

**Egypt: National Drainage Programme (NDP)**

**Ex-post evaluation**

<b>OECD sector</b>	31130 / Agricultural Land Resources	
<b>BMZ project ID</b>	(1) 1992 65 653 (fixed assets investment) (2) 1992 70 141 (complementary measure)	
<b>Project-executing agency</b>	Egyptian Public Authority for Drainage Projects (EPADP)	
<b>Consultant</b>	(2) Euroconsult & Darwish Consulting Engineers	
<b>Year of ex-post evaluation</b>	<b>2004</b>	
	<b>Project appraisal (planned)</b>	<b>Ex-post evaluation (actual)</b>
<b>Start of implementation</b>	Q 1 1993	Q 1 1993
<b>Period of implementation</b>	1993-1998	1993-2001
<b>Investment costs</b>	EUR 230.5 million	EUR 249.4 million*
<b>Counterpart contribution</b>	EUR 105.2 million*	EUR 128.5 million*
<b>Financing, of which Financial Cooperation (FC) funds</b>	(1) EUR 22.9 million FC/loan  (1) EUR 2.7 million FC/grant	(1) EUR 22.9 million FC/loan  (2) EUR 2.7 million FC/grant
<b>Other institutions/donors involved</b>	World Bank, Dutch DC	World Bank, Dutch DC
<b>Performance rating</b>	2	
<b>Significance / relevance</b>	2	
<b>Effectiveness</b>	3	
<b>Efficiency</b>	2	

**Brief Description, Overall Objective and Project Objectives with Indicators**

The aim of the project conducted under the leadership of the World Bank and with the participation of German Financial Cooperation (FC) and Dutch development cooperation (DC) was the stabilisation of agricultural yields by improving the drainage systems in a production area of approximately 310,000 ha as well as the strengthening of the Egypt Public Authority for Drainage Projects (EPADP), which is the institution in charge of executing the project. The investment measures comprised the installation and renewal of underground drainage systems (field drainage) and open drainage ditches as well as the supply of equipment and spare parts for drainage-laying and maintenance and for pumping stations. In addition, measures to strengthen the executing agency were implemented under the Dutch TC project. An FC-financed complementary measure comprised the introduction of a monitoring and evaluation (M&E) system at the project-executing agency designed to establish the effects of drainage.

Overall objective of the project: The overall objective of the project is to contribute to maintaining and improving the bases of agricultural production in order to stabilise and increase agricultural incomes.

Indicator: Increasing farmers' average incomes by 20%. On the basis of World Bank calculations an economic internal rate of return of 24% was assumed upon project appraisal, which is implicit in the overall objective.

Project objective: The stabilisation and increase of agricultural yields through the sustainable improvement of drainage systems in a cultivation area of altogether about 310,000 ha and the strengthening of EPADP, which is the institution in charge of project execution.

Indicators: The increase in agricultural yields. Yields of the most important agricultural crops are expected to increase by 10% to 20%.

### **Project Design / Principal Deviations from the original Project Planning and their main Causes**

The year-round irrigation, which became possible due to the Aswan Dam, produced constantly rising groundwater levels and led to related water logging and soil salination, which became clearly visible from the mid-1970s. Since then the Egyptian government has implemented extensive drainage programmes. Under these programmes field drainage pipes were installed in the soil of the drainage areas. The water collected in the drainage pipes is diverted, by force of gravity, in underground pipes (collectors) into a system of open drainage canals (receiving waters) and finally all surplus water collected in these canals is channelled via the River Nile into the Mediterranean Sea. Pumping stations are used where the water cannot be diverted by means of gravitation. The extensive drainage programmes, which also comprised the project evaluated here, were very successful in preventing a rise in the groundwater level and the further salination of the soil. They contribute substantially to improving the conditions for higher agricultural yields.

#### Investment measures

The following measures were implemented: (a) initial drainage of roughly 248,000 ha; (b) rehabilitation of roughly 63,000 ha of field drainage; (c) extension of about 1344 km of existing receiving waters which cover a drainage area of 214,200 ha; (d) financing of electro-mechanical equipment and spare parts for drainage pumping stations and of vehicles; (e) financing of equipment for the installation and maintenance of drainage pipes and systems for the production of pipes.

Measures (a) to (c) and (e) were part of the project design. Since the pumping stations are indispensable for the functioning of the system, the modification (in the course of the project implementation) of the project agreement concluded between the Egyptian government and the World Bank to include the financing of measures that had not been planned at the time of the project appraisal under (d) in the amount of USD 37,8 million was factually justified. The other project measures were not reduced as a result of these additional measures because the Egyptian government made available more funds for the project.

As planned, the implementation was mainly carried out independently by EPADP, the institution responsible for the planning, construction and operation of drainage facilities in Egypt. It selected the drainage areas in accordance with the relevant technical

criteria and worked out the detailed design required for the project implementation. The contracts for the pipe laying were awarded to private enterprises, which are obliged, however, to use the drainage pipes provided by EPADP. Contracts for the supply of equipment and vehicles were awarded on the basis of international competitive bidding. During the international bidding competition no bids were presented for the pipe laying by any foreign firms. In consequence, the works were provided by Egyptian firms. The fact that the implementation took two years longer than had been scheduled did not have any noticeable negative impact. The quality of the construction works is good. The selection of areas, the planning of drainage measures and the implementation of the measures were conducted properly.

### Complementary measure

During the first phase of the complementary measure (1993-98) the project executing agency was supported mainly with regard to the improvement of its M&E system for the collection and evaluation of data to establish soil parameters and yields. A corresponding unit was established and equipped, and 15 monitoring areas with approximately 20 observation wells each were created. Currently the EPADP uses the M&E data collected mainly for statistical purposes and not to back up management decisions. Measures to improve the management information system (MIS) of EPADP were implemented in a second phase (1998-2001) of the complementary measure. This phase comprised the monitoring of complaints from farmers, the monitoring of maintenance works, the establishment of criteria for priorities in the rehabilitation, the built-up of a data base, the analysis and evaluation of the data as well as improvements in the reporting. The result of the measures was the conception and testing of the respective systems and their documentation in corresponding manuals. However, the systems developed were not introduced within EPADP due to lacking "ownership" in EPADP. Within EPADP the opinion prevailed that the institution already adequately fulfilled all required tasks with the existing procedures and, thus, there was no sufficient incentive to implement the systems developed by the consultant. In consequence, important parts of the complementary measure (the MIS) were not successful.

### **Key Results of the Impact Analysis and Performance Rating**

The result of the investment measures implemented is the establishment of functioning field drainage systems with proper diversion of the water collected into open receiving waters and the installation of the pumps required to further channel the water collected. Overall the project measures were appropriate to eliminate the bottlenecks in the drainage systems that had been identified in the project appraisal.

The achievement of the overall and project objectives can be summarised as follows:

- Given the figures of 248,000 ha newly built and 63,000 rehabilitated field drainage systems, the planned scope of draining measures was slightly outperformed. The yield targets for the main products of wheat, maize and cotton were achieved and partly even exceeded. The forecast yield increases for most of the other crops were also largely achieved. Overall, the project objectives were achieved.
- In order to determine whether the overall objective was achieved the income produced from drained fields was compared with the income produced from undrained fields ("with and without the project"). In the "with the project" case income increases attributable to the project were 30% (in the delta) and 38% (in the Nile valley). Thus, the overall objective of 20% was clearly exceeded.

The maintenance condition of the areas drained so far with underground drainage systems is good. The maintenance of open drainage canals (receiving waters) is more problematic. The use of dredgers with unsuitable buckets caused excessive damage to the side slopes and the severe widening of the cross-sections, and as a result it became more difficult to maintain the larger drainage canals. It is necessary on a large scale to introduce the measures that have been developed in the context of other projects to improve the ongoing maintenance of the systems. Otherwise, considerable damage on the open drainage canals have to be expected in the medium to long term, which cannot be removed in the framework of the ongoing maintenance.

Detailed information on the maintenance budget (O&M) for the drained project areas are not available. Calculated on the basis of the entire O&M budget of EPADP it is estimated at approximately EGP 8.9 million annually. Around EGP 10 million are necessary every year for the ongoing maintenance. Thus, the funds available to EPADP for O&M appear to be just sufficient.

The problems in the sector include the low cost participation of the users, who currently only repay the investment costs (without interest) over a period of 20 years. The users do not contribute to covering the operating costs though they are in the position to bear additional costs. Currently EPADP receives sufficient public funds to ensure the functioning of the drainage systems. However, in the long run the Egyptian state will not be able to bear the main brunt of the investment costs and the ongoing costs of the water supply and drainage systems. Thus, the legal framework has to be established in order to ask the users to bear a larger share of the operating costs.

The developmental effectiveness of the project is assessed as follows:

- The project objective was achieved. The problems with the proper maintenance of the open drainage canals bear certain sustainability risks, which are however still acceptable. Most of the objectives pursued with the complementary measure were not achieved. Therefore, we classify the project's effectiveness as sufficient (sub-rating 3).
- The main source of income of the target group in the project area is agriculture. The increase in agricultural production due to the project measures lead to a significant increase in incomes. This benefited approximately 370,000 farms with roughly 2.2 million persons, of which roughly 70% are smallholders. Thus, we classify the project's developmental relevance and significance as satisfactory (sub-rating 2).
- The specific investment costs are reasonable. The economic profitability of the project is good. Therefore, we judge the project's efficiency as satisfactory (sub-rating: 2).

After considering the key development-policy criteria, we classify the project as having **satisfactory developmental effectiveness** (rating 2).

### **General Conclusions**

In order to increase the sustainability of future projects it should be agreed with the Egyptian government to involve the target group more strongly in the planning, implementation and operation of large-scale drainage projects. If new projects are started an agreement on the involvement of the users should be reached in an appropriate form with the executing agency, for instance by means of implementation agreements. In the framework of the sector dialogue and in cooperation with other donors active in the sector, the Egyptian government has to be convinced that it has to create the legal basis to ensure that the users bear a larger share of the investment costs and the ongoing costs.

## Legend

Developmentally successful: Ratings 1 to 3	
Rating 1	Very high or high degree of developmental effectiveness
Rating 2	Satisfactory 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 the Evaluation of Project Success

The evaluation of the "developmental effectiveness" of a project and its classification during the ex-post evaluation into one of the various levels of success described above in more detail concentrate on the following fundamental questions:

- Are the **project objectives** reached to a sufficient degree (aspect of project **effectiveness**)?
- Does the project generate sufficient **significant developmental effects** (project **relevance** and **significance** measured by the achievement of the overall development-policy objective defined beforehand and its effects in political, institutional, socio-economic and socio-cultural as well as ecological terms)?
- Are the **funds/expenses** that were and are being employed/incurred to reach the objectives **appropriate** and how can the project's microeconomic and macroeconomic impact be measured (aspect of **efficiency** of the project conception)?
- To the extent that undesired (**side**) **effects** occur, are these tolerable?

We do not treat **sustainability**, a key aspect to consider for project evaluation, as a separate category of evaluation but instead as a cross-cutting element of all four fundamental questions on project success. A project is sustainable if the project-executing agency and/or the target group are able to continue to use the project facilities that have been built for a period of time that is, overall, adequate in economic terms, or to carry on with the project activities on their own and generate positive results after the financial, organisational and/or technical support has come to an end.