

# The problem of water in Libya

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Economic resources are divided into two types: natural resources and human resources. Water resources fall under natural resources and population falls under human resources an increase in the latter leads to the increased demand for the former. The demand may be direct or indirect. Direct demand is the demand for water for drinking and cooking, and the indirect demand is for other human needs. The relationship between population growth and demand for water resources is direct. Demand for water by agricultural and industrial sectors is an indirect demand. The current trends of increasing demand for water indicate an approaching water crisis in many countries in North Africa and the Middle East.

Two-thirds of the earth's surface is covered with water. However, shortage of water is one of the most serious problems facing many countries of the world. The reason is that 97 percent of all the water is unfit for human use. Of the remaining three percent, two-thirds are locked up in glaciers, polar icecaps, and snow. That leaves only one percent available for human consumption. This residual amount should be enough to satisfy the needs of all the living things in the world for (humans, animals, and plants) Even though over 70% of earth's surface is covered with water, water is identified as one of the most important natural resources, and its scarcity has become a problem for many countries around the world. Libya one of such countries. Water problem exists all over the world, but in some parts of the world such as in Libya, it is turning out to be a major issue. Libya is faced with a serious water shortage due to an imbalance between limited water resources and increasing demand. The country's population has tripled since the 1950s. Because of the population growth, and the improvement in the standards of living, the country is facing a severely from a lack of water resources. Water shortage of about 1154 to 4339 Mm<sup>3</sup> have been estimated for the years 1998 and 2025, respectively.

Libya is a sovereign state in North Africa, bordered by the Mediterranean Sea to the north, Egypt to the east, Sudan to the southeast, Chad and Niger to the south and Algeria and Tunisia to the west. The country is made of three historical regions: Tripolitania, Fezzan and Cyrenaica. Libya is mostly arid and semi-arid covers a total of 1,759,540 square kilometres (CIA, 2013)

The cultivable area of the Libyan state is estimated to be about 2.2 million hectares(1.2% of the total area) (NASID, 2006) Groundwater is the main source of fresh Water in the country more than 90%of agricultural production achieves from irrigated agriculture, also under conditions of the rapid growth in the population Water demand exceed 83% of the total annual consumption (LGWA, 2006). Rapidly increasing population in many parts of the World place growing demands on Water for agricultural, domestic, and industry use Responses to these increased demands include not only steps such as well drilling, and dam construction, Libya has more complicated problem compare with another country because the country depends heavily on groundwater about 90% of the water resources. and the groundwater comes from desert, but most of the people live in north part of the country where is not enough water for them. The Great Man-Mad River project was carried out to transport Fresh water from underground reservoirs in south Libya to north of the country where most people live, water availability in Libya is very low and does not amount to 1000 cubic meters /years /person were 538 and 154 cubic meters/years / person in 1960 and 1990. respectively in Libya the amount of water withdrawal is over eight time its renewable water resources (FAO, 2001).The main aim of this paper is forecasting of demand of the water in Libya for (agriculture, Domestic and Industry

water use) using the time series analyzing on Eviwes 10 software from 1975 -2014 and the forecasting until 2050. Using ARIAM model.

**Keywords.** Libya - Water availability - Population growth – Water scarcity.

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