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Nuclear Energy Development and Proliferation Concerns in the Middle East

Introduction

At the dawn of the twenty-first century, the world grapples with energy and environmental crises alongside the other problems such as transnational terrorism, and nuclear proliferation, that is the increase in the number of nuclear-armed states.[1] Since energy is vital for development, there is a huge world-wide demand for clean, affordable and security risk-free energy. Nearly every aspect of development from reducing poverty and raising living standards to improving health care, and industrial and agricultural productivity requires reliable access to modern energy sources. It is for this reason that nuclear energy, among others, recently tops the world energy politics. Nuclear energy is frequently pronounced as being a solution to the energy shortage in the decades to come. That aside, nuclear energy also brings forward proliferation concerns owing to the dual nature of the technologies involved in its peaceful exploitation: Nuclear energy can be put to civilian as well as military uses. Therefore, economic growth and national security become interlinked in the domain of nuclear power development.

Against this background, this paper aims to present the connections between the drive for nuclear energy and the proliferation concerns in the Middle East. The paper proceeds in two parts: First part presents the nexus between energy needs of states worldwide and the environmental concerns. In explaining the connection between energy needs, security, and environmental threats, this part provides an account of the broader world dynamics within which the Middle Eastern dynamics operate. Specific issues that are addressed in the first part are the primary drive behind the nuclear energy today, the reasons why states opt for nuclear energy more when compared to alternative resources, and why they choose to initiate nuclear technology or improve their already existing capabilities, as well as the arguments of the opponents to the nuclear energy option.

The second part concentrates on the connection between nuclear energy acquisition and the proliferation concerns raised thereof. Within the framework of such a connection, focal states are those in the Middle East. The political and strategic landscape in the Middle East, the reasons of proliferation concerns, the images of responsible and irresponsible states underlying the proliferation threat, and the concerns of neighboring states about nuclear Iran and their possible reactions are assessed in this part.

Primary Driver Behind Nuclear Power Industry Today

The primary driver behind the world-wide high demand for energy mostly originates in the energy needs of rapidly expanding global economies. Energy is vital, and why nuclear energy is preferred is a central question. A less-known reason for states' choice of nuclear energy is the mitigation of carbon emission increases. Although international public opinion has not reached a consensus on the subject yet, nuclear energy is debated to be mitigating carbon emissions. Emissions are continually rising and put the future of life on earth at risk. In developing countries, the demand for energy is estimated to be surpassing the demand in the West.[2] If these countries continue to rely on fossil fuels, which will most probably increase the emission of greenhouse gases drastically paving the way for a devastating climate change. What follows will be extreme pollution not just for their own citizens, but for the people of the world as a whole.

However, the energy problem does not stop at the margins of the developing world. Developed states, which have nuclear power and technology already, also search for ways to remedy their increasing energy need so as to maintain sustainable growth of their economies.[3] States, whether they are developed or not, may have other reasons for considering nuclear power to achieve their national energy needs: a lack of available indigenous energy resources, the desire to re-

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1 The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) is a landmark document whose objective is to prevent the spread of nuclear weapons while promoting cooperation in the peaceful uses of nuclear energy as well as to further the goal of achieving nuclear disarmament and general and complete disarmament. The NPT represents a commitment in a multilateral treaty to the goal of disarmament by the nuclear-weapon States. Opened for signature in 1968, the NPT entered into force in 1970.

2 The interview with the Head of the World Nuclear Association John Ritch, "An Atomic Future?", *Environmental Finance*, May 2006, p. 20.

3 MIT Nuclear Energy Study Advisory Committee, *The Future of Nuclear Power*-An Interdisciplinary Massachusetts Institute of Technology (MIT) Study, 2003; "An Atomic Future?", *Environmental Finance*, May 2006, p. 20; Emerging Nuclear Energy Countries: World Nuclea Association http://www.world-nuclear.org/info/inf102.html; CountryBriefingsWorldNuclearAssociation;; Otfried Nassauer, "Nuclear Energy and Proliferation*", Nuclear Issues Papers*, Heinrich Böll Foundation, December 2005, No. 4; US Department of Energy - *DOE Statement on Canada Joining the Global Nuclear Energy Partnership*, 30 November 2007.

duce dependence on imported energy, or the need to increase the diversity of energy resources. Reconciling energy needs of a strong economy with proliferation and environmental concerns takes the stage as an intractable global problem that interests every state in the world.

Simultaneously, the climate change and environmental concerns evolve to dominate the world nuclear power and energy politics with two contrasting argumentations. On the one hand, there are non-governmental organizations (NGOs) that oppose nuclear power categorically on the grounds of moral, normative and environmental concerns.[4] On the other hand, there are those states that vie for nuclear energy. Ironically, even though states and non-state actors argue from the common talking-point of the nature of nuclear energy and technology, they draw different lessons: Anti-nuclear NGOs claim that nuclear power is environmentally damaging and is also threatening the world peace and security, arguing that nuclear power intrinsically pollutes both the natural environment and the security environment of the world. In contrast, some developed and developing states assert that nuclear energy is a quick-fix for energy shortage and climate-change.

This is why plans are in place to expand nuclear power in almost all of the countries where it now exists, and also why several other countries – such as Poland, Turkey, Vietnam, Indonesia, Jordan, Syria, Egypt and Gulf countries – have begun planning to introduce nuclear power projects. Nuclear energy is regarded by these states as a truly sustainable energy source almost without emissions, with manageable wastes and readily-found fuel.

These states argue that nuclear energy will reduce carbon emissions while corresponding to the high energy needs of their economies. This argumentation rests on the proposition that keeping on with fossil fuels, that has been the main order of the world energy industry up to now, contributes to global warming and climate change through large-scale emission of hundreds of billions of tones of carbon in the form of carbon dioxide.

Resource Options and the Challenges

No comparison is intended between energy resources, and thus no conclusion is reached as to which option is more preferable or best. Indeed, it would not be prudent to exclude any one of them. Accordingly, the point of singling nuclear energy out is just to underline the current drive of states for nuclear energy, and why this is the case.

Drastic increases in the energy needs of states force decision-makers to choose an economically viable and sustainable resource option, which brings huge output and also is cost-effective. Authorities, unlike other citizens, perceive that they are under the pressure of time in making decisions owing to the estimated short, medium, and long-term economic status of their countries.[5] That said, options are mainly the renewable energy resources, carbon sequestration, increased energy efficiency, and nuclear energy. The first three are not emission-free options; they just reduce carbon emissions. Although nuclear energy is just one of the options for meeting the energy needs, it is purportedly argued to be more environment-friendly: Nuclear-energy is almost emissions-free.[6] The fuel is argued to be plentiful and yields virtually no emissions, and that the waste is small in volume and safely manageable. Hence, nuclear energy is tempting for state authorities.

States that are Improving/Considering Nuclear Power Programs

There are over thirty states that consider embarking upon nuclear power projects. These states in *Europe* include: Italy, Albania, Portugal, Norway, Poland, Belarus, Estonia, Latvia, Ireland, Turkey; in the *Middle East and North Africa*: Iran, the Gulf states, Yemen, Israel, Syria, Jordan, Egypt, Tunisia, Libya, Algeria, Morocco; in *Central and Southern Africa*: Nigeria, Ghana, Namibia, and Kenya; in *South America*: Chile, Venezuela; in *Central and Southern Asia*: Azerbaijan, Georgia, Kazakhstan, Bangladesh; and in *South East Asia*: Indonesia, Philippines, Vietnam, Thailand, Malaysia, Australia, and New Zealand.[7]

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4 Charles Krupnick, "Politics, Money, and the Environment: Contemporary Conflicts over Civilian Nuclear Reactors in Central Europe Following EU Accession" *Paper presented at the annual meeting of the International Studies Association,* San Diego, California, USA, 22 March 2006; Anti-Atom International http://www.unet.univie.ac.at/~a9406114/aai/english/english.html; "A rebirth of the anti-nuclear weapons movement?" *The Bulletin Online Global Security News and Analysis*, 14 December 2007, http://www.thebulletin.org/roundtable/antinuclear-weapon-movement/

5 Alexander L. George, *Bridging the Gap: Theory and Practice in Foreign Policy*, Washington: United States Institute of Peace Press, 1993.

6 *An Atomic Future*, p. 20; Nuclear Energy Institute Resources and Statistics http://www.nei.org/resourcesandstats/nuclear_statistics/environmentemissionsprevented

7 World Nuclear Power Reactors 2006-08 and Uranium Requirements, 14 January 2008, http://www.worldnuclear.org/info/reactors.html.

8 According to the Nonproliferation Treaty (NPT) are the United States of America, the Russian Federation, China, United Kingdom and France are *de jure* nuclear weapon states (NWS). *De facto* nuclear weapons states, those that are not member to the NPT, are: India, Pakistan and Israel.

Today, only eight countries are known to have nuclear weapons capability.[8] By contrast, 56 states operate civil research reactors, and 30 states have total 435 commercial nuclear power reactors. The United States, Russia, United Kingdom, France and China as nuclear-weapon-states (NWS) all have ongoing and planned nuclear power programs. They are also actively improving and modernizing existing capabilities with intensive research and development endeavors.[9] Germany obtains one third of its electricity from nuclear energy, using 17 reactors. German public sentiment in the last few years has swung in support of nuclear energy for economic needs.[10] States that consider initiating nuclear power programs together with those states that already use it add up to forty-three states. This list demonstrates the world-wide trend towards nuclear energy usage.

Political and Military Landscape of the Middle East and Proliferation Concerns

A catastrophic mixture of anarchy and gang warfare - not limited to but especially in Iraq, mounting civilian casualties and collapsing infrastructure, and a region-wide eruption of embittered refugees problem are some of the remarkable repercussions of a politically instable Middle Eastern region. Muslims fighting Muslims in sectarian conflicts, a general conflict from Samara to Gaza passing through Beirut marks a bleak portrait. The most violent conflicts in the Middle East today are in Palestine, Lebanon and Iraq.

The military landscape of the region can be viewed, first, from the perspective of conventional warfare, and secondly, from that of unconventional warfare. Although no likely conventional war (force-on-force confrontations of armies) between states is in the offing, it would hardly be baseless to predict that once it occurs, a conventional war between regional states may well include either Iran's nuclear aspirations, or a total break-down of control in Iraq, or even both, as its *casus belli*. As the first and foremost unconventional mode of warfare that is rampant in the Middle East, terrorism has reached formidable heights. Alongside terrorism, another unconventional dynamic is horizontal proliferation, the spread of nuclear weapons to new states. Such a concern does not necessarily anticipate an exchange of nuclear warheads in an open-warfare. The political deterrent effect of possessing nuclear weapons is a sufficient reason for states to grow defensive, creating a security dilemma, and in turn a nuclear arms race.

Indeed, in the Middle East where the dynamics of power politics still largely reign, no state could rule out nuclear-weapons as weapons of last resort in the face of total collapse. The region consists of one-bomb targets, such as the Gulf states. This might particularly be the case for Israel, which is vulnerable even to a single nuclear missile attack due to its lack of strategic depth.[11] Since Israel is said to be a one-bomb target, when it sees a nuclear attack imminent, it can resort to preemptive use of its own nuclear weapons.

Still, another unconventional warfare concern is the possibility and the probability of terrorist networks having access to weapons of mass destruction. A nuclear armed-terrorist group might unleash hell to the region at large. Terrorists are walking threats without a retaliatory address. Consequently, proliferating countries cause concerns in the region because any nuclear new-comer to the region may further aggravate the above-mentioned dark contingencies. At the very least, introduction of a new *de facto* nuclear weapons state will create a perception of vulnerability on the part of neighboring states. They would most likely behave more defensively towards both the terrorists and the nuclear states of the region.

As for the security circumstances in the region, much has been written about the apparent Iranian drive to advance its nuclear capability.[12] Iran is considered by many to be a proliferating country having strong aspirations to develop nuclear weapons. Should this be the case, a relevant question in this context would be as to what would be the reactions of neighboring states to a nuclear weapons capable Iran? In response to such a development, neighboring countries may either accommodate and appease a nuclear Iran, or they may turn outright hostile and oppose Iran

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9 *Country Briefings*-World Nuclear Association http://www.world-nuclear.org/info/info.html#countries.

10 A poll early in 2007 found that 61 percent of German population opposed the government's plans to phase out nuclear power by 2020, while 34 percent favored a phase out: World Nuclear Association, Country Briefings http://www.world-nuclear.org/info/inf43.html - updated January 2008.

11 Israel's total land area is just 20,330 sq km, roughly eight-times the territory of Essen/Düsseldorf of Germany, or roughly New Jersey of the United States alone.

12 Mustafa Kibaroglu, "Good for the Shah, Banned for the Mullahs: The West and Iran's Quest for Nuclear Power," *The Middle East Journal*, Spring 2006, Vol. 60, No. 2, Middle East Institute, Washington DC, pp. 207-232; Mustafa Kibaroglu, "Iran's Nuclear Ambitions from a Historical Perspective," *Middle Eastern Studies*, March 2007, Vol. 43, No. 2, Routledge, Taylor & Francis Group, London, pp. 223 – 245. Henry Sokolski and Patrick Clawson (eds), *Getting Ready for a Nuclear-Ready Iran* (Carlisle, PA: US Army War College, Strategic Studies Institute, 2005); Ray Takeyh, 'Iran's Nuclear Calculations', *World Policy Journal*, vol. 20, no. 2, Summer 2003; Ray Takeyh, 'Iran Builds the Bomb', *Survival*, vol. 46, no. 4, Winter 2004, pp. 51–64; Michael Eisenstadt, 'Living with a Nuclear Iran?', *Survival*, vol. 41, no. 3, Autumn 1999, pp. 124–48; Geoffrey Kemp, Michael Eisenstadt, Farideh Farhi and Nasser Hadian, *Iran's Bomb: American and Iranian Perspectives* (Washington DC: The Nixon Center, March 2004); Geoffrey Kemp, *The U.S. and Iran: The Nuclear Dilemma: Next Steps* (Washington DC: The Nixon Center, 2004).

diplomatically and economically. A third option would be that they would replicate what Iran did, by acquiring a countervailing nuclear deterrent capacity of their own.

Despite the fact that most Gulf states are one-bomb targets, a direct nuclear attack is not perceived to be the only or even the greatest threat. They perceive the greatest threat to be an escalating spiral of conventional and nuclear arms race due to the additional political deterrence capability that comes with the acquisition of nuclear weapons even without their actual use. Further concerns of the neighbors comprise a preventive strike by the United States or Israel, as the Israeli strike at the Osirak/Tammuz reactor of Iraq in 1981 had set a precedent. Concerns in the region extend to the prospect of a nuclear accident at one of Iran's reactors. The Chernobyl nuclear accident of 1986 in Russia haunts the minds of the people in the Middle East. A nuclear Iran would also cause uncertainties as to whether nuclear weapons would embolden Iran in supporting conflicts in the region, or would it adopt a more unyielding coercive diplomacy.[13]

Proliferation Concerns

Proliferation concerns are underlined by the likelihood that the use of nuclear power would be introduced and expanded to other Middle Eastern countries. Leaving Iran aside, there are thirteen Middle Eastern countries that are reportedly interested in nuclear power today such as the following: Morocco, Algeria, Tunisia, Libya, Egypt, Jordan, Syria, Saudi Arabia, Yemen, Oman, Qatar, United Arab Emirates, and Bahrain. The nuclear drive of states in the region may be seen also as a reaction to Iran's high-profile nuclear bid.[14]

Egypt

Alongside the existence of Iran's nuclear endeavors, energy needs are currently raised as a fundamental reason to acquire nuclear power. Egypt is one of the countries that argue it needs nuclear power for economic reasons. On 29 October 2007, President Hosni Mubarak announced that Egypt, which lacks oil reserves, would build several nuclear power reactors to meet the rising energy demands.[15] A former senior nonproliferation official in the US State Department, namely Fitzpatrick who is currently a fellow at the International Institute for Strategic Studies in London maintains that "Egypt can absolutely make a legitimate case for nuclear energy". He argues "[Egypt's] reserves are dwindling, it needs the oil and gas for export, and it needs to diversify its energy resources".[16] However, Egyptian desire seems to originate also from security concerns: In a nationally televised speech, Egyptian President Mubarak announced that nuclear power was an "integral part of Egypt's national security" while also promising that the country would not seek nuclear weapons.[17]

Historically, Egypt's nuclear program appears to be a delicate balance of championing nuclear nonproliferation in the Middle East, developing civilian nuclear industry to address its economic and electricity needs, while at the same time seeking some guarantee of security against Israel. Egypt has had an on-again off-again nuclear program since the 1950s. Prior to 1981, there were several indicators of possible Egyptian interest in nuclear weapons. Egypt is reported to have requested nuclear arms in 1965 and 1967 from the Soviet Union and China, respectively. Both requests were turned down.[18]

> *Failing to secure assistance from China, Cairo approached India, presumably with hopes of gaining access to sensitive nuclear technology. Both countries signed a nuclear cooperation agreement in 1970, which anticipated joint research in the production of heavy water, nuclear fuels, and raw materials prospecting. Very little assistance was forthcoming from the Indians, and the Egyptians reportedly cooled to the idea of working with them after the United States entered into discussions with Egypt in 1974 on bilateral nuclear cooperation. Supplier restraint clearly played a role in frustrating Egypt's somewhat naive hopes of gaining easy access to sensitive, nuclear weapons related technology from the Soviet Union, China, and possibly, India.*[19]

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[13] Kaye, Dalia Dassa and Wehrey, Frederic M. , "A Nuclear Iran: The Reactions of Neighbours", *Survival*, Vol. 49, No. 2, pp. 111 – 128.
[14] Dan Murphy, "Middle East Racing to Nuclear Power", 12 November 2007, available at http://www.csmonitor.com/2007/1101/p01s03-wome.html?page=1.
[15] Jeffrey Fleishman, "Egypt to Build Nuclear Power Plants to Meet Energy Demands", *Los Angeles Times*, 30 October 2007. http://www.boston.com/news/world/middleeast/articles/2007/10/30.
[16] Dan Murphy, p. 2, http://www.csmonitor.com/2007/1101/p01s03-wome.html?page=2.
[17] "Egypt Announces Nuke Power Plants Plans - President Mubarak Says Nation Should Diversify Energy Sources; U.S. Willing To Help", CBS News, 29 October 2007, http://www.cbsnews.com/stories/2007/10/29/world/main3422950.shtml
[18] Barbara M. Gregory, "Egypt's Nuclear Program: Assessing Supplier-Based and Other Developmental Constraints", *Nonproliferation Review,* Fall 1995, pp.20-22. For the details of the Egyptian activities in the past, please also see Joseph S. Bermudez, Jr., "Ballistic Missile Development in Egypt," *Jane's Intelligence Review*, October 1992.
[19] Ibid.

Supplier restraints appear to have been successful in thwarting Egypt's efforts to obtain nuclear weapons and nuclear weapons-related technology in the 1960s and 1970s. However, such a restraint cannot be said to represent a major impediment to Egyptian nuclear development since Egypt joined the NPT as a non-nuclear weapon state in 1981.[20] In the early 1990s, Egypt headed the effort to establish a nuclear weapon-free zone in the region. It also led the Arab states in criticizing the NPT by highlighting Israel's refusal to accede to the Treaty as an obstacle to nonproliferation efforts in the region, most notably during the 1995 NPT Review and Extension Conference.[21]

During the preparation of the State evaluation update for Egypt in 2004, the IAEA identified several open source documents published by the Egyptian Atomic Energy Agency that indicated the possibility of unreported nuclear material, activities and facilities in Egypt.[22] In December 2004, Egypt acknowledged that between 1990 and 2003 it has conducted experiments, which had not previously been reported to the Agency, involving the irradiation of small amounts of uranium and thorium and their subsequent dissolution. Egypt also acknowledged that it had failed to include laboratories and some imported and domestically produced nuclear material in its initial declaration. Corrective actions were taken by Egypt, which has cooperated with the Agency and provided information and access to personnel and locations. Although Egypt's activities were not prohibited under the NPT, it was obligated to report them to the IAEA under their 1982 safeguards agreement. Their failure to do so raised questions as to the full extent of scientific activity that has taken place in Egyptian laboratories and what these facilities may be capable of doing. Question marks are proliferating especially when Egypt tries to oversee balance of power vis-à-vis Saudi Arabia and Israel: As one former Egyptian ambassador suggested,

> *…if Iran goes nuclear the Egyptian public will wonder why Egypt has abstained from this option and why has Egypt not invested in a nuclear option – why should Egypt be inferior to Israel and Iran? Similarly, the perception that Saudi Arabia may be headed toward nuclear acquisition could intensify Cairo's drive for a similar capability, under the belief that Egypt should be the rightful proprietor of the 'Arab bomb'.*[23]

Egypt has a 22-megawatt research reactor north of Cairo that was built by an Argentine company and completed in 1997. Although it does not have a remarkable nuclear power capacity yet, Egypt has an intention of acquiring it.

Saudi Arabia and the Gulf Countries

Officials from the Gulf Cooperation Council (GCC) - Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates - have already announced their interest in a possible shared nuclear program. Saudi foreign minister Prince Saud Al Faisal declared in January 2007 that any nuclear program would be developed "under strict controls and with peaceful intentions, to be an example for any country seeking to adopt the technology without any intention to join the nuclear arms race".[24] Until recently, the leaders of Saudi Arabia used to tell the world that they could foresee no need for the Kingdom to develop nuclear power. Today, Saudi Arabia is reportedly scrambling to hire atomic contractors, buy nuclear hardware and build support for a regional system of reactors.[25] Kaye and Wehrey point out that Saudi Arabia's reaction to Iranian nuclear drive is a leading concern among small Gulf countries.

> *More than any other spillover effect of a nuclear Iran, the Saudi reaction is likely to be the pivot around which inter-Arab debates revolve. When asked during an interview about the best way for the region to respond to a nuclear Iran, a senior Saudi diplomat stated, 'With another nuclear weapon'. Smaller Gulf countries fear that Riyadh may use the specter of a nuclear-armed Iran to reassert its dominance over Gulf and, more broadly, Sunni Arab affairs. Similarly, some Gulf actors fear that Washington could acquiesce in this strategy,*

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20 Ibid.

21 The Nuclear Threat Initiative, *Egypt Profile*, http://www.nti.org/e_research/profiles/Egypt/Nuclear/index.html

22 The comprehensive safeguards agreement between Egypt and the IAEA entered into force on 30 June 1982. IAEA Safeguards Statement 2004, p. 9, paragraph 38,

23 Dalia Dassa Kaye, p.114.

24 World Nuclear News (WNN), *Nuclear Energy An Option For Gulf States*, 11 April 2007, http://www.world-nuclear-news.org/nuclear-Policies/110407Nuclear_energy_an_option_for_Gulf_states.shtml.

25 http://www.nytimes.com/2007/04/15/world/middleeast/15sunnis.html?_r=1&oref=slogin; For Saudi Arabia's nuclear calculations, see Gawdat Bahgat, 'Nuclear Proliferation: The Case of Saudi Arabia', The Middle East Journal, vol. 60, no. 3, Summer 2006, pp. 421–43; Richard L. Russell, 'A Saudi Nuclear Option?', Survival, vol. 43, no. 2, Summer 2001, pp. 69–80; and Akaki Dvali, 'Will Saudi Arabia Acquire Nuclear Weapons?', Center for Nonproliferation Studies Issue Brief, Monterey Institute of International Studies, March 2004, http://www.nti.org/e_research/e3_40a.html.

endorsing Saudi Arabia as the new policeman of the Gulf to the detriment of the smaller states' bilateral relations with the United States. In interviews in Oman and the UAE, for example, officials cautioned that Washington should 'watch its friends first' (implying the Saudis), and that, in the view of one Omani official, US diplomatic efforts would be better spent curtailing Riyadh's revisionist border designs than focusing on Iran's 'legitimate right' to self-defense. 'Saudi Salafism', this official said, was 'the real nuclear bomb of the Arabian Peninsula'[26].

Jordan

Jordan, which is not an oil producer, has announced plans to build its first nuclear power plant by 2015. King Abdullah II of Jordan recently told the Israeli newspaper Haaretz that "the rules have changed" and that "everybody's going for nuclear programs." According to the Jordanian Energy Minister Khaled Sharida, the country would like to use nuclear energy for electricity as well as seawater desalination, and his staff was "working on a timetable for implementing the project."[27] During a regional tour to Saudi Arabia, Oman and Jordan, the IAEA Director-General Mohammed El Baradei reiterated the Agency's readiness to "help Jordan to benefit from nuclear energy for peaceful purposes" and said that an IAEA team would be dispatched next week to look into Jordan's plans.[28]

Syria

Syria had plans in the 1980s to build a reactor, but abandoned these plans after the Chernobyl accident soon followed by the collapse of the Soviet Union. With escalating oil and gas prices, nuclear power is now being considered in Syria again. The news and the reports of the September 6, 2007 Israeli raid on an alleged Syrian nuclear cache are as disturbing as they are incomplete. Different sources and experts suggested it was a highly successful Israeli raid on nuclear materials supplied to Syria by North Korea.[29] Through the end of October 2007, Israeli Prime Minister Ehud Olmert apologized to Turkish Prime Minister Recep Tayyip Erdogan for Israeli aircraft that violated Turkish airspace during a strike on an alleged nuclear facility in Syria.[30] Although verifying the extent of Syria's ostensible nuclear ambitions is difficult, the Israeli raid about which no state has made clear declarations, raised suspicions about Syrian nuclear intentions.

Turkey

Within the framework of the world-wide trend towards nuclear energy, Turkey also seeks civilian use. State authorities in Turkey underscore that Turkish energy policy is based upon five main pillars: natural gas, coal, hydroelectric power, renewable energy, and nuclear energy. On numerous occasions, Energy Minister Hilmi Güler underlined that, due to energy shortages, the need to diversify energy resources and the need to reduce the dependency on foreign energy supplies, nuclear energy is not only a choice but it is a "must" for Turkey. Turkey has adopted the necessary legislation to prepare the ground for construction of the first nuclear power plant. The legislation authorizes the Energy Ministry to choose the location and the contractor of a power plant that would host up to three reactors to generate 5,000 MW(e) of electricity to be completed by 2018. Energy Ministry repeatedly declared that alongside nuclear energy, Turkey receives high bids for hydroelectric power plants, and that Turkey took big steps in the geothermal energy because under its soil lies a big stove-like geothermal power.[31] Although wind energy bids did not prove fruitful, new legislation regarding liberalization and easing license processes provide hope for realizing the potential of renewable energy. Search for further coal mines are given new impetus since the Ministry sees it as under-researched. New search-projects started off also for petroleum and natural gas both in land and the sea.

Within the chaotic Middle Eastern political landscape, Turkey can be regarded as a security-producing country in that it works towards the goal of strengthening the nonproliferation regime.[32] Having acquired the

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[26] Dalia Dassa Kaye.

[27] William J. Broad and David E. Sanger, "With Eye on Iran, Rivals Also Want Nuclear Power", *New York Times-Middle East*, 15 April 2007. http://www.nytimes.com/2007/04/15/world/middleeast/15sunnis.html?_r=1&oref=slogin.

[28] Jamal Halaby (AP), "More Mideast States Eyeing Nuclear Power-On Mideast Visit, U.N. Nuclear Chief Finds Interest in Developing New Nuclear Programs", *ABC News*, 15 April 2007 http://abcnews.go.com/International/wireStory?id=3044014.

[29] "Israelis 'blew apart Syrian nuclear cache'-Secret raid on Korean shipment", From the Sunday Times, *Times Online*, 16 September 2007 http://www.timesonline.co.uk/tol/news/world/middle_east/article2461421.ece.

[30] Herb Keinon, "Olmert: Israel respects Turkey's sovereignty", *The Jerusalem Post*, 28 October, 2007 http://www.jpost.com/servlet/Satellite?cid=1192380672915&pagename=JPost%2FJPArticle%2FShowFull.

[31] "Bakan Guler: Nukleer Enerji Tercih Degil Mecburiyet", *Hurriyet*, 26 April, 2006 http://www.hurriyet.com.tr/sondakika/4320901.asp?sd=3.

[32] Turkey signed the NPT in 1969, and became a state party to NPT in 1980 after it ratified the treaty. Turkey is under the safeguards control of the IAEA since 1982. Turkey is also a state party to several non-proliferation treaties including the Chemical Weapons Convention by ratifying the Convention in 1997, and the Biological and Toxin Weapons Convention in 1974. Turkey also ratified the Additional Protocol (INFCIRC/540) of the IAEA Safeguards Document, which is implemented to enhance the safeguards inspections that is carried out in the NPT member-countries. Turkey has also become a state party to the Wassenaar Agreement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies.Turkey also joined the Nuclear Suppliers Groups, the Zangger Committee and the Australia Group.

status of being a responsible country and a candidate for the European Union, Turkey is not regarded as a proliferation concern Turkey has long been a state that quests peaceful nuclear energy for civil purposes.[33]

Conclusion: Prospects and Pitfalls of Nuclear Energy Development

By its nature, a nuclear power program involves issues associated with supply of nuclear material, ionizing radiation and the related security challenges of safety of nuclear materials against theft and sabotage. This is a major undertaking requiring careful planning, preparation and investment in a sustainable infrastructure. Such an infrastructure entails legal, regulatory, technological, human and industrial support to assure that the nuclear material is used exclusively for peaceful purposes and in a safe and secure manner. Provided that such an infrastructure is built by the states embarking upon nuclear energy programs, proliferation risks will be minimized to a considerable extent.

The International Atomic Energy Agency (IAEA) focuses on twelve criteria to be met for embarking on a nuclear power program. Most important ones among them are the regulatory criterion and the legislative aspects of the candidate country. Regulatory arrangements include the establishment of an effective, competent and independent regulatory body, which must carry out the control of the reactors through oversight of nuclear facilities and activities and by overseeing the necessary staff and their specific competencies. Meeting the regulatory aspects is crucial to activate non-proliferation measures. Radiation protection, nuclear safety of materials, environmental protection, conventional health and safety are the important regulatory aspects to be met. As for legislation needed to embark upon nuclear energy programs, the key elements are again nuclear safety, security, safeguards and liability for nuclear damage.[34]

If the fulfillment of the above-mentioned International Atomic Energy Agency (IAEA) criteria and Agency's timely and effective verification of states' activities are sustained, international community will have a good nonproliferation prospect, and will acquire additional reasons to press on harder for nuclear safety and security. In that regard, the ingredients and working-mechanism of the non-proliferation regime are important.

There are three main layers of the nuclear non-proliferation regime, which can also be seen as criteria to be 'responsible'.

First layer comprises the global norms established by the NPT, the safeguards of the IAEA, and the export control arrangements. There are other important treaties such as the Comprehensive Test Ban Treaty that aim to halt further proliferation of nuclear weapons via forbidding nuclear tests. Second layer of the nonproliferation regime is the Cooperative Threat Reduction program between the United States and Russia that was launched back in late 1991, which aimed at stopping the flow of nuclear materials and know-how from former Soviet landscape to the states of concern or to the unauthorized hands of terrorists groups. The third layer consists of a set of multinational arrangements put in place including the Global Threat Reduction Initiative (also known as the "Nunn-Lugar" Program), the Proliferation Security Initiative (PSI), and the UN Security Council Resolution 1540, designed to strengthen the national controls over fissile material. Commitment to the regulations of these treaties and measures count for being a responsible state as opposed to be seen as a state of concern.

States that regarded as 'responsible' are those which are legally obligated and recognized to be using nuclear power only for peaceful purposes.

Attribution of such recognition is determined by the level of commitment of states to the non-proliferation regime, the Non-proliferation Treaty being at its core. The commitment of states is measured by the degree of their cooperation during process of verification of their compliance.

A responsible state is one that behaves vigorously to maintain the non-proliferation regime. In addition, responsibility regarding non-proliferation is accredited with the character of state regimes. Since democratic countries are held to be more accountable for their own actions, international recognition of the democratic credentials of a country is essential.

Correspondingly, from the nonproliferation perspective, the democratic credentials of a country become important in tandem with the Nuclear Taboo.

The taboo against nuclear weapons and their usage, which has its evolution during the Cold War period, is defined as

> *…a de facto prohibition against the use of nuclear weapons. The taboo is not the behavior (of nonuse) itself but rather the normative belief about the behavior. "Norm," means a standard of right or wrong, a prescription or pro-*

[33] Mustafa Kibaroglu, "Turkey's Quest for Peaceful Nuclear Power", *The Nonproliferation Review,* Spring-Summer 1997, pp. 33-44.
[34] The *Handbook on Nuclear Law* of the IAEA, www-pub.iaea.org/MTCD/publications/PDF/Pub1160_web.pdf.

> *scription for behavior "for a given identity." Taboo is a particularly forceful kind of normative prohibition that is concerned with the protection of individuals and societies from behavior that is denied or perceived to be dangerous. It typically refers to something that is not done, not said, or not touched.*[35]

As such, there has been a nuclear taboo in the world. Although it is not robust since there are states with nuclear arsenals and world-wide disarmament is yet to come, and there are those that aspire to acquire nuclear weapons, it has proved psychologically and normatively helpful to deny the use and spread of nuclear weapons and their delivery means. As Tannenwald maintains,

> *The taboo apparently holds even in Israel, which, although democratic, has long faced an acute security situation where its survival has often been perceived to be at stake. Avner Cohen, the path breaking historian of the Israeli nuclear arsenal, argues that Israeli leaders were reluctant to consider use of nuclear weapons in wars against Arab states in 1967 and 1973 not only for prudential and organizational reasons but also because of normative factors. They viewed nuclear weapons as usable only in the last resort. Their reluctance was partly grounded in what Cohen calls a "double sense of prohibition": the evolving global normative prohibition against the use of nuclear weapons and Israel's own moral code and culture of nuclear opacity*[36]*.*

More examples of the taboo can be given to explain the success of it throughout the second half of the twentieth-century. However, past achievements should not be seen as reasons for complacency because there are also pitfalls: Factors that may weaken the taboo are succinctly put by Tannenwald: weakening of the NPT by the proliferation of nuclear weapons to new states; nuclear states' continued declaration and emphasis given to nuclear weapons as important instruments of national security or giving nuclear weapons new war-fighting roles; states relying on nuclear threats and deployments as instruments of policy; development of mini-nukes that blur the distinction between conventional and nuclear weapons, reducing the threshold of nuclear usage. Furthermore, the taboo will be severely damaged -if not annihilated- by any use of nuclear weapons.[37] Last, but not least, the prospects for the normative avoidance of nuclear weapons proliferation seem dim when confronted by radicalism. Radical regimes such as North Korea and Iran that are isolated from the international community to certain extent, and non-state violence by terrorists exacerbate the problem of freezing horizontal and vertical proliferation. That makes keeping the nuclear taboo strong difficult.

Compounding problems of terrorism in the Middle East and the alleged nuclear weapon aspirations of some regional states are against the nuclear taboo and damage the nonproliferation efforts. In confronting such problems, strengthening the nuclear nonproliferation regime remains vital. To this end, states must hedge against the nonproliferation pitfalls by increasing international diplomacy both bilaterally and multilaterally. International institutions such as the UN and the IAEA must be reinforced by states that aim to act responsibly for a more secure world. Acting responsibly includes adhering to the enhanced verification mechanism of the IAEA by states that so far opposed to additional safeguard measures and on-site inspections. Nuclear energy and technology is an interface between economic development and international security, and that is why regional and world-wide consensual formulas to be reached in the status of such an interface are a key to international peace and security.

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[35] Nina Tannenwald, "Stigmatizing the Bomb-Origins of the Nuclear Taboo", *International Security,* Vol. 29, No. 4, Spring 2005, p.8.
[36] Ibid.
[37] Ibid.