



Palestinian National Authority
Palestinian Water Authority



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Water Security and Links with Water Policy in Palestine

Sustainable Management of the West Bank and Gaza Aquifers

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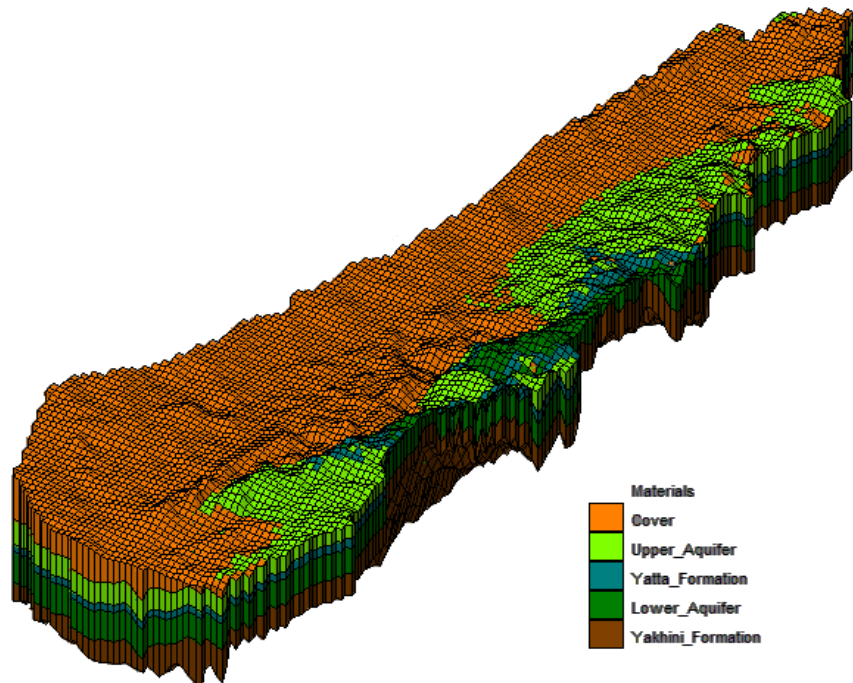


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SUSMAQ

Sustainable Management of the West Bank and Gaza Aquifers

MANAGEMENT OPTIONS REPORT Water Security and Links with Water Policy in Palestine

FINAL DRAFT

Important: This report is an output from the Management Options Study, part of the SUSMAQ project. As the report is in draft form, the findings, interpretations and conclusions expressed are those of the authors, and should not be attributed to the Palestinian Water Authority or any other Palestinian organisation.

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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 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 management 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 (PWA), University of Newcastle (NCL) and British Geological Survey (BGS). The project is funded by the United Kingdom’s Department for International Development (DFID).</p>	<p>Management Options Study</p> <p>The Management Options (MO) Study is part of the SUSMAQ project.</p> <p>The MO Study focuses on changing water demands, the use and allocation of water as both an economic and a social good, and the policy and institutional arrangements that can support sustainable water use and sustainable livelihoods.</p> <p>The MO Study has two main objectives. Firstly, it aims to identify alternative groundwater management options and evaluate them against a range of performance and feasibility criteria. These include cost and economic efficiency; equity; technical, political and institutional feasibility; public and political acceptability; and hydrogeological impact. Secondly, the study aims to develop economic, demographic and land use scenarios and evaluate possible abstraction/pollution outcomes.</p>
<p>Bibliographical Reference</p> <p>Water Security and Links with Water Policy in Palestine. Management Options Study Report, June 2003. SUSMAQ-MO #14 V0.4. Sustainable Management for the West Bank and Gaza Aquifers, Palestinian Water Authority (Palestine) and University of Newcastle upon Tyne (UK).</p> <p>Contributors: Tony Allan, Roger Calow, Alan MacDonald, Stephen Merrett, Khalil Saleh and Yasser Shalabi, with contributions to Chapter 3, Section 3.3, from Geoff Parkin and Enda O’Connell.</p> <p>Editor: Roger Calow</p>	<p>Feedback</p> <p>The SUSMAQ and PWA teams will appreciate any feedback on this report. Feedback should be sent to the above contacts.</p>

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Executive Summary

This report is an output of the Management Options (MO) Study, part of the project *Sustainable Management of the West Bank and Gaza Aquifers (SUSMAQ)*. The report is one of the project deliverables specified in the Project Monitoring Review approved by the Department for International Development (DFID) in July 2003. It describes work carried since publication of the MO Inception Report in January 2001, conducted jointly by team members in Palestine and the United Kingdom.

The report has three broad objectives:

- Firstly, to discuss different perspectives on, and approaches to, groundwater management in Palestine, and draw policy recommendations. Conventional approaches are those that fall within the Integrated Water Resources Management (IWRM) ‘toolbox’. They view the water sector in isolation, focusing on the capacity to manipulate flows into and out from aquifers through direct regulatory, economic and technical interventions. Broader approaches position water as an element in the changing economy, society and environment of Palestine, and extend to consider the livelihood systems from which the structure of water demand emerges, and the policy objectives set by other (non-water) sectors.
- Secondly, to identify the factors which influence water security in Palestine, in terms of access to local freshwater, and the ability to purchase water intensive commodities, and discuss implications for policy. The water security theme is explored at different scales: strategic; national and local.
- Thirdly, through the process of developing the report, to generate discussion – sometimes contentious and challenging – on the important ideas, concepts and conclusions highlighted.

Report structure and messages

The report is divided into five chapters, exploring the water security – water policy theme at strategic, national and local levels. Each chapter concludes with a list of key messages.

The report begins with a description of the evolution, scope and objectives of the MO study, and links with the wider SUSMAQ project. Specific report objectives are also described in more detail (Chapter 1).

Chapter 2 discusses water resources management in terms of the *implementation* of new reforms, and wider economic policies that can help achieve long term *water security*. This is termed ‘the strategic picture’. The objective is to highlight management perspectives not yet in general currency in Palestine, and to discuss lessons learned from other countries in the implementation of their new water laws which may be of relevance to policy-makers in Palestine. It is emphasised that devising a new suite of economic and regulatory remedies, and then implementing them at the required scale to make an impact, is a long term goal. However, the problems of water scarcity, and the means for addressing them, do not all lie in water policy. Indirect mechanisms for relieving pressure on the resource base, focusing on the structure of water demand, are therefore discussed.

Chapter 3 takes a more conventional approach, looking firstly at the availability of water in the West Bank (the supply-side), and then discussing some of the key resource issues that the water balance numbers do not reveal, in particular variations in groundwater reliability, vulnerability and the costs of water access. This work builds on the technical work of the SUSMAQ team, hence the focus on the West Bank. The chapter then goes on to review water demand projections for Palestine and supply-demand gaps, examining the assumptions on which they are based and the numbers generated. It is noted that forecasting methods based on per capita need make it easy to adjust forecasts to revised population estimates, but that population-based methodologies are

not a realistic way of predicting irrigation demands. Groundwater use in irrigation will be influenced by many factors, and while population growth can be used to legitimise expansion, in reality the population-food/crop link is tenuous. A food-needs argument is based on a misconception about the nature of food insecurity, and the means through which it is achieved.

Developing the supply-demand issue further, the chapter then looks at ways in which the results of demand projections can be linked with aquifer modelling, and at ways of evaluating outcomes. This ongoing work has been developed with members of the wider SUSMAQ team. A key advantage of the approach proposed is the ability to match high resolution data on distributed demand over time, with high resolution data on aquifer parameters and conditions. Current tools compare lumped demand estimates with basin-wide (physical) sustainability criteria.

The chapter concludes by examining the issue of the inter-sectoral allocation of water, not from the perspective of a spreadsheet 'plan', but in terms of the political and social drivers that determine allocation outcomes. It is noted that water managing and allocating measures are prioritised differently by politicians, sector professionals and users. What is feasible to achieve, and what is economically rational, differ.

Chapter 4 discusses access to basic water and wastewater services in the West Bank and Gaza, and summarises recent research on poverty and its interface with agriculture and rural development. It is noted that the pattern, nature and dynamic of poverty in Palestine reflects, in large part, Palestine's subordinate economic and political relationship with Israel. Heavy dependence on Israel for employment and trade has made the Palestinian economy vulnerable to restrictions on the movement of goods and people. It has also highlighted the role of agriculture in absorbing surplus labour, and providing supplementary income. This has fuelled the perception that agriculture is key to future economic development, and economic independence. However, it can also be argued that the role of agriculture is overplayed, certainly in the medium to longer-term. Different messages can be expected to play themselves out through water and agricultural policy, and these may conflict. It is important that water professionals engage with the arguments, as their outcome will have major implications for water use.

Report conclusions are summarised in Chapter 5. Appendices contain additional information on study reports (Appendix 1) and socio-economic data supporting Chapter 4 (Appendix 2).

1 Introduction

This report is an output of the Management Options (MO) Study, part of the project *Sustainable Management of the West Bank and Gaza Aquifers (SUSMAQ)*. The report is one of the project deliverables specified in the Project Monitoring Review approved by the Department for International Development (DFID) in July 2002 (SUSMAQ-MAN, 2002a). It marks the end of a phase of work carried out under BGS management, and the beginning of a new period of work under the stewardship of Alan Nicol (Overseas Development Institute - ODI) and Miles Burton (Carl Bro. International).

BACKGROUND

The MO Study contributes to several outputs of the wider SUSMAQ project described in the Project Monitoring Review Report. A distinction is made between Output 8 of the project logical framework for which the MO Study is solely responsible, and Outputs 9 and 10 which are a joint responsibility.

The MO study is *solely* responsible for Output 8:

Output 8: Guidance on evolving groundwater management policies developed that balance and reflect changing environmental, economic and social priorities over time.

Study deliverables which contribute to this output are:

- Inception Report (complete – SUSMAQ-MO, 2001a).
- Project Report: Water Security and Links with Water Policy in Palestine (this report).
- Project Report: results of field-level water and livelihoods analysis, and implications for water policy (scheduled for completion by August 2003, but the nature and timing of this deliverable may change following reorganisation of study).
- Final Project Report: developing and implementing water policy under changing social and economic conditions in Palestine (scheduled for completion by August 2004 but, again, the timing and nature of this final deliverable may change).

Deliverables for which the MO study is *jointly* responsible, with the technical teams, are as follows:

Output 9: Sustainable yield of the West Bank and Gaza aquifers, using flow and contaminant transport models, and spatially disaggregated demand estimates developed.

Project deliverables which contribute to this output are as follows:

- Project Report: demand projections for the West Bank and Gaza (scheduled for completion by August 2003; review of existing demand studies included in this report).
- Project Report: assessment of the sustainable yield and implications of alternative supply and demand trajectories (scheduled for completion by December 2003).

Output 10: Capacity of PWA to sustainably manage water resources for the benefit of all sections of Palestinian society enhanced.

This is a general capacity building output with no explicit deliverables in terms of reports. Key actions which contribute to capacity building include:

- Multidisciplinary workshops. Two have been held to date, in Amman, Jordan (March 2002) and Limassol, Cyprus (February 2003). The MO team has been involved in both, giving

presentations and running seminars (Amman). Outputs and outcomes have been written up as workshop proceedings.

- Seminars. Both the MO and technical teams held seminars/training sessions during the Amman workshop.
- MO workshops and training. Three UK-based workshops involving all UK and Palestine-based members of the MO team have been held to date. These have been organised to compensate for travel restrictions placed on BGS employees and consultants, which have prevented travel to Palestine. They have included work visits to the School of Oriental and African Studies (SOAS), DFID, Information Training and Development Ltd (ITAD) and Environmental Resources Management Ltd (ERM), who manage the Hebron Water Access and Storage project (HWASP). In addition, they have included participation in seminars at the Oxford Centre for Water Research (on the water resources of Palestine) and DFID (on water and livelihoods – theory into practice).

From study inception onwards, efforts have been made to involve project stakeholders in the development of the MO work programme. The process effectively began in February 2000 (project Inception Workshop) with a reorientation of work towards the West Bank, and the planning of a separate MO Study Inception Phase. This was based around a study planning and consultation visit to Palestine in July 2000, leading to detailed specification of outputs and supporting activities (see SUSMAQ-MO, 2001a), and the appointment in 2001 of a local MO Researcher, Mr Yasser Shalabi.

Although the UK members of the MO team have been unable to visit Palestine since then, continuing efforts have been made to engage and consult. For example: one of the seminar days at the project workshop in Amman was used to discuss and gain feedback on the work programme with colleagues from PWA (see SUSMAQ, 2002b); working notes (see below) have been produced to try and speed-up the circulation of ideas and findings; workshops have been held in the UK instead of Palestine; and, for this report, efforts made to encourage comment on the list of contents. However, travel restrictions have clearly compromised the kind of face-to-face interaction on the study that is so essential for developing shared ‘ownership’. This is one of the main reasons why management of the study is changing.

Fieldwork was planned for the latter half of 2002, with preliminary results to be presented and discussed in this report. Because of changes in study personnel and management, this was postponed. Fieldwork is now planned for 2003.

In addition to the deliverables described above, the MO Study has produced a series of working notes, or discussion papers, to present ideas and findings emerging from study activities for rapid circulation, discussion and feedback. These include, for example, short papers on water and socio-economic change in Palestine, links between technical and socio-economic studies, groundwater protection policies and institutional analysis. A full list study reports and working notes is presented in Appendix 1.

REPORT OBJECTIVES

This report has three broad objectives in support of Output 8 above:

- Firstly, to discuss different perspectives on and approaches to groundwater management in Palestine, and draw policy recommendations. Conventional approaches are those that fall within the Integrated Water Resources Management (IWRM) ‘toolbox’, and employ the direct water policy levers of water pricing, regulation etc. There are also powerful, indirect influences on water use arising from wider economic policy and livelihood transition that are not normally considered in the management debate. Identifying these influences and manipulating them towards water management goals is important.

- Secondly, to identify the factors which influence water security in Palestine, in terms of access to local freshwater, and the ability to purchase water intensive commodities, and discuss implications for policy. The water security theme is explored at different scales: strategic; national and local.
- Thirdly, through the process of developing the report (including circulation of list of contents and key messages; workshop and meeting presentations) to generate discussion – sometimes contentious and challenging – on important ideas and concepts.

More specifically, the report is also intended to:

- Draw together work from the different MO activities first outlined in the MO Inception Report (SUSMAQ-MO, 2001a), much of which has been presented in study working notes.
- Demonstrate how the technical and social science components of the project can be integrated to develop useful, interdisciplinary decision-support tools.
- Provide ‘value-added’ to existing water management studies in Palestine emphasising, in particular, the need to *adapt* water policy to changing social, economic and environmental conditions.
- Provide a useful platform from which to launch the next phase of the study in terms of source material and ideas.

REPORT DEVELOPMENT

The report draws on a series of working notes produced by the team between July 2000 and February 2003. These have been circulated within the wider project team and to appropriate staff within PWA. In addition, the report presents hitherto unpublished work on, for example, poverty and access to water services in Palestine. A full list of project reports, working notes and internal documents produced on the MO Study is presented in Appendix 1.

A provisional list of contents for the report was first produced in August 2002 and presented at a project technical meeting in September 2002. A more detailed list of contents was then discussed at a study workshop in October 2002, involving all members of the MO team, including Yasser Shalabi and Khalil Saleh from Palestine. The outline was revised, key messages included, and writing responsibilities assigned. A more detailed draft was then circulated for comment prior to a project Steering Committee Meeting in November 2002. The draft was also discussed separately with Eng. Fadle Kawash during his visit to BGS later that month. Key elements of the report were then presented at the multidisciplinary project workshop in Cyprus held in February 2003.

REPORT STRUCTURE

The remainder of the report (excluding this introduction) is divided into four chapters.

Chapter 2 discusses water resources management in terms of the *implementation* of new reforms, and wider economic policies that can help achieve long term *water security*. This is termed ‘the strategic picture’. The objective is to highlight management perspectives not yet in general practice in Palestine, and to discuss lessons learned from other countries in the implementation of their new water laws which may be of relevance to policy-makers in Palestine.

Chapter 3 takes a more conventional approach, looking firstly at the availability of water in the West Bank (the supply-side), and then discussing some of the key resource issues that the water balance numbers do not reveal, in particular groundwater reliability, vulnerability and the costs of access. This work builds on the technical work of the SUSMAQ team, hence the focus on the West Bank. Chapter 3 then goes on to review water demand projections for Palestine and supply-

demand gaps, examining the assumptions on which they are based and the numbers generated. Developing the supply-demand issue further, the chapter then looks at ways in which the results of demand projections can be linked with aquifer modelling, and at ways of evaluating outcomes. This ongoing work has been developed with members of the wider SUSMAQ team. The chapter concludes by examining the issue of the inter-sectoral allocation of water, not from the perspective of a spreadsheet 'plan', but in terms of the political and social drivers that determine allocation outcomes. Because of its focus on regional/national supply and demand studies, the chapter is termed 'the national picture'.

Chapter 4 discusses access to basic water and wastewater services in the West Bank and Gaza, and summarises recent research on poverty and its interface with agriculture and rural development. Conclusions are then drawn on the links between the three, looking beneath the demand data presented in Chapter 3 to people's views on domestic and irrigation water needs.

Report conclusions are summarised in **Chapter 5**. The appendices contain additional information on study reports (Appendix 1) and socio-economic data supporting the analysis in Chapter 4 (Appendix 2).



Full report/document is not available online