



Palestinian National Authority
Palestinian Water Authority



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Sustainable Management of the West Bank and Gaza Aquifers

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Sustainability Assessment Case Studies of Water Resources Management Options in Palestine

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<p>The SUSMAQ Project</p> <p>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.</p> <p>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).</p>	<p>Project Results Dissemination</p> <p>The project disseminates its results through the project website www.ncl.ac.uk/susmaq, newsletters, workshops, technical meetings, publications in conference and scientific journals.</p>
<p>Bibliographical Reference</p> <p>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).</p> <p>Authors: Geoff Parkin, Felipe Contreras Jimenez, Enda O’Connell, Muath Abu Saada, Amjad Aliewi, Alan McDonald, Alan Nicol, Yasser Shalabi, Miles Burton, Chris Kilsby,</p>	

CONTENTS

1	INTRODUCTION.....	1
1.1	BACKGROUND.....	1
1.2	REPORT SCOPE AND STRUCTURE	1
2	APPROACH TO SUSTAINABILITY ASSESSMENTS.....	3
2.1	PRESSURE-STATE-RESPONSE SYSTEM	3
2.2	DESCRIBING PRESSURES, STATES, AND RESPONSES FOR PALESTINIAN WATER RESOURCES..	4
2.3	MULTI-CRITERIA ASSESSMENT OF MANAGEMENT OPTIONS	4
3	DEVELOPMENT OF SCENARIOS, MANAGEMENT OPTIONS, AND SUSTAINABILITY INDICATORS FOR PALESTINE.....	6
3.1	CONSULTATIONS AND WORKSHOPS	6
3.2	SCENARIO DEFINITIONS	7
3.3	MANAGEMENT OPTIONS	11
3.4	SUSTAINABILITY INDICATORS	15
3.5	LINK BETWEEN MO'S AND BI'S.....	17
3.6	DATA SOURCES	18
3.7	CALCULATION OF BASIC INDICATOR VALUES	21
4	SUSTAINABILITY ASSESSMENT OF MANAGEMENT OPTIONS – DEMONSTRATION CASE STUDIES	26
4.1	SCOPE OF THE STUDIES.....	26
4.2	SELECTION OF MANAGEMENT OPTIONS FOR THE CASE STUDIES	27
4.3	EVALUATION OF BASIC INDICATORS FOR SOCIO-ECONOMIC / HYDROPOLITICAL SCENARIOS	28
4.4	ASSIGNMENT OF WEIGHTS.....	33
4.5	RESULTS – PRIORITISED MANAGEMENT OPTIONS.....	33
4.6	ASSESSMENTS FOR CLIMATIC SCENARIOS.....	38
5	CONCLUSIONS AND RECOMMENDATIONS	40
5.1	USE OF THE SUSMAQ DST FOR PRIORITISING MANAGEMENT OPTIONS	40
5.2	WATER RESOURCES MANAGEMENT STRATEGIES	40
5.3	STAKEHOLDER INVOLVEMENT IN DECISION-MAKING	43
5.4	IMPLICATIONS FOR MANAGEMENT OF PALESTINIAN WATER RESOURCES	43
5.5	RECOMMENDATIONS	44
6	REFERENCES.....	45

LIST OF FIGURES

Figure 2-1	Framework for Assessing SUSMAQ Management Options	3
Figure 2-2	The Pressure-State-Response (PSR) System with feedbacks	4
Figure 2-3	SUSMAQ DST software	5
Figure 3-1	Schematic illustration of possible stages of Palestinian development, and socio-economic prioritisation.....	8
Figure 3-2	Typical Supply Demand Graph for various scenarios.....	9
Figure 3-3	Isocost maps for pumping costs and drilling costs.....	24
Figure 3-4	Isocost maps for combined pumping and construction costs.....	24
Figure 4-1	Illustration of the use of package data for sustainability assessments under different scenarios.....	27

Figure 4-2 Example of results from the transient groundwater model	30
Figure 4-3 Overall indicator values based on default weightings, for all three socio-economic/hydropolitical scenarios for the North region	35
Figure 4-4 Third level indicator values for current scenario, North West Bank, with weightings based on June 2004 workshop.....	38
Figure 5-1 Schematic of hierarchical system of components in SUSMAQ DST ..	41
Figure 5-2 Schematic of effect of staged implementation of packages on sustainability indicators a) initial ordering of planned implementation of Management Options b) revised ordering following sustainability assessment.....	42

LIST OF TABLES

Table 3.1 SUSMAQ hydropolitical/socio-economic scenarios.....	10
Table 3.2 SUSMAQ Management Options	12
Table 3.3 Water availability (ceiling values) for SUSMAQ Management Options (MCM/annum).....	13
Table 3.4 SUSMAQ basic indicators.....	16
Table 3.5 Basic Indicators that do not directly measure the impact of Management Options.....	17
Table 3.6 Long-term additional water availability, and total water supply from packages in the SUSMAQ Package Database	19
Table 3.7 Data availability of packages in SUSMAQ package database for evaluating Basic Indicators, by region and scenario	20
Table 3.9 Data requirements for isocost calculations	23
Table 4.1 Environmental indicator values from regional groundwater modelling	31
Table 4.2 Weightings from June 2004 workshop, and default weightings.....	37

APPENDICES

Appendix A Basic indicator values for the West Bank demonstration case studies
Appendix B Standardised 1st level indicator values for the West Bank demonstration case studies
Appendix C 2nd and 3rd level indicator values for the West Bank demonstration case studies
Appendix D 3rd level indicators for the West Bank demonstration case studies

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.

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

Section 3 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

Section 4 presents the results of demonstration case study applications of the sustainability assessment methodology.

Section 5 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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