

**Pakistan: Chashma Irrigation Project Phase III**

**Ex post evaluation report (final evaluation)**

<b>OECD sector</b>	31140 agricultural water resources	
<b>BMZ project ID</b>	1991 66 174	
<b>Project executing agency</b>	Water and Power Development Authority (WAPDA)	
<b>Consultant</b>	Consortium Harza, SOGREAH, NDC (construction consultant); AHT, Essen (management consultant)	
<b>Year of ex post evaluation report</b>	2010 (sample 2009)	
	<b>Project appraisal (planned)</b>	<b>Ex post evaluation (actual)</b>
<b>Start of implementation</b>	Q IV 1992	Q III 1993
<b>Period of implementation</b>	8 years	10 years
<b>Investment costs</b>	USD 289.4 million	USD 306.3 million
<b>Counterpart contribution</b>	USD 63.7 million	USD 73.4 million
<b>Financing, of which Financial Cooperation (FC) funds</b>	USD 43.9 million or EUR 37.7 million	USD 39.6 million or EUR 38.4 million
<b>Other institutions involved</b>	ADB	ADB
<b>Performance rating</b>	4	
• <b>Relevance</b>	5	
• <b>Effectiveness</b>	4	
• <b>Efficiency</b>	5	
• <b>Overarching developmental impact</b>	4	
• <b>Sustainability</b>	4	

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

The project involved the third stage of constructing the “Chashma Right Bank irrigation system”, west of the River Indus in Punjab Province and the North West Frontier Province. The first phase (1979-1987) and the second phase (1988-1994) were financed by the Government of Pakistan and the Asian Development Bank (ADB), and involved primarily the development of an area of irrigated land comprising approximately 98,750 hectares. During the third phase about another 145,690 hectares irrigated land was developed, with the following components:

(1) A 150 km extension of the main irrigation channel (including headworks and withdrawal facilities, road and pedestrian bridges, etc.); (2) The construction of a total of 42 distribution channels with a total length of 644 km; (3) The construction of 1,690 subsidiary channels for local farmers to enable them to develop land, including the delivery of technical advisory services to water user groups and individual users; (4) Support for the agricultural extension services. The lead project executing agency was the Water

and Power Development Authority (WAPDA), although components (2) and (3) were delegated to the relevant divisions of the two provincial governments, which were also responsible for implementing component (4) independently.

The project aimed to raise agricultural production, to be measured against an increase of yields between 30 % and 50 % for main crops, i.e. wheat, maize and cotton as well as a cropping intensity of at least 127 %. The overall objective was to raise family incomes by a minimum of 100 %. The target group, put at around 31,800 households or roughly 317,000 people in total, comprised farms already present in the zone as well as new farms and households to settle in the area.

The total costs of the project were put at around USD 306 million in 2003 during the final monitoring mission conducted jointly with the ADB in its capacity as lead donor. Of this total about EUR 38.4 million was financed from the FC loan. No information was available on the amount and structure of remaining ADB funds available for the project. Equally, the contributions made by Pakistan's central government, the two provincial governments and the target groups themselves could not be quantified in sufficient detail.

This project was the last FC commitment in Pakistan's irrigation sector. Currently, no new projects are planned in this sector.

#### **Design of the development intervention / major deviations from the original project planning and the main reasons for these**

Apart from a few modifications to the design of Parts A and B (in terms of designing headworks and measures to channel off floodwater) the above project measures were implemented as planned. The period of implementation, which was estimated at 8 years during the project appraisal, was in fact around two years longer, as a result of the extremely cumbersome project organisation and the lack of any clear separation of duties and responsibilities between WAPDA, the relevant provincial authorities, and the implementation consultant contracted.

The main result of the project was the development of a total of about 146,000 hectares of irrigated land for the cultivation of rice, wheat, oil plants, forage plants, cotton and sugarcane. Today, the concept selected and the way this was modified in the course of implementation must be considered inappropriate. Planning was based on the assumption of secure water supplies were, at a very high average level compared to the country as a whole. This subsequently proved to be overly optimistic. The technical design based on this assumption did not allow for the efficient use of increasingly scarce water resources. Exceptional events like the freak floods of 2010 do by no way affect the structural water scarcity that prevails in Pakistan.

The responsible provincial authorities as a whole did not comply with the requirement of a gradual increase in irrigation tariffs. The current tariffs are entirely inadequate, and come nowhere near covering running and maintenance costs.

#### **Major findings of the results analysis and performance rating**

The lack of reliable data does not allow for a sufficiently stringent assessment of income changes at farm level – even less for a causal attribution to the project. In any case, increases in income expected initially (at a rate of over 100%) appear unlikely to have been achieved for the following reasons: (1) low average cropping intensity of 85% over the last three years; (2) extremely low yields for all crops; (3) large tracts of

land used to grow crops that offer relatively low value added (in particular wheat) and a low level of diversification (with little fruit, vegetables, forage crops, etc.).

Due to the above-mentioned lack of basic data, it is impossible to reliably calculate the macroeconomic profitability *ex-post*. It seems safe to assume, however, that the return on investment will be significantly lower than the 13.5% envisaged at project appraisal.

In retrospect, the actual scope and intensity of participation on the part of users and their associations in the preparation and implementation of the project appears too low for assuming any long-term strengthening of target group/civil society participation structures or significant moves towards good governance.

Women perform a significant part of the work in rural households in both agricultural production and in livestock farming, but it has not proved possible to describe or quantify their contribution in more detail on the basis of empirical data. The project design did not provide for any specific measures to take into account the interests of women and/or to advance their interests, and no such measures were implemented.

No fundamental new data or findings relating to the environmental impacts of the project are available. The categorisation adopted previously – i.e. no relevant environmental impacts and no need for action – appears plausible.

The core problem identified in 1992 during project appraisal (low agricultural production as a result of low rainfall) is still valid – as one among several constraints. The premise, dating back to the 1970s, that this can be overcome by simply extending the available farmland, apparently was not reflected any further during project appraisal. Today, the drastic drop in water availability, the high competition between water-using sectors, the low level of efficiency in irrigation and the inadequate maintenance of existing irrigation and draining infrastructure would appear to be at least equally pressing problems. These were not adequately addressed by the project, which also applies to the institutional and organisational causes of the above problems. From today's perspective, the relevance of the project must be regarded as clearly inadequate (rating 5).

The project objective, the significant increase in agricultural production, has not yet been achieved as planned. Between 2006/07 and 2008/09, the average cropping intensity was reported as 85 %, and thus well below the original target of 127%. Since start-up, yields of the main crops have remained below national and provincial averages, and thus fall well short of original expectations. In spite of significant improvements in water availability and higher irrigation charges, few improvements can be seen in comparison to the situation before the project was launched. Like all irrigated farming in Pakistan, the project area is characterised by an extremely high average level of water consumption and a very low physical water productivity in comparison to other countries with comparable geographical conditions (e.g. Indian Punjab, Egypt). The clear attribution of the development of farmland and harvests to the project impacts is rendered more difficult by the lack of any reliable data on the provision of water for irrigation as surface water from the main channel (thanks to the project) and any contributions made by spontaneously built private groundwater wells (effectiveness rating 4).

Efficiency of the project is considered to be clearly inadequate for the following reasons (rating 5): (1) serious overrun on costs and major delays in implementation; (2) cumbersome and inefficient organisation of project preparations and implementation with concomitant high administrative costs; (3) inappropriate technical design of the irrigated schemes, rendering specific investment costs, which were low in international terms,

irrelevant in retrospect; (4) unsatisfactory level of cropping intensity and harvests and thus low level of use of new production capacities, i.e. low level of allocation efficiency and high follow-on costs for operations and maintenance work, for which the financing must be considered uncertain.

It is plausible to conclude that the intervention has also fallen short of achieving the overall objective, i.e. raising families' incomes by over 100 %, as a result of the limitations laid out above and taking into account the following factors: (1) significant delays in implementation and thus also in the irrigated land becoming available for farming; (2) strong rise in the costs to be borne by the farmers themselves for measures to develop their land; (3) failure to achieve the objectives relating to the cropping programmes and cropping intensity and to raising the harvests of main crops (overarching developmental impact rating 4).

Neither the authorities' planned budgets nor their actual expenditure are adequate to ensure proper operation and maintenance of the public irrigation and drainage facilities. Besides, irrigation tariffs charged fail to adequately contribute to cost coverage. This remains a structural feature of Pakistan's irrigated agriculture and applies to all four provinces of the country, and thus also for the project area. Little progress has been made on institutional reforms to decentralise the operation and maintenance of public infrastructure and to create transparent conditions and responsibilities. Consequently, the majority of the planned efficiency gains, cost savings and greater contributions to be made by users to covering costs have not been achieved. During the final monitoring mission, numerous problems were identified with respect to the sustainable operation and maintenance of the project's investments. The problems mentioned included the inability of water user associations to perform the tasks allocated to them. As yet, there is no indication that the sustainability risk – previously classed as high – has since lessened significantly (sustainability rating 4).

In view of the above criteria, we class the developmental impacts of the project as a whole as unsatisfactory (rating 4).

### **General conclusions**

The project design dates back to the 1970s, with a conceptual focus on technology- and engineering-based production increases (supply side) prevalent at that time. The institutional, socio-economic and target-group-related factors were at best given secondary consideration. The same applies to the competition for the ever scarcer water resources. Today, integrated planning approaches would address these problems in a far more comprehensive manner.

In this measure, the ADB was clearly the lead donor in terms of design and implementation, and had already financed the previous stages. Nonetheless, efforts should be made to play a more active part in preparatory work, project appraisals and subsequent implementation – even where FC provides a relatively small percentage of the total financing. A more active participation in sector-related dialogue is also advisable, when far-reaching reforms are required to ultimately ensure the success of individual interventions.

## Notes on the methods used to evaluate project success (project rating)

Projects are evaluated on a six-point scale, the criteria being relevance, effectiveness (outcome), “overarching developmental impact” and efficiency. The ratings are also used to arrive at a final assessment of a project's overall developmental efficacy. The scale is as follows:

- |   |   |
|---|---|
| 1 | Very good rating that clearly exceeds expectations  |
| 2 | Good rating fully in line with expectations and without any significant shortcomings  |
| 3 | Satisfactory rating – project falls short of expectations but the positive results dominate                                     |
| 4 | Unsatisfactory rating – significantly below expectations, with negative results dominating despite discernible positive results |
| 5 | Clearly inadequate rating – despite some positive partial results the negative results clearly dominate                         |
| 6 | The project has no positive results or the situation has actually deteriorated  |

A rating of 1 to 3 is a positive assessment and indicates a successful project while a rating of 4 to 6 is a negative assessment and indicates a project which has no sufficiently positive results.

### **Sustainability is evaluated according to the following four-point scale:**

#### Sustainability level 1 (very good sustainability)

The developmental efficacy of the project (positive to date) is very likely to continue undiminished or even increase.

#### Sustainability level 2 (good sustainability)

The developmental efficacy of the project (positive to date) is very likely to decline only minimally but remain positive overall. (This is what can normally be expected.)

#### Sustainability level 3 (satisfactory sustainability)

The developmental efficacy of the project (positive to date) is very likely to decline significantly but remain positive overall. This rating is also assigned if the sustainability of a project is considered inadequate up to the time of the ex post evaluation but is very likely to evolve positively so that the project will ultimately achieve positive developmental efficacy.

#### Sustainability level 4 (inadequate sustainability)

The developmental efficacy of the project is inadequate up to the time of the ex post evaluation and is very unlikely to improve. This rating is also assigned if the sustainability that has been positively evaluated to date is very likely to deteriorate severely and no longer meet the level 3 criteria.

The overall rating on the six-point scale is compiled from a weighting of all five individual criteria as appropriate to the project in question. A rating of 1 to 3 indicates a “successful” project while a rating of 4 to 6 indicates an “unsuccessful” project. In using (with a project-specific weighting) the five key factors to form an overall rating, it should be noted that a project can generally only be considered developmentally “successful” if the achievement of the project objective (“effectiveness”), the impact on the overall objective (“overarching developmental impact”) and the sustainability are considered at least “satisfactory” (rating 3).