



RESEARCH ARTICLE

Economic Impacts of Climate Change in the Arab Countries with Reference to the Kingdom of Saudi Arabia

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ARTICLE INFO	ABSTRACT
Received: May 24, 2024 Accepted: Aug 14, 2024	This research aims to determine the human activity's role in exacerbating the greenhouse phenomenon, and defining the various reasons behind the climate change and its resulted in effects on the developing countries with a special emphasis on the Arab countries particularly in Saudi Arabian. The greenhouse effect is a world phenomenon which can only be curbed through full international cooperation at the individual, institutional and governmental levels. The paper has found that the industrialized countries, which are distinguished by their high rates of energy consumption compared to the developing countries, are the main source behind the eminences of greenhouse effect gases. Thus, they have the greater role to take the necessary actions to curb the eminences of these harming. These actions can be restricted in two main trends: curbing the eminences of greenhouse effect gases through the dependence on the alternative energy types and improvement of fuel usage efficiency. In addition, the green areas should be enhanced as the represent the main basis to absorb carbon dioxide. The Kingdom of Saudi Arabia cooperates at the international level in combating climate change. In November 2016, Saudi Arabia officially approved the Paris Agreement, with the aim of combating the problem of climate change and mitigating its severity. The Kingdom of Saudi Arabia has adopted many initiatives to adapt with the risks resulting from climate change and its impact in Saudi Arabia, by establishing a national program to adapt with climate change and developing action plans to reduce disaster risks. In 2020, Saudi Arabia announced that it would invest \$160 billion in renewable energy sources by 2030. It also set a plan to plant 10 billion trees by 2025 with the aim of reducing the negative effects of climate change and ensuring a sustainable future for its people.
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INTRODUCTION

The global warming phenomenon and the climate change phenomenon resulted from the greenhouse effect have risen up a great controversy at the governmental and non-governmental organizations, international institutions and environmentalists due to their serious effects on man and environment. Stockholm Environment Conference, held in 1972, is the first international conference which discussed that theme in order to curb the negative effects resulted from these phenomena. Evidently, the human activity during the American, European and other scientific and industrial revolutions occurred over the past years have led to increase the greenhouse effect and pollution because of natural gas, stone charcoal and fuel burning to produce the energy necessary for running the industrial and agricultural production operation. In addition, the rapidly increased population and the increasing cutting of tropical forest trees have contributed to increasing the greenhouse rates in the atmosphere. The poor and developing countries are greatly influenced by these phenomena

due to their weak economic potentials to protect themselves against the world seriously increasingly effects of that problem. These effects include draught, desertification, the increasing number of hurricanes and floods that help spread poverty and impede development in these countries. On the contrary, the developed countries are cable of facing the environmental disasters whenever they occurred (*Eriksen, 2007*).

This research aims to determine the human activity's role in exacerbating the greenhouse phenomenon, and defining the various reasons behind the climate change and its resulted in effects on the developing countries with a special emphasis on the Arab countries particularly in Saudi Arabian.

Therefore, the research raises the following questions: what are the reasons behind climate change and its economic effects on the developing countries, including Saudi Arabian?. Who will pay for the damages? What are the international treaties organizing that? What are the current policies and procedures followed to curb the effects of that phenomenon?

The research paper will suggest suitable methods to curb the exacerbation of this phenomenon in the future.

The research is divided into four parts in addition to the introduction. Part I includes concept and reasons of the climate change and greenhouse effect phenomena. Part II refers to the economic effects of climate change on the developing countries. Part III focuses on the economic effects of climate change on the Arab countries with reference to Saudi Arabian. Finally, part IV handles the most important necessary economic policies to be applied in the short and long terms to curb the greenhouse phenomenon in the future.

Concept and reasons of the climate change and greenhouse effect phenomena:

IPCC, 2007 indicates that climate change refers to any change in climate over the years whether as a result of natural changes or human activities. Climate change is defined also as "change in climate dated directly or indirectly to human activity which leads to changes in the atmosphere formation (*UNFCCC, 1992*). Some believe that climate change effect is represented in the higher atmosphere temperature which becomes different in the yearly seasons, the higher temperature of oceans and seas whose surfaces level up as a result of melting ice-mountains and the north and south poles snow, floods, draught, storms, hurricanes, extinction of some animals and plants, diseases transfer, spread of environmental refugees, the increase of wars and conflicts among states over sweet waters and their resulted in economic problems (*Latif, 2006*).

The global warming phenomenon is also defined as the temperature gradual increase of the atmosphere's lower layers surrounding the earth due to the eminences increase of greenhouses gases and warmed gases. The French scientist Fourier was concerned with the greenhouse effect in 1842. He tried to find an interpretation for the earth warmth phenomenon. He found that the reason is attributed to the earth atmosphere. The Swedish scientist Arrhenius adopted that interpretation and in 1896 introduced his theory to interpret the earth warmth atmosphere. He referred to the probability of increased temperature of earth and its atmosphere due to the eminence of carbon dioxide because of stone charcoal burning (*El-Hinawy, 2004*). Others believe that global warming leads to delaying the occurrence of the forthcoming natural snow age to the earth, a mater which will lead to the emergence of a new climate age called the human age (*Crutzen, 2003*).

There are different interpretations about how the climate change occurs including (*Rahmstorf, 2006*): climate change results from universal phenomena. Milancovich's theory (1879-1958) focuses on divergence or deviation of the earth rotation orbit around the sun. This leads to change in the quantity and intensity of the sun rays reaching the earth via the atmosphere and, hence, climate change occurs at domestic, continental and world levels. In addition, there is the climate change

which results from the sun rays reflections: as the sun ray, which is reaching the earth, transfers the heat energy from the sun to the earth. In addition, there is the climate change, which is caused by man, as overpopulation leads to increasing the energy due to the multiple the home, agricultural and industrial activities and others which man conducts in his daily life. Another type of climate change results from natural reasons due to the volcanic material spread in the atmosphere for higher and longer heights and distances carried up by the winds from one place to another and negatively affects the climate (Ismail, 2006).

Others like (Tanaka, 2006 and Sabine, 2004) believe that greenhouse gases are responsible for the increase of earth temperature and climate change occurs in the ocean and seas waters. Therefore, it affects the life of marine beings and the natural environmental imbalance. In addition, the oil prices rise in the world markets since the second half of the year 2008 led to a huge increase in the demand rates of oil products despite the environmentalists' warning of the necessity of gradual transfer to alternative energy resources which are friendlier to the environment than the fossil fuel (IPCC, 2001).

Kyoto's Protocol or Agreement 1997 of Greenhouse phenomenon

It is an international agreement aims to curb the greenhouse phenomenon and stipulates that industrialized countries should curb the eminences of greenhouse gases by 5.2% as compared to the pre-1990 status by the advent of 2012. The European countries (15 countries) approved the whole terms of the agreement, while the United States of America withdrew from the agreement on the pretext that the agreement represents a threat to its economic interests. Therefore, the United States' withdrawal had negative effect on the certain states that hesitated to sign the agreement such as Canada and Australia in the pretext that America only represents 36% of the total greenhouse in the world. Kyoto's agreement, signed by 141 countries and effective in February 2005, is the first collective agreement for environment preservation and cur its pollution. The United Nations conference held in Bali-Indonesia 2007 adopted a new plan to curb the world greenhouse through working out solutions among the poor and rich states which differ among themselves on the climate policies. The framework treaty will be effective after the end of current stage of Kyoto's agreement (www.arabic.xinhuanet.com). The question is what is the efficiency of Kyoto's agreement regarding the greenhouse phenomenon?.

The general commitments of the protocol include all world states without exclusion regardless of whether they are developed or developing. The most important of these commitments are the 38 developed states should proportionally reduce the eminences of gases causing the greenhouse within a defined period of time starts from 2008 till 2012. The developed states pledge to finance and ease clean technology transfer to the developing and less-developed states particularly in the fields of energy and transportation using environment-friendly technology in order to meet the ever lasting requirements of development. On the other hand, the developed states pledges to support the developing states in facing the climate change negative effects. Comparing the general and private commitments of the developed states as stipulated in Kyoto's protocol, the protocol lays the greater burden of implementing the commitments on the developed sates and incumbents the industrialized states to provide necessary financial and technical support to help the developing and less-developed states implement the protocol's provisions.

The protocol entails the developed states not the developing states to follow policies which reduce the warmed gases eminences according to defined proportions and timetables. The protocol eliminates the fears of the developing and less-developed states of any negative effects imposed by its terms; it causes diminish of socio-economic growth and impedes their adopted development projects. The developing and less-developed states view themselves as victims of the wrong industrialization policies adopted by the developed states. In turn, the developed sates with the United States on top, view it as an unjust agreement which is inconsistent to its interests. The American vision believes that there are other undeveloped countries which are on their way of

development and will become great industrialized countries like India and China. These states achieve progress in the field of industrialization without observing the protocol's commitments.

The economic effects of the climate change on the developing countries:

The data (*Database of world resources institute,2020*) indicates that during the 2000-2019 periods, the east Asia forest expands by 3.84 million hectares annually and in Europe by 0.66 million hectares annually. The South-America forests diminished by 4.25 million hectares annually, the African forests diminished by 4.04 million hectares annually and the Southeast Asia forests diminished by 2.85 million hectares annually. Brazil, Indonesia and Sudan are among the most worldly hurt poor and developing countries of losing wide areas of equatorial forests.

The world lost forest areas estimated by the end of the last century 8.87 million hectares annually by 0.22%. During the period of 2000-2019 the world lost forest areas estimated 7.23 million hectares annually by 0.18%. Evidently, the poor and developing countries had lost large parts of their forest size: the lost parts are considered as national and environmental wealth which cannot be easily compensated in the near future because of the increasing removal of trees for industrial purposes; forests transfer into farms to produce the agricultural crops; and the long draught periods occurred in these areas due to the greenhouse effect.

The Caribbean states are the most affected by the climate change because of its situation in the passage of tropical storms directed towards the north-America states. The continent of Africa is considered as one of the poorest world continents as more than 60% of Mozambique population, 70% of Benin republic, Niger and Burkina Faso populations live under the poverty level. People of these poor areas are unable to protect themselves against the dangers of disasters resulted from the climate change such as draught and floods.

The African-century region states are the most affected states of the climate change because of draught and famine as more than a half million person suffers from full famine and depends totally on the humanitarian aids to fight against starvation. In addition, 11 million people in the region suffer from their basic needs shortage including food and water by 60%. The UN food and agriculture organization warned in January 2016 against the suffering of a large number of victims because of famine and food shortage (*Mansour, 2017*). There are areas in Somalia, Ethiopia, and Kenya in the African-century region suffered from the unavailability of food and water. The draught causes the loss of million people of their livelihood, a matter that leads to their migration to other areas and states leaving behind their homes (*Totz, 2016*).

In addition, India, Seri Lanka, Bangladesh and Myanmar have faced a number of floods and hurricanes resulted in the death of more than hundred thousand people mostly poor people and hurt more than 21 million people (*Spiegel, 2008*). Despite the population census of India does not exceed one billion people, its launch or production of carbon dioxide, its contribution to the spread of greenhouse effect phenomenon is much less than Germany whose population is 82 million people. The Indian peninsula and its neighboring areas are considered as mostly jeopardized by natural disasters like hurricanes, floods and draught (*Wikipedia, 2018*). The endangerment of most Asian areas to environmental disasters leads to large economic losses represented in the reduction of food and agricultural production in these areas. In addition, Bangladesh and Pakistan are considered as over-populated areas where the environmental disasters resulted in several problems for the poor class of their population. Therefore, they migrated to other areas and countries, a matter which negatively affects the social scale in these areas (*Bauer, 2017*).

The economic effects of the climate change on the Arab Countries with special reference to Saudi Arabian:

The Arab countries are categorized among the world poor states. These countries are situated in geographic areas where the dry and sub-dry climates prevail. The Arab countries contribute by 4.2% of the world warmed gases' eminences. The kingdom of Saudi Arabia contributes the highest rate among the Arab countries followed by Egypt and Algeria. In spite of the Arab countries less contribution to the world gas eminences, the Arab region is considered as the mostly affected region of the climate prevails in the world (*Al-Madani, 2014*). The total area of the Arab world stretches 14 million kilometers square representing 10.2% of the world area. In spite of its large area compare to the total world areas, the Arab world's water resources represent only 0.5% of the world renewable sweet water resources. The sweet water per capita in the Arab region equals about 1000 meter cubic annually compared to the world per capita estimated about 7000 meter cubic.

Under the difficult water situation exists in the Arab region, the sweet water per capita is expected to reach in 2025 about 460 meter cubic of water annually (*Al-Kahl, 2019*). In addition, the climate change, urban and population growths, water rarity, deterioration of arable lands, desertification, inability to manage wastes, deterioration of costal and marine environment and air pollution are among the most important environmental challenges facing the Arab countries (*Kanval et al., 2024; Tolba, 2018*). Evidently, the rainfall-watered areas diminished from 35.037 million hectares in 1991 to 14.063 million hectares in 2019. This certainly attributed to the reduction of rainfall rates in the Arab region, a matter which clearly reflects the negative effects of the climate change phenomena on the Arab region (*Arab Organization for Agricultural Development, 2020*).

The Gulf States and north-African states in particular suffer from the spread of such phenomenon and its dangers on the sustainable development plans of these countries. The temperature degrees were remarkably high in Kuwait by the end of the last century and reached its highest degrees 51 cc in Kuwait in 1998 compared to 53 cc in 2018. In addition, Kuwait and its surrounding areas suffer from the sand storms (*Ramadan, 2019*). Syria, which is highly dependent on grains cultivation and considered as one of the grains exporting countries in the world, has experienced draught waves during the recent years. Therefore, Syria imported wheat for the first time in 2008 after two successive years of draught (*Mouazini, 2009*).

At the Arab level, Sudan comes second in the availability of water resources. However, Sudan faces sharp shortage of sweet water quantity in some areas. Therefore, there is a negative reflection on the economic development and the co-existence between the tribes and ethnic groups settled in these areas. In the recent decades, Sudan has experienced a series of draught which hurt the food security and led to human migration and resulted in the internal disputes. The mostly important dispute is the on-going dispute in Darfour situated in the south of Sudan.

Iraq suffers a remarkable reduction in its water resources due to the reduced levels of the Tigris and the Euphrates and their branches in the Iraqi territories and the sharp draught phenomenon of which Iraq suffers. Iraq is considered as a model of the developing countries affected by the greenhouse effect phenomenon as evident in the high temperature since the mid-last century as the highest temperature degrees in Iraq reached 32.6 cc in 2019 from 22.9 cc in 1990. Therefore, the salinity rates of Iraqi soil and water increased. This leads to the plants spoil and reduction of field crops production. Iraq and other Arab countries situated in Asia and Africa could depend on the sun energy as a suitable and cheap alternative for fuel since such type of energy is available over the all seasons of the year (*Al-Yousifi, 2020*).

The effects of climate change on Saudi Arabian:

The expected negative effects of climate change on the Kingdom of Saudi Arabia, Temperatures in Saudi Arabia are expected to rise by 3 degrees Celsius by 2050. It is expected that increasing temperatures will lead to the expansion of desert environments in the Kingdom of Saudi Arabia by up to 30%, which will lead to the loss of biodiversity, including plants and animals that have adapted

to the dry climate, in addition to a decrease in crop productivity by 30%, which may lead to a decrease in Food due to high temperatures and lack of rain(Peters, G., Andrew,2017).

Sea level rise of up to 1.2 meters by the end of this century is expected to submerge coastal areas in Saudi Arabia. This will lead to the loss of property and infrastructure, including cities, ports and dams. Climate change is expected to lead to the spread of water and airborne diseases in Saudi Arabia, such as malaria, fever, and others due to rising temperatures, increased rainfall, and changing rainfall patterns(Abdullah Al-Arfaj, 2020).

The Saudi Arabian efforts to facing the climate change phenomenon

Climate change has increased environmental challenges in the Kingdom of Saudi Arabia and therefore, local initiatives to mitigate the effects of climate change have become necessary. The Kingdom of Saudi Arabia cooperates at the international level in combating climate change. In November 2016, Saudi Arabia officially approved the Paris Agreement, with the aim of combating the problem of climate change and mitigating its severity. This is by limiting global warming to less than 2 degrees Celsius(Jing, Liang, 2020).

This is in addition to the role and efforts of local administrations in the Kingdom of Saudi Arabia in solving the problem of climate change. According to the United Nations Development Programme, local administrations carry out approximately 70% of the measures necessary to reduce the damage of climate change, and 90% of the measures necessary to help citizens adapt to its effects (United Nations,2019). The tasks of local administrations include: planning and designing urban communities, implementing transportation , land use planning, establishing and repairing infrastructure, regulatory oversight, enforcement of laws, and provision of services.

Recent years have witnessed transformational changes in the Kingdom of Saudi Arabia in order to work to protect its environments and natural resources, as Saudi Arabia occupies a unique position in efforts to combat climate change and adapt to it due to its enormous potential in the field of solar energy technology, Saudi Arabia's strategic importance in the global energy market, and the trend towards economics diversification within the framework of Saudi Vision 2030. Saudi Arabia has significantly reduced its traditional dependence on oil, with the aim of helping to transform its economy into a more environmentally friendly economy, and reducing its concentration on oil(International Energy Agency,2021). Saudi Arabia also aims to reduce annual carbon emissions to reach 130 million tons by 2030 by investing in renewable energy projects, including solar energy projects(Saudi Green Initiative,2020).

Saudi Arabia has pledged to reduce carbon emissions by more than 4% of the global contribution despite achieving only 1.86% of global emissions in 2019 through the Middle East Green Initiative. This means that Saudi Arabia's contribution to reducing carbon emissions will more than double its current share of global emissions. The Saudi strategy in general to mitigate the effects of climate change is based on diversifying the energy portfolio by adopting renewable energy sources, as well as on carbon capture technologies through the green initiative and planting trees(Abdullah Al-Arfaj ,2020).

The Kingdom of Saudi Arabia has adopted many initiatives to adapt with the risks resulting from climate change and its impact in Saudi Arabia, by establishing a national program to adapt with climate change and developing action plans to reduce disaster risks. In 2020, Saudi Arabia announced that it would invest \$160 billion in renewable energy sources by 2030. It also set a plan to plant 10 billion trees by 2025 with the aim of reducing the negative effects of climate change and ensuring a sustainable future for its people(King Abdullah University of Science and Technology,2023).

The summary of the above is that mitigation and adaptation measures to climate change in the Kingdom of Saudi Arabia include:

- Reducing greenhouse gas emissions by investing in renewable energy sources and planting trees with the aim of absorbing carbon dioxide from the atmosphere.
- Develop climate change-resistant technologies with the aim of protecting infrastructure and property from the negative effects of climate change.
- Replanning cities with the aim of resisting climate change.
- Protecting ecosystems in order to enhance their ability to adapt to climate change.

Dangers facing the poor and developing states because of the climate change:

The poor and developing states face a number of dangers and challenges due to the world climate change problem represented in the high temperature degrees of earth, and oceans and seas waters starting from 1970 (Solanki, 2013). The most important dangers facing the poor and developing states are the increased number of hurricanes, floods, rainfalls, rising of sea level surface, forests fire and waves of draught and desertification occurred in different parts of the world. In addition, there are other dangers like the quick melting of Snow Mountains in the North and South poles that led to wasting the world reserves of sweet water valid for human and agricultural consumption. Furthermore, famines, disputes and wars prevailed while diseases like Malaria appeared in areas in which it never exists before because of the climate change effect on settlement and human health.

In its 2018 report, the World Health Organization confirmed the death of about 150 thousand people annually as a result of the increasing climate change effects mostly among the poor and developing states inhabitants due to the Anemia resulted from food shortage (WHO, 2018). The number of people living under poverty line increased since 2009 from 840 million people to 854 million people in 2019. In the poor and developing states only, roughly 820 million people live under poverty line (Bals, 2017). In addition, people and inhabitants migrate from their areas to other areas and countries in a new phenomenon called environmental refugees. This adds further burdens on the immigrants and the hosting countries which negatively affects the living of the indigenous people of these countries as a result of competition over job opportunities and natural resources exploitation.

This is clearly evident in the east Africa areas like Sudan and Ethiopia which are largely affected by the climate change prevails in these areas. Furthermore China, India and Bangladesh suffer from the internal and external migration because of the climate change resulted from the greenhouse effect (Bauer, 2017). The availability of sweet water for inhabitants and the sharing of common rivers waters between different countries are among the most important and sensitive issues that threaten peace and stability in most of the world areas particularly in the poor and developing states which suffer originally from sweet water shortage and greatly influenced by the climate change phenomenon (Richerzhagen, 2019). The probable effects of climate change on the agricultural production and food security will not only depend on the climate per se, but on the crops ability to adapt with the climate change as well.

Economic policies that should be adopted to curb the increasing of greenhouse effect

The currently adopted polices in several world states against the climate change phenomenon have proved limited and conventional ways in dealing with it whether they are technological or specialized in making policies to exacerbate the phenomenon ahead. They have raised various serious questions about the world equality, justice, responsibility and commitment in fighting against this phenomenon and its serious effects on the human life. Therefore, the developed and developing countries of the world should observe the following policies and suggestions to curb the negative effects of this phenomenon ahead (Masnadi, Mohammad S.,2018):

Policies that should be adopted in the short term

They could be achieved through the important role of the environmental education and the spread of environmental awareness to people and inhabitants of different world countries in facing the

climate change problem and its dangerous effects in order to curb the high intensity of gases causing global warming. In the developed countries like America and Germany, an individual consumes quantities of energy that largely exceed the consumption rates in the developing countries like Somalia, Mali, and Bangladesh. The fuel burning and energy consumption in the household activities represent 12% of energy consumption size in the great industrialized countries (*Tanaka, 2017*). This confirms the responsibility of the industrialized countries towards exacerbation of the global warming phenomenon.

Therefore, people's environmental awareness should increase through the participation of various mass media on the economy (it needs revision) and saving in energy resources consumption particularly in the households activities, different daily fields, public and private buildings in the developed and developing countries (*Matthes, 2015*). In this regard, the European Union decides to halt normal lamps production effective September, 2009 and prohibit their use by the beginning of 2012 because they consume much energy.

The procedure aims to reduce electrical-energy consumption (*Energie-richtig-spare, 2019*). Many developed countries have adopted programmes such as power-management in different computers and electronic sets to reduce energy consumption in the automatic sets after ending its use (*Welt-in-zahlen, 2019*). Moreover, several countries of the world tend to economize in consuming energy related to different transportation such as vehicles, trucks, trains, planes, and ships representing about 30% of the total carbon dioxide quantities in the atmosphere. It is a high proportion that leads to contaminate the air, particularly, in the big cities congested with transportation and causes various diseases to the inhabitants (*Tanaka, 2017*). The vehicles proportion in the great industrialized countries is as high as the population when compared to the third world countries. This is attributed to the high standard of living in these countries.

In this concern, (*Dinger, 2019*) believes in the necessity of minimizing the size and power of the private vehicle engine, encourage people to use public transportation such as buses and trains instead of using the private vehicle to move within the cities. In this regard, the government's procedures play a main role in subsidizing the transportation fees in order to encourage people using the public transportation. He believes as well in changing the engine's fuel type or energy resources from diesel to petrol, to natural gas and finally to electric power in order to lessen the size and type of gases launched in the atmosphere.

Many countries including the poor and developing countries are greatly concerned with the natural gas-based transportations for economic and environmental reasons. These reasons are they are less in economic cost and less harming to the environment compared to diesel and petrol (*Haus + Energy, 2018*). Furthermore, old vehicles should be replaced by new one to reduce fuel consumption. The driving speed should be determined as well as high speed increases fuel consumption and burning. Certain financial duties should be imposed to prevent vehicles from entering congested cities and a car free day should be organized while the use of bicycles could be used instead of cars within the cities.

Policies that should be implemented in the long term

They include the necessity of adopting policies and procedures aim to prevent burning and elimination of tropical forests. They also include paying attention to tree plantation in several areas of the world. Attention should be paid to two of the most important dangers: burning and elimination of long-aged trees in the tropical forests and transferring them into grazing lands as occurred in the South-America Amazon forests and Southeast Asia forests (*World Wide Fund for Nature, 2020*). The interest in increasing plantation of trees inside and outside cities will reduce the proportions of gases-contaminated air and improve the climate and weather conditions in cities, so that the inhabitants temper (*Ott, 2017*).

It is necessary to use some renewable and sustainable energy resources and environmental-friendly alternatives, particularly after the multiple-energy crises occurred over the last period of time between the oil producing and consuming countries. The most important of these crises is the one occurred between the Arab nations and the West during the October War in 1973. For the first time, the Arab nations used oil as a weapon against the western countries, a matter which negatively affected the economic and industrial activities of many industrialized countries because of the unavailability of fuel. As a result of that crisis, many countries tended to transfer to the renewable and sustainable energy resources to reduce reliance on oil ahead and exploit the clean and environment-friendly energy resources (*El-Bassam, 2018*).

In addition, some developed countries adopted Carbon Dioxide Capture and Storage processes. It is a new-in-trial technology aims to reduce the carbon dioxide quantities launched in the atmosphere especially in the stable areas in which the gas can be easily captured and stored like electric-energy generation stations, oil excavation and refinery installations, steel and cement factories. Consequently, the exacerbation of greenhouse effect can be lessened.

Finally, the world countries should reduce the international population growth rates particularly in the poor and developing countries. The increasing over-population problem is one of the most important and dangerous problems facing the mankind currently. The world population exceeds 6 billion people and is expected to increase in the forthcoming years. India and China are considered as the most over-populated countries in the world as their population equals half of the world population. Many other countries like Egypt, Bangladesh and Brazil suffer from over -population. Consequently, they have several environmental, economic and service problems besides the negative effect on sustainable development plans, increasing poverty rates among their people and the inability of many poor and developing countries to provide suitable solutions for them (*Politik und Unterrricht, 2018*).

CONCLUSION

The greenhouse effect is a world phenomenon which can only be curbed through full international cooperation at the individual, institutional and governmental levels. The paper has found that the industrialized countries, which are distinguished by their high rates of energy consumption compared to the developing countries, are the main source behind the eminences of greenhouse effect gases. Therefore, it has the greatest role in taking the necessary measures to reduce the emission of these harmful gases. These actions can be restricted in two main trends: curbing the eminences of greenhouse effect gases through the dependence on the alternative energy types and improvement of fuel usage efficiency. In addition, the green areas should be enhanced as the represent the main basis to absorb carbon dioxide.

As for the experience of the Kingdom of Saudi Arabia in confronting climate change, its efforts are focused on: implementing the Clean Development Mechanism approved by the Kyoto Protocol, exchanging information about the dimensions of the phenomenon and its environmental repercussions, raising popular awareness of the phenomenon and its economic dimensions and dealing with it, building capabilities, as well as transferring technology, and activating programs Participation of associations and non-governmental organizations in the Kingdom of Saudi Arabia.

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