Solving the Water Shortage Is the Key to Mideast Peace

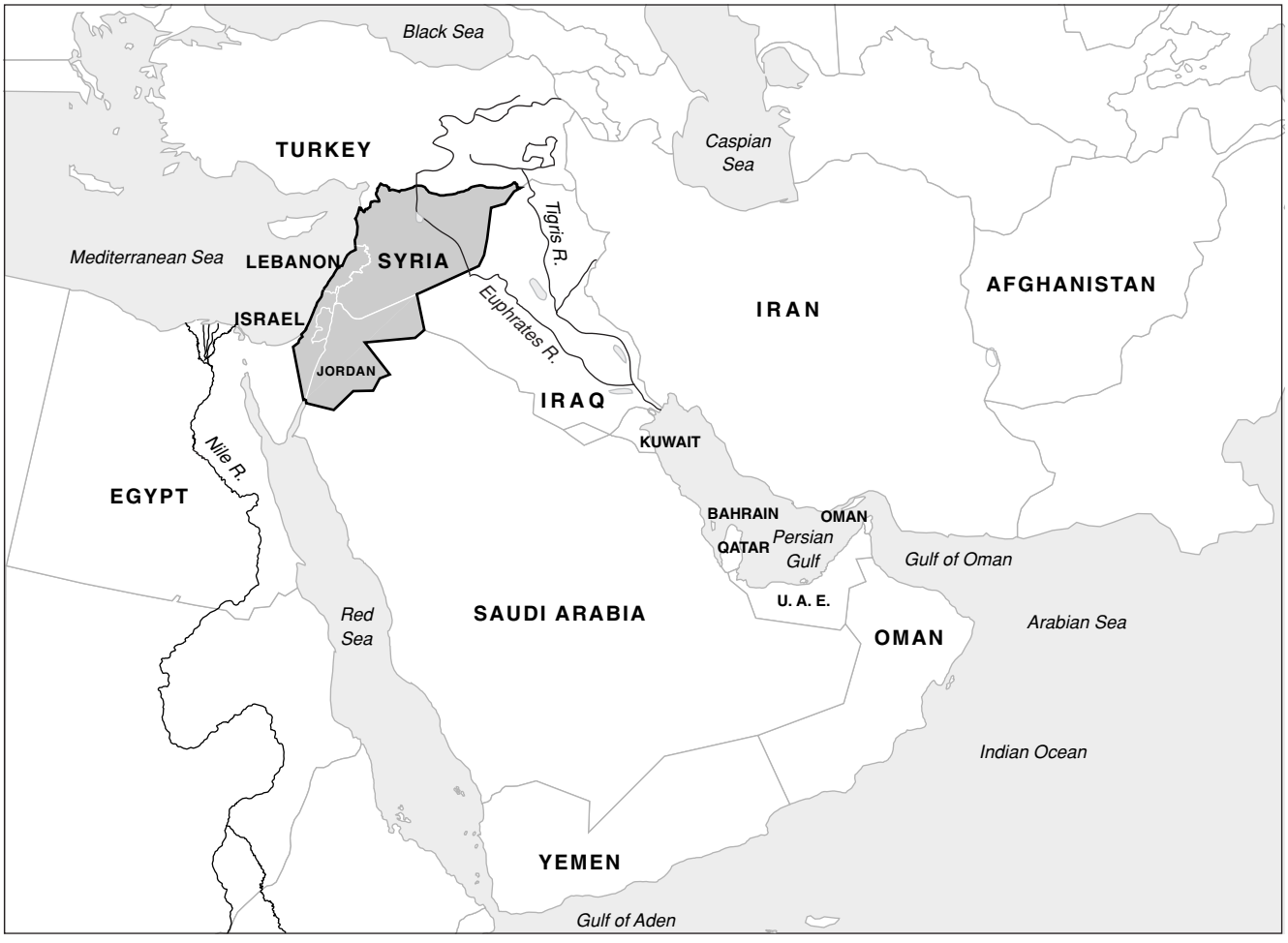
by Muriel Mirak-Weissbach

When peace talks resume, between the Israeli and Syrian governments, there will be one central issue which must be faced, if progress is to be made. That issue is water. Similarly, as the Palestinian-Israeli track is revived, the same issue will be decisive. There can be no viable Palestinian state, no future perspectives for hundreds of thousands of returning Palestinian refugees, unless the basis is established for a productive, growing agricultural and industrial economy; and that requires water currently not available.

President Bill Clinton has taken up the cause of peace among Arabs and Israelis, as a personal crusade, of sorts. All well and fine. But, the tragic irony in his well-meaning effort is, that his own State Department is just as committed to sabotaging the most viable approach to solving the water crisis, which is the massive application of nuclear-powered desalination plants throughout the region. To the extent that Clinton accepts the State Department's policy of technological apartheid—forbidding nuclear technology to the Arabs—and accepts the insane, free-market alternative, which is privatization of water, there will be no peace in the region. Instead, there will be war.

Lyndon LaRouche, who has been campaigning for peace through development in the Middle East over decades, was the first to articulate a regional proposal pivotted on nuclear desalination, initially applied to the Palestinian-Israeli talks, now extended to talks between Tel Aviv and Damascus. On April 25, LaRouche commented, "There will be no Middle East peace unless, and until, the water issue, as I have defined this repeatedly since 1975, is finally adopted by the U.S. and relevant other parties involved in the negotiations." LaRouche said that he hoped President Clinton "would develop a clear understanding of this point and its implications; in the visible aspects of the negotiations so far, there is no evidence that he has yet come to an understanding of this problem." As a result, "The entire, otherwise feasible Middle East peace is going down the toilet—a waterless toilet," he said.

FIGURE 1
The Focal Point of Peace Negotiations



LaRouche characterized this matter as of "next to the utmost urgency, inferior only to the urgency of moving toward a New Bretton Woods as I have defined it." Whether these polices would prevail, or not, he said, was a matter of sheer political will: "Sometimes, in history, the only obstacle to certain measures, lies within the stubborn refusal to accept a road to survival which happens to be contrary to one's previously established prejudices. The role of massive desalination programs is so obvious, respecting the feasibility of Middle East peace, that there could be no rational excuse for failing to situate the entire peace effort within the framework of a mass-desalination agreement and its prompt implementation."

Figure 1 shows the extended area of the greater Middle East and Egypt, identifying national borders, and the few rivers of the region—one of the most arid in the world. **Figure 2** gives more geographic detail for the five inner-core nations, as well as illustrating the concept of locating nuclear-powered desalination in the trans-Jordan and surrounding areas.

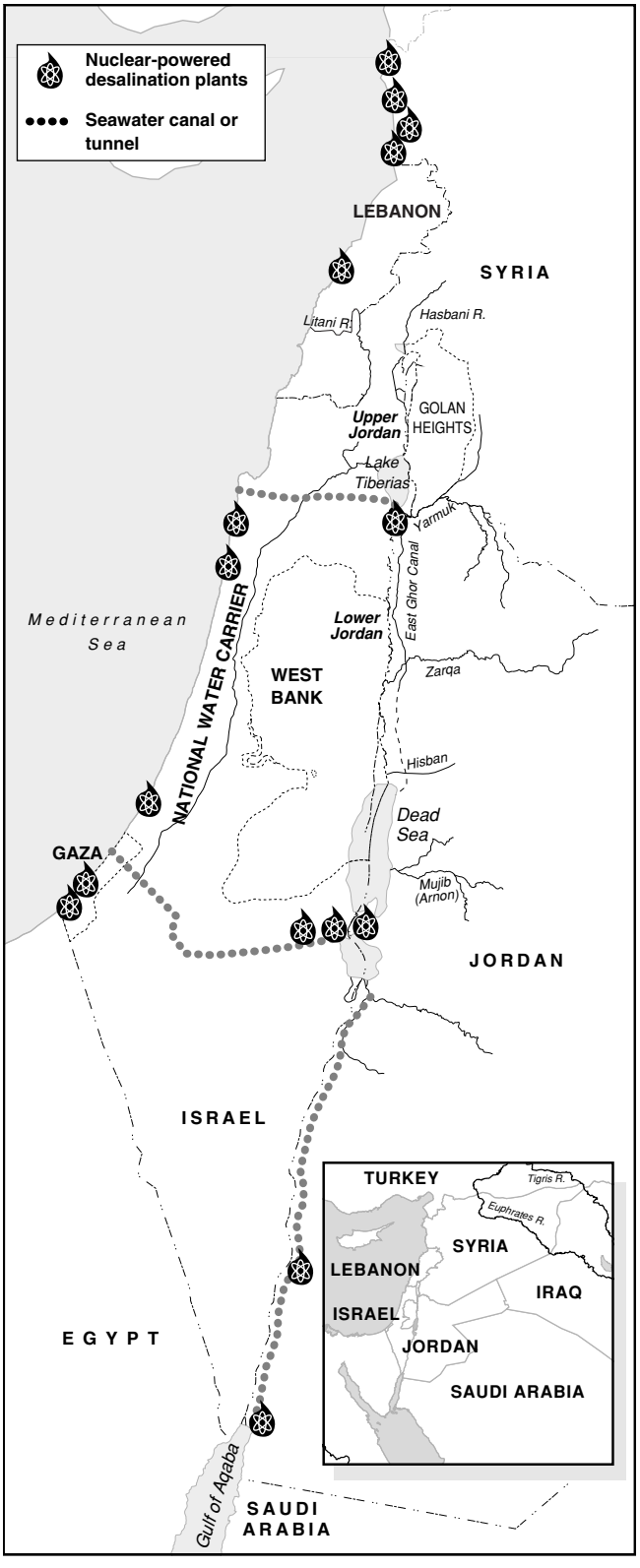
Land, and Water, for Peace

When Syrian Foreign Minister Farouk Shara'a met with Israeli Prime Minister Ehud Barak, for talks in Shepherdstown, West Virginia beginning on Jan. 3, negotiations broke off, ostensibly around the definition of the borders between the two states. While Barak demanded that the 1947 United Nations mandate map be used as a basis, Shara'a demanded that it be the cease-fire line, existing prior to the outbreak of the June 1967 war. The difference between the two, is a thin strip of land, along the shoreline of Lake Tiberias. In Israel's version, that strip would be under its control, whereas Syria's map shows its territory extending up to and including the eastern shoreline of the lake. Later, when President Clinton met Syrian President Hafez al-Assad in Geneva, and tried to sell him the same map as Barak's, Assad refused, and the talks ended abruptly.

Clearly, Syria's demands for Israeli withdrawal from the Golan Heights, and restoration of its entire territory, are a

FIGURE 2

Proposed Nuclear Desalination—Make Water Resources to Make Peace



matter of national sovereignty, not to be disputed. The reason why Israel insists on maintaining the shoreline, is, obviously, that it thereby gains access to the waters of the lake.

The simple truth of the matter is, that virtually every war fought in the region since 1947, has been over water, directly or indirectly; and anyone who denies this, is a liar or a fool. Certainly the British have played geopolitical games, exploiting religious and ethnic fault-lines, but water access has always been *the* economic fulcrum for all such London stratagems.

Following the 1948 Arab-Israeli War, Israel held land, including on the western shore of Lake Tiberias, as well as parts of the West Bank and Gaza. Israel started to establish a national water distribution system, taking water from Lake Tiberias, despite Arab and international protests. In 1964, Syria started a canal project, which would have rerouted water from the Hasbani and Banias Rivers (both of which feed the Jordan River in the north) around the Golan Heights, and into the Yarmuk River, where a dam was to be built by Syria and Jordan. This was a *casus belli* for clashes on the Israeli-Syrian border in spring of 1965, and, in 1966 and 1967, before the outbreak of the "Six Day War," Israeli Air Force planes bombed the construction site of the dam, as well as construction vehicles and roadways.

It was in the June 1967 war, that Israel secured its "strategic reserves" of water: It occupied the Golan Heights, Gaza, and the West Bank. This meant annexing the source of the Banias, and controlling the flow of the Yarmuk. In the closing hours of the war, Israel bombed the dam to smithereens. Israel also controlled the north bank of the Yarmuk, at Hammat Gandar, thus controlling the flow of water into Jordan's East Ghor Canal. (Israel destroyed large parts of this canal two years later, by military means.)

The lands seized in the 1967 war, corresponded to water sources, which Israel exploited. The water distribution system of Israel, known as the National Water Carrier (see Figure 2), which services its coastal cities and as well as its settlements in the Occupied Territories, took 20% of its supply from ground water from the western part of the Occupied Territories, another 20% from Israeli coastal groundwater, and the rest from Lake Tiberias, as well as water from the eastern side of the Occupied Territories, which is from the Jordan River. The water for Lake Tiberias, Israel pumped out of the Yarmuk River. Prior to the 1967 war, Israel had taken 80% of its water through drilling and wells. After the war, it accessed the new sources, and issued laws preventing Arabs from drilling wells.

Finally, in 1982, Israeli invaded Lebanon and occupied the southern part, with its proxy force, the South Lebanese Army. Again, although the rationale was security, the reason for the move, was to be in a position to gain access to the waters of the Litani River, at the northern edge of the "security zone."

As a result of the wars in the region, and the takeover of water sources, there has been a continuing deterioration of

water supplies. At the same time, population growth, the influx of 300,000 refugees into Jordan from the Gulf War, and severe drought over the past years, have literally dried up the rivers—and the wells. The Israeli, Jordanian, and Palestinian populations have grown from 9 million to 12 million in the last decade. Syria's population, of 17.2 million, is growing at a rate of 3.15%. In Damascus, it is reported, tap water is available only 4-6 hours per day. Syria's freshwater supplies are being depleted, and the construction by Turkey, of a huge dam project in southeast Anatolia, is diverting massive amounts of Euphrates River water away from Syria.

As **Table 1** shows, there has been a drastic decline in the per-capita supply of renewable water, in all the countries currently involved in the prospective peace process.

TABLE 1
Drastic Decline in Renewable Water Resources of Mideast Countries, Per Capita, 1950-90
(cubic meters per capita)

Country	Renewable water[1] 1950	1990	2025 (trend)	Annual Water Withdrawals mid-1990s
Lebanon	2,736	1,438	879	271
Syria	1,571	445	156	435
Jordan	1,145	354	131	173
Israel	—	382 (1995)*	—	408
Gaza & West Bank	—	*	—	160

1. The hydrologic term "renewable water" is used only as an indicator of the limited resource base. The measurements for water resources in the region (surface and groundwater both) are imprecise, but the paucity is certain.
*The water resource base is here given as the same for Israel, Gaza, and the West Bank, though the *use* of water (withdrawals per capita) is highly inequitable, favoring Israelis.
Sources: Compiled from The Inter-Islamic Network on Water Resources Development and Management, Amman, Jordan; *World Resources 1996-1997.*

Nuclear-Powered Desalination

The most efficient, technologically advanced, and equitable way of solving the water crisis, is to build and install nuclear-powered water desalination plants throughout the area, to provide access to fresh water to every urban and agricultural area (see Figure 2). Along canals, between the Mediterranean and the Dead Seas, and from the Dead Sea to the Red Sea, as well as along the Mediterranean coast from Syria to Gaza, nuclear plants would be placed. There have been designs for over 40 years, for "floating" nuclear plants, that can be built, assembly-line fashion, and brought by barge to the location, and installed on-site.

In recent years, there have been proposals for an especially appropriate power technology: the high-temperature gas-cooled reactors (HTRs), to produce the highest energy yield. The modular high-temperature gas-cooled reactor (MHTGR), and similar HTR plants, are propsed by California-based General Atomics, and by the European firm, Siemens/Asea Brown Boveri.

Recently, South Africa has made known its plans to produce and export small, standardized high-temperature gas-cooled reactors, which would be ideally suited to the Middle East, as nuclear modules. With four nuclear modules, of 350 megawatts each, a dual-purpose desalination electricity plant would be installed, to provide power for a multi-effect distillation system. (See artist's depiction of a modern seawater distillation tower.) This could provide a volume of fresh water of 401,500 cubic meters per day, and 466 MW net electrical power output.

Just one such "island" of four nuclear modules, would provide 145.6 million cubic meters of fresh water per year—which exceeds the flow of water from the Lower Jordan River into the Dead Sea, and exceeds the volume of water used by the more than 1 million Arabs on the West Bank. Four of these islands, would provide 650 million cubic meters a year. With 20 plants, half of them located at points along the new seawater canals, there could be a supply of 2.92 billion cubic meters (bcm) of "new" water made available per year.

Table 2 shows the amount of "new" water resources that could be made available, relative to the needs of the 34 million people in the countries of the immediate region, based on guidelines for nuclear-powered desalination from the head of the International Atomic Energy Agency.

This approach makes possible the otherwise unthinkable: ample fresh water, for household, agricultural, and industrial use, in quantities required for new urban centers, or "nuplexes." By producing new water, available as required, equitably, the *casus belli* for future conflicts is removed. But more than any other consideration, nuclear energy is necessary, as a revolutionary technology, to revolutionize the entire economic process, leapfrogging the region into a new era. Integral to this is the crucial factor of education, ultimately the source of all wealth in an economy, which will be greatly enhanced by the introduction of these new technologies. To epitomize the point: One research nuclear reactor, located in a new research facility to be established in Gaza, for example, would become a magnet for young children, sparking in them the enthusiasm and optimism that scientific advances generate.

There are already several projects for desalination plants in the region, which could be implemented, using nuclear energy to power them. Israel has plans of its own for introducing this technology. On March 7, 1999, the government issued a resolution, instructing the ministries of national infrastructure, finance, and the interior, to advance the planning of desalination plants into the national water supply system, and to prepare specification for bids, to be constructed and owned by private investors. The plant proposed, was 50-55 million cubic meters (mcm) per year (13.2-14.5 billion gallons per year). This would serve Israel's needs only, as currently conceptualized.

On the level of regional cooperation, a workshop in Amman, Jordan last September discussed a white paper published in the magazine *Desalination and Water Reuse* Vol. 9/4, on "Solving the Problem of Fresh Water Scarcity in Israel, Jordan, Gaza and the West Bank." The study, issued by the Center for Middle East Peace and Economic Cooperation, argues that "only seawater desalination offers a secure, long-term solution." Noting the plan of the Israeli government to build a 50 mcm/year plant, the study also reveals that the Palestinians are considering a 50 mcm desalination plant for Gaza, and that Jordan plans to desalinate the same amount per year of brackish water, in the Hisban River (see Figure 2). The study notes that technological advances have reduced the price of desalinated water, to about $0.55 per cubic meter, which, it says, is "roughly half the the retail cost of tap water paid by an Israeli household in Tel Aviv."

TABLE 2

Sixteen Nuclear Desalination Plants Can Provide Water Security to 34 Million People in Five Mideast Countries, as Phase I for Economic Development and Peace

Country	Population (millions)	Net Annual Renewable water[1] (bcm)[2]	First Nuclear Desalting Plants	'New' Water Provided (bcm)[2]
Lebanon	3.940	3.94	1	0.365
Syria	17.214	5.50	4	1.46
Jordan	4.562	1.42	4	1.46
Israel	5.750	2.7*	4	1.46
Gaza & West Bank	2.670	*	3	1.06
Totals	**33.766**	**13.56**	**16**	**5.805**

1. The hydrologic term, "renewable water" is used only as an indicator of the limited resource base. The measurements for water resources in the region (surface and groundwater both) are imprecise, but the paucity is certain.
2. Billion cubic meters

*The water resource base is here given as the same for Israel, Gaza, and the West Bank, though the *use* of water (withdrawals per capita) is highly inequitable, favoring Israelis.

Sources: *The World Almanac 2000; World Resources 1996-1997;* The Inter-Islamic Network on Water resources Development and Management, Amman, Jordan.

The locations proposed by the study, for desalination plants, are not far from those illustrated by *EIR:* along the Mediterranean coast (specifically, off Haifa, Hadera, Tel Aviv-Ashdod-Ashkelon, and Gaza) as well as along the Mediterranean-Dead Sea and Red Sea-Dead Sea canals, to be built; and, at Hisban in Jordan. The study focusses only on Israel, the Palestinian Authority, and Jordan, and does not deal with Lebanon or Syria; but the proposal, as *EIR* has presented it, for locating plants on the coast of Lebanon and Syria, would dovetail with the study's general approach. The obvious thing to do, would be to take the three projects, already identified by the three political authorities as priority projects, and plan to make them nuclear desalination units.

Technology and Technological Apartheid

The obvious question that arises in this context, is: Why not? Indeed, why have such nuclear desalination plants not already populating the region? The technologies have existed for decades. Desalination is the major means for producing fresh water in desert countries, like Saudi Arabia. In fact, the Saudis are the world's biggest producer of desalinated water, producing 520 million gallons per day (1.97 million cubic meters), from 25 stations, which covers 70% of the potable water in the kingdom.

Last November, the governor of the Saline Water Conversion Corp., Dr. Fahad Balghunem, announced that three new desalination plants were under construction, in al-Khobar, Jubail, and al-Shoaia, and five delivery systems, which will bring the total length of water pipelines up to 4,155 kilometers, serviced by 29 pumping stations. His corporation is studying the possibility of installing "20 more plants, with a daily production capacity of 2.6 million cubic meters of water, in addition to 12 water delivery station projects, with a total length of 2,640 km," according to official releases.

The Saudi example demonstrates that massive application of desalination does function to sustain an industrializing economy—albeit with conventional energy sources. But nuclear desalination also exists: In the former Soviet Union, a liquid-metal-cooled fast reactor was commissioned in 1973, in Shevchanko (now Aktau) on the eastern shores of the Caspian Sea, in Kazakstan. It became operational in 1977, and provides both electricity for urban use and heat for desalination. This reactor proves that nuclear desalination can function on an industrial scale. There are, in addition, 16 small desalination plants which the Russians have attached to nuclear ice-breakers and other nuclear-powered ships.

In 1999, it was announced that China and Morocco had signed an agreement, whereby China would supply a nuclear reactor to Morocco, for purposes of powering a desalination plant. The 10 MW reactor is to provide drinking water for 70,000 people, near the city of Tan-Tan, in the south. And, according to reports in 1995, Russia and Iran started discussing the possibility of building a nuclear desalination plant at the port of Bushehr on the Persian Gulf. The plant would be part of the agreement for Russia to help complete the 1,200 MW power station at Bushehr, build an 880 MW station there, and provide research reactors to universities in Iran.

Massive Opposition from Anti-Peace Factions

The opposition to these plans has been massive. The radical environmentalist gang, Greenpeace, widely identified as

A Nuclear-Powered Desalination Plant for Use in the Mideast

For rough and ready calculations on nuclear-powered seawater desalination plants, the specifications made use of in **Table 2** are based on an article by Jürgen Kupitz, head of the Section on Nuclear Power Technology Development, of the International Atomic Energy Agency. The following excerpt is from Kupitz's article, "Nuclear Energy for Seawater Desalination: Updating the Record," which appeared in the *IAEA Bulletin:*

"A desalination plant with a capacity of 1 million cubic meters per day could supply an urban concentration of 3 to 4 million people with sufficient potable water for domestic use. Such a desalination plant, using the RO [reverse osmosis] process, would require a nuclear plant having an installed capacity of about 300 MW-electric (MWe). The same urban concentration of people also would require between 4,000 to 6,000 MWe of installed capacity to provide their corresponding electricity needs. Hence, nuclear power plants in the upper end of the small and medium-size power range, and certainly the large-size nuclear power plants, would only constitute suitable choices when they are intended to supply electricity to consumers in addition to energy for seawater desalination. Thus, there is no reason why nuclear reactors could not supply both requirements simultaneously, and take advantage of the economic benefits accruing to large-size nuclear plants."

As Kupitz notes, "practically any type of nuclear reactor could provide the energy needed for desalination." The IAEA conducted a series of feasibility studies, including one in response to a request for assistance submitted by five North African states—Algeria, Egypt, Libya, Morocco, and Tunisia. This 1996 study identified a series of locations that required seawater desalination in the range of 20,000 to 720,000 cubic meters per day, by the year 2005. At present, there is a regional capacity of 1 million cubic meters per day, and in Saudi Arabia, the currently installed capacity for seawater desalination is about 4 million cubic meters per day.

The IAEA estimates that it would take $200-300 million for a multi-effect distillation system to be built, including the cost of the reactor.

Nuclear Desalination Today

The only industrial-scale nuclear reactor that supplies electricity as well as heat for desalination was built by the former Soviet Union, a BN-350 liquid-metal-cooled fast reactor, which went into operation in 1973. It is located in Aktau, Kazakstan (formerly Shevchanko, U.S.S.R.). Aktau has been operated since 1989 at a reduced thermal power level of 520 MW(th) with a maximum electric power production capability of 80 MWe, plus heat for the production of about 80,000 cubic meters per day of potable water.

There are several small nuclear-powered desalting plants that serve the in-plant needs of nuclear power stations in Japan, and Russia has about 16 small plants installed on nuclear ice-breakers and other nuclear-powered ships.—*Marcia Merry Baker*

a branch of British intelligence, immediately raised a hue and cry about the Moroccan project, alleging that the nuclear reactor cooling water would be contaminated with radioactive tritium. Instead, it proposed solar energy. The opposition to the Bushehr plant has been more blatantly political, and broadcast loudly from Washington. Immense pressure has been put on Russia, not to collaborate at all with Iran, on nuclear technology, on grounds that Iran is considered a "rogue state," capable of developing nuclear weapons, for use against Europe, and so forth.

The "rogue state" argument is palpably absurd, and is used as a cover for denying advanced technologies to countries in the developing sector. The fraud of the rogue state thesis is easily dismantled, when one considers what happened to the project for nuclear desalination, in the countries of the Middle East, following the 1993 Oslo Accords. The idea of nuclear desalination was introduced into the negotiating process, by LaRouche associates and *EIR*. In late 1993, Palestinian Finance Minister Mohammad Nashashibi, an engineer, went on record in an interview with *EIR*, enthusiastically supporting the concept. In early 1994, then-Crown Prince Hassan of Jordan, who was responsible for matters concerning technological development, also endorsed the idea in an interview with *EIR*. At the same time, independently, Shimon Peres, then Israeli Foreign Minister, elaborated the idea of "nuclear islands," in an article in an Italian publication, "islands," in the sense that they should, in his view, be put under international control.

Regardless of the significant differences in detail, all three agreed in fact to the appropriateness of the nuclear desalination concept to solving the region's underlying problem. But it was never to progress any further.

By December 1993, the World Bank had already issued its definitive report on what could and what could not be allowed, in the economic agreements attached to the Oslo peace treaty. Nuclear energy was not even mentioned as an option, and desalination was at the bottom of the list, if at all. This became public knowledge, in 1995, during the Middle

East-North Africa economic summit, hosted by the Jordanian government in Amman. Jordan had in 1994 signed its own peace treaty with Israel, in which water projects were included. But when the issue of nuclear desalination was raised, in the relevant workshops and press conferences, it was denounced as ludicrous, outrageous, and so forth, not only by the World Bank types, but also by Jordanian water experts.

Although no one at the U.S. State Department would argue that the Hashemite Kingdom of Jordan is a "rogue state," the policy here, too, is denial of nuclear technology. The widely advertised fact that Israel possesses nuclear technology, does not perturb anyone. The fact is, the liberal free-market fanatics, who have politically pushed through the World Bank's hijacking of the economic policymaking in the regional peace process, are committed to denying advanced technologies, including nuclear, which could render nations truly independent and sovereign. As for water policy in particular, the name of the game is "privatization," and this comes from the very top.

None other than Secretary of State Madeleine Albright outlined the policy on April 10 in remarks regarding this year's Earth Day. Identifying the water shortage problem as an international phenomenon, Albright proposed three ways to handle it: through technical means (to improve water-use efficiency), through eliminating waste, and through diplomacy. On the matter of waste, Albright said, "In many societies, water is wasted because it is underpriced." She explained, "Direct and indirect subsidies are common in both developed and developing countries." Paying lip service to the need to consider social considerations, as well, in pricing policymaking, she went on to assert, "But a system that reflects the full cost of treating and delivering water—and that enforces the collection of bills and requires polluters to pay—will get far more value from the resources than a system riddled with subsidies."

Albright continued to elaborate how the third means, diplomacy, should be used to achieve this shift away from subsidies, i.e., state control over policy. The United States, she said, should intervene diplomatically, to solve water problems regionally. Not coincidentally, Albright chose the Middle East as the area where the United States, which "chairs a working group on water resources," can establish a precedent, for cooperation. Specifically, she proposed a "global alliance for water security in the twenty-first century," in the "spirit of last month's World Water Forum" held in The Hague, a forum which also promoted the privatization of water. The goals of the alliance, she said, "must be to dramatically improve the management of transboundary water resources." Finally, Albright announced that the United States would be hosting a conference of donor countries in early summer to "help others deal cooperatively with water issues," and reiterated, in the same breath, that the government "strongly supports efforts by the World Bank and private foundations to see that investments in water-related projects reflect and encourage sound management practices."

Thus, anyone seeking an explanation for why the concept of nuclear desalination has not been promoted by the United States in Clinton's peacemaking efforts, need look no further. Unless this problem at the State Department is eliminated, there will be continuing sabotage of the only technologically and economically viable solution to the water crisis.

Generating Water, Power: Beautiful, and Necessary

by Marcia Merry Baker

The accompanying artist's depiction of a modern seawater desalination tower, is proposed for location on the Pacific Coast of Southern California, a region very similar to the eastern Mediterranean littoral. The structure houses a multi-effect distillation process (vertically stacked evaporators), for large-scale output (284,000 cubic meters daily). The artwork was done for the frontispiece of "Seawater Desalination Plant For Southern California" (Preliminary Design Report No. 1084), of the Metropolitan Water District of Southern California, Los Angeles, October 1993.

The tower, and Figure 2 and Table 2, illustrate the idea of locating a number of large-scale nuclear-powered desalination installations on advantageous sites—mostly the seacoasts in the Mideast, as part of a "Phase I" program to create new water resources and, at the same time, inexpensive, plentiful energy supplies for economic development throughout the region.

Where should plants be located? The symbol of the atom/drop of water, is located at 16 points on the map, to identify some favorable locations. Ten are shown on the Mediterranean coast (Syria, Lebanon, Israel, and Gaza); one on the Gulf of Aqaba (Jordan); one on a proposed Red-Dead Sea Canal (Jordan); and three on a proposed Med-Dead Canal, whose Mediterranean starting point might be in Gaza. The three plants on the canal are shown inland, illustrating that one facility might produce water for Gaza and the West Bank, and the other facility along the canal, for Israel. The third plant is shown at the terminus of this Med-Dead Canal route, representing an installation to provide water for Jordan.

In the north, a proposed seawater conveyance route is shown, to signify a potential tunnel from the Mediterranean to the Jordan Valley, where the conduit could supply seawater feedstock to a desalination facility for Jordan. (The route was shown in the October 1994 Government of Israel report, "Development Options for Regional Cooperation," submitted to the Economic Summit for the Middle East and North Africa. The report proposed such a seawater tunnel, running south of Haifa and north of Mt. Carmel, to feed a desalination facility