

## **WATER EFFICIENCY THROUGH NUMERICAL AND ECONOMIC ASSESSMENT OF REHABILITATION PLANNING FOR WATER NETWORK IN DEVELOPING COUNTRIES**

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**Summary.** Many of developing countries are facing crisis in water management according of increasing population, water scarcity and finally effects by world economic crisis.

Water distribution system in developing countries are facing many challenges of efficient repair and rehabilitation since the information of water network is very limited which makes the assessment of Rehabilitation plans very difficult.

Sufficient information with high technology in developed countries makes the assessment for rehabilitation easy. Developing countries facing many difficulties to assess the water network causing system failure, deterioration of mains and bad water quality in the network by pipe corrosion.

The limited information in developing countries brought into focus the urgent need to develop economical assessment for rehabilitation of water distribution systems adapted to such countries.

This paper will discuss the development of economic methodology of assessment Rehabilitation tools for Water Network using the most necessary basic information which will contribute to water efficiency. Gaza Strip is used as a case study.

Mechanical Factor, Physical Factor and Failure Factor will be considered in Technical condition assessment as numerical factors.

Geographic Information System (GIS) will be used as database and Decision support System (DSS). ArcGIS9.2 software and Water Modelling software (WaterCAD) will be used to build optimizing rehabilitation tools.

This paper will present the existing situation of water network and water scarcity in Gaza Strip. The regulations affecting water distribution, available condition assessment and rehabilitation technologies, and rehabilitation management strategies in that country will be described.

The paper also will review recent experiences in Rehabilitation Models and assess the effectiveness of the application of GIS as a DSS tool for Rehabilitation method selection of water network and forecasting of pipe quality.