

Assessing the Effect of Global Climate Change on the Future Jordanian Society (II): Implication

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ABSTRACT

An investigation was made on what strategic policy-making is required under the condition of global climatic change in sectors of energy, water and agriculture in Jordan, using a mathematical model previously developed to assess the future Jordanian society. According to this model, the increase in consumption resulting from the growth of both population and personal consumption was found to greatly exceed the increase of production in all sectors in Jordan throughout this century, especially in the case of climatic change. The introduction of distributed energy sources for insuring energy security, further efficient use of rain water and the introduction of new technologies such as desalinization, for instance, for water security, and the appropriate adaptation for the agriculture were pointed out as for the tactical policies in each sectors. Moreover, the importance of public awareness of the crises of energy, water and food is pointed out. Also, the necessity of building capacities for bringing up leaders to practice the adaptation, and the urgency of making long-term strategic policies in all sectors is emphasized.

Keywords: Future Jordanian Society, Model, Global Climatic Change, Energy, Water Resources, Agriculture, Assessment, Risk Communication, Building Capacities, Strategic Policy Making.

1. INTRODUCTION

The forecast of the Jordanian society, which probably varies under the condition of global climatic change, and the investigation of the possible measures by which we can cope with this change are two essentially important issues from the viewpoint of national policy, because the Jordanian society seems to be very vulnerable to the sort of climate change. The authors have developed a mathematical model to forecast the future society and to assess the effectiveness of policies to be taken under the climate change, where Jordan and its surrounding world were modeled according to the systems concepts (Ohnishi and Tyfour, 2005).

In this model the world was divided into three regions: Jordan, Arab League countries and the other countries including OECD (Organization for Economic

Cooperation and Development), between which an interaction was assumed to take place through the exchange of agricultural products. In the region of Jordan, three sectors; energy, water and agriculture were introduced, and the per capita demand and supply, along with the total demand and supply of the quantities relevant to those sectors, were derived from the year 2000 to 2100. In this case, some statistical quantities were assumed to evolve with time with a growth function-like behavior so that the constants and coefficients in this function were evaluated by the least squares fitting to secular data in the past or treated as input parameters.

In the agricultural sector, three types of farm products, such as fruits, field crops and vegetables, were considered for simplicity, and they are exchanged in a worldwide scale by the foreign trade. By imposing a constraint such that the total production of each product over the world is equal to the total consumption in every year, without assuming any stock of the product, the world price of the product was deduced. The production and consumption of the product in Jordan were given in terms of the world price thus derived. To give the effect

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