

MERIA

DRY AQUIFERS IN ARAB COUNTRIES AND THE LOOMING FOOD CRISIS

Elie Elhadj*

As water volumes in Arab lands dwindle, as per capita income in the large and heavily populated non-oil producing states remains low and narrowly diversified, as high population growth rates persist, a food disaster will sooner or later strike. These countries will have neither the water to grow the food they need, nor the exports to earn the foreign currencies to import the food they require. This article recommends that the affected economies should grow and diversify. To that end, scarce economic resources should be allocated according to rate of return criterion and population growth rates cut substantially. Also, Arab oil exporters should create a giant “peace fund” to provide their poor neighbors with grants to help them grow and diversify their economies in order to escape poverty.

INTRODUCTION

To set the stage, certain facts need to be stated. First, foodstuffs are an encapsulation of water, virtual water. Generally, 1,000 tons of water (1,000 cubic meters (m³)) are needed to produce a ton of wheat, and 16,000 m³ of water is needed to produce a ton of red meat.¹ Further, a ton of rice requires 3,400 m³ of water to grow; a slice of bread, 40 liters (kilograms); a cup of tea, 30 liters; an apple, 70 liters; and a glass of beer, 75 liters. It follows that the composition of one’s diet determines the volume of water embedded in the food consumed. The more meat in a diet, especially red meat, the more water an individual consumes. The term virtual water and food will be used in this paper interchangeably.

Second, an individual requires one cubic meter of drinking water per annum, between

50 and 100 m³ for other domestic uses, and about 1,000 m³ of water to raise the food requirement of that individual.² At the national level, over 90 per cent of the water needed by an individual or the economy provides one’s food needs.³ This water can either be local or “imported” in the form of virtual water.

THE WATER CHALLENGE

The following table shows the food self-sufficiency ratio of the nine most populous Arab countries, per capita gross domestic product (GDP), and the degree of reliance on the agricultural sector. Saudi Arabia is classified separately due to its wealth relative to the other countries in the table and to its unique unsuccessful experiment in desert agriculture, as will be addressed later in this article.

Country (1)	Agricultural share of annual freshwater withdrawal (billion m3) (2)	Annual water for cotton (billion m3) (3)	Annual water for foodstuffs (billion m3) (4) = (2- 3)	Annual virtual water needs (billion m3) (5) = population size x 1,000 m3 (a)	Food self-sufficiency % (6) = (4/5)	Per capita GDP @ official rates (\$) (7)	Labor force in agriculture % (8)
Algeria	6x65% = 4	-	4	34	14%	3.880	14%
Egypt	68x86% = 58	3 (b)	55	82	67%	1.560	32%
Iraq	43x92% = 40	-	40	28	143%	1.965	NA
Morocco	13x87% = 11	-	11	34	32%	2.150	40%
Syria	20x95% = 19	4 (c)	15	19	79%	2.000	32% (d)
Sudan	37x97% = 36	-	36	40	90%	1.250	80%
Tunisia	2.6x82% = 2	-	2	11	18%	3.300	55%
Yemen	7x95% = 6	-	6	28	21%	960	NA
Total	176	7	169	276	60%	1.953	
Saudi Arabia	17x89% = 15	-	15	28	54%	13.400	12%

Source: Unless noted otherwise, the data in the table are from CIA World Factbook. Most of the data are for 2007, <https://www.cia.gov/library/publications/the-world-factbook/geos/sy.html>.

(a) Since an individual requires about 1,000 cubic meters of water per annum to raise the food requirement of that individual, the annual volume of water embedded in the food requirements of the entire population of a country would be equal to the size of the population x 1,000 m³.

(b) UNESCO-IHE Institute for Water Education, 2005, "The Water Footprint of Cotton Consumption," p. 15, <http://www.waterfootprint.org/Reports/Report18.pdf>.

(c) The World Bank (WB), Rural Development, Water and Environment Group, Middle East and North Africa Region, *Syrian Arab Republic Irrigation Sector Report*, No. 22602, (Washington D.C., WB, August 6, 2001), Table A. 12, p. 58.

(d) One quarter of Syria's labor force is engaged in agriculture plus one half of the manufacturing workforce is dependent on agriculture for employment (Ibid, p. ix).

The table invites three observations: First, although the ratio of food self-sufficiency varies from one country to another the overall average ratio is rather low: 60 percent.

Second, with an average per capita GDP of less than \$1,950 per annum the Arab region outside the oil producing countries is characterized as poor. Third, the degree of

reliance on the agricultural sector by Arab labor is significant; more so for the population as a whole since rural families typically have more children than urban families.⁴

In this article, the inefficient investment that Saudi Arabia and Syria undertook in irrigation and agricultural development in the recent decades and Egypt's perilous course in hydropolitics will be discussed. Solutions will be advocated, particularly the allocation of scarce resources according to rate of return on investment criterion and the establishment of a giant "peace fund" by the oil-exporters of the Arabian Peninsula to alleviate poverty among their neighboring poor.

Saudi Arabia, Syria, and Egypt represent useful case studies to ponder. The three countries demonstrate that in spite of the profound differences among Arab monarchies and republics in types of governance, ideologies, political agendas, natural resources, and climate conditions, they nonetheless share in common national decisionmaking processes that produced financially wasteful and environmentally damaging strategies. These case studies approximate sociopolitical models found in other Arab monarchies and republics.

Saudi Arabia's Agricultural Project: From Dust to Dust

Saudi Arabia's desert agriculture confirms that money and water can make even a desert bloom until either the money runs out or the water is depleted.⁵ Saudi Arabia's experience is noteworthy because within 15 years, the country experienced shortages of both money and later, water. These shortages impacted negatively on the country's heralded commitment to desert agriculture.

In 1993, Saudi Arabia suffered financial strains, so its cereal-growing program of the previous twelve years was scaled down drastically. Then, in early 2008, as the quality and quantity of non-renewable aquifers reached perilous levels, the government declared that purchases of wheat from local farmers would be reduced by 12.5 percent

annually, with the aim of relying entirely on imports by 2016.⁶

Farming is alien to desert habitat and the culture of its peoples. As Saudi Arabia became rich following the quadrupling of oil prices in 1973, however, Saudi investors were induced by huge government subsidies to import the equipment and the farm workers to implement a heavily propagated strategy of food self-sufficiency. Within 12 years, between 1980 and 1992, wheat production grew 29-fold--to 4.1 million tons⁷--making the Saudi desert the world's sixth-largest wheat exporting country.⁸ To achieve this enormous growth, the wheat-producing areas were increased by 14-fold, to 924,000 hectares.⁹ To put 924,000 hectares in perspective, Egypt, with five times as many people, has an irrigated surface for all crops evolved over the centuries of 3 million hectares.¹⁰

Beginning in 1993, under pressure from declining oil prices since the mid 1980s,¹¹ the government had to scale down its wheat-growing subsidies. The budget deficits between 1984 and 1992 added up to \$130 billion.¹² Liquidity became so tight that the government had to delay (default) for a few years in honoring more than \$70 billion in obligations to thousands of suppliers, contractors, and farmers.¹³ Between 1981 and 1993, spending on security added up to \$225 billion, out of \$420 billion in total oil revenues.¹⁴ In addition, the 1980-1988 Iran-Iraq War cost \$25.7 billion,¹⁵ the 1991 Gulf War cost \$80 billion,¹⁶ and maintaining the profligate lifestyle of some 4,000 immediate members during that period of the al-Saud ruling family's patriarch may be estimated to have cost \$4 billion per annum.¹⁷

Within four years, by the end of 1996, 76 percent of the new wheat-growing surface was abandoned.¹⁸ Wheat production dropped by 70 percent.¹⁹ By 2000, barley production, too, dropped by 94 percent.²⁰

The estimated financial cost of this venture between 1984 and 2000 was around \$100 billion,²¹ excluding a number of unquantifiable subsidies.²² If these subsidies were added, the overall spending might have doubled and the cost of wheat doubled to

\$1,000 per ton. The international price for wheat during that period averaged \$120 a ton.²³

As for the cost in terms of water, between 1980 and 1999, a gargantuan volume of water--300 billion cubic meters, the equivalent to six years flow of the Nile River into Egypt--was used. Such volume translates to around 15 billion cubic meters per annum--equivalent to the volume of water that Syria and Iraq combined receives from the Euphrates River. Two-thirds of the water thus used is regarded as nonrenewable, according to estimates by the Ministry of Agriculture and Water.²⁴ At this rate, it does not need to be a genius to predict that if the extraction does not stop, the non-renewable water reserves will sooner or later be depleted. The January 2008 announcement confirms this reality.

The dramatic rise and equally dramatic fall of Saudi cereal production reflected haphazard planning and a failed, politically determined economic and ecological policy created by poorly informed elite enjoying rentier economic circumstances. This experience proved merely that throwing out money and water could make even a desert bloom, until either the money or the water ran out.

Food independence is impossible for a country like Saudi Arabia. A population of about 28 million requires about 28 billion m³ of water annually to grow its food needs. However, as the above table shows, Saudi Arabia extracts 15 billion m³, or 54 percent. Eventually, the irrigated lands from non-renewable water sources will be abandoned and the investments written off.

A country like Saudi Arabia would be better off to stop desert irrigation altogether in order to spare its remaining water for drinking and household purposes for future generations. Saudi Arabia and the other five members of the Gulf Cooperation Council (GCC); Bahrain, Kuwait, Oman, Qatar, United Arab Emirates, are fortunate in that oil revenues will enable them to import foodstuffs; at least until alternative energy sources will be found or until the oil gets depleted and the financial reserves dissipated.

The Syrian Government: A Bad Farmer

Unlike Saudi Arabia, agriculture in Syria has for millennia supported large population centers and produced thriving civilizations along rivers and coastal areas. Of Syria's landmass (185,000 sq. km), 25 percent is arable.²⁵

Spending by the Syrian government on irrigation and agricultural development has been substantial but inefficient. Beginning in 1960, the eight five-year plans that followed invested about \$20 billion on the agricultural sector (at the official foreign exchange rates of that period).²⁶ Three-quarters of the investment was made between 1988 and 2000.²⁷ However, the results have not been brilliant; 550,000 hectares, or 45 percent of the country's total irrigated surface, were added during this period, of which the government contributed 138,000 hectares²⁸ and the private sector developed the rest. Ninety percent of the 138,000 hectares (124,000 hectares) was in the salt-affected and drainage-poor Euphrates Basin--gypsum in the soil caused the irrigation networks to collapse. In the Euphrates Basin 43 percent of the land was identified by the World Bank as having drainage problems or potential to develop problems in the future.²⁹

The government started in 1968 building the Tabqa Dam on the Euphrates River. Made in the Syrian national discourse as one of the government's proudest achievements, the Tabqa Dam failed to achieve its targets. The plan was for the dam to increase by 2000 the irrigated surface in the Euphrates Basin by 640,000 hectares.³⁰ By 2000, only 124,000 hectares, or 19 percent of the target had been achieved.³¹

Land reclamation cost was high, estimated at \$25,700 per hectare.³² At such costs, it would be practically impossible to make a reasonable rate of return on the investment. A 10 percent return translates to \$2,570 per hectare, over and above the cost of production.

The Tabqa Dam wastes a huge volume of water to evaporation, estimated at 1.6 billion m³ annually.³³ While this volume could theoretically satisfy the drinking and household water needs of Syria's 19 million

inhabitants, most cities have been suffering severe water shortages for years, including the capital Damascus, which suffers daily water shut-offs during the blazing summer months lasting over fifteen hours.

The loss of water to evaporation is all the more significant in light of Turkey's 50 percent cut in the flow of the Euphrates River into Syria and Iraq, which resulted from the construction of the huge GAP project in eastern Turkey. Turkey reduced the flow to Syria and Iraq to 500 m³ per second in accordance with a protocol for the distribution of the river's waters signed on July 17, 1987. Turkey started construction of the Keban Dam in 1966, two years before Tabqa's start of construction.³⁴

The non-financial returns from the government's emphasis on investment in agriculture were poor as well. Under Syria's vulnerable economic circumstances and despite the government's commitment to the welfare of the agricultural sector, the migration from rural communities to urban centers continued. The ratio of rural to total population has declined since 1961, from 63 percent to 48 percent in 2000.³⁵ Reliance on capricious rainfall was not reduced either. In 1989, wheat production was 1 million tons; in 1995, it jumped to 4.2 million tons; in 1999, it dropped to 2.7 million tons; and in 2007, it increased to 4.5 million tons.³⁶ Estimates for 2008 are for a harvest of around 2.5 million tons.

Over-extraction of groundwater has deteriorated Syria's environment seriously. Irrigation extractions beyond the volume of renewable water have led to negative balances in five out the country's seven basins,³⁷ thus reducing the quantity and degrading the quality of the remaining water reserves.³⁸

Like Saudi Arabia, food independence is impossible for a country like Syria to achieve. Syria's population of about 19 million requires about 19 billion m³ of water annually to grow its food needs. Yet as the above table shows, Syria can provide only 15 billion m³ from irrigation and rain combined. The gap will get bigger as Syria's population grows.

The World Bank concluded that Syria's government "will need to recognize that achieving food security with respect to wheat and other cereals in the short-term as well as the encouragement of water-intensive cotton appear to be undermining Syria's security over the long-term by depleting available groundwater resources."³⁹ Of Syria's 13 billion m³ in irrigation water use, almost a third (4 billion m³) is used in cotton irrigation.⁴⁰ In spite of these difficulties, a Ministry of Irrigation Strategy report revealed Syria's commitment to increasing the irrigated surface between 2000 and 2020 by 493,000 hectares in five of the country's seven basins; 181,000 hectares of which in the Euphrates Basin.⁴¹

Eventually, with continued water over-extraction, irrigated lands will be abandoned, investments written off, and food production halted. Coupled with Syria's narrow GDP diversification and dearth in foreign currency sources from exports, food imports would become increasingly difficult to afford. Whenever this happens, the negative impact on rural communities and societal order could be shattering.

A country like Syria would be better off beginning to focus its efforts on investment in export industries in order to generate sufficient foreign currencies to buy food in the future instead of continuing to invest in white elephant irrigation schemes.

Lessons from Saudi Arabia and Syria's Experience

From the above, it may be concluded that money and water can make a desert bloom until either the money or the water runs out. Food self-sufficiency in arid and semi-arid countries like Saudi Arabia and Syria is more of a romantic dream than a reasoned strategy. The above table shows that slogans and political economics aside, food self-sufficiency in Arab countries is impossible to attain or sustain. Growing populations and insufficient water resources make such a strategy unrealistic.

Currently, the overall ratio of Arab food self-sufficiency is 60 percent. As the size of the population grows, the ratio will progressively decline. The overall deficit of 40 percent has been covered through food imports, quietly. Importing foodstuffs runs in the face of the well-propagated slogan of food independence, so the government-controlled media ignores discussing food imports.

Except for Iraq, the food self-sufficiency ratio of every country in the table is negative. The ratio ranges from as little as 14 percent for Algeria, 18 percent for Tunisia, 21 percent for Yemen, 32 percent for Morocco to as much as 90 percent for Sudan, 79 percent for Syria, and 67 percent for Egypt. By 2050, the region's population is expected to grow by two-thirds.⁴² By that time, even if water volumes do not decrease--a big if--the overall food self-sufficiency ratio in Arab countries will decline to around 35 percent.

Under the arid and semi-arid conditions of the Arab world an economist would argue that it would be beneficial to import foodstuffs instead of investing in financially and environmentally non-viable local farming schemes. An economist would also argue that farming in arid or semi-arid areas should be left to rain fed lands. Given that drinking and household water use in every country is typically one tenth the volume of the water needed to become food self-sufficient, it would be necessary to stop further depletion of non-renewable water reserves by abandoning irrigation schemes so that the remaining water may be preserved for drinking and household purposes. International "trade" in virtual water allows water-scarce countries to import high water using foodstuffs and export low water using manufactured products.

However, importing foodstuffs gives rise to three challenges. The first is national security. Importing foodstuffs runs contrary to the popular notion in Arab countries that food self-sufficiency protects national security from the dangers of a boycott. Government propagandists succeeded in incorporating this fallacy into the national discourse. They made it into a sacrosanct belief without regard to their severe water shortage or the fact that they

import many items, the boycott of any of which would be as detrimental to national security as the boycott of foodstuffs, if not more; such as, to name only a few, desalination plants, medical equipment, pharmaceuticals, spare parts, etc.

Failure to address critical issues like water scarcity openly and truthfully is not surprising under non-representative non-participatory governance. Such type of rule bans free press, egalitarian non-governmental organizations, and environmental groups--thus, making it impossible to have effective dissent against the mendacity of food independence in a mainly arid region or introduce a balancing perspective into water policy.

The second challenge is the difficulty in generating the foreign exchange needed to pay for food imports. While foreign exchange is not an issue for the time being in the underdeveloped but rich economies of the Arab oil producers, securing foreign currencies is a major problem to the underdeveloped and poor economies of the non-oil rich states where more than 90 percent of the Arab population lives.

The third challenge is the negative effect that virtual water imports have on rural employment. While farming in the oil-rich desert states is an aberration and expatriate workers do the work, in semi-arid societies the land is the only source of livelihood for millions. While abandoning farming in the oil-rich desert states would mean sending the foreign workers back to their countries of origin, virtual water "trade" by poor arid/semi-arid countries would cause severe dislocations to rural communities, typically suffering from little or no alternative work opportunities. Economic and labor immobility causes governments to make politically convenient decisions despite their financial inefficiency and environmental damage in order to avoid societal unrest.

Failure to export low-water using goods, to enhance non-farm employment opportunities in rural areas, and to cut population growth rates substantially will prolong dependency on irrigation water. Failure in these areas, as the case of Egypt below will illustrate, transforms

transboundary rivers into sources of conflict, even war. By contrast, in an economy that is rich, well diversified, and abundant in foreign currency earnings, like that of Israel, for example, water scarcity should be of little consequence.

Egypt's Hydropolitics: A Perilous Course

With a per capita income of \$1,560 in 2007 (at official rates), Egypt is poor. It is desperately dependent on irrigation water. It cannot easily generate the foreign currencies to import additional foodstuffs. It also suffers from economic and labor immobility and rapid population growth. Over the past 50 years, Egypt's population has more than tripled to 82 million, representing more than a quarter of the Arab world's population today. By 2050, Egypt's population is expected to reach 160 million people.⁴³

Like Saudi Arabia and Syria, food independence is impossible for a country like Egypt. With a population of 82 million, Egypt needs some 82 billion m³ of water to grow the food it needs to make it food self-sufficient. Yet as the above table indicates, Egypt's annual water volume from the Nile River for foodstuffs is 55 billion m³. The difference of 27 billion m³ is "imported" in the form of foodstuffs, quietly. The future promises that more virtual water "trade" will become necessary, as Egypt's population continues to grow.

The Nile is critical for Egypt, a matter of life and death. The Nile supplies almost all of Egypt's fresh water. A 1959 agreement between Egypt and Sudan allocated the Nile's annual flow of 84 billion m³, minus 10 billion m³ for evaporation from Lake Nasser, on the basis of 75 percent for Egypt--or 55.5 billion m³ per annum--and 25 percent for Sudan--or, 18.5 billion m³ per annum. The agreement was reached without acquiescence or involvement of the other eight riparian countries. Egypt's entire freshwater supply originates outside its borders, raising troubling national security threats to Egyptians. The Nile flows into Egypt via Sudan from Ethiopia, Uganda, Tanzania, Kenya, the

Democratic Republic of the Congo, Rwanda, Burundi, and Eritrea.

Egypt's difficult economic circumstances expose its national security to the irrigation actions of its upstream riparians. Consequently, the government of Egypt has threatened its upstream riparian countries with war if the Nile waters were to decline as a result of irrigation projects in those countries. The threat is synonymous with Egypt decreeing that upstream countries in the Nile basin must not engage in irrigation projects to feed their hungry population so that Egypt's water allotment is preserved. As a case in point, Ethiopia provides around 55 billion m³ of the Nile's annual flow, or around two thirds of the flow to Sudan and Egypt. Ethiopia has 200,000 irrigated hectares out of a potential 3.7 million hectares of irrigable land. With a population nearly the size of Egypt, and facing problems in sustaining, Ethiopia will need to develop a large portion of this land for agricultural use. If Ethiopia irrigates only 500,000 hectares, for example, the flow of the Nile to Sudan and Egypt will drop by 6.25 billion m³ per annum.⁴⁴

Furthermore, Egypt's water woes could be exacerbated by the possible effects of global warming on the flow of the Nile from less rain and increased evaporation. Abject poverty and hunger/famine, which afflict Egypt's nine upstream riparian countries, combined with Egypt's own poverty and economic plight make it reasonable to predict that it is only a matter of time before violent conflict erupts over the Nile's waters, unless remedial action is taken.

A Way Forward

To avert conflict with its riparian neighbors, Egypt has little choice but to reduce its water use and to focus on growing and diversifying its GDP. Especially important here is the development of industries that produce low water using goods for export and provide employment alternatives to farming in rural areas. Such industries would also generate the foreign currencies needed to

import high water using foodstuffs instead of growing the food at home.

A number of measures can grow per capita GDP and diversify its sources, including, cutting the rate of population growth, adopting water conservation targets--especially reducing the red meat content in people's diet--and allocating scarce economic resources efficiently according to rate of return on investment criterion.

In what follows, the efficient allocation of scarce economic resources will be discussed, followed by a proposal for the establishment of a giant peace fund by the oil-exporters of the Arabian Peninsula to provide grants to augment the national saving/investment of their poor neighbors to help lift them grow and diversify their economies in order to escape poverty.

EFFICIENT ALLOCATION OF SCARCE ECONOMIC RESOURCES

In allocating scarce national resources, an economist would argue against investing in any project unless justified on a purely rate of return on investment basis. Irrigation and land reclamation projects are no exception. These must be evaluated according to their rate of return on investment with full costing of water that ensures maintaining the quantity and quality of the aquifers and accounting for the negative and positive externalities of production and consumption. A rate of return approach diverts the foreign currencies that would otherwise be allocated to irrigation and land reclamation to higher return investments. In the export and/or import-substitution industries, such diversion would increase foreign currency earnings, which would then be used to import food. A rate of return on investment criterion would diversify GDP sources. The diversification would enhance employment opportunities in rural areas and mitigate the negative effects of food imports on rural employment. A rate of return approach invests taxpayers' money in more rewarding projects for the country as a whole, not to one segment of the population at the expense of the others. A rate of return on

investment criterion can help steer GDP on a path of optimal growth.

Given their low per capita income, relatively low labor costs provide Arab labor markets with a comparative advantage in cost of production. Comparative advantage in production cost leads to specialization and competitiveness in world markets. It is no accident that Japan leads the world in the export of electronics, Switzerland in expensive watches, and the United States in computer software.

Other approaches to scarce resource allocation are inefficient because of the ethical, ideological, and emotional bias that typically influence decisionmakers and are often driven by narrow personal interests. Such debates could be particularly intense when dealing with water issues, which impinge on poor sections of the population as well as on the environmental services provided by water. Important matters and decisions include: How much taxpayer money should be invested in dams and irrigation? What volume of non-renewable groundwater ought to be extracted? Should the water be used to supply householders or irrigation, or for which crops should it be used and where? Last, how much water, if any, should be conserved for environmental protection or for future generations?

Applying a rate of return criterion makes water extraction and delivery a central factor in the cost of production. This issue is controversial. It represents a departure from attitudes developed as a result of poverty and age-old customary practices that expect water to be free of charge. However, population explosion in Arab lands, combined today with insufficient water resources must bring new realism into ancient expectations and practices.

A "Peace Fund" by Arab Oil States

Per capita income in the Arab world outside the GCC is low--less than \$2,000 a year. The web of political and commercial risks in these markets dissuades foreign private sector investors from risking their

capital there. The gap between the investment funds needed to achieve a desired GDP growth rate and the economy's ability to generate the necessary saving to underwrite this investment must be sourced from abroad. GCC states should be the source. These states have a security interest in doing so. They also have a moral obligation to live up to and obey the Islamic injunctions they flaunt.

The indigenous population of the six GCC states is around 20 million, about the size of the population of Cairo. Aside from Saudi Arabia, where 75 percent live, the native-born populations of each GCC state are less than the inhabitants of a single street in Baghdad, Cairo, or Damascus. Additionally, GCC states host about 25 million expatriate workers. These include the domestic servants, maids, and chauffeurs in almost every home; the laborers on construction sites, farms, and municipal services; as well as the teachers, engineers, physicians and nurses, etc. Expatriate workers have built GCC infrastructure and glittering cities. They keep Gulf communities functioning from producing the oil bonanza to sweeping the streets, in return for miserly wages for most, inhumane living conditions, slave-like treatment, and a negligible proportion of the GDP that they generate.

GCC states produce about 17 million barrels of oil per day, valued in 2007 at more than \$600 billion. Much of this staggering sum is spent on unproductive pursuits, if past patterns are any guide. As seen above, Saudi Arabia spent hundreds of billions of dollars on weapons and security, on unsustainable desert irrigation schemes, and on the profligate lifestyle of the ruling family. The five tiny GCC neighbors have spent enormous amounts of money on symbols of statehood to demonstrate their legitimacy and sovereignty. These city-states wasted enormous amounts of money on procuring state-of-the-art weapons (which they cannot keep functioning without American and European experts), on huge magnificent airports--sometimes only a few kilometers from one another--on half a dozen local airlines, on elaborate diplomatic missions around the globe, etc. The ruling elites in these

communities compete with each other on who owns the grander palace, flies the bigger private Airbus or Boeing, sails the more extravagant yacht, and flaunts the larger golf course--all while poverty, dilapidated unsafe primitive public utilities, disease, and illiteracy afflict the millions of Arab and Muslim brethren nearby.

A financial aid fund or "peace fund" would provide grants, not loans, to the poor neighbors of the GCC states. The fund would invest in schools, libraries, laboratories, hospitals, roads, ports, airports, telecommunication networks, water and sanitation infrastructure, etc. Such projects would reduce chronically high unemployment rates, improve workers' skills, enhance economic growth, and lead to greater saving, which in turn would spur a new cycle of economic growth that would be self-perpetuating. At a 25 percent contribution into the proposed peace fund, a sum of \$150 billion in 2007 would be available to lift millions out of poverty, disease, and frustration.

For the "peace fund" to succeed, the recipient governments must develop good governance structures that ensure transparency and accountability and allocate national resources efficiently. Investing in education and health, for example, must take precedence over purchasing weapons. That officials in the beneficiary countries might misappropriate (steal) the aid funds is no excuse to abandon the peace fund concept. The World Bank could manage such a program to ensure the viability of the projects and the correctness of the disbursements. That most GCC members have locally managed development aid organizations is no substitute for the peace fund. The resources of these aid organizations are woefully inadequate, and they are politically motivated, often doing more in propaganda value for their owners than help the poor.

Why be so generous? The answer is that unless regional poverty is alleviated, a ticking food bomb threatens the fantasy world of GCC living with conflict and instability. The threat of starving hordes bordering those dazzling palaces, skyscrapers, seven-star hotels, and ice-skating rinks should spur Arab royals to

start helping to lift their neighbors from abject poverty. Indeed, the Koran implores Muslims to be helpful to their neighbors (Koran, 4:36), and GCC rulers have made Islam a state ideology and a divine way of life. Being faithful to the Koran will make them less hypocritical.

Self interest aside, the peace fund should be seen from a moral viewpoint--a form of reparation payments for the cruelty wreaked by GCC societies upon the tens of millions of guest workers who have worked there since the quadrupling of oil prices in October 1973. That the foreign workers accepted to work for miserly wages and put up with slave-like treatment does not absolve the wrongdoers of moral responsibility or justify their exploitation of hapless laborers in strange lands. It follows that the peace fund should benefit all foreign labor providers to GCC states, especially the major labor providers such as Bangladesh, Egypt, India, Indonesia, Pakistan, and the Philippines.

Looking into the long-term, the peace fund should also be regarded by GCC citizens as a down-payment of goodwill to be used when oil ceases to be the world's prime source of energy or when the oil reserves run out and the financial reserves dissipate. Although such an eventuality might be decades away, the consequences of whenever it materializes would be catastrophic to contemplate. A century or two are like fleeting moments in the context of the long sweep of history.

Over the millennia, a limited sized population could survive in the harsh Arabian Desert. As late as 1960, the population of Saudi Arabia was around four million and the rest of the Peninsula, excluding Yemen, had less than a million. During the 1960s, travelers to GCC capital cities recall pathetically poor and primitive living conditions. Today, the Arabian Peninsula artificially accommodates 45 million people (excluding Yemen) through desalinated water and the importation of every necessity and luxury. When oil loses its value and the financial reserves are depleted, the expatriate workers will go home, the glitzy skyscrapers will rust, and most of the natives will want to migrate. History suggests that

they would wish to settle in the Levant, Mesopotamia, and Egypt. One historic migration is notable here. Following the death of Muhammad in 632, poor Bedouins quickly fanned out of Arabia in the name of Islam and settled, with the help of the sword, in Syria, Egypt, and Iraq.

While the numbers of those involved in previous migrations were relatively small--possibly thousands or tens of thousands--the next migration would involve millions of people. Over a relatively short period of time, for example, the next four decades, the indigenous GCC population could double to 40 million (at an annual growth rate of 1.5 percent). With such numbers, only a sizable reservoir of past goodwill can help those who would hope to take refuge among their brethren to the north and the west.

** Elie Elhadj, born in Syria, is a banker with a 30-year career in New York, Philadelphia, London, and Riyadh. He was Chief Executive Officer of a major Saudi Arabian bank throughout most of the 1990s. This article is adapted from his 2005 Ph.D. Dissertation at London University's School of Oriental and African Studies (SOAS), "Experiments in Water and Food Self-sufficiency in the Middle East: The Consequences of Contrasting Endowments, Ideologies, and Investment Policies in Saudi Arabia and Syria."*

NOTES

¹ Tony Allan, "Virtual Water--Economically Invisible and Politically Silent--A Way to Solve Strategic Water Problems," *International Water & Irrigation*, Vol. 21, No. 4 (2001), p. 39.

² Tony Allan, *The Middle East Water Question Hydropolitics and the Global Economy* (London: I.B. Tauris, 2000), p. 6.

³ Ibid.

⁴ In Syria, for example, the average number of children considered ideal in rural areas was about six, and about four in Damascus. M. El-Jabi and A. R. Omran, "Family Formation and

Social Characteristics: Syrian Arab Republic,” <http://www.popline.org/docs/007300>.

⁵ For more on Saudi Arabia’s agricultural experiment see: Elie Elhadj , *Middle East Review of International Affairs (MERIA), Saudi Arabia’s Agricultural Project: From Dust to Dust*, Vol. 12, No. 2 (June 2008), <http://www.merijournal.com/en/asp/journal/2008/june/elhadj/index.asp>.

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