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Title of Thesis: AN ANALYTICAL ECONOMIC STUDY FOR THE OPTIMAL WATER RESOURCES USE BASED ON VIRTUAL WATER TRDAE IN EGYPT
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ABSTRACT

The main objective of this study is to estimate the volume of virtual water trade to Egypt with the world and assess the total water footprint. As the study aims also to explore the possibility of using the virtual water concept as an effective tool in the management and raise the efficiency of water use in Egypt in order to reach the optimal use of water in various uses. The estimation was appreciated according to the theory of Tony Allan. The results of the study show that the agricultural virtual water trade in Egypt was estimated at 37.8 BCM in 2009, of which about 32.4 BCM represents the volume of virtual water imports, and about 5.4 BCM represents the volume of virtual water exports, thereby realizing net virtual water imports was estimated at 27 BCM, and with the knowledge that the available water in Egypt as much as about 72 BCM, and the total water footprint was estimated at 107.8 BCM, of which about 75.4 BCM represents the internal water footprint , and about 32.4 BCM represents the external water footprint, was estimated of water scarcity index to Egypt about 150%, while the percent of water security index by about 70% , and as much water dependency index by about 30%. The virtual water trade between Egypt and the world has been addressed in the study by commodity groups and by country blocs again. And for the study of virtual water trade by commodity groups have been estimated net virtual water imports of the crops and its products at about 22.9 BCM, while as much as for an animal production around 4.1 BCM thus achieving net agricultural virtual water imports estimated at 27 BCM in 2009. As for the virtual water trade by country blocs has led the Group of Arab States list of countries in terms of virtual water imports from Egypt with about 3.2 BCM, while the least of which is Australia's total imports of water a default estimated 0.7 BCM, but for the world's virtual water exports to Egypt the default group has achieved the highest amount of Eastern Europe's virtual water exports to Egypt about 11.4 BCM annually, while Central America, a group less virtual water exports to Egypt, about 0.16 BCM in 2009. Per capita water footprint was estimated in Egypt from a survey study about 1297 m 3 per capita per year which is higher than the world average is estimated at about 1240 m 3 per capita per year and less than the likes of the United States of America which estimated at about 2183 m 3 per capita per year, per capita water footprint divided as goods and services consumed to food, industry, and household consumption water footprint. and then work one tenth scenarios for the Total water Footprint differ according to different factors including income and the style of life and the degree of awareness and the cultural level of individuals.

Key words: Total Water Footprint, Virtual Water Trade, Water Availability, Water Dependency, Water Security, Water Scarcity, Per Capita Water Footprint, External Water Footprint, Internal Water Footprint, Blue Water Footprint, Green Water Footprint, Gray Water Footprint.