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Climate Changes and Its Effects on the Arab Area

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Abstract

Climate change is a phenomenon of concern not only to countries in the Arab World but also to all countries all over the world, though the Arab region is at a disadvantage due to its predisposition to harsh climatic conditions. The energy sector is the main contributor to climate change, which in turn results in changes in water quality and quantity, sea level, human health, food production, tourism and security. Arab World countries have attempted to adapt to or mitigate the effects of climate change; but there are numerous challenges that they must overcome in order to keep up with these changes. Some mitigation factors in the industrial sector and building sector, mainly those in search of substitute fuels to oil are far-reaching if the countries can cooperate in their efforts. Since the area has resources to implement comprehensive changes, it is recommended that stakeholders work together in order to achieve synchrony in their efforts.

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1. Background Information

The Arab world energy sector, as is the case in most regions globally, is the principal anthropogenic contributing factor to the deteriorating climatic conditions. This mainly arises from overdependence on fossil fuels which combustion results in the release of greenhouse gases, mainly carbon dioxide, which causes a sustainable rise in global temperatures, averaged at 2-3 percent in the Arab World. However, unlike other regions in the world, the Arab World has a potential of using other sustainable fuels, especially if the governments make a commitment and implement the policies and strategies in existent.

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For instance, the year-round high temperatures found in the region make the Arab World a perfect candidate to expansive use of solar energy for domestic and industrial use. In addition, the area is characterised by high velocity air currents, which could be exploited to provide a sustainable source of non-polluting energy. This has not been the case due to many underlying factors, including the fact that oil is easily available underground, and most technologies have been built to use oil as the only fuel (Kenawy, 2010:280).

The climatic change in the Arab world affects different people in varying degrees, such that the people that feel the effect of the change mostly have little or no role to play in emission of greenhouse gases. For instance, poor people in the Arab world are mostly dependent on agriculture as the only economic activity; when the climate changes and the productivity is reduced, these people lose their only source of living, as opposed to the oil merchants whose oil business is not affected as severely. In addition, poor people have little or no means of adapting to unfavourable climatic conditions, and they feel the full effect of higher temperatures, and other harsh climatic conditions (Elasha, 2010:8).

Many Arab world countries have adopted adaptive and corrective and mitigation measures to curb the adverse effects of climate change; though these changes have been uncoordinated due to various underlying factors. First, the Arab world does not have dependable and detailed information on the current climatic conditions and future projections of likely changes, data that is pertinent in policy and strategy formulation. Secondly, in the Arab world it is not clear on the roles that individuals, agencies, governments and nations have to play in climate change mitigation. Thirdly, most of the countries in the Arab world have few or no channels that the public can use to participate in decision-making on matters that concern the environment. Fourthly, stakeholders in the Arab world have little or no coordination and cooperation among them in their efforts at mitigation of the effects of climate change. Finally, there are conflicts of interest on exploitation of natural resources. Stakeholders in the Arab world have to overcome these challenges for their efforts towards environmental conservation to bear any fruits (Elasha, 2010:11; Nicholls, 2004:75).

2. Effects of Climate Change and Adaptive Measures

Climatic changes in the Arab world have had effects on water resources, sea level and coastal areas, human health and development, food production, biodiversity, land use and urban planning, tourism, and national security and conflict control among other aspects of daily life.

3. Water Resources

Apart from Iraq, Lebanon and Syria, all countries in the Arab world suffer from acute water scarcity, with less than 1000 cubic metres per capita all year round; with the whole region having less than 1 percent of the world's fresh water resources despite occupying 10 percent of the planet. Climate change results in higher temperatures, which are likely to put a strain on the already desolate situation, compromising both the quality and quantity of the available water resources. Rivers experience flooding and water shortage due to high rainfalls over a short period and extensive and intense dry spells respectively (Tolba and Saab, 2009:75; Arnell 2004: 9. 48).

The countries have adopted farming practices that reduce water consumption and conserve the limited water resources, and exploit the little available water by changing crop patterns. In addition, Arab world countries have developed drought resistance crops to improve food security in the region (Tolba and Saab, 2009:76).

4. Sea Level and Coastal Areas

Global warming results increase in glacial melting, which causes sea levels to rise beyond the safe tide levels; a situation that is made worse by the erosion caused by water as it flows to the sea. The coastlines of many countries in the Arab world are close to, lower than or on the sea level; and a slight change in sea levels usually has devastating effects on the coastlines. Egypt, Qatar, the United Arab Emirates, Kuwait and Tunisia have up to 5 percent of their landmass at less than 1 metre above the sea level, which makes them vulnerable, especially since these areas are centres for economic activities. For instance, if the sea level was to rise by 1, 3 and 5 metres, then Egypt would lose more than 12, 25 and 35 percent of the most agriculturally productive lands respectively. The other countries would be affected by destruction of beaches and infrastructure, resulting in loss of economically productive areas (Tolba and Saab, 2009:47). The countries have responded to changing sea levels by strengthening the infrastructure at the coastline, and finding alternative agricultural land, in the case of Egypt (Wetherald and Manabe, 2002:4379).

5. Mitigation Efforts

In addition to the adaptive measures discussed above, many Arab world countries have adopted various mitigation measures that could reverse the climate change situation if the countries are consistent and effective enough. These measures aim to improve the sustainability of environment management, mainly by increasing the quantity and quality of renewable energy sources used in the region. Though disjointed, isolated and disorganised, these measures have managed to reduce the levels of anthropogenic greenhouse gas emissions, and enhanced carbon dioxide sinks in the region.

6. Industrial Sector

The industrial sector is the second largest energy consumer in the Arab world countries, and the sector is in the process of implementing changes that result in reduction of the volume of carbon dioxide emissions. The industrial sector is adopting the use of machinery with high combustion efficiency to reduce the amount of wasteful emissions. In addition, the sector is adopting waste heat recovery measures where heat from industrial components is used for other purposes instead of being released into the atmosphere. Finally, the industrial sector is adopting the use of machinery with high power factor, and energy-efficient lighting to prevent wastage of energy (Tolba and Saab, 2009:15).

7. Building Sector

The building sector accounts for more than 36 per cent of the carbon dioxide emissions in the Arab world. Countries have adjusted their building codes to adhere to high efficiency and reduced energy consumption; including changes on heating and insulation of buildings. In response to climatic, economic, and certification factors, Arab world countries have adopted green building concepts and strategies to minimise energy consumption, carbon dioxide emission and maximise efficiency (Tolba and Saab, 2009:26; Sabine, 2004:368).

8. Fuel Switching

Natural gas is predicted to be the viable replacement to oil before the world can develop technologies

to utilise sustainable fuels. This is because natural gas produces less carbon dioxide when used for energy generation, industry and transport, domestic and commercial purposes. Arab countries have started adopting the use of natural gas, with Egypt in the lead with widespread use of compressed natural gas as industrial fuel (Tolba and Saab, 2009:19).

9. Renewable Energy

As stated earlier, the Arab world has dependable sources of renewable energy including wind and solar energy, with Egypt leading in commercialisation of wind energy, and the widespread use of solar energy for heating purposes in Palestine, Tunisia and morocco (Tolba and Saab, 2009:21).

10. Other Approaches

United Arab Emirates has an extensive program that has seen the forestation of vast tracts of land in the country, which is sure to change the climatic conditions due to the role that trees play as heat sinks. Abu-Dhabi is doing what seems like an environmental experiment, by having Masdar as a zero-carbon city, which if sustainable will have a tremendous effect on environmental conservation worldwide. Algeria is aiding its seas, oceans, and forests in their role of carbon dioxide sequestration; the country captures carbon dioxide from the main sources, and then ferries it through a pipeline to a storage area. The sustainability of this may be questionable, but at least the country is making an effort to reduce its carbon footprint. Jordan encourages its citizens to acquire hybrid and all-electric cars by offering duty and tax exemptions, which will in the long run reduce the level of carbon emissions in the country's transport sector (Nicholson, 2005:630; Tolba and Saab, 2009:30).

11. Recommendations

Like the rest of the world, the Arab world should work towards the use of sustainable energy, non-climate dependent agriculture, effective and sustainable waste-management practices, and effective land use and forestry. However, these are not achievable unless governments and other stakeholders change the way the region is governed. For instance, the countries should stop doing environmental conservation as disjointed units, and work towards regional and international integration and coordination. Most countries are aware of the effects of climate change and even have policies and strategies for adaptation and mitigation; however, they are reluctant to implement these policies and strategies due to the factors mentioned above. Therefore, all stakeholders should sort out their differences and tackle all challenges that hinder adaptive and mitigation action. Stakeholders and regulation agents should follow up the implementation, and make necessary modifications depending on the situation at the time. Finally, the Arab world countries should embrace research and consultations as core tools in improving and reversing the effects of climate change in the region.

12. Conclusion

Climate change is a problem of global concern, especially considering the adverse effects of climate change to economies all over the world. Despite its destructive ability, climate change is relatively easy to control and reverse if individuals, communities and countries work together as a team. The Arab world is at a disadvantage compared to other regions since its climate was bad enough even before the advent of climate change; and other underlying factors hinder the ability of the region to achieve

considerable progress in its attempts on adaptive and mitigation measures. Countries have adopted various mitigation measures including increased efficiency in energy consumption, and switching from the use of oil as the primary fuel among other attempts to reduce the volume of greenhouse gas emissions. However, countries have approached these measures as separate entities, undermining the importance of global cooperation for the world to reduce the ill effects and reverse the climate change situation.

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