Harnessing salty water to enhance sustainable livelihoods of the rural poor in four countries in West Asia and North Africa: Egypt, Jordan, Syria and Tunisia

Project completion report – January 2005

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Background

This project was approved for funding under the Comprehensive Assessment Program in late 2003. Based on a work plan and schedule of work submitted subsequently and a Letter of Agreement signed between IWMI and ICBA, project activities were initiated in early 2004.

The project aimed to assess the potential to use saline groundwater in sustainable agricultural production in four countries in West Asia and North Africa, namely Egypt, Jordan, Syria and Tunisia. It quantified available saline groundwater resources and their potential to improve livelihoods of the rural poor through increased irrigated production of food and fodder crops in the target countries. The project lifetime was one year from 1 January 2004.

Planned project outputs

The planned outputs of the project included:

1. Reports on the quantity, quality and distribution/location of saline groundwater resources in Egypt, Jordan, Tunisia and Syria.
2. A synthesis report on the potential impact of the use of saline groundwater on the livelihood of rural poor in the four countries.
3. An annotated bibliography on saline groundwater resources in four countries.
4. A policy brief on the use of brackish and saline groundwater resources to improve agricultural productivity.
5. Strengthened capacity of national scientists in water assessment methodologies.

Project implementation

Details of the first six months of the project were provided earlier in a "*Six-months' progress report – January-July 2004*", which is included in electronic form on the accompanying CD. The following paragraphs summarize the activities described in that report and add the activities undertaken from July-December 2004.

Identification and recruitment of consultants: The project involved a desk study of the available saline groundwater resources and an assessment of possible options for utilization of this water in plant production systems that fit with the existing farming systems and socio-economic circumstances in the target areas. It was based on national reports for the four countries – Egypt, Jordan, Tunisia and Syria – prepared by national

teams of consultants. The teams of consultants were identified during January and February 2004 through existing contacts. In addition, an international consultant was identified to prepare a synthesis of the national reports that highlighted common factors and those specific to each country. ICBA prepared terms of reference, guidelines for the national reports and specific contracts for each for each consultant by the end of March/beginning of April 2004. Details of the consultants recruited, the report guidelines and the terms of reference are provided in Annex 1 of the six-months progress report.

Project workshop: A two-day project workshop was held in Dubai in late June 2004 with the objectives of:

1. Reviewing draft national reports
2. Requesting provision of missing information, where necessary
3. Discussing mechanisms and targets for dissemination of the information contained in the country reports.

Representatives of each of the teams of consultants, the international consultant and ICBA staff participated in the workshop. A report of the meeting, including the program and summaries of the main presentations, is on the accompanying CD.

The meeting concluded that published data on quantities and qualities of saline water available in different aquifers were often contradictory and incomplete. Similarly, matching socio-economic data on people and poverty, as well as agronomic information allowing calculation of likely impacts of the use of saline water on livelihoods were often also lacking. Accurate evaluation of potential impacts of use of saline groundwater on livelihoods was thus fraught with difficulties. However, expert opinion could readily identify areas of each country where presence of saline groundwater resources, poor farmers and farming systems that would be disposed to accept saline agricultural production appeared to coincide. A set of criteria that could be used to identify prospective areas with potential for saline agricultural production was developed.

Finalization of national reports: Following the workshop discussions, and taking into account specific comments on their drafts, national teams of consultants refined their documents by adding and deleting information as required. Final drafts were submitted to ICBA by the end of September 2004. These were reviewed in detail by the international consultant and a series of questions of clarification posed. The national teams provided responses that were used in drafting the synthesis report.

Preparation of synthesis report: Drafting of the synthesis report was initiated following the workshop to capture the initial conclusions reached there but could only be completed following submission of the final drafts of the national reports and receipt of responses to questions of clarification. The synthesis report was submitted in draft form by the end of October, reviewed by ICBA staff, and finalized by the end of November 2004.

Annotated bibliography: A bibliography on saline water resources and their use in agricultural production was commissioned in September from Cornell University Library. This search of their own and commercially available databases resulted in approximately

500 references and abstracts on various aspects of saline water resources and their utilization by October 2004.

Policy brief: ICBA staff prepared the policy brief in November/December 2004 following submission of the synthesis report. It is based on the criteria determined during the project workshop for identifying areas with potential for saline agriculture that will contribute to poverty alleviation and on the general conclusions of the study.

Project Outputs

1. National reports: As indicated above, the first output of the project comprised national reports on the quantity and quality of saline groundwater resources and their potential contribution to agricultural production and poverty alleviation for Egypt, Jordan, Syria and Tunisia. The four final national reports for Egypt, Jordan, Syria and Tunisia are attached to this report in electronic form on CD-ROM. In due course, ICBA plans to make these documents available through its web site.

With the exception of Egypt, the quality of the national reports was generally disappointing. They tended to be descriptive, lacking analysis and clear conclusions. In large part, this was due to the fragmented and contradictory nature of the data available and the difficulties in making sense of it. It was clear that there were significant saline groundwater resources in each of the countries, but precise quantification of amounts and water quality was not possible from the published data. Reliable information on vegetable, fruit, field crop and forage production at various levels of salinity was only available in few cases. Poverty was well documented at the national level but disaggregated data for different regions and population groups was generally lacking, making it difficult to unambiguously identify poor communities who might benefit from saline agriculture.

The findings from the workshop that national experts could readily integrate the available information on water resources, poverty and prospects for saline agriculture to identify locations and population groups with the highest likelihood of benefiting from use of saline groundwater was completely at variance with their failure to provide this information clearly in their written reports. We believe that this has important implications for the methodology of assessing the prospects for saline agriculture in any future attempts to do this in WANA or other regions. The gaps and other limitations of published data on water quantities and qualities, agricultural systems, different population groups and their poverty status and the general socio-economic and policy environments are such that hard conclusions are likely to be difficult to reach based on this information alone. Other informal knowledge and information are required to both filter and supplement the published information to form a coherent and readily intelligible picture. From the evidence of this study, more precise estimation of the likely impacts of introducing saline agriculture may best be obtained through expert consultations, as a first step, to identify promising locations and communities where saline agriculture might be viable, followed by intensive study of these specific locations and populations. In

some cases, this might then lead to pilot projects that would confirm the economic returns of saline agriculture options in participation with the target communities.

2. Synthesis report: The synthesis report aimed to compare and contrast the national reports and draw out the likely regional and wider implications of using saline groundwater for agricultural production from the examples of the four country case studies, and in particular to draw conclusions on the probable impacts on poverty. Its ability to do this was vitiated by the failure of the national reports to reach clear conclusions, as described above, which was in turn due to the incomplete and contradictory nature of the data available. It concluded, however, that there was scope for introduction of saline agriculture in the study countries. There were cropping options available for water at a range of salinities, including those beyond the levels normally associated with agriculture. There were sources of renewable and nonrenewable saline water that could be exploited and there were areas of poverty where saline agriculture could contribute to improved livelihood strategies for poor rural communities. It was not able, however, to quantify the likely impact of introduction of saline agriculture technology on poverty.

The synthesis report is available in electronic form on the accompanying CD. It will be published by IWMI in the Comprehensive Assessment series of publications and will be made available electronically through ICBA's website.

3. Annotated bibliography: Our original intention was that the bibliography would be made up of the references, formal and informal, cited in the national reports. In practice, however, the referencing of these reports was poor and did not capture the informal publications and reports, particularly those in Arabic, which we had thought might be available at the country level. As a substitute, we commissioned a literature search that returned over 500 references and abstracts on a wide range of topics related to saline water resources and their use in agriculture. ICBA plans to publish the references, without abstracts, both electronically and in hard copy. The anticipated time frame for publication is the third quarter of 2005.

An electronic copy of the full results of the literature search, including abstracts, is to be found on the attached CD-ROM.

4. Policy brief: The policy brief summarizes the criteria for identification of situations where saline agriculture can contribute to sustainable livelihood options for rural poor and the general conclusions of the study. The proposed text is available on the attached CD-ROM.

5. Strengthened NARS capacity: Teams of national experts prepared the national reports that constitute output 1 above. A total of 12 experts are cited as authors of the reports and actively participated in the project. An unknown number of other national staff contributed to extraction and compilation of the data and also benefited from the project, gaining greater understanding of the available data and its strengths and weaknesses.