Climate Change: Impacts, Adaptations and Policy Making Process: Palestine as a Case Study

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Abstract: *Global climate change related to natural and anthropogenic processes has been the topic of concern and interest world-wide. One of the most significant impacts of the 'greenhouse effect' is anticipated to be on water resources. Thus, the impact of climate change appears to be an additional component on top of the large number of existing water-related problems. The present paper will identify key climate change actors, evaluate the potential impacts of climate change, review available literature on climate change, and assess the policy-making mechanisms and priorities for Palestine as a case study. Climate adaptation measures, adaptive capacity, gaps in policies, research and other country-specific issues and institutional limitations are also identified.*

Summary

1. Introduction

Global warming is one of the major issues in our present time. It is an issue that is multi-disciplinary and will have various climatic impacts on different sectors. With regards to Palestine specifically, climate change will have major impacts on water resources and the water sector (among others), and the effects will target both ground and surface water supply for domestic and industrial uses, irrigation and in-stream ecosystems.

The emerging Palestinian State is located in Southwest Asia on the Eastern shore of the Mediterranean. It is composed of two separate areas, Gaza Strip and the West Bank. There are two distinctive climatic seasons; a wet winter and a dry summer. Annual average rainfall in the West Bank and Gaza is approximately 450mm and 400mm respectively. The Jordan River system is the only surface water resource in the West Bank. There are two aquifers shared by Palestine and Israel: the Mountain Aquifer underlying the West Bank and the Coastal Aquifer underlying Gaza.

Palestine, Israel, Jordan, and most other mid-eastern countries which are generally characterized by aridity, have very limited water resources. Palestine has one of the lowest per-capita water availability world-wide. With continuing population growth and Israeli control over shared water resources, predictions for climate change within the region and changes in rainfall amount and distribution will only intensify these problems. Palestine will experience serious deficit and the shortage is estimated to be 271x106 m^3 for the year 2020.

The aim of this paper is to identify key climate change actors, evaluate the potential impacts of climate change, review available literature on climate change, and assess the policy-making mechanisms and priorities for Palestine as a case study.

2. Key climate change actors and research at Palestine

1) Climate Change Adaptation Strategy and Program of Action for the Palestinian National Authority – The program was initiated by Environmental Quality Authority (EQA) and financed by UNDP/PAPP

2) Rising Temperatures, Rising Tensions. The project was implemented by the International Institute for Sustainable Development (IISD)

3) Al-Najah National University (Academic)

4) Palestine Academy for Science & Technology (Governmental)

5) GLOWA-Jordan River Project: Financed by the German Federal Ministry of Education and Research (BMBF) as part of the GLOWA research initiative: Global Change in Hydrological Cycle. The project is coordinated by the Department of Plant Ecology of the University of Tübingen, Germany

6) SUSMAQ: The project was financed by the British Government and implemented by Palestinian National Authority

7) Friends of the Earth (NGO)

3. Analysis of the Climate Change Situation in Palestine

The climate of Palestine is traditionally described as 'Mediterranean', with varied internal climate depending on altitude and latitude. Over the course of the century, there has been a significant decrease in the amount of rainfall and a noticeable increase in the amount of warming. The IPCC predicts an increase of 2.2-2.5°C and over 10% further decrease in rainfall post 2020.

Palestine is witnessing rapid demographic growth and restrictions on economic development & water resources from Israel that is adding pressure on already scarce resources. Palestine is predicted to witness increased water stress and climate change, with a decrease in annual precipitation.
To assess the vulnerability and predict future climatic changes, a number of models were used, but none of which are region specific or take into account the socio-economic specificity of Palestine.

4. Impacts on priority policy sectors

Climate change will affect various sectors in Palestine to different degrees. The agriculture sector will suffer from extreme weather conditions such as increased droughts or intense rains resulting in floods, affecting both cold and heat sensitive crops. Israeli restrictions to movement and water access coupled with climate change will only exasperate the stress to water resources.
Other sectors such as energy, public health, and coastal management will also be heavily affected by climate change. Palestinians in the West Bank and Gaza are said to face health issues related to lack of water, in addition to increased risk to parasitic diseases due to the increase of the annual mean temperature.

5. Adaptation

Adaption practices vary according to region, situation, and specific conditions. There are three types of options available in the agriculture sector; technical, management, and

infrastructural. Some of these measures can be done without support, but infrastructural measures will need significant capital investment. One key output was the Climate Change Adaptation Strategy for Palestine.

6. Measures

Adaptive capacity at the national level in Palestine is directly compromised by movement restrictions as well as insufficient water and land resources. In order to manage climate risk in Palestine, a coordinated collection, analysis and dissemination program needs to be introduced. Currently, there are two national planning bodies that have been able to mainstream the issue of climate change; The Higher Council of Civil Defence and the National Committee to Combat Desertification. At the moment, the Environmental Quality Authority (EQA) is the leading agency on climate change for the PNA. Other areas, specifically agriculture and water, need to increase resilience of farmers and address climate variability through capacity building.

7. Adaptation Integration into Policy Planning

Key governmental departments need to be involved in the development of adaptation strategies. There are a number of actions that can help facilitate adaptation and integration of adaptation into policy, including actions at the low level, the national level, and the regional level. The issue of climate change and policies of adaptation need to be raised in key sectors through mass media, specifically using current events like economic, weather, and health crises. Improving public awareness and developing overall communications strategies makes climate change science accessible to the average citizen.

8. Conclusion

The comprehensive assessment of future climate risks requires in-depth domestic research capabilities. There is an identified need for the PNA to acquire increased capacity for monitoring and modeling rainfall variability and long-term climate change in Palestine. One of the recommended practices is that priority by given to the low-cost and medium-cost measures which are judged to have the highest levels of adaptive capacity and technical feasibility. Capacity-building is necessary, as well as training and increased public awareness. International support to build and strengthen environmental and sectoral institutions is also crucial.