III. Southwest Asia and Africa

A MARSHALL PLAN FOR SOUTHWEST ASIA

Crossroads of the Continents

by Hussein Askary

April 10—This text is an updated version of Part 6 of the Arabic translation of the EIR Special Report, The New Silk Road Becomes the World Land-Bridge, which was published in February 2016. Part 6 of the Arabic version also included an appendix on the reconstruction of Syria, separately published in *EIR* Dec. 23, 2016: *Aleppo Will Rise from the Ashes of War*.

The visit by Chinese President Xi Jinping in January 2016 to Saudi Arabia, Egypt, and Iran should be seen as an economic and strategic turning point in the history of the Southwest Asia region. The visit has to be used as far as possible to build the foundation for a new modus operandi of peace through economic development. This, obviously, has to go hand in hand with resolving the crisis in Syria politically and the eradication of terrorism militarily as necessary. This visit, in which President Xi invited these nations to join the Economic Belt of the New Silk Road, came at one of the darkest moments in this region where three wars are raging simultaneously, in Syria, Iraq, and Yemen, and many other nations, such as Egypt, Libya Turkey, Lebanon, Kuwait, and Saudi Arabia, are targeted by terrorist activities. President Xi's visit also came one week after the Chinese Foreign Ministry issued the first ever Chinese political paper concerning the Arab world, focusing on the necessity of economic cooperation and building the basic infrastructure projects along the New Silk Road, and promoting nuclear power and industrial development as the key elements to stabilize and resolve the crises in the region. This visit and the economic, cultural, and trade agreements that were signed between China and the three countries President Xi visited created an atmosphere of optimism and openness toward the idea of the New Silk Road.

This Chinese initiative, if the countries of the region pursue its content and principles, would realize the ideas and initiatives promoted by EIR and the Schiller Institute for this region over more than 30 years.

In a speech delivered at the Zayed Center in Abu Dhabi in June 2002, Lyndon LaRouche presented the economic perspective for the Gulf nations, being "on the cross-roads" of the Eurasia-Africa continents. Indeed, the geographical location of Southwest Asia nations on the most vital trade and transport routes between three continents gives them a unique advantage. If these nations were to integrate and transform their

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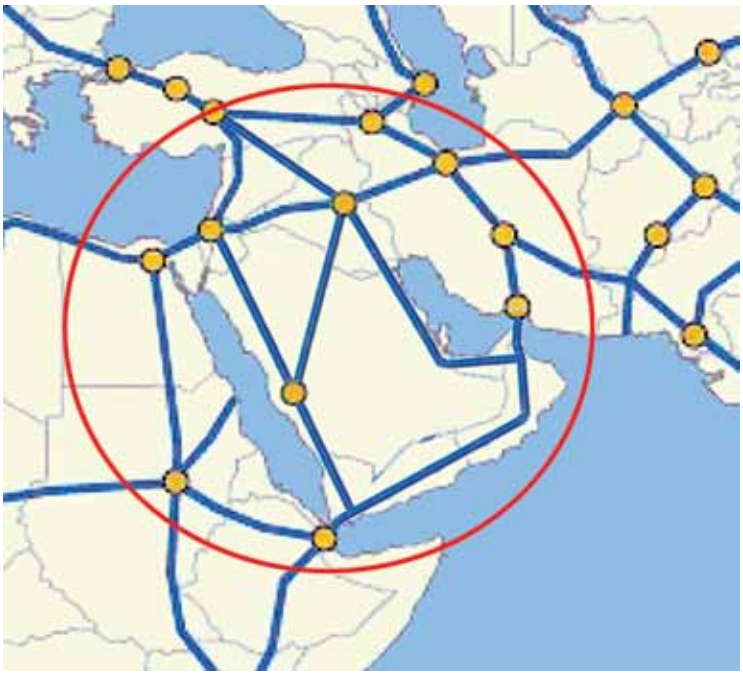
Lyndon LaRouche with Dr. Ubaid bin Masood al-Jahni between sessions of the conference on "The Role of Oil and Gas in World Politics" at the Zayed Centre in Abu Dhabi in June 2002, where he was a featured speaker.

economies to facilitate the future economic development of the Eurasian landmass and Africa, they will play a key role in these developments, ensuring at the same time their long-term economic, political, and cultural survival beyond the era of fossil fuels. This region is immediately important for economic development in other parts of the world, especially East Asia, because of its oil and gas resource base. For example, 48% of the world's crude oil exports originate from this region, and 80-90% of that oil goes to the Asian nations of China, India, Japan, and South Korea. Almost two-thirds of the oil and natural gas reserves of the world are located in this region and proximately adjacent areas in North Africa and Central Asia. Thus, this region is a choke-point for the supply of energy. Although still dominated by Anglo-American geopolitics, with an anti-imperialist policy this region could become a bridge for peace and development.

FIGURE 1



The two best examples in the region of the tendency toward the new paradigm of development of the physical economy represented by the BRICS nations (Brazil, Russia, India, China, South Africa) are Egypt and Iran. Since the second revolution in June 2013, and the election of President Abdulfattah el-Sisi, Egypt has taken steps to move away from its crisis-ridden and dependent status to become a truly developing nation. And that despite massive economic and social ills that have accumulated over many decades, and in the face of a terrible assault on the nation by the terrorist group the Islamic State (IS). The new tendency is exemplified by Egypt's efforts to utilize as much as possible its national resources, financial and human, that have been idle for many years. These resources are now channeled into a comprehensive and well-planned national development strategy based on mega projects put on schedules for super-accelerated completion, as was achieved in the digging of the second Suez Canal in a record time of one year (completed in November 2015). There is also a renewed focus on industrial development and reclaiming the desert for agricultural and urban development to rebalance the demographic discrepancy in the country.

Egypt has also benefitted from the Chinese policy which regards Egypt as a key strategic transport and logistic hub on the Maritime Silk Road between Asia and Europe. In addition, President el-Sisi has established a very special political and strategic relationship with Russia President Vladimir Putin, and economic cooperation has been progressing between the two countries, including the signing of an agreement to build Egypt's first commercial nuclear power plant in El-Dhaba on the Mediterranean coast. (Being geographically part of Africa, Egypt's role is dealt with in Part 10 of the EIR Special Report.)

The second important example is Iran. Although this part of the report is focused on Iran's role as a key connection between Asia and the region and Europe, it is strategically very important to normalize Iran's relations to the Arab states in the region in general and Egypt in particular in order to thwart the attempts to drive the region into an unprecedented religious and sectarian war that can lead to the fragmentation and destruction of almost all large nations in the entire region.

In addition, the natural physical-economic geographical area includes Iran, Turkey, Syria, Egypt, Sudan, Ethiopia, Djibouti, and the Gulf Cooperation Council (GCC) countries [see **Figure 1**]. This region is not only the greatest source of petroleum resources in the world, containing more than two-thirds of all known reserves of oil and gas in the world, but also a natural bridge between the continents, a center of many ancient civilizations, and home to about 450 million people, most of whom are under the age of 30 with a relatively good education. This population is expected to double

in the coming 30-50 years. In addition, it contains massive non-fuel mineral resources, and even large water resources if used wisely and effectively. It is potentially one of the largest markets for industrial and high-technology goods, from which it has been locked out for several decades and now is hungry for these necessary products for its development. The region as a whole does not lack financial resources, with more than $1 trillion just in the Sovereign Wealth Funds of the GCC countries alone.

Broader Development Potential in Southwest Asia

There is a very paradoxical situation in this region when it comes to the correlation of living standards, culture, education, and economic and financial wealth. Since the oil crisis of 1973 in particular, these countries have been divided into two categories, the so-called rich ones and the poor cousins. The rich ones are the oil exporting countries in the Gulf, members of the GCC, which have small populations and large mineral wealth. They are also members of the British imperial club, and are coddled by the United States and Europe. The others have fewer resources and larger populations, and have been cursed by the British and the United States. The poorer ones include Iran, Iraq, Syria, Lebanon, the Palestinian people, and Egypt. Jordan has vacillated between these two camps politically, but economically is one of the poorest in the region. The paradox here is that the population in the seemingly poorer countries has much higher levels of education, more advanced labor skills, and a deeper sense of historical identity. The richer ones are living in a strange dichotomy between material wealth and primitive traditions and religious extremism. Technological progress is welcome, but only as a pragmatic power tool, not for the improvement of the cultural and physical conditions of the citizens of the states or their future missions. An educated middle class is obviously a political threat to the ruling families. The discrepancy between the small native labor force and the foreign workers (constituting 80-90% of the labor force in the private sector in most of the richer countries) threatens to pose serious problems in the near future, as mass unemployment among the natives increases, and the lack of basic labor rights among guest workers become more tangible as their wages do not match the real increase in prices globally. Obviously it is difficult to sustain a society of half slaves.

In the poorer group of nations, a great number of the best brains and educated persons have fled these countries due to civil wars, political oppression, and wars or invasions by foreign armies such as in the case of Iraq or foreign-backed terrorist groups as in the case of Syria today. Economic sanctions against Iraq, Iran, and Syria, and International Monetary Fund (IMF)/World Bank policies imposed on Egypt, have led to the deterioration of living standards, infrastructure, and educational systems. All this has set back the development of these nations many decades. Yemen has suffered all three—IMF conditionalities, terrorism, and recently a foreign campaign of intensive bombardment and economic blockade.

The Schiller Institute program for the development of the region, now possible with the New Silk Road Initiative, will shift this imbalance dramatically because the financial and mineral wealth, human resources, and skills will be directed toward one unified mission for all the countries—national and regional integrated development. Youth among the native populations will be trained, allowing them to join the labor force to build their nations and green the desert, in similar fashion as the Franklin Roosevelt era (1933) New Deal and associated Civilian Conservation Corps (CCC) programs during the Great Depression pulled unemployed people in America off the streets into the national reconstruction projects, helping turn the United States into the most powerful economic nation on earth during World War II. The brain drain will be stopped, and hundreds of thousands of scientists and well-educated people working in exile or as expatriates in Europe and the Americas will feel safe to come home and serve their nations. The financial and mineral wealth and whatever national credit that can be generated in the rich countries, can be matched up with the skills of the labor of the others in the short term to launch the reconstruction process. A common credit system established through a development bank can fill the credit gaps among the oil-poor or water-poor countries.

The GCC region boasts of the largest Sovereign Wealth Funds (SWF) in the world, with a total of $1.5 trillion. Most of that oil wealth is not invested in the region but in financial and real estate markets in mainly Britain and the United States. The author proposes the establishment of an "Arab Infrastructure Development Bank" with a capital of at least $100 billion.

Nations such as Yemen and Jordan would no longer be left at the mercy of the IMF just because they cannot pull together their credit potentials to launch an eco-

nomic development process. A nation such as Jordan will be aided to build its first nuclear power plants, and will upgrade its human potential and processing of natural resources (such as phosphate and uranium) and become a rich nation within one generation, rather than waiting desperately for hand-outs from the United States, European Union (EU), or IMF and World Bank. Sharing know-how, for example in dealing with desert conditions, agricultural problems will be dealt with most effectively through establishing a unified scientific research center functioning under a common executive authority. Right now, due to the policies of fomenting religious strife and wars throughout the region all the way to the Caucasus and western China, the entire region is threatened by 30-year religious/sectarian war from which it might never recover. This vicious cycle must be broken. There are global preconditions, of course, such as shifting the murderous geopolitical system of divide and conquer of the British Empire, that are required to assist these nations to shift focus from destruction to construction. The integration of this region into the Eurasian-African Land-Bridge will be key, and will benefit the world and these nations.

FIGURE 2

International Union of Railways, April 2012

The Bridge Among Continents

Many links integrating the region into the Eurasian-African Land-Bridge are already underway [**Figure 2**]. The inauguration of the Mashhad-Sarakhs (Turkmenistan) railway in 1996 by then-President Hashemi Rafsanjani connected Iran to China and further revived the ancient Silk Road. Two years later, Iran completed its connection to the northwest, to Turkey, reviving the Silk Road connection to Europe. In 2001, the Mashhad-Bafq-Bandar Abbas line was completed, connecting landlocked Central Asia to the Persian Gulf. Iran also completed the Bafq-Kerman-Zahedan railway to Pakistan, connecting Iran to the Indian subcontinent. There is also the strategic continental International North-South Corridor, which goes from Russia to India. There is an agreement among Russia, Iran, and India to build a trade route through the Caucasus and Central Asia, through the Iranian railway network. This will tie in the port of Chabahar in southern Iran on the Gulf of Oman, on which development work is commencing. India is very interested in this, because shipping by sea takes about three weeks to the Black Sea, while the railway system through Russia takes one week.

Iran is connecting its south-north railway network to Russia via the Caucasus region through both Azerbaijan and Armenia in cooperation with Russia. On March 3, the first train crossed the bridge built over the Astaracay River, which forms the border between Iran and Azerbaijan. The railway between Astra in Azerbaijan and Rasht in Iran is the last missing piece in the International South-North Transport Corridor. In January 2013, the Armenian Ministry of Transport and Communication, Dubai-based investment company Rasia, and Russian Railways (RZD) subsidiary South Caucasus Railway (SCR) signed a trilateral agreement for the construction of the Southern Armenia Railway. The agreement covers the construction of a 316 km railway

linking Gavar, 50 km east of Yerevan near Lake Sevar, with the Iranian border near Meghri. The electrified, single-track railway line will be part of a new north-south corridor linking the Black Sea and the Persian Gulf, according to Armenian authorities. Interestingly, China is also involved in the project because the feasibility studies conducted by Rasia selected China Communications Construction Company to become the lead member of a consortium that will be responsible for the project. The Iranian section of the project is under construction, but the Armenian part is stalled due to tensions with Azerbaijan, through which territory part of this line has to pass on the way to the Iranian border.

The Iran-Pakistan gas pipeline, a vital economic endeavor for Pakistan's energy security and prosperity that was pursued by the Pakistani government despite American pressure, is crucial to bring Pakistan on board a regional solution for the situation in Afghanistan. The Iranian part of the pipeline was completed earlier. On March 11, 2013, construction work on the Pakistani section of the pipeline was inaugurated by President of Pakistan Asif Ali Zardari and President of Iran Mahmoud Ahmadinejad. The pipeline in Pakistan had been expected to be constructed in 22 months with the participation and financial backing of Iran, but construction of the Pakistani section of the pipeline was suspended due to pressure from the United States. Obama Administration and Saudi Arabia. As part of that pressure, and due its desperate need for gas, Pakistan was forced to sign an agreement with Qatar for the purchase of an 1.3 million tons annually of liquified natural gas (LNG) for 20 years. The gas will be delivered by tanker to the port of Gwadar, and will cost Pakistan approximately $15 billion. Internal economic and political instability in Pakistan, in addition to pressure from the Saudi-British-American axis to isolate Iran, is a major obstacle to Iran-Pakistan cooperation. But building a modern Afghan nation will require modern institutions and a prosperous and thriving economy.

China, India, and Iran are already the three largest economic partners of Afghanistan. The country has the potential of soon standing on its own economic feet, as it will be enabled to explore and exploit the massive mineral resources in its soil. These resources are estimated to make Afghanistan a world-class mining nation.

Completing the bridge to the west, Iran also has been active in promoting trade, transport, and economic exchange with Turkey and Iraq. In addition to a gas pipeline and railway to Turkey, Iran has been building a gas pipeline to Iraq, to be extended farther to Syria and the Mediterranean. A railway is planned to run adjacent to the pipeline and road projects. However, the destabilization of Syria and Iraq through sectarian violence has halted work on the projects. Thus, Iran will continue to be a key element of the New Silk Road or Eurasian Land-Bridge. Turkey is also a key player in connecting Asia to Eastern Europe across the Bosphorus—new bridges and tunnels have been built and others are under construction to connect the Asian and European sides of Turkey at the capital, Istanbul.

Extending the Iran-Turkish Connection to Europe

Rebuilding the Hijaz Railway from Turkey through Syria, Jordan, and Saudi Arabia to Eden in Yemen was under consideration before the events in Syria broke out in the Spring of 2011. From Yemen, a tunnel or bridge to Djibouti on the Horn of Africa was also being considered at the time by the Yemeni government and corporations from the United Arab Emirates (UAE). From Yemen, through Oman and the UAE, a tunnel to the Iranian port of Bandar Abbas across the Hormuz Strait is a feasible transport corridor that would connect Asia to Africa directly. A railway and highway connection northward from the UAE through Saudi Arabia, Qatar, Bahrain, and Kuwait that will potentially connect to Iraq and Turkey, and through Syria to the Mediterranean, is under consideration by the GCC nations. From Jordan and northern Saudi Arabia, a bridge/causeway across the southern end of the Gulf of Aqaba to connect to Egypt was under study by the government of former President Hosni Mubarak in 2009. Almost all these projects are shelved now due to the political and military destabilization of the region. Israel's connection to these networks, including gas and electricity networks, was openly discussed in the 1990s, but has been excluded since the collapse of the peace process between the right-wing Israeli government under Benjamin Netanyahu and the Palestinian Authority. All these projects, nonetheless, can be put back on the fast track, whenever a just international political order is established.

The Proposed Inter-Arab State Transport Projects

The Schiller Institute priority list of projects to integrate the Arab countries by railway and roads includes:

- **The Berlin-Baghdad Railway and extensions:**

FIGURE 3

The vast desert that stretches almost continuously from the Atlantic coast of North Africa through the Arabian Peninsula, all the way through to western China, represents a major challenge for economic development for all the nations involved.

Istanbul-Mosul-Baghdad-Basra-Kuwait-Dhahran-Doha-Abu Dhabi-Musqat-Salalah (Oman).

• **The Hijaz Railway and extensions:** Istanbul-Aleppo-Damascus (Beirut)-Amman-Jeddah-Mecca-Alhudaidah (Yemen)-Aden.

• **The Orient Express and extensions:** Istanbul-Tripoli (Lebanon)-Beirut-West Bank-Gaza-Sinai-Alexandria. An extension from Tehran through Baghdad to Palmyra in Syria, Damascus, Beirut, and Latakia will connect Central Asia and the Persian Gulf to the eastern Mediterranean coast.

• **Zubaida Road (Road of Pilgrims):** Baghdad-Najaf-Alhail-Almadina-Mecca and further to Yemen.

• **The Nile Line/Alexandria-Cape Town:** Alexandria-Cairo-Aswan-Khartoum-Addis Abeba-Djibouti and further into the Great Lakes regions and East Africa to South Africa.

• **The Maghreb Road:** Alexandria-Tripoli (Libya)-Tunis-Alger-Wajdah-Fez-Tanger-Casablanca.

A special connection between the Arabian Peninsula and Sinai and Africa is being seriously considered by the governments of Egypt and Saudi Arabia, including a bridge/causeway or tunnel across the Tiran Strait in the south of the Gulf of Aqaba.

Parallel to these high-speed transport corridors, a joint network for transportation and transfer of electricity, oil, gas, and water has to be established to open new areas that are generally desert today for development.

A Common Enemy: The Desert

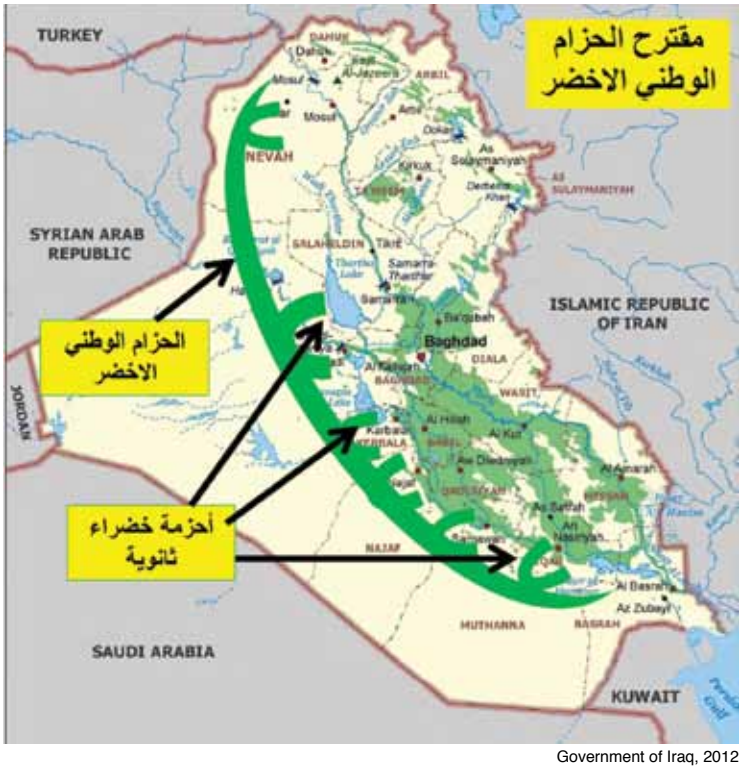
What is striking about transcontinental regions where the Silk Road passes is that the landscape is a vast desert stretching almost continuously from the Atlantic coast of North Africa through the Arabian Peninsula, across the Zagros Mountains to Iran and Central Asia, and all the way to western China [**Figure 3**]. The size of that transcontinental stretch of desert is about 13 million square kilometers. Areas that receive between 250 and 500 mm of annual rainfall are usually deemed to be semi-desert or semi-arid. In general, large parts of the area receive an average annual rainfall of 250 mm or less. Many parts of the great deserts get less than that, and sometimes no rainfall at all.

The major deserts of the world are located within these regions. These deserts are currently expanding, due to not only the lack of adequate economic and sociopolitical measures, but also the destruction of existing green areas through the mismanagement of local resources. Long cycles of drought have also contributed to the expansion of the desert. Sandstorms and dust storms are frequent events in Southwest Asia, especially in the Gulf region, but even extending to Iran, Afghanistan, Pakistan, and India. While sandstorms rise up to tens of meters, dust storms can rise to several kilometers into space. And they can cover whole countries. Their impact on urban areas can shut down airports, ports, hospitals, schools, and other vital facilities.

Attacking the Desert from the Fertile Crescent: The area stretching from Lebanon to Syria and down Mesopotamia to the Gulf is called the Fertile Crescent. Historians claim that agriculture in the world started in this region. However, it is not so fertile any more. By better managing the natural resources and creating new resources of land and water, green belts, and trees; improving vegetation selection; and applying advanced agronomy and animal husbandry and especially space-era science and capabilities, a new array of productive activity can be established where once was desert.

In the 1970s and 1980s, "green belts" were being planned for eastern Syria, western Iraq, and parts of eastern Jordan. With successive rows of forests, the ex-

FIGURE 4



Government of Iraq, 2012

FIGURE 5

EIRNS, 2012

The Southeastern Anatolian Project, called the GAP, would dam the Tigris and Euphrates rivers in Turkey, and create a huge reservoir behind the Ataturk Dam.

pansion of desert areas can be stopped and gradually reclaimed. In Iraq, for example, a plan was prepared decades ago to create a green belt in the west of the country [**Figure 4**].

Due to the series of geopolitical wars and destruction of Iraq's infrastructure and agriculture, these plans were never implemented. Furthermore, the degradation of the soil and land has expanded the arid areas. There now are active operations, although limited in scope, to return to this idea. Iraq and Iran signed an agreement in 2010 to invest approximately $2.1 billion in projects to create green belts in the southwestern part of Iraq, especially in the region of the cities of Karbala and Najaf, which are frequently hit by sand and dust storms. One project, for example, established a 27-kilometer-long crescent lined with thousands of newly planted trees in a belt 100-200 meters wide. It is irrigated by 50 shallow wells (35 to 50 meters deep). The area is now the front line of Karbala's battle against increasingly frequent sandstorms and salinity and erosion of the soil. The project has involved planting more than 100,000 olive, palm, eucalyptus, and other trees, all of which were chosen for their resistance to heat and soil salinity.

Water Sources: The obvious question is, of course: Where will all the water come from to back this massive war on the desert? The region is dominated by two major water systems—the Tigris and Euphrates rivers basin, and the Jordan River basin. The latter is a relatively limited water system dominated by military and political conflicts for the control of the water between Israel and Lebanon, Syria, and Jordan. The Mesopotamian water system is larger and has greater potential.

The general problem in this and other desert regions is that a great part of the rainfall disappears due to evaporation, transpiration, and runoff. To collect and use as much as possible of the precipitation, large-scale water infrastructure systems are required. One of the most ambitious water infrastructure projects in the region, the South Eastern Anatolian Project (in Turkish abbreviation GAP) [**Figure 5**], has been under way during the past two decades. However, this project has created major problems for the countries downstream, Syria and Iraq, because it blocks

the natural flow of the Tigris and Euphrates. What is needed is to establish a scheme of cooperation among the three countries, and even Iran, which shares some of the tributaries of the Tigris with Iraq, to make the entire Mesopotamian basin function most effectively as one unit.

Legal and technical agreements have to be made to ensure the sound management of the system and a just share in the water. The GAP, begun more than 20 years ago and modeled on the Tennessee Valley Authority, envisions 22 dams to provide 7.4 GW of electricity, water management, irrigation, and flood control. Located in southeastern Turkey, the project covers 10% of the country's land area—75,000 square km and nine provinces in the Euphrates-Tigris basins and southeastern plains—and accounts for 20% of Turkey's arable land. The project includes the development of infrastructure of all types required for integrating the entire region, including transportation, power, tunnels, and canals. According to Turkish government estimates, when the projects are completed, 1.7 million hectares of land will be effectively irrigated. The region represents 28% of Turkey's total hydraulic potential, with the Ataturk Dam at its center.

There is a large number of dams in Syria and Iraq, but more can be done, especially in northern Iran, to build dams on the tributaries of the Tigris River that flow inside the Iraqi Zagros Mountains, such as the Greater Zab. Building new and maintaining the existing relatively modern system of dams, barrages, and canals in Syria and Iraq will rescue these two countries from flooding during the Spring and drought during the Summer.

Seawater Desalination: One thing that has become clear for the governments of the Gulf and other dry regions throughout the world is that the best solution to secure water for drinking, other urban usage, and industry is the desalination of sea water. Steps have been taken by the countries in the region to build conventional desalination plants on a large scale, investing heavily in the combined water desalination/power generation process with the use of fossil fuels such as natural gas and oil. More than two-thirds of the world's production of fresh water by desalination occurs in the region. Saudi Arabia alone produces 25 million cubic meters of water per day, which is estimated to be one-half of the world's total.

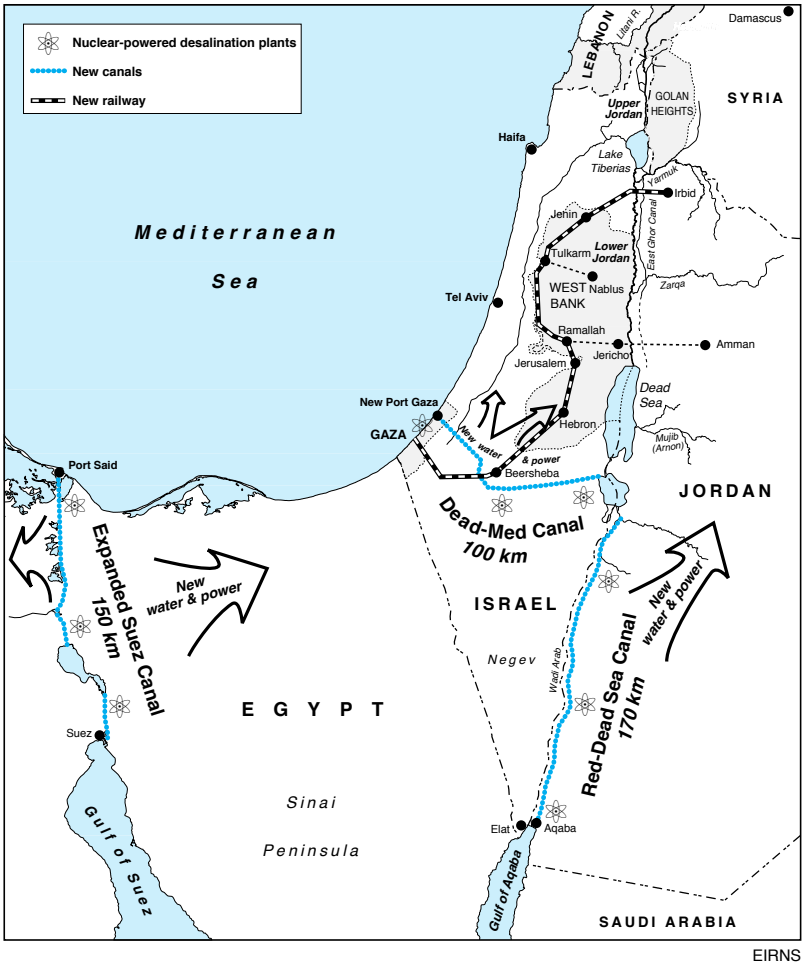
The U.A.E. produces around 3 million cubic meters per day. However, these countries will have to more than double that amount of desalinated water in the next decade and triple it in the decade beyond to meet projected demand. Water consumption had been expected to rise from 8 billion cubic meters in 2012 to about 11 billion cubic meters in 2016. Massive investments are already projected in this area. A major problem with these projections is that the desalination of seawater is reliant on thermal power plants run by oil and gas. Reportedly, Saudi Arabia, for example, uses 1.5 million barrels of oil daily to produce the electricity and heat used for desalination. It is a net physical economic loss in the sense that valuable industrial raw material (oil and gas) that could yield many times its value if used as a base for petrochemical and other products is instead burned to achieve a relatively low energy-flux-density output compared with nuclear power.

Nuclear Desalination: One of the key solutions to this water shortage problem is the use of nuclear power for desalination and for increased industrial activities in the petrochemical field. As International Atomic Energy Agency studies show, medium-size nuclear reactors are especially suitable for desalination, often with cogeneration of electricity using low-pressure steam from the turbine and hot seawater feed from the final cooling system.

There are many new technologies being tested in this field, all of which point in the direction of higher temperature and pressure, something that can only be achieved efficiently through nuclear power. Fourth generation high-temperature nuclear power plants have long been proven as the most efficient, but almost no effort is being taken to invest in them. At the moment, Iran is the only country in the region that has an operating large civilian nuclear power plant. The Bushehr plant, a product of cooperation between Iran and Russia, was inaugurated officially in September 2011, and reached its full power production capacity (1,000 MW) in August 2012. Iran is planning to build several new nuclear reactors, with the expressed aim of increasing the energy output of the country and desalinating seawater. In December 2006, the GCC announced that the Council was commissioning a study on the peaceful use of nuclear energy. In 2007, the member states signed an agreement with the IAEA to cooperate on a feasibility study for a regional nuclear power and desalination program. The U.A.E. was the first of the countries in the study to launch its nuclear power program. The Emirates Nuclear Energy Corporation (ENEC) was established in 2009 in Abu Dhabi as an investment vehicle

FIGURE 6

Features of the Oasis Plan, 1980



The roots of this plan for solving the water crisis in the Middle East go back to the mid-1970s, but it was codified in 1990, when LaRouche was campaigning to stop the first Gulf War.

for the nuclear program. In December 2009, ENEC announced its acceptance of the bid offered by the South Korean Korea Electric Power Corporation (Kepco) to build four 1,400 MW nuclear plants by 2020 at the cost of $20 billion. The construction of the first of the four plants was started in Baraka in July 2012, and the fourth and last will be completed in 2020.

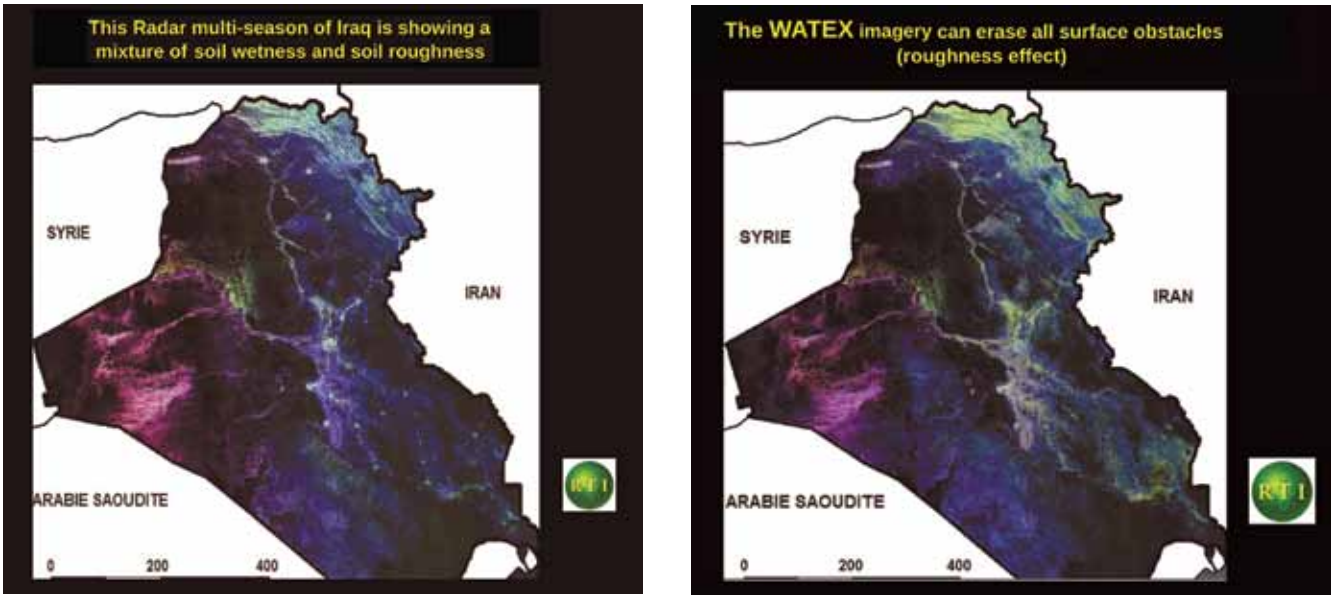
Saudi Arabia announced through the royal decree of King Abdullah bin Abdul-Aziz Al-Saud in April 2010 the establishment of the King Abdullah City for Atomic and Renewable Energy. Shortly after that, the Saudi government announced plans to build 16 nuclear power reactors by 2030. Unlike the Iranian nuclear program, the GCC's programs are welcomed and approved by the United States and the West generally, for obvious geopolitical reasons. In 2013 Jordan signed an agreement with Russia to build the first nuclear power plant in the country. The expressed purpose of the project was water desalination. Israel has similar plans for nuclear power development for desalination purposes.

Lyndon LaRouche has argued since the 1970s that without turning to nuclear power to secure energy and water in this region, as prescribed in his Oasis Plan [**Figure 6**], no peace process can endure under the economic pressures including the shortage of water and power in the region. The Palestinian people especially, who have been deprived of even the little existing underground water by Israel, will have no chance of survival without large-scale seawater desalination. A United Nations report issued in 2012 determined that the Gaza Strip would be "unlivable by 2020" due to the complete depletion and contamination of the ground water aquifers. Lebanon and the coastal cities of Syria are experiencing the same water crisis as the Palestinian areas. Only a combination of modern water management systems and nuclear desalination can reverse the catastrophic conditions in these two countries.

Groundwater: Space technology is now being used to discover and manage groundwater. A major breakthrough in the exploration of groundwater, using space technologies of remote sensing in combination with geological and hydrological innovations, was achieved in the past few years by the French company Radar Technologies International (RTI). Geologist Dr. Alain Gachet, founder and president of RTI, developed the patented WATEX technology, an algorithm that transforms Space Shuttle radar images of Earth and other remote sensing tools into images for mapping groundwater moisture and discovering groundwater aquifers with amazing precision.

Applying WATEX in the refugee camps in Darfur in 2004 contributed to the exploration of 1,000 productive wells, and literally saved the lives of hundreds of thousands of refugees stranded in the desert in Chad and Sudan. In 2013, application of WATEX in the dry region of Turkana in northwest Kenya achieved even greater

FIGURE 7



The comparison of a radar image (left) with WATEX technology (right) demonstrates that the new technology greatly improves the search for available groundwater.

results, promising this dry and extremely poor region hope for economic revival and survival. In 2015, Dr. Gachet and RTI completed the mapping of all the groundwater resources of Iraq in a project sponsored by UNESCO [**Figure 7**]. His results give great hope to the fight against desertification in Iraq, and support the Schiller Institute's findings of the importance of the Iraqi Green Belt. (A transcript of Dr. Gachet's presentation to the Schiller Institute Berlin Conference in June 2016 can be accessed at: http://www.larouchepub.com/eiw/public/2016/eirv43n29-20160715/35-42_4329.pdf)

The usual criticism of focusing on groundwater as a long-term source of water for communities is that most of that water is fossil water that will be depleted and gone forever. WATEX and other modern theories of hydrology prove that the fossil water and completely "confined aquifers" is a myth. These new technologies prove that, while a great deal of water is stored for thousands of years in some underground aquifers such as the Grand Nubian Sandstone Aquifer, a great amount of water is continuously contributing to recharging aquifers through fracture systems deep underground and which extend to tens and sometimes hundreds of kilometers to other regions such as mountains with high rainfall. The only problem is that these systems have never been mapped. These new technologies can now finally tell us something about the 97% of all the fresh water of the planet which is under the surface.

Petrochemicals: Industry of the Future

The collapse of the global oil price since 2014, bringing down the price of a barrel to below $30 sometimes, rang alarm bells in the economies of all oil exporting countries. Most of these nations depend economically almost exclusively on the sales of oil and gas. This development posed serious questions regarding the future of the economies of Southwest Asia. The diversification of national income should be a self-evident matter. But there also should be focus on the areas of strength. For example, the countries of the region cannot become food exporters, because they suffer from prolonged periods of drought and water shortages. Although they have to endeavor to become more self-sufficient in food production, the strength of the economies of these nations lies in the abundance of hydrocarbon resources and the potential of moving from the role of raw oil exporters to industrial economies specialized in petrochemical production.

The global chemicals sector has long been dominated by the United States, Europe, and Japan. There are factors that say that this situation is changing and will have to change. Some oil industry officials in the region argue that the Middle East can offer an "energy advantage," i.e., an abundance of the fuel and feedstock that constitute the lifeblood of the petrochemical industry. In terms of fuel, the Middle East region boasts abundant supplies of competitively priced gas and liq-

uids, meaning reduced costs for petrochemical facilities and lower costs of electric power generation. These low energy costs constitute a big competitive advantage, particularly in an energy-intensive business such as petrochemicals. For example, in the EU's chemical industry energy as a whole accounts for 10% to 60% of production costs for most products, meaning savings on energy expenditure can provide a big edge over higher cost competitors. Even more vital to the success of a petrochemical enterprise is the availability and cost of feedstock, whether gas- or liquids-based.

There is a common misconception in this argument, however, because in the near future nuclear power will—and should—replace gas as an energy source for the petrochemical industry. Natural gas will itself be used as a feedstock for chemicals and fertilizer industries. The other shortcoming in the strategic thinking of these countries' oil sector is that its development of massive petrochemical and refinery capacity has focused on producing and exporting "primary" or intermediary refined products with low added value, such as ethylene, propylene, butylene, and benzene. These primary products are used to generate greater added value somewhere else on the planet by producing a range of polymers (plastics), solvents, resins, fibers, detergents, ammonia, and other synthetic compounds.

Plastics properties make them ideal for a host of applications. Products made of plastic are stronger, lighter, more economical and recyclable. And ongoing improvements in the properties of polymers mean that plastics are more than ever a material of the future. The plastics are the single most crucial product in this sector. The most important application on a mass base is packaging, followed by building/construction. These two applications together consume almost 60% of the total Western-European plastic use. Plastics are used to make window frames, synthetic carpet, ducts and piping, room partitions, sound- and above all heat-insulation panels, and tanks to hold water, heating oil, and sewage. Plastics also have a role in electrical appliances, light fittings, furniture, toys, and electronics equipment. In electronics, they are a key component including in cell phones, TV sets, and computers. In the medical sector plastics go into every disposable item—syringes, blood pouches, heart valves, orthopedic apparatus, artificial limbs, medicine containers, and professional garments.

Even in the automotive sector plastics have started taking over an important share of components. Today's motor vehicles have fenders and spoilers made of plastic, and often some body panels, the fuel tank, and interior fittings such as dashboards and seats. About 20% of the parts under the hood are also plastic. Because plastics are lighter than metal, the vehicle is lighter too, and a weight saving can mean a significant reduction in motor-fuel consumption.

Another effect of developing the down-stream petrochemical industries is employment. Basic chemicals production offers little job opportunities, but there is substantial potential for job creation further down the product chain. Policy will have to be geared toward encouraging production of more sophisticated products as a means of creating more jobs for the country's young and rapidly expanding population.

A recent study by CEFIC, the European Chemical Industry Council, said that in the past 10 years, Europe's share of the world production of chemical products fell from 31% to around 27%, as Asia's rose from 13% to 23%. In 1990, the Middle East produced just under 3 million tons of ethylene, good for less than 5% of world production, compared with Europe's 30%. This rose to 12 million tons in 2005. With all the units that are soon to go on stream and all the gas fields in development, the projection is that the Middle East will soon overtake Europe. This rationale is not restricted to base products like ethylene and polymers, but also goes for finished products.

A contributing factor is that many European and American industries are moving to the region due to the cheap conventional energy source for the industry and the region's proximity to China and other emerging Asian economies that have become the world's largest consumers of petrochemicals.

One interesting aspect of the chemical and petrochemical industry is that it is closely connected to continuous scientific advancements and discoveries. As the German and French chemical industry historically gave birth to or created the environment for scientific breakthroughs in atomic science and space technologies, such as rocket science development, this sector can become the basis for creating a totally new science-oriented cultural paradigm, because it requires higher levels of education and skill.

As one study of the European chemical industry indicated: "Without the chemical industry, there is no chemistry, and without chemistry, there is no solution for the big challenges facing the world in the foreseeable future: 10 billion people with the resulting problems on energy, food and water supply."

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