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Dust Crises and its Regional Geopolitical and Security Impact in West Asia

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ABSTRACT: Western Asia has recently become an arena for significant upheavals of various kinds, be it political, safety-related, geopolitical, social, etc. These have in turn focalized the salience of the region as well as its ensuing situation and challenges on a global perspective. Such a naturally-born phenomenon is characterized, amidst other factors, by its transregional quality, granting it some sort of geopolitical peculiarity. The occurrence of haze would implicate a merged endeavor on part of the countries, engaged in this cross-regional abnormality. This joint endeavor is, however, hindered and at times exacerbated due to certain political inconsistencies among the countries, undoubtedly rising from differences in ideology, religion, politics, and social standards. In this light, the present study seeks to inquire the impacts of haze, as a geopolitical phenomenon, on involved countries. It also tries to find out whether subsequent implications of this predicament could in effect be employed to establish new relations among rather-standoffish nations or if they are merely components of a cold relation among countries and could intensify each nation's problems, reducing the overall quality of life further. The findings indicate that despite the existent domestic and transregional problems, public opinion tends to establish joint cooperation among the engaged countries. This is not in the least a result of fear of a low life quality among the inhabitants of the said nations.

Keywords: Western Asia, Dust crises. Geopolitical crises, Regional security.

INTRODUCTION

The transregional and spherical qualities of certain natural phenomena, such as Aerosol, have given rise to international consequences observed on regional and even global scales. A solution to this is analogous with international determination and collaboration. At times, the severity of such phenomena reaches an extent where, according to experts, new comprehensive and international governments are formed so as to –perhaps-- alleviate the global aftermath. This highlights the importance of the governing policies of different countries with which global consequences of such natural phenomena could be dealt with. Similar phenomena, such as global warming, ozone depletion, melting glaciers, increased sea levels, climate

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changes, etc., have captured the attention of, at least, a number of academic and political associations. They have even led to the establishment of several international covenants, such as those in Stockholm (1972) and Rio (1992). What can be concluded from such similar endeavors is the significance of determination and the manner by which the involved countries employ when relating with one another along with their handling of trans-regional hazards. One of the prime instances of trans-regional hazards, which has been occurring at an ever-increasing rate in countries south west of Asia in recent years, is the phenomenon of Aerosol (Khan et al., 2019; Dahutia et al., 2019). Aerosol is comprised of mainly dust along with other dry particles, suspended in air. It can travel up to a distance several kilometers from its origin.

Arid regions with no vegetation are more prone to Aerosol then other areas. These regions are primarily found scattered in the northern sectors of Africa, Iraq, Arabia, Syria, and Iran. Given the damages inflicted from Aerosol on these countries, it is direly and inevitably needed that their corresponding governments conduct a joint endeavor. Nevertheless, relations amongst these governments are not necessarily favorable and in certain cases quite aloof even, thus postponing a propitious outcome. In other words, present ideological systems as well as well as hidden or apparent geopolitical contentions among the countries in this region has caused a shift in their relations from normal to rather cold and complex. Considering the mentioned conditions, the geopolitical phenomenon of Aerosol can cause further implications for the engaged countries.

Thus, the present study attempts to both provide a descriptive analysis of Aerosol's detrimental effects of on the affected countries and, simultaneously, elucidate the existing relations among them. The ultimate aim for it is to propose a multidimensional approach to the predicament of Aerosol.

MATERIAL AND METHODS

The present study is descriptive-analytical, incorporating the library method for gathering information. The analytical approach to the examination of the study's findings is qualitative.

RESULTS AND DISCUSSION

The term "geopolitics" was first coined by a Swedish scientist, called Rudolf Kjellen, in 1899 (Hafeznia, 2011) as a combined notion of politics and geography. Geopolitics has recently found its ground among several academic societies and expert opinions. Many definitions of geopolitics have been put forth hitherto; however, none are entirely accurate. A standard definition, widely accepted by all, is yet to be proposed. The phrase *geopolitics* consists of the terms *geo* (meaning earth or land) and *politics* (meaning policies and affairs of states and power) (Kaviani, 2011). Geopolitics is now introduced as an interdisciplinary field of study in various accredited universities and research centers, both in Iran and around the globe. It particularly captivates geographers, politicians, military people, and experts of political sciences and international relations. Geopolitics has undergone tremendous practical and theoretical changes at frequent intervals during the first century, following its introduction (Hafeznia, 2011). The highly complex history of geopolitics and its use as a practical instrument by Nazi leaders during the Second World War rendered a state of academic poverty, hindering the theoretical and scientific development of geopolitics. The diversity of the definitions put forth apropos of geopolitics was engendered through governing political and social atmospheres as well as personal preferences and research interests of

scientists (Kaviani, 2011). Instances of such definitions include:

"Geopolitics or geographical politics refer to the effects of the environment or environmental forms such as the earth, rare resources, means and facilities of communication, etc. on decision making processes in politics, particularly on a regional and global level" (Mojtahedzadeh, 2007).

"The study of the effects of geography on power relations in international politics" (Kaviani, 2011).

"A combination of several complex and belligerent forces fighting over small territories of land, possibly with the ulterior motive of eliminating opponents or achieving political supremacy" (Ezzati, 2007).

One can, however, refer to a more combinatory explanation of the concept, something that considers it an academic examination with the aim of analyzing the correlations between geography, power, politics, and the consequent patterns arising from their combinations (Hafeznia, 2011). These patterns include competition, collaboration, convergence, divergence, crisis, peace, war, etc. (Hafeznia, 2011). Before the collapse of the Soviet Union, geopolitics was seen as a traditional study, which observed political-military sympathy among political units, also characterized by military approaches and war (Kaviani, 2011).

From a geopolitical perspective, one can divide the period from early 19th century until the collapse of the bipolar system into three sub-periods:

1. Civilized geopolitics
2. Naturalist geopolitics
3. Ideological geopolitics

The discourse of geopolitics was also reformed after the 1980s, with the intervention of newer mindsets, ushering in the age of post-modern geopolitics (Hafeznia, 2011). Some novel occurrences of this period include globalization, geo-economy and the ever-increasing significance of economy in the global equations, critical approaches to previous geopolitical literature, clash of civilizations, anti-geopolitics and origination of the masses against their rulers, anti-terrorist discourse, environmental geopolitics, and global security. In what follows, the role of environment and its accompanied issues as one of the prime aspects of post-modern geopolitics will be investigated.

The 21st century somewhat put an end to the post-modern period of geopolitics. It proclaimed a new era of global geopolitics, characterized by the expiration of contentions among two ideological poles, a period in which geographical divisions were innovated. Yet, among the overall motion towards global integration in this period, one can still observe signs of political disunity. For instance, the old administrative divisions of Heartlands and Rimland have nowadays given way to regional convergence. These changes portray a motion from the modern era into the post-modern one. The worldview in the post-modern period is generally configured in terms of old and new, wherein the former refers to tendencies towards national identity and culture, while the latter pushes towards concepts of economic globalization in international markets, information revolution, and integration of global security (Mojtahedzadeh, 2007).

Some of the principal subjects of geopolitics in the post-modern era are in connection with the environment, particularly in line with the integration of global security. The environment, according to the 1967 definition of the European Economic Community (EEC) includes water, air, earth, and internal and external factors relating to the survival of any living being (Zolfaghari, 2008). The role of human beings, as both the instigators and targets of environmental effects is of utmost significance. Current

trends of population growth have exposed the environment to serious threats such as lack of resources, resources depletion, and environmental pollution (Hafeznia, 2011), now manifested in a variety of forms. In so doing, these trends are in conjunction not only with the ever-increasing rate of consumerism on the one hand, but the asymmetrical distribution of environmental resources as well as inappropriate interactions of human beings with the environment, on the other hand. The increasing rate of global population growth has reduced the proportion of arable lands (per capita) as well as water shortages. Soil erosion, deforestation, low water quality, and pollution are all among the consequences of population growth. Emigrants from rural areas leave their homes only to find that the majority of them comprise the marginal and poverty-stricken regions of urban areas. Employment, hygiene, education, and other facilities are among the main concerns of governments in regards to these marginal groups. The expansion of metropolises, insufficient nutrition, extinction of biological resources, intensification of desertification, increased demand for drinking water, destruction of marine and oceanic resources, air pollution, environmental pollution resulting from toxic, chemical, and even nuclear wastes as well as wastewaters, increased military weapons and warmongering, annihilation of wetlands and coastal habitats, etc. can be counted among other issues in relation to the environment (Zolfaghari, 2008). Such matters give rise to different patterns and arrangements among various levels of political organizations and institutions. And the patterns involve competition, collaboration, mutuality, conflicts and strife, etc., all of which indicate the salience of the environment in global politics.

Environmental geopolitics is the product of a relation between the status of biological resources and sources of life along with international and national policies and matters of security (Hafeznia, 2011). Environmental concerns made their way into geopolitics during the 1960s with the advent of movements such as the Green Peace Campaign and the Friends of the Earth network of organizations in countries inside North America, Australia, and Western Europe. These eventually led to international meetings and events among different governments (Hafeznia, 2011). Among such meetings was the International Stockholm Conference as part of the 1972 UN Framework Convention on Climate Change, which aimed to reform global policies in order to prevent further damages to the environment. The second international UN conference was held 20 years later in Rio de Janeiro as the first "Earth Summit". It was entitled the largest gathering of world leaders as of 1992 (Mojtahedzadeh, 2007). The third international earth summit took place in December 1997, in Kyoto, in which 160 countries participated. The prime objective of the conference was to incorporate various countries around the world in a defined plan to reduce the ratio of environmental pollution from gas sources to total gas production by approximately 6% in 1990 (Mojtahedzadeh, 2007). Certain organizations were also built for the sole purpose of preserving the environment, amongst which the Environmental Protection Agency, was the first of its kind (Mojtahedzadeh, 2007). Environmental protection and prevention of further damages to the environment require international perseverance, for the earth and its atmosphere contain a single ecosystem with any threat to just a single sector of the globe ensuing further complications for the remaining sectors (Omidi, 2010). The resulting predicaments include lack, destruction, and pollution of resources, which directly affect human life and thus threaten the governments.

The majority of prognostications advert to the eventuality of the threats, posed to both the world and the human beings as a whole, should such environmental crises come to pass (Kaviani, 2011). This gives rise to the issue of environmental security, whose principle components are recuperating current insufficiencies in natural resources, preserving environmental health, improving biodegradation, preventing social predicaments and conflicts, and increasing social stability (Kaviani, 2011). In addition to collaborations among governments on issues of environmental protection, the world is also witnessing certain disputes over scarce resources. Geographically speaking, the locations of mines, oil wells, pipelines and transportation pathways have always been in the vicinity of various conflicts and clashes (Hafeznia, 2011). Strives over rare resources are in fact quite evident at both domestic and international levels. Relations arising on account of environmental predicaments highlight the significance of the environment to geopolitics.

Failure to control the phenomenon of Aerosol will result in dire consequences and damages to human life. Perhaps the most critical consequence of Aerosol is its direct damage to the well-being of any individual, exposed to this phenomenon. According to World Health Organization, as many as 500,000 individuals annually succumb to early deaths, resulting from exposure to suspended particles in the air. Investigations show that Aerosol storms increase mortality rates by 1.7%. Aerosol causes a three-fold increase in the density of certain heavy metals, such as lead, along with other toxic metals like mercury and arsenic (Nadafi, 2009). Each unit gram of desert soil contains 10^7 bacteria of 10000 genotypes, as well as 10^6 fungi (NAdafi, 2009). NASA experts believe that each gram of Aerosol can inflict serious damages to the respiratory system and even cause cadaverous epidemics. Despite their African and Middle Eastern origins, Aerosol particles can travel from the Middle East all the way through India and China, and finally reach North America through the Pacific Ocean (Zolfaghari et all, 2011).

This underscores the global nature of Aerosol impacts. Moreover, the presence of Aerosol particles in the atmosphere has a weighty effect on climatic conditions. They can alter temperatures through absorption and dispersion of solar radiation. The Aerosol can then transfer solar radiation around the earth and emit long-wave infrared to the space (Goudie, M, 2001). In other words, given the physical characteristics (shape and size of sub particles) as well as corresponding constituents, Aerosol particles can increase or decrease the temperature in a specific region through solar absorption and reflection, respectively (Kermanshah, 2011). In fact, the effect of Aerosol on climate conditions is so strong that it could be considered one of the causes of dinosaurs' extinction, as it may have brought on or at least aggravated the ice age by preventing sunlight to reach earth. By dint of storms, Aerosol particles in the atmosphere, which are mainly of a terrestrial origin and indicate vital geo-atmospheric interactions, can also affect the biochemical cycle of ecosystems. Moreover, they can alter the characteristics of soils, oceans, and air, especially considering the fact that they are capable of travelling thousands of kilometers away from their point of origin (Washingtonet al., 2003). Aerosol storms damage vegetation, thereby threatening the survival of livestock. They also hinder processes of beekeeping and in conjunction with soil erosion lead to intense desertification. It is worth noting that a total of 250 million individuals around the world are directly affected by the outcomes of desertification, while another 750 million suffer its indirect

consequences. From an economic standpoint, desertification reduces managerial power, thus leading to resource destruction (Winford, 2009). In addition to decreasing production capabilities in arid regions, desertification also affects various biophysical variables such as albedo, temperature, precipitation, soil humidity, and wind and water erosion.

Land destruction in semi-arid regions reduces the vegetation severely. This in turn increases the albedo, causing a drop-in land surface temperature, and accelerating the subsidence of the upper atmospheric air masses. As a result, convection flows and cloud formation processes are minimized and precipitation is mitigated (Winford, 2009). Among other economic and social impacts of Aerosol, one can mention reduction in agricultural products, abandonment of agricultural lands, and migration; the latter transpiring further social predicaments. While they largely contribute to erosion, Aerosol storms lower the clarity and reduce eyesight to less than a kilometer (Goudie, 2000), entailing further consequences such as increased accidents, flight cancellations, and the damages that come from them. Other impacts of Aerosol include turbidity of aquatic plants, increased consumption of water for purposes of washing, recession of industrial, service, and educational units and the financial losses thereof, increased consumption of petroleum, water contamination, perturbations in power transportation systems, increased dilapidation and decreased useful life span of buildings, diminished performance of solar-photovoltaic systems due to air opacity, and last but not least mental problems inflicted upon human beings due to depressed eyesight (Zolfaghari et al., 2011).

The phenomenon of Aerosol is among the most influential occurrences apropos of human life. It is comprised of dry particles suspended in air, measuring less than 0.1 mm in diameter and capable of travelling great distances (Mahmoodi, 2007). Approximately $5x10^8$ tons of dust are annually dispersed in the atmosphere. Africa alone contributes to a hefty $3.3x10^8$ ton share of atmospheric dust, corresponding to a 66% of total atmospheric dust in the world. Atmospheric dust can maneuver at distances of over 4000 km from its point of origin (Zolfaghari et al., 2011). The dust is generally originated in arid regions, with precipitation rates below 200-250 millimeters per year. It is topographically found in lowlands. By this token, the largest sources of dust on earth are located in the northern hemisphere, forming a dust belt starting from north west Africa crossing through the Middle East, central and southern Asia, towards China (Kermanshah, 2011). Areas, located within the global arid and semi-arid strip and in the vicinity of large deserts, frequently suffer from both regional and trans-regional Aerosol regimes (Kermanshah, 2011). Statistically south west Asia is among the most significant regions in terms of dust and Aerosol (Goudie, 2000). The countries in south west Asia, which are considered either targets or points of origin of Aerosol, include Iraq, Arabia, Kuwait, Syria, Iran, Yemen, and the United Arab Emirates. It should, however, be noted that the phenomenon of Aerosol has a planetary nature and parts of the particles existing in these countries originate from North Africa.

There are numerous underlying causes of Aerosol. Among them lack of vegetation is recognized as the major stimuli. The rather expeditious reductions in vegetation during recent years along with deforestation and changes in zoning and land use of countries such as Iraq, have increased the occurrence of Aerosol. The absence of vegetation in regions suffering from wind erosion has had a long-standing effect on the transfer of dispersed dust

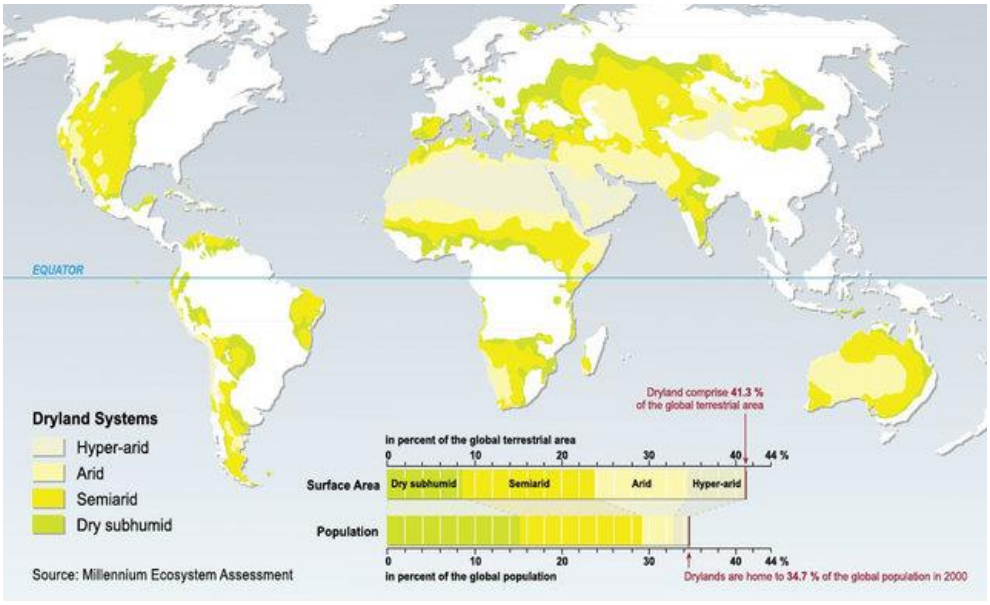

Fig. 1.Geographical map of highly arid, arid, and semi-arid regions around the globe

from one region to another. Furthermore, the largest sand desert of the world, the Rub' al Khali, which encompasses Saudi Arabia, Yemen, and the United Arab Emirates, has emerged as one of the prime sources of dust, following its loss of what little vegetation it had due to drought (Toofan, 2010). Among other factors inciting Aerosol one can mention low rainfall, consecutive droughts, reduced humidity, and intense winds in the region. The atmospheric conditions in the region also facilitate the increased concentration of dust particles in air, which are subsequently transferred towards Iran by virtue of south western winds. One example of these is the Somoom current. Originating from Arabia, it frequently carries sand and dust particles (Poorali and Taghizadeh, 2011). The northern (Shomal) breeze is another example of such currents, which plays quite an influential role in the transportation of Aerosol. The Shomal current is a strong and continuous wind, blown from Iraq towards the Mesopotamia during the summer. The breeze is less evident during winter, albeit not unlikely and rather irregular (Shayan, 2009). Based on the studies, conducted on locating external sources of dust in Iran using satellite images, the phenomenon of Aerosol in Iran originates from two main focal points: one expanding from the western regions of Baghdad and Mosul towards Bahr' al Malh and the other within the Hawizeh Marshes (Atayi and Ahmadi, 2010). A large fraction of the Aerosol in Iran, therefore, originates from trans-regional centers in Iraq. However, the issue of Aerosol in Iran is not excluded to only external sources, but is also emanated from arid climates, particularly in Khuzestan province, as well as the peculiar geological and geomorphological condition of the country, which exacerbates the consequences of this phenomenon (Poorali and Taghizadeh, 2011). Water shortage and drying out of wetlands and estuaries along with improper water resource management are among other influential factors that intensifies the Aerosol phenomenon. Following the construction of several dams at the behest of Turkey and Syria in order to restrain the water currents from the Tigris-Euphrates rivers lowered the amount of inlet water in the lower sectors, drying out the surrounding wetlands. The severity of these droughts was to the extent that a substantial span of the Hawizeh Marshes, comprising part of the largest wetlands of Mesopotamia, got lost (Mokhtari,

Soltanifard, Yavari, 2009). The benefits of the Hawizeh wetlands, considered extensions of the wetlands in south Iraq, in alleviating the amount of dust and Aerosol were two-fold: one through increased humidity from the wetlands, which acted as a barrier against dust particles approaching from the Iraqi desert; and the other by virtue of preventing the wind from dispersing the soft dust of the region, provided that the wetlands were not dried out. Studies also show evidence of monocellular organisms specific to wetland dust, thereby proving that the origins of the dusts are in fact within the wetlands (Ghanavati, 2012).

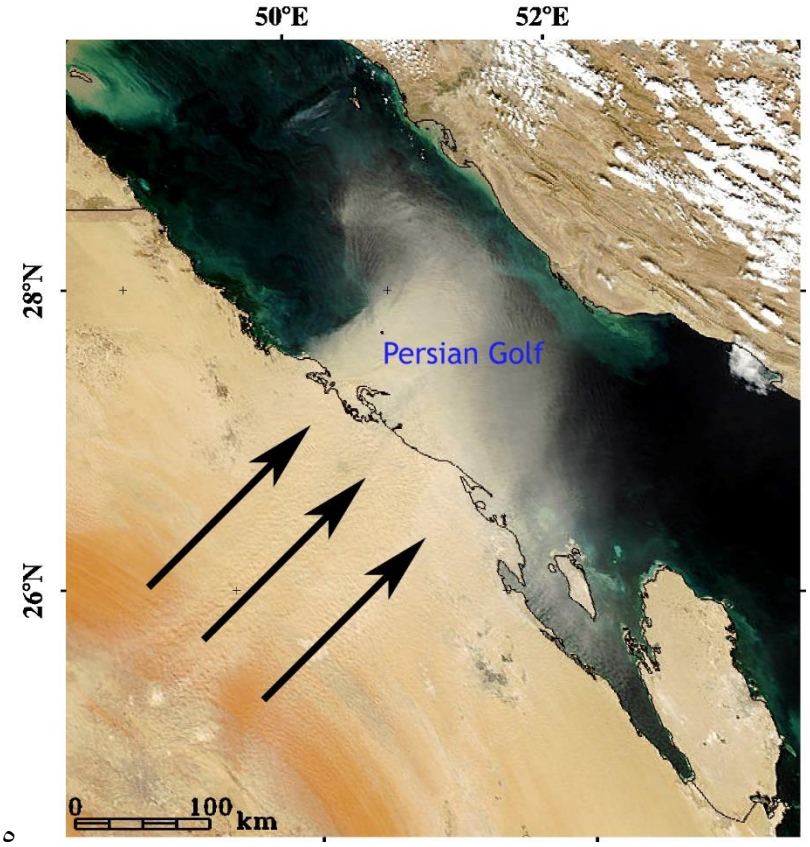

Fig. 2. The focal point of Aerosol

At present, the main targets of Aerosol in south west Asia (the Middle East) are Iran and its western neighbors. The outset of Aerosol in Iran originates from both domestic and trans-regional sources. A large part of the Aerosol, occurring in the western and south western regions of the country, are the result of active focal points of Aerosol and dust in the neighboring countries west of Iran, which coincidentally are themselves in the west and south western areas of Asia. Based on recent statistics, the number of such focal points varies from 5 to 50 and even 100. Nonetheless, the common thread among all the focal points is in the fact that the majority of such places lie in Iraq and its wetlands, Arabia, and Syria. Countries involved in the trans-regional phenomenon of Aerosol are often quite different in terms of politics, social standards, and economy. Identifying such factors and the manner by which the countries relate with one another in such matters could prove quite helpful to inhibit the occurrence of both Aerosol, itself, and its side-effects. Geographically speaking, Iraq, Iran, and 15 other neighboring countries are within the same

geopolitical and strategic region in the Middle East.

This region is highly diverse and unstable in terms of linguistics, ethnicity, race, religion, culture, politics, and economy. In other words, the region is considered a highly fragile geopolitical strip (Kaviani et al., 2012). It is also self-evident that relations among the countries are highly influenced by such factors. Iraq, with a Shia majority, became autonomous in 1932 following the collapse of Ottoman Empire. Since its independence, the country has rarely engaged in amiable relations with Iran. This frigid relation is primarily due to factors such as disagreements over lands and borders, ethnicity, race, religion, and most importantly geopolitical bottlenecks (Kaviani et al., 2012). The matter has been exacerbated as the result of expansionist beliefs inside both Iranian and Iraqi governments (Bahman, 2011). The rise of the Arab Socialist Ba'ath Party as the result of a coup led by Saddam Hussein against Abd al-Karim Qasim, the Iraqi prime minister of the time, engendered a state of military organization of political space (Kaviani et al., 2012). Pleading different justifications, Saddam Hussein abolished the 1975 Algiers Agreement and declared war against Iran following its Islamic Revolution. The agreement, however, was signed once again after 8 years of warfare and imposed damages.

Iran-Iraq relations following the 8-year war was highly influenced by ideological and geopolitical guidelines of the governing bodies, until 2003, when Coalition Forces, led by America, invaded Iraq and put an end to Saddam Hussein's government, ushering in new relations among Iran and Iraq. The inauguration of a new government in Iraq and the reconstruction of the military and police forces for management of domestic affairs and establishment of security as well as attempts to improve the country's economy and alleviate issues related to ethnicity and religion, primarily caused by the presence of regional and transregional forces, were the main difficulties encountered in Iraq, which even to this day pose great challenges to the government. Despite cultural, ethnic, and religious commonalities between Iran and Iraq, the countries still quarrel over matters of history, politics, religion, race, and territory. The current government of Iraq, considered the sole gateway of Iran to the Arab world, is suffering from severe instability, insecurity, and several domestic conflicts and wars, depriving it of all its force and vigor. This lack of a central and powerful government along with political order is undoubtedly the prime reason why any attempts, or lack thereof, by Iraqi authorities to rebuild the country in terms of foreign policies and economics are in vain. It also shows why solving environmental issues, requiring relations with neighboring countries, are doomed to failure.

Saudi Arabia, on the other hand, enjoys different circumstances due to its peculiar political and cultural structure among countries of the Middle East. The employment of a tribal system along with traditional ways of thought and Wahhabism have granted the country an odd quality. Relations between Iran and Saudi Arabia, considered the main power figures in the Middle East, has long been a matter of utmost importance. Following the Islamic Revolution, relations among the two countries adopted a more sensitive outlook, albeit skeptic attitudes toward Iran emerged later on. The establishment of the Gulf Cooperation Council is an instance of such skepticism (Vaezi, 2008). During the Iran-Iraq war, Saudi Arabia was, quite evidently, in favor of Saddam Hussein. Although emphasizing on similarities in regional and political stability in the Middle East can generally encourage further relations among Iran and Saudi Arabia, certain requests and attempts, such as the ones made by Saudi Arabia to gain full control over the region as the sterling

advocate of the Sunnite or contradicting approaches and conflicts of interest in terms of neighboring countries, taking advantage of mutual trust, relations with the USA, Wahhabism, excommunication of the Shia, and finally governmental politics, have somewhat created a tense atmosphere. This undoubtedly affects both current and future relations between the countries.

Among Arabian countries in the Middle East, Syria has always played a pivotal role. Relations between Iran and Syria are among the oldest and most volatile associations between Iran and the Arab world, counting on different political, economic, and military matters. The history of relations between Iran and Syria date back to 1946, when Syria was declared an independent country, gaining immediate support from Iran.

Ever since, certain political conformities have been evident among the two countries, such as common enemies and external threats—Israel, the Ba'ath Party, and America—as well as support for Palestine, Hamas, and Hezbollah. The relations between the countries got further solidified during the administration of Hafez al-Assad, due to common interests and corresponding regional threats. The outcome was Syria's opposition against other Arabian countries in favor of Iran, especially in terms of logistic supports during the Iran-Iraq war. The affinity between the countries continued even after the death of Hafez al-Assad and the rise of Bashar al-Assad. Since the very beginning, Syria was under the threat of external and regional tensions arising from political designs of the USA and Israel. Hence, it found a potential ally in Iran. Unlike the past, however, current relations among Iran and Syria are not solely motivated by anti-Israeli notions and matters of security, but by joint collaboration.

Common enemies and religious similitudes are among other factors facilitating this relationship (Tahayi, 2009). Despite the shared similarities among countries of the Arab world in terms of geography, history, economy, culture, ethnicity, linguistics, race, social norms, and politics, there are also certain differences in political structure, ideologies, religion, ethnicity, and political and competitive approaches which affect the quality of relations among them. Saudi Arabia and Iraq followed a competitive power structure during the administration of the Ba'ath Party, wherein each country sought to consolidate its own standing as the leading power figure of the Arab world. The political outlook of Saudi Arabia on Iraq was, however, significantly altered following the invasion of Iraq by American forces, switching to a more concerned perspective. In other words, Saudi Arabia was concerned about the emergence of a Shia government in line with the policies of Iran, which would facilitate the Iran-Iraq-Syria bond, thereby breaking the balance in the region (Ahmadi, 2011). This enticed Saudi Arabia to take certain precautious attempts against the government of Iraq, aiming to inject an atmosphere of domestic instability and irregularity in the country (Ahmadi, 2011). History shows a similar case for relations between Syria and Saudi Arabia, with close and favorable relations being a rarity. The prime reason for such associations between the said countries is most likely due to differences in foreign policies employed by Syria apropos of Iran and Israel, compared to other Arabian countries. Saudi Arabia would not tolerate another Shia government in the vicinity of Iran. Nevertheless, some of the differences between Arabian countries, and with Iran, have ethnic origins.

It should be noted that the attitude of Arabs, particularly those of Saudi Arabian origins, towards Shia Arabs is quite similar to how they view Iran (Najafi Firoozjayi, 2009). The history of relations between

Syria and Iraq has also been highly influenced by the political structure and policy of the countries. Syria has long been opposed to the presence of occupiers in Iraq, to the extent that it only initiated diplomatic relations with Iraq following the collapse of the Saddam administration. In spite of similarities, conflicts were also quite evident in terms of collaboration and compromise, rendering any interaction whatsoever even more complex. Some regional considerations between the countries include charges of terrorist and anti-security activities of Syria against Iraq by the USA and Britain, different outlook of Syria towards political arrangements in the power structure of Iraq, issues relating to ethnic Kurds in both countries, etc. (Dehghani, 2007) All of the mentioned predicaments, in addition to border conflicts between the countries, have prevented a coalition and affinity between them on both regional and global matters. After 2011 and the instigation of clashes between anti-Bashar-Asad political groups in Syria, the Iraqi government also declared its stance on the domestic affairs in Syria. Based on this declaration, Iraq believes that the instability in Syria and clashes between terrorist groups and the government of Syria are in no way to the benefit of the domestic political stability of Iraq. As a result, Iraq has taken similar measures as Iran. This seems to work out as neither Iraq would benefit from a Sunni government in Syria, nor would Syria benefit from a democratic Iraq. In this light, it appears that neither of the countries are prepared for, or at least capable of finding, the right circumstances to contemplate on their conflicts, but are rather occupied with anti-government terrorist activities and other domestic strives. Regarding the relations between Iraq and Turkey, it should be stated that Turkey considers itself part of the Western block and is taking every possible measure to join the European Union (Najafi Firoozjayi, 2009). Collaborations between Turkey and Israel and America, with the objective of joining NATO, are major causes of tensions between Turkey and its neighboring countries (Karimipoor, 2000). Associations between Turkey and Iraq have seen their ebbs and flows following the independence of both countries. Ideological disputes and practical conflicts among the countries has rendered their relationship rather obscure and dark. Despite historical, economic, ethnic, and religious similarities and shared matters of security (peace-ipsc.org/fa), associations between the two countries have been mostly exigent and at times agitated. Issues pertaining to the ethnic Kurds in both countries in combination with accusations made against Turkey, concerns of Sunni Turkey and Shia Iraq, and outlooks on changes in Syria are all among the most influential factors to affect relations between the two countries. On the other hand, Turkey possesses the vital vein of Iraq—the Tigris-Euphrates Basin—and is highly biased towards the strategic problem of divergence among ethnic Kurds (Karimipoor, 2000). It is worth noting that Turkey has recently witnessed anti-Erdogan uprisings, particularly in relation to national policies towards the affairs of Syria, which appear only to the benefit of American and Israel, and Erdogan's attitude towards Turkish citizens, all of which have yet to be dealt with successfully.

International and domestic proceedings to curb Aerosol and alleviate its subsequent impacts are among major attempts of the Iranian government for management of Aerosol phenomenon. The proceedings were officially approved in 2009 with notices of regulations, published to state the country's promptitude in its combat against the detrimental effects of Aerosol. The approved plan consisted of three phases: short-term, midterm, and long-term. Based on the approved regulation,

the Ministry of Agriculture is obliged to determine and dispatch certain task forces to spread mulch on soil and take any other required actions in regions suffering from intense wind erosion, as mentioned by reports, found in studies on identification of prime sources of desertification.

The ministry is free to collaborate with Iran Meteorological Organization and provincial governments, all in accord with a predefined time table. According to article 4 of the short-term plan, outlined in chapter 2 of the regulation, the Department of Environment and Iran Meteorological Organization are obligated to design a large-scale project for the development and facilitation of atmospheric monitoring centers and awareness systems as well as shared control over climatic conditions of the region, all within a period of 3 months. Any assistance from the Forests, Range and Watershed Management Organization of Iran is made readily available. Other proceedings of the proposed plan include public notices and educational courses, construction of green spaces at critical centers, development and facilitation of health and emergency centers in target regions of Aerosol, and giving rights to the southern and western wetlands of the country by the Ministry of Power, in order to combat the Aerosol.

Midterm plans include clauses on execution of a constructional project for the implementation of a green strip by the municipalities of the southern and western provinces of the country, implantation of at least 600 square kilometers of seedlings per annum for a period of 5 years, and allocation of independent funds to researches on Aerosol.

The long-term plans related to the regulation include sections on:

1. Completion of communicational infrastructures to develop and promote networks for environmental monitoring of air pollution,
2. Development and upgrade of equipment for air pollution sensing stations,
3. Procurement of a comprehensive plan to manage and resuscitate ranges in the southern and western provinces of the country,
4. Acquirement of an inclusive plan to handle fluid sands and wind erosion in the southern and western zones of the country,
5. Development and facilitation of airports to the south and west of the country with advanced navigational and meteorological facilities for better conduction of flights during Aerosol storms,
6. Dispatching expert teams to countries within the scope of Aerosol, and
7. Procurement of a draft for collaborative projects between countries of the region in order to prevent and control the phenomenon of Aerosol.

One of the main instigators of Aerosol is the destruction of wetlands. In this light, the head of the Department of Environment reiterated in an interview with ILNA that: “In the previous year [2009], only 5% of focal points causing Aerosol were located within the borders of the country. The Hawizeh Marshes and Shadgan wetland have produced a substantial amount of dust after drying out, but were duly dealt with and supplied with the required amount of water. As a result, we have been able to eliminate the 5% contribution to sources of Aerosol within the country and can say with certainty that all domestic focal points have been excluded.

However, as the figures indicate, only a small percentage of Aerosol sources are domestic, with the majority of focal points being external. Handling this predicament, thus, requires trans-regional cooperation, especially between Iran and Iraq. The infrastructure for sub-regional development of measures to control and prevent dust storms in western Asia has been stated in

the 11th article of the Convention against Desertification, annex 2, article 5. The convention stipulates that Asian countries, suffering from desertification, are obliged to procure and implement the predefined work plans at a sub-regional level with the assistance and consultation of other members of the convention (Toofan, 2010). On this basis and considering the intense impacts of dust storms, the involved countries within this region are encouraged towards regional negotiations. These incentives went as far as the signing of a document of cooperation and agreements among several countries of the region in 2008, some of which are reported as follows:

- A memorandum of understanding, signed between Iran and Iraq during the Iraqi Environmental Board's trip to Iran in 2008,
- A mutual cooperation document signed in 2009to combat Aerosol,
- The 2010 quadripartite conference between Turkey, Iran, Iraq, and Syria addressing the phenomenon of Aerosol and the environment,
- The meeting of senior experts of the involved countries with reference to the procurement of a plan to address the issue of Aerosol in 2010,
- A second meeting of the ministers of environment of Iran, Turkey, Iraq, Syria, and Qatar in 2010 and the proposal of an executive trans-regional plan with contexts pertaining to the environment, air quality, meteorology, and desertification, and
- Iranian expert's visit to Iraq in 2011 with the objective of following up on prior agreements.

The latter step ultimately worked towards an agreement, the provisions of which were to:

1) pilot a project for the dissemination of mulch over a total span of nearly 500 hectares surrounding the city of Karbala, 2) desertification procedures expanding to nearly 1 million hectares in area during a given period of 5 years, 3) procurement of an executive plan for desertification procedures by Iran to be sent for implementation in Iraq, with the assistance of Iranian experts, 4) educational courses on environmental management of Aerosol, and 5) methods to combat desertification by Iraqi experts in Khuzestan.

According to Aghayi Moghaddam, the proposed plan, initiated with the cooperation of the University of Tehran, sought to design a polymer network, taking into account reactions of ionic particles, in order to consolidate fluid sands (Ghanavati, 2012). Despite continuous efforts made to combat the issue of Aerosol, the problem has yet to be fully dealt with due to certain financial deficiencies. In fact, in an interview with Javan News Agency on June 19, 2013, Mohammadi Zadeh, head of the Department of Environment of Iran, mentioned the lack of funding for the management of Aerosol and emphasized the 30% decrease in Aerosol concentration during the 2012-2013 water year. This decrease is most probably the result of educational courses held for Iraqi authorities in conjunction with other attempts such as arboriculture and implementation of plans to fight desertification in Iraq. After referring to the approval of the national document for combating desertification, Mohammadi Zadeh added that the document was at that time under examination of technical task forces of the Islamic Consultative Assembly. Also in regards to water resource management with the objective of combating Aerosol and desertification, he spoke about the precedence of supplying drinking water, followed by water for agricultural, industrial, and finally environmental uses in the past. Thanks to certain successful attempts, these had shifted towards prioritizing the supply of water for environmental purposes. As a result, the

ministry of power is henceforth obligated to observe this regulation (www.javanonline.ir/vdcezz8nvjh8xoi.b9bj.html).

CONCLUSION

The phenomenon of Aerosol and its accompanied consequences does not target only a single nation, but displays a trans-regional nature, affecting a myriad of countries. Experts, nowadays, believe that environmental problems are a threat to global security. The impacts of Aerosol storms in Asia can also threaten the security of America. This highlights the importance of collaboration between a multitude of countries as well as legislation of new regulations on an international level, all with the purpose of managing the phenomenon of Aerosol. The aftermath of damages inflicted on a specific region's environment is evident in other regions as well. An instance of this can be seen in how the drying out of wetlands in Iraq affect the occurrence of Aerosol in Iran. Thus, governments should at least consider the global characteristic of environmental phenomenon for their own domestic security; nonetheless, conflicts and strives in the Middle East have had negative impacts on the convergence of the countries of the region towards managing environmental crisis, which ultimately has been to the disadvantage of the countries involved. Iraq and Syria are presently occupied with domestic tumults and irregularities. Saudi Arabia is also witnessing similar conditions as of recently. It is evident that under such conditions, the issue of Aerosol would fail to top the list of governments' priorities. The highest rate of damages from Aerosol in Iran are focused on south western provinces of the country. It requires sufficient funding to combat the consequences of this phenomenon, which Iran alone cannot procure. Adding salt into injury, the circumstances of Iraq, as the prime source of Aerosol formation in Iran, display a state of economic downfall, thus offering faint hopes for assistance, at least financially. This further complicates the issue of Aerosol and is ultimately met with futile endeavors on part of Iran. The overall outlook on the issue of Aerosol does not appear too favorable, given the domestic predicaments and security issues in Iraq and Syria, considered the main focal points of Aerosol in the region. Meanwhile ideological and geopolitical competitiveness between Iran, Iraq, Syria, and other countries such as Saudi Arabia, Turkey, and Qatar, along with their regional and global supporters does not improve the situation at all.

All the same, this could change if certain modifications could be made about the antagonistic relations between the conflicting parties and subsequent policies were made for cooperation among countries in order to manage the phenomenon of Aerosol. It should, however, be noted that given the impacts of Aerosol on the inhabitants of the engaged countries, factors such as public opinion and civil communities can significantly alter the political and ideological course of this predicament.

The following recommendations could be made in order to alleviate the phenomenon of Aerosol and its accompanied consequences:

- Reviewing international laws on environmental issues
- Ventures through international institutions and legislation of obligatory laws through the issue of Aerosol in Iran
- Encouragement of governments towards solving this predicament
- The use of leverage in possession of Iran in order to push the engaged countries towards cooperation and ultimately solving this predicament
- Efforts towards the establishment of relatively stable policies in countries suffering from domestic disputes

- Increased funding for procedures relating to the management of Aerosol, particularly in terms of innovative strategies, put forth by experts of this field
- Vindication of regulatory bodies of the involved countries with regard to the issue of Aerosol and notification of the irreparable damages of Aerosol
- Improved diplomatic relations among the countries of the region with the objective of decreasing tensions and intervening on behalf of the involved governments in order to prevent or alleviate conflicts.
- Emphasis on common interests in order to increase convergence

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CONFLICT OF INTEREST
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LIFE SCIENCE REPORTING
No life science threat was encountered in this research.

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