

Energy Security in the Middle East Geopolitics, Security Challenges and Sustainable Supplies

Meeting Report (June 2013)

Conference Overview

The Energy Security Conference was held in Amman during June 12-13, 2013, at the Mohamad Ali Budier Auditorium of the University of Jordan and the Ishtar Meeting Room of Le Royal Hotel.

The conference was organized by the Arab Institute for Security Studies (ACSIS) www.acsis.org, the Konrad Adenauer Foundation www.kas.de, the US-Korea Institute www.uskoreainstitute.org, the Energy Center of the Higher Council for Science and Technology www.hcst.gov.jo and the Omni Advisory Group www.oag.hk.

The opening session included brief notes by **Ayman Khalil** (ACSIS) and speeches by **Rhodri Richards** (Omni Advisory Group), **Jenny Town** (US-Korea Institute), **Simone Hueser** (Konrad Adenauer Foundation) and **Malek Kabariti** (Minister of Energy and Mineral Resources and the **patron of the meeting**).



Keynote speakers highlighted the critical need for energy security globally, as well as the specific need to combat the energy dilemma in Jordan, including the utilization of oil shale, liquefied natural gas, various renewable energy resources as well as non-conventional resources including nuclear energy. The event was held as the Kingdom was witnessing an acute shortage of Egyptian gas supplies and an increased demand on energy resources as a result of the influx of refugees from Syria.

Panel 1: "Nuclear Energy – Towards a Nuclear Security Culture"

Chairperson: Ambassador Paul Wilke



Future of Nuclear Security Governance and the IAEA

John Bernhard, an advisor on nuclear security governance, opened the first panel of the conference with a discussion of the current challenges facing a nuclear security regime. Bernhard warned of the potential threat of nuclear terrorism following 9/11 and emphasized the fact that any act of nuclear terrorism would have major short and long-term international effects which would impact global economy as well as global health. He then went on to discuss the

weaknesses of the current nuclear security regime, a regime that lacks common international standards and relies too heavily on non-binding agreements that depend upon the cooperation of every single state. According to Ambassador Bernhard, one of the major hurdles to overcome was the concept of national sovereignty, which often is an obstacle to wide-ranging international agreements. Bernhard subsequently commented on the NSS (Nuclear Security Summit) Process, which was of crucial importance in terms of raising international awareness over nuclear security but was lacking in that it would not be able to produce the comprehensive international regime needed. The speaker highlighted two potential solutions to overcome this challenge: to develop a nuclear security regime within the framework of IAEA, or to establish a regime based on other existing international instruments, while addressing the weaknesses of the current regime. Developing a regime within the IAEA seemed like the logical solution; however, it is limited by budgetary concerns and by the fact that decision-making in such a large organization takes a long time and needs significant compromise, making a stringent regime difficult to enforce.



Progress on Nuclear Security through the NSS Process

Michelle Cann, of the Partnership for Global Security, spoke of the progress many states have made in strengthening their nuclear security regimes since the beginning of the NSS Process. In her opinion, there is now a strong international emphasis on nuclear security culture, and the NSS Process has had many national, regional and international consequences. Cann highlighted the fact that many MENA countries have been extremely cooperative with both the IAEA and the NSS Process in order to emphasize nuclear security and combat nuclear

terrorism. This is especially important given that the largest increases in employing nuclear energy in the next few decades will be in the Middle East and Asia; A fact that will have significant impact on the entire region, in terms of global markets, transportation and supply chains. The speaker went on to highlight developments achieved by the NSS Process, including dissemination of nuclear security best practices via workshops and conferences, establishment of Centers of Excellence and IAEA Support Centers and encouragement of national training exercises on border control and nuclear response. Cann concluded with the important question pertaining to the fate of the Nuclear Security Summit Process following the Hague summit?

How and Why Korea's Nuclear Security Practices Have Changed since the Fukushima Accident

Jounghoon Lee, of KINAC (Korea Institute of Nuclear Non-Proliferation and Control), touched on the nuclear security culture in Korea and his work in nuclear safeguarding and security. He reported that under the current Nuclear Energy program in Korea there are 23 operational unit, and expect to have 38 units functioning by 2030s. He added that Korea's Nuclear Security is strictly regulated by KINAC and by the NSSC (Nuclear Security and Safety Commission). There is also a strong legal framework in Korea for dealing with nuclear security issues, dating back to their participation in CPPNM (the Convention on the Physical Protection of Nuclear Material), joined in 1982 and ratified in 1987. Since 9/11, Korea has also undertaken various legislative and practical nuclear security measures to cope with new threats such as terror and sabotage. Moreover, nuclear security practices have been further reviewed in light of the 2011 accident at Fukushima in Japan. Korea has reevaluated its "Design Basis Threat" in 2012, the same year when Korea hosted the NSS in Seoul. The speaker discussed Korea's future aims to establish a strong national nuclear security culture, through the creation of an international nuclear security academy.



Panel 2: “Emerging Security Challenges – Impact on Energy and Fuel Supplies”
Chairperson: Al-Sharif Nasser bin Nasser (MESIS)



Egyptian Gas Supplies – Impact of the Arab Spring

Mohsen Soliman, of the Natural Research Center of Egypt, focused on the ramifications of the Arab Spring on Egyptian gas supplies in particular, and more broadly on energy supplies in the Middle East. He noted that the Middle East currently has 70% of the world's oil and 65% of the world's gas supply, amidst a growing energy demand by 77%. The Arab Spring and the subsequent political instability had an impact on the Egyptian oil exports as well as the gas supply from Egypt to Jordan. Soliman explained that some criminals took advantage of the Egypt's instability to destabilize energy supplies. Starting from 2011 and until recently, there was a number of explosions targeting the Arab Gas Pipeline near Al Arish. Although terror cells were present in Sinai before the Egyptian revolution, Al-Qaeda and other affiliated terror groups exploited the region and made use of the unstable political situation, which also impacted energy supplies. Finally, he noted that the geopolitics of Sinai have changed since the revolution, and it has become a free territory where anyone with a weapon can operate. This is especially important given Sinai's strategic location for energy transportation.

A New Mediterranean ‘Gas’ Bonanza: Serious Implications for Immediate Regional Actors

Ahmad Shikara, of the Emirates Center for Strategic Studies and Research (ECSSR), referred to recent gas explorations in the Mediterranean. Shikara explained that exploded and disrupted gas pipelines have had an indirect yet significant impact on Eastern Mediterranean politics. Examples of this include decreased cooperation between Jordan and Egypt and Jordan's consideration of alternative imports in the form of LNG from Iraq. Shikara quoted Prince Al-Hassan Bin Talal as saying "Creating a community of water and energy in the Middle East could be the impetus for further regional cooperation in the same way the European Coal and Steel Community did in Europe". Yet he explained that the problem in the Middle East is that there is not enough political will to extract energy resources from deep-sea areas. In a regional sense, Shikara noted that Israel has done well to promote its own self-interest and economic position in the region. In conclusion, he suggested that remedies could include Egypt conducting a new peace treaty with Israel regarding oil prices.



Crises in the Gulf – Impact of Blocking the Hormuz Straits

Alain Guidetti, of the Geneva Center for Security Policy, touched on the importance of oil flow in the Hormuz Straits. He emphasized the fact that there have been major shifts in oil flow from the Gulf in recent years that have had a global economic impact. He pointed out that there has been a large shift in the distribution of Gulf oil supplies in traditional markets such as Europe and the United States to emerging markets in Asia, primarily Japan and Korea. The financial crisis of 2008 resulted in the economic decline of the West and the rise of Asia, and in particular, China as a new major regional actor. He referred to the US role, not only as the main oil exporter but also the security provider for the Gulf, and therefore has to maintain its position until the economic crisis subsides. However, the changing dynamics in the region are affecting the balance of power and

in the long run it is likely that the Middle East will become less of a priority concern to the US administration. Guidetti noted that despite this, the Gulf is in a privileged position and remains the major region having a foreseeable future in energy. He concluded that the closing the Hormuz Straits would raise the world oil prices by 60%.

Panel 3: “The Energy Dilemma – Options Available to Jordan”
Chairperson: Leila Abu Hassan (Jordan Senate)



Towards an Effective Mix of Energy Resources in Jordan

Salah Azzam, acting director of NERC (National Center for Research and Development at HCST), spoke about the importance of a diverse and effective range of energy resources in Jordan. Particularly, he highlighted that a push towards an effective mix of energy resources is critical to energy security in Jordan. Energy use comprises roughly 20% of the National GDP, and cost roughly 4 billion JD in 2012, while only 3% of energy used in Jordan comes from local sources, such as natural gas and oil shale. In his opinion, it is critical for Jordan to utilize domestic energy resources, including renewable energy systems. Solar radiation is also significantly high in the southern region of Jordan, with the potential to provide roughly 20 Giga-watt of power through photovoltaic systems (almost 4 times Jordan’s annual energy needs). Mr. Azzam indicated the potential of utilizing other renewable energy solutions including wind energy systems and hydropower systems. He explained that only 12% of Jordanian households use solar heated water, while commercial solar water heater usage is expected to increase to 24% by 2020, which would save roughly 760 Giga-watt/hours (GWh). Moreover, solar PV (photovoltaic) system usage is projected to increase to 100 Megawatts (MW) by 2020, saving 182.5 GWh per year. Similarly, wind energy is expected to provide about 500 MW by 2020, saving 109.5 GWh per year. In this way, a combination of energy sources will be effective in ensuring Jordan’s energy security.



Let Jordan Shine – Applicability of Solar Solutions in Jordan

Dr. Issa Batarseh, President of the Princess Sumaya University for Technology (PSUT), explained the focus of the “Let Jordan Shine” initiative and the opportunities for solar power use in Jordan. The “Let Jordan Shine” Initiative is designed to address energy challenges in Jordan, and to promote and expand the use of solar energy. He underlined the fact that this is especially important in Jordan given that the cost of energy currently comprises 20% of the national GDP, while the projected demand for energy will increase 4-fold by 2025. Batarseh noted that existing energy infrastructure in Jordan, such as power plants is outdated and therefore inefficient. In his opinion, Jordan must be more aggressive in its adoption of solar energy technology. Given that the southern region of Jordan sees at least 300 days of sunshine per year, solar energy solutions is becoming highly feasible options throughout the Middle East. However, to increase solar energy use, emphasis must be put on the installation of photovoltaic panels, and there needs to be an increase in research and development initiatives. The speaker commented on the important for Jordan to see an increase in the use of solar energy technology as part of a smart grid system.



Prospects of Utilizing Oil Shale and Geothermal Energy in Jordan

Bassam Suna'a, formerly of the NRA (National Resources Authority) spoke about the range of energy options available to Jordan that exist but have not yet been fully explored. The use of geothermal energy resources has been negligible so far, despite its potential yield. Several investigations and activities of geothermal energy in Jordan have taken place over the last thirty years by different agencies and research institutes. The Ministry of Energy and Mineral Resources in Jordan investigated the economic and environmental methods for utilizing this indigenous natural resource. Oil shale, is another untapped resources that must be emphasized and readdressed. Suna'a noted that multiple foreign entities have invested in Jordanian oil shale, however oil shale resources have yet to be fully and sufficiently exploited. In his opinion, the lack of oil shale use in Jordan is a result of current government policy, which emphasizes the exploration of oil shale, but not its exploitation.

Panel 4: "Regional Interconnectivity"

Chairperson: Rhodri Richards (Omni Advisory Group)



Prospects of a Jordanian-Iraqi Oil Pipe

Ali Fayyad, Vice-Chairman of the Oil and Energy Committee of the Iraqi Parliament, analyzed the possibility and highlighted the technical details of a Jordanian-Iraqi oil pipeline, which he believes holds many benefits for both Iraq and Jordan. He noted that although Iraq has vast oil supplies, production of oil in Iraq is mainly based on the interests and needs of other countries. Despite this, many countries continue to undermine Iraqi oil production. Fayyad declared that the Republic of Iraq calls on all officials to support and seek investment in the extraction of Iraqi oil and the development of the Iraqi oil industry. A high level of oil production in Iraq will require additional infrastructure such as distribution ports and electrical stations, to transport supplies into nations such as Jordan and Saudi Arabia. He explained that Iraq is currently working on a pipeline into Jordan, which will start being constructed at the end of the year. Indeed, there has been a significant level of interest from Iraqi leaders in the Jordanian - Iraqi pipeline. In his opinion, construction of this pipeline must be accelerated, as it has the potential to not only provide more than 3000 jobs in Jordan (with an additional 1000 in Iraq), but will also generate an estimated revenue of \$3 billion dollars for the Kingdom of Jordan. This pipeline will also serve to increase Iraqi-Jordanian collaboration with other nations, such as Syria, Lebanon and Egypt. He finally explained that approximately 200,000 barrels will be transported daily through the pipeline, as it has been built with a high capacity so that oil can also be supplied to Egypt, which he hopes will bring stability to the region.

Status of the Dead Sea-Red Sea Conveyor

Nabil al-Zou'bi, the manager of the Dead Sea-Red Sea project, presented on the current status of the Dead-Red project and its future prospects. He began by noting that Jordan is one of the poorest water nations in the world, thus the Ministry of Water and Irrigation is very serious about the water situation and has undertaken various projects to ensure water security in Jordan. The Dead Sea-Red Sea conveyor is a



major water project under the direction of the Ministry of Water and Irrigation, which will provide 100 million cubic meters of water to populated areas. He pointed out that even after the Dead Sea-Red Sea project is completed, it is still important to proceed with other water projects, such as desalination of water from the Red Sea. In terms of how the project will function, the conveyor will replenish and re-salinate the Dead Sea, in order to compensate for the dropping water level and to prevent environmental degradation. Meanwhile, a parallel conveyor will bring water from the Red Sea to Amman, after the desalination process. Tunnel systems are a potential option for implementing the project. The tunnel system could then connect to a series of hydropower and desalinization stations. It is estimated that the project will cost \$1.6 billion, and will have an impact on political relationships with other nations, such as Israel.

MEDSOLAR – Prospects of Regional Cooperation

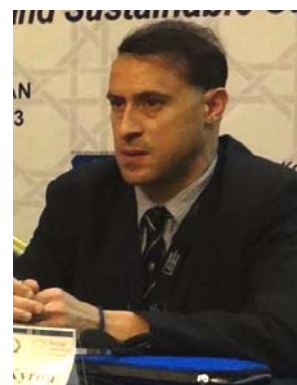
Nicola Bugatti, of Trama TecnoAmbiental, spoke about MEDSOLAR initiative and the prospects of cooperation within the Mediterranean on solar energy technology. The MEDSOLAR initiative is currently active in 5 countries – Spain, France, Lebanon, Jordan and Palestine, and will run for 30 months, from January 2013 to June 2015. With a budget of just over €3 million, the aim of the project is to promote and install Solar Photo Voltaic (PV) energy systems and transfer know-how between the countries involved in the project to create better understanding of the PV technology. He highlighted that research on the adaptation of PV technologies will focus on: characterization of electrical grids, analysis of legal framework, definition of new systems, pilot implementation, tests, and the creation of cross border networks. He noted that there has been high interest in cross-border adaptation, particularly in the implementation of PV systems connecting Europe with Mediterranean nations. He also pointed out that although the project is funded by the European Union, the Middle Eastern countries involved in the project are still seen as true partners and he hopes for increased cooperation regarding energy supplies within the Mediterranean region.



Panel 5: “Energy Economy and the Human Dimension” ***Chairperson: Rhodri Richards (Omni Advisory Group)***

Moving Beyond Oil and Gas – An Economic Perspective

Dinos Kerigan-Kyrou, of Charmogen focused on future of alternative energy resources and their potential impact on global energy security. He began by noting that energy security, particularly the regular supply of gas and petrol, is the most important component of our infrastructure. Indeed, food and agriculture, communication, health systems and defense cannot function without energy. He highlighted that there are several challenges to global energy security, namely dangerous emissions, highly fluctuating oil prices and an insecure supply of both oil and gas that is unable to meet the global daily consumption of 19 million barrels of oil. Dinos mentioned that Russia is rich in gas which is extremely expensive to transport. In his opinion, in order to meet these challenges and increase energy security we must enforce several policies. First, increasing energy diversity and become less dependent on a single source of energy. Second, reducing consumption and using renewable sources of energy such as solar, wind, geothermal and biofuels; the use of nuclear energy needs to be financially viable, as it requires large financing. In conclusion, the speaker predicted that fossil fuels will remain the dominant source of energy for at the coming thirty years, unless we manage to reduce the cost of renewable energy.



YUANomics: Offshoring the Chinese Currency Renminbi – Implications for Energy Transactions in the Middle East & Africa

Kenny Tang, of Coventry University in London, spoke about Chinese economic growth and its impact on energy in the Middle East and Africa. He began by noting that, according to recent studies, 35% of the world's economic growth comes from China. When the world financial crisis occurred, the majority of business was being done in US Dollars, which led to off shore currency build-up of more than \$600 billion. China, meanwhile, learning from this, has promoted the internationalization of its currency, and this has partially been achieved through its energy strategies. Tang noted that China is a major world energy user and so far its energy strategies have been very successful. Indeed, China's energy diplomacy has encompassed a few aspects, such as developing closer relations with countries such as Iran, Sudan and Myanmar. He pointed out that while this has worked to a certain extent, it has also led to some military implications, such as deals to exchange military hardware in return for energy. However, it has also provided economic aid for investment in energy supplies, while also promoting the offshoring of the Chinese currency. Dr. Tang could not rule out a significant interaction between these developments and the energy security situation in the Middle East.



The Human Dimensions of Energy Security

Lakshman Guruswamy, of the University of Colorado, highlighted the human impact of energy security and energy poverty. He began by noting that energy is of primary importance in the growth of civilizations. Indeed, society relies on energy to a great extent; in food and agriculture, water, sanitation, heating, cooking, the petrochemical industry, transportation, lighting, information technology and economic growth. However, despite its great importance, 2.5 billion people worldwide have no access to clean and reliable energy. Therefore, there are several challenges within the realm of energy security, including but not limited to: a lack of cohesive collaboration networks, lack of decisiveness of stakeholders on how to utilize available energy. Guruswamy underlined the fact that a large number of women and children, who are most at risk, die from unclean water and food and inhaling fumes. For that reason, the United Nations came up with the Millennium Development Goals (MDGs), which aim to improve international development around the globe by 2015. However, six out of the eight MDGs need energy in order to be achieved, including food security, water security, health security and sanitation.



Social Aspects and Energy Investments in Arab Countries

Mohammed Al Ta'ani, of the Jordan Renewable Energy Society, spoke about the shift towards renewable energy in the Middle East and its potential social impact. He explained that that energy sources are running out and therefore its natural to shift towards renewable energy resources, in particular solar energy. As a result, Jordan Renewable Energy Society has been holding many awareness campaigns on the use of solar energy. He concluded by noting that measures such as local development, public involvement & participation, economic development, job creation, green transportation and behavioral change can work wonders towards a greater push for renewable energy and a broader understanding of its importance.



Panel 6: “International Models”
Chairperson: Otmar Oehring (Konrad Adenauer Stiftung)



Energy Security – A NATO Perspective

Julijus Grubliauskas of NATO discussed the role that NATO currently plays in international energy security and the links between energy security and global stability. Resources are more globally diverse than before, and in his opinion, there is in fact, an abundance of global energy resources; yet this does not translate into global stability. One of the major energy security issues NATO faces is the vulnerability that comes with energy and oil transportation, e.g. Somali piracy. However, Grubliauskas emphasized that, as an international consensus-based organization, NATO has a limited role to play in terms of energy security, which is generally seen as a national issue for which NATO can provide limited support. Ways in which NATO supports member and partner states to improve energy security practices include information and intelligence sharing, exchange of best practices for critical infrastructure management, education, training and consequence management procedures. In recent years, NATO has also begun to strongly encourage energy efficiency in the armed forces. Finally he highlighted that NATO should no longer be seen as purely a military organization, but instead is a platform to allow states to work and cooperate better together.

Energy Security – A Russian Perspective

Dmitry Konukhov, a research associate at CENESS (the Center for Energy and Security Studies) in the Russian Federation, spoke about Russia’s role in developing and encouraging nuclear power use globally. For multiple reasons, the Russian government is committed to pursuing policies of nuclear energy. Due to security concerns, modern nuclear power plants are much easier to secure than other resources such as gas pipelines, which are vulnerable targets to terrorism. Currently, the Middle East region is spearheading a push toward nuclear power use and Russia is committed to supporting these efforts. At this time, Russia holds a 16% share of the international nuclear power plant construction market, with 19 current construction projects, and plan to control a 25% share of the nuclear power plant construction market by 2030. Konukhov highlighted that Russia has been innovative in developing flexible financing policies, including state loans, which has made nuclear power much more affordable for smaller states with limited budgets, as nuclear power often requires significant startup financing. Finally, he explained that Russia provides high level support for nuclear power beyond simply the construction of the plants. Russia believes in a high level of localization for the nuclear power projects, as well as providing safety training and support for the development of appropriate legislation for new nuclear power systems. Russia is also committed to supplying fresh nuclear fuel throughout the life of the nuclear power plant and then removes spent fuel after its use.



Energy Security – An Iranian Perspective

Nasser Hadian, a professor at the University of Tehran, spoke about the current energy situation in Iran, and highlighted the wide range of views that exist within the Iranian elite regarding the nuclear power option. Professor Hadian mentioned that Iran has been an energy producer, most significantly of oil and gas. However, in recent years, the West has been reducing Iran’s capability to produce/sell oil and gas through sanctions, which is depriving Iran of energy security. In other words, Iran is paying a heavy price for its nuclear program. According to Professor Hadian, there is a diversity of opinion amongst Iranian elites as to how



the nuclear program should proceed. He discussed three main views: 1) support for nuclear energy alone, as an alternative source of energy; 2) support for nuclear energy and nuclear weapons capability but as a deterrent only, without developing the weapons themselves; and 3) support for full nuclear capability, including weaponization. Hadian noted that the first view is the official view of the Iranian regime and that both the first and second views are permissible under international standards. Hadian discussed in depth why he did not believe that the third view would ever take place, because it could generate a nuclear arms race in the region, and because there has been a religious prohibition on nuclear weapons by Supreme Leader Ayatollah Khamenei, and also due to the high costs of production, maintenance and security, and the possibility of terrorist groups of gaining access to such weapons. The speaker noted, that although President Ahmadinajad does not influence nuclear policy. With a change of president comes a change in expertise, thus its possible that Iran's nuclear program will change direction in coming years.



***Gas Discoveries in the Eastern Mediterranean:
Prospects for Conflict or Regional Co-Operation***

Chris Pelaghias, the Chairman of ERPIC (the European Rim Policy and Investment Council) in Cyprus, spoke about gas deposits in the Eastern Mediterranean and how this could influence regional stability. Pelaghias noted that such gas deposits could be the cause for either more conflict between states in the region, or it could be an opportunity for states to increase regional cooperation on energy supplies and security, which may provide a basis for a more stable relationship between Mediterranean states. However, he noted that the process of determining the amount of gas or areas of gas deposits that belong to each

Mediterranean state could be a potential source of discord.

***Desertec: A Global Perspective for Energy Security
from Deserts***

Mohamed El Hamamsy, of DESERTEC, spoke about the initiative to harness clean energy from deserts as a new alternative energy source that could increase energy stability and security in the MENA region. El Hamamsy noted that power from deserts could supply up to two-thirds of the region's rising energy demand, which would also be a huge step towards increased development in the region. Power can be harnessed from the desert through a combination of wind, photovoltaic (PV) and solar-thermal power plants, all of which not only would increase energy supplies, but also reduce dependence on fossil fuels. He highlighted that the potential for energy production from deserts would benefit the MENA region and beyond. The speaker focused on the potential of exporting desert generated energy to other countries, which would generate revenue for development but also diversify world energy supplies and increase global energy security as it would reduce Western dependence on oil and gas.



Panel 7: “Closing Remarks”

The conference concluded by highlighting the main discussion points raised during the conference, which included:

- the global importance of energy security and an international framework for dealing with energy security and avoiding regional conflict caused by energy supplies
- the importance of diversification of energy sources to reduce dependence on fossil fuels such as oil and gas and to increase global energy security
- the importance of developing regional networks of cooperation regarding energy supplies and projects for energy sources and transportation, such as through DESERTEC, MEDSOLAR, the Jordanian-Iraqi oil pipeline, and the Dead Sea-Red Sea Conveyor
- the human importance of energy supplies and security for international development and reduction of energy poverty

