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PERFORMANCE AUDIT REPORT

TURKEY

**IGDIR-AKSU-EREGLI-ERCIS (IAEE) IRRIGATION PROJECT
(LOAN 2433-TU)**

AND

**DRAINAGE AND ON-FARM DEVELOPMENT PROJECT
(LOAN 2663-TU)**

June 28, 1999

Sector and Thematic Evaluations Group
Operations Evaluation Department

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Currency Equivalents (annual averages)

Currency Unit = Turkish Lira (TL)

End of Year value of US\$1.00 in TL

1986	US\$1.00	758
1987	US\$1.00	1,021
1988	US\$1.00	1,815
1989	US\$1.00	2,314
1990	US\$1.00	2,930
1991	US\$1.00	5,080
1992	US\$1.00	8,564
1993	US\$1.00	14,473
1994	US\$1.00	38,726

Fiscal Year

Government: January 1 to December 31

Abbreviations and Acronyms

DOFDP	Drainage and On-Farm Development Project
DSI	General Directorate of State Hydraulic Works
FAO	Food and Agriculture Organization of the UN
GDRS	General Directorate of Rural Services
IAEE	Igdir, Aksu, Eregli and Ercis
ICR	Implementation Completion Report
OED	Operations Evaluation Department
O&M	Operation and Maintenance
SAR	Staff Appraisal Report
WUO	Water Users Organization

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Operations Evaluation

June 28, 1999

MEMORANDUM TO THE EXECUTIVE DIRECTORS AND THE PRESIDENT

**SUBJECT: Performance Audit Report on Turkey
Igdir-Aksu-Eregli-Ercis (IAEE) Irrigation Project (Loan 2433-TU)
Drainage and On-Farm Development Project (Loan 2663-TU)**

Attached is the Performance Audit Report on two projects in Turkey, the Igdir-Aksu-Eregli-Ercis Irrigation Project (IAEE) and the Drainage and On-Farm Development Project (DOFD) prepared by the Operations Evaluation Department. The IAEE project was approved in June 1984 for a loan of US\$115.3 million and was completed in June 1992, after three one-year extensions. A total of US\$4.9 million was canceled. The DOFD project was approved in March 1986 for a loan of US\$255.0 million and was closed in June 1995, three years late. A total of US\$81.1 million was canceled and US\$56.9 million was used for the completion of the balance of works carried over from the IAEE project.

The overall objectives of IAEE were to achieve increased agricultural production, employment and incomes by shifting public investment toward quicker-yielding projects facilitated by improved cost recovery. To achieve these objectives, the project was to produce a national irrigation master plan and complete four large irrigation schemes covering about 119,000 ha and benefiting 25,400 families. The main planning issue to be resolved was that there was a large number of unfinished projects due to budget constraints, and a backlog of 300-400,000 ha of on-farm irrigation and drainage works due to mismatched implementation capability of the main irrigation agency, the General Directorate of State Hydraulic Works (DSI), and the on-farm development agency, the General Directorate of Rural Services (GDRS).

The DOFD project was designed as the first phase of a 10-year core program for irrigation and drainage covering an area of 1.4 million ha developed under an agricultural sector adjustment loan (Loan 2585-TU which has been separately audited). Its objectives were to strengthen DSI, GDRS and agricultural extension services, and to rehabilitate or complete drainage and on-farm development works spread over 700,000 ha in the south and west of the country to benefit 97,000 farm families.

Implementation was problematic for both projects. The IAEE irrigation master plan exercise, delayed by late appointment of consultants and lack of ownership by DSI, was rolled over and eventually completed under the DOFD project. Both projects were marred by poor appraisal that failed to address the inadequacy of the first year's work programs, poor costing, and significant managerial, coordination and procurement issues. Indeed, DOFD was significantly reduced in scope a year after approval. Lack of prior consultation with project beneficiaries led to land acquisition and access problems that particularly slowed implementation of drainage works. More important, neither project led to a reform of the irrigation planning process, a focus on fewer priority projects, better subsectoral coordination, or closure of the implementation gap between DSI and DGRS. The financial over-commitment problems that had plagued the subsector in the late 1970s were only partially relieved during implementation, but after

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project closure government reverted to business as usual except on the issue of cost recovery where transfer of responsibility for irrigation schemes to users has all but eliminated the need for cost recovery.

As a result of the findings of the Irrigation Master Plan and Bank pressure, government focused its attention on reducing the unsustainable costs of operation and maintenance. Working in partnership with the Bank, DSI designed a program to transfer O&M to water user organizations in the DOFD project area from 1993. The results are outstanding. By 1998, almost 1.5 million ha—84 percent of DSI's irrigated area—was transferred to private sector O&M that appears to be sustainable. Stakeholder ownership is high and the pilot program is being replicated in other regions of Turkey. Following demand from farmers, the Bank in 1997 assisted Turkey with the *Participatory Privatization of Irrigation Management and Investment Project (Loan 4235-TU)* that helps water user organizations purchase equipment needed for O&M.

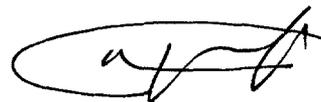
While there are notable successes, there are also problems. Improvements to land and water productivity are high, even though neither project fully achieved its physical objectives. In many areas crop yields have more than doubled and provide an important demonstration effect. However, increased water use for agriculture and better drainage has adverse impacts on other sectors in some areas, particularly environment, and there is a growing need for regulation. At Catal Huyuk—one of the world's top-10 heritage sites—improved drainage threatens artifacts and the Bank is mitigating this problem through a cultural heritage loan.

The outcome of the IAEE project is rated as unsatisfactory, sustainability as uncertain and institutional development as negligible. While OED agrees with the ICR rating for sustainability, the ICR rated outcome as satisfactory, and institutional development as partial. Bank performance is rated as unsatisfactory.

The outcome of the DOFD project is rated as satisfactory, institutional development as high and sustainability as likely. OED's ratings agree with those of the ICR. Overall, Bank performance is rated as satisfactory despite deficient preparation and appraisal.

There are several important lessons from these projects:

- Incentives play a major role in the success of a project and the time spent during appraisal or supervision understanding and operationalizing these is seldom wasted.
- Successful implementation of the irrigation management reforms was preceded by a carefully structured program that maintained pressure for reform learned from the successes in other countries, identified leaders, provided continuous training and support for several years, and selected viable pilot projects. An important consideration was to allow sufficient time for this process to mature.
- Contrary to perceived irrigation norms, viable water user organizations can be established within or around civic or locally elected groups.
- An emergency fund should be established to enable speedy mitigation of adverse project impacts on highly sensitive environmental sites and cultural heritage.



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Principal Ratings

Igdir-Aksu-Eregli-Ercis (IAEE) Irrigation Project (Loan 2433-TU)

	<i>ICR</i>	<i>Audit</i>
Outcome	Satisfactory	Unsatisfactory
Sustainability	Uncertain	Uncertain
Institutional Development	Partial	Negligible
Borrower Performance	Satisfactory	Unsatisfactory
Bank Performance	Satisfactory	Unsatisfactory

Drainage and on-Farm Development Project (Loan 2663-TU)

	<i>ICR</i>	<i>Audit</i>
Outcome	Satisfactory	Satisfactory
Sustainability	Likely	Likely
Institutional Development	Substantial	High
Borrower Performance	Satisfactory	Marginally satisfactory
Bank Performance	Satisfactory	Satisfactory

Key Staff Responsible

Igdir-Aksu-Eregli-Ercis (IAEE) Irrigation Project (Loan 2433-TU)

	<i>Task Manager</i>	<i>Division Chief</i>	<i>Country Director</i>
Appraisal	S. R. Freiberg	D. Ritchie	R. Picciotto M. Bart
Midterm	S. H. Thavaraj	Tae-Hee Yoon	H. E. Kopp
Completion	H. Lacey	T. J. Goering	M. W. Wiehen

Drainage and on-Farm Development Project (Loan 2663-TU)

	<i>Task Manager</i>	<i>Division Chief</i>	<i>Country Director</i>
Appraisal	M. Tirmazi	R. Harris	R. Picciotto A. Stoutjesdijk
Midterm	S. H. Thavaraj	Tae-Hee Yoon	H. E. Kopp
Completion	J. Mohamadi	T. J. Goering/P. Garg	M. W. Wiehen

Preface

This is the Performance Audit Report (PAR) for the Igdır-Aksu-Eregli-Ercis Irrigation Project (Loan 2433-TU) and the Drainage and On-Farm Development Project (Loan 2663-TU). The Igdır-Aksu-Eregli-Ercis Irrigation Project was approved in June 1984 for a loan of US\$115.3 million and was completed in June 1992, after three one-year extensions. A total of US\$4.9 million was canceled. The Drainage and on-Farm Development Project (Loan 2663-TU) was approved in March 1986 for a loan of US\$255.0 million and was completed in June 1995 after three one-year extensions. The uncompleted works of the IAEE project were financed by US\$56.9 million from the DOFD loan. In addition US\$50.0 million was cancelled in February 1994 and US\$30.0 million in October 1994. At completion another US\$1.1 million was cancelled.

The PAR is based on the Implementation Completion Reports (ICRs) for each project prepared by the Europe and Central Asia Regional Office, the Staff Appraisal Reports (SARs), the legal documents, on study of the projects' files, supervision reports and project documents and on the findings of an OED mission which visited Turkey in September-October 1997. During this mission, OED's audit team met with officials of the Government of Turkey, the implementing agencies, and with project beneficiaries. The collaboration of these officials and other persons is gratefully acknowledged.

Following standard OED procedures, the draft PAR was sent to the borrower for comments before it was finalized. All comments were taken into account in the final version and the borrower's comments are included as Annex C.

1. Introduction

1.1 While the importance of agriculture in Turkey is declining, it represented about 20 percent of GDP, 40 percent of exports and 60 percent of employment at the time of appraisal. Given the generally arid climate, irrigation development is essential to increase cropping intensities and yields and provide incentives to invest in higher-quality inputs and management. Out of a total cultivated area of 27.7 million hectares (ha), in 1980 only about 3 million ha was under some form of irrigation. Two million ha was served by the public sector, but 600,000 ha required on-farm irrigation and drainage infrastructure, land leveling and soil reclamation to use water efficiently. The one million ha in the private sector was handicapped by unreliable water supplies and outdated irrigation methods.

1.2 In the mid-1970s, government expanded subsidies to agriculture and irrigation received more than half of public investment. While the active irrigation portfolio expanded to almost 150 projects, *ad hoc* investment spread the budgetary allocation too thinly to be effective. In consequence, irrigation growth declined from about 52,200 ha/year in 1969 to about 16,000 ha/year in 1979.¹

1.3 The situation was made worse because construction of irrigation facilities was done independently of on-farm irrigation, drainage and access roads, land leveling and soil reclamation. The government's irrigation agency, the General Directorate of State Hydraulic Works (DSI) under the Ministry of Energy and Natural Resources is responsible, *inter alia*, for major irrigation headworks and canal construction. And it could construct irrigation infrastructure at about five times the rate of the on-farm irrigation and drainage works constructed by the Ministry of Agriculture, Forestry and Rural Affairs' General Directorate of Rural Services (GDRS).² Thus, by the end of the 1970s, there was a large number of unfinished projects due to budget constraints, and a backlog of 300-400,000 ha of on-farm irrigation and drainage works due to mismatched implementation capability.³ As a result, typical irrigation infrastructure projects planned to take 5 years, took 12 or more years to complete.

1.4 Not surprisingly, the delay in benefits severely curtailed economic viability, cost recovery and thus system sustainability. Because of this poor performance, the Bank ceased lending for irrigation in the mid-1970s.

1. Government disagrees with these data which were taken from DSI's 1984 Year Book for Irrigated Area. In particular, government states that the rate of growth in 1979 was 65,000 ha/year.

2. GDRS was formed in 1984 from the General Directorate of Land and Water Conservation (TOPRAKSU) with the amalgamation of its parent body, the Ministry of Rural Affairs, with the Ministry of Agriculture and Forests into a new Ministry of Agriculture, Forests and Rural Affairs. The Ministry underwent a reorganization and GDRS became an independent body in 1994 under the Minister of State reporting to the Prime Minister.

3. In many areas of Turkey, land leveling and soil reclamation is normally required to make the land irrigable and productive, yet this cannot be done until infrastructure is complete. Where only land leveling is required it sometimes takes 15 years before there are any agricultural benefit. If, in addition, several seasons of leaching are required to remove salt build-up, reclamation could typically take 15-20 years from project inception.

1.5 In 1980, government policy was changed. As a first step under the new policy, allocations for new projects were stopped and resources were directed to complete a few priority irrigation and drainage projects and improved cost recovery. As a result, the portfolio shrank from 147 projects in 1977 to 79 in 1983.

1.6 Given these reforms, the Bank fielded an Agricultural Sector Identification Mission in 1980. This led to the appraisal in 1982 of investments in four major irrigation projects at Igdir, Aksu, Eregli and Ercis (IAEE) in order to address the subsectoral problems. While the IAEE project was being finalized, the Bank decided in 1984 to refocus a successful program of adjustment lending through a two-year agricultural sector adjustment loan (ASAL).⁴ The ASAL concentrated on the three core elements of agriculture: removing distortions in the input pricing and marketing framework, addressing the problem of inefficient resource use in the public sector irrigation program, and reforming some inefficient public enterprises in agriculture.

1.7 The ASAL paid particular attention to irrigation. It was driven by irrigation's large share of public sector agricultural investment, its poor performance, and the potential for quick returns from a series of well-focused investments. In particular, completion of on-farm drainage and irrigation canals to reduce waterlogging and salinization was seen as a key investment. The ASAL also embraced, *inter alia*, the irrigation subsectoral objectives of IAEE, including the Master Plan.

1.8 During preparation of the ASAL, it became increasingly obvious that coordination between DSI and GDRS and the implementation capacity of GDRS were more constraining than had been realized while appraising the IAEE project.⁵ Indeed, the Bank's Irrigation Advisor stated "under the IAEE project, nothing specific seems to have been done to increase GDRS's capacity...in fact, it should be considered whether there is any merit in limiting the scope of the...project to GDRS only." This comment was driven by the realization that increasing the efficiency of DSI would provide an extra 1.3 million ha of irrigable land between 1981 and 1991. Conversely, over the same period, GDRS would likely only complete 250,000 ha of on-farm irrigation and drainage works, less than its current backlog, and the area of unfinished works would escalate. Thus a 10-year Core Program for Irrigation and Drainage was designed to cover an area of 1.4 million ha.

1.9 The Core Program was estimated to cost US\$1,234 million. To get the Core Program off to a quick start, the ASAL provided US\$117 million from its first \$200 million tranche: US\$111 million to provide equipment for the maintenance and rehabilitation and maintenance of surface drains, US\$4 million for technical assistance to strengthen DSI's and GDRS's capability for civil works, and US\$2 million for training. It was to be released in two tranches, the first for US\$200 million in FY86, the second for US\$100 in FY87

1.10 The Drainage and On-Farm Development (DOFD) project was designed to complete the first half of the Core Program at a total cost of US\$481 million, supplementing the funding provided under the ASAL. Its objectives were to strengthen the institutions that support the subsector and rehabilitate or complete drainage and on-farm development works spread over 700,000 ha in the south and west of the country to benefit 97,000 farm families.

4. Turkey - Agricultural Sector Adjustment Loan (Loan 2585-TU), June 1985, for US\$300 million equivalent to be disbursed over two years.

5. Memorandum from R. Burcroff to R. Harris (Chief EMPA3) re: Service Area Backlog, February 23, 1984.

1.11 The objective of this audit is to examine how effectively the IAEE and DOFD projects led to better institutional performance and a sustainable program of irrigation investment. This is particularly important as the OED audit of the ASAL reported that “the parastatal reform track followed in the ASAL has turned out to be a dead-end” and rated its outcome as unsatisfactory.⁶

6. PPAR, Report No. 11381, Loan 2585: Turkey - Agricultural sector adjustment loan.

2. Project Design

Igdir-Aksu-Eregli-Ercis (IAEE) Irrigation Project

2.1 The overall objective of the project was to shift public investment toward quicker-yielding projects and improve cost recovery from beneficiaries. The approach adopted was to undertake highly selective civil works complemented by a number of policy reforms in the areas of planning, institutional development and cost recovery. At appraisal, DSI's construction portfolio comprised 79 irrigation projects covering 966,000 ha. Four of these that could be completed within five years and at about half the cost of typical DSI schemes were selected for Bank financing.⁷ To achieve these objectives, IAEE had six components:

- Constructing new and upgrading existing: irrigation systems including 302 km of main, 487 km of secondary and 1,169 km of tertiary canals; drainage systems including 526 km of main and secondary drains and 768 km of tertiary drains; and 70 km of flood protection dikes and a large diversion weir for the Aksu subproject;
- Implementing on-farm improvement works: land leveling over 79,100 ha; soil reclamation over 18,000 ha; surface drains over 60,600 ha; subsurface drains over 29,000 ha; and construction of 570 km of feeder roads;
- Procuring equipment and vehicles (US\$36 million);
- Training in-country and overseas for staff of the government's implementing agencies;
- Strengthening extension services through provision of offices and agricultural equipment; and
- Providing technical assistance to conduct a national irrigation strategy review and produce an irrigation master plan.

Issues at Appraisal

2.2 **Planning.** The major problem facing the sector was the absence of a capability to systematically program public investments for irrigation. The State Planning Organization proposed that DSI coordinate the project because it had the largest share of project funds. Conversely, DSI argued that only the State Planning Organization had the authority for this task. Eventually, following Bank pressure, DSI reluctantly accepted the role of coordinating the inputs of GDRS and the agricultural extension service, a solution that later proved to be problematic.

2.3 Although DSI was allocated almost 90 percent of the nation's water development budget, it had neither the staffing nor the institutional capability to take a long-term view of Turkey's

7. This was possible because the headworks in selected projects were substantially complete. Two of these projects, at Ercis and Eregli, included storage dams that would be completed independently of the project. Thus incremental completion costs were estimated to be US\$2,000-2,500 per ha rather than US\$4,500 ha.

irrigation development needs. Accordingly, the project funded technical assistance to help DSI and GDRS formulate a 10-year irrigation strategy and investment master plan under the coordination of the State Planning Organization. The primary planning objectives were to increase commissioning of newly irrigated land to 100,000 ha a year and to weed out uneconomic projects from the existing portfolio. A major step toward achieving this was to clear the backlog of incomplete irrigation projects through a five-fold increase in GDRS's implementation capacity (estimated to be only 20,000 ha/year in 1982).

Cost Recovery

2.4 Legislation already provides for recovery of operation and maintenance (O&M) costs and capital costs from large-scale irrigation investments by DSI. Since, however, there are no provisions for interest charges or (currently high) inflation, the amount collected hardly meets the cost of collection. Similar legislation on cost recovery was lacking for on-farm small-scale irrigation, drainage and land development works carried out by GDRS. Because new elections were scheduled for October 1983, it was unrealistic to expect legislation to be quickly approved by parliament. Rather than stop processing of the project, the Bank proposed a dated covenant by which GDRS would levy charges for investments made. But even this proposal ran into problems with the Ministry of Agriculture, which argued that it was more onerous for GDRS than that for DSI.⁸

2.5 Disagreement about the GDRS cost recovery covenant caused negotiations to be extraordinarily strung out (started March 15 and finally agreed May 4, 1983). Eventually, it was agreed that DSI would be allowed to disburse up to \$30 million before GDRS's cost recovery covenant came into force; and that there would be no disbursement to either DSI or GDRS's force accounts or for contracts signed after September 1, 1983, "unless all necessary action is taken to permit such cost recovery." Compounding the problem of monitoring such an ill-defined covenant, the Bank also agreed that payment should be related to farmers' ability to pay, and allow a 5-year grace period.

2.6 ***Safeguard policies: the international water dispute.*** It was originally planned that the loan would go to the Board in June 1983, but an international water dispute with Iran delayed the Board presentation by more than a year. The dispute seriously challenged the Bank's existing policy on international water ways (OMS 2.32) and, as a result, the policy was substantially revised in 1985. The Igdır irrigation subproject is located on the Aras River which forms the border between Turkey and the former USSR and between USSR and Iran downstream of the project. Water for the subproject would be supplied from the Arpacay storage dam constructed jointly by the USSR and Turkey subject to a treaty.⁹ During appraisal, the mission calculated that as only 8 percent of the total winter flow was stored for irrigation use in the dry summer season, the effects on Iran would be either negligible or slightly positive if return flows are considered, and therefore could be overlooked.

2.7 There is no mention of international water rights in the October 1982 decision memorandum, but by January 1983 senior management was expressing concern. Accordingly, the Bank placed the onus on the government of Turkey to demonstrate that the Igdır subproject

8. Different definitions of "full cost" recovery, and 20 years compared with DSI's 50 years amortization period.

9. An agreement to jointly share the waters of the Aras River between Turkey and USSR was signed in 1927 and supplemented by an agreement in 1973 governing the use of this water.

did not contravene existing treaties and agreements. If, as the Bank believed, there was no agreement between Turkey and Iran, then the Bank would formally ask Iran for a statement of no objection to the Igdır subproject. Unfortunately, the near breakdown of negotiations over cost recovery delayed the notification to Iran until late April, when they were given an unrealistic four weeks to respond. The government of Iran initially requested two cancellations of the Board date, and finally an indefinite postponement.

2.8 In response to a request by Iran in March 1984, the Bank sent a fact-finding mission in April. The mission's report affirmed the view that water diversions from the Aras River would not appreciably harm Iran, and the Region decided to go ahead with the Board presentation in early June 1984. Although Iran circulated their objections to the Igdır subproject to the Board, the Board conditionally approved the loan on June 5. The Board stipulated that the Bank "make special efforts in the next four months to use its good offices to promote an agreement between the riparians."¹⁰

2.9 The Bank diligently followed up on its undertaking to the Board. While Iran sought to enter into negotiations with Turkey, a move supported by the Bank, the government of Turkey's response was that this was a bilateral issue of no concern to the Bank. As a result of this impasse, nothing was achieved in the four-month period and the water issue was allowed to lapse.¹¹

2.10 As a result of these delays, dated covenants were initially deferred by nine months and the closing date extended by a year. Effectiveness was delayed one month (to October 1984) to allow legislation on GDRS cost recovery to be passed. At the request of the prime minister, the dated covenant was further delayed until April 1985. Several of these outstanding issues were followed up by the appraisal mission of the DOFD project in June 1985.

Drainage and On-Farm Development Project

2.11 The objectives of the project were to concentrate government's resources on high—priority schemes while remaining within the scope of the Core Program agreed under the ASAL, and assist in improving the design and implementation capacity of DSI and GDRS. It had eight components:

- Rehabilitation and cleaning of existing surface drains serving an area of 668,000 ha;
- Construction of new surface drains in priority areas covering 668,000 ha;
- Installation of subsurface drains over an area of 137,500 ha;
- Replacement of tertiary surface drains with a buried pipe collector system over 75,000 ha;
- Reclamation of saline and alkaline soils over an area of 40,000 ha;

10. M84-30 (Rev.) dated June 19, 1984, refers.

11. The Executive Director for Iran sent a letter on Sept 23, 1991 wanting an update on the water issue. The Bank's reply was that they had made the offer of Bank's good offices to foster progress - but if Turkey is unwilling to accept, there is nothing the Bank can do.

- Construction of 1,310 km of access roads to serve 85,000 ha;
- Strengthening of Drainage Research Stations and construction of accommodation and facilities needed for operation and maintenance staff; and
- Technical assistance, staff training and preparation of the follow-on second stage project.

2.12 At full development the project was planned to improve agricultural production over a net area of 220,000 ha. This is less than the 668,000 ha shown above because only part of the total area without adequate drainage suffered waterlogging and new and rehabilitated drains are required to prevent waterlogging.

Issues at Appraisal

2.13 The appraisal mission selected 10 subprojects (out of the proposed portfolio of 242 subprojects) for preliminary review, and project design and costing was based on detailed analysis of only six of these. As this was too few projects for the first year's work program, the Bank proposed that the remaining subprojects be appraised by a DSI/GDRS team following agreed criteria assisted by several groups of consultants initially recruited under the ASAL and subsequently supported by project funds.

2.14 Four major issues remained unresolved at the completion of appraisal and caused significant problems during implementation: drainage design, project costs, use of consultants and international competitive bidding. The State Planning Organization (SPO) and GDRS argued that the Bank-estimated costs were excessive, a view rebutted by the appraisal mission.¹² Treasury expressed reservations about international competitive bidding for civil works and recruitment of reviewing consultants, while SPO argued that it was not necessary to recruit separate consultants for the Master Plan (under IAEE) because those recruited for the Core Program could be used. While accepting SPO's proposal, the Bank resisted the others. As a result, recruitment of the project consultants under the ASAL soon ran into problems and it was decided to make this a condition of loan effectiveness.

2.15 At the same time, both DSI and GDRS said they could not undertake the agreed work program for 1986 and asked for it to be deferred to 1987-89. The reasons are unclear but were probably a combination of inadequate budget and insufficient design staff (GDRS, for example only had 14 staff). Despite this, the project moved forward for Loan Committee clearance.

2.16 At negotiations, government reaffirmed its commitment to the Core Program and asked for a one-year extension of the project schedule "because of a hump in the national debt," and of the whole Core Program by two years. Given Turkey's economic situation, the Bank had little choice but to agree. Ironically, the extra two years increased the costs of the Core Program by US\$85 million because of higher contingency provision and extended use of consultants. It also caused a reduction in budget for on-farm drainage from 35 to 22 percent of the total cost—but there was still a modest adjustment in favor of GDRS: DSI's budget share fell from 2.5:1 to 2:1.

12. Excessive costs related mainly to the design of drains: the Bank wanted less widely spaced and deeper drains than GDRS.

2.17 Cost recovery became a contentious issue between Bank operations and programs as the GDRS cost recovery covenants in IAEE were in default. Programs took a pragmatic view and argued that while government had passed the required legislation, albeit late, and the Council of Ministers had to approve the enabling rules and regulations, the dates for this are not critical as the works will not be in operation for considerable time. Bank management eventually agreed an intermediate position, made Council of Ministers approval a condition of effectiveness, and softened the IAEE covenant. Overall, given the choice between maintaining the timetable of lending and reform, resolve on key policy issues seemed to be weakening.

3. Implementation

Project Management

3.1 Project management was a major issue for both IAEE and DOFD. Over the life of the projects there was major reorganization: DSI reported to the Ministry of Energy and Natural Resources but in 1987 it was changed to the Ministry of Public Works and Settlement. GDRS and GDPI both reported to the Ministry of Agriculture, Forestry and Rural Affairs (MOAFRA). No provisions were included at appraisal for authoritative and effective high-level management mechanisms strangely “because of the projects’ complexity.”¹³ And it was assumed that coordination problems would be an issue only at field level. Accordingly, following the Bank’s advice, government established Regional Coordinating Committees for expediting and overseeing IAEE implementation. In practice, these institutional arrangements did not work, and even within MOAFRA cooperation between GDRS and agriculture extension services was lacking. The major problem—at least in the critical first 3-4 years of each project—was that there was no ‘owner’ who could provide leadership and coordination. As DSI pointed out to the audit team, IAEE was only 2 percent of their portfolio and it did not justify special attention.

3.2 Poor project management, inadequate and late budgetary allocations and procurement problems slowed implementation. Initially, neither DSI nor GDRS provided full-time project or technical managers and each agency planned independently even though their activities were interdependent. Each agency negotiated separately with SPO for each project and subproject. Thus one element funded for GDRS has no funding in the DSI portfolio and *vice versa*. Priorities were neither consistent nor synchronized. Procurement was a major issue for IAEE because DSI had no advisor conversant with Bank policy and practice who could provide guidance and solve problems. As a result, local contracting was delayed, as was the arrival of heavy machinery and equipment needed for the force account works (some of which was funded under the ASAL).

3.3 It was only after six years that the management of DOFD started to function smoothly. Two years into DOFD, DSI began to finally appoint full-time managerial and counterpart staff but, ironically, these staff were seriously depleted by departure of senior managers on overseas training under the ASAL. GDRS’s requests to the Ministry of Agriculture for additional staff were not heeded.¹⁴ Overall, the lack of DSI and GDRS field staff held back local coordination and the survey program, and thus work and morale.¹⁵ It also made managing the consultants difficult. When finally appointed, GDRS personnel expressed concern that they had not been fully involved in developing the program, although they would finally be responsible for the operation of the system.

13. Internal bank memo 3/12/87 Kogan to Harris/Bhatia.

14. Initially, DSI made the head of the Design and Construction Department Project Manager, assisted by his deputies. As he could only give part-time attention to management needs the Bank urged several times for more dedicated senior staff.

15. The May 1989 supervision at Izmir noted: “counterpart staff are not provided in a consistent manner and are withdrawn before field investigations are complete” even then, “GDRS’s field investigations teams are still too few in number and under-resourced to complete the whole field investigation program according to schedule.”

Project Design

3.4 Poor management led to design problems. Under the IAEE project it was difficult to reach agreement of the depth of drains and elevations of canals (at secondary and tertiary level especially) and set up an agreed system of bench-marks for elevations both for canal and drainage design and implementation. Scanty soil investigation work to delineate alkaline soils, particularly at Igdir, led to very imprecise estimates of the gypsum required to mitigate this problem.¹⁶

3.5 The scope and size of the DOFD project was reduced following the consultant's review of drainage needs and design criteria in 1987. Drainage design was made considerably cheaper by maintaining groundwater at one meter, instead of two meters depth as originally planned, and buried collector drains were replaced by open collectors. In the light of these developments, the 10-year core program was reduced from 1.4 to 0.31 million ha for surface drainage and from 0.44 to 0.22 million ha, for subsurface drainage. The targets for DOFD were reduced to 161,000 and 133,400 ha, respectively.

Delays Caused by Land Acquisition and Access Problems

3.6 Access to land to install drains created major delays to planned progress for both projects, a problem unforeseen during appraisal of IAEE and not identified during appraisal of DOFD. Even before the IAEE project became effective, the problem of land acquisition for drains and access for land leveling and subsurface drain installation arose.

3.7 Land acquisition was made difficult because of uneven land consolidation and inadequate funds with DSI to make timely compensation. Cadasteral records were poor, and most base maps were 20 to 30 years old and frequently inaccurate. In the best cases, GDRS had assisted with land consolidation prior to the subprojects and land had been set aside for irrigation and drainage works. Where this had not occurred, land had to be acquired piecemeal by DSI at relatively high cost, and it could be as much as 30 percent of total investment. Sometimes farmers were unwilling to part with their land because government was slow in paying compensation. When DSI eventually won its case in court, compensation was determined at the date of judgment (which could be years later) and far above the original budget allocated. Indeed, Bank supervision recommended that several GDRS's subproject bidding be delayed to avoid contractors claims while land acquisition problems were solved, particularly in the Adana and Izmir areas.

3.8 Access to farmers' land was a major problem as blocks sufficiently large for work to be cost-effective were required. Land leveling or drains can be implemented only during the dry season, which conflicts with the cropping schedule for cotton, the dominant and most profitable crop, that leaves only a period of 1-2 months when the land is fallow. Many farmers were tenants who were not prepared to forgo a crop for capital works that benefit the landlord, while some owners were not always convinced that land leveling or drainage would greatly increase yields. In the worst case at Aksu, GDRS reduced the target area for subsurface drainage from 17,000 to

16. Initially estimated at 12,500 ha, this was increased to 30,000 ha in March 1988, increasing the quantity of gypsum required from 157,000 to more than one million tons (and project costs by 20 percent), only to be reduced to 22,000 ha and 235,000 tons by the following November. By project closing, only 4,200 ha had been treated using 180,000 tons of gypsum.

3,000 ha, an 82 percent reduction, because they estimated that only about 500 ha/year was feasible given the social problems. A reappraisal showed that this reduction lowered the ERR from 21 to 10 percent.¹⁷

Procurement and Contract Issues

3.9 With the failure of the largest ICB contract at Igdir (for US\$45 million) due to poor management, and unsatisfactory performance at Aksu, the government successfully argued the case for more local competitive bidding (LCB) for both projects.¹⁸ However the Bank appeared initially unaware that government regulations for LCB did not conform to the Bank's standards and guidelines.

3.10 The Bank's Procurement Advisor visited Turkey on October 1985 to try and agree bid documents and protocols, but was unsuccessful. Subsequently, DSI issued new LCB documents saying that they "could not follow Bank's procurement procedures."¹⁹ The Bank objected but, realizing that there would be considerable delay in resolving this, they approved, on an exceptional basis, local shopping up to \$2 million to enable work to continue.

3.11 When a Bank review showed that up to \$30 million under IAEE could be the subject of misprocurement according to Bank rules, DSI asked the Bank to review its procurement prior to 1984. This revealed that Bank LCB procedures could only be applied if the Council of Ministers exempted Bank-financed projects from Turkish Laws 2886 and 2990 that governed bidding.²⁰ And even then, any rebid of contracts (as at Igdir) had to use the same documentation as the voided contract. While not happy at this outcome, the Bank finally agreed to approve the earlier contracts on a case-by-case basis, and not disburse against any LCB issued after August 1987 unless it complied with the Bank's procedures.

3.12 By September 1989, DSI's concluded that its force account work (valued at \$74 million) was larger than it could manage, and the Bank approved LCB contracting.²¹ Similarly, GDRS shifted about \$25 million from ICB to LCB because of the small and scattered nature of the work. Following the cancellation of the Igdir ICB contract in 1988, the work was split into three LCB contracts further delaying completion. Unfortunately, only one contract of DOFD was completed on schedule (at Konya), while three of the remaining six contracts had to be relet, one twice.

3.13 In its last official year (1992) only 14 percent of the subsurface drainage was completed, and the Bank predicted that the slow rate of drainage installation (10,000 ha in 1989 vs. 40,000 planned) would push completion to 1995. To compound this problem, progress was impeded

17. Reappraised by FAO at the end of 1985, the ERR at appraisal of 21 percent was reduced to 12 percent because of (a) increased opportunity cost of agricultural labor from tourism, (b) increased cost of production, and (c) delays in benefits. Reducing land leveling/sub surface drainage to 3,000 ha resulted in an ERR of 10 percent. (FAO memo Lauwers to Delon, 11/06/85).

18. Reasons accepted were Igdir's isolated position adjacent to the (then) USSR border and the security problems this posed, and the small and scattered nature of the other works. All of this, of course, should have been identified at appraisal.

19. Bank memo from Harris to Management, June 11, 1986.

20. The Council of Ministers approved this waiver July 20, 1987, but only for future contracts.

21. Procurement of heavy equipment and machinery under the IAEE and ASAL was difficult and late, that reduced the capacity for force account work by DSI.

until the end of the project by the slow release of counterpart funds and delayed approval of the bidding process by government. However, by December 1993, work progress had improved remarkably due to better management information, timely decision making, and a reform of the policy environment.

Cost Recovery

3.14 Capital cost recovery for GDRS was finally approved in late 1988. It differed, however, from the 100 percent agreed with the Bank as it set the maximum at 75 percent with a lower limit of 50 percent for the undeveloped regions. Also it is to be reclaimed over a period of 30 years with a 10-year grace period (as against the five years agreed with the Bank) that in times of high inflation makes it negligible. While the Bank pressed DSI on the capital cost issue, it missed the fact that collection of capital and O&M costs was the responsibility of the Ministry of Finance and hence no progress was made.

Master Plan

3.15 Late appointment of consultants and lack of data caused the irrigation master planning exercise to be moved from the IAEE project to the DOFD project. The draft report that considered DSI's portfolio of 585 ongoing and proposed projects was submitted in November 1988.²² Scrutiny by the Reviewing Consultants showed that the draft plan had to be substantially revised and this took three years to complete.

3.16 Subsequently, the Bank produced an Irrigation Management and Investment Review based on the findings of the Irrigation Master Planning exercise.²³ The review concluded that continued investment in irrigation was economic if adequate funding was made available.²⁴ However, budget constraints made it unlikely that sufficient investment funds could be mobilized for this program. Indeed, the main recommendations of the Master Plan were that 30 of the ongoing 77 projects should be discontinued as they were uneconomic, and that more attention should be given to making O&M sustainable.²⁵ Primary reasons, as in 1982, were that too little money was spread too thinly over too many incomplete schemes, and the delays in commissioning made many projects uneconomic. In addition, dam construction for hydropower and irrigation in south east Anatolia—the GAP Program—distorted regional equity by crowding out significant new investment elsewhere.

22. The Irrigation Master Plan is a 15-volume engineering and economic study on Turkey's ongoing and planned irrigation schemes.

23. The Irrigation Management and Investment Review was provided to the government as a discussion paper draft on August 25, 1992.

24. Irrigation Master Plan investments proposed 1.2 million ha of new investment over 10 years that would boost agricultural GDP to 3 percent from its 1990s level of 2.5-2.6 percent. The average yield of irrigated land is 7.6 times that of rainfed land, while average value added is 2.6 times that of rainfed land. Average incremental income from irrigated compared to rainfed farming is US\$1,200/ha.

25. The revised Master Plan reappraised 77 ongoing and 150 proposed projects and considered 101 earmarked projects that were more than 76 percent complete. Using standard investment ranking techniques, the plan proposed two alternative investment strategies that gave priority to earmarked projects. While strategy one retained all projects and gave an aggregate ERR of 8 percent, strategy two rejected all projects with an ERR of less than 8 percent and had an overall ERR of 13.5 percent.

3.17 The review highlighted the fact that, under all scenarios, the burden of O&M would become unsustainable. For example, in 1991 in real terms, only 17 percent of the year's O&M expenses were met by collections from farmers, a large proportion of whom would not pay, a position probably helped by the low one-time penalty for non-payment (10 percent), and the 70 percent annual inflation rate. Thus 83 percent of the 1991 O&M expenses had to be subsidized from the government's budget. The problem was made more difficult by the gap between irrigation infrastructure supplied by DSI and the slower rate of on-farm development by GDRS, which meant that no fees could be levied on unfinished works.²⁶ And as new irrigation infrastructure was added, so the need for larger subsidies. In the absence of additional funding, actual expenditures on O&M decreased in real terms by about half between 1981-83 and 1989-91. And while 70 percent of DSI's O&M funding needs were met in 1986, this fell to only 25 percent in 1992.

3.18 The review concluded that the only way out of this impasse was to divest the responsibility for O&M to local water users' groups. It noted the success of the 1,350 GDRS-sponsored groundwater cooperatives that were a prerequisite to investment, and the success of its small-scale irrigation schemes covering one million ha that were transferred to local water users' groups. Thus in late 1992, the Bank proposed, and government agreed, that a National Irrigation Committee be established to investigate options for divestiture. Concurrently, the Bank proposed study tours to familiarize Turkish stakeholders with other countries' experiences.

3.19 There was some debate in the Bank about this proposal as the loan was due to close in mid-1993. Senior management was concerned about extension when the cost recovery covenants were still in default and proposed closing the project after a six-month extension. In a courageous and far-sighted stance, the division chief responded: "a reasonable operating premise for the Bank is that a sound system of financial management of the irrigation system—even though it may have little short-term impact on the project we are financing—makes a greater contribution to Turkey's development than does an insistence on meeting cost recovery covenants through adjustments in a government-operated system which is basically unsound. A project close on December 31, 1993 would almost certainly mean a clean break in our dialogue on improved financial management."^{27,28} Management agreed, and the project closing was extended by a year.

3.20 Within Turkey, the budget problems were well recognized by the government, which had already endorsed privatization of state-owned enterprises, and by DSI, which also had to cope with the rapid growth in wage cost of unionized labor in the early 1990s. Discussions between the authorities and the Bank centered on transfer of responsibility for O&M to irrigators, which was successful elsewhere, as the solution to these problems. In response, DSI prepared pilot transfer schemes in Antalya, Konya and Adana before the end of 1993 and gave responsibility for transfer to its O&M Department. Irrigation management transfer was not new to DSI as it had transferred about 2,000 ha/year since the 1950s. What was new, however, was that DSI proposed

26. A review of 22 schemes covering 22,000 ha showed that in 1988 the irrigation intensity was only 43 percent, ranging from 1 to 65 percent. This was much less than the expected intensity of 80 percent because of incomplete on-farm development. Irrigation efficiencies are about 35 percent despite the fact that most projects have lined canals to the tertiary level because on-farm water management was still using traditional practices.

27. Memo: Goering to Wiehan, Zaidan and Mehra June 7, 1993.

28. The government drew the audit's attention to a letter of May 25, 1993, in which they emphasize that a six-month extension would serve no useful purpose. The uncertainty would have nullified the basis for longer period contracts for both civil works and the supervisory consultants and effectively closed down the project.

to increase the transfer rate to 150,000 ha/year. Key enabling policy decisions were: to make considerable investments in training and knowledge transfer from other countries; and that O&M engineers would not lose their jobs as a result of the transfer. The *esprit de corps* that developed enabled a friendly competition among the regions to produce the best pilot transfer projects.

3.21 The DOFD project supported study tours to Spain, Mexico and the United States, which played a vital role in showing some 50 DSI senior staff and farm leaders what was possible. These staff carried out 41 orientation meetings and seminars for DSI regional and headquarters personnel, irrigation association chairmen and visiting international delegations between October 1993 and 1995.

3.22 GDRS also played an important role over the period 1993-94 by organizing meetings with many related agencies, water user groups and agricultural producers' organizations. GDRS's high-level management also participated in study tours organized by Utah State University's Irrigation Management Center. And in November 1993 they summarized their experience in the publication of "Farmers' Participation in Irrigated Farming Investments and O&M in Turkey" that also defined GDRS's policy towards the irrigation turnover program.

3.23 The results were spectacular. Between 1993 and 1995, the rate of transfer increased from 9,422 ha/year to 711,214 ha/year. By the end of 1998, 84 percent of DSI irrigated area of 1.8 million ha was transferred to user operation and management.

4. Outcomes

Reform of Irrigation Subsector Planning

4.1 The Bank's primary objective, reforming the public sector's approach to the planning of irrigation and drainage, was not achieved in either IAEE or DOFD. The financial over commitment problems that had plagued the subsector in the late 1970s were only partially relieved during the project and got worse after completion: in 1997 there were 242 active projects compared with only 108 in 1981. DSI staff at Antalya told the audit team that because of burgeoning portfolio, a typical large project designed for implementation over four years would still take about 23 years to complete because of the competition for the limited central budget.²⁹

4.2 Although the Irrigation Master Plan (IMP) was to be completed under IAEE, it was seen as mostly an academic exercise that was not likely to be effective. The slow response to the IMP proposal by DSI was echoed in the delayed appointment of the consultants and lack of ownership. In consequence, it was rolled over to the DOFD project to enable greater time for completion. Not unexpectedly, government took little note of its recommendations. Sadly, the excessively long project implementation periods, which defer benefits, make even the good projects uneconomic. The continued lack of coordination between DSI, GDRS and the agricultural extension services makes a bad situation worse. The Bank's new Participatory Privatization in Irrigation Management and Investment Project (PPIMP) has a small technical assistance consultancy to update the Irrigation Master Plan and its use as a planning tool.

4.3 The gap between the implementation capacity of DSI and GDRS remains. In part this is because GDRS does not have the political visibility of DSI at the center and its work planning is driven very much by the provincial authorities whose priorities differ from those of DSI. DSI certainly fares better in securing its share of the national budget mainly because its works are more visible and more likely to follow a predefined schedule. Conversely, GDRS has to overcome the challenge of intransigent farmers to get its work done and this makes for many unscheduled delays that give a perception of inefficiency. Officials at the center were unable to see a solution to the coordination problem, while DSI's response was to argue that the physical aspects of GDRS's work should be transferred to DSI. This major issue needs to be resolved.

Strengthening DSI's and GDRS's Institutional Capacity

4.4 The investment in training made substantial improvements to the technical skills of staff. The most notable aspect of this is the success of the irrigation operation and management transfer program that was not part of either project's original design. Regrettably, no efforts were made to develop a cadre of multi-disciplinary managers who could bridge the coordination gap between DSI and GDRS. Although GDRS has made efforts to strengthen the marketing of its services to farmers, little has been achieved to date.

29. Government states that this example is highly circumstantial and is not representative of typical projects. Conversely, the audit heard similar statements at all places visited, including DSI's headquarters in Ankara.

Cost Recovery

4.5 The results are mixed. Farmers still regard GDRS's services as free and those interviewed do not expect to have to pay for land consolidation or leveling, alkaline or saline soil reclamation or for subsurface drainage. This is despite a real increase in land values. At Konya I, for example, farmers said that land values have increased 5-6 times as a result of the DOFD project.

4.6 Conversely, while the recovery of operation and maintenance costs for DSI has effectively been abandoned, it has been replaced by the irrigation management transfer program, which has significantly reduced the need for DSI's services and hence costs.

4.7 The transfer program was undertaken entirely with existing DSI staff. Unlike the management transfer programs preceding it in East and South Asia, the program was initiated through existing local governments and leaders and not through grass-roots organization of farmers. Most of the organizations visited at audit were based on administrative or municipal structures, and they appear to have no problems in managing hydrological units, much to the consternation of the traditional engineers who mandate establishment around hydrological units. The size of the transferred units is large, averaging 6,500 ha, whereas those of East and South Asia are relatively small. In this respect they are similar to the modulo organizations in Mexico that served as prototypes for the Turkish program.

4.8 Many of these new irrigation organizations are successful businesses with a million dollar or more turnover. Each water users organization (WUO) is financially autonomous and retains the fees it collects. Under the transfer agreement, the WUOs is responsible for providing all the services related to the operation and maintenance of the transferred facilities and the cost of these services. However, water rights and ownership of the facilities remain with the state and this could create future problems. All the WUOs visited had a full-time salaried management team and women hold senior and influential appointments. The majority owned their own offices and computers, but nascent WUOs typically rented space in local DSI offices. Financial records were always available and management committees of farmers are very active and keen to be independent of government. While it is too early to conclude that WUO's cost recovery is enough to fully maintain the facilities even though more than 80 percent was being collected, nevertheless it was clear from the audit's interviews with WUOs that systems were being maintained and water supplies were more equitable. One outstanding issue—WUOs need for heavy engineering plant—is being addressed through a Bank supported project approved by the Board in October 1997.³⁰ At the very worst, deterioration is being slowed and management is being achieved at minimal cost to the government.³¹

Physical Achievements

4.9 Neither project fully achieved its global physical objectives, yet the improvement to land productivity is high. The IAEE project reclaimed 5,700 ha of alkaline/saline soils or a quarter of

30. Turkey: Participatory Privatization of Irrigation Management - An Investment Project. SAR Report No. 16525-TU, September 18, 1997.

31. DSI provides assistance to the WUOs. This ranges from use of heavy equipment to advice on O&M costs and assistance in setting the structure of irrigation service fees. WUOs sign an agreement with DSI and also pay, up front, about 70 percent of the cost of equipment procured.

the revised targets. This may double when the work at Eregli is completed. Incremental irrigation was just over 16,000 ha at project completion, but this could reach the design area of 43,000 ha if works are finished. A major setback to IAEE is that the irrigated area at Aksu has decreased because of the impact of the tourist industry, although this may be countered by higher yields. The DOFD project fared rather better, completing 93 percent of the target area of 161,000 ha for surface drainage works by DSI and 42 percent of the 55,600 ha of subsurface drainage undertaken by GDRS. Where drainage has been installed, waterlogging is reduced and crop yields have increased significantly, in many cases doubled. The success of drainage is having a strong demonstration effect: for example, at Adakoy village near Aydin, farmers who had earlier objected to GDRS's activities now want drainage and are prepared to pay for O&M.

Economic Rate of Return

4.10 The audit believes that the overall ERR for the IAEE will be less than the 10 percent calculated by the ICR, or half the rate estimated at appraisal. Taking account of the much lower level of government investment than was assumed in the ICR, the audit estimates the ERR to be about 5 percent primarily because of increased costs and delayed benefits. Conversely, the ERR for the DOFD project at 22 percent is close to that estimated at appraisal.

Safeguard Policies

4.11 *International Waterways:* The Bank's handling of this issue was fully in compliance with the Bank's pre-1985 policy. The issue has been periodically raised by Iran but Turkey has remained silent. The Bank's good offices have been declined. While the issue at Igdir was the quantum of water used by Turkey, the audit notes that there may also be an unresolved water quality issue for downstream riparians because of drainage effluent, particularly from alkaline soil areas in the dry season.

4.12 *Safety of Dams:* Dam safety was a serious concern during the project. In 1986 the Kockopru Dam's spillway tunnel failed and delayed commissioning by five years. Several other dams had problems, and up to 1988 DSI had not met inspection covenants for three-quarters of the dams at risk. The Bank increased pressure for independent inspection but met with resistance from DSI as several of the dams were not financed by the Bank. At audit, the issue was unresolved.

4.13 *Environment:* Initially, both projects included boilerplate statements that the engineering works improved the environment, particularly for malarial control, and that the impact of inland drainage effluent would be negligible. By 1988, supervision was less sanguine and included an environmental expert whose brief included wetland ecosystems, water quality and public health. The consultant's report concluded that the DOFD "did not threaten any internationally important wetlands."

4.14 Many lesser-known wetlands (for example north-east of Konya at Eregli) have been completely desiccated as a result of either water diversion for irrigation, drainage or groundwater development facilitated by the projects. This may be partly mitigated by the creation of new storage reservoirs upstream. In parts of the Menderes valley east of Izmir, shortage of water for irrigation has led DSI to block some drainage canals to enable recycling of drainage water: many farmers complain that soils are now becoming salinized. Overall, insufficient attention was given

to determining and mitigating adverse environmental impacts of irrigation and drainage at a river basin scale.

4.15 *Cultural Heritage*: Although the safeguard policy was not extant during appraisal and implementation, the DOFD and IAEE projects have had adverse impacts on cultural heritage. At Aksu, for example, there is *prima facie* evidence (bulldozed ruins adjacent to the canal) that the alignment of a secondary irrigation canal required the demolition of part of the Roman aqueduct north of Aspendos.

4.16 The Catal Hoyuk tell, 50 km southeast of Konya, is a world heritage site renowned as the world's oldest community dating back to 7500 BC. Drainage works and associated groundwater development under the DOFD's Konya II subproject have successfully lowered groundwater levels. The resultant desiccation of unexcavated archeological material may prove irreversible. Details are given in Annex B. The ECA region, when notified of the problem in early 1998, agreed on steps to mitigate the problem very quickly and fielded an appraisal mission in October 1998. A cultural heritage project has been designed, *inter alia*, to include mitigation work at Catal Hoyuk. There is some concern among the archeological community that, while the funds needed to mitigate the problem or speed excavation are relatively small (less than US\$5 million), linking it to a national cultural heritage project may be too slow to be effective. The creation of emergency cultural heritage mitigation fund needs to be considered by the Bank.

5. Ratings

Outcome

5.1 The outcome of the IAEE project is rated as unsatisfactory. It did not achieve its subsectoral objectives. Although Bank financing and oversight undoubtedly hastened project implementation, it still yields a low ERR due to high cost and delayed benefits.

5.2 The outcome of the DOFD project is rated as satisfactory because of its high ERR and successful introduction of the irrigation management transfer program.

Institutional Development

5.3 Institutional development of the IAEE project is rated as negligible. It made almost no impact on Turkey's ability to make more effective use of its human, organizational and financial resources and it had no lasting impact on institutional development of either DSI or GDRS. GDRS's capability to increase its implementation capacity to 100,000 ha/year was not achieved.

5.4 Conversely, the institutional development of the DOFD project is rated as high against SAR objectives because the introduction of the irrigation management transfer program fundamentally changed the way Turkey addresses the problem of paying for operation and maintenance. It should be noted that the DOFD rating does not take account of the poor institutional response to the Irrigation Master Plan, which it inherited from the IAEE project and was not part of its original objectives, nor the issue of cultural heritage, which became Bank policy in the year the project was completed (1994).

Sustainability

5.5 Sustainability of the IAEE project is uncertain for the reasons elaborated in Chapter 4. In addition to the institutional problems, sustainable water resources management for all users, including the environment, is an unresolved issue. The audit would have rated it unlikely but for the introduction of the irrigation management transfer program under DOFD and its likely expansion to include the four subprojects.

5.6 Sustainability of the DOFD project is rated as likely particularly because of high beneficiary participation and ownership. There are, however, still unresolved questions at the interface between DSI and GDRS: who is responsible for cleaning and maintaining the subsurface field drains and collectors, and how is this to be paid for?^{32,33}

32. The Bank's regional office has commented: "The solution is not to rely on GDRS as it will be unrealistic and wasteful to try to strengthen GDRS to handle this task. Instead, more realistic and sustainable solution is to focus on encouraging and assisting (providing only catalyst or stimulating assistance—not a government managed activity) WUOs to get ready for maintaining these subsurface systems."

33. The government notes that GDRS could transfer the subsurface drains and collectors to the WUOs and that the legal basis for this already exists.

Bank Performance

5.7 Bank performance on the IAEE project is rated as unsatisfactory. Identification, preparation assistance and appraisal were deficient. Attention to procurement, counterpart funding and management issues at appraisal was wholly inadequate and this caused severe problems during implementation, as did the adequacy of civil works feasibility, design and engineering.³⁴ In its keenness to resume lending to Turkey, the Bank was not as objective as it should have been, particularly on the issue of ownership and was naively drawn into a situation in which it had little policy impact (see para 5.9). While supervision was assiduous in addressing faulty project design this cannot be rated as satisfactory, as it was a case of closing the stable door after the horse had bolted. The audit rating is further endorsed by the Bank's lack of resolve on the disposal to farmers of government land improved by the project at Iğdir and inaction on the Irrigation Master Plan that was to identify policy options for the subsector.

5.8 Bank performance of the DOFD project is rated as satisfactory, but only because of its excellent performance in initiating a new and highly successful approach to irrigation management transfer to beneficiaries. In the absence of the new management transfer initiative, overall performance would have been rated marginally unsatisfactory because detailed design work and contracts were inadequate to define the physical objectives of the project. This resulted in an expensive and over-sized project (US\$81 million of the US\$255 million loan was canceled). In addition, US\$56.9 million was transferred to DSI to enable completion of works started under the IAEE project. The first year's work program was not prepared, vital management and coordination issues were overlooked, government's capacity to provide timely and adequate counterpart funds was overestimated, and stakeholders were not consulted during appraisal. Together, these factors caused the project to be extended by three years.³⁵

Borrower Performance

5.9 Borrower performance on the IAEE project was unsatisfactory. It did not address the fundamental problems of the irrigation and drainage portfolio—too many projects, many of which could not be justified—nor did it provide adequate and timely management support, coordination or counterpart funds. Several covenants were not complied with, and at the end of the project it appeared that the changes and reforms required by the Bank of the implementing agencies were too ambitious.³⁶ Indeed, it seems that the Bank did not really understand the Turkish policy making environment and did not have adequate policy dialogue at senior government level.

34. Neither project was in compliance with OMS 2.20 "Project Appraisal."

35. Government states that the absence of a Bank regional management team until June 1988 and lack of a resident Bank staff in Ankara throughout these projects made it very difficult to have timely consultations on procurement, policy and coordination issues.

36. Government notes that "unrealistic and immature covenants have little chance of being met. It is a deficiency for both sides but especially for the Bank to think that it is enough for a covenant to be implemented once it is put on paper in the Letter of Agreement." Government also states "the insistent misunderstanding and unrealistic expectations on the Bank side regarding the ability of agencies doing the technical, engineering and construction work to make big policy changes and solve all problems by themselves.....has been a real obstacle in coming to a consensus in design and implementation of many projects."

5.10 The same remarks as for IAEE can be made about the borrower's early performance on DOFD. However, belated recognition of the criticality of the O&M issue, and wholehearted adoption of the new irrigation management transfer policy shifts the audit's rating of borrower performance to marginally satisfactory.

6. Conclusions and Lessons

6.1 The shifting of the costs of operation and maintenance from the public to the private sector is a significant accomplishment and highlights what is possible when the incentives are conducive to reform. However, many of the incentives were short term and related to users' rescue of failing irrigation systems and providing job security for DSI engineering staff. Excessive DSI staffing is not at present an issue. Between 1991 and 1998 DSI reduced recruitment of seasonal temporary workers from 5,384 to 2,637 and auxiliary O&M staff from 3,594 to 2,873. In addition, there is a steady demand for DSI staff to supervise new projects, particularly in SE Anatolia. In the longer term some DSI staff may become redundant by the gradual privatization of parts of the state agencies as more responsibility (and maybe ownership of irrigation systems) is given to water user organizations.

6.2 Already many WUOs are discussing federating and assuming greater managerial control below the main supply reservoirs. This raises several issues: the legal status of water user organizations; water rights; and who assumes the responsibility for major rehabilitation.³⁷

6.3 The legal status of WUOs is important because it defines what they can do. In particular, the most pressing problem that WUOs face is that the heavy equipment required for O&M was retained by DSI after turnover.³⁸ Most WUOs have established *ad hoc* procedures to hire equipment from DSI and GDRS as needed, but those visited by the audit wanted their own heavy equipment as their size justified the investment. Fortunately, this need is being addressed through the Bank-assisted *Participatory Privatization of Irrigation Management and Investment Project* (PPIMIP).³⁹ Under this project, the government agreed to draft a law formalizing the legal status of WUOs. Providing WUOs pay 70 percent of the cost, the project provides a grant for the balance. And consultants are provided to assist WUOs with procurement, identification of demand driven rehabilitation on a cost-sharing basis, and work with DSI on water resources monitoring and investment planning. Latest information provided by the government indicates that equipment purchase by WUOs is proceeding successfully.⁴⁰

37. The Bank's regional office has commented: "With regard to the legal issue, the law for water user associations has been drafted. Concerning [major rehabilitation], just like large scale successful transfer of irrigation O&M to WUOs, there is a real possibility for substantial transfer of this role to WUOs, provided the policies that were initiated during the last part of DOFDP and those that are used in connection with the ongoing PPIMIP are seriously followed. PPIMIP is currently in the process of initiating a study for this purpose. It is clear that there will not be much scope for completion of rehabilitation work through traditional practice, as any additional rehabilitation to be completed by DSI will add to the list of several hundred extra slow moving schemes that generally take more than 10-20 years to complete."

38. Government points out that some of the heavy equipment is nearly obsolete whilst the remainder is needed by DSI for its own O&M tasks.

39. Loan 4235-TU for US\$20.0 million scheduled for closure in December 2002. Total project cost is US\$58.8 million.

40. The government notes: purchase of O&M equipment is not a problem for WUOs even under existing legislation. Under the ongoing project, as of end of May 1999, WUOs have already purchased 700 pieces of large and small equipment, costing \$4.4 million, of which they (WUOs) have paid up front \$3.2 million to suppliers."

6.4 There is much left to be done. As WUOs become more powerful, the issue of water rights will arise and some mechanism for equitable water allocation among all user (including environment) will have to be determined—a problem compounded by the government's unwillingness to realistically charge for water used in agriculture taking account of inflation. Without assured long term water supplies, WUOs will lose the incentive to invest. On the demand side, the PPIMI is piloting a drip irrigation subproject but farmers' response is lukewarm. And finally, government has to ensure coordination of the activities of DSI and GDRS and an economically viable work program of projects tailored to the available budget.

6.5 A number of important lessons arise from these projects:

- Incentives play a major role in the success of a project and the time spent during appraisal or supervision understanding and operationalizing these is seldom wasted. Coercion does not work.
- Successful implementation of the irrigation management reforms was preceded by a carefully structured program that maintained pressure for reform learned from the successes in other countries, identified leaders, provided continuous training and support for several years, and selected viable pilot projects. An important consideration was to allow sufficient time for this process to mature.
- The importance of appropriate incentives, timing and champions in-country and within the Bank, cannot be overemphasized.
- Contrary to perceived irrigation norms, viable water user organizations can be established within or around civic or locally elected groups.
- An emergency fund should be established to enable speedy mitigation of adverse project impacts on highly sensitive environmental sites and cultural heritage.

Basic Data Sheet

IGDIR-AKSU-EREGLIS-ERCIS (IAEE) IRRIGATION PROJECT (LOAN 2433-TU)

Key Project Data (amounts in US\$ million)

	Appraisal estimate	Actual or current estimate	Actual as % of appraisal estimate
Total project costs	292.0	270.3	92
Loan amount	115.3	167.3	142
Cofinancing			
Cancellation		4.9	
Date physical components completed	June 1989	Not complete	
Economic rate of return	20%	5%	25
Institutional performance		Unsatisfactory	

Cumulative Estimated and Actual Disbursements

	FY83	FY84	FY85	FY86	FY87	FY88	FY89	FY90	FY91	FY92	FY93
Appraisal estimate (US\$M)	9.5	21.0	61.8	85.4	104.0	115.0	-	-	-	-	-
Actual (US\$M)	5.9	9.0	14.0	32.8	46.7	61.9	77.6	107.9	110.7	110.4	
Actual as % of appraisal	62	43	23	38	45	54	67	94	96	96	
Date of final disbursement: August 18, 1992											

Project Dates

	Original	Actual
Identification	-	07/80 ^a
Negotiations	03/83	05/04/83
Board approval ^b	05/19/83	06/05/84
Signing	-	06/15/84
Effectiveness	09/17/84	10/29/84
Closing date	06/30/89	09/30/94 ^c

a. The project originated with the GOT's request to the June 1980 Agricultural Sector Identification Mission for Bank financing to assist completion of irrigation schemes under construction: July 1980 for project concept and in July 1981 for specific subprojects.

b. Board presentation was delayed by one year due to riparian issues between Iran and Turkey, relative to the Igdir irrigation scheme.

c. The loan was finally closed on December 31, 1994 due to delay in reconciliation of the discrepancies in the special account.

Staff Inputs (staff weeks)

Stage of project cycle	Actual
Through Appraisal	129.0
Negotiations	14.0
Supervision	247.7
Completion	12.0
Total	403.0

Mission Data

	Date (month/year)	No. of Persons	Staff days in field	Specializations represented ^d	Performance rating		Types of problems ^e
					Implementation status	Development objectives	
Identification	07/80	n.a.	n.a.	n.a.	–	–	–
Preparation ^f	08-09/82	3	–	A,E,IE	–	–	–
Appraisal	09/82	4	–	A,E,IE,A	–	–	–
Supervision 1	07/84	1	18	IE	1	1	O
Supervision 2	09-10/84	1	18	IE	1	1	T,P,O
Supervision 3	09/85	3	20	IE,E,A	3	3	T,M,F
Supervision 4	04-05/86	3	16	IE,E,A	1	2	T
Supervision 5	11-12/86	1	12	IE	3	2	T
Supervision 6	07/87	1	5	A	n.a.	n.a.	n.a.
Supervision 7	10-11/87	1	11	A	3	2	M,T,O
Procurement ^g	11/87	1	6	IE	n.a.	n.a.	n.a.
Supervision 8	06/88	3	16	A,IE,E	2	2	M,O
Supervision 9	10-11/88	2	30	IE,DS	3	2	M,O
Supervision 10	04-05/89	3	25	IE,A,E	3	2	M
Supervision 11	09-10/89	1	14	IE	3	2	M
Supervision 12	05/90	3	16	IE,A,E	2	2	–
Supervision 13	06/91	1	11	IE	2	2	–
Supervision 14	03/92	2	20	IE	2	1	–
Completion	03-04/95	2	15	E,IE	n.a.	n.a.	n.a.

d. IE = Irrigation Engineer; DS = Dam Specialist; A = Agronomist; E = Economist.

e. F = Financial; M = Management; T = Technical; P = Political; O = Other.

f. Carried out by FAO/CP.

g. For both IAEE and Agricultural Sector Adjustment Loan.

Other Project Data

Borrower/Executing Agency:

FOLLOW-ON OPERATIONS

Operation	Loan no.	Amount (US\$ million)	Board date
Participatory Privatization of Irrigation Management and Investment Project	4235	20.0	October 1997

Basic Data Sheet

DRAINAGE AND ON-FARM DEVELOPMENT PROJECT (LOAN 2663-TU)

Key Project Data (amounts in US\$ million)

	Appraisal estimate	Actual or current estimate	Actual as % of appraisal estimate
Total project costs	480.5	180.3	38
Loan amount	255.0	117.0	46
Cofinancing	0	0	
Cancellation		81.1	
Date physical components completed	June 1992	Substantially complete 1995	
Economic rate of return	22	22%	100
Institutional performance		High	

Cumulative Estimated and Actual Disbursements

	FY86	FY87	FY88	FY89	FY90	FY91	FY92	FY93	FY94	FY95
Appraisal estimate (US\$M)	11.0	51.0	98.0	149.0	200.0	255.0	255.0	205.0 ^a	175.0 ^b	175.0
Actual (US\$M) ^c	–	20.0	20.4	29.3	41.2	85.0	105.9	141.9	155.7	173.9 ^d
Actual as % of appraisal	–	39.2	20.8	19.7	20.6	33.3	41.5	69.2	89.0	99.4

Date of final disbursement: November 28, 1995

a. US\$50.0 million was canceled on February 9, 1994.

b. US\$30.0 million was canceled on October 7, 1994.

c. As of November 28, 1995, a total of US\$1.1 million remained undisbursed.

d. It includes US\$56.9 million disbursed to complete the works under the IAEE project (Loan 2433-TU).

Project Dates

	Original	Actual
Identification ^e	–	1984
Negotiations	–	01/06/86
Board approval	–	03/20/86
Signing	–	03/27/86
Effectiveness	06/27/86	06/15/87
Closing date	06/30/92	06/30/95 ^f

e. Several Bank missions during 1984 and 1985 assisted the GOT in the design of the project.

f. Not yet finally closed.

Staff Inputs (staff weeks)

Stage of project cycle	Actual
Through Appraisal	213.1
Negotiations	14.1
Supervision	201.3
Completion ^g	14.0
Total	431.4

g. Carried out by FAO/CP.

Mission Data

	Date (month/year)	No. of persons	Staff days in field	Specializations represented ^h	Performance rating		Types of problems ⁱ
					Implementation status	Development objectives	
Identification ^l	1984/85	n.a.	n.a.	n.a.	—	—	—
Preparation	up to early 85	n.a.	n.a.	n.a.	—	—	—
Appraisal	06/85	5	—	IE,E,A,IE,DS	—	—	—
Supervision 1 ^k	04/86	1	2	IE	n.a.	n.a.	n.a.
Supervision 2	07/86	1	7	IE	2	2	F,M
Supervision 3	11/87	1	35	IE	2	2	F,M
Supervision 4	06/88	1	6	IE	2	2	F,M
Supervision 5	10-11/88	2	27	IE,ES	2	2	F,M
Supervision 6	04-05/89	1	20	IE	2	2	F,M
Supervision 7	10/89	2	18	IE,DS	2	1	P,M
Supervision 8	09/90	2	21	IE,ES	2	1	F,M
Supervision 9	09-10/91	2	26	IE,PO	3	1	M,F,P
Supervision 10	02-03/92	2	11	IE,PO	3	1	M,F,P
Supervision 11	10/92	3	11	IE,PO,DS	3	1	M,C
Supervision 12	07/93	2	16	IE,DS	3	2	C,M,F
Supervision 13	09-10/93	1	23	IE	3	2	C,M,F
Supervision 14	04/94	1	18	IE	2	2	M,F
Supervision 15	09/94	1	9	IE	2	2	M,F
Supervision 16	03/95	2	8	IE	2	2	M,F
Completion ^l	06/95	2	14	E,IE	n.a.	n.a.	n.a.

h. IE = Irrigation Engineer; DS = Drainage Specialist; A = Agronomist; E = Economist; ES = Environmental Specialist; F = Financial Analyst; PO = Project Officer.

i. C = Compliance with legal covenants; F = Financial; M = Management; P = Political.

j. Several Bank mission during 1984 and early 1985 assisted the GOT in the design of the project.

k. No form 590 prepared for this mission.

l. Carried out by FAO/CP.

Other Project Data

Borrower/Executing Agency:

FOLLOW-ON OPERATIONS			
Operation	Loan no.	Amount (US\$ million)	Board date
Participatory Privatization of Irrigation Management and Investment Project	4235	20.0	October 1997

Safeguard Policies: Cultural Heritage and Environment

Çatal Höyük is a series of shallow mounds located along the edge of an ancient wetland and is dated to 6,800 to 5,500 BC. The site was first excavated in 1958 and yielded clay houses with wall paintings, human floor burials and crude baked earthenware mother goddess figures. The World Monuments Fund of New York has identified Çatal Höyük as one of the 100 most endangered sites and includes it (with the Taj Mahal and the Pyramids) as one of the 30 sites most in need of funding to stop further destruction and loss. The factors behind this categorization were the international importance of this site as the "first city" with the "first murals." The threats to it were identified as the erosion of the top of the mound and the lowering of the water table at its base.

Field monitoring by the Çatal Höyük archaeological team indicates that the groundwater levels have fallen significantly since 1993. While the mounds have long been above the water table, this is not true for the lowest - and oldest - archaeological levels that remain to be systematically excavated. This means that deposits that had been waterlogged for the last 10,000 years or more are now above the water table for much of the year. Under these modified conditions, desiccation of the clay houses and their contents will occur, and oxidation will seriously jeopardize preservation of the organic remains. Trenching in 1997 also revealed a well-preserved buried Neolithic landscape (buried soils, pits, ditches, fields etc.) surrounding the site.

Çatal Höyük is surrounded by areas undergoing intense irrigation and drainage development. The ICR reports that "groundwater levels have reportedly been lowered from 0.5 m to 1.3 m below ground level over much of the area, demonstrating the success of the project." (ICR Appendix A, Mission's Aide Memoire, para 15). In addition, Dr. Neil Roberts (who directs the Palaeoenvironmental aspects of the Çatal Höyük Project) reports that diversion of the Carsamba river and pumping of groundwater for irrigation has led to (a) the complete desiccation of the Hotamis marshes between 1984 and 1990, and (b) the disappearance by the summer of 1997 of Lake Suleymanhaci which was 3.5 m deep and about 2 km long in 1993. Dr. Roberts also reports that in the early 1980s these marshes were described as one of the finest for the migratory wetland birds in the Asia Minor.

While rigorous environmental screening and mitigation now required by the Bank (OD 4.01 Environmental Assessment, GP 4.11 Cultural Heritage and OP 4.02 Environmental Action Plans) were not in place during appraisal (June 1985), in September 1986 the Bank issued Operational Policy Note (OPN) 11.03: Management of Cultural Property in Bank-Financed projects. Under this OPN, "the Bank will assist in the protection and enhancement of cultural properties encountered in Bank-financed projects, rather than leaving that protection to chance" (paragraph 2 (b)), and "this policy pertains to any project in which the Bank is involved, irrespective of whether the Bank is itself financing any part of the project that may affect cultural property." (paragraph 2(d)).

As the Bank did not take account of the project's impacts on Çatal Höyük during mid-term review, there appears to be a *prima facie* case for the Bank to explore with the Government of Turkey measures to mitigate the project's impact on Turkey's cultural heritage.

While the Bank did undertake an environmental review of the DOFD project, it is not clear from the supervision reports that either the Hotamis marshes or Lake Suleymanhaci were included. Notwithstanding, it appears that the adverse environmental impact of DOFD works and a mitigation plan was not factored into project design at mid-term review.

BORROWER's COMMENTS

**REPUBLIC OF TURKEY
PRIME MINISTRY
THE UNDERSECRETARIAT OF TREASURY
General Directorate of Foreign Economic Relations**

Ref: DEI.01.02/114 - 1725

Ankara..... 18 -06 1999

Mr. Gregory K. Ingram
Manager
Sector and Thematic Evaluations Group
Operations Evaluation Department
The World Bank

06-18-99P04:42 RCVD

Re: Performance Audit Report for Loan 2433-TU and Loan 2663-TU
Your letter dated May 26, 1999

Dear Mr. Ingram,

Thank you for your letter of June 15, 1999 extending the time for borrower comments on the PAR.

Please find attached the Government of Turkey's comments and requests for modification together with copies of some related documents including our letters to the Bank regarding Loan 2663-TU.

We would like to take this opportunity to convey our thanks to the Bank and our wishes for collaboration in successful projects in the future, too.

Yours sincerely,



Jale AKTAJ
Head of Department

Enc. 6

cc: Ms. Ruth Bachmayer, EDS10

**Comments by the Government of Turkey on Performance Audit Report Loan
2433-TU and Loan 2663-TU**

p. 1 Introduction para. 1.2 (SPO's comments)

- line 4

"...60,000 ha/year..." should be modified as "...75,000 ha/year..." .

- line 5

"...16,000 ha/year..." should be modified as "...65,000 ha/year..." .

p. 2 Introduction Footnote 1

Please add "The Ministry underwent a reorganization in early 1990s and GDRS became an independent body in 1994 under a Minister of State reporting to the Prime Minister."

p. 3 para. 1.6 line 6

- One of the objectives of ASAL is stated as "...removing distortions in the pricing...". It is suggested to be modified as "...removing distortions in the input pricing...".

- Another objective stated as "...and reforming inefficient public agencies..." should be clarified as "...and reforming certain inefficient public agencies...".

p. 4 para. 1.11

The outcome of ASAL could have been rated unsatisfactory in terms of the planned reform track but this is the observation back in early 1990s. Because neither IAEE nor ASAL were single standing projects but fortunately were thought as steps of a long lasting arduous yet conscious attempt to transform the traditional approaches to agriculture and irrigation sector investments into more effective and less costly ones in a long established public investment area and policy environment.

p. 6 para. 2.4 lines 1 and 2

The statement "Legislation already provides for recovery of O&M costs and a small part of capital costs from large-scale irrigation investments by DSI, ..." is wrong in that such capital costs are subject to full recovery (not a small part of costs) according to related legislation, although collection is made at nominal cost of the investment. Hence, recovery requirement by the legislation should not be confused with collection.

p. 18 Cost Recovery

para. 3.14

- line 6

"...fact that recovery is the responsibility of the Treasury and...." should read "...the Ministry of Finance...".

- line 7

The Statement "...the Treasury is responsible for recovery..." should also read "...the Ministry of Finance is responsible for recovery....", because the Undersecretariat of Treasury (The Undersecretariat of Treasury and Foreign Trade until December 1994) is a separate body since December 1983 reporting to the Prime Minister via a Minister of State and responsible only for borrowing, lending, public finance, banking, insurance and foreign capital operations.

It is also assumed that the word "recovery" is used meaning of physical collection of fees and not the policies regarding recovery.

p. 19 Master Plan**para. 3.16 line 9 (SPO's comment)**

"In addition, massive dam construction.....new investments elsewhere" is thought to be a misleading interpretation and should be deleted.

p. 20 para. 3.19

There was a strong and live basis of what Mr. Goering advocated when he suggested that the closing date be extended for another year. It is thought that also mention should be made of the Treasury's letter of May 26, 1993 to the Bank regarding the developments in policy and practice related matters at the implementing agency level towards adoption of the idea of making further transfers to WUOs possible through new mechanisms. (Please see attachment no. 1)¹

p. 21 para. 3. 21

Regarding the study tours, the intensity and effectiveness of the preparatory work before, in-between and after the tours is worth mentioning. (Please see attachment no. 3)

However, it needs to be noted that it was not only DSI that organized and participated in such visits.

GDRS also played an important role in 1993 and 1994 by organizing meetings and brainstorming sessions with wide participation from many related public agencies, WUOs and producers' organizations.

They also published in November 1993, besides a booklet on foreign country practices, a comprehensive report entitled "Farmers' Participation in Irrigated Farming Investments and O&M in Turkey" with a separate executive summary comprising the discussions, conclusions and recommendations of the series of meetings and also all relevant prevailing legislation (laws, decrees, communiques, sections on intra-agency circulars regarding cost recovery issue, sections on irrigation investment policies as suggested in SPO's Five Year Development Plans and the list of the National Irrigation High Level Working Group members.

1. These attachments are lodged in OED's files and are available on request.

GDRS high level management also joined tailor-made study tours in the same countries organized by Irrigation Management Center of the Utah State University which greatly helped the GDRS regional directors to understand the issues and transfer such information to farmers. These have been detailed in our letters to the Bank on May 26, 1993, February 2, 1994 and also on May 4, 1994. (Please see attachments no.1, 2 & 3)

p. 21 para. 3. 22 line 2

The following is given as an update of the figures:

"By the end of 1998, 84 percent of DSI irrigated area of 1.81 million ha..."

p. 21 Outcomes - Reform of Irrigation Subsector Planning

para. 4.1 First sentence

"The Bank's primary objective, reforming the public sector's approach to the planning of irrigation and drainage, was not achieved in either IAEE or DOFD".

It is important to note that the direction of the original targets were never lost from sight no matter what obstacles were encountered. This proves to be a long, arduous but rewarding development exercise for both the Government of Turkey and the Bank.

It could have been impossible to achieve today's level of understanding, institutional capacity and completed infrastructure had the projects not been started despite those expected or unforeseeable problems and challenges.

Today, it might be easier to find all kinds of faults with previous policies and practices, however many problems cease to be problems once they are solved. The issues still outstanding should be handled taking into consideration the past experiences.

para 4.1 line 4

The statement "...after project closure Government reverted to business as usual." does not reflect the attitude towards irrigation investments after DOFDP closure since both SPO and DSI continued to pay attention to disciplining the portfolio through technical and fund allocation mechanisms and moreover DSI went on with preparation and implementation of a follow-up project to strengthen both its own and WUOs positions in transfers of O&M to WUOs to spread such practice across the country.

GDRS also made efforts to involve farmers in planning prior to on-farm development works and encouraged formation of farmers' organizations and quite high financial contributions from them. These efforts created the PPIMP which became effective as of April 24, 1998.

para. 4.1 line 5

Comments on "a typical large project" and "23 years to complete it" are thought to be opinions that should be assessed in relation to circumstances in project selection, management and funding as the reference information with analysis of different

combinations of portfolio and conditions that change over time. So the comments on the sectoral investment practices and the example it is based on should either be modified accordingly or omitted.

p. 22 para. 4.2 (SPO's comments)

- line 3

The word "SPO" should be deleted.

- line 7

The number of projects which shows as "270" should be corrected as "242".

p. 22 para. 4.2 line 10

It is thought that a few sentences on the reasoning of the "...Bank's new Participatory Privatization project..." would be useful in this para. to indicate the stages that DSI and GDRS and also the policy-makers have passed, albeit not fast enough, since 1980s and the main direction of all the efforts in that area.

Also, the full name of the new project (Participatory Privatization in Irrigation Management and Investment Project) had better be used since the first place the name of the project is mentioned is this paragraph.

p. 23 para. 4.4 line 5

The statement saying ".....no efforts have been made to strengthen GDRS's ability to market its services to farmers." should be modified to reflect the change in and strong advocacy against traditional type policy makers by GDRS's higher management of the approach to new investments, including the efforts spent under the PPIMIP, the new project. Although there might be need for different and better methods for "marketing" of at least some of the services to beneficiaries in full or in part, neglecting this growing movement against the old approaches, albeit slow and difficult, would be unfair to GDRS.

p.25 para. 4.10

At their appraisals ERRs were calculated to be positive for both projects. What made previously economic projects uneconomic? Is it due to technical reasons or due to delays in completion of work.

The challenges came from the fact that in a country where 40 % of the population based their incomes mainly on farming and where only half of the economically irrigable land could be opened to irrigation after work of several decades, there is need for both staff and funding to carry out irrigation works across the country and it is very difficult and unrealistic to expect implementation of such projects to be very smooth and in an isolated environment whereas there are many stakeholders, numerous technical, natural, social and managerial issues and interventions.

p. 25 Footnote 28

The percentage of contribution by WUOs mentioned in the statement "DSI provides assistance to the WUOs who pay about a third of the cost." should be corrected as "... who sign an agreement with DSI and also pay up front about 70 percent of the cost of equipment procured."

This, in fact, has already been stated correctly in para. 6.3 line 8.

p. 29 para. 5.6

As a solution to the issue mentioned here as a problem, GDRS could transfer the subsurface drains and collectors to the WUOs in the area after signing a protocol between GDRS and the WUO to describe the work and the area covered etc. Although GDRS personnel and budget may not be sufficient to maintain such infrastructure, farmers would not act on their own without an agreement in place. Also, legal basis for such protocols is already existing.

p. 30 para. 5.8 line 6

The statement "This resulted in an expensive and over-sized project...." indicates the result, but it is thought that it should be clarified, since the cancellation was made from the allocation to GDRS only. Part of their allocation was transferred also to DSI. It also needs to be remembered that, the problems and delays in GDRS contracts had a negative effect on the disbursement of already oversized GDRS allocation.

p. 30 Borrower Performance para. 5.9

When speaking of the policy covenants that could not be met, it is important to note that any unrealistic and immature covenant has little chance to be met. It is a deficiency in project design for both sides but especially for the Bank to think that it is enough for a covenant to be implemented once it is put on paper in a project's LA. It needs to be remembered that a project is not made up of financial and policy covenants and it comprises sets of long-term, simultaneous and well coordinated activities which require a high level of administrative capacity and policy change dimensions besides financial management.

Besides this, a classical, short-sighted urging for meeting unrealistic, impractical covenants proved to be of no contribution to development but instead a wholistic approach with vision can bring more benefits.

When we look back now, it is easier to see the rights and wrongs, however, we still can not say for sure if better solutions to at least some of the implementation problems were available back then but overlooked and not incorporated into the project and LA. Also, activities, problems, solutions and performance require to be assessed in terms of their appropriateness under the then-prevailing circumstances and not of today's.

Another difficulty was posed by the absence of an RMT until June 1988 and absence of a contact person in Ankara throughout the lives of the projects for purposes of consultation in procurement, policy, coordination matters. This issue had also been brought to Mr. Goering's attention by Treasury in 1994, albeit quite late, during his visit to Turkey.

In 1993 when Treasury, although not assigned such a task by its establishment law, took the lead in policy coordination following the first extension of DOFDP and called for meetings and participated in sessions where the project, the covenants and the trends in the world in this sector were discussed, the reactions from DSI and GDRS to new ideas were fast, positive and encouraging. In fact, until that time, SPO had kept including such findings and recommendations in the Five Year Development Plans for almost three decades.

Only then, Treasury felt that it would have a reasonable basis to request further extension from the Bank and did so with its letters of May 26, 1993 and May 4, 1994 (Please see attachments no. 1 and 3)

The unmatching counterpart funding is thought to be an issue created by ad hoc approaches to funding from state budget, not paying due attention to state budgeting and accounting policies by both the implementing agencies and the Bank. It is important to foresee and prevent problems before they create bottlenecks and take much longer to resolve. Efforts toward devising proper mechanisms to overcome unmatching funds problem, although crucial to timely implementation, was not paid much attention across the portfolio, until a couple of years ago when Treasury started special studies in collaboration with the Ministry of Finance and SPO to that end.

It is also not fair to say "...it appeared that it had used the Bank opportunistically to bolster its beleaguered treasury", since this statement carries a meaning of ill intention. With the vagueness of the mechanisms to use as bases of the transformation of traditional policies, immature circumstances, absence of necessary contacts among the parties and presence of numerous issues not dealt with before, the change that the implementing agencies were asked to bring about was too ambitious.

Being mainly technical and engineering bodies and under great pressure from the beneficiaries, the Parliament and on the other hand the responsibilities they assumed under the Projects, their performance throughout a decade to tackle with design, timing, procurement and legal issues to continue construction and at the same time to understand and convince both themselves and the farmers of new policy approaches, is, in fact, worth praise.

The insistent misunderstanding and unrealistic expectations on the Bank side regarding the ability of agencies doing the technical, engineering and construction work to make big policy changes and solve all problems by themselves like perhaps in some countries in East and South Asia which are used as examples in the PAR for other

reasons, has been a real obstacle in coming to a consensus in design and implementation of many projects.

Even so, the efforts of the agencies and the Bank were continuous and successful.

Followed by DOFDP, the funds provided for irrigation investments helped greatly to complete the irrigation network in 1 m. ha. This is a great change which could not have been imagined to take place in 1980s but the attempts served to bring about changes in the policy approaches of the implementing agencies.

DOFDP served even beyond its target in the institutional development category through opening the era of WUOs' participation in O& M of DSI schemes and of reducing government employment and related costs dramatically instead of spending on staff salaries and facilities for O&M.

The force exerted on the beneficiaries and the higher level policy makers towards better planning, implementation, participation and cost recovery is worth as much attention as the civil works. Today these are seen as natural and part of daily work and the interesting point is that such changes were achieved with almost no major changes to related legislation.

This shows that the understanding and support of the requirement for better planning and implementation comes strongly from the technical level and also beneficiaries (WUOs) which means a bottom-up approach.

p. 31 para. 5.10

It should be noted that the Gulf Crisis in 1991 compounded the counterpart funding problem further during the first half of 1990s in DOFDP's case.

p. 31 Conclusions and Lessons para. 6.1

It is thought that the statements regarding a) DSI's current downsizing (in terms of personnel) due to privatization of O&M and perceived future difficulties in employment of surplus staff and b) the relation between possible future squeeze in DSI's budget and "...privatization of parts of the state agencies..." need more explanation since there seems to be a conflict in the pictures described.

It also needs to be mentioned that DSI's engineers will always be needed whether there are transfers of O&M of schemes to WUOs or not because of the need for supervision at least but the recruitment of seasonal temporary workers and auxiliary staff across O&M offices in Turkey decreased greatly between the years 1991 and 1998 from 5384 to 2637 and from 3594 to 2873 respectively since they are not needed by DSI anymore. Such reduction occurred in the headquarters office, too. This policy led to a decrease in the number of O & M personnel by 3447 since 1991 and there is not a surplus staff problem in the said Department. (Please see attachment no.5)

Also, some of the Turkish Government's opinions, comments, conclusions and lessons regarding the ICR of IAEE and DOFD Projects had been included in the Treasury's letter of February 27, 1996 to the Bank. (Please see attachment no. 4)

p. 31 para. 6.2 line 3

Under the PPIMIP, work is being undertaken to draft a water law for Turkey to address issues like water rights, water allocations etc. and relevant legislation of some foreign countries are being examined in this context.

p. 32 para. 6.3 line 8

The following part of the statement should be deleted:

"... that enables them to purchase heavy equipment." Because, their legal status already enables them to do so. They are private organizations and can purchase what they need with their own sources.

Also, besides the fact that there was not a legal basis in place for hiring DSI's heavy O&M equipment to farmers, it also needs to be noted that the reasons such equipment being retained by DSI even after the turnovers include either their being close to obsolescence or the necessity to keep them for hiring to DSI contractors, as necessary.

p. 32 para. 6.3

p. 32 para. 6.3 line 7 and para. 6.4 line 5

"...PPIMI.." should read "...PPIMIP..".

p. 32 Footnote 33

The following is given as an update, since the figures have changed greatly in a short period of time :

"... as of end of May 1999, WUOs have already purchase 700 pieces of equipment of which 23 are heavy equipment, costing \$4.4 million, of which they (WUOs) have paid up front \$3.2 million to suppliers."

Also, "...,costing \$3.4,...." should read "...costing \$3.4 million,..."

p.32 para. 6.4 line 4

The statement "...government's unwillingness to charge for water used in agriculture." is thought not to reflect the policy if not modified to read "...government's unwillingness to charge at positive interest rates for water used in agriculture."

Comments by GDRS

The Draft Performance Audit Report is reviewed in detail. It is seen that issues mentioned in the Report have been based on either the reports of agencies or the on site supervisions of the World Bank experts in project areas.

Turkey is in need of further developing its infrastructure in both urban and rural areas. Being established as a public agency responsible for constructing rural and agricultural infrastructure, GDRS have been under pressure of providing more rural infrastructure like roads and drinking water and services like on-farm development works have rated lower in the priority list. For this reason, implementing units experience administrative and financial problems.

As stated in the Report, the same problem was encountered in IAEE and DOFD Projects, too.

The Loan finally closed on June 30, 1995 and the Project activities were realized at varying stages. With a view to making an analysis of the achievements and failures and deriving lessons from them, problems and recommendations for solution can be stated as follows:

1. Problems:

a) One of the requirements of the loan agreement was provision of consulting services. The award of this contract was finalized in 1987. Later, the consulting firm prepared the contracts for on-farm development tenders. This preparation stage took nearly two years. The first bidding was awarded in March, 1989 and the contract was signed in August, 1989. Before being able to start any construction under the project, three years had passed as the preparation stage which later turned out to be the delay of project works.

b) The civil works under OFDP were awarded according to ICB rules which were very different from LCB rules and new to GDRS that suffered significant difficulties in understanding, interpreting and implementing many articles of the contracts. Cost recovery which was a requirement of the LA was not achieved because of insufficient farmer participation.

Conflicts occurred between farmers and contractors due to cultivation of the land during the civil works. In many cases farmers did not allow the contractors to work on their land and sometimes GDRS could not even invite the contractor to start drainage works because of that reason. Frequently either GDRS or the contractor was not able to comply with contract terms which adversely affected performance.

a) Because of the larger size of the contracts under the Projects in relation to those the contractors were accustomed to undertaking, and the short periods of time

allowed for completion of the works in relation to the size of the area worked on, problems arose between the contractors and GDRS regarding requests for extension of time for completion.

b) Generally, because DOFDP works were not handled together with land consolidation, implementation difficulties were encountered whereas such problems were minimized in cases otherwise.

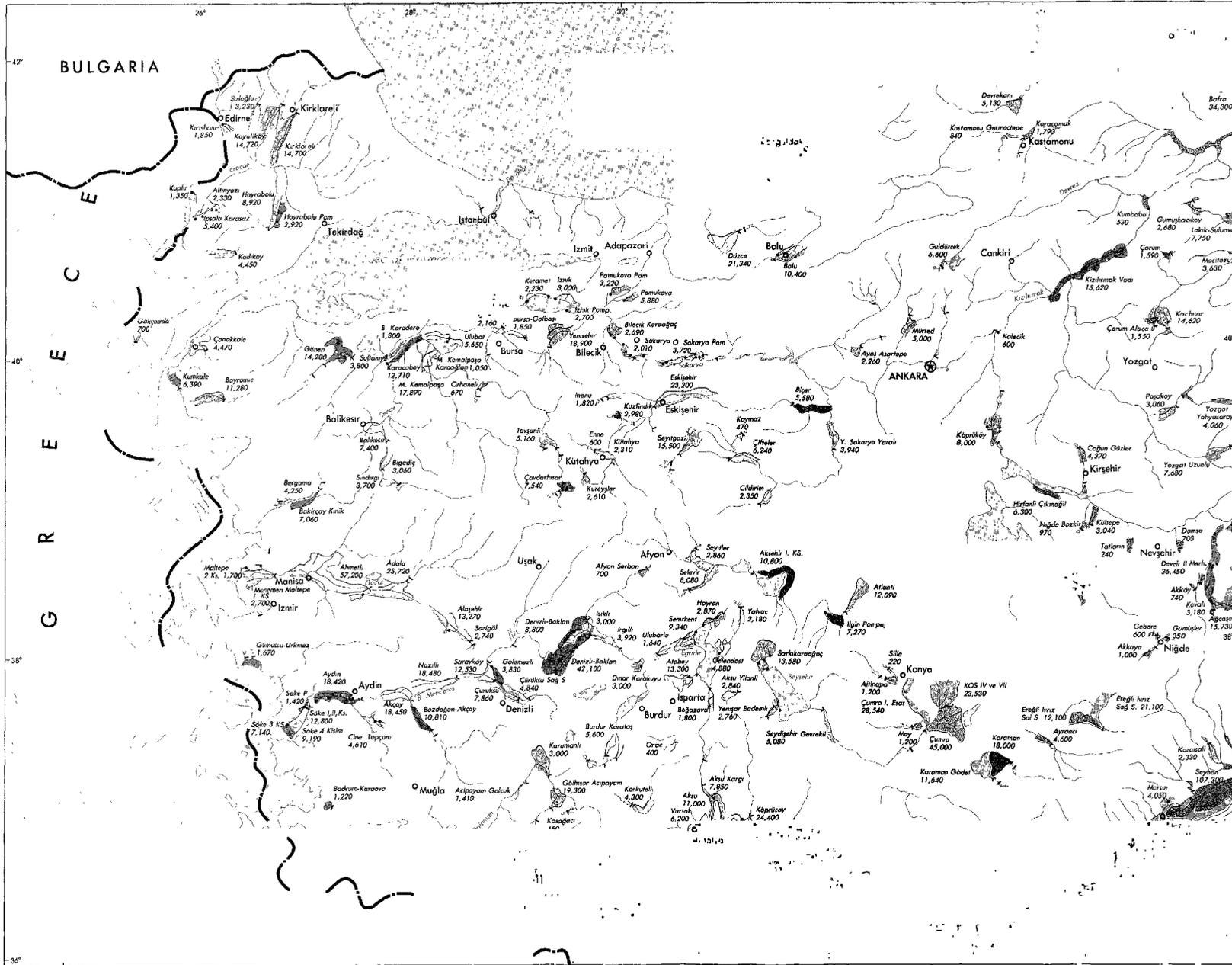
2. Recommendations for Solution

a) If the contracts had been prepared at the beginning of the project, a three-year delay would not have occurred. Therefore, regarding the future projects, the issues related to procurements should be clarified before implementation starts.

b) The terms and conditions of contracts ought to be reviewed and revised to take into account the special conditions of the country and the sector. It should be possible to introduce some flexibilities taking into account farmer behavior and crop patterns. In contracts of works, the size of project, local conditions and related crop patterns should be considered.

c) DOFD works should be implemented in parallel to land consolidation projects in order to both minimize conflicts with farmers and make the construction economical.

MAPS



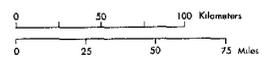
TURKEY DRAINAGE AND ON-FARM DEVELOPMENT PROJECT

Developed: 10,600

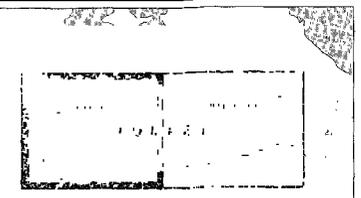
LARGE SCALE IRRIGATION PROJECTS (area in hectares):		
Project Stage	Gross Project Area [ha]	Number of Units
Existing	1,111,630	146
Under Construction	437,400	52
Designed	486,470	31
Being Designed	285,720	38

NOTE: Only large scale irrigation projects supplied by surface water are shown

- Rivers
- Dams/Reservoirs
- Diversion Weirs
- Pumping Stations
- Main Irrigation Canals
- Groundwater Irrigation
- International Boundaries



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TURKEY DRAINAGE AND ON-FARM DEVELOPMENT PROJECT



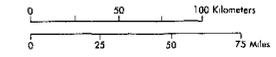
Selçuk 8,080

LARGE SCALE IRRIGATION PROJECTS
(area in hectares)

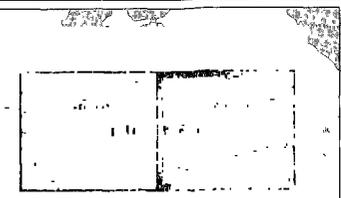
Project Stage	Gross Project Area (Ha.)	Number of Units
Existing	1,111,630	146
Under Construction	437,400	52
Designed	488,470	38
Being Designed	285,720	31

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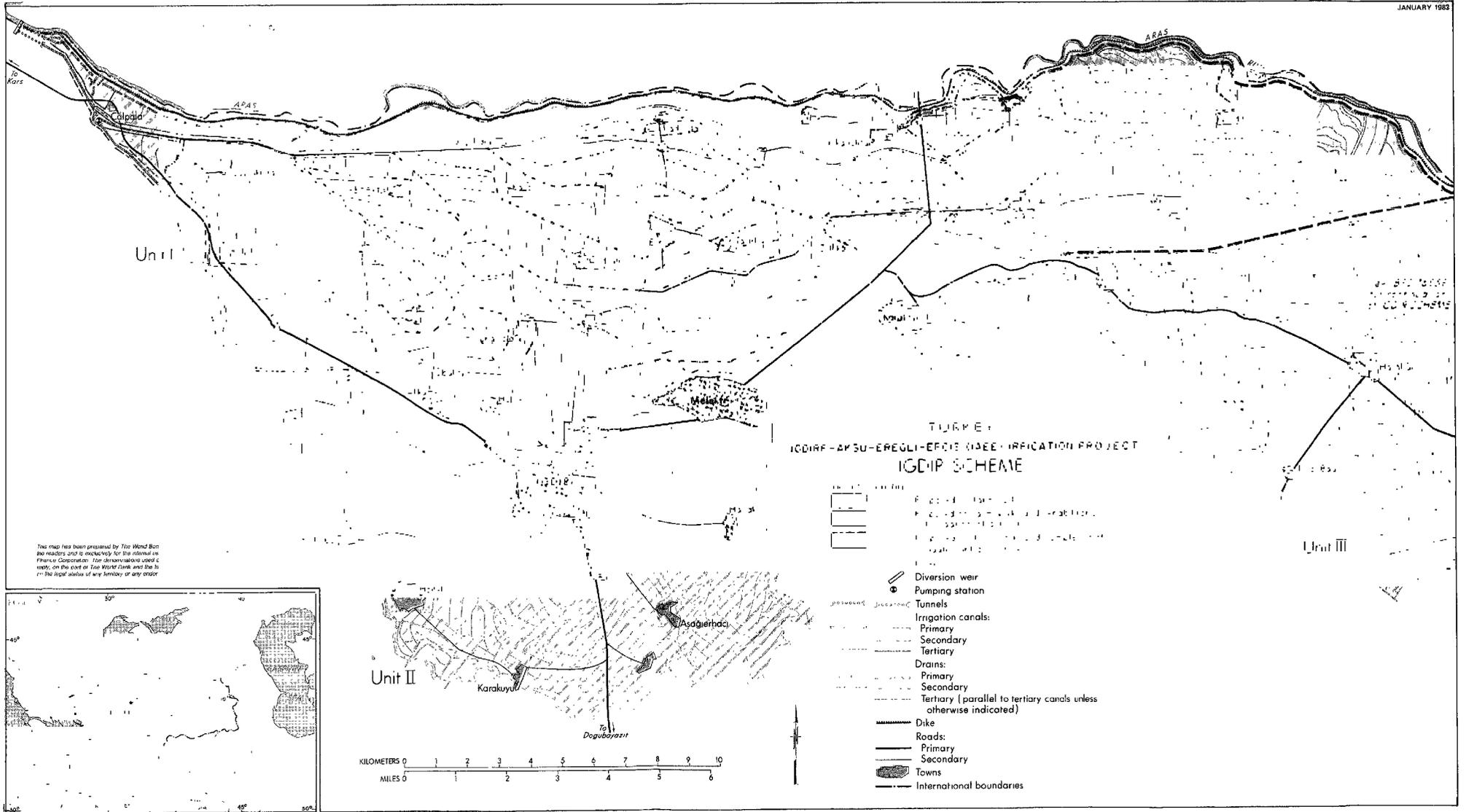
- Rivers
- Dams/Reservoirs
- Diversion Weirs
- Pumping Stations
- Main Irrigation Canals
- International Boundaries



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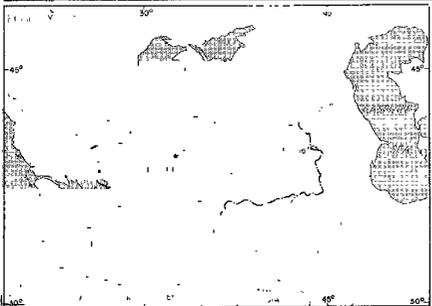


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TURKEY
IGDIF-AKSU-EREGLI-ERCIYES IRRIGATION PROJECT
IGDIP SCHEME

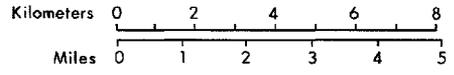
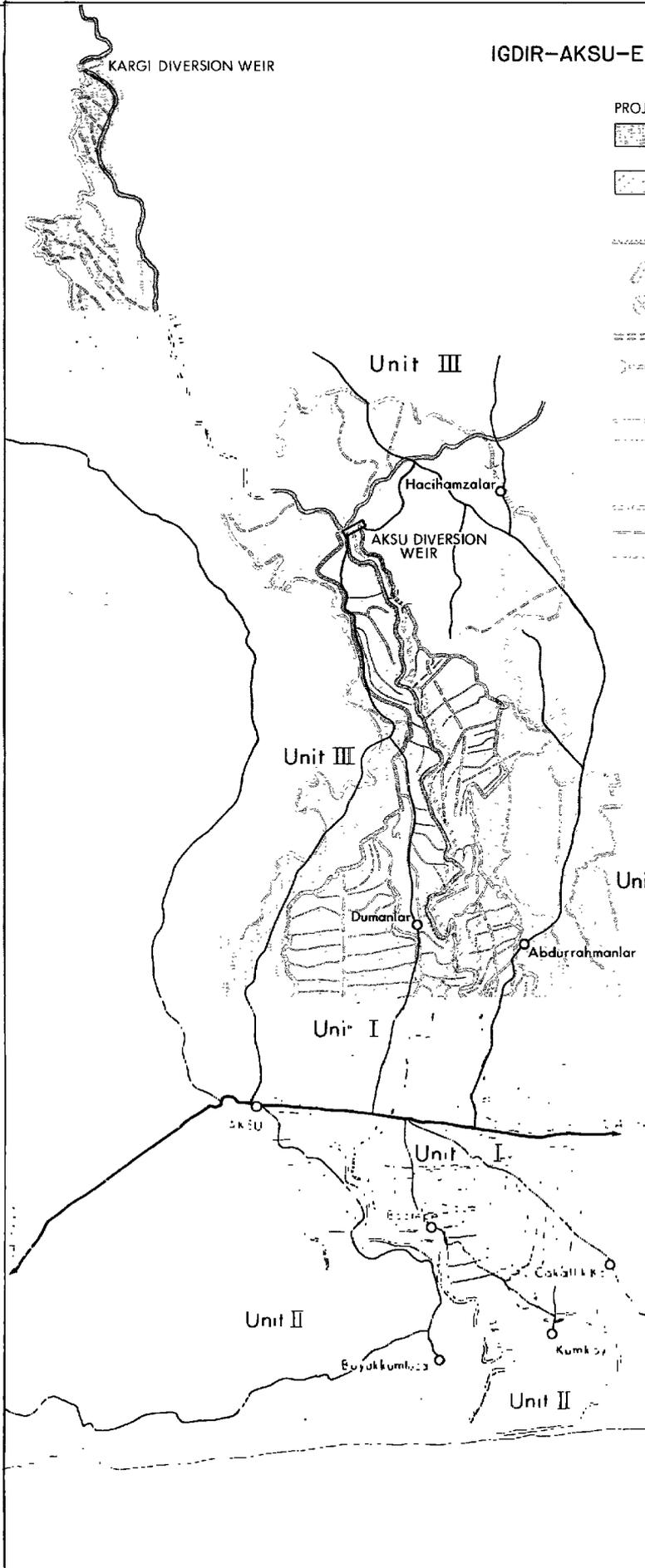
- Legend:
- Primary
 - Secondary
 - Tertiary
 - Tertiary (parallel to tertiary canals unless otherwise indicated)
 - Dike
 - Roads:
 - Primary
 - Secondary
 - Towns
 - International boundaries
 - ▭ Diversion weir
 - ⊕ Pumping station
 - Tunnels
 - Irrigation canals:
 - Primary
 - Secondary
 - Tertiary
 - Drains:
 - Primary
 - Secondary
 - Tertiary (parallel to tertiary canals unless otherwise indicated)

KILOMETERS 0 1 2 3 4 5 6 7 8 9 10
MILES 0 1 2 3 4 5 6

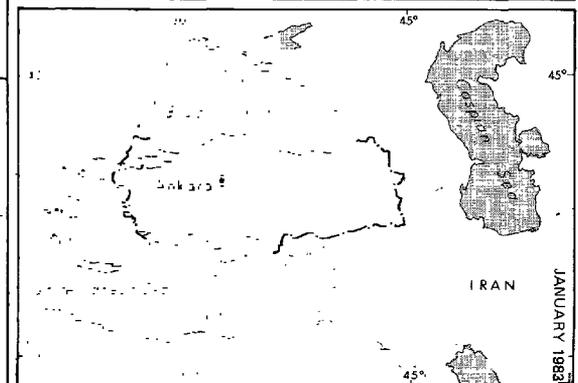


TURKEY
 IGDİR-AKSU-EREGLI-ERCIS (IAEE) IRRIGATION PROJECT
 AKSU SCHEME

- | PROJECT | EXISTING | |
|---------|----------|--|
| | | Proposed on-farm works and completion of irrigation infrastructure |
| | | Proposed on-farm works |
| | | Rivers |
| | | Embankments |
| | | Diversion weirs |
| | | Pumping stations |
| | | Siphons |
| | | Tunnels |
| Canals: | | |
| | | Primary |
| | | Secondary |
| | | Tertiary |
| Drains: | | |
| | | Primary |
| | | Secondary |
| | | Tertiary |
| Roads: | | |
| | | Primary |
| | | Secondary |
| | | Towns |
| | | International boundaries |



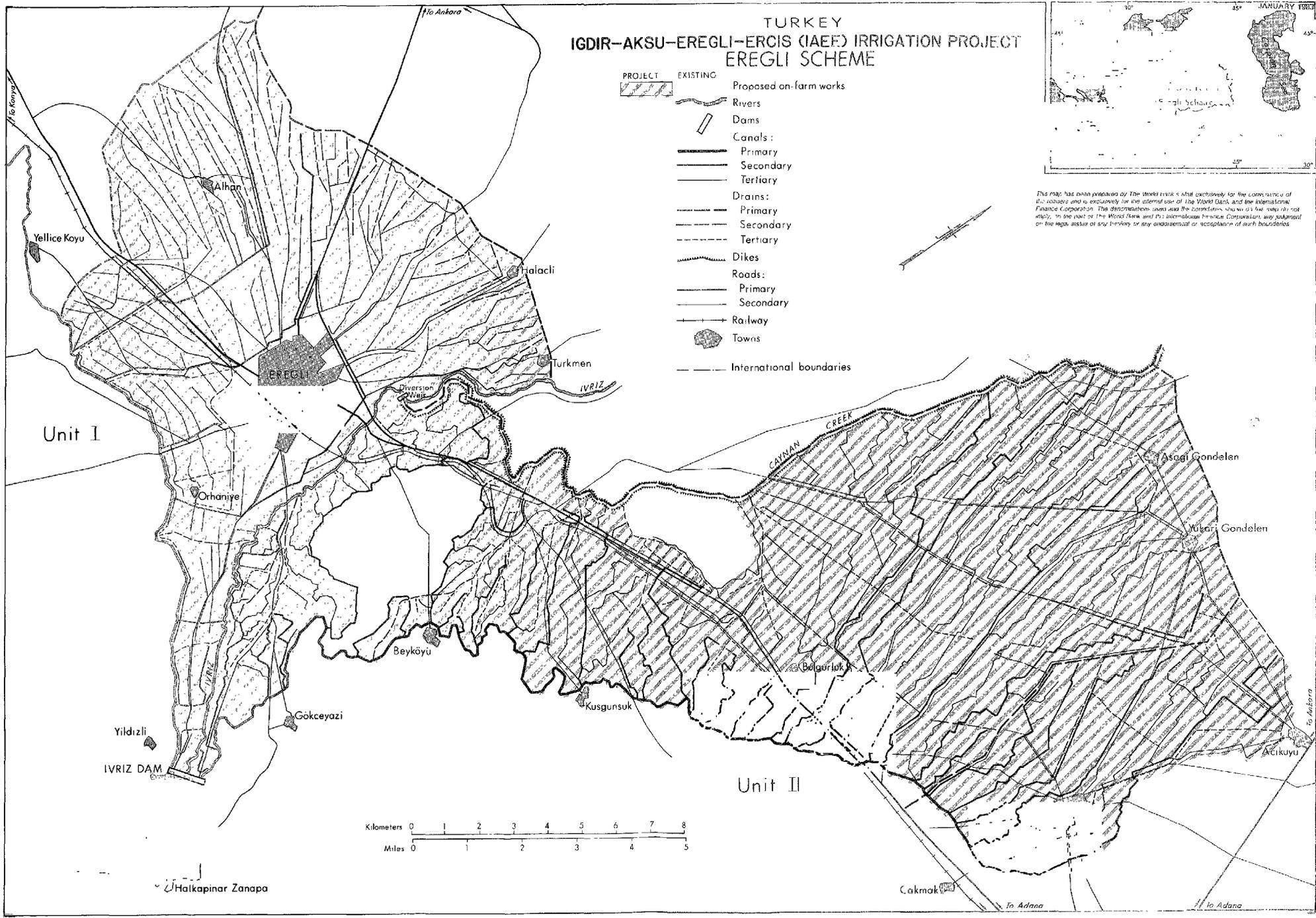
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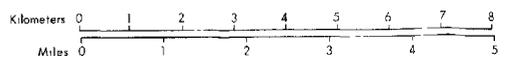


TURKEY IGDIR-AKSU-EREGLI-ERCIS (IAEF) IRRIGATION PROJECT EREGLI SCHEME

- | | | |
|----------------|-----------------|--------------------------|
| PROJECT | EXISTING | |
| | | Proposed on-farm works |
| | | Rivers |
| | | Dams |
| | Canals: | |
| | | Primary |
| | | Secondary |
| | | Tertiary |
| | Drains: | |
| | | Primary |
| | | Secondary |
| | | Tertiary |
| | | Dikes |
| | Roads: | |
| | | Primary |
| | | Secondary |
| | | Railway |
| | | Towns |
| | | International boundaries |



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Halkapinar Zanapa

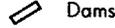
Cakmak

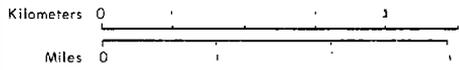
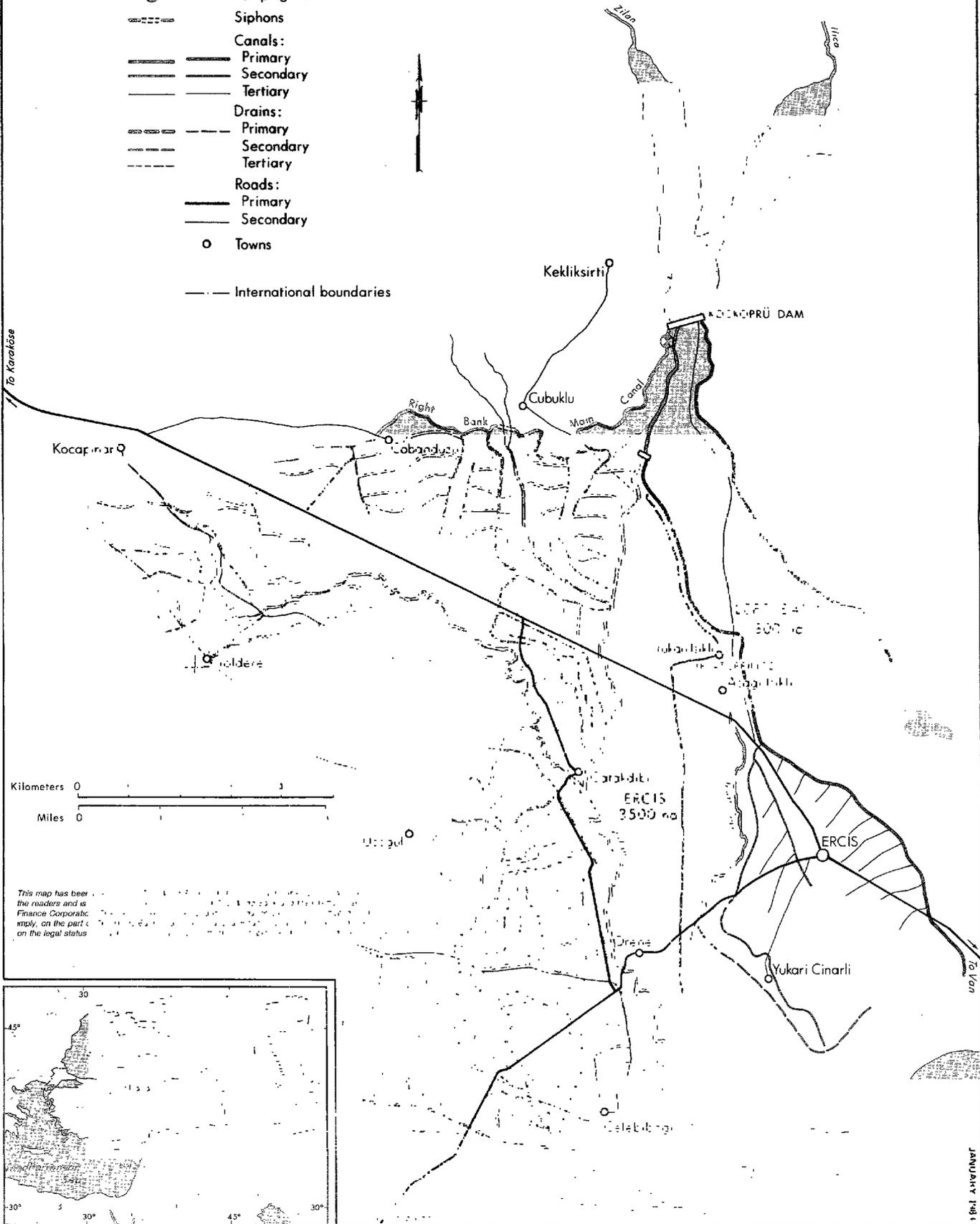
To Adana

To Adana

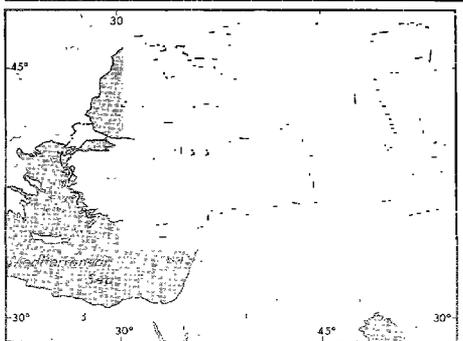
TURKEY
 AKSU-EREGLI-ERCIS (IAEE) IRRIGATION PROJECT
 ERCIS SCHEME

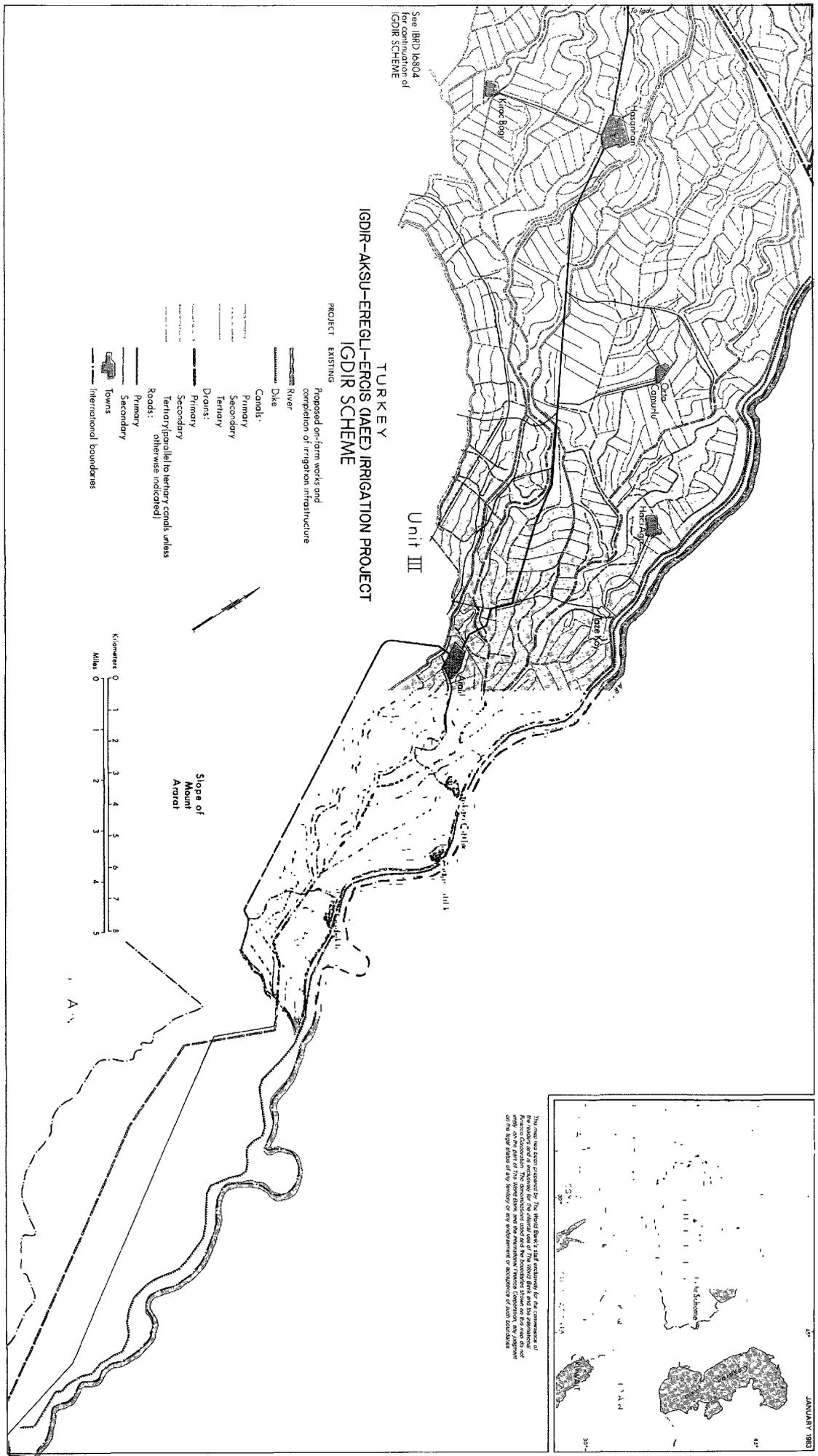
PROJECT EXISTING

-  Proposed on-farm works and completion of irrigation infrastructure
-  Rivers
-  Dams
-  Pumping station
-  Siphons
- Canals:
 -  Primary
 -  Secondary
 -  Tertiary
- Drains:
 -  Primary
 -  Secondary
 -  Tertiary
- Roads:
 -  Primary
 -  Secondary
-  Towns
-  International boundaries



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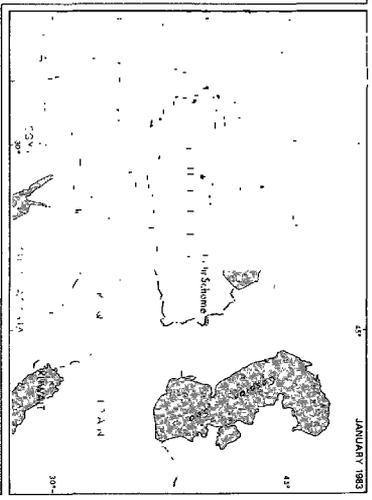
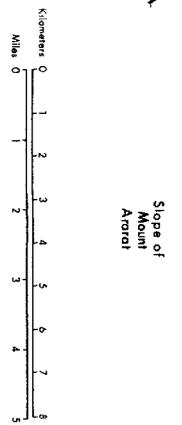




See IBRD 16804
for continuation of
IGDIR SCHEME

TURKEY
IGDIR-AKSU-EREĞLİ-ERĞİS (AĞED) IRRIGATION PROJECT
IGDIR SCHEME
Unit III

- PROJECT EXISTING
- Proposed on-farm works and
completion of irrigation infrastructure
- River
 - Dike
 - Canals:
 - Primary
 - Secondary
 - Tertiary
 - Drains:
 - Primary
 - Secondary
 - Tertiary (parallel to tertiary canals unless
otherwise indicated)
 - Roads:
 - Primary
 - Secondary
 - Towers
 - International boundaries



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