

Online Publication Date: 10 March, 2012

Publisher: Asian Economic and Social Society

Asian Economic and Financial Review



Nuclear Energy in Turkey, Do We Need It Indeed?

Serdar Erdurmaz (Assistant Professor in Gazikent University and General Coordinator in TURKSAM International Relations and Strategic Analysis Center in Ankara/Turkey)

Citation: Serdar Erdurmaz (2012): “ Nuclear Energy in Turkey, Do We Need It Indeed?” Asian Economic and Financial Review Vol.2, No.1, pp.233-243.



Author (s)

Serdar Erdurmaz

Assistant Professor in Gazikent University and General Coordinator in TURKSAM International Relations and Strategic Analysis Center in Ankara/Turkey.

E-mail:serdarderurmaz@gmail.com

Nuclear Energy in Turkey, Do We Need It Indeed?

Abstract

Two main events happened in 2007's forced Turkey to reconsider of nuclear power plant building which has been postponed in several occasions. On the one hand Turkey aware that energy dependency to another states causing the negative effects to its developing economy, on the other hand she should take into consideration the threat coming by the Iran's ongoing nuclear program. If Iran succeeds to produce a nuclear weapon, for Turkey the threat is indirect, and more tied to concerns about the balance of power and loss of relative status and influence in the region. With regard to the energy resources dependency to the other states, approximately 70 percent of Turkey's domestic oil and gas are bought from abroad, and Russia and Iran are its top suppliers. Our country's electricity demand tends to increase by a rapid average of 7.5%. Having been realized as 191.5 TWh in 2007, our electricity generation is expected by 2020 to reach 406 TWh with an annual increase of 5.96%. In order to meet the increasing demand for electricity, we need to at least double our existing installed power by 2020. To meet the need of Turkey for electricity in the near future, the projections indicate that it will be necessary to employ nuclear power for electricity production Construction of nuclear power plants is in progress. It seems determining the main target of Turkey's desire to deal with the nuclear technology is very important for USA and the western states. This study aims to point out that which main factor is dominant for Turkey's decision dealing with the nuclear technology, and foreseen Russian agreement.

Key Words: Energy, Nuclear Energy, Nuclear Energy in Turkey, Energy Polices in Turkey.

It was only January 2008 that Turkey became aware, once again, of how vulnerable her growing economy is (Kılıç, 2008). For an entire week, Iran reduced its contractually agreed-upon gas deliveries to Turkey, eventually cancelling them altogether. Iranian President Mahmoud Ahmadinejad imposed a ban on exports of natural gas "for as long as we are unable to satisfy our internal demand," a spokesman of the Iranian gas company explained. Energy prices in Istanbul promptly climbed to new record highs. By the end of January, the monthly gas bill for a three-room apartment had jumped to at least €150 (\$233),

about a third of the average Turkish family's monthly income (Stainvorth Daniel, 2008). This situation was an alert one again, for Turkey to asses how vulnerable it is in terms of energy dependency to one another country.

In the mean time, the new threat perception that arose with the nuclear Iran came up with the question whether Turkey has an urge to have its own nuclear weapon. Iran's nuclear program remains one of the most serious threats to Middle East countries, despite the December 2007 US National Intelligence Estimate (NIE) conclusion that "Iran abandoned its nuclear

program in 2003". Iran continues to conduct work that contributes to nuclear weapons development. According to the intelligence estimate, Iran now possesses the scientific, technical, and industrial capability to eventually produce nuclear weapon, if it decides to do so (Senate & Biden, February 2008). It is believed that Iranian acquisition of a nuclear weapon or a nuclear weapon capability would dramatically shift the balance of power among Iran and its three most powerful neighbors – Saudi Arabia, Egypt and Turkey. And it is believed that the possibility exists that Turkey would respond to Iranian nuclear weapons by developing nuclear weapons as well (Senate & Biden, February 2008, p. 40).

Two events mentioned above happened in the same period of times, in lately 2000's, pave the way that Turkey has taken the initiatives to the establishment of nuclear power plants in agenda again. Turkey just like most Middle Eastern states has at one time or another considered nuclear energy, but almost she never plans to put forward has ever come to fruition. Beginning in 1968, Turkey embarked three times on nuclear energy development plans, but financial difficulties shelved each of the projects. In February 2006, Turkey revived its long-deferred quest for nuclear energy, announcing plans to build several nuclear power plants (Mark, 20 May 2008, p.10). Turkey has recently concluded its first official bid with the Russian government and that a second one is under way with a South Korean firm.

This study aims to clarify Turkish ambition to have nuclear technology either to compensate its energy dependency to other states or to take a measure in kind against potential nuclear threat of Iran.

Turkey's energy dependency on other states.

Turkey's established energy supply capacity is 41.802,6 MW as of the end of 2008 and is dominated by hydro, natural gas and coal resources. According to the 2020 projections, the capacity needs to be increased by 50,000 MW, which requires a \$4 billion to \$5 billion USD annual investment (Turkey's Energy

Industry, Istanbul Chamber of Commerce, 2008).

The Turkey's current energy needs amount is 88m tons of crude oil equivalents, with 72 per cent of that amount currently being met by foreign suppliers. Turkey must invest approximately \$128 billion in energy infrastructure by 2020 to keep pace with rising demand and to move from dependence on foreign oil and natural gas (Erdoğan, 2007). In parallel with the developing economy, Turkey's electricity demand tends to increase by a rapid average of 7.5%. Having been realized as 191.5 TWh (tera- watt hour per year) in 2007, the electricity generation is expected by 2020 to reach 499 TWh with an annual increase of around 7.7 % according to the higher demand scenario, or 406 TWh with an annual increase of 5.96% according to the lower demand scenario (Ministry of Energy and Natural Resources, 2010). As of 2008, our installed power is 41.987 MW, 33% of the total installed capacity is based on hydraulic resources, 32% on natural gas, 24% on coal and 11% on other resources (EPDK, 2008 Annual Report, 2009). And in 2008, our electricity consumption is 198.4 billion kWh which comes three main sources: natural gas by 48.17%, coal by 28.98%, and hydroelectric by 16.77%. Recent draughts have restricted the expected contribution of hydroelectric power plants.

Analysts say Turkey's heavy reliance on imported fossil fuels, specifically natural gas, poses the biggest long-term challenge for leaders in Ankara. She possesses nearly no recoverable oil or gas reserves of its own, according to the U.S. Energy Information Administration. That means Turkey is dependent on foreign suppliers to meet a growing demand for energy resources. Government is trying to diversify its energy sources because of its energy dependency rate is very high. More than 70 percent of Turkey's primary energy sources come from abroad especially oil and natural gas. Russia is the biggest supplier of natural gas followed by Iran. Considering the reliability of those countries arguable, she is trying to find new suppliers to diversify its gas supply and in order to achieve that, she has signed and signing long-term contracts with many countries such as Nigeria,

Egypt, Azerbaijan, and Turkmenistan. These efforts are to decrease dependency on main supplier Russia as well as to become a strong player in natural gas and oil trade by selling additional resources to neighboring countries through pipelines. So far Turkey has established a state policy to become an energy corridor between energy rich Middle East / Caspian region and Europe (Gürbüz, 2007).

According to 2006 data, more than 40 percent (\$12.5 billion USD) of total Turkey's crude oil and fuel imports come from the Russian Federation; \$6 billion USD for oil/oil products; and \$5.5 billion USD for natural gas. The Turkish National Committee says Turkey spent \$35 billion in oil and gas imports in 2007, an 80 percent increase from 2005. Nearly 70 percent of Turkey's domestic oil and gas are bought from abroad, and Russia and Iran are its top

suppliers. In 2007 Moscow supplied 23.2 billion cubic meters of gas to Turkey, 64 percent of the country's imports of gas (Bruno Greg, 2008).

It can be seen from the table below, the biggest share in crude oil import belongs to Russia and Iran, the share of Iran, Russia and Saudi Arabia in total import is approximately 83% (EPDK, 2008 Annual Report, 2009). Iran is also one of the major sources for imports of oil/oil products, with \$3.7 billion USD in 2006. The other source of oil/oil products imports is Saudi Arabia, with \$1.7 billion USD. In 2007, approximately 40 percent of crude oil, 60 percent of fuel oil and 60 percent of natural gas came from the Russian Federation. Crude petroleum amounts of refining undertaking license holders in 2006, 2007, 2008 according to countries are shown below;

Country	Amount (1.000 tones)			Share (%)		
	2006	2007	2008	2006	2007	2008
Iran	9.121	8.356	7.800	38	36	36
Russia	6.871	9.365	7.137	29	40	33
Saudi Arabia	3.354	3.556	3.073	14	15	14
Iraq	552	865	1.874	2	4	9
Kazakhstan	-	-	636	-	-	3
Syria	-	244	515	-	1	2
Italy	-	447	447	-	2	2
England	-	-	184	-	-	1
Azerbaijan	-	-	77	-	-	1
Libya	4.165	612	-	17	3	-
Total	24.063	23.445	21.743	100	100	100

After Russia, Iran serves as the second leading natural gas supplier to Turkey. Iran, which supplies Turkey with 17 percent of its gas imports, presents another set of political challenges. Washington has criticized Ankara's cooperation with Tehran on gas and power-generation projects. Honoring international sanctions against Iran presents difficulties for

Turkey due to the significant economic relationship between the two countries as well as Turkey's need for Iranian oil and natural gas. This Turkish dependence on Iranian gas will most likely continue to grow. Turkey views Russia as an unreliable energy supplier and believes it will need to increase its energy imports from Iran in order to decrease its energy dependence on Russia. As part of this

effort, Turkey concluded a \$23 billion natural gas deal with Iran in 1996 and recently agreed two additional energy deals with Iran. These deals will allow the Turkish companies to develop oil and natural gas in Iran and permit Turkmenistan to pipe gas through Iran and Turkey to Europe (Larrabee, Jul./Aug. 2007). Turkish-Iranian Energy Cooperation in the Shadow of US Sanctions on Iran continues and in July 2010, a deal was concluded with a Turkish private energy company, worth \$1.3 billion to build a pipeline from Iran to Turkey (Saban, July 27, 2010).

Against this background, it becomes clear that unless Turkey finds another way to produce energy domestically such as installing nuclear power plants as an alternative primary source of energy, it will resort increasingly to foreign sources of energy such as imported oil and natural gas (Kibaroglu spring-summer 1997,40). And this will lead her deeply depending on either Russia or Iran.

Turkish concerns against the threat of Iranian nuclear program.

In the regional security concerns arisen from the Iranian nuclear threat, the IISS report, 20 May 2008, "Nuclear Programs in the Middle East: In the Shadow of Iran", almost every country in the Middle East has announced nuclear energy plans in the space of less than a year, in 2006-2007, in response to Iran's dramatic progress towards atomic power (Mark, 20 May 2008). Like most Arab countries, Turkey has announced its intention to restart its civilian nuclear program. If Iran succeeds to produce a nuclear weapon, there is a reason for concern that it could in time prompt a regional cascade of proliferation among Iran's neighbors. For States such as Turkey and Egypt, the threat is indirect, and more tied to concerns about the balance of power and loss of relative status and influence in the region, the dossier by leading defense think tank pointed out (Mark, 20 May 2008, s. 9). Turkey is in no doubt that Iranian society supports the nuclear program and one Turkish leader has indicated his belief that a nuclear weapon is the aim (International Crises Group 7, April 2010). According to the report of IISS; Turkey, in many respects, should

be among the regional countries least affected by Iran's nuclear activities.

US Senate Foreign Relations Committee undertook an examination of the factors that could motivate states of the Middle East to acquire nuclear weapons. Between July and December 2007, committee staff chaired by Joseph Biden conducted research and interviewed hundreds of individuals in Middle East countries and wrote a report (Senate & Biden, February 2008) which would be the main source to the IISS dossier (Mark 20 May 2008). In this Committee report, it is pointed out that regarding Iran's nuclear program, Ankara believes a nuclear-armed Iran a "threat," but regional actors or leaders do not view a nuclear-armed Iran as an existential or military threat. All Turks interviewed believe that Turkey would not be the target of a nuclear Iran. By this, the Turks mean they do not envision an Iranian nuclear or conventional military attack based on an Iranian possession of nuclear weapons.

After the December 2007 US National Intelligence Estimate's (NIE) key findings as the evidence that Iranian threat is not imminent, Turkey does not even see the Iranian nuclear program as its leading foreign policy concern, but instead views it as a distant and somewhat abstract threat.

Turkey's perception of the reliability of the NATO and U.S. security guarantees will play a decisive role in Turkey's response to an Iranian acquisition of nuclear weapons. A long-standing member of NATO, Turkey is formally protected by the collective security guarantee laid out in Article V of the North Atlantic Treaty. The country's ties to the West are further strengthened – at least in theory – by its ongoing accession talks with the European Union (EU). Should these talks be successful, Turkey would receive an immense boost to its standing and prestige in the region.

Both these factors make it less likely that Turkey would respond to a nuclear capable Iran by seeking to acquire nuclear weapons itself. However, the Turks have a lingering skepticism about NATO guarantees, which they did not feel were forthcoming in the First and Second

Gulf Wars. A hardening EU mood against Turkish accession is adding to a growing alienation from the West in Turkey, and could give the country more reason to consider its own deterrent (Mark, 20 May 2008, s.61).

Another study is a quantitative analysis conducted by the “Fondation pour la recherche stratégique” in 2008, which attempts to assess the likelihood of each Middle East country to go nuclear, pointed out Turkey with (+4), ranks fairly low, contrary to many predictions (Tetraï Bruno, Center for Contemporary Conflict 2009). This analysis is meaningful showing that Turkey’s calm position against nuclear Iran threat.

Should Iran develop nuclear weapons and Turkey decided that it had to follow suit, it would face significant obstacles in the pursuit of nuclear capabilities. It not only would jeopardize relations with the United States, but it would also have a negative impact on its NATO links. Moreover, such a decision would almost certainly deal a fatal blow to Turkey’s aspirations to join the European Union. Turkey would face a hard choice: It can either rely on the EU and NATO nuclear umbrella or go for its own nuclear weapons (Henri 2009). The economic and security interest of Turkey, Saudi Arabia and Egypt, unlike those of Iran, are tied to the USA and broader global economy, and developing nuclear weapons would put those interests at risk (Ray 2010).

Turkey does not at present have the ability to produce significant quantities of fissile material usable in a nuclear-weapons program, and there is no known evidence that Turkey’s official research institutes or universities have conducted any research directly related to weaponisation. Turkey may have the technical capability to manufacture many of the components for a gas-centrifuge uranium-enrichment program; although it has given no hint that it has any intention of doing so.

As a result that Iran nuclear posture is not a force full factor for Turkey in its desire to have nuclear energy power. One impact of Iran’s nuclear program has been to catalyze Turkey’s nuclear energy development efforts. Turkey is moving aggressively toward the development of

domestic nuclear power generation, but nuclear power plants will probably not come on line before 2015. Much of Turkey’s move toward nuclear energy appears to be driven by legitimate energy needs, but Turkey also seeks to match Iran’s nuclear progress and to ensure future flexibility that will allow adaptation to Iran’s actions. As a result of these developments, if Iran crosses the nuclear threshold in 5 to 10 years, Turkey will already have a significantly stronger technological foundation should it choose to pursue a nuclear weapons capability (Senate & Biden, February 2008, s.36).

Energy Policy and Nuclear Infrastructures in Turkey:

Faced with rapid electricity demand growth, Turkey considers to include nuclear power within her energy mix because it is an important carbon-free source of power that can potentially make a significant contribution not only to her future electricity supply but also to efforts to strengthen her security of supply, which is the focus of Council Directive 2005/89/EC (Directive 2005/89/EC of the European Parliament and of the Council, 2006) concerning measures to safeguard security of electricity supply.

In Turkey’s long-term planning work, she foresees to achieve the following target on nuclear energy up to 2023, which is the 100th anniversary of our Republic: To be able to make complete use of our potential of indigenous coal and hydraulic resources, To make maximum use of renewable resources, To incorporate nuclear energy into electricity generation within the period until 2020 (Ministry of Energy and Natural Resources, 2010). In comply with this target; in May 2009 nuclear energy headline took place in Electricity Energy Market and Supply Security Strategy Paper as follows, “8.3. Nuclear Energy Activities initiated for use of nuclear power plants in electricity generation will continue. Our target is to increase the share of these power plants in electricity energy up to at least 5% by the year 2020 and to increase it even further in the longer run (Electricity Energy

Market And Supply Security Strategy Paper, 2009).

In this way, Turkey's energy sector, which hitherto stood on three main pillars (natural gas, coal and hydraulic), is being redesigned in a sound, five-pillar structure to additionally include renewable resources and nuclear energy. The expected ultimate outcome of these endeavors is to make use of efficient energy policies to reduce external dependency in energy and minimize the environmental footprint of energy generation activities.

By acquiring nuclear energy, the country hopes to make itself independent of its main energy suppliers, Russia and Iran. Authorities in Ankara have always considered Turkey's acute dependency on foreign oil and natural gas as a "high security risk."

With regard to nuclear infra- and superstructure, TAEC/TAEA and TEK/TEAS have gone through a learning process over the past three decades during the deliberations for nuclear technology transfer. Likewise, Turkish scientists, technicians, and administrators have accumulated a good deal of knowledge and experience in the nuclear field, and conducted studies, among other issues, on recovery of uranium from various districts of the country (Kibaroglu spring-summer 1997, s.41).

Turkey is a signatory to the NPT and signed on to the Additional Protocol in 2006. Turkey has one research and two small experimental nuclear facilities. The main such installation is on the outskirts of Istanbul at Küçükçekmece. Built in 1962 and upgraded subsequently to a 5 megawatt research reactor, it provides isotopes and other services to the medical industry. The other two experimental facilities are situated near Ankara are straightforward research laboratories (Kibaroglu spring-summer 1997). Turkey is active in a wide range of nuclear-related civilian fields, and uses radioisotopes in medical, agricultural and industrial applications (Mark 20 May 2008).

However, Turkey has no nuclear power plants, despite studies that were started as early as 1965 to explore building one such plant

(Erdoğan, Nuclear power in open energy markets: A case study of Turkey, 2007). Turkey has in the past expressed interest in developing a nuclear industry, but despite discussions with a variety of countries to forge a way to collaborate, it has never managed to translate these efforts into concrete action. In 2006, the Turkish Prime Minister announced that Turkey would soon start building three nuclear plants that would become fully operational by 2015 (Erdoğan, Nuclear power in open energy markets: A case study of Turkey, 2007). However, these hopes are unlikely to materialize because of domestic opposition; the costs are high and there seems to be a lack of interest on the part of would-be investors. In September 2008, the government received only one bid for its Akkuyu tender on the Mediterranean coast. The one bid, from a Russian Atomstroyexport company undermined the very notion of reducing Ankara's energy dependence on Russia from which it purchases most of its gas (Gareth 28 September, 2008). The government subsequently decided to postpone its decision to whether to cancel the tender until after the March 2009 local elections. The government is nonetheless determined to go ahead with nuclear energy because, as Prime Minister has argued, this is vital for Turkey's industrial competitiveness. Ankara took a modest step in that direction in August 2009. As part of a broader set of agreements on energy projects, Turkey and Russia agreed to reopen talks on civilian nuclear cooperation.

Meanwhile, The U.S.-Turkey nuclear agreement was signed on July 26, 2000, and approved by the Turkish parliament on January 14, 2005 (Al-Marashi, 2006). The underlying purpose of the agreement is to authorize and set the conditions for transfers to Turkey of U.S. civil nuclear technology, equipment, components, and material, including nuclear power reactors and their low enriched uranium fuel (Williams, 2008/2009). On June 2, 2008 in Ankara the United States of America and the Republic of Turkey brought into force the U.S.-Turkey Agreement for Peaceful Nuclear Cooperation (the "123 Agreement") by an exchange of diplomatic notes (Bureau of European and Eurasian Affairs, 2008) (Civilian Nuclear Energy Cooperation Agreement

between the Turkish Republic and United States of America, 2006). Its reemergence may be due to American concerns that Turkey, pressured by growing domestic energy demand, will increasingly be tempted to seek Iranian gas sources (Henri 2009).

After it was announced that Atomstroyexport provided the sole bid for the project, the tender received an overwhelmingly negative response from Turkish energy experts. Some experts have noted that the sole bid for the tender eliminates pricing flexibility, forcing Turkey to accept whatever offer price Atomstroyexport demands. Other experts have expressed concern that the proposed project would make Turkey's nuclear project heavily dependent on Russia because the plant would be fueled by a type of uranium that only Russia produces. As a result, The Turkish Atomic Energy Agency (TAEK) approved the technical aspects of the consortium's bid and sent the bid for the Cabinet's evaluation. The Cabinet sent its opinion to TETAŞ, which announced that it canceled the tender on Nov. 20.

After participating to the Third World Energy Summit in Abu Dhabi, the United Arab Emirates, in January and announced that the ministry decided to launch another tender in March 2010. The companies from USA, South Korea, Japan, China and Canada showed interests for the future tender. Russian Atomstroyexport, the winner of the previous tender was closely monitoring the developments on the tender issue.

In January 2010, during Turkish Prime Minister Visit to Moscow, surprisingly Russia and Turkey signed a joint statement regarding plans to build a nuclear power plant on Turkish soil, bypassing the expected tenders. It was declared that nuclear cooperation with Russia would proceed through "direct interstate agreements". Both leaders highlighted the importance of energy ties and said their countries enjoy "an exemplary cooperation" in the sector. Russian President Medvedev said he hoped this visit will promote "stronger ties between two countries," which he said were important for "addressing complicated regional problems." Following that, in May 2010, Russian President

Dimitry Medvedev visited Istanbul to sign the agreements to build a nuclear power plant and co-chair the first meeting of the Turkey-Russia Cooperation Council. And now, the negotiations between Turkey and Russia have been going on.

This would be an almost intolerable detail for Turkish officials to accept: one of the major reasons for Turkey's interest in nuclear energy has been to reduce its dependence on Russia for energy supplies. As a result, either such a direct interstate agreement or the award of the contract in 2008, for the nuclear power plant at Akkuyu to a Russian-led consortium seems to defeat the main goal of the original tender. Nuclear power is seen as a device by which the technologically powerful can control and exploit those who lack such power. For example, Russian's proposal made for nuclear power stations to meet Turkey's needs is widely seen as motivated by a desire to exploit his country's nuclear expertise, and in so doing, to extend its international influence. That dependency also gives the Russians considerable political and economic leverage over Ankara and increases Moscow's influence over Europe's energy future through greater control of existing and proposed pipelines that provide European countries with more than 40 percent of their energy needs.

The Russian government has two good reasons to guarantee long-term loans to build a Russian nuclear power plant in Turkey; First, it is supporting Russian industry in export of Russian nuclear technology. Second, those reactors will run on enriched nuclear fuel exported from Russia. According to the agreement between Turkey and Russia for the cooperation in the use of nuclear energy, transfer of technology will be made by Russia. But, furthermore, it is said that the Russian type nuclear reactor uses the fuel rods which have a special design. Another word, Russia would be the only resource to buy such nuclear rods and Turkey should merely depend on Russian supply. However, Check Republic which has the same type of reactor was able to solve this dependency by making private agreement with the U.S. Westinghouse Company. Recently, Ukraine started to supply fuel for their VVER

reactors from the same source. But probably the price is too high. On the other hand, another question is whether radioactive waste can be disposed of safely by Russia. In nuclear project bill passed by parliament, in February 2007, it is stated that the collection and management of a plant's nuclear waste would be the responsibility of its operator, but that the state would bear the eventual cost of plant dismantlement. In comply with this bill; Russia is prepared to take back the spent product from fuel it supplies. Under current legislation, Russia is also able to reprocess and temporarily store foreign-origin spent fuel, though not to provide long-term disposal of the waste (Mark 20 May 2008, s.66). It seems this brings the relative dependency to Russia. But it seems such cases are valid for all other companies that awarded the subject tender.

At present, the small quantities of low-level radioactive waste produced by Turkish nuclear facilities can be stored at the Radioactive Waste Processing and Storage Facility at CNAEM. It is planned in future that Turkey will be able to deal safely with spent fuel waste from the planned reactors. In this regard, Turkey anticipates that spent fuel will be stored at reactor sites for ten years, then transferred to provisional storage facilities for up to 30 years, during which time he expects long-term waste-management facilities to be brought online (Mark 20 May 2008).

Seen from this perspective, other countries choice rather than Russia might be an attempt to counter the criticism that Ankara has deepened its energy dependence in recent years. While Turkey was already dependent on Russian gas and oil for much of its domestic consumption, by awarding the first nuclear power plant to Moscow, the government exacerbated this vulnerability. In March 2010, a deal signed in Istanbul will give Korea Electric Power Corporation (Kepco) five months to prepare a bid to build a four-reactor nuclear power plant at Sinop. Concerning the interest expressed by other international players such as China and Japan in nuclear power plants, Turkey said she would be open to offers from other countries and companies and will evaluate them on the basis of competitiveness in terms of financing and construction terms.

Conclusions

Two events happened in the same period of times, in lately 2000's, forcing Turkey to take initiatives to the establishment of nuclear power plants in agenda again. The first one, Iran's nuclear program seems one of the most serious threats to Middle East countries and Turkey either. And the latter, Turkey's deepened dependency to Russia and Iran in terms of natural gas and oil energy resources.

Almost every country in the Middle East has announced nuclear energy plans in the space of less than a year, in 2006-2007, in response to Iran's dramatic progress towards atomic power. Like most Arab countries, Turkey has announced its intention to restart its civilian nuclear program. For states such as Turkey and Egypt, the threat is indirect, and more tied to concerns about the balance of power and loss of relative status and influence in the region. There is, however, a division between the government and the security establishment regarding Iranian intentions. The government and most of the Turkish public do not perceive the Iranian nuclear program as a serious threat to Turkey (Henri 2009).

Turkey's perception of the reliability of the NATO and U.S. security guarantees and its ongoing accession talks with the European Union (EU) will play a decisive role in Turkey's response to an Iranian acquisition of nuclear weapons. The Turks have a lingering skepticism about NATO guarantees, which they did not feel were forthcoming in the First and Second Gulf Wars. A hardening EU mood against Turkish accession is adding to a growing alienation from the West in Turkey, and could give the country more reason to consider its own deterrent.

A quantitative analysis conducted by the "Fondation pour la recherche stratégique" in 2008, which attempts to assess the likelihood of each Middle East country to go nuclear, shows Turkey with (+4), ranks fairly low, contrary to many predictions. This shows Turkey's intention to use the nuclear energy technology not due to the Iranian nuclear threat but for energy needs.

As a result that Iran nuclear posture is not a forceful factor for Turkey in its desire to have nuclear energy power. One impact of Iran's nuclear program has been to catalyze Turkey's nuclear energy development efforts. Turkey is moving aggressively toward the development of domestic nuclear power generation, but nuclear power plants will probably not come on line before 2015. Much of Turkey's move toward nuclear energy appears to be driven by legitimate energy needs, but Turkey also seeks to match Iran's nuclear progress and to ensure future flexibility that will allow adaptation to Iran's actions. As a result of these developments, if Iran crosses the nuclear threshold in 5 to 10 years, Turkey will already have a significantly stronger technological foundation should it choose to pursue a nuclear weapons capability.

In terms of the energy resources, Turkey is trying to diversify its energy sources because of its energy dependency rate is very high. More than 70 percent of Turkey's primary energy sources come from abroad especially regarding oil and natural gas. Turkey's own gas and oil resources are limited. Russia is the biggest supplier of natural gas followed by Iran.

Turkey strongly believes in by acquiring nuclear energy; make itself independent of its main energy suppliers, Russia and Iran. Authorities in Ankara have always considered Turkey's acute dependency on foreign oil and natural gas as a "high security risk."

In February 2010, Russia and Turkey signed a joint statement regarding plans to build a nuclear power plant on Turkish soil, bypassing the expected tenders. Making an agreement with Russia brings again a risk to far more deepened dependency to Russia. Because of that Nuclear power is seen as a device by which the technologically powerful can control and exploit those who lack such power. For example, Russian's proposal made for nuclear power stations to meet Turkey's needs is widely seen as motivated by a desire to exploit his country's nuclear expertise, and in so doing, to extend its international influence. That dependency also gives the Russians considerable political and economic leverage

over Ankara and increases Moscow's influence over Europe's energy future through greater control of existing and proposed pipelines that provide European countries with more than 40 percent of their energy needs.

According to the agreement between Turkey and Russia for the cooperation in the use of nuclear energy, even transfer of technology will be made by Russia. This would be an almost intolerable detail for Turkish officials to accept: one of the major reasons for Turkey's interest in nuclear energy has been to reduce its dependence on Russia and Iran for energy supplies.

Seen from this perspective, the South Korean choice to prepare a bid to build a four-reactor nuclear power plant at Sinop might be an attempt to counter the criticism that Ankara has deepened its energy dependence on Russia in recent years. Concerning the interest expressed by other international players such as China and Japan in nuclear power plants, Turkey said she would be open to offers from other countries and companies and will evaluate them on the basis of competitiveness in terms of financing and construction terms.

According to the assessments above we strongly claim that Turkey's desire to have nuclear power plant arisen from its basic requirements to make itself free from energy needs dependency for second states. But this capability also fulfils the need of infrastructures to develop required instruments in kind. And Turkey will already have a significantly stronger technological foundation should it choose to pursue a nuclear weapons capability.

Resources

Agreement Between the The United States of America Concerning and The Government of the Republic of Turkey for Co-operation in the Peaceful Uses of Nuclear Energy. (2009, July 09).

http://www.taek.gov.tr/attachments/157_usa_text_eng.pdf.

Agreement between the Government of the Republic of Turkey and the Government of Russian Federation, 2009

- Al-Marashi, İ. (2006, November). *U.S. – TURKEY NUCLEAR COOPERATION AGREEMENT STIRS DEBATE IN TURKEY, SETS BENCHMARKS FOR ANTICIPATED U.S. – INDIA NUCLEAR ACCORD*. February 2010, http://www.wmdinsights.com/I10/I10_ME5_U_STurkeyNuclear.htm.
- Bureau of European and Eurasian Affairs, U. (2008).** *Fact Sheet, U.S.-Turkey Agreement for Peaceful Nuclear Cooperation*, . Civilian Nuclear Energy Cooperation Agreement between the Turkish Republic and United States of America. (2006, July 9). *Turkish Official Gazette, Issue 26223* . Turkey: Government of Turkey.
- Directive 2005/89/EC of the European Parliament and of the Council.* (2006, January 18). http://www.energy.eu/directives/l_03320060204en00220027.pdf.
- Electricity Energy Market And Supply Security Strategy Paper. (2009, May 21). http://www.enerji.gov.tr/yayinlar_raporlar_EN/Arz_Guvenligi_Strateji_Belgesi_EN.pdf.
- EPDK, *2008 Annual Report*. (2009). Nisan 08, 2010 tarihinde <http://www.epdk.gov.tr/english/default.asp>.
- Erdoğan, E. (2007)** “Nuclear power in open energy markets: A case study of Turkey” *Energy Policy* Vol.35, No.5, pp.3061-3073.
- Gareth, Jenkins. «More Speed, Less Haste Results in Turkish Nuclear Tender Fiasco.» *Eurasian Daily Monitor (Jamestown Foundation)*, 28 September, 2008.
- Gürbüz, Ö. (2007, December). *Critical Assessment of Europe’s Energy Market – Turkey*.
- Henri, Barkey. «Turkey’s Perspectives On Nuclear Weapons And Disarmament, Unblocking the road to Zero.» *Stimson, Nuclear Security Series, Vol IV*, 2009.
- International Crises Group. (7, April 2010). “*Turkey And The Middle East: Ambitions And Constraints*. Europe Report N°203.
- Kardas, S. (July 27, 2010). *Turkish-Iranian Energy Cooperation in the Shadow of US Sanctions*. [http://www.jamestown.org/single/?no_cache=1&tx_ttnews\[tt_news\]=36672](http://www.jamestown.org/single/?no_cache=1&tx_ttnews[tt_news]=36672),
- Kardas, S. (2010, April 01). *Asia Times*.://www.partnershipforglobalsecurity.org/Projects%20and%20Publications/News/Nuclear%20News/412010105506AM.html.
- Kibaroglu, M. (1997, Spring/Summer). *Turkey’s Quest for Peaceful Nuclear Power*,. *The Nonproliferation Review* , s. 33-44.
- Kılıç, S. (2008, Ocak 08). İran Doğalgazı tamamen Kesti, NTV-MSNBC. Ankara, Türkiye.
- Larrabee, S. (Jul./Aug. 2007). ‘Turkey Rediscovered the Middle East’. *Foreign Affairs* .
- Mark, F. (20 May 2008). *Nuclear Programs in the Middle East: in the shadow of Iran*. London: IISS Strategic dossier.
- Ministry of Energy and Natural Resources. (2010). http://www.enerji.gov.tr/index.php?dil=en&sf=webpages&b=enerji_EN&bn=215&hn=&nm=40717&id=40717
- Putin seals new Turkey gas deal*. BBC, (2009, August 06).
- Ray, Lindsay James and Takeyh. «After Iran Gets Bomb.» *Foreign Affairs*, March/April 2010: 33-49.
- Senate, R. t., & Biden, J. R. (February 2008). *Chain Reaction: Avoiding a Nuclear Arms Race in the Middle East*. Washinton: US Government Printing Office.
- Stainvorth Daniel, S. O. (2008, November 07). *Nuclear Power in the Earthquake Zone*. Istanbul.
- Tetrajs Bruno, Center for Contemporary Conflict ,. (2009). *The Middle East's Next Nuclear States. Strategic Insights* .
- Turkey's Energy Industry, Istanbul Chamber of Commerce*. (2008). www.us-istanbul.com.
- Turkey's Energy Politics: Neither East or West*. (2009, September 01), Woodrow Wilson International Center for Scholars.
- Williams, A. P. (2008/2009, December/January). *Amid Growing Hopes for the Future, Turkish Nuclear Energy Ambitions Suffer Setback. WMD Insights* .
- World giants eye \$20 billion nuclear energy market in Türkiye*. (2010, January 06). <http://www.yatirimlar.com/content/view/38425/31/>. adresinden alındı

Abbreviations:

CANDU: CANada Deuterium Uranium, the CANDU ("CANada Deuterium Uranium") reactor is a Canadian-invented, pressurized heavy water reactor developed initially in the

late 1950s and 1960s by a partnership between Atomic Energy of Canada Limited (AECL), the Hydro-Electric Power Commission of Ontario.

PWR: Pressurized water reactors (PWRs) constitute a majority of all western nuclear power plants and are one of two types of light water reactor (LWR), the other type being boiling water reactors (BWRs). In a PWR the primary coolant (superheated water) is pumped under high pressure to the reactor core, then the heated water transfers thermal energy to a steam generator. In contrast to a boiling water reactor, pressure in the primary coolant loop prevents the water from boiling within the reactor. All LWRs use ordinary light water as both coolant and neutron moderator.

GE: General Electric Company.

MW: Mega Watt

NIE: National Intelligence Estimates

NPP: Nuclear Power Plant

R&D: Research and Development

TWh: tera- watt hour per year= 1000 giga watt hour per year.

