



Climate Change Egypt between Facing the Difficult Challenge and Taking the Promising Opportunity



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Talking about climate change has exceeded the stage of wondering whether it is just a transient phenomenon or a factual change with known causes and effects causing suffering in the whole world. Climate change is a natural phenomenon caused by the changes happening during different time eras, with human activities contributing to the acceleration of the changes occurrence. In fact, the increase in the concentrations of greenhouse gases after the Industrial Revolution at unprecedented rates because of the increasing human development activities led to an increase in the volume of heat absorbed by such gases and the thermal content of the atmosphere. This caused thermal imbalance because of the rise in the average temperature of the Earth, causing climate changes and the consequent impact on all life aspects in their different manifestations

The temperature increase on a permanent and unprecedented basis has led to an increase in water evaporation from water bodies and a decrease in soil moisture because of the increased evaporation. This increases drought and leads to desertification in some areas, as well as reduction in the quantities of water flowing into groundwater reservoirs. In addition, the rise in temperature has led to an increase in the water quantities required for growing crops and the agricultural sector needs. It also increases the demand on water derived from the limited water resources and causes shift in the season dates with the accompanying disturbance in weather conditions that have caused disasters such as torrential rains and

floods. This state threatens human lives and destroys property in different areas on the Earth.

Climate change has become an obsession delaying the process of sustainable development and hampering the efforts aiming to raise the standard of living and reduce poverty, given the fact that the sectors most affected by climate change are water, agriculture and coastal areas.

The water sector is one of the most important sectors affected by climate change, which consequently has negative effects on food and energy and direct and indirect impacts on the Egyptian economy.

The climate change phenomenon is a transnational phenomenon, and it has been noticeable in recent years that climate disturbances represented in high temperatures and the lack of rains or increase in the off-season rains negatively affect the quality of food crops, fodders and animal production in Egypt, which requires expanding the agricultural area to achieve the minimum food security level. The increased demand on water required for expanding the agricultural area in light of the water deficit resulting from the decrease in water flows from our share of the Nile River in addition to the local dry weather and the increasing population growth all constitute a challenge to the sustainable development plans.

The rise in temperatures threatens with a rise in the sea levels, causing drowning the Egyptian coasts, displacing the population and regression in tourism, which may lead to dire social and economic consequences. In addition, the rise in the Mediterranean Sea level will cause the coastal lands to be exposed to salinization and the coastal aquifer to be damaged. This will negatively affect agricultural productivity, especially with the extensive use of aquifer water, in addition to flooding of vast areas of the Nile Delta and damaging the best agricultural lands that produce 3040%- of Egypt's food and agricultural production and 50% of the industrial production.

In addition, the implementation of agricultural and industrial development plans to meet the population growth faces great challenges, most notably the water shortage, caused by the manifestations of climate change. The biggest problem is that the poor segments are the most affected by the repercussions of climate change because it obliges them to leave their communities, a state that makes adopting supportive policies and exerting vigorous efforts for facing climate change a demanding requirement, not a luxury.

The mechanisms for limiting the effects of climate change are based on taking measures for reducing the greenhouse gases emissions, focusing on the need to curb the increase in such emissions, aiming to achieve balance between anthropogenic emissions and their removal processes as well as to achieve adaptation in facing the climate change negative effects. Adaptation here means taking the necessary actions and measures to adapt to climate change. Such measures vary from one country to another based on their respective geographical locations, their financial capabilities as well as the degree of their vulnerability to the negative climate changes. They include building flood defenses, establishing early warning systems for hurricanes and switching to drought-resistant crops.

Although Egypt produces only 0.6% of the volume of greenhouse gases emissions, it considers adopting mitigation measures and adaptation to climate change as being essential matters. That is why the Egyptian government has taken measures to switch to a low-carbon economy, because it is more resilient in facing climate change, and it helps in creating new job opportunities while adopting an approach integrating the environmental and social dimensions for addressing the climate change negative effects.

Mitigation measures are applied in new projects by switching to low-emission technologies for reducing the high emissions, which will help achieve the goals of sustainable development. This is based on the use of new and renewable energy, investing in improving energy efficiency in the various sectors, recycling and processing solid and agricultural waste as well as using natural gas or electricity in the sectors of transport and small industries.

In fact, investing in the measures of adapting to climate change

In fact, Egypt is a promising market for investment in the context of climate action in the fields of clean energy, given the fact that God has endowed Egypt with natural resources such as the sun and wind farms, making investment possible in the solar power plants and wind energy projects. In addition, Egypt is one of the attractive countries regarding localization of the technology of manufacturing solar cells and the components of desalination plants.

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is crucial, because of its economic dimensions and its role in facing the decline in water flows caused by climate change, which has consequently affected agricultural and industrial activities and the population distribution. For bridging the gap between water needs and the available water resources, many adaptation projects are being implemented to develop water resources through treating and recycling sewage and agricultural water, desalination of the seawater as well as collecting the rain and torrential water. This also includes limiting pollution by supplying the sanitation services to villages and increasing the efficiency of water use through rehabilitating canals as well as reducing the intrusion of seawater by implementing an infrastructure for protecting the beaches.

The Egyptian economy faces growing development challenges and pressures on the state budget to implement both mitigation and adaptation projects in light of the lack of sufficient funding to implement all measures required for facing the climate change impacts and negative effects. Such effects impair environmental systems, human health, agriculture, industry and population distribution, causing hindrance of the economic growth and undermining the efforts of achieving the poverty eradication goal in the sustainable development plan.

After presenting all these clear challenges, we should make use of the climate change through creating opportunities for investment, development as well as strengthening the strategic presence of the state, the private sector and the international community for achieving a quantum leap in facing the climate change challenges. It is recommendable to invest in climate action on two tracks, both within the Egyptian state borders and on the continental track through cooperation with Africa countries.

Despite the repercussions of climate change, Egypt is a promising market for investment in the context of climate action in the fields of clean energy, given the fact that God has endowed Egypt with natural resources such as the sun and wind farms, where investment is possible in the solar power plants and wind energy projects. In addition, Egypt is one of the attractive countries regarding localization of the technology of manufacturing solar cells and the components of desalination plants in addition to projects for localization of the low-carbon technologies and the waste treatment and recycling technologies given the growing use of solar energy panels and electric batteries to ensure energy sustainability.

It is also essential to invest in mining the waste of desalination plants by extracting valuable salts from the brine resulting from desalination, such as nickel, cobalt, magnesium and lithium. In fact, the global demand for lithium has increased in an unprecedented way because it is considered the main and most important element in the manufacture of all types of small and large batteries, and an essential component in the manufacture of electric vehicles in the future. This makes the extraction of lithium from non-traditional ores a very urgent matter.

This includes creating opportunities for investment in the governmental and private sectors, and maximizing trade exchange between Egypt and the Nile Basin countries to support those countries and implement joint development projects such as electrical, agricultural and animal production projects. This can support the Egyptian economy and solve the economic problems resulting from the lack of water resources by importing virtual water from those countries to provide the agricultural and animal needs.

Finally, the government should work to create an environment motivating climate-related investment by developing financing tools and joint action mechanisms to take all these promising opportunities.