

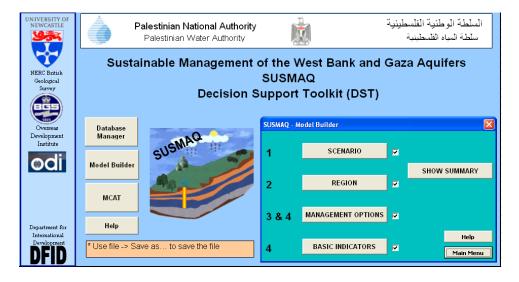
# Palestinian National Authority Palestinian Water Authority



السلطة الوطنية الفلسطينية سلطة المياه الفلسطينية



**Sustainability Assessment Case Studies of Water Resources Management Options in Palestine** 



**SUSMAQ-SUS # 60 V 1.1** 

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#### Disclaimer

This report is an output from the SUSMAQ project "Sustainable Management of the West Bank and Gaza Aquifers". The findings, interpretations and conclusions expressed are those of the authors and should not be attributed to other collaborators on the SUSMAQ project.

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#### The SUSMAQ Project

The aim of the project is to increase understanding of the sustainable yield of the West Bank and Gaza aquifers under a range of future economic, demographic and land use scenarios, and to evaluate alternative groundwater management options. The project is interdisciplinary, bringing together hydrogeologists and groundwater modellers with economists and policy experts. In this way, hydrogeological understanding can inform, and be informed by, insights from the social sciences. The results of the study will provide support to decision-making at all levels in relation to the sustainable yield of the West Bank and Gaza aquifers.

The project runs from November 1999 to October 2004, and is a partnership between the Palestinian Water Authority, University of Newcastle upon Tyne. The project is funded by the United Kingdom Government's Department for International Development (DfID).

#### **Project Results Dissemination**

The project disseminates its results through the project website <a href="www.ncl.ac.uk/susmaq">www.ncl.ac.uk/susmaq</a>, newsletters, workshops, technical meetings, publications in conference and scientific journals.

#### **Bibliographical Reference**

This report should be referenced as: SUSMAQ (2005). Sustainability Assessment Case Studies of Water Resources Management Options in Palestine. Report No. SUSMAQ - SUS #60 V1.1, Sustainable Management of the West Bank and Gaza Aquifers, Palestinian Water Authority (Palestine) and University of Newcastle upon Tyne (UK).

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## 1 Introduction

## 1.1 Background

The aim of the SUSMAQ project is to create a methodological framework for assessing the sustainable yield of the Palestinian aquifers, as part of the development of sustainable water resources management in Palestine. Sustainable water resources management requires consideration of the social, economic, and environmental impacts of the possible water Management Options (MO's). The decision-making process involves a wide range of stakeholders, who must have access to the best available information relating to these impacts.

During the SUSMAQ project, detailed analyses were made of the groundwater systems in the Palestinian West Bank, focussing on the Western Aquifer Basin and the Eocene aquifer of the North-East Aquifer basin, and of the environmental influences affecting sustainable management of these aquifers. This work was built around numerical groundwater flow and transport models of the aquifers, which were informed by field, data analysis and modelling studies of geology, hydrostratigraphy, pollution sources and groundwater quality, and of the rainfall distributions under current and future climates, and how these affect groundwater recharge. The social and economic aspects of water management were studied through a series of institutional analyses, household surveys, village level case studies and local stakeholder workshops.

These detailed studies formed the basis for development of an integrated sustainability assessment methodology, based on a Multi-Criteria Assessment (MCA) approach, which brings together the different aspects of sustainability and allows an open and transparent means for stakeholders to engage in a dialogue to develop the most appropriate water resources management options related to different possible scenarios of socio-economic, hydropolitical and climatic futures for Palestine. The methodology is designed to be flexible and responsive to changing circumstances. A set of demonstration applications of the methodology was developed to illustrate the use of the approach for the North, Central and South regions of the West Bank. Although these demonstration case studies are based on the best available information, some databases were incomplete, particularly relating to the proposed water development projects under the direction of the Palestinian Water Authority. The outcomes of these demonstration studies should not, therefore, be used directly to inform investment decisions for water resources development in Palestine without further analyses. Once further data are available, the methodology can be used with stakeholders to identify appropriate investment priorities for future water resources management, and to assess their sustainability.

## 1.2 Report scope and structure

This report describes the development of the sustainability assessment methodology, and its application to case studies of the sustainable management of regions of the Palestinian West Bank. The report draws together the technical and socio-economic components of the SUSMAQ project. The scientific and socio-economic analyses and technical developments underpinning this study are described in full in the series of SUSMAQ reports. The parts of this work directly relating to the MCA approach are

summarised here. The application to a set of case studies is then described in this report.

<u>Section 2</u> outlines the methodological approach to the sustainable management of water resources in Palestine, described in full detail in **SUSMAQ Report 41**.

<u>Section 3</u> describes the work carried out in applying the sustainability assessment methodology, and is based mostly on work described in detail in other SUSMAQ reports, including:

**SUSMAQ Report 34:** definitions of scenarios and Management Options.

**SUSMAQ Report 38**: definition of sustainability Basic Indicators (BI's)

**SUSMAQ Report 39**: quantification of MO's

**SUSMAQ Report 51:** evaluation of environmental BI's

**SUSMAQ Report 52:** evaluation of social BI's

**SUSMAQ Report 53:** evaluation of economic BI's

<u>Section 4</u> presents the results of demonstration case study applications of the sustainability assessment methodology.

<u>Section 5</u> draws conclusions regarding the future use of this approach and the SUSMAQ DST for the sustainable management of Palestinian water resources.



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