Civilian Nuclear Programs in the Middle East: Nuclear Spring or Nuclear Autumn?

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In recent years, a not-insignificant number of states in the Middle East have begun to think seriously about nuclear infrastructures for civilian purposes, and some have even begun constructing them. While several of the states, such as Egypt, have considerable experience in this field, others, such as the Arab Gulf states, have no prior experience to speak of. Interestingly, the latter have thus far shown the most progress, as demonstrated by the United Arab Emirates, which is expected to be the first Arab state to operate power reactors in the region. Iran's advanced nuclear program and the fears it has spawned have apparently been the catalyst for initiating these ambitious programs. However, those countries that are now examining the nuclear path claim that their main interests are producing electricity and/or desalinating water, and not achieving a nuclear balance with Iran.

The purpose of this article is to understand the motives behind the civilian nuclear programs in Middle East states, assess the significance of these programs, and provide an up-to-date snapshot of the situation. The fact that the preferred path for some states that developed military nuclear capability in recent decades was through civilian nuclear development sparks fears concerning the civilian nuclear programs in the Middle East. Therefore it is generally preferred that states seeking to develop new nuclear programs not be allowed to carry out nuclear fuel production and post-irradiation fuel reprocessing on their territory. These restrictions

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have aroused resentment among the "new nuclearizers," and states such as Turkey, Saudi Arabia, and Jordan have declared that they will retain the right of access to fuel cycle technologies, first and foremost to carry out the process of uranium enrichment on their territory.

Jordan

Jordan's increased demand for energy (an annual increase of 7 percent), the lack of significant oil and gas reserves – the kingdom imports some 95 percent of its energy needs, and about one-fifth of its GDP is devoted to this procurement – and the damage to the supply of gas from Egypt create a difficult challenge for the kingdom. The fact that there are large amounts of uranium in Jordan (10,000 tons) influenced the kingdom's decision to establish a nuclear power reactor in the country. At the same time, there are several fundamental problems in establishing reactors in Jordan: aside from budgetary difficulties and the dangers of operating reactors in seismologically sensitive areas, there are technical problems and international pressures connected with the prevention of proliferation of nuclear weapons.

It has been reported that Jordan is seeking to connect its first power reactor to the power grid by 2019, with an output of 1,000 megawatts of electricity, an ambitious goal by any standard. According to the Jordanian energy minister, the plan is to build a power station forty kilometers northeast of Amman, which will be cooled by water treated at a purification plant.[1] It can be assumed that this is technically feasible. According to the Jordanians, large scale desalination of water in Jordan (from the Red Sea-Dead Sea canal) will require large amounts of electricity. Another problem is the human infrastructure required to build and operate the power reactor, from engineers and technicians for construction and operation, to government officials for licensing and supervision who will define the standards and monitor the building and operation of the reactor. In addition, a major financial investment is required, since with nuclear reactors the basic investment is between $1.5 and 3 billion, and there are also costs for building, operating, and eventually decommissioning the reactor. These more or less double the expenditure.[2] Reactor operating costs, which also determine the final cost of the electricity, depend on the price of nuclear fuel, and herein

lies another problem: enrichment of the uranium that serves as fuel in nuclear reactors.

Jordan is a signatory to the Nuclear Non-Proliferation Treaty (NPT) and the Additional Protocol, and is a participant in the International Framework for Nuclear Energy Cooperation (IFNEC) – whose goal is "to facilitate cooperation among the IFNEC Participants in pursuing the expansion of clean, sustainable, nuclear energy worldwide in a safe and secure manner, while at the same time reducing the risk of nuclear proliferation."[3] However, Jordan has announced its intention to retain the right to enrich uranium. The fundamental problem with this announcement is the possibility that Jordan, if it has a working enrichment facility, could divert uranium and enrich it to a military level. This is a serious temptation, especially if the Middle East awakening comes to the kingdom and Jordan's government is taken over by extremist elements who could use the facilities for the production of high enriched uranium, suitable for use in nuclear weapons. The United States is working resolutely against the Jordanian drive to realize its option to enrich uranium, but thus far, it has not been especially successful. Another problem is that Jordan lacks the necessary professional manpower and technological infrastructure (and to a certain extent, the necessary supply of electricity) to build and operate a large enrichment facility that would provide nuclear fuel to a power reactor. If the fuel were supplied from Jordanian sources, it would be so expensive as to make the nuclear power reactor project economically unfeasible.

In the past, Jordan accused Israel of pressuring South Korea and France not to sell nuclear technologies to the kingdom. The Jordanian King even alleged that Israeli actions on this issue brought Israel-Jordan relations to their lowest point since the peace treaty was signed in 1994. According to the King, there are countries, especially Israel, that are worried that Jordan will become economically independent. Noting that reactors for generating electricity exist in many places in the world and that there would be more and more of them, he added that Israel must deal with its own affairs.[4]

Egypt

Egypt has had an interest in nuclear development for many years. It established a center for nuclear research at Inshas that included a small

Soviet-made research reactor that went critical in 1961. This center has trained personnel and carried out various studies on nuclear issues. Since the 1980s, Egypt has considered building power reactors that would supply a significant portion of its energy consumption. The site chosen was al-Daba'a, near the Mediterranean, west of Alexandria. On a number of occasions, Egypt sought construction estimates for the first reactor, but it never reached the point where a contract was signed and implementation of the plan began. The presidential plan of 2006 revived Egyptian ambitions. Currently the plan is for one or more reactors, each with an output of 1,200 megawatts. In 2009, Egypt was able to supply over 22,000 megawatts of electricity. Thus, the additional supply from nuclear power stations would not have been a problem, both because of the relatively small part this power source would play, and because of the electric grid's ability to carry the additional load.[5] Egypt does not yet have large scale proven sources of uranium, although it is continuing to search for them and is also considering building a plant to produce uranium from the phosphates in its possession.

The main concern that arises with Egypt from time to time is the possibility that it will want to develop nuclear weapons. Presidents Sadat and Mubarak apparently decided against this, but not all Egyptian officials were in complete agreement. During one of its routine visits, the International Atomic Energy Agency (IAEA) discovered uranium particles enriched to a high level, and Egypt had no satisfactory explanation for this.[6] In addition, Egypt has refused to sign the Additional Protocol, which would allow the IAEA to carry out more thorough inspections on Egyptian soil. There have been additional reports that in 1984, Egyptian Defense Minister Abu Ghazala sought approval from President Mubarak to develop nuclear weapons, but Mubarak refused, and Abu Ghazala was fired.

To a certain degree Egypt today suffers from political distress because of Iran's increased power and status, including in the military nuclear realm. Therefore, there is a not-insignificant chance that Egypt will want to acquire a military nuclear capability, especially if Iran achieves this capability. There is no doubt that Egypt has the necessary technological and human infrastructures, and promoting this project is mainly contingent on a political decision. If Egypt takes such a decision, the project will require many years, but without undue interruption it

could ultimately be realized. This would undoubtedly negatively affect the entire issue of power reactors, since delivery of the reactors and fuel for these reactors and removal of spent fuel would be harmed. Egypt's economy would be harmed because international aid would cease, and it is not clear that wealthy Arab states would come to its rescue. If Egypt pursues this direction and the change of government in the country brings extremist Islamic groups to power, their control of nuclear weapons would endanger the region and the entire world.

The Gulf States

In December 2006, the Gulf Cooperation Council (GCC) states announced that they were seeking to develop a shared nuclear program,[7] and in March 2008 the program received the approval of the IAEA.[8] In spite of the six states' cooperation, however, the possibility of a joint nuclear power station appears less likely, and some of the states intend to focus on promoting a national nuclear program.[9] While these countries are advancing toward connecting their electric grids, in practice, Oman, Bahrain, Qatar, and Kuwait have signed bilateral agreements and have established national authorities to deal with research and policy planning on the nuclear issue. These steps toward development of independent nuclear programs leave the GCC as the institution that sets goals, studies the issue, and serves as a framework for negotiations with the IAEA.

Kuwait, Bahrain, Oman, and Qatar

For some of the Gulf states, the idea of turning to nuclear energy is not new. As long ago as the mid 1970s, Kuwait decided to build an experimental nuclear power station.[10] In March 2010, Kuwait announced its renewed interest in establishing a civilian nuclear program. It signed a cooperation agreement with the IAEA and established the Kuwait National Nuclear Energy Commission (KNNEC), whose function is to examine construction of nuclear power stations and the issues of security and safety, inspection, supervision, and legislation in the field.[11]

According to Kuwait, the main drive behind its nuclear development is to cope with the rising demand for energy and reduce air pollution. The emirate has decided to build four nuclear power stations, each with a capacity of 1,000 megawatts, by 2022.[12] In June 2010, the United States and Kuwait signed a memorandum of cooperation dealing with

a range of issues, including nuclear legislation, regulations, security, and safeguards; radiation protection; and human resource planning in the nuclear field.[13] Yet in spite of the emirate's activism, it appears to be having second thoughts, and it is not interested at this point in pursuing an independent nuclear capability.[14] Kuwait was never very committed to the issue, but doubts concerning the nuclear program grew after the Fukushima disaster.[15]

In 2006, Qatar also began to consider the possibility of building a civilian nuclear program. In Qatar's case, the rationale is to continue to export large quantities of oil, and even more so, gas. This export is the basis of the Qatari economy. While Qatar has signed nuclear research cooperation agreements with France and Russia, the program is still in the research stage and no concrete plan to build nuclear reactors or nuclear power stations has been declared yet. Bahrain and Oman have also declared their intention to build nuclear programs. However, they have taken few steps in this direction, and it is not inconceivable that they will make do with cooperation, even if it is limited, within the GCC framework.

The United Arab Emirates

Estimates are that electricity consumption in the United Arab Emirates will reach 40 gigawatts by 2020. Today, the country's production capacity is half of that. According to estimates, exclusive reliance on renewable sources of energy, such as sun and wind, will provide up to 7 percent of the federation's energy needs. In response to these estimates, Abu Dhabi has begun to prepare to develop a civilian nuclear infrastructure. At this point the nuclear program includes the construction of four reactors, which are supposed to be connected to the electric grid by 2020.

Toward late 2008, an agreement began to be formulated on civilian nuclear cooperation between the United States and the UAE. The 123 Agreement, named for the relevant clause in US law that discusses nuclear cooperation, was signed in January 2009. It includes an agreement by the parties to cooperate on various civilian nuclear issues, such as professional exchanges, technical aid, and transfer of components and equipment. A main clause in the agreement prohibits any fuel cycle activity in the UAE (which means reliance on imports of nuclear fuel from other countries and sending spent fuel outside of the

country). This clause, in addition to a commitment to work transparently with the IAEA, has contributed to assuaging US fears, and was critical in the attempt to establish this agreement as a model for the future. In December 2009, the United Arab Emirates chose the South Korean firm KEPCO to build the reactors. The agreement to build and operate the reactors and to supply fuel for three years totaled some $20 billion, with the first reactor scheduled to be connected to the electric grid in 2017.[16] In March 2011, a ceremony was held marking the start of work at the site chosen for the reactors (Braqa, near the Saudi border), and since then, it has been progressing according to schedule.

The UAE has succeeded in overcoming economic, regulatory, and political obstacles on the way to a full nuclear program. In spite of its commitment to transparency on the issue vis-à-vis the international community, there are still fears of proliferation by the UAE. One of the main gaps is connected to the need to work for tighter control over exports. Indeed, Dubai, which served as a base of operations for the smuggling network of Pakistani scientist A. Q. Khan, is a smuggler's paradise and serves as a main channel for Iran to bypass Western sanctions. Many Iranians live in Dubai, and Iranian front companies that smuggle banned substances to and from Iran operate from Dubai.

Of all Middle East states, the United Arab Emirates has made the most progress in developing a civilian nuclear program driven by "objective" energy needs. A great deal of money has been invested in the program, backed by a coherent policy that is committed to transparency and to the use of the most advanced technology. The timetables for completing the project are ambitious and in fact unprecedented: a decade between the publication of policy on the issue and the date to connect the reactor to the electric grid. The Achilles' heel of the project remains human resource development. In spite of fears that the reactors will become a target for terrorist attacks and concerns about building them in a region prone to war, the federation is attracting foreign governments and companies and is showing its economic power by offering experts from all over the world attractive working conditions.

Saudi Arabia

Although Saudi Arabia has the largest proven oil reserves in the world and is the world's largest exporter of oil, in recent years the kingdom

has begun preparing openly to develop nuclear energy for purposes of electricity production and water desalination, and it is expanding its efforts to build a knowledge infrastructure on the subject. To this end, it has dedicated a series of projects and signed nuclear cooperation agreements with a number of countries. It has been reported that the process of choosing sites for the reactors has already begun and that the kingdom intends to finish the construction of the first reactor by 2020.[17] The Saudi foreign minister has sought to assuage fears that his country intends to develop nuclear weapons, expressing the hope that the announcement of intention to develop this nuclear capability would not be misunderstood. He noted that it was not secret and was progressing openly, the goal being to obtain technologies for peaceful purposes.[18] Yet in spite of this and other declarations, the kingdom has in the past signaled that it will not give up uranium enrichment capability, as the United Arab Emirates did in exchange for foreign aid in building nuclear facilities.[19]

The internal Saudi consumption of oil and gas has risen at an average annual rate of 7 percent, which is liable to endanger the kingdom's ability to serve as a regulator of oil output in the future. Today the kingdom consumes some 2.8 billion barrels a day, which is about one quarter of its entire output; at this rate, in another twenty years or so, it will not be able to export oil at all.[20] In addition, the kingdom desalinates over 70 percent of its drinking water, and the demand for energy is expected to rise, from 44,000 megawatts today to over 75,000 megawatts projected for 2020. Therefore, nuclear energy (along with renewable energy) has become another way to vary the kingdom's sources of energy, reduce the dependence on oil and gas for internal consumption, and allow export of a larger share of oil and gas.

In April 2010, King Abdullah published an order establishing a nuclear agency, the King Abdullah City for Atomic and Renewable Energy (K.A.CARE), to coordinate policy, legislation, and research on a range of applications in the nuclear realm, under his direct responsibility. The enormous potential of the Saudi nuclear program is attracting many companies from all over the world. In February 2011, Saudi Arabia signed the first agreement of its kind for international nuclear cooperation. According to the official announcement, the agreement that was signed between Saudi Arabia and France will allow Saudi experts to learn from

the French about technological possibilities, economic requirements, and possibilities of developing qualified nuclear personnel.[21] In late 2011, Saudi Arabia also signed an agreement with South Korea to build and operate nuclear reactors in the kingdom, and in early 2012, it signed a nuclear cooperation agreement with China. In February 2012, in the first conference of its kind in Saudi Arabia, the Saudi "roadmap" to nuclear energy was presented, which includes ensuring the supply of fuel for the long term and preparing a technical cadre in the relevant professions.[22]

According to the announcement, the kingdom will invest over $100 billion over two decades to build no fewer than sixteen nuclear reactors for purposes of generating electricity and desalinating water.[23] It was also reported that the United States has begun discussions with Riyadh on a deal – perhaps in light of the parameters of the memorandum of understanding between the two countries from 2008 – in which the kingdom made a commitment, not legally binding, not to "pursue sensitive nuclear technologies." The deal would permit the Saudis to engage in civilian nuclear activity, and in exchange the United States will supply it with nuclear know-how and training, as well as nuclear materials. It is not clear whether the agreement being formulated has terms similar to the agreement signed by the United States with the UAE. However, several members of Congress expressed doubts as to the commitments the kingdom will take on itself in regard to plutonium separation and uranium enrichment and the ramifications of this step for the region.[24] In addition, it is not clear whether the kingdom will agree to the same commitments made by the United Arab Emirates in exchange for international aid, including signing the Additional Protocol of the IAEA.

Beyond limited experience in the use of nuclear technologies for medical and agricultural purposes, the kingdom's nuclear knowledge infrastructure remains minimal. In spite of Saudi Arabia's relative cooperation with the international community in civilian nuclear matters, the kingdom is a signatory to the Small Quantities Protocol, which in practice exempts it from intrusive inspections and makes it difficult for the IAEA to verify that in fact it is not carrying out forbidden development. The Saudi authorities have never confirmed this, but for years various publications have hinted that Saudi Arabia is working or intends to work to develop military nuclear capability. A series of

unusual statements on the nuclear issue coming from Riyadh for the first time in the past year, all of them emphasizing Saudi Arabia's intention to consider the nuclear path if the international community is not able to stop Iran from achieving its objective, supports this sentiment.[25] These statements, unlike past statements, publicly and explicitly address the military nuclear issue and suggest that there may be a shift in Saudi nuclear policy.

Turkey

In the past decade, Turkey's consumption of electricity has grown by an average of more than 8 percent per annum, and estimates are that demand for electricity will increase at an average rate of 6.5 percent a year until 2030.[26] Turkey mainly relies on energy imports, and its goal is to decrease this dependence and diversify its sources of energy. One of the methods it has examined for several decades and is investigating even more so at present is building a civilian nuclear capability. Since the 1960s, Turkey has made five attempts to develop civilian nuclear capability, but problems – mainly US opposition, difficulties with financing, and lack of political stability – brought this endeavor to a halt.[27] Today, Turkey has a limited infrastructure for civilian nuclear development, specifically, three small facilities for research and testing.[28] While uranium has been found in Turkey, mining it is considered expensive relative to uranium deposits in other countries, and Turkey has no infrastructure for commercial mining.[29] In connection with 2023 Vision, marking 100 years of the Turkish Republic, the Turks declared their intention to build three nuclear reactors in the country using know-how from foreign companies. There is also a long term plan to build some twenty reactors by 2030.[30] Domestically, there is some opposition to nuclear development because of the high risk of earthquakes in parts of the country. Nevertheless, there is no significant "green" political association or opposition.

After the failure of the commercial tender for building the first nuclear power station in Akkuyu on the Mediterranean coast, Turkey signed a $20 billion deal with Russia in 2010 to build reactors with the aid of Rusatom, the Russian state-owned company. The reactors are supposed to be operational starting in 2019.[31] Rusatom is responsible for raising the funds for construction, but Turkey has made a commitment to purchase most of the electricity produced by the power station, which will have

four light water reactors, each with an output of 1,200 megawatts. The power plant will be a "turn-key project," with Rusatom responsible for supplying the fuel rods and reprocessing the spent fuel.[32] Turkey is planning another reactor at Sinop on the Black Sea coast, and there are plans to build a third reactor also on the Black Sea, near the border with Bulgaria, in Igneada.[33]

Turkey currently has no actual plans to develop fuel cycle capabilities, but Prime Minister Erdoğan has declared that his country retains the right to do so.[34] The Turks fear that if the enrichment process takes place outside of the country, Turkey will remain dependent on outside parties to supply its energy needs. Turkey is also angry that states already in possession of nuclear capability are increasing the supervision of and restrictions on development of nuclear capabilities. Turkey, which has signed all the main treaties for preventing proliferation of weapons of mass destruction and nuclear weapons in particular, is very critical of the fact that the nuclear powers do not keep their NPT Article IV commitments to recognize without discrimination the right of non-nuclear states to engage in nuclear development for peaceful purposes.

Unlike in the past, Turkey today has the necessary economic resources and political stability to progress on a civilian nuclear route. Furthermore, it would appear that its growing energy needs justify a turn in this direction. There are still obstacles domestically, for example, the relatively small number of scientists in this field and insufficient regulatory infrastructure. However, at least in the first stage the choice of a "turn-key project" is supposed to solve the problem of lack of Turkish experience. In the future, the Turks aspire to a civilian nuclear program that has elements of self-reliance.

In recent years Turkey has also invested much effort to increase its influence in the Middle East. Therefore, in the long run the possibility that Turkey would move from the civilian to the military path cannot be ruled out. While unlike other states in the Middle East Turkey has NATO's nuclear guarantee, if in the future the guarantee is perceived as less reliable, Turkey's tendency to rely on itself will likely grow stronger.

North Africa

In the late 1980s, Algeria had a fairly developed nuclear program. Although it is a signatory to all the relevant treaties, over the years the

international community has expressed concerns that the program also has military applications. Algeria has significant uranium deposits as well as two nuclear reactors, which were built with the aid of Argentina (a small reactor for medical research purposes) and China (a 15 megawatt heavy water reactor). Concern that Algeria was seeking to acquire military nuclear capability led to heavy US pressure, and as a result, Algeria signed the NPT in 1995. Algeria is also a signatory to the Pelindaba Treaty, which established a zone free of weapons of mass destruction in Africa and entered into force in 2009.[35] Algeria has a number of nuclear cooperation agreements – with the United States, Russia, China, France, and Argentina – that were signed in 2007 and 2008. In 2009, it was announced that Algeria plans to have an operational nuclear reactor by 2020.

The previous regimes in Tunisia and Libya also had such ambitions. In 2008, Libya, under Muammar Qaddafi, and Tunisia, under Zine al-Abidine Ben Ali, signed nuclear cooperation agreements with France that included training of personnel, aid in mining uranium, and a French offer to build a water desalination reactor in Libya. The fall of the regimes in Libya and Tunisia brought all progress on this issue to a halt.[36] Morocco, in contrast to its neighbors, does not have oil and gas reserves, but it does have a not-insignificant quantity of uranium. (In 2007, an agreement was signed with the French company AREVA to extract the uranium deposits.) A small American-made research reactor (2 megawatts) is under construction near Rabat. In January 2011, approval was given to establish a government nuclear agency, and a draft law on the issue was prepared. It was also announced that by 2014, tenders would be issued for international companies to build two reactors, each with a 1,000-megawatt capability, which would apparently not be operational before 2020, in order to meet growing energy needs and reduce greenhouse gas emissions.[37]

Conclusion

The current role of nuclear power as a source of energy in the Middle East is negligible. However, no fewer than thirteen states have declared in recent years that they intend to develop a civilian nuclear infrastructure.[38] While most of the projects discussed here are far from finished, it is likely that early in the coming decade Turkey and the UAE will begin to produce some of the electricity they require using nuclear reactors. Egypt, Algeria,

and Saudi Arabia also have the capability to set up civilian nuclear programs in the future. Many of the states make convincing arguments regarding the value of the projects: the growing demand for energy; reduced dependence on fuels that pollute; and release of a larger share of oil and gas for export. However, additional considerations – of prestige and regional standing that naturally accompany nuclear development – cannot be ruled out. In addition to the civilian nuclear programs, there are concerns about the safety of nuclear facilities and materials from terrorist elements, and about constructing such sensitive facilities in potential areas of conflict.

There is a long road ahead until the process surveyed here can be called a nuclear spring or renaissance. Many of the declarations are not reliable, and many states have not yet resolved fundamental issues connected to nuclear development, including the long term safety of the fuel supply, arrangements for handling spent fuel, and regulatory and political solutions. Some of the states have not yet resolved issues such as project funding, necessary changes to the electric grid, and more sensitive issues concerning access to uranium enrichment and plutonium separation technologies. The Fukushima disaster in March 2011 was the worst nuclear disaster since Chernobyl in 1986, but thus far it has not had a significant impact on the policy of the countries surveyed here other than Kuwait, which stopped its nuclear development. Moreover, countries such as Saudi Arabia are even accelerating processes connected with nuclear development.

> Most of the states surveyed here do not constitute a threat in the foreseeable future in terms of nuclear proliferation. The danger of a nuclear arms race in the Middle East is not connected, at least in the short term, with development of civilian nuclear programs.

The activities taking place outside the reactor site are those that present the most difficulties for the "new nuclearizers": the need for the fuel cycle, starting with the front end nuclear fuel production, and including the back end treatment of spent fuel after its removal from the reactor.[39] The issue of access to fuel cycle technology is also the most worrisome for those who fear a transition from civilian nuclear programs to military programs (only two states outside of Europe, Japan and Mexico, which have a well developed civilian nuclear infrastructure, have not considered the military nuclear option

at any time).[40] Some of these states wish to retain the right to maintain such capabilities but still lack the ability to do so. The international community has good tools to cope with this danger, if only because of the dependence of most of these states, and to a lesser extent, Egypt and Turkey, on building nuclear infrastructures and training personnel. Thus, for example, both Turkey and the UAE chose, at least in the first stage, to receive the fuel from outside sources and send the spent fuel back to Britain or France, in the case of the UAE, or Russia, in Turkey's case. However, economic considerations are liable to bring about a situation in which countries that export nuclear technologies will be less punctilious about the restrictions so as not to lose potential markets.

The rationale behind the 123 Agreement between the United States and the UAE was to set a binding precedent, a sort of gold standard, which would henceforth apply to all states seeking to build a civilian nuclear infrastructure. However, since then, countries like Saudi Arabia and Jordan (and states outside the region, such as Vietnam), have been less prepared to adopt similar terms, especially regarding relinquishing enrichment and separation capability. It appears that the United States, which is seeking to avoid loss of markets in its competition with countries such as Russia, France, and Korea, is likely to put aside the precedent that it sought to establish, and to adopt a strategy of judging on a case by case basis. Aside from the possible danger of the agreement already signed with the United Arab Emirates, according to the policy being formulated, a number of "new nuclearizers" will be able to enrich uranium. It is not inconceivable that others will seek to do likewise.

The Obama administration, which has championed the battle against nuclear proliferation, must turn back this policy and meet the standard that it set. If it does not, the nuclear nonproliferation regime will be badly harmed. Selective application – precisely at this time, when the international community is having difficulty stopping uranium enrichment in Iran – not only does not necessarily ensure that those states will acquire the facilities and the know-how from the United States; it will probably harm the NPT, if only because of the importance of the United States in the nuclear field and the contribution of bilateral agreements, such as that with the UAE, to stemming nuclear proliferation.

In spite of the differing characteristics of the states surveyed, most of them, perhaps other than Saudi Arabia, show a relatively high level

of transparency as a means to gain the support of foreign governments and companies in promoting the projects. One of the most compelling arguments made by those who support stopping Iran before it acquires military nuclear capability is that other states in the region will follow in the nuclear path. However, the expected pace of civilian nuclear proliferation in the Middle East now appears to be slower than was believed in the middle of the previous decade, when the start of the programs was announced. This is because of various obstacles, some political and diplomatic, but mainly economic and technical. As a result, only a small number of states that had declared their intention to establish viable nuclear programs have succeeded in doing so.

This article has sought to provide an up-to-date picture of the situation regarding civilian nuclear development in the Middle East. For this reason, it has not discussed states such as Iran, which is working on the military aspects of nuclear development, and Syria, which was previously engaged, and perhaps is still pursuing an endeavor of this sort. Most of the states surveyed here do not constitute a threat in the foreseeable future in terms of nuclear proliferation. The danger of a nuclear arms race in the Middle East is not connected, at least in the short term, with development of civilian nuclear programs, and certainly according to the model adopted by the UAE. However, there are several states that pose a greater risk.

All the states discussed here are signatories to the NPT, although Egypt and Saudi Arabia have not adopted the IAEA Additional Protocol, an issue that must also be resolved as a condition for international aid in this area. Furthermore, as Iran's nuclear program progresses, it is not inconceivable that various actors will look for shortcuts and seek not only to promote a civilian program, but also to acquire the components of off-the-shelf weapons. Some of the civilian nuclear projects can still be presented as competitors to the Iranian model, as they prove that it is possible to promote a nuclear program according to accepted standards and receive aid from the international community. But given that nuclear technology has a dual use, and the fact that several of the states surveyed fear Iran's nuclear ambitions, the possibility that some of them will in the future seek to realize the military potential latent in their projects cannot be ruled out.

Notes

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