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Geopolitical Condition for Determinants of the Jordan Water Security

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Abstract

This study aimed at studying the geopolitical condition for the determinants of the Jordan Water security through the following objectives: clearing the effective demographic data on Jordan water security. Disclosing the impact of the Syrian crisis on the Jordan Water Security and recognizing the influence of climate characteristics on Jordan Water Security and clearing the impact of the geopolitical condition on Jordan Water Security. The study had employed the analytical descriptive method… and it concerns with specifying reality and collecting facts about it and analyzing its sides, with what shares in working on developing it. The study deduced results meaning that the geopolitical condition played a role in the lack of water, because of the geographic nature of Jordan, the thing that led to fewness of water resources and increase of population and the flow of the Syrian refugees. It1 appeared clearly that the geopolitical condition plays a significant role in availability or fewness of water for the same source of water. The study deduced a recommendation meaning; working on benefiting from the Jordan geopolitical condition in exploiting the water harvest and the scientific method in water-storing, and the necessity of working with the international organization to guarantee non-influencing the Jordan geopolitical condition and agreement with the states of adjacency on water shares.

Key words: Jordan; Geopolitical; Rains evaporation; Syrian refugees; Water security

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INTRODUCTION

The term geopolitical indicates to the integrated relationship between geography and the political science) Ethington, & McDaniel 2007), where the natural earth geography itself imposes on the policy and the water policy, the subject of study in particular, and it usually depends on benefitting from the natural resources in achieving objectives of internal and external policy Dodds, 2000), and in other words, the term expresses the region, that comprehends the diverse political incidents that occur on its land and the geopolitical analysis covers specifying the most important resources required by the process of development and the political, economic and social prosperity of the states through the power of the state that leans on its area and the diverse of its sources and then the ability to affect and be affected by other states as Turkey plans nowadays (Selby, 2005).

And the geopolitics is a science discusses the impact of the earth and its nature on policies of the state, either the internal and external policies, the economic, social, military and water policies, that attains its vital and strategic interests. It is a science derived from geography and politics altogether (Kelly, Phyl, 2016) worked on building a mutual theoretical model as a comprehensive geopolitical analytical instrument can be employed across a large group of contexts, and the geopolitical incidents.

And the geopolitical analysis tackles the water condition, its sources, and the threatenings of their carrying out kliot, N. (2005), and the water determinants impose themselves on the policy of the state in many times and may lie behind the wishes of the states in

building stable and diverse relations in achieving the highest level of water availability for their people, and so employs the geopolitical analysis in treating abundant basic constituents of the natural sources and sources of water, that explain plenty of political phenomena with geopolitical – political nature about the water resources, and the stinginess of water is considered the dominating trait to many states including Jordan.

We find what approaches %80 of the population of the world are exposed to high level of threatening for water security. Horrible investment in water technology enables rich states from compensating levels of decrease in water stinginess (Vörösmarty, C. J., McIntyre, P.B., Gessner, M.O., Dudgeon, D., Prusevich, A., Green, P., & Davies, P.M., 2010).

And the concept of water security receives an increasing interest all along the past decade at each of policies and academic discussions. And there exist numerous definitions for this concept, promoted by a group of international organizations, the thing that made the water security an axis for concluding conferences like the one concluded by the forum of Asia and the Pacific Ocean for water in the year 2007, they concluded their first summit entitled: "Water Security: Leadership and Commitment" (Asia Pacific Water Forum, 2007), and water security too became at the front of internal issues and tables of administration works in the past decade, especially the connected with fears of terrorism (vitality), besides, there is a big increase in employing the term "Water Security" in studies and academic communities all along the decades (Cook, & Bakker, 2012).

The study treats the water condition in Jordan and its water security, that is considered an extension for the human security, that covers within its dimensions nutritious and economic security, in addition to analyzing causes of water shortage from which water sources in Jordan suffer and the reflection of that on the Jordan water security.

And in spite of the diverse of water sources in North Jordan, but these sources do not cover the need of the population in the Jordan North governorates in shadow of the steady growth of the population in the past years resulting from the Syrian crisis that threatens the water security, the thing that requires searching for replacement sources fulfill the water shortage, from which Jordan suffers at all its sectors; the economic and service, especially Jordan is classified one of the world poorest ten states in water (Ministry of Water and Irrigation, 2006).

THE GEOPOLITICAL CONDITION OF THE AREA OF STUDY

The Hashemite Kingdom of Jordan is located in the Southern-Western part of Asia Continent and extends between both lines: Length line °34 59 and °39 18 in the east, and both of breadth circles °29 11 and °33 22 in the North, and due to the geographic location of Jordan that is bordered from the North by lands of the Syrian State, for this location had affected this Jordan geopolitical location directly on the process of development and everlasting the natural resources, the most important of which are water resources; so the North territories are considered the most affected territories by the Syrian Crisis, (Figure 1).

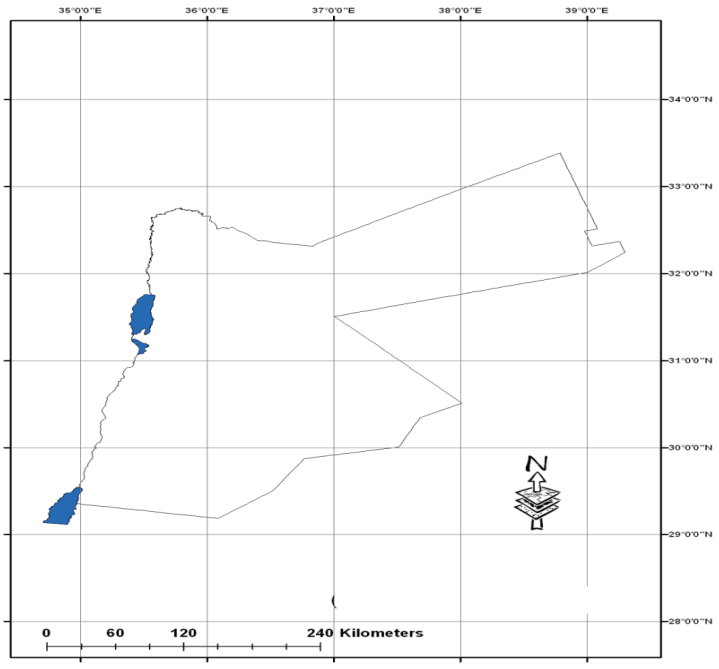


Figure 1
Study area

Problem of Study

The problem of study conceals in studying the geopolitical condition for the determinants of the Jordan Water Security, in shadow of the variation of climate data, and the disorder of the water equilibrium, as a result of aggravation of the population migration from the adjacent states and because of the limitness of its water resources, and increase of water consuming average with what surpasses the available size from the water sources.

Question of Study

The problem of study starts from a primary enquiry meaning what is the geopolitical condition for the determinants of Joran water security.

Subsidiary Questions

• What are the populational data affecting the Jordan water security?

• What is the impact of the Syrian Crisis on the Jordan water security?

• What is the influence of the climate characteristics on the condition of the Jordan water security?

• What is the influence of the geopolitical condition on the Jordan water security?

Objectives of Study:

• Clearing the affective populational data on the Jordan water security.

• Disclosing the impact of the Syrian crisis on the Jordan water security.

• Recognizing the impact of climate characteristic on the Jordan water security.

• Clearing the impact of the geopolitical condition on the Jordan water security.

Significance of study

The Significance of the scientific and practical study springs through the following:

• What the water sources suffer from the clear exhaustion affected the water security in Jordan, in shadow of increasing numbers of migrants from the adjacent states towards Jordan, in addition to the limitness of water resources in Jordan; for Jordan is considered one of the poor states in the water resources.

• Fewness of local studies that tackled the impact of the Syrian crisis on the water condition in Jordan, in spite of its significance for planning purposes in the domain of hydrology of the agricultural and population activities.

• This study is considered as a step for preparing similar studies possible to generalize their results at a comprehensive from tackles the impact of the exclusive migration on the water condition in Jordan.

• This study also shares in supporting decision-makers by a scientific study benefited by it in policies-making treat the water threatening.

Concepts of Study

There is a group of basic concepts in this study, there are: Kelly, P. (2016) defines the classical geo-policy as it is studying the impact and sovereignty of the geographic features from sites of districts, states and sources, in addition to impact of topography, climate, area, migration, size and shapes of states, and demography and the like, on policies of external states and their actions as an auxiliary factor for efficiency and political ability.

Geopolitical Concept

Yves Lacste defined the geopolitical concept that it is: A study of different forms of authority conflict on earth, ability is measured by the resources contained by the region and by ability on planning outside the region, this for distances increase slowly (Hepple, L. 2000).

And this correlation and integration appeared in the geopolitical analysis among the states, after the impact of this integration was cleared in the frame of studying the political relations among the states and connection of that with their internal policies, that govern the internal and external geopolitical site in building their general policies.

National security

National security: It is defined with the extent of social, political, economic and ability of the state in conserving the internal security, protecting borders of the country and its independence, and achieving development and stabilizing the state of associations and law (Adajah, 2017).

Concepts of human security

Human security: It is security of man from fear-hunger and conserving his human dignity through calm and stable life and continuous (Adajah, 2017).

Concept of water security

Water security is defined as: "Achieving self-satisfaction from water at everlasting from in accordance with the acknowledge averages" (Ghneimi, 20078, 45).

Economic Security: It includes the significance of availability of income fits the needs of the people with what insures a suitable dwelling and good life, and insuring labor opportunities suite with efficacies, and desire achieving social justice by the just distribution of the resources and returns.

Food Security

To be available at all people the necessary purchasing ability to obtain the basic food at every time (UNDP, 1994).

Methodology of study

To achieve objectives of study, the study depended on the descriptive analytical method, and this method had been represented in numerous steps, of them:

• Description of natural data of climate in Jordan and its effect on the Jordan water security, beside analysis of information and available climate and hydraulic data.

• Analyzing water resources in Jordan together with clearing their geographic distribution.

• Preparing the cartographic maps related with the subject of study.

• Analyzing the impact of the Syrian crisis on the water security in Jordan.

• The geopolitical condition and the Jordan water security.

Tackling the study will be done through the following axes:

Previous Studies

Interest of researchers increased in the domain of social sciences, especially politics by studying the geopolitical effects of the water condition in Jordan at the beginning of mid-twentieth-century, this interest had been dedicated on two dimensions, the first dimension was represented in studying the geopolitical problems connected with water condition: as a result of populational pressure increase on them, while the second dimension was represented in studying water condition and its relationship with water security of the states. This study had come to add another dimension, represented in analyzing the water condition in Jordan and its impact on the water security, in addition to analyzing the specified geopolitical dimensions of water condition in Jordan, in the following an illustration for some studies that concerned about the water studies at both local and worldly levels:

And in a study by Cook, C., & Bakker, K. (2012): entitled "Water Security: Debating an Emerging Paradigm. This study submitted a comprehensive review for the concept of water security, including the academic and political literature. The analysis indicates to the using of employment of the term water security had increased a great deal in the past decade, across numerous specializations. This study did compare between definitions and an analyzing method for the water security across the natural and social sciences and found that it is indicating to employing methods of analysis and distinguished criteria, and sometimes un-applicable. And studied the characteristic traits and defects of tight frames corresponding the wide and integrated frames of the water security and disclosing their benefit by referring to the integrated administration the water resources. Finally, it pin-pointed that the integrated method of the water security merges the issues of the rational government, and so it propagates with a good as a new method of water management.

In a study of (John, 2008) studied the impact of ice on the flow of rivers in upper basin of Mississippi valley. And the study had illustrated that the continental snow plates that cover the North of American works on increasing the water flow of rivers at the zone of dividing water in the upper basin, and this increase had been reflected on the storage of the inner layers, and results of statistical analysis of this study asserted this relationship.

In a study of Zeitoun, M.& Warner, J. (2006) entitled "Hydro hegemony a framework for analysis of transboundary water conflicts"

The study cleared that rarity of water and increasing demand for water all over the whole world calls for a deeper understanding of the water conflicts crossing borders. And the study attempts answering the permanent and deep political question: who obtains the quantity of water, and how and why? And the water domination is the domination at the level of the river basin, and it is being achieved through strategies of controlling the water resources, such as picking up the resources, integration, and containment. The study deduced that the political processes outside water sector work on consisting the water political relations at the level of the basin at a form amounting among the derived benefits from cooperation in the shadow of leadership of the domination and non-classifying sides of the domination. Competitive results are specified from part of domination on the resources through the shape of the occurring water domination, usually for the interest of the powerful. And the frame of water domination, is applied on the basins of the Nile, Jordan, Tigris, and Euphrates rivers; for it is clear that the present dominating water constituents tend towards the dominating form. There are denotations at every case of the cases of inconsistency of power, that affects an in just results, on the expense of the pending conflicts with low sharpness. The study proposes making a useful analyzing typical frame available to studying the choice of powerful dominators and how can they be able to go far from domination lead the track of cooperation.

Ministry of Water and Irrigation in Jordan made a study in (2006), and showed existence of consecutive decrease in the individual's share from the water resources; for they reached less than 150 cubic meters per year in the year (2006).

Also the study of Selby, J. (2005), entitled "The geopolitics of water in the Middle East: fantasies and realities" views that most addresses of experts and politicians about water in the Middle East concentrates on rarity of water and significance of their geopolitical sites, even if they were not apparent in many times. Optimists and pessimists as one side tend to suppose that water has deep geopolitical impacts, but instead of considering them issues related with the political economy; but they consider water provisions a decisive site and a cause of local conflicts at many parts of the area.

As the study of (White and Howe, 2004) had cleared that mismanagement of surface water negatively affects water in North-East Britain. And the study deduced that constructional activity directly affects the Hydrological circulation through restricting the level of the leaking water from the surface water to the stored inner water. The study illustrated that the bad technicalities of managing the surface water work on the aggravation of water pollution problems, occurrence of floods, and numerous of dangerous environmental problems, and also the study cleared that the correct management of water resources have to connect with two factors; they are: home demand, and climate change.

(Al-Adamat et al., 2003) tackled the extent of pliability of inner water in the Basaltic Aquifer in Al-Azraq

Basin in Jordan, to saltiness pollution, depending on the geographical information system (GIS). The researchers did analyze the impact of the hydrologic conditions, and the human effects on the type of the inner water and its movement. The study in its methodology depended on analyzing data that are related with the depth of the inner water and size of recharge by rainfall. Also, researchers did prepare maps clearing the degree of danger to which the inner water expose to within the basaltic aquifer. And the study had been classified with %84 of the layer locating within the zone with medium danger, and the rest within the zone with low danger.

Also the study of Ashton, (2002) entitled "Avoiding conflicts over Africa's water resources in pin-pointed that about %85 of water resources in Africa consist of great rivers basins, that are being divided among numerous countries, usually the priorities of allotment and water distribution inside any country together with objectives of national development. Meanwhile this may achieve the national objectives of the "Water Security", but it is obliged to greatly concentrate on the regional efforts to guarantee employing the available water resources to harvest permanent and everlasting benefits for peoples of Africa as a whole. And from the ideal direction, the strategy of water resources management of every state should agree with the strategy of its neighbors if wanted to keep peace and prosperity and avoid conflict in the region.

DISCUSSIONS

Firstly: Analyzing the Demographic Data

Water usage in Jordan and its impact on its water security: the water resources in the Hashemite Kingdom of Jordan- by virtue of its dry climate and semi-dry one-by its stinginess and oscillation, the thing that affects the size of water available for the different usages from one year to another, so the size of available water had amounted to about 912 cubic meters in the year 2016, meanwhile the demand for water in this year amounted 1403 cubic meters, the thing that evidently indicates to existence of water failure estimated about 411 cubic meters, and the future estimations indicate that the size of available water for the different usages in the year 2025 estimated of about 1459 cubic meters, meanwhile the size of demand for water is estimated about 1548 cubic meters in that year, that is at a failure estimated with about 88 cubic meters of water (The National Strategy for Water, 2016) and in shadow of this permanent failure between the available of water and the demand for it imposes on Jordan geopolitical challenges related with water security, the thing that demands laying water strategy takes into consideration laying water strategy takes into consideration searching for new water sources and organizes regional agreements enhance the available water sources for the inhabitants. And looking at water usages for different purposes in the year 2011, we find that the quantity of the consumed in this year had amounted to 1010 cubic meters. And the agriculture sector had absorbed the share of the lion at a quantity amounted 729 cubic meters and formed a rate of (61%) from the size of consumed water in Jordan, while the quantity of the consumed water at home/municipality sector about 429 cubic meters and formed the rate of (%36) from the size of consumed water, but industry sector the quantity of consumed water in this sector 39 cubic meters and formed the rate of (3%) from the size of consumed water (Ministry of Water and Irrigation, 2014) and by looking at the geopolitical dimensions for these numbers we find that agriculture sector mainly depends on water of irrigation, the thing that means that the everlasting and stability of agriculture sector is directly connected with the water condition and its permanency and what results from violation of balance between them both of geopolitical impacts impose on Jordan economic and political challenges.

The Kingdom had been classified – as a result of its water resources stinginess- within the poorest ten states in water in the world, and the yearly share of the individual from the renewed water & source and been estimated less than 100 cubic meters in Jordan (The National Strategy of Water, 2016).

Jordan depends by what increases over %76 of its water needs for drinking purposes on the inner water while depends %24 of its needs from drinking water on surface water, and the peaceful extraction of un-renewed water amounts about 144 cubic meters for the period (2015-2025), where it is distributed on twelve inner water basins (Map 2) and the size of available surface water amounts, through the same period (263-311) cubic meters per year (The National Strategy of Water, 2016).

Surface and inner water are exposed to deterioration, exhaustion, and pollution and absence of economy culture in using water; as a result of the increase of pressure on it by the economic activities, the thing that demands keeping and everlasting it for long time periods, and laying programs for the management of water resources in Jordan and finding replacements to limit its exhaustion and deterioration.

And in light of this water condition of the Kingdom, we find that being aware of the size of using water in Jordan at all sectors represents a positive step towards the everlasting of the water resource, with what guarantees achieving a peaceful water condition for the population, in shadow of population growth, and consecutive decrease in the individual's share from the water resources; for it reached to less than 150 cubic meters per year in the year 2006 (Ministry of Water and Irrigation, 2006). Ashton, P. J, (2002) pin-pointed that water resources consist of great rivers basins that are divided among numerous countries. And averages of high population growth accompanied by constant increase in demand for water led to crossing

numerous countries the spot in which the rarity of water provisions lead to effectively limit increase of development. The present populational trends and patterns of using water indicate that more countries will overstep the limits of their water resources pliable to be economically used and the wild limits before the year 2025.

Secondly: Impact of Syrian Crisis on the Jordan Water Security

Since years, Jordan witnesses a sharp retreat in the water sources, and water sources in the inner basins became at a difficult case (Al-Qaisi, 2010), for the impact of seeking refuge to the strategic storage of water. And the statistical data issued from the Department of General Statistics indicates that one of causes of increasing the average of demand for water in the last years in Jordan was because of the Syrian Refuge and increase of demand for water as a result of the natural populational increase, for the population number in Jordan was about four million persons in 1990 and the rate of populational growth is about %3.42 and so the number of the population of Jordan approaches 10 million persons in accordance with the recent formal satisfaction Jordan (Tarawneh, Hadadin, & Bdour, 2008).

The Syrian crisis witnessed complications and great developments at both levels the international and regional; where they formed a dangerous challenge in front of the decision-makers in light of the geopolitical determinants of the Jordan foreign politics, through the developments of incidents in Syria (Francis, 2015) and from the most significant results of the Syrian crisis is the increase of economic, social, security and water burden that made heavier the shoulder of the Jordan economy in spite of the existence of the international aids, also the international aids to Jordan were never as the required sum (Al-Dahamsheh, 2017).

And the Jordan formal statistics indicates to the existence of about one and a half million Syrians in Jordan, approximately half of them are registered at the High Commissariat with the description of refugees. But in the Mafraq Governorate that comprises (18) municipalities; where the number of the Syrian refugees in the governorate according to the High Commissariat's statistics (2016) amounted to (100) thousand persons and it is a number surpasses the number of the original inhabitants in the governorate, that reaches about (80) thousand persons and eight municipalities from (18) adjacent to the Syrian borders, they are Hosha, Al-Sirhan, Sabha, and Naifeh municipalities host the great number of the Syrian refugees (Al-Dalabeeh and Al-O'dwan, 2017, p.284).

The evaluation of the Jordan Ministry of Planning and International Cooperation of Pressure degree on Water Provisions after the arrival of the Syrian refugees, and found that %70 of it obtained by the Jordanian and the Syrian Refugees at less than the national standards, that amount to (100) liters for each person (Al-Shoubaki, & Haris, 2018).

Also the Jordan Ministry of Foreign Affairs cleared that the cost of receiving the Syrian refugees in the Kingdom since the beginning of the crisis in 2011 until 2017 amounted (10) milliards and (301) million US$. The Ministry published on its formal page on its site on twitter on October 10, 2017 numbers including the burdens of Syrian Refugee crisis on the Kingdom, since the beginning of the crisis until the present year (The Jordan Ministry of Foreign Affairs, 2017).

Cost of sheltering the Syrian refugees for the year 2017 distributed due to the sectors in the table No. (1), they are as follows:

No.	Sector	Cost by the million dinars
1.	Health	111.442.742
2.	Education	138.286.152
3.	Water & Healthy Wasting	506.500.000
4.	Transportation & Non-Formal	111.091.400
	Manpower	----------*
5.	Food Substance	3.343.783
6.	Consuming the Infrastructure	172.973.615
7.	Municipal Services	23.168.370
8.	Security Cost	403.981.312
9.	Total	1.7 US$

*not available
Source: Jordan Ministry of Foreign Affairs**,** 2017.

Hosting the Syrian refugees included the cost of education, health, support of electricity, water and healthy drainage consuming the infrastructure, the municipal services, the support materials and goods, transportation losses, and then non-formal manpower and security. Health, education, water, and healthy drainage, transportation, non-formal manpower, food substances and security cost.

The Ministry mentioned the direct estimating cost of hosting the Syrian refugees and the expected Syrian crisis for the very years amounted to 1.7 Millard dollars. Share of water and drainage was 506.500.000 million dollars in the year 2017. This fearful populational pressure causes a decrease in water shares of the Jordanian citizens, and Jordan cannot be dissolute from its geopolitical site by being near the Syrian borders.

Thirdly: Influence of the Climate Characteristics on the Jordan Water Peaceful Condition

The climate directly specifies the effectiveness of the hydrologic processes connected with water circulation of the basin, and these processes are represented in rain pelting, evaporation, water flowing and water- leaking. And the climate of Jordan is classified within the semi-dry climate classifications, where the yearly average of its rains is less than 250 millimeters (Abed, Yasin, Sadaqa, & Al-Hawari, 2008) . In the following is an illustration of the most important elements of climate and their effect on the water condition in Jordan and its water security.

Rains

Impact of rains appears on water condition in Jordan through changes that emerge of the size of the stored water, and lowness of the water level, and these changes happen as a result of rains vibration and their diversion from spatial and time yearly average, and rains vibration connects with the extent of affection of the basin by the meteorological depressions from part of their power and place extension and extent of their impact on the dry internal zones.

Due to the variable topographic features of Jordan, the distribution of rainfall varies considerably with location. Rainfall amounts vary from 600 mm in the northwest to less than 200 mm in the eastern and southern deserts, which form about 91% of the surface area. The average total quantity of rainfall which falls on Jordan is approximately 7200×106 m3/y, and it varies between 6000×106 m 3/y and 11,500× 106 m 3/y. Approximately 85% of the rainfall evaporates back to the atmosphere; the rest flows into rivers and wadis as flood flows and recharges groundwater. Groundwater recharge amounts to approximately 4% of the total rainfall volume, surface water amounts to approximately 11% of total rainfall volume (Abdulla & Al-Shareef, 2009). And the depression in averages of rainfall in the Southern and Eastern parts increased the stress of dryness, and both researchers had counted the coefficient of dryness in accordance with the following equation:

The Yearly Average of Rainfall

$$\text{Drought factor} = \frac{\text{The annual rate of rain}}{\text{The annual rate of rain} + 10}$$

(Shihadah, 1990)

For the precipitation effectiveness in North Jordan is about (12) while in the Southern parts amounted (2.3). from the other part, time vibration of rainfalls averages pelting on Jordan work on occurring consecutive periods of dryness, negatively affect the water condition through contradiction of the size of the inner storage, and averages of rainfalls variate during the rainy season, where it begins in October and lasts till the end of May, and this period agrees with the beginning of the zone affection with the meteorological depressions, and repetitions of meteorological non-stability cases.

About %88 of Jordan area locates in the dry zone, that its rainfalls averages do not increase more than (250) millimeters yearly, and the area of the Jordanian lands locating in the semi-dry zone, that receives between (300-400) millimeters yearly forms about (%2.3) from the area of the whole Kingdom, corresponding (%0.7) represents the area of the semi-wet zone, that receives rains their average does not exceed (600) millimeters yearly (Al-Roosan & et al., 2001).

Temperature

Rise of temperature degree in Jordan works on increasing sharpness of dryness of the yearly average, and decreasing the effectiveness of rains in water flowing formation for a long time period, and in the size of high water drainage, the thing that is negatively reflected on the peaceful water condition in Jordan. The yearly temperature degree the average amounts to about (16.) centigrade. And the averages of temperature on the monthly level, for the month of December is considered the coolest months of the year; for the values of temperature in this month to below (-1°), while July month registered the highest month of the year in temperature, for the average of temperature in this month amounted to about (40°) centigrade (Al-Salaymeh, Al-Hamamre & Abdelkader, 2010).

Evaporation

Jordan is distinguished with the rise of evaporation averages, where more than %92 of the size or rainfalls pelting on it by evaporation(Ministry of Water and Irrigation,2015), the thing that negatively impacted the peaceful water condition in Jordan and on the size of yearly nutrition of the inner water layers; and the rise of the water loss is explained by evaporation in Jordan, by rise of temperature averages in most of the year months, and disclosing the surface, and fewness of plant cover (Shafir & Alpert, 2011).

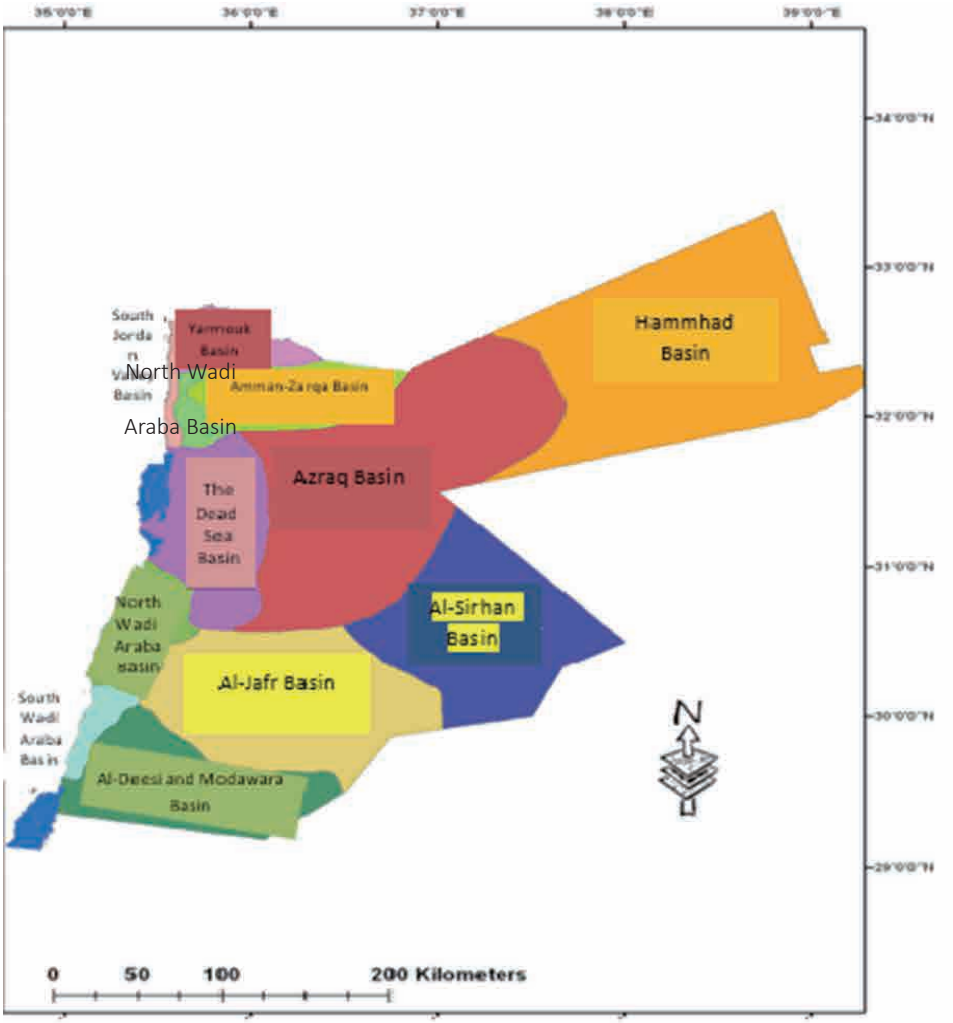
Relative Humidity

The water storage in Jordan is affected at a rate of wetness, where the relative humidity decreases the Eastern and Southern parts from Jordan, for the yearly average of the relative humidity in it amounted to about (%50), while the average of wetness in the Northern parts to reach (%60). And the rate of humidity depends on rainfalls averages, so we find that the rate of humidity rises in the raining months of winter to reach the highest rate in January month at (%70), while decreases in summer months to reach the lowest rate of it in June (%40). And the increase of humidity within the range of the Western and Northern heights to the increase of the content of social humidity, and increase of effectiveness of rains in forming water followings, work on increasing the average of yearly nutrition of the water layers within the unit (Amman – Wadi Al-Seer) (A7-B2), while we find that the decrease of humidity in the Eastern parts works on limiting from effectiveness of rains, and their ability on forming water flowings, the thing that negatively impacted the averages of yearly nutrition of the prevailing water layers in those parts (Ministry of Water and Irrigation, 2015).

Winds

The yearly average of winds speed in Jordan amounts to about (9.3) Kilometers per hour, and the speed of winds increases during months of winter as a result of affecting the basin by the wet meteorological depression, also they increase in the period through which Jordan is exposed to impact of the dry Khamsin depressions in both seasons of spring and summer, and the winds

of the wet meteorological depressions had impacted a positive impact on the water security through increasing the inner storage by action of the accompanying rains to those depressions, also their distinction with coldness had decreased the quantities of evaporated water from rains and water flowings, while the Khamsin winds negatively impacted the inner storage; that is for their distinction with dryness and height of their temperature degree, the thing that led to escalation of water evaporation processes (Ministry of Water and Irrigation, 2015).



Source: Ministry of Water and Irrigation, 2000

South Jordan Valley Basin

Figure 3
Inner Water Basins in Jordan

Fourthly: The Geopolitical Analysis of the Jordan Water Security

The Jordan water security plays an axial role in stability of Jordan. And though numerous of drinking water challenges sometimes because of dryness and populational increase, and existence of the Syrian refugees of its land due to the Jordan geopolitical location, and competition on sources of water with states of the neighborhood. And Jordan is considered one the poor states in the world in water from part of sweet water provisions, and Jordan confronts' abundant of water challenges like the rest of the Middle East States and their limitness, dryness, evaporation, unjust employment, unstudied agriculture, and exclusive migrations from Iraq, Libya, Yemen, Syria, some other states, the internal demographic changes, climate change and employment of inner water without licensing.

The impact of the geopolitical dimension had concentrated on the site of Jordan in numerous axes: the first axis was represented in performing the Israeli entity by occupying (700) million cubic meters from the water of the Jordan River to irrigate Naqab desert and this quantity of water forms the rate of %60 from the size of water drainage of the River Jordan (Al-Tawil, 2009) and that had been reflected on the size of water flowing of the River Jordan, the thing that negatively impacted the agricultural sector in Jordan valley for the decrease of the water size needed by agriculture sector in the valley, but

the second axis had been represented in the tributary of the River Jordan, and it is the Yarmouk River, where Syria performs exploiting water of the Yarmouk River, the thing that demands coordination with Syria to manage the water resources in the basin of Yarmouk, but the third axis had been represented in existence of inner water reservoir, mutual between Jordan and Saudi…it is Al-Dissi Basin the thing that demands coordination with Saudi to obtain, both states, the just rate of water of the basin, inform the water of the basin is not renewed.

Water security means conserving. the available water sources, and employing them by an organized way in drinking, agriculture and other usages and protecting the water resources in different studied ways.

The relationship between water security and national security is an integrated correlative relationship in any violation of water security leads to violation of the human security and so reflection on the national security.

Starting from that, there is the conservation of the Jordan water security, considering it one of the most important constituents of the national security, it is conserving the water security of springs and zones of flowing of the River Jordan and the constant natural flowing of its water, considering them from the main sources of water, they can impact the Jordan national security, and violating of tyrant employment of water by the adjacent states threatens the national security. And threatens the guarantee of the Jordan River water flowing continuation at a natural way without intervention from anybody guarantees the lowest limit of water availability.

And I do not insure my native land (homeland) without existence of water security, because it is the basic and the pillar of the human security with both its dimensions; the nutritious security and economic security, and the relationship in integrative among water security, economic growth and the political stability, and what happened in the Arab Spring shows the significance of nutritious security and the human security in particular.

To register in the territory of the Middle East and North Africa the lowest share of the individual from the available water in the world, though it has the lowest average of water productivity. And there is a space to improve the way of managing the water resources. The size of the treated drainage water connected with resources of irrigation water about %7 in Tunisia, %8 in Jordan, and %32 in Kuwait. And reemployment of what approaches %10 from the treated liquid garbages are done in Kuwait, %20-30 in Tunisia and %85 in Jordan. (Kamizoulis, Bahri, Brissaud, & Angelakis, 2003).

Economy of most states of the Middle East territory and North Africa depend on agriculture, in spite that tourism and petroleum production are also important in numerous countries. Therefore, there are great differences in using water in the industrial, house and agricultural sectors (Lofgre, & Richards, 2003). For example, Bahrain uses %29 from the gross total of renewed water for agriculture. Other states that use quantities of water relatively less than water in the territory of the Middle East and North Africa it is agriculture (%58), Qatar (%59), Lebanon (%60) and Jordan (%65). Iran uses (%92), Egypt 9%86), and Iraq (%79) most of water for agriculture purposes, (Qadir, Bahri, Sato, & Al-Karadsheh, 2010). And in spite of all that the sweet water good for drinking is considered a strategic material and a basic constituent for all nutritious, economic, social and health domains and food, energy, enhancing the everlasting development, and conserving the psychological diverse and vital of nature. And though, there is stinginess in water sources and its resources in a constant decrease governed by the Jordan geopolitical site, because it is considered a pass and settlement country for abundant emigrations suddenly occur, in addition to the polluting factors of the inner water, and the industrial usages that pollute the environment and water without controller, misusage of water at all domains, and increase of population, that imposes more pressures on sources of sweet water.

And this arises, because of the geopolitical condition in Jordan with its relatively small area and fewness of water natural resources, rise of temperature in summer, increase of water evaporation, absence of the correct cultural awareness for the balanced usages of water and conserving them and their sources, guaranteeing their flowing till guarantee the rights of the coming generations, and so the geopolitical condition had imposed threats on the human security resembled in the water security imposed by the nature of land geography, climate, emigrations, the consecutive refuge that made the geopolitical condition a pressing factor on the Jordan water security.

CONCLUSION

The study had concluded the following results and recommendations:

Results

- Jordan suffers from water stinginess because of non-organized water usage.
- There is absence of cultural awareness for conserving water and everlasting it.
- The increase of the Jordan populational growth form a continuous threat on water.
- Existence of the Syrian refugees on the Jordan lands led to an additional pressure on water.
- The nature of climate rise of temperature degree and evaporation led to loss of a part of sweet water.
- The lowness in rainfalls led to water stinginess.
- It was pin pointed that the geopolitical condition played a role in water stinginess, because of the geographic nature of Jordan, the thing that led to lowness of water resources, increase of the population and flowing of the Syrian refugees.
- It was clearly apparent that the research in the

geopolitical condition plays a significant role in availability or fewness of water in the same sources of water.

Recommendations

Considering previous results, the following recommendations can be specified:

• Necessity of working on taking modern scientific arrangements to treat water stinginess and organize its usages.

• Necessity of performing an awareness campaign to enhance the cultural awareness to conserve water and everlasting it.

• Working on laying programs to organize offspring at a form achieves balance between water consumption and the individual's share in the future.

• Working with the international organizations to return the Syrian refugees to their country after the stability of the political condition there.

• Necessity of finding scientific solutions to limit the effect of climate, rise of the temperature degree, and evaporation, that leads to loss of part of the sweet water.

• Working on increasing opportunities of rainmaking through the modern scientific methods to guarantee rainfalls with satisfactory averages.

• Working on benefitting from the geopolitical condition of Jordan in exploiting the water-harvest and the scientific methods in storing water.

• Necessity of working with the international organizations to guarantee non-affecting the Jordan geopolitical condition and get in agreement with the states of neighborhood on water shares.

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