

Middle East Wild Cards and Global Energy Security

Lessons from Oil@USD250
The 2012 Herzliya Game

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Executive Summary

The Herzliya Conference convened the first-ever global war-game, simulating a global oil crisis caused by a terrorist attack that crippled the Abqaiq oil facility, which handles more than two-thirds of Saudi oil production. The attack led to the removal of six million barrels of oil per day from the markets during the first three months after the attack. Subsequently, with limited functioning, Saudi Arabia restored only two of the six million barrels of oil per day, thereby causing a global shortage of four million barrels per day for a sustained period with no spare capacity available on the global market.

What was special about this exercise? The unique combination

- Broad international participation and diverse experience –
 - Participants from the United States, China, Europe, Russia, Israel and the International Energy Agency;
 - Including energy practitioners and experts, business leaders, Middle East specialists, global politics and strategy professionals, incumbent and retired senior officials of national governments, intelligence services, and international organizations;
 - Entrenched interests of the oil industry and OPEC countries were not part of the scenario planning and management.
- Structured as a moderated analytical exercise –
 - Participants maintained their professional position and offered assessments;
 - Transcending policy divides between energy experts and between international policy and strategy specialists.
- Extensive timeframe – covering the six-month evolution of the crisis.

Principal Findings

- Saudi Arabia's oil industry and its primary oil facility in Abqaiq are vulnerable – a sophisticated attack on Abqaiq could lead to a severe environmental crisis on the ground and to a long-term malfunctioning of the facility.

¹ This policy brief summarizes the major points and outlines the conclusions from the 2012 Herzliya Game "Oil@USD250" held at the Herzliya Conference in February 2012 and at the adjacent plenary session debriefing the exercise. Since the Chatham House Rule governed the exercise itself, the brief does not attribute ideas, nor does it incorporate the entire exchange. Therefore, the brief does not necessarily bind or reflect the positions of the participants or of their affiliated institutions. The author acknowledges with thanks the comments and remarks of Yossie Hollander, Danny Rothschild, Ori Slonim and Michaela Klein-Weiss on earlier versions.

- The simulation demonstrated that an event of this magnitude could:
 - Plunge the global economy into a deep recession;
 - Pose a threat to the survivability and to the territorial integrity of Saudi Arabia and its neighbors, and destabilize the Middle East;
 - Benefit and shield Iran from international pressure and enhance its global position even though the scenario implicated Iran in instigating the attack on the Saudi oil facility.
- International policymaking is not sufficiently addressing or managing the risks –
 - Saudi Arabia's position as the second largest oil exporter and as the sole global oil supplier of last resort constitutes unsustainable risks.
 - The IEA will not be able to regulate effectively the markets in a long-duration crisis:
 - New major consumers – China and India – are not members and their reserves are not supervised;
 - A six-month oil supply crisis will nearly exhaust IEA members' strategic reserves;
 - The crisis will leave less developed countries with hardly any oil supplies –
 - Severe oil shortage in Sub-Saharan Africa and in the Horn of Africa would cause state failures, civil strife, societal unrest, violence and inter-state warfare;
 - Instability in Africa could "spillover" to affect Western interests in form of illegal migration, proliferation of crime and terror networks, and threats to maritime security.

Policy Recommendations

- Reduce dependencies on oil at large and on Saudi oil reserves specifically:
 - Set an open fuel competitive market mandating new vehicles to operate on all-alcohol fuels (including gasoline, ethanol, and methanol) or on electricity;
 - Phase-out subsidies on oil for transportation;
 - Disperse and diversify oil reserves and oil spare capacity across a broad geographical distribution.
- Enhance international preparedness and policy awareness:
 - Expand the IEA mandate to include encouraging the development of spare capacity;
 - Enlarging the membership scope of the IEA – to include emerging economies, specifically China and India;
 - Comprehensive and multidisciplinary policy approach is necessary for planning and for thinking through contingencies concerning international energy crises.

Introduction

For the last 100 years, oil has maintained a critical role as the essential energy source for transportation. During the last decade, the oil market has re-transitioned from a cheap abundant commodity into a market of steadily rising prices, which reflects the narrowing gap between supply and demand. Despite a modest decline in Western demand for oil, the narrowing gap reflects growing demand for energy, and particularly oil, in emerging economies, mainly China and India, against the backdrop of insufficient development of new cheap sources of production. The average daily consumption of oil worldwide in 2010 was 87 mb/d, contrasted with estimates that under even the most optimal circumstances, global production could yield a maximum of 91 mb/d.

Supply disruption and/or soaring demand for oil bears a direct and immediate impact on the global economy as oil prices are highly volatile and extremely sensitive to short term fluctuations. OPEC ran out of spare oil capacity in peace time in 2008 when global demand and supply balanced at 86 million barrels per day with prices fluctuating—spiraling up to USD145 and then down to USD30 per barrel. This resulted in the worst global recession since the 1930s. Compounding this predicament is the fact that in the short-term, there are limited alternatives to oil for transportation and the capacity to adjust instantly is minimal at best. Although there are some promising developments that ought to reduce the dependency of transportation upon petroleum, they still face an unfavorable regulatory environment and well embedded interests in most countries, and require additional R&D for commercial value and environmental considerations.

Against this backdrop, IDC Herzliya's Institute for Policy and Strategy convened a first-ever international war-game, simulating the consequences of a sophisticated multi-pronged terrorist attack crippling the Abqaiq oil facility, which handles more than two-thirds of Saudi oil production. Held under the auspices of the 2012 Herzliya Conference, practitioners and experts from America, Europe, Asia, and the Middle East grappled with the implications of a developing crisis that led to the removal of six million barrels of oil per day from the markets during the first three months after the attack. Subsequently, the facility resumed limited functioning, allowing Saudi Arabia to restore only two of the six million barrels of oil per day, thereby causing a global shortage of four million barrels per day for a sustained period with no spare capacity available. The immediate outcome of the sustained shortage of oil supply would be a considerable spike in global oil prices, which could reach USD200 per barrel, if not more, within six months. While the participants conceded that the simulation constituted one of the worst possible scenarios, there was broad consensus that it was not farfetched or entirely hypothetical, as Saudi's oil industry has been a target for terrorists repeatedly.

Taking into consideration the vulnerabilities of Saudi Arabia's oil industry (and its primary oil facility in Abqaiq), its position as the second largest oil exporter and as the global oil supplier of last resort constitutes unsustainable risks. The simulation demonstrated that an event of this magnitude would plunge the global economy into a deep recession, pose a threat to the survivability and to the territorial integrity of Saudi Arabia and its neighbors, and destabilize the Middle East. Although the scenario implicated Iran, the Game showed that the disruption of Saudi oil would shield Iran from international pressure and enhance its global position. The simulation further established that international policymaking is not sufficiently addressing or managing these risks.

The 2012 Herzliya Game drew two primary policy lessons that could mitigate the risks. The first set of recommendations addresses the need to ***reduce dependencies on oil at large and on Saudi oil reserves specifically***. In the face of the inadequate composition and mandate of the International Energy Agency

(IEA), the second set of recommendations outlines measures for ***enhancing global preparedness and policy awareness, and enlarging the membership scope of the IEA***. While a global energy crisis, as the one simulated in Herzliya, would undoubtedly compel policymakers to adopt bold measures in reducing global dependency on oil for transportation, it would be reckless to wait for such a crisis to occur.

The following reports incorporate the background analysis for the scenario focusing on the strategic and regional dimensions of Saudi Arabia's oil industry, a brief review of the game and the course of the scenario, and the global and Middle East implications of the simulated crisis. The report concludes with a detailed discussion of the policy lessons and recommendations of the exercise. The appendix of this report reviews the Game's mission, format, and flow.

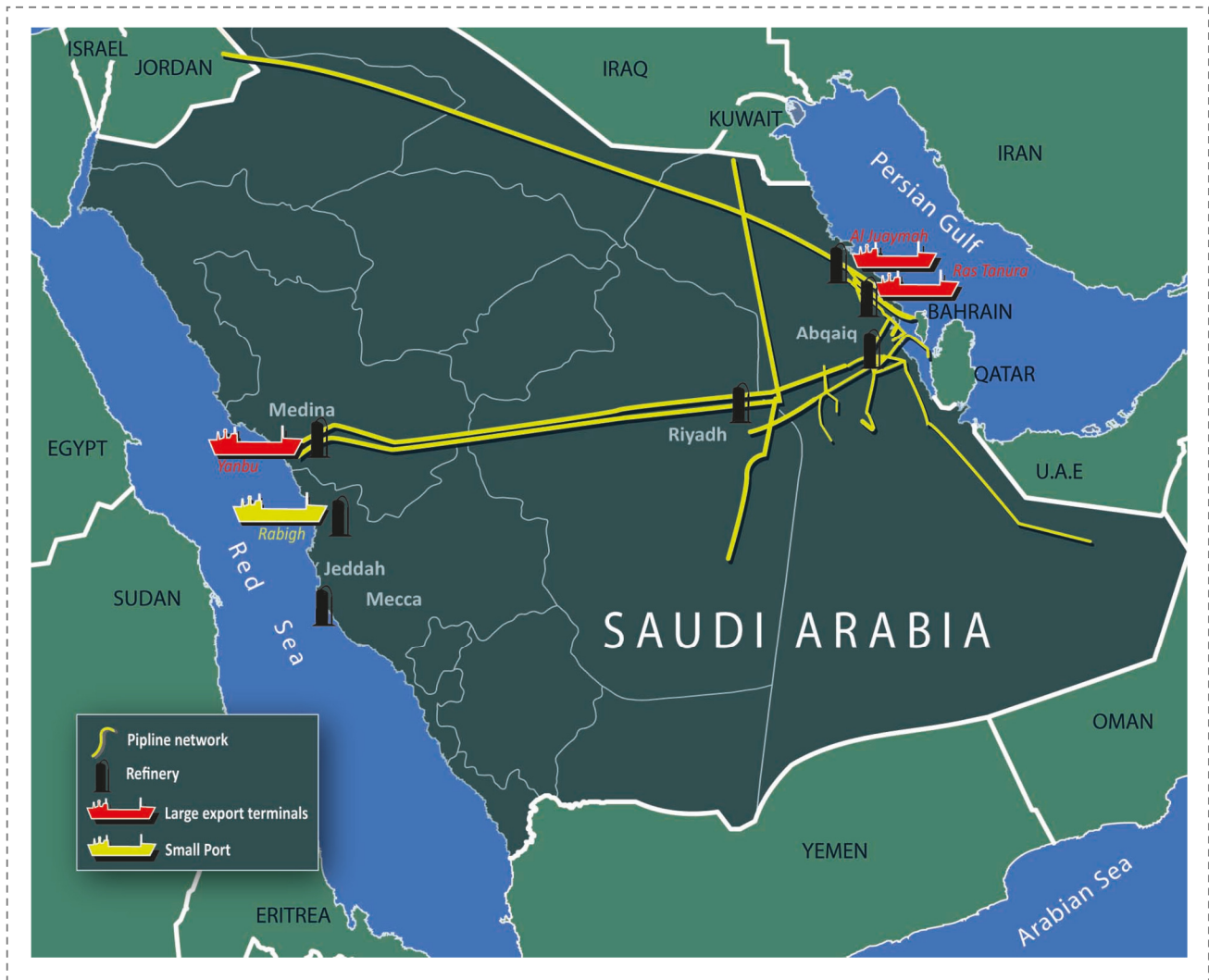
With the growing international focus on Iran's nuclear program, and its threats to harm the freedom of maritime navigation in the Strait of Hormuz, the simulation's starting point of a terrorist event at Abqaiq provides a useful analytical context for highlighting the economic and strategic implications of global oil dependency. The Herzliya Game offers food-for-thought for considering the multidimensional nature of the strategic challenges emanating from the Middle East in the midst of political turmoil.

The Heartland of Saudi Arabia's Oil Industry: The Shiite Populated Eastern Provinces

The starting point of the Herzliya Game was a sudden terrorist explosion at the Abqaiq oil facility in Saudi Arabia. This facility concentrates almost 70 percent of total Saudi crude oil production for initial processing before it is routed to the export terminals in the Arabian Gulf and the Red Sea. The facility is a critical hub in the Saudi supply chain, handling 6 mb/d of crude oil, constituting almost 7 percent of global daily production.

An attack disrupting the Abqaiq facility is not an entirely hypothetical scenario, taking into consideration the well-established vulnerability of Saudi oil facilities to terrorist threats. In summer 2002, a group of Saudis was arrested for involvement in a plot to sabotage Ras Tanura and pipelines connected to the facility. In February 2006, al-Qaeda operatives attacked the Abqaiq facility, but the attack was foiled. In 2008, Saudi Arabia's Interior Ministry announced that authorities disrupted terrorists' plans targeting the kingdom's oil industry, and arrested more than 700 militants in a yearlong series of raids aimed at al-Qaeda members and supporters.

Furthermore, the Abqaiq facility is located in the Eastern Provinces. The repressed Shiite minority in the Kingdom (15 percent of the Kingdom's total population) make up the majority in this region. In the past, Saudi security officials have worried about the affinity of their Shiite minority towards Shiites in Iraq and Iran. With Iranian guidance, radical Shiites grouped in the 1990s to form the "Hizbullah al-Hijaz," which targeted the oil industry facilities and took responsibility for the 2006 Khobar bombings. Clashes between the ruling Sunni minority and the Shiite population in neighboring Bahrain raised the tension between the Gulf countries and Iran amid accusations that the latter has infiltrated into the Shiite communities in Saudi Arabia and other Gulf countries and planned local protests and subversive activities. In recent months, Saudi and Iranian media have repeatedly reported on public disorder, strikes, and demonstrations led by Shiite groups in the Eastern Provinces.



Global Implications of the Simulated Crisis

The Herzliya Game demonstrated that members of the International Energy Agency (IEA), the **developed economies, could sustain an oil crisis of the scale simulated for six months**. During this initial period, IEA members were expected to release more than 900 million oil barrels from their strategic reserves, out of the total store of 1.66 billion barrels. At that point, the IEA, which currently represents only 50 percent of global oil consumption, would probably stop supplying strategic reserves to non-IEA members.

Nearing exhaustion of the strategic reserves, and although the impact of this event will not be uniform, **"demand destruction" would lead to fierce competition over oil supplies on the high seas and in international markets**. In a way, this would be the 21st century version of "beggar thy neighbors" policies of the 1930s. While in the first half of the 20th century, governments tended to address their economic crises through policies that harmed other nations economically, the pursuit of oil in face of global shortage might lead governments to "zero-sum" competitions. The consequences would be similar in terms of regional security and stability across the world. Unable to withstand the fierce international competition for oil and the skyrocketing prices, **less developed, non-oil producing countries, particularly in Africa, would be crippled and subjected to rampant civic strife and fighting**, famine, failed

governance, and inter-state warfare. Furthermore, state failures and violence could **spillover to the developed** world in forms of mass migration, unfettered activities of transnational crime and global terror networks, and threats to maritime security.

As in 2008, recession would curb global demand for oil and drive down oil prices. However, oil prices might balance at a relatively high point, which would curtail the rebound of the global economy. Furthermore, as oil is increasingly used as a financial instrument, price fluctuations will become more frequent, regardless of supply and demand fundamentals. Consequently, **global vulnerability to a real crisis of supply is increasing.**

The impact of such a supply shortage and price spike would be considerable for China, and other Asian economies. China imports five million barrels of oil per day, and the price spike would likely exhaust its export surplus and reduce its financial reserves and purchasing power, assuming it is in a position to secure supplies to replace its imported oil from Saudi Arabia, which makes up 20 percent of its total oil imports (as of 2010). The oil price spike would have a direct impact on the costs of manufacturing and shipping, triggering trade diversion, elevating global inflation, and plunging the global economy into a deep recession.

In the densely interdependent global marketplace, and unlike recent rounds of the global crisis, this recession would not distinguish between developed and developing nations. European economies—still in the midst of the Eurozone crisis—would be further impaired, and the US manufacturing-driven recovery would become unsustainable. The global process of individual empowerment would curtail governments' ability to chart their respective courses and maintain functioning markets, in face of mass social protests and public disorder.

The global impact of such a crisis would not be uniform. Although gasoline is primarily used for transportation, it still makes up 5.5 percent of sources for electricity generation globally. While on a worldwide scale this is not a significant figure, in a number of countries, particularly in the developing world, **the use of gasoline for electricity exceeds** that average, including Saudi Arabia (58 percent), Pakistan (35 percent), and Egypt (20 percent), to name a few. Several countries are even more heavily reliant on oil for electricity (>60 percent) including Benin, Malta, Eritrea, Cyprus, Jamaica, Cambodia, Lebanon, Senegal, Cuba, Haiti, Nicaragua, and Sri Lanka. Exogenous events, such as the Fukushima nuclear disaster in Japan or the sabotaging of Egyptian gas supply to Jordan, are increasing these countries' use of oil for electricity generation. In fact, Japan has become the second largest importer of oil as it phased out its nuclear plants for electricity generation. Taken together, **the impact of a global oil crisis in several countries, mostly developing, would be even more severe.**

In the longer term, the crisis would probably drive a search for additional oil sources, energy efficiency, and the use and development of alternative sources of energy for transportation. Oil production would probably expand into new areas previously considered too expensive to develop or environmentally unsustainable. Simultaneously, there would be a drive to follow the Brazilian example of introducing regulations permitting the use of flex-fuel vehicles (using both ethanol and methanol), as the cost of adjustment is insignificant. This process would probably increase the global demand for natural gas. While the price of natural gas is not entirely associated with oil, and is declining currently, growing demand could turn around the price trajectory. As oil prices would rise, the public demand for cheaper alternatives would increase. Some countries could follow the Chinese example and opt to produce growing quantities of coal-based methanol.

Implications of the Simulated Crisis for the Middle East

A crisis impairing Saudi's oil infrastructure would have a profound impact on the geopolitics and the geoeconomics of the Middle East. A crisis of this magnitude would considerably enhance Iran's power and influence, while wreaking havoc and crippling the Kingdom of Saudi Arabia, thus reshuffling Middle East regional balance of power.

Iran is currently the third-largest global exporter of oil (following Russia and Saudi Arabia), although international sanctions might reduce the demand for, and thereby the prices of, Iranian oil. However, the scenario demonstrated that although Iran was directly involved in the event that triggered the global shortage, the crisis would likely enhance its position. Accordingly, Western and non-Western countries alike would seek Iranian cooperation in addressing the situation. In a sense, ***a major disruption of Saudi Arabia's oil industry would offer Iran immunity from international pressure and bolster its regional influence.***

The ***exercise exposed Saudi Arabia's critical vulnerabilities.*** It is important to recall that most of Saudi Arabia's oil fields and facilities are located in the Kingdom's Eastern Provinces, where the repressed Shiite minority makes up the majority of the population. The Saudi Shiite community has a long history of covert relations with Iran, and members of the community have been involved in terrorism under Iranian guidance. The disruption of the Kingdom's oil industry would likely intensify already-existing civil protests in the Eastern Provinces.

Furthermore, the scenario revealed that sabotaging Abqaiq's hydrodesulphurization cylindrical towers (silos for separating sulfur and producing "sweeter" crude oil) would likely create sulfur contamination in the surrounding area. The environmental damage could preclude access to at least parts of the Abqaiq facility. Under these circumstances, the local Shiite employees cannot be trusted to secure the rehabilitation of the site while as the foreign workers and their families may choose to leave the Kingdom. In other words, ***a sophisticated attack on the facility could severely impair the Saudi oil industry for a considerable period.***

Moreover, the ***survivability of Kingdom and the royal court are entirely dependent on the oil industry for internal revenues and for the basic functioning of essential public utilities.*** With unemployment rampant among the young population in Saudi Arabia (at 30 percent), conventional wisdom holds that the government must maintain oil production at the current level, and at a price of no less than USD100/b to assuage the public. Soaring global oil prices would not offset the revenue loss during a sustained production crisis in Saudi Arabia's oil facilities. Furthermore, a serious oil supply disruption would have a huge domestic impact as virtually all of the Kingdom's immense energy consumption for electricity and water desalination is dependent on petroleum.

In other words, such a ***crisis would constitute an existential threat to the survivability of the House of Saud, and to the territorial integrity of the Kingdom.*** This, in turn, would create a ripple effect and ***pose a threat to the survivability of the regimes and to the territorial integrity of Saudi Arabia's neighbors***—from Jordan and Iraq through the United Arab Emirates, Bahrain, Qatar, and Kuwait, to Oman. In sum, the game exposed the fragility of key countries in the Middle East and demonstrated that a large scale and long-term disruption of Saudi Arabia's oil industry would probably result in a ***destabilization of the Middle East, while increasing Iranian influence.***

Mitigating Risks: Reducing Dependencies and Bolstering International Policy Coordination

Reducing global addiction to oil for transportation is not a novel recommendation and has been a focal point of national and international agendas throughout the past decade. The 2012 Herzliya Game however, underscores the **urgent need to match rhetoric with the implementation of concrete policy measures**. Developed and developing markets alike ought to apply the Brazilian experience and reform the car industry through the introduction of an open fuel standard requiring new vehicles to operate on all-alcohol fuels, including gasoline, ethanol, and methanol. The adjustment costs for the car industry would be insignificant.

The optimization of a real flex-fuel car industry would benefit from **allocating resources for further research and development (R&D)** to develop fuel-manufacturing technologies that are more environmentally sustainable, and that could enhance the energy density of these fuels. In this respect, the growing abundance of natural gas and its falling prices provide an excellent opportunity for a vigorous and commercially lucrative R&D effort.

Furthermore, governments, particularly in the developing world, **need to phase out subsidies for oil**. Oil subsidies are not only prevalent in oil rich countries, such as Venezuela, Saudi Arabia, and Iran, but also in other countries including China, India, Mexico, Indonesia, Malaysia, and Egypt. Gasoline prices in all countries should reflect real market prices, because otherwise there is no incentive for consumers to adjust their consumption to rising prices. A 2011 IEA report has posited that removing subsidies for oil would not only ease the fiscal burden of developing countries, but would reduce global oil demand by 3.7 million barrels per day by 2020. Previous attempts to reduce oil subsidies have resulted in mass protests. Under these circumstances, a sudden crisis disrupting global oil supply could lead either to soaring sovereign debt or to domestic instability if governments instantly slash subsidies. Therefore, responsible governments should introduce a phased process of reducing oil subsidies, possibly through alternate measures, to alleviate the financial burden upon the populace.

The **geopolitical concentration of oil reserves and spare capacity is unsustainable**. Currently, OPEC countries hold 78 percent of proven oil reserves and there is negligible spare capacity outside of Saudi Arabia. Furthermore, Saudi Arabia's spare capacity is currently declining. The 2012 Herzliya Game demonstrated in the clearest possible terms the high risks associated with this situation, as oil prices are set at the margin and concentration is dangerous. **Dispersion and diversification of oil reserves and of oil spare capacity across a broad geographical distribution is essential**. As one may not expect (or rely upon) OPEC to take such a sensible and timely course of action, oil importing nations—the consumers—ought not only diversify import sources but also assume more responsibility in **encouraging and incentivizing smaller players to develop much-needed spare capacity to offset shortages**.

Ideally, the IEA, on behalf of its 28 developed member-states should take the lead in the effort of diversifying global spare capacity, but this mission is not part of its current mandate. Moreover, the **IEA is not sufficiently representative**. Established in 1974, the **IEA once represented 75 percent of oil consumers, while today it represents only 50 percent**. If it does not expand its membership, the IEA will represent only 30 percent of consumers by 2030. Consequently, the capacity of IEA to maintain effective international policy coordination of oil consumers and to manage strategic reserves is in decline. Time has come to **expand the IEA's mandate and membership and to invite China, India, and other major developing countries to pool resources and collectively manage strategic reserves**. To be clear, the

extension of invitations to the developing countries to accede to the IEA is a vital interest of its current members in order to increase the effectiveness of the organization in addressing its missions and to verify that these nations are setting aside sufficient supplies as strategic reserves. In that respect, it is clear that without expanding its membership, the IEA will not be able to carry out effectively its primary mission—to manage and mitigate the effects of a major oil crisis, even one on a smaller scale than the one simulated in Herzliya.

The current institutional shortcomings of the IEA also reflect a broader policy sticking point. Whereas the 2012 Herzliya Game underscored the multidimensionality of repercussions of the state of global oil markets, it also revealed that beyond a relatively small circle of energy practitioners and experts, the **broader policy community is not sufficiently informed and aware of the fundamentals of global energy security**. It also seems that energy policy officials do not address political, strategic, and socio-economic questions in contingency planning and emergency policy development. Furthermore, the Game exposed **gaps in policy awareness, interests, capabilities, and threat perceptions** even among close allies as the US and Europe (including the European Union and NATO). There is an urgent need—even at working levels—to address the political, strategic, and socio-economic issues collectively and to **think comprehensively through contingencies dealing with potential dislocations. International leadership is required to end the divorcing of energy policy from public policy and international relations, and to adapt international institutions accordingly.**

Appendix: Review of the 2012 Herzliya Game – Oil@USD250

Background

The purpose of the 2012 Herzliya Game was to assess the consequences of a sudden event causing a severe disruption in oil supply. The game offered a platform for analyzing possible implications of the given crisis, and developing effective strategies to mitigate the risks and vulnerabilities that emanate from the structure of the current oil market and related geostrategic considerations.

The 2012 Herzliya Game convened a group of seasoned experts and practitioners from around the world, combining different professional experiences (all in their private and personal capacity). Unlike classic war games, participants did not emulate actors (i.e. leaders and states). Rather, the game was structured as a moderated analytical exercise in which participants maintained their professional position and offered an assessment of respective national interests, policy alternatives, possible international measures, and outcomes. Participants were also welcome to exceed their nominal assignments and offer additional assessments.

Held under the Chatham House Rule, the exchanges in the exercise were strictly not-for-attribution. The Game's debriefing and conclusions were discussed in an on the record plenary session.

A moderated discussion, the game consisted of a two/three-round simulation. Following a brief introduction, the first iteration started with the presentation of the hypothetical crisis event, and set the starting point as one week after the event (T+1W). Subsequently, and during a break, the control team assessed the outcomes of T+1W and set the starting point for the second round at three months after the event (T+3M). Participants then analyzed and responded to the given situation. Subsequently, the control team drew the end-point for the Game at 6 months after the event (T+6M), and the participants held a short concluding discussion offering their respective lessons and recommendations.

The Simulation: The Opening Hypothetical Crisis Event (T+1W)

A week after a series of explosions rocked the Abqaiq facility and the global oil market, the fog over the incident has started to clear.

To recap, the Abqaiq crude oil processing facility is located in the interior of the Eastern Province of Saudi Arabia, in the desert, 60 km southwest of the Dhahran-Dammam-Khobar area. Operated by Saudi Aramco, the enormous Abqaiq facility is considered a strategic oil hub, processing about two-thirds of Saudi Arabia's crude oil; it is a key component in Saudi oil production, making crude oil safe for shipment in tankers. Abqaiq also contains one of the world's largest oil fields, and is connected both to the Gulf Coast oil terminals, and to the Yanbu oil terminal on the Red Sea.

This morning, a week after the events, a senior executive of Saudi Aramco briefed journalists in Dhahran. The executive acknowledged that the series of blasts forced Aramco to completely shut down the giant oil processing facility for at least another 14 days, if not more. Apparently, the blasts severely damaged the Abqaiq power station's main transformers, requiring their full replacement. In addition, the blasts severely damaged at least three of Abqaiq's ten hydrodesulphurization cylindrical towers (silos for separating sulfur and producing "sweeter" crude oil—the Arabian Extra Light and Arabian Light crude oil), creating sulfur contamination in the area. The executive, briefing the journalists under the condition of anonymity, admitted

that the damage is a result of a sophisticated sabotage that targeted both the plant's SCADA (monitoring, data collection, and supervisory control) systems and key infrastructure of the plant. Adding to the general state of confusion on the site in the immediate aftermath of the event was the explosion that destroyed the Abqaiq Area Emergency Control Center (ECC). The executive refused to comment on the suggestion that the incident was triggered by a cyber-attack followed by a series of explosions detonated in critical infrastructures of the facility. The executive did confirm that shortly after the explosions, Saudi Aramco activated an emergency evacuation of the some 2,000 workers and family members living in the Abqaiq Residential Compound to the Saudi Aramco Residential Camp in Dhahran. The return of workers and their families to the compound will be possible only after the restoration of the power station and the completion of the cleanup of the mass sulfur contamination.

Based on these reports, oil industry experts claimed that Saudi Aramco's assessment that the facility will be dysfunctional for three weeks in total are not credible. Rather, these experts asserted that Saudi Aramco would not be able to resume work in Abqaiq for at least 30 additional days because of the extensive damage to the power station, back-up, and spare equipment, and to the pipeline network.

The vulnerability of Saudi Arabian oil facilities to terrorist threats is well established. In the summer 2002, a group of Saudis was arrested for involvement in a plot to sabotage Ras Tanura and pipelines connected to it. In February 2006, al-Qaeda operatives attacked the Abqaiq facility, but the attack was foiled. In 2008, Saudi Arabia's Interior Ministry announced that authorities disrupted terrorists' plans targeting the kingdom's oil industry and arrested more than 700 militants in a yearlong series of raids aimed at al-Qaeda members and supporters.

However, the local Shiite population seems tied to last week's event, a scenario that Saudi security officials worried about for the past few years due to the local Shiite population's affinity to Shiites in Iraq and Iran, and their continued oppression under the Saudi Sunni-dominated Kingdom. More than once, officials with the Saudi Ministry of the Interior have raised concerns that the Shiite population might side with Iran in a confrontation between the two countries. The assessment that this incident was an "inside job" reinforces the assumption that Saudi Aramco's local Shiite employees perpetrated it.

Speaking under the condition of anonymity, experts affiliated with global security contractors, and advisors pointed out that such a sophisticated and multidimensional attack required long-term surveillance, as well as a careful and patient execution of an elaborate plan. The experts speculated that the attack was the product of a two-year-long operation involving at least a handful of Aramco employees inside the compound with access to restricted areas.

Reports in Dhahran indicate that shortly after the event, the Saudi General Security Service (domestic intelligence agency) detained several dozen workers for questioning. National Guard forces were deployed in major Shiite communities in the Qatif region. The Iranian Press TV agency claimed three days ago that the arrested workers were cleaners and janitors employed by a Qatif-based contractor for Aramco. Shortly after the arrests, the "Committee for the Defense of Human Rights in the Arabian Peninsula," (an organization with known ties to Saudi Shiites and Iran) issued a statement condemning the deployment of security forces and calling on the Shiite communities in the Eastern Provinces to take to the streets to protest the brutality of police forces.

Subsequent reports have indicated that leading imams and clerics were detained as well, many of whom are known to have past involvement with Hizbullah al-Hijaz (the Saudi-Shiite/Iranian sponsored terrorist organization responsible for the 2006 Khobar bombings). Unnamed Saudi officials accused Iran of responsibility for the events and the consequent turmoil. In an official statement, the Iranian government refuted those accusations, but added an opaque threat that it will consider its options if Saudi security forces continue their brutality aimed at the innocent Shiite population.

During the last week, oil prices have risen from USD100 to USD180 a barrel. Traders claim that the price could climb even higher if the situation and unrest spread beyond the attacked facility. Consequently, prices in gasoline stations across the world have elevated by 30 to 50 percent. Four days ago, the IEA announced that it was preparing to activate its emergency plans. An agency official posited that he did not expect any tangible shortage of supply in the OECD economies in the foreseeable future. Analysts indicate that current oil in the supply chain may be sufficient for 20 days before there is a need to use strategic reserves.

The US promised to start releasing oil from its strategic reserves in order to ease the pressure on prices. In response to a journalist's question in a briefing, a senior US State Department official indicated that the US was considering allowing a divergence of crude oil to China from Angola and Nigeria, oil originally allocated to the US. The official's comment provoked a vivid public debate. The question came after many energy experts had claimed in the media that the crisis has a direct effect on China, Japan, and South Korea, who are the primary importers of Saudi oil. China imports 900,000 b/d from Saudi Arabia, which is 10 percent of its total oil imports. According to this analysis, the cumulative sum of oil and oil products on tankers heading to these markets, national reserves, and oil and oil products found in the private sector, will enable it to maintain current level of global supply for the next 21 days. Since China's normal consumption is 9 mb/d, it is expected to suffer from an oil shortage of almost 500,000 b/d, if no additional measures are taken.

The Flow of the Game

T+1 Week

At that time, both the projected length of the shutdown as well as the identity, motivations, and organizational affiliation of the attackers remained unclear. The first round also highlighted several unconfirmed factors that could potentially link Iran to the attack. Further, the participants were informed that the intensified activities of Saudi security forces created unrest among the large Shiite population, including Shiite Aramco employees.

During this phase of the game, many participants focused on measures that would calm the markets, mainly by using the IEA's Emergency Plan, which supports the markets' supply by releasing oil from IEA members' strategic oil reserves. The control group emphasized that although the shutdown of Abqaiq created a significant shortage of oil, it takes four-to-five weeks for a barrel of oil to make its way from the oil field to the consumer. In addition, during routine periods, there are large back-stocks of oil and oil refined products at various points along the supply chain, thus a real shortage was not to be expected during the first six-to-seven weeks into the crisis. The first round also revealed that the oil sources outside of Saudi Arabia are inadequate to augment the oil supply. The participants did not reach a consensus regarding oil prices at T+1 week, which the scenario assessed at USD180 per barrel.

T+3 Months

During this phase, the participants were briefed on Iran's definitive role in the attack, and the growing unrest among Saudi Shiite community. That unrest motivated a strike of Shiite Aramco employees, causing further disruption to both production and reconstruction work at Abqaiq. The control group indicated that production remains unstable, averaging two million barrels per day, about 30 percent of the normal pre-attack level. The participants were informed that the effects of the attack sparked a major global crisis, taking into consideration the great uncertainty regarding the crisis' length and forthcoming developments. Three months after the attack, soaring oil prices (now around USD200 per barrel) had an overwhelming influence on the global economy, affecting oil-importing and oil-exporting countries alike. The current price forces governments to either lower their gasoline tax or increase spending on gasoline subsidies. Growing

inflationary pressures, a slowdown of economic and business activity, and declining global trade volumes (due to the tremendous increase in shipping costs) necessarily follow such a dramatic increase in oil prices. Panelists pointed out that oil prices above USD200 per barrel were not only unsustainable, but would lead to an unprecedented economic depression.

Simultaneously, participants also analyzed the political and strategic ramifications of the crisis. The analysis, mostly centered on Iran, had two major themes: the extent of the Iranian involvement in the pre-attack preparations and the post-attack Saudi-Iranian interactions. The participants revealed a situation whereby overpowering economic factors blocked any overt retaliation against Iran, even when Iran's culpability was irrefutable. The only two scenarios that would increase the likelihood of military action against Iran would have been an Iranian military intervention in Saudi Arabia, or a show of Iranian military force in Arabian Gulf, i.e. seizing the Strait of Hormuz or deploying maritime mines. The reality that an attack on Iran would remove an additional 2.5 million barrels per day from oil markets shielded Iran from any serious consideration of military measures by the US or NATO. Furthermore, in face of economic recession and exorbitant oil prices, the price of an attack would be prohibitively expensive.

Concluding Phase: T+6 Months

In the concluding phase, the Control Group drew the end point of the game outlining the continuation of popular unrest in the Shiite Eastern Provinces of Saudi Arabia, coupled with increased tensions with Iran. Saudi Aramco still had difficulty resuming to pre-crisis levels of oil production. In this stage of the crisis (more than 6 months after the attack), IEA members had already released more than 900 million barrels from their strategic oil reserves, out of an initial store of 1.66 billion barrels. The IEA Emergency Plans were not designed to handle a crisis of this magnitude, and the international community failed to coordinate the central management and allocation of oil supply. As such, participants expected a further deterioration of the situation, in part due to several countries devoting efforts to procuring as much oil as possible in direct competition with other countries.

Even if the international community reached agreement on coordinated actions to mitigate the crisis, the participants expected that poor countries would suffer catastrophic consequences as the major developed and emerging economies are likely to use their advantage to secure oil supplies at the expense of the poor. These countries have almost no oil-demand flexibility, since oil is their primary source for power generation and transportation. Specifically, the most fragile countries in this regard are in Sub-Saharan Africa and in the Horn of Africa. Control over oil fields in these countries and transit routes to export terminals along the eastern coast are a source of power and revenue. Several factors, including the length of the crisis and the panic it sparked in the markets, aggressive behavior of state actors, and the sky-high prices of basic commodities (because of an increase in production costs due to high oil prices), were expected to trigger fierce inter-state and intra-state warfare resulting in famine.

Game Participants

Control Group:

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Maj. Gen. (res.) **Danny Rothschild**, Director, Institute for Policy and Strategy; Chair, Annual Herzliya Conference Series
Mr. **Aad van Bohemen**, Head, Emergency Policy Division, International Energy Agency
Mr. **Nick Butler**, Visiting Fellow and Chair, King's Policy Institutes, King's College; Fmr. BP Group Vice President for Strategy and Policy Development
Dr. **Gal Luft**, Executive Director, Institute for the Analyses of Global Security (IAGS)
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USA:

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Europe (EU/NATO):

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About the Author

Mr. Tommy Steiner

Senior Research Fellow at the Institute for Policy and Strategy at the Interdisciplinary Center Herzliya and Manager of the Herzliya Conference Series. He previously served as the Executive Director of the Atlantic Forum of Israel. As part of his work at the Institute, he heads research programs that focus on Israeli foreign policy, as well as EU- and NATO-Israel relations. He teaches International Relations, Government, and Security Studies at the Lauder School of Government, Diplomacy, and Strategy at the IDC. His fields of expertise include international security, transatlantic relations, international relations theory, and regionalism in the Mediterranean, Middle East, and Asia-Pacific. The Davis Institute for International Relations at the Hebrew University awarded him the Harkabi Prize. He holds an MA in International Relations from the Hebrew University of Jerusalem.

About the Annual Herzliya Conference Series

Israel's premier global policy gathering, the Herzliya Conference exclusively draws together international and Israeli participants from the highest levels of government, business, and academia to address the most pressing national, regional, and global issues.

Convened by the IDC Herzliya's Institute for Policy and Strategy, the Conference proceedings, reports, and recommendations provide leaders with real, timely and authoritative assessments and policy recommendations needed to guide their organizations through challenging geopolitical, economic and social developments. As strategic and political processes and events emanating from an ever-turbulent Middle East increasingly impact the global arena, the deliberations at Herzliya cover a broad span of issues, ranging from nuclear proliferation and the Middle East peace process to world finance, energy security, and global warming.

Harnessing path-breaking methodologies, the Herzliya Taskforce reports and the commissioned studies present an accurate, coherent, and comprehensive picture of the region and the world.

The Herzliya Roundtable sessions – small interactive focus group discussions with officials, experts, and business executives, held off-the-record and by invitation only on the sidelines of the Conference – provide plenty of prospects for professional networking and relationship building; the informal exchanges that occur create unique opportunities for discourse and the discussions shape regional and international policy debates.

About the Institute for Policy and Strategy (IPS)

The Institute for Policy and Strategy (IPS) is headed by Maj. Gen. (res.) Danny Rothschild. The Institute operates as part of the Lauder School of Government at the Interdisciplinary Center (IDC) Herzliya. Its primary objective is to engage in research activities which contribute to Israel's national policy and to the upgrading of its strategic decision-making process. The range of IPS projects encompasses a variety of issues crucial to Israel including national security and strategy; foreign policy; intelligence; the Jewish people; economics; science and technology; welfare; social policy and education.

IPS conducts research on a broad analytical scope, concentrating on identifying emerging issues and trends. It also invests in improving analysis and in innovative methodologies. IPS is characterized by its variety of disciplines and inputs, as well as by its interdisciplinary, integrative, comprehensive and future-oriented approach.

IPS cultivates close working relations with governments, active public institutions, think tanks and research institutes around the world. It convenes meetings with experts and holds seminars and debates. The annual Herzliya Conference on the Balance of Israel's National Security is the flagship of IPS activities.

The Chairman of the Institute's Board of Directors is Mr. Israel Makov. The other members are: Maj. Gen. (res.) Ilan Biran, Prof. Moshe Barniv, Prof. Amir Barnea, Mr. Yossie Hollander, Prof. Galia Golan, Prof. Alex Mintz, Prof. Rafi Melnick, Prof. Dov Pekelman, Ms. Dalia Segal, Amb. Zalman Shoval, Maj. Gen. (res.) Shlomo Yanai, Mr. Zvi Ziv and Prof. Uriel Reichman.