

**Jordan: Irrigation Project in the Southern Jordan Valley II**

**Ex-post evaluation**

<b>Project</b>	Irrigation Project in the Southern Jordan Valley II	
<b>OECD sector</b>	31140 – Agricultural water resources	
<b>BMZ project number</b>	1982 65 324 1985 70 236 (SFF I) 1992 70 257 (SFF II) 1995 70 417 (SFF III)	
<b>Project executing agency</b>	Jordan Valley Authority	
<b>Consultant</b>	<ul style="list-style-type: none"> <li>• Dar al Handasah Consultants (Shair &amp; Partners) – Implementation of irrigation system</li> <li>• Gersar/Qubein – TAG Engineering – Study for and installation of the Water Management Information System</li> <li>• Gersar/SCP – Installation of the Water Management Information System</li> </ul>	
	<b>Project appraisal (planned)</b>	<b>Ex-post evaluation (actual)</b>
<b>Start of implementation</b>	<ul style="list-style-type: none"> <li>• Irrigation system: 4/84</li> <li>• Extension of the Water Management Information System: --</li> <li>• Personnel assistance: --</li> </ul>	<ul style="list-style-type: none"> <li>• Irrigation system: 11/84</li> <li>• Extension of the Water Management Information System: 4/97</li> <li>• Personnel assistance: 5/92</li> </ul>
<b>Implementation period</b>	<ul style="list-style-type: none"> <li>• Irrigation system: 42 months</li> <li>• Extension of the Water Management Information System: --</li> <li>• Personnel assistance: --</li> </ul>	<ul style="list-style-type: none"> <li>• Irrigation system: 38 months</li> <li>• Extension of the Water Management Information System: 55 months</li> <li>• Personnel assistance: 43 months</li> </ul>
<b>Investment costs</b>	76.1 million EUR	46.9 million EUR
<b>Counterpart contribution</b>	27.5 million EUR	12.2 million EUR
<b>Finance, of which FC funds</b>	48.6 million EUR	34.7 million EUR
<b>Other institutions/donors involved</b>	None	None
<b>Performance rating</b>	Clearly insufficient degree of developmental effectiveness (Rating 5)	

• <b>Significance/Relevance</b>	Rating 5
• <b>Effectiveness</b>	Rating 5
• <b>Efficiency</b>	Rating 5

**Brief description, overall objective and project purpose with indicators**

The project comprised the construction of an irrigation system for around 5,900 ha of new irrigation area, including an extension of the King-Abdullah Canal (KAC) by 14.3 km as well as the necessary services roads. The course of the Wadi Hisban was modified. As a complement to these measures, the existing Water Management Information System (WMIS) run by the project executing agency, the Jordan Valley Authority (JVA), was upgraded. The latter component was accompanied by personnel assistance measures.

The project purpose was to raise farm production in the Southern Jordan Valley. This was to make a contribution to increasing the income of farmers in the project region (overall objective). The indicator for overall objective achievement was an annual income earned by a 3-ha model farming enterprise of some 24,400 Jordanian Dinar (JD) (approximately equivalent to EUR 35,000; both figures based on prices in 2002) 7 years after the implementation of the irrigation system. No specific indicators have been defined for project purpose achievement.

Total project costs amount to about EUR 48.2 million. A total of about EUR 35.9 million was financed from FC funds. Of this, EUR 34.67 million was provided as a FC loan for the investment and EUR 1.22 million as a financial contribution from the Study and Expert Funds I-III for personnel assistance. The remaining funds of the FC loan amount to about EUR 0.43 million.

**Project design/Major deviations from the original project planning and their main causes**

The FC loan of EUR 49.59 million originally allocated to finance the project was reduced by about 20% in 1990. This reduction resulted from considerable cost savings in the construction of the irrigation system. The reasons for this were that funds allocated for technical contingencies and price increases were not used and the mean exchange rate remained below the estimate.

In 1990, BMZ also approved an expansion of the project scope. With project funds, the water of the Wadi Hisban was captured above sources with a high salt content and channelled directly to the Hisban-Kafrein irrigation area in operation since 1979 and also financed from FC funds, thus avoiding salination of the Wadi Hisban water. Other approved extensions, such as the connection of the Hisban-Kafrein irrigation area to the KAC, were not financed from FC funds as these measures were either postponed by JVA or financed from other sources.

**Key results of impact analysis and performance rating**

The measures to develop about 5,900 ha for irrigation (main component) were largely carried out as planned. These measures comprised extending the KAC by 14.3 km, erecting four pumping stations, laying a subterranean pressure pipeline network and other infrastructure measures (service roads and drainage system). The construction measures were carried out between 1984 and 1989. The implementation encountered no major problems. Nevertheless, the irrigation perimeter is till today not in operation. This is due to various reasons: Initially, the

operation of the additional area developed for irrigation was delayed due to the low water level in the King Tallal Dam for lack of rainfall. When the reservoir was sufficiently filled towards winter 1992, the JVA argued that growing winter vegetables alone was not financially viable for the farmers, since the investments they would have to make (drip irrigation system, greenhouses, etc.) were not profitable unless they were used in the summer half-year, too. This was in contradiction to the project design, which envisaged using the irrigation perimeter solely for irrigation in the winter half-year. JVA intended to ensure an all-year-round availability of irrigation water through putting the Karameh Dam into operation. After completion in autumn 1997, however, there were problems with the salt content of the water. At the same time, a drought set in that lasted till 2001, which resulted in an overall water shortage in the Jordan Valley. Moreover, only at the end of the nineties the land reallocation required for irrigation operations was carried out: In 1999, 90% of the farmers had agreed to their new farming areas. The reason why the irrigation perimeter is still not in operation is that although JVA had initiated the necessary overhaul of the irrigation infrastructure at the end of the nineties with World Bank financing the drought has persisted and caused a water shortage for the last four years. Based on the experiences gained over the last 13 years, there are today reasonable doubts as to whether the additional irrigation area will ever be put into operation. The key component of the project has so far had only marginal impacts on the target group as very little water was provided in the canal during winter and only irregularly tapped, so the project has been unable to make a significant contribution to raising the income of the farmers. For the same reason, possible beneficial environmental impacts, such as the conservation of groundwater reserves, have not materialised.

The improvement of the WMIS for the whole of the Jordan Valley has been implemented in several stages. First, the WMIS was examined in a pilot phase to appraise functionality and acceptance. Based on the findings and recommendations of this pilot phase, the following measures were carried out: replacement or improvement of the computer equipment of the WMIS to forecast seasonal and daily water needs and water supply (Phase A), adjustment of the WMIS applications and suitable software for a better and more user-friendly management (Phase B), expansion of the measuring system, automation of remote control of weirs and installation of dynamic regulation to monitor and control the whole hydraulic system of the KAC (Phase C). All phases were successfully completed and the WMIS is properly operated by JVA. The WMIS makes a major contribution to improving the efficient use of the water resources in the Jordan Valley. Alongside an increase in water supply for irrigation through improved efficiency, this project component has also had beneficial impacts on environmental protection and resource conservation (see the BMZ evaluation entitled, Jordan – Resource Management in Rural Areas dated July 2001).

In the project appraisal, a total of nine conditionalities were imposed on the borrower and/or the project executing agency. The conditionalities, where relevant, were largely met, though with considerable delay in some cases. The implementation of the required actions had some tangible beneficial impacts, such as the improved marketing of agricultural produce and a substantial rise in the fees for irrigation water (1995), but could not prevent project failure.

The project appraisal identified marketing as the most important project risk. The major deficits were identified in marketing organization, market research and agricultural extension services to suit market needs. Several conditionalities aimed at remedying these deficits. As production has not been increased due to the project, these risks have never become relevant. The project design (restriction to irrigation in the winter half-year) was also considered to pose an economic risk for the farmers of the target-group. A recommendation was made to JVA to conduct

relevant water management studies to inquire the possibility of providing water in the summer half-year as well (see above). As the farmers due to the unavailability of water did not invest in the irrigation infrastructure they were supposed to finance, this risk never played a role either.

The additional irrigation area developed in the project was never put into operation, nor is this likely in future. The intended increase in farm production by developing irrigation in the Southern Jordan Valley was therefore not achieved and this is not expected in future, either. The complement to the main measure, improving the Water Management Information System, was implemented effectively and thus made a contribution to more efficient and economical resource management and in turn also to improving the conditions of life of the population in the Jordan Valley. This project component accounted, however, for merely 10% of total costs, so that the successful implementation must be seen in a relative light. We therefore assess the **effectiveness** of the project as clearly insufficient (partial rating 5).

Since the investments in irrigation infrastructure, accounting for 90% of total costs, have been idle for 10 years, the project can no longer attain an adequate financial and economic rate of return. As to its main component, the project must be rated as a complete failure in terms of efficiency. No precise figure can be determined for the economic benefit gained from improving the WMIS. Nonetheless, the costs incurred can be assumed to be reasonable (see the above mentioned BMZ evaluation). We therefore rate the **efficiency** of the project as a whole as clearly insufficient (partial rating 5).

In hindsight, the project design was quite well suited to make a contribution to increasing farmers' income. Even if due to the persistent drought and the resultant water shortage the irrigation infrastructure will not be put into operation, the basic developmental relevance of the project approach remains. Since, however, the project was never put into operation, this aspect is attributed subordinate importance only. Despite the successful implementation of the WMIS, the project has made no significant contribution to increasing farm income so that the significance of the project is clearly insufficient (partial rating for **relevance/significance**: 5).

Weighing up the above listed key categories, we attest the project a **clearly insufficient degree of developmental effectiveness** (rating 5).

#### **General conclusions applicable to other projects**

None

## Key

Developmentally successful: Ratings 1 to 3

Rating 1 Very high or high degree of developmental effectiveness

Rating 2 Satisfactory degree of developmental effectiveness

Rating 3 Overall sufficient degree of developmental effectiveness

Developmental failures: Ratings 4 to 6

Rating 4 Overall slightly insufficient degree of developmental effectiveness

Rating 5 Clearly insufficient degree of developmental effectiveness

Rating 6 The project is a total failure

### Criteria for evaluating project success

The evaluation of a project's developmental effectiveness and its assignment in ex-post evaluation to one of the various levels of success described in more detail below addresses the following fundamental questions:

- Have the **project objectives** been reached to a sufficient degree (aspect of project **effectiveness**)?
- Does the project generate sufficient **significant developmental impacts** (project **relevance** and **significance** measured by the achievement of the predefined overall developmental objective and its political, institutional, socio-economic, socio-cultural ecological impacts)?
- Was/Is **funding/expenditure appropriate** for achieving the objectives and how can the project's microeconomic and macroeconomic impact be measured (aspect of **efficiency** of project design)?
- Where undesired (**side**) **effects** have occurred, are these acceptable?

Instead of treating **sustainability**, a key aspect in project evaluation, as a separate category, we look at it as a cross-sectional element of all four fundamental questions on project success. A project is sustainable if the project executing agency and/or the target group can continue to use the project facilities set up for an economically viable period of time in all or to carry on with the project activities on their own to beneficial effect after financial, organizational and/or technical assistance has ended.