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Loan Committee - TURKEY - Sir Hydropower



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Turkey - Sir Hydropower Project - Loan Committee Project File

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# International Bank for Reconstruction and Development

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E 1231

FOR  
EXECUTIVE  
DIRECTORS'  
MEETING

For consideration on  
August 26, 1986

DECLASSIFIED

JUN 29 2022

R86-216

FROM: The Deputy Secretary

WBG ARCHIVES

August 7, 1986

## TURKEY: Sir Hydropower Project

1. Attached is the President's Report and Recommendation (P-4259-TU) on a proposed loan to the Republic of Turkey for the Sir Hydropower Project.
2. A report entitled "Turkey: The Vth Five-Year Plan in the Context of Structural Adjustment" (5418-TU) was distributed on August 6, 1985.
3. A detailed report entitled "Staff Appraisal Report: Turkey - Sir Hydropower Project" (5919-TU) is being distributed separately.
4. A draft Loan Agreement between the Republic of Turkey and the Bank and a draft Project Agreement between the Bank and Cukurova Elektrik A.S. are available from the Secretary's Department Document's Office (X76236).
5. Questions on these documents should be referred to Mr. Eschenberg (X32854).

### Distribution:

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JUN 29 2022

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Report No. P-4259-TU

REPORT AND RECOMMENDATION  
OF THE  
PRESIDENT OF THE  
INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT  
TO THE  
EXECUTIVE DIRECTORS  
ON A  
PROPOSED LOAN  
IN AN AMOUNT EQUIVALENT TO US\$132 MILLION  
TO THE  
REPUBLIC OF TURKEY  
FOR THE  
SIR HYDROPOWER PROJECT

August 1, 1986

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## CURRENCY EQUIVALENTS

Currency	Unit	Jan. 1981	1/	Jan. 1983	Jan. 1984	Jan 1985	Jan. 1986	March 1986
US Dollar	-	TL 91.00		TL 191.15	TL 309.20	TL 451.00	TL 587.00	TL 658.00
TL 1	-	US\$ 0.011		US\$ 0.005	US\$ 0.003	US\$ 0.002	US\$ 0.002	US\$ 0.002

/1 Since January 1981, the rate is being adjusted for the differential inflation between Turkey and its major trading partners.

### Fiscal Year

January 1 to December 31

## WEIGHTS AND MEASURES

kVA	=	kilovolt ampere
kW	=	kilowatt
kWh	=	kilowatt hour
GWh (Gigawatt hour)	=	1,000,000 kWh
HV	=	High Voltage
kV (kilovolt)	=	1,000 volts
MUV Index	=	Unit value index of manufactured exports in US\$
MW (Megawatt)	=	1,000 kW
MVA (Megavolt-ampere)	=	1,000 kVA
MVAR (Megavolt-ampere reactive)	=	1,000 kVAR
One meter (m)	=	3.28 feet
One kilometer (km)	=	0.624 mile
One kilogram (kg) (1,000 grams)	=	2.2 pounds
One ton (metric ton) (1,000 kg)	=	2,205 pounds
One kilocalorie (kcal)(1,000 calories)	=	3.968 BTU
toe	=	tons of oil equivalent

## GLOSSARY AND ABBREVIATIONS

CEAS	-	Cukurova Elektrik A.S. (Cukurova Electric Company)
DSI	-	Devlet Su Isleri (State Hydraulic Works)
EdF	-	Electricité de France
EIE	-	Electric Power Resources Survey Administration
KEPEZ A.S.	-	Kepez Electric Company
KfW	-	Kreditanstalt fur Wiederaufbau
LRMC	-	Long-Run Marginal Cost
MENR	-	Ministry of Energy and Natural Resources
MTA	-	Mineral Research Institute
PEE	-	Public Economic Establishment
PPF	-	Public Participation Fund
SAL	-	Structural Adjustment Loan
SEE	-	State Economic Enterprise
SPK	-	Capital Markets Board
SPO	-	State Planning Organization
TEK	-	Turkiye Elektrik Kurumu (Turkish Electricity Authority)
TKI	-	Turkiye Komur Isletmeleri Kurumu (Turkish Lignite Enterprise)
TPAO	-	Turkiye Petrolleri Anonim Ortakligi (Turkish Petroleum Corporation)

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- 1 -

TURKEY

SIR HYDROPOWER PROJECT

Loan and Project Summary

Borrower: Republic of Turkey

Beneficiary: Cukurova Electric Company (CEAS)

Amount: US\$132 million equivalent

Terms: Seventeen years including four years of grace, with interest at the standard variable rate.

Onlending Terms: The loan would be onlent to CEAS on at least the same terms as the Bank's with CEAS assuming the foreign exchange risk.

Project Description: The proposed project would support the Government's strategy of developing Turkey's indigenous energy resources and of bringing about greater involvement of the private sector in energy development. Financing would be provided for the 283.5 MW Sir Hydropower Station on the Ceyhan river; the project would also include transmission lines to connect the power station to the national grid, technical assistance and training.

Project Benefits and Risks: The project would help in developing economically and at least cost Turkey's indigenous energy resources. Although geological investigations for the Sir dam were comprehensive, there is still some risk that geological problems might appear during construction. The risk is considered manageable. Appropriate expert geological supervision would be provided. In addition, it is likely that CEAS will be restructured during project implementation. Proposals for restructuring would be discussed with the Bank.

<u>Estimated Project Cost:</u>	<u>US\$ Million Equivalent</u>		
	<u>Local</u>	<u>Foreign</u>	<u>Total</u>
<u>Hydropower Project</u>			
Land Acquisition & Settlement	20.0	-	20.0
Preliminary Works	14.8	-	14.8
Civil Works	36.5	22.7	59.2
Hydraulic Equipment	0.6	4.1	4.7
Electro Mech. Equipment	9.1	21.3	30.4
Switchyard Equipment	0.8	7.1	7.9
Engineering & Administration	8.2	5.5	13.7
Transmission Lines & Substations	7.3	21.6	28.9
Technical Assistance	<u>0.1</u>	<u>1.5</u>	<u>1.6</u>
Total Base Cost	97.4	83.8	181.2
Physical Contingencies	12.3	9.5	21.8
Price Contingencies	<u>17.4</u>	<u>20.6</u>	<u>38.0</u>
<u>Total Project Cost</u>	<u>127.1</u>	<u>113.9</u>	<u>241.0</u>
<u>Interest During Construction</u>			
IBRD Loan	-	18.1	18.1
<u>Total Financing Required</u>	<u>127.1</u>	<u>132.0</u>	<u>259.1</u>
<u>Financing Plan</u>			
IBRD	-	132.0	132.0
CEAS Internal Cash Generation	98.3	-	98.3
CEAS Share Capital	<u>28.8</u>	-	<u>28.8</u>
<u>Total</u>	<u>127.1</u>	<u>132.0</u>	<u>259.1</u>

<u>Estimated Bank Disbursements</u>	<u>US\$ Million Equivalent</u>						
<u>IBRD FY</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>
Annual	14.9	20.5	28.0	32.7	23.2	10.3	2.4
Cumulative	14.9	35.4	63.4	96.1	119.3	129.6	132.0

Economic Rate of Return: 11.5 percent

Appraisal Report: No. 5919-TU dated August 1, 1986

Maps: IBRD 19443 and 19444

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

REPORT AND RECOMMENDATION OF THE PRESIDENT OF THE IBRD  
TO THE EXECUTIVE DIRECTORS ON A PROPOSED LOAN  
TO THE REPUBLIC OF TURKEY FOR THE  
SIR HYDROPOWER PROJECT

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1. I submit the following report and recommendation on a proposed loan to the Republic of Turkey for the equivalent of US\$132 million to help finance the foreign exchange cost of the Sir Hydropower Project. The loan would have a term of 17 years including 4 years of grace, with interest at the standard variable rate. The loan would be onlent to the Cukurova Elektrik S.A. Company (CEAS) on at least the same terms as the Bank loan, with CEAS bearing the foreign exchange risk.

PART I - THE ECONOMY 1/

2. An economic mission visited Turkey in June 1982, and its report entitled "Turkey: Country Economic Memorandum, Recent Economic Developments and Medium-Term Prospects" (No. 4287-TU) was distributed to the Executive Directors in June 1983. The report of a mission to review the financial sector, entitled: "Turkey: Special Economic Report - Policies for the Financial Sector" (No. 4459-TU), was distributed in September 1983. A Bank mission reviewed the Government's Fifth Five-Year Development Plan (1985-89) in September 1984 and its report: "Turkey: The Vth Five-Year Plan in the Context of Structural Adjustment" (No. 5418-TU) was distributed in July 1985.

3. Turkey's area is about 780,000 square kilometers (i.e. about equal to the area of France and West Germany combined) with a population of around 50 million and GNP per capita of \$1200 in 1984. The density of population is low (78 per square kilometer of agricultural land), and about 47 percent live in urban centers. Population growth (2.2 percent per annum) is below the median for middle-income countries. Despite rapid economic growth in the mid-1970s as well as emigration of workers (to Western Europe and to the Middle East), there is still substantial unemployment which, including disguised unemployment in agriculture, is estimated at about 19 percent of the civilian labor force. There is, however, little or no absolute poverty, although income distribution is skewed. There are considerable regional differences in income and large rural-urban disparities. Recent data indicate a probable increase in income inequality since the 1970s, especially a relative deterioration of the position of wage and salary earners and an improvement in the position of the trading and commercial classes, and, more generally, of capital-owners. Educational enrollment has expanded greatly, but the level of adult literacy remains relatively low compared to the European average for middle income countries.

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1/ Parts I and II are substantially the same as Parts I and II of the President's Report on the Second Railway Project (P-4223-TU) dated June 11, 1986.

## Background

4. During the 1970s Turkey did not make the necessary adjustments to the shocks caused by the steep rise in oil prices, stagflation in the OECD economies, and the consequent deterioration of its terms of external trade. Until 1977 Turkey maintained high rates of economic growth by increasing public investment. The foreign exchange requirements were financed initially by workers' remittances and then increasingly by borrowing, a large part of it short-term. The rapid GNP growth came to an abrupt halt in 1977 as the massive external debt burden led to a sharp deterioration in creditworthiness, severe shortages of imports, disruptions in industrial production and a rise in unemployment. By the end of 1979, domestic inflation had also become an issue of critical importance.

5. In response to the crisis of the late 1970s, the Turkish authorities made a major shift in development strategy in 1980, moving towards outward orientation and giving an increased role to market forces. To alleviate the balance of payments constraint and import shortages, policies were adopted to expand exports, increase workers' remittances, liberalize imports, encourage foreign investment and improve external debt management. On the domestic front, the objectives were a reduction in the inflation rate, reform of the State Economic Enterprises (SEEs), a more efficient financial sector, improved resource mobilization and better selection of investments, especially in the public sector.

6. The adjustment program, which has been supported by the Bank through five Structural Adjustment Loans, an Agricultural Sector Adjustment Loan, and a Financial Sector Adjustment Loan involves far-reaching changes in attitudes, institutions, and the legal and policy framework, all of which require time to be put in place. Major structural changes have been made in the exchange rate system, the export and import regimes, the tax system, interest rate and selective credit policies and the public investment program. Implementation of the adjustment program started in January 1980, continued under a military regime during the period September 1980 - November 1983, and has since been carried out by an elected government.

## The Structural Adjustment Program, 1980-85

7. The Turkish economy has shown an impressive response to the structural adjustment program and the outcome met or exceeded the Government's own targets through 1982. The overall performance deteriorated in 1983 due to a combination of factors (slowdown of export growth, slippages in the monetary program, shortfall in Government revenues), but improved again, except in the area of inflation and the budget deficit, in 1984. The improvement was maintained in 1985, this time including a slowdown in inflation and a reduction in the budget deficit.

8. After expanding by 4.1 percent in 1981 and 4.6 percent in 1982, real GNP growth slowed down to 3.2 percent in 1983, due to the effects of a bad harvest, stagnant exports and lower workers' remittances. The growth rate rebounded in 1984 to 5.9 percent, mostly on account of favorable performance in agriculture (3.7 percent growth) and industry (9.3 percent growth). Merchandise exports also expanded strongly, by more than 25 percent in dollar terms. In 1985, according to the latest estimates, the economy grew by about 5.1 percent, as against the program target of 5.5 percent. The slowdown in

growth was most significant in agriculture (2.8 percent growth) and manufacturing (5.5 percent), due respectively to less favorable climatic conditions and slackening domestic demand. On the expenditure side, the average annual real rate of growth of public fixed investment over the period 1980-84 was 3.8 percent. Provisional estimates for 1985 indicate that public fixed investment totalled TL 3,181 billion, implying a much higher real growth (17.1 percent) over 1984 than programmed (5.8 percent). The growth of investment was concentrated in infrastructure--energy, transportation and telecommunication. The growth rate of private investment has fluctuated more severely, falling by 17 percent in 1980, recovering slowly, and then rising by 7.3 percent in 1984 and by 7.0 percent in 1985. Private consumption, after declining by 5 percent in real terms in 1980, grew by 5 percent in 1983 and 1984 before slowing down to an estimated 3.7 percent in 1985. Strict budgetary discipline contributed to a steady decline in the real rate of growth of public consumption from 8.4 percent in 1980 to 1.7 percent in 1983; however, it increased to 3.2 percent in 1984 and an estimated 3.3 percent in 1985.

9. During 1981-82, the Government met with considerable success in reducing the rate of inflation through a combination of fiscal, monetary and incomes policies. After peaking at 107 percent in 1980, the average annual rate of increase in the wholesale price index (WPI) decelerated to 37 percent in 1981 and 27 percent in 1982. In 1983 the downward trend was reversed and the inflation rate rose to 30 percent. Inflation accelerated further in 1984, and reached 50 percent, due to the lagged impact of the expansionary monetary policy pursued during the second half of 1983, and a significant increase in agricultural product prices, especially of fresh fruits and vegetables, as a consequence of export liberalization and higher export market prices. Other contributory factors included substantial "catch up" increases of SEE prices - since January 1984 most SEEs have effectively been allowed to set their prices freely - and higher import prices resulting from the nominal depreciation of the Turkish lira. In addition, inflationary pressures stemmed from a larger than anticipated budget deficit in 1984 as a result of a slowdown in the growth of revenues.

10. In 1985 inflation declined considerably -- the average annual rate of increase in the WPI fell to 43.2 percent, after reaching a very high level in the first quarter of 1985 (about 60 percent as of March 1985). By December 1985, the month-over-month change in the WPI (i.e. December 1985 over December 1984) had correspondingly declined to 38.3 percent and by May 1986 it had dipped even further, dropping to about 28 percent for the first time in two and half years. Factors causing the high inflation rate in the first quarter of 1985 were the introduction of a value added tax (VAT) in January 1985 and continued substantial increases in the prices of several key intermediate goods and inputs. Thereafter, several factors combined to lower inflationary pressures: (i) monetary growth slowed, particularly in the fourth quarter, with M2 growth declining from an annual rate of 64 percent as of September 1985 to 53 percent at year-end; (ii) by April 1985 most of the catch-up increases in the prices of SEE products appeared to have been completed and the rate of price adjustment abated considerably; (iii) the significant slide of the dollar, which started after March 1985, resulted in a

slowing down of the nominal depreciation of the Turkish lira against the dollar and therefore in smaller increases in prices of imported products than were witnessed in 1983-84; (iv) the persistence of high real interest rates (which increased as inflation declined) helped to channel liquidity towards savings rather than consumption and thus lowered aggregate demand; and (v) lower exports of certain agricultural products (cereals and pulses) meant that the domestic market was well supplied, thus easing inflationary pressures on food prices. The steady deceleration in the inflation rate, which has now continued for over 12 months, reinforces the expectation that the Government's target rate of 25 percent for 1986 could be achieved, particularly considering the large decline in world oil prices since January 1986, the continued weakening of the dollar relative to other international currencies, and the Government's maintenance of a tight monetary and fiscal program.

11. In the fiscal area, progress has been uneven. During 1980-82 the budget deficit declined from 5.3 to 2.1 percent of GNP, but increased to almost 5 percent of GNP in 1984, due mainly to a disappointing performance in raising tax revenues. In 1985, however, the budget deficit is estimated to have been TL 621 billion or 2.3 percent of GNP, a significant improvement over 1984. This is largely because the Government took several measures in 1985 to increase revenues, the most important of which was the introduction of VAT. In its first year, VAT collections amounted to about TL 1 trillion, significantly above the target. Other tax measures which were adopted included substantial increases in various fixed charges and duties and large increases in penalties for overdue tax payments. As a result of these measures, budget revenues rose from 15.4 percent of GNP in 1984 to 17 percent in 1985, reversing the downward trend in revenues over the previous three years. Government expenditures decreased from 20.3 percent of GNP in 1984 to an estimated 19.3 percent in 1985.

12. Progress has also been made in rationalizing interest rates and reforming the banking system. Since 1981, interest rates on time deposits at commercial banks have been positive in real terms. Time deposits have been yielding a positive real return since early 1984. Positive deposit interest rates have resulted in a steady growth in deposits, about 10 percent per annum in real terms in 1984 and 1985. Improvements in incentives for savings were accompanied by administrative reforms of the banking system, the enactment of a new banking law, and measures to revitalize the capital market.

13. While positive real interest rates have provided an incentive to save, they have also meant high borrowing costs. Effective nominal interest rates range from 60 to 80 percent on non-preferential credits, in part because of the impact of high liquidity and reserve requirements, the option which commercial banks have to invest in high-yielding government bonds, and high intermediation costs. The Government took a number of steps in 1985 to reduce the interest rate differentials between preferential and non-preferential credits: in particular, the preferential interest rate for export credits was discontinued in January 1985, while, during the year, interest rates for larger agricultural loans and for loans to SEEs were increased from 28 and 22 percent to 34 and 35 percent respectively. The narrowing of the gap between interest rates on preferential and non-preferential credits, together with the decrease effected in the amount of preferential credits, is expected to increase the general availability of credit and exert a downward pressure on non-preferential interest rates.

14. Improvements in the balance of payments were substantial between 1980 and 1982, with the current account deficit decreasing from \$3.3 billion (5.7 percent of GNP) in 1980 to \$1.2 billion (1.6 percent of GNP) in 1982. In 1983 the current account deficit increased to \$1.8 billion, as merchandise exports stagnated and workers' remittances fell by one-third. These developments were reversed in 1984 as exports increased by over 25 percent in dollar terms to reach \$7.4 billion. Remittances, too, registered a higher than expected increase, reaching \$1.8 billion (up by 20 percent over 1983). Merchandise imports grew by more than 16 percent to reach \$10.8 billion. As a result of these developments, both the trade and the current account deficits declined as compared to 1983. Latest estimates for 1985 indicate a further strong improvement of the balance of payments situation. Merchandise exports grew by 11.6 percent (in dollar terms) in 1985, while merchandise imports increased by 8 percent. Among the invisibles, tourism revenues and investment income from abroad increased significantly compared to 1984 and previous years. Workers' remittances, on the other hand, declined by 5 percent. The current account deficit in 1985 is now estimated at about \$1.0 billion, or about 1.9 percent of GNP.

15. Merchandise export performance has been impressive throughout the 1980-85 period, during which exports registered an average annual rate of increase of about 23 percent in dollar terms. This growth has been led by the manufacturing sector and has involved a rise in the share of exports to the Middle Eastern countries. Industrial exports, composed primarily of processed foods and textiles, have risen from 32 percent of total exports in 1980 to more than 72 percent in 1985. These results were achieved by a combination of indirect measures (flexible exchange rate policy, import liberalization) as well as direct measures (tax rebates, preferential credits) to enhance the relative profitability of exports and offset the traditional bias towards production for the domestic market. Successful penetration of the Middle Eastern markets has brought their share in total Turkish exports from 17 percent in 1980 to around 40 percent in the 1983-85 period.

16. On the import side, the 1982-83 period was marked by a relative stability in the growth of merchandise imports, as prices of both oil and non-oil imports declined, and the volume rate of growth remained moderate. In 1984, however, merchandise imports increased substantially. The increase was most pronounced in some of the groups (e.g. raw materials and consumer goods) that have been subjected to major liberalization through a lowering of tariff rates and a significant removal of quantitative restrictions. In 1985, as domestic demand eased, and the initial effects of pent-up demand for importables released by import liberalization weakened, the rate of import growth decreased to about one-half of the level recorded in 1984.

#### Medium-Term Prospects

17. The Fifth Five-Year Development Plan (1985-89), which was approved by the Grand National Assembly in June 1984, reaffirms the Government's determination to pursue an outward-oriented development strategy and to liberalize the economy by relying increasingly on market forces. The public sector is targeted to play a supportive role by concentrating its investments in infrastructure rather than manufacturing, while the private sector is to be encouraged to play a leading role in the growth of manufacturing and exports. Some of the key targets are:

- (i) an average annual GNP growth rate of 6.3 percent;
- (ii) an average annual real rate of growth of merchandise exports of 10.6 percent;
- (iii) an average annual real rate of growth of 10.9 percent in private investment and 6.8 percent in public investment;
- (iv) a declining external debt service ratio, from 26 percent in 1984 to around 18 percent in 1989; and
- (v) a decreasing rate of inflation reaching 10 percent p.a. in 1989.

18. While the overall thrust of the Plan is in accord with the goals of the structural adjustment program, the Plan targets, if viewed collectively and in the light of the developments in 1984 and 1985, appear somewhat ambitious and likely to strain domestic resources (especially in the public sector) as well as have an adverse impact on the external balance. Accordingly, the Government is adjusting the annual programs to ensure that they remain compatible with the fight against inflation and with a growth strategy commensurate with the Government's ability to generate resources.

19. The recent decline in international oil prices is likely to have a favorable impact on Turkey's balance of payments. The Bank's projections presented below take into account the most recent decline in oil prices. The analysis shows that the savings from direct petroleum imports alone could be about \$1.3 billion in 1986. The favorable direct impact would be offset to some extent by lower export growth to oil-exporting countries (which account presently for about 40 percent of Turkey's exports) as well as lower profit and workers' remittances from construction activities in these countries. However, a compensating increase in Turkish exports to, and workers' remittances from, OECD countries on account of a more favorable OECD growth outlook is likely in the medium term. Our estimate puts the net positive impact of the oil price decline on Turkey's balance of payments at about \$400 million in 1986. There would be indirect benefits as well in the medium term, including a reduction in the cost of debt servicing as a consequence of a decline in inflation and interest rates in OECD countries. An improvement in the balance of payments would give the Government the option of repaying its external debt sooner, thus improving Turkey's debt service ratio in the coming years, or using the extra resources to support a faster growth strategy. Given the uncertainty associated with the oil price projections, we have been cautious in revising GDP growth targets significantly at this time, in order to emphasize inflation control and a greater build-up of foreign exchange reserves.

20. The Bank's projections indicate a GDP growth of 5.9 percent p.a. on average for the 1986-90 period. At the beginning, growth might be relatively slow (5.3 percent p.a.), gradually accelerating in the outer years to an average rate of 6.1 percent p.a. in 1987-90. The inflation targets in the Bank's projections are also more conservative compared to the Plan targets, implying a reduction from about 43 percent in 1985 to around 18 percent in 1990. Key economic variables in the Bank's projections for the period 1986-90 are presented in Table 1.

Table 1: TURKEY - SELECTED ECONOMIC INDICATORS, 1984-90

(Base Case)

	Units	1984 (Act.)	1985 (Est.)	1990 (Proj.)	Real Growth Rate /a (%)		Average Real Growth Rate (%) 1985-90
					1984	1985	
GDP /b	1985 TL bil	25672.5	26920.2	35466.8	5.8	5.1	5.7
Agriculture	"	4621.9	4728.2	5481.3	3.5	2.8	3.0
Industry	"	7138.1	7605.6	10820.4	9.3	5.5	7.3
Services	"	12443.2	13040.5	17156.4	5.8	4.4	5.6
Consumption	"	21578.3	22389.6	29274.5	4.8	3.7	5.5
Fixed investment	"	4661.2	5260.4	6742.1	3.8	12.9	6.5
Exports of goods (fob)	Curr \$ mil	7389.0	8255.0	18127.6	34.6	12.1	8.5
Imports of goods (fob)	"	10331.0	11230.0	21567.7	18.0	5.3	7.8
Trade balance	"	-2942.0	-2975.0	-3440.1			
Workers' remittances	"	1807.0	1714.0	2741.8			
Current account balance	"	-1426.0	-1013.0	-809.0			
<b>Ratios</b>							
Investment/GDP	%	20.2	19.8	20.5			
Domestic savings/GDP	%	15.5	16.0	18.3			
Exports of goods/GDP	%	14.0	15.0	17.1			
Current acct. deficit/GDP /c	%	2.7	1.9	0.8			
Debt service ratio /d	%	26.0	31.3	21.2			
Public fixed investment/ total fixed investment	%	59.0	58.8	51.8			
<b>Memo item:</b>							
Gross capital required	Curr \$ mil	4627.3	3894.8	4507.4			

/a Growth rates have been revised to incorporate recently available information and therefore may not be consistent with nominal estimates.

/b At market prices. Components are expressed at factor cost.

/c Based on constant TL.

/d Total debt service (excluding short-term)/exports of goods and NFS plus workers' remittances.

21. Achievement of these growth rates will depend primarily on the performance of agriculture and manufacturing. This in turn will depend to a large extent on the Government's determination to constrain the growth of the public sector in line with resources and to create a more favorable investment climate for the private sector. This translates into a projected real growth in public fixed investment of about 3.9 percent p.a. on average for the 1986-90 period. In light of the developments in 1985, this implies a much tighter control of public investment. The comparable figure for the growth of private fixed investment is 10.6 percent p.a. The projections allow for a modest increase of per capita consumption of slightly above 3.0 percent p.a. on average over the period 1986-90.

22. Merchandise exports are projected to grow at an average rate of 8.1 percent per annum in real terms during 1986-90. This assumes the maintenance of a realistic exchange rate, further import liberalization and the ability of Turkish exporters to take advantage of higher expected growth in the OECD market. Merchandise imports are projected to grow at an average annual rate of 7.4 percent. This is consistent with the import liberalization program of the Government. On these assumptions, the current account deficit is projected to decrease to \$927 million in 1990 as compared to an estimated 1985 figure of \$1,013 million. The projected capital account would remain manageable throughout the period, even in the face of some sharp increases in amortization payments arising from the debts rescheduled during 1978-80.

23. The medium-term scenario presented above is, of course, only one of many possibilities and is used specifically to illustrate Turkey's potential in the light of the Government's own development strategy. Given Turkey's progress in the structural adjustment program, the favorable response which this has evoked from the international financial community, and the present outlook for both lower oil prices and a decline in interest rates, the GNP growth projected in the medium-term base case scenario could be exceeded if the current account deficit is lowered and there is an improvement in the mobilization of public resources.

24. In view of the sensitivity of the projections to the assumptions regarding export growth, a downside risk case has also been developed. With Turkey's export performance heavily dependent on exogenous factors such as the world economic conditions and movements in international prices, a slower growth of merchandise exports (an average of about 6 percent p.a. over the 1986-90 period) coupled with lower mobilization of public resources (3 percent lower revenues than envisaged under the base case scenario) would lead to a more difficult but still manageable balance of payments situation, a lower GDP growth (averaging about 4.7 percent p.a.) and a higher debt service ratio. In such a situation the Government would have less chance of absorbing the unemployed and improving tangibly the average standard of living. However, if the Government in such circumstances were to resort to a high growth strategy, then it could witness a repeat of the situation which prevailed in the 1970s, and which led to a debt crisis. It is unlikely that the Government would risk such a situation. It is therefore more probable - even if exogeneous developments are unfavorable - that the Government would continue with the structural adjustment program as implemented to date.

### External Debt and Creditworthiness

25. At the end of 1978, Turkey had \$7.2 billion in short-term debt and \$7.0 billion in medium and long-term debt. Between 1978 and 1980, Turkey rescheduled some \$9.2 billion of outstanding obligations through a series of rescheduling arrangements concluded with official and commercial creditors. Following the resolution of the debt crisis, inflows were mostly from official sources -- OECD countries, the World Bank and the IMF. Since 1983 commitments from commercial banks have outstripped those from official sources and have reached an estimated level of \$2.4 billion by end-1985. Of the estimated total debt outstanding of \$25.4 billion (including IMF) at end-1985, medium and long-term debt accounted for about 75 percent. Short-term debt as a percentage of total debt outstanding fell from 51 percent in 1978 to about 11 percent in 1982, then increased to an estimated 25 percent in 1985. Much of this growth in the stock of short-term debt is due to the inflows associated with the Dresdner Bank scheme. <sup>1/</sup> At end-1985, the outstanding liabilities associated with the Dresdner scheme amounted to \$2.7 billion, constituting 40 percent of short-term external obligations. Inflows from the Dresdner scheme have been steadily growing with few withdrawals, which is clearly a reflection of increased confidence in the Government's economic policies. The Government is sensitive, however, to the build-up of short-term debt and intends to limit its share of total debt in the medium term to the present level. Based on the growth scenario outlined in paras. 19-22, debt outstanding and disbursed as a percentage of GDP is projected to fall from an estimated 46 percent in 1985 to 38 percent in 1990. This translates into a forecast of total debt outstanding in 1990 of \$31 billion, with short-term debt constituting about 26 percent of the total.

26. The debt service ratio for medium and long-term credits increased from about 26 percent in 1984 to an estimated 31 percent in 1985, mostly as a result of large repayments of rescheduled debt falling due. Debt service obligations are expected to be on average about \$4.3 billion a year during 1986-90, a quarter of which is attributable to service obligations on rescheduled debt. However, the debt service ratio is projected to decrease to about 25 percent in 1990, due largely to improvements in the current account of the balance of payments. The debt burden should remain manageable provided current policies are successfully implemented, the export drive is sustained, and Turkey continues to receive support from international commercial and official sources. Confidence in Turkey's overall economic performance, its stable record in meeting debt servicing obligations and its improved debt management, encouraged commercial banks to commit about \$1.9 billion of medium-term credits in 1985. In the first quarter of 1986, nearly \$500 million out of a total of \$700 million borrowed from commercial banks consisted of medium and long-term loans. Several major American, European, Japanese and Middle Eastern banks have been involved in these operations.

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<sup>1/</sup> Under this scheme the Dresdner Bank collects deposits from Turkish workers in West Germany and automatically places these funds at the disposition of the Central Bank of Turkey, which guarantees the deposits and pays an interest rate commensurate with the Euro-market rate.

27. Turkey's economic program has been supported by the IMF through a series of standby arrangements during 1980-84. The Government did not ask for a new standby in 1985. The Government's decision seems to reflect the view that the favorable economic developments in 1985 indicate that Turkey has "graduated" from the IMF's program and that the IMF presence through Article IV consultations and periodic staff visits to review the economic performance should suffice for purposes of maintaining international confidence.

## PART II - BANK GROUP OPERATIONS IN TURKEY

28. Through March 31, 1986 the Bank and IDA have lent \$6740.7 million 1/ to Turkey, through 92 projects. Agriculture accounts for 23 percent of the funds lent, industry and DFCs for 22 percent, power for 18 percent, structural adjustment and program loans for 25 percent, and urban development, transportation, education, tourism and technical assistance for the remaining 12 percent. Disbursements for all sectors combined averaged 62 percent of appraisal estimates at the end of March 1986, which compares favorably with other countries in the region. As of March 31, 1986, IFC commitments to Turkey totalled about \$254 million, of which about \$69 million were still held by IFC. Annex II provides a summary statement of Bank loans, IDA credits and IFC investments as of March 31, 1986.

29. Bank lending is aimed at supporting Turkey's medium-term objectives of restructuring the Turkish economy by placing more reliance on market forces and adopting a more outward-oriented strategy. The main vehicle for the Bank's operational discussions with the Government has been the structural adjustment lending (SAL) program, which was completed in June 1984, and more recently the sectoral adjustment lending program. Significant progress has been achieved in the last five years, but the task of restructuring is by no means over. The current Five Year Plan involves the broadening and deepening of the adjustment process at the sectoral level. Recent economic developments have underlined the need for a continuation of the stabilization program without giving up the goals of sectoral adjustment. Hence the emphasis of Bank lending in the post-SAL period will continue to be on striking an appropriate balance between sectoral adjustment lending designed in part to be quick disbursing and supportive of policy reforms in the major sectors, and carefully formulated project lending focussing on high priority projects principally in the agriculture, energy, industry and transport sectors.

30. A series of sectoral adjustment loans for the major sectors is planned over the next few years. A first loan for agriculture was approved in June 1985. A financial sector adjustment loan approved in June 1986 is the second of the series. Further lending of this kind would support measures to enhance the utilization of industrial capacity in the public and private sectors, keeping in view the scope for the "privatization" of publicly-held assets in the manufacturing subsectors. Other sectors where sectoral adjustment loans are likely to be developed include energy and transport, and it is expected that there would be a follow-up loan in agriculture.

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1/ Net of cancellations.

31. Project lending, which would continue to make up the majority of the lending operations, would be designed to support and strengthen the adjustment process. Some project lending would be earmarked for the construction or rehabilitation of key projects in the energy sector. Other projects would be guided by the major policy objectives of the Government, which include generation of foreign exchange (including improving productivity in export industries and providing essential infrastructure for exports), improvement of institutional efficiency, non-inflationary output growth and amelioration of the social costs of adjustment (including provision of social infrastructure and employment generation, with some emphasis on the least developed provinces in Eastern Turkey).

32. This would be the second loan to Turkey presented to the Executive Directors in this fiscal year. Other proposed loans being processed include vocational training, water supply and sewerage, urban development, and an energy sector adjustment loan.

33. Turkey's debt burden is projected to remain manageable throughout 1986-89 (paras. 25 and 26). The Bank Group's share of Turkey's total external debt was 14 percent in 1984, is estimated at 14.4 percent in 1985, and is expected to grow to about 20 percent by 1989. Official debt outstanding is projected to increase from \$11.0 billion in 1984 to \$14.7 billion in 1989 and private medium and long-term debt outstanding is projected to increase from \$5.2 billion in 1984 to \$7.5 billion in 1989. The Bank group's share of total debt service payments is projected to increase from about 12 percent in 1983 to an estimated 13 percent in 1984, and to about 18.6 percent in 1989.

34. IFC has invested in synthetic yarns, textiles, pulp and paper, glass, aluminum, cement, iron and steel products, heavy diesel engines, motor bicycle engines, piston rings, food processing and tourism. It has also invested in the Industrial Development Bank of Turkey (TSKB) and provided guarantees for overseas contracting firms. In addition, IFC is currently providing technical assistance to the Government with respect to the development of the capital market and a regulatory framework for leasing.

### PART III - THE ENERGY SECTOR AND THE POWER SUBSECTOR

#### Energy Resources

36. Turkey has substantial untapped lignite and hydropower resources, as well as more limited, but still important, oil, gas and coal resources and geothermal potential. Hydropower with potential economic viability is estimated at about 29,500 MW under average hydrological conditions and corresponds to an annual production of about 100,000 GWh. Only 15 percent has been developed so far, but this is projected to rise to about 30 percent by 1990. Proven recoverable reserves of oil are about 16 million tons; however, potential reserves that may become economically recoverable, using enhanced oil recovery techniques currently being tested, could be as high as 30 million tons. Oil production has been declining over the last decade, as few discoveries have been made in recent years; in 1984 production was about 2.2 million tons, equivalent to 12 percent of total consumption. Proven recoverable gas reserves are about 400 billion standard cubic feet. Domestic gas is expected to be supplemented by large scale imports of natural gas from the U.S.S.R.

37. Total known reserves of hard coal are estimated at about 1 billion tons, all located in the north of Turkey. Coal production has been declining as operations move to deeper, less accessible seams; in 1984 production was 3.5 million tons (2.2 million toe). Proven and probable lignite reserves are about 8 billion tons, but about half of this is of extremely low quality (950-1,000 kcal/kg). Lignite production in 1984 was about 25 million tons, equivalent to about 6.9 million tons of oil. There is potential for geothermal development, for both space heating and electricity generation, and a review of promising geothermal sites is under way.

#### Energy Consumption and Supply

38. Total gross energy consumption was about 40.5 million toe in 1984, of which commercial energy consumption amounted to 32 million toe. Petroleum made up the most significant share of primary commercial energy (57 percent), with lignite (20 percent), hydropower (11 percent), coal (11 percent), asphaltite and imported electricity making up the balance. Overall, about 23 percent of final commercial energy consumption was in the form of electricity. Non-commercial energy production (primarily fuelwood, but also other biomass) was an important energy source, accounting for 29 percent of total domestic energy production. The most notable change in the pattern of energy consumption over the past two decades has been the decrease in the relative share of hard coal in the total. This was accompanied by a rapid growth in consumption of petroleum until the mid-1970s reaching 50 percent in 1977/78; and a rapid rise in the share of lignite (primarily for thermal power production) and hydroelectric power consumption starting in the second half of the 1970s. During this period, hard coal consumption stayed relatively constant in absolute terms, while traditional biomass energy sources increased slightly in absolute terms but decreased steadily as a percentage of total energy consumed.

39. Trends observed in the growth and pattern of energy consumption during the latter part of the 1970s are expected to continue during the 1980s and 1990s. The most important factor in the growth of energy demand will be the growth rate of the economy as a whole and the growth of the relatively energy-intensive industrial sector. The demand for lignite is expected to grow rapidly, both for direct consumption by households and industry and, even more importantly, for the power sector.

#### Organization of the Energy Sector

40. The energy sector in Turkey is characterized by the dominance of Government owned enterprises and agencies. The Ministry of Energy and Natural Resources (MENR) is responsible for the development of energy resources in Turkey. The Turkish Hard Coal Enterprise (TTK), the Turkish Lignite Enterprise (TKI), the Turkish Petroleum Company (TPAO), and the Mineral Research Institute (MTA) have responsibility for the extraction of fossil fuels and radioactive minerals. Design and construction of hydroelectric projects is entrusted to the State Hydraulics Authority (DSI). The Turkish Electricity Authority (TEK) is responsible for the generation, transmission and, since November 1982, the distribution of almost all the electricity sold in Turkey. TEK is also responsible for the implementation of the Government's program for rural electrification and the construction of all public sector generating and transmission facilities, with the exception of public sector hydroelectric plants for which DSI has responsibility.

41. Private sector participation in the supply of electricity has until now been confined to two private utilities (CEAS and KEPEZ) and industrial companies which generate power for their own use. However, recent changes in Government energy policy give greater encouragement to private sector participation in the development and production of energy (para. 43). The Government is actively seeking ways to encourage both local and foreign private sector participation in geothermal development, lignite mining, hydroelectric projects and the construction and operation of power plants fired by imported fuels.

#### Energy Sector Policy

42. To meet its energy requirements, Turkey launched a massive program in the late 1970s to increase the domestic production of electricity and lignite. This program tended to stretch the implementation capabilities of the State energy agencies, and spread resources too thinly over too many projects, with resulting long delays in completion schedules. This has, in turn, resulted in an energy deficit which is likely to remain a feature of the Turkish economy at least through the 1980s. MENR and TEK are in the process of improving their energy planning capabilities; and MENR has produced Turkey's first energy policy paper. Furthermore, the current Five Year Development Plan (1985-89) contains some broad objectives relevant to the energy sector including the following:

- Priority is to be given to domestic sources of energy, especially hydropower and lignite, provided that they are economically justified;
- Imported energy including, but not limited to, oil will be considered;
- Renewable and nonconventional resources such as geothermal, solar and biogas will be supported; and
- Private sector financing, both local and foreign, will be sought for participation in energy development.

43. Two features of Government policy represent a departure from previous energy policy. The first is that Government policy is now quite clearly to encourage private sector participation in the energy sector. There are no longer constraints to private sector electricity generation, and existing private utilities like KEPEZ and CEAS have plans to increase their capacities. In addition, the Government is currently negotiating with private consortia which would assemble financing, and construct and operate for a specific period (10-15 years), thermal plants based upon imported fuels. The second shift in policy focus is increased concern that indigenous resources be developed only when economically justified. Improving efficiency in the lignite mining subsector, at least to levels at which marginal production costs are competitive with imported coal, or conversely abandoning mining ventures if such economies cannot realistically be achieved, has become a major energy policy objective for the Government.

44. A less explicit but no less important component of the Government's energy policy relates to the pricing of energy products. Regular increases in the prices of petroleum products to maintain them at economic levels have been a feature of the Government's pricing policy for the past five years. Electricity tariffs have been increased sharply since early 1984. As of April 1986 bulk power tariffs were roughly at the level of long run marginal cost. Prices of petroleum products are being maintained at international levels. Lignite prices, which had shown a threefold increase in real terms in the seven years preceding 1983, declined slightly in real terms in 1984. Since 1984 they have gradually increased in real terms.

45. The Government is also in the process of developing a program for the conservation of energy by encouraging more efficient use in existing and new industrial enterprises. Energy efficiency programs and legislation have been evaluated by both the MENR and SPO, and legislation has been passed which allows for tax credits for various types of investments in energy efficiency improvements. The Bank included financing of energy audits in selected manufacturing facilities under Loan 1916-TU. These audits have been completed and are under review. TEK has engaged consultants to assist in the development of an energy conservation and load management program. MENR has requested Bank assistance in the development and implementation of a comprehensive energy conservation program.

#### Electricity Supply and Demand

46. The present installed power capacity in Turkey is about 8,500 MW of which 4,500 MW (53 percent) is thermal and the balance hydro. The share of hydroelectric power has increased sharply. It was about 33 percent in 1972. On the thermal side, lignite has made an increasing contribution to the production of electricity. Total net generation in 1985 was about 27,500 GWh, of which TEK accounted for almost 90 percent. Imported electricity from Bulgaria and the U.S.S.R. accounted for about 3,000 GWh. Total availability was less than the potential effective demand. There is considerable evidence that power shortages have caused cutbacks in production in industries such as cement, textiles and paper. In addition to the capacity constraint, the high level of total system losses (technical losses plus energy unaccounted for), estimated at about 20 percent, contributed to the supply shortages.

47. Growth in demand for electricity averaged about 9 percent per annum over the period 1965-1985. Between 1970 and 1983, the percentage of population with public electricity supply rose from 51 percent to 78 percent. Per capita consumption of electricity is currently about 550 kWh. TEK's latest long-term generation plan (1987-2005) is based upon a projected overall growth in electricity demand of about 10 percent per annum till 1990 and a growth of 8% per annum beyond 1990.

48. For more than two decades the Turkish power subsector has been confronted with major problems. Electricity supply has been insufficient to meet demand in every year since 1971, resulting in high costs to the economy as imports increased and supply interruptions continued. Many of the issues facing the subsector can be traced to institutional problems in the public sector agencies responsible for planning and implementing the subsector's investment program. This has resulted in project delays, consequent substantial cost escalations, power shortages, frequent and protracted plant

breakdowns due to inadequate maintenance, and relatively high system losses, especially in the urban networks. The shortage of qualified staff in TEK resulted in resources, human and financial, spread too thinly over too many projects in the investment program.

49. The Government agrees that closing the supply gap will require a sustained coordinated effort by the major agencies in the subsector. It plans to emphasize increased supply in parallel with managing demand and improving efficiency of existing facilities. To illustrate the magnitude of the task, it should be noted that Turkey would have to bring on stream three times more power generating capacity in the 1980s than in the 1970s and that the momentum would have to be sustained throughout most of the 1990s. TKI and DSI will have to meet their respective production targets commensurate with TEK's plans. Even if a lower growth rate in electricity demand is assumed, and optimistic assumptions are made about the sector's implementation capacity, except for 1986 and 1987 some power shortages are likely to continue throughout the 1980s.

#### Bank's Role in the Power Subsector and Experience with Past Lending

50. The proposed project would be the twentieth Bank operation in the power subsector in Turkey. The Bank has made fifteen loans and a technical assistance grant (total \$1131.7 million) and IDA has granted three credits (total \$55.7 million) for five hydroelectric projects, two thermal power stations (oil- and lignite-fired), a lignite mine and several transmission and distribution networks. The technical assistance grant helped reorganize Turkey's power subsector. All these projects were completed successfully, although often with long delays.

51. A Project Performance Audit Report (PPAR) distributed to the Board in November 1981, 1/ on the Keban Transmission (Loan 568-TU) and the first TEK Power Transmission (Loan 763-TU) projects, found that these projects had met their physical objectives despite implementation delays and cost overruns. A Project Completion Report on the Istanbul Power Distribution Project (Loan 892-TU), distributed to the Board in December 1982, 2/ also reported physical completion of the project after considerable delay. Major problems identified were the shortage of local counterpart finance and late preparation of bidding documents. The PCR on Loan 1194-TU commented on the need for improvement in the monitoring and coordination of the project. The report recommended the establishment of a project implementation unit within TEK. Such units are now regularly used in Bank financed power projects in Turkey.

52. Through its lending the Bank has been able to assist the Government in the consolidation of the power sector and in the establishment of TEK. The Bank has also provided advice and supported efforts to bring about other institutional reforms. Considerable progress has been made in areas such as TEK's system planning and procurement procedures. The Bank has also assisted in attracting funds from other bilateral and international financing agencies and from commercial banks. Recently a B-loan of \$350 million was arranged for the partial financing of the Kayraktepe Hydropower Project (Ln. 2655-TU).

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1/ No. 3695, dated November 23, 1981.  
2/ No. 4264, dated December 29, 1982.

### Planned Strategy for Assistance to the Sector

53. Sector policy discussions, which recently have been held twice a year with the Government and energy sector agencies, have provided a valuable forum to discuss the issues and constraints facing the sector. Detailed agency by agency action programs are being prepared and will be discussed with the Bank. Future Bank lending in the sector would be based on these action programs.

54. For the electric power subsector the Government will emphasize (a) investments which yield quick returns, such as completion of priority ongoing investments, upgrading of existing facilities, reduction in losses, and improvements in maintenance procedures and efficiency; (b) programs to ensure a balanced electric power development program through appropriate investment in generation, transmission, distribution and general plant; (c) improved demand management including identification of energy saving investments and enactment of energy conservation legislation; (d) technical assistance to strengthen capabilities in planning, financial management and manpower development; (e) investments in new generation options such as those based upon imported coal and natural gas; and (f) an increased role for the private sector in the production of electricity.

55. The Government has identified a series of investments which would address the above medium-term issues. The size and structure of Turkey's 1986 power sector investment program and the investment strategy proposed for subsequent years seem consistent with the goal of meeting Turkey's electricity needs economically. The Bank will continue to have opportunities to express its views on future energy sector investment programs.

### PART IV - THE PROJECT

56. The proposed project would support the Government's strategy of developing economically Turkey's indigenous energy resources. The project was identified in March 1984 and appraised in June/July 1985. Loan negotiations were held in Washington from May 28 to July 8, 1986. The Turkish delegation was headed by Mr. Hikmet Ulugbay, Chief Counselor for Economic and Commercial Affairs in the Turkish Embassy and included representatives of the Treasury and CEAS. A Staff Appraisal Report entitled "Sir Hydropower Project" (No. 5919-TU) dated August 1, 1986 is being circulated separately to the Executive Directors. The main features of the project are given in the Loan and Project Summary and in Annex III.

### Project Description and Rationale for Bank Involvement

57. The project would help support the Government's strategy of reducing Turkey's electric power deficit through, inter alia, developing economically Turkey's indigenous energy resources and helping to bring about greater involvement of the private sector in the energy sector. The Bank would serve as a catalyst; through providing financial and technical assistance, it would enable CEAS, a relatively small power company, to finance, construct and operate a major power plant without direct recourse to public funds and

without imposing an administrative burden on the Turkish Electricity Authority (TEK), which is itself preoccupied with the implementation of a major investment program. The project would consist of the following components:

- (a) construction of a thin concrete double curvature arch dam (120 m high above the foundation and with a crest length of 325 m) at Sir on the Ceyhan River to form a gross storage reservoir capacity of 1,120 million m<sup>3</sup>, spillway, bottom outlet and intake structures, a powerhouse with three 94.5-MW vertical Francis turbine generator units, and a switchyard with SF6 switchgear and gas insulated busbars, including associated consultancy services and the carrying out of a resettlement program, or provision of idemnification, as required for about 7,000 people currently living in areas to be affected by the project, including provision of alternative adequate housing and other community and infrastructure facilities.
- (b) transmission line facilities to interconnect the Sir powerhouse with TEK's 380-kV grid, and subtransmission lines and substation facilities to efficiently transmit the Sir generation to the load centers in the CEAS service area; and
- (c) technical assistance for studies to improve the existing facilities of CEAS (Mersin, Seyhan and Kadincik II power stations); and a regional power transmission study including "wheeling" of power over the national grid system, training, procurement of training equipment and upgrading of existing computer facilities.

#### Cukurova Elektrik A.S.

58. CEAS is a limited liability company which supplies electricity within the Cukurova region in Southern Turkey, which includes the fertile and highly developed Cilician plain and covers the provinces of Icel, Adana, and Hatay plus a number of villages in the Kahramanmaraş Province (to the east of Adana province) which surround the Sir project site. CEAS was granted a concession in 1953 for the supply of electricity in the region. It was initially formed to operate the power portion of the multipurpose Seyhan Project, which was completed in 1956 with the help of the Bank (Ln. 63-TU). CEAS presently operates five generating plants. In 1983 CEAS received the approval of SPO and MENR to build the Sir Hydropower Project and the Duzkesme-Berke Hydropower project downstream.

59. CEAS has applied to become a regional utility, as provided for under Law 3096 of 1984. The Government confirmed during negotiations that it expects CEAS' application to be approved, subject to a satisfactory outcome to negotiations between MENR and CEAS. If the application is approved, CEAS would be restructured as a fully integrated regional utility, possibly taking over all generation, transmission and distribution facilities in the Cukurova region. If CEAS becomes a regional utility, its operating revenues would increase through direct electricity sales to retail customers. On the other hand, CEAS would incur increased operating and maintenance expenditures related to the distribution network, which would also require major investments for rehabilitation and expansion. The possible terms for transferring to CEAS other generating plants in the region (all hydroelectric) have not yet been determined. Agreement was reached during negotiations that the Government and CEAS would exchange views with the Bank in respect of any

proposals leading to the restructuring or reorganization of CEAS. An additional remedy has been included in the event that any action is taken which may have an adverse impact on the project.

60. CEAS presently has an authorized share capital of TL 15 billion of which TL 3.6 billion is paid in. While the Government, through TEK, is the largest single shareholder, TEK's shares account for only one quarter of the total capital. Individual investors, trade associations, banks and insurance companies, and other private firms own the majority of the stock. CEAS's present installed capacity is 298 MW, of which 192 MW (64%) is hydro. The generating facilities consist of: (i) the 60-MW Seyhan hydroelectric plant; (ii) the 70-MW Kadincik I hydroelectric plant; (iii) the 56-MW Kadincik II hydroelectric plant; and (iv) a 106-MW oil-fired steam plant at Mersin. In addition, CEAS operates a 6-MW hydropower station at Yuregir for which it pays an annual rental fee to DSI.

61. In 1985 total net generation by CEAS amounted to 1,394 GWh, compared to a regional electricity consumption of 2,800 GWh (representing about 10% of the national electricity consumption) and a peak demand of 502 MW. Because of earlier restrictions placed on CEAS's ability to construct new generating facilities, it purchases electricity increasingly from TEK to meet demand in its concession area. CEAS has been a net purchaser of electricity since 1978. In 1985 TEK's supply accounted for 57% of the energy supplied to the regional network.

62. Peak load and electricity consumption in CEAS's concession area increased at an average rate of 9.1% over the past ten years, mainly as a result of the region's rapid economic growth. However, actual consumption has been consistently lower than potential effective demand, estimated to be about 10% higher. Power shortages at the regional level are a reflection of the pervasive energy deficit observed at the national level as TEK has been unable to supply all the electricity needed by CEAS to complement its own generation.

63. About 200 industrial customers account for over half of the regional electricity consumption. The largest industrial customer in the region is the Iron and Steel Works at Iskenderun (Isdemir), accounting for over 16% of regional industrial consumption. This plant has its own generation capability, but no longer has surplus energy to sell to CEAS. Other major industrial consumers include textile, cement, and food processing plants. The remaining share of available bulk supply is then sold by CEAS to TEK's Toroslar Distribution Enterprise for retail distribution. On TEK'S behalf, CEAS prepares bills for electricity sales to about 200 villages and municipalities, but does not collect directly from these retail customers. Despite the region's rapid industrial development and accompanying urbanization, about half of the population is still classified as rural, and of these, almost 90% are connected to the electricity grid as compared with only 50% in 1975. Overall for the region, almost 95% of the population has access to electricity, which is high compared to some other regions in Turkey.

64. CEAS's planning department has prepared a 10-year forecast of electricity demand in the Cukurova region and carried out an extensive sensitivity analysis. It is expected that electricity demand will grow at an average rate of 10% per annum over the 1986-1994 period, with industry's share in the total remaining constant at about 60%. Net sales to the Cukurova region are expected to reach 6,312 GWh by 1994 (as compared to 2,800 GWh in 1985) and peak demand 1,102 MW.
65. The proposed Sir hydropower plant, to be commissioned in 1991, would be CEAS's only new generating capacity coming on stream during the 1986-1994 period, in addition to the possible rehabilitation of the Mersin plant and its conversion to combined cycle operation. Generation from Sir (projected at 725 GWh per annum without irrigation) would partially meet the increase in electricity demand. The remaining deficit would have to be met by additional transfers from TEK through the national grid. By 1990, purchases from TEK are expected to represent 73% of the energy supplied to the regional network, but this share would decrease after Sir is commissioned. CEAS's ten-year forecast balance of energy and capacity for the Cukurova region has been communicated to MENR and TEK for use in the preparation of the national forecast balance of energy and capacity. However, there is no contract between TEK and CEAS concerning their annual exchanges of electricity. Instead, MENR collects information from both utilities on the expected available supply and then issues instructions to CEAS and TEK on the amount of electricity which in principle should be exchanged between them during the year. However, in the event of power shortages at the national level, CEAS remains subject to load-shedding measures to the same extent as other regions in Turkey.
66. Primarily a wholesaler of power, CEAS operates a transmission grid down to the 15-kV voltage, plus some of the 6-kV lines in the region. Altogether CEAS owns and operates about 2,200 km of transmission and distribution lines at 154, 66, 30, 15 and 6 kV. The operation of the CEAS power system is controlled from a telephone-operated dispatch center at Seyhan. However, there is inadequate coordination between TEK and CEAS regarding optimization of the generation scheduling and planned plant outages. Under the proposed project, technical assistance would be provided to identify the requirements for improving CEAS's load dispatch operations and their interface with TEK's system. Losses on CEAS's network are reasonable, amounting to about 4% of the electricity supplied.
67. The 380-kV substations and lines within the Cukurova region are part of the national power grid owned and operated by TEK. CEAS interconnects with this 380-kV grid at TEK's Erzin substation. Two additional interconnection points at the 154-kV level exist at the Toroslar and Osmaniye substations. TEK will construct an additional 380/154-kV substation at Adana, which is being built under the Bank financed Fourth TEK Transmission Project (Loan 2586-TU). The distribution system within the CEAS concession area is owned and operated by TEK, through the Toroslar Distribution Enterprise, which is one of eighteen regional distribution enterprises formed in 1982 when the responsibility for retail sales was transferred from the municipalities to TEK.

## Implementation

68. CEAS would be responsible for project implementation.

## Land Acquisition and Resettlement

69. The laws and procedures relating to resettlement have been reviewed and are considered to contain adequate provisions to protect the rights of the population to be resettled. Land needed for public purposes may be acquired compulsorily in Turkey in accordance with the Expropriation Law of 1983. This is a three-step procedure. Firstly, the project agency offers to purchase the land from the landowner through normal negotiations for the sale and purchase of land. In the event the landowner does not wish to sell, a notice is filed for compulsory acquisition in the public interest pursuant to the 1983 Expropriation Law. Under the Law, a permanent committee in each province--consisting of local representatives, land experts and members of the administration--determines the value of land in such cases. Land values are determined at market value. In the event there is disagreement, the third step is to take the matter to the courts. There are, in addition, procedures for resettlement of displaced populations. Landowners are given the option either to be resettled or to take cash compensation. Usually, it is the Resettlement Department of the Ministry of Agriculture, Forestry, and Rural Affairs (MAFRA) that makes available other land for displaced populations. The cost of resettlement is borne by the project agency. Current resettlement procedures specify that dam construction and resettlement should be carried out in a coordinated manner and that priority should be given to the resettlement of people whose land would be submerged due to dam construction. In view of the delicate and sensitive issues associated with the resettlement operations, the Prime Minister has ordered the various agencies involved to fully cooperate with MAFRA in finalizing resettlement issues quickly.

70. The Sir Dam reservoir covers about 48 km<sup>2</sup> of surface area and would affect nine villages having about 7,000 inhabitants (about 1800 families) in houses which are mostly built with sun-dried bricks, stones, and briquettes. The farms in the reservoir area consist of small scattered pieces of land, and their produce is mostly for their own consumption. About 5,000 hectares of land will need to be acquired for the project. CEAS has agreed to acquire the necessary land in accordance with a time table agreed with the Bank. CEAS has been preparing detailed surveys of the many smallholdings in the project area for the last year and this work is continuing. This land includes 1,400 hectares of arable flat land, mostly devoted to maize and cotton, and 1,900 hectares of arid land or steep slopes. Forest covers around 600 hectares and vineyards and gardens a further 400 hectares. The balance comprises rivers (400 ha), villages (100 ha) and unregistered land (200 ha).

71. In the most recently constructed hydroelectric project financed by the Bank, impounding of the reservoir has just begun. All the property affected has already been acquired and the measures taken by the Government to resettle the affected population are considered satisfactory. For the proposed Project, the Government has agreed to carry out with CEAS a resettlement program for the affected inhabitants, including provision of alternative adequate housing and other community and infrastructure facilities. There is adequate suitable land within the province and landowners opting for relocation would first be offered this government-owned land. If this is not acceptable to them, they would then be offered land in

other provinces. New agricultural land is currently being developed in the region through irrigation projects. Landowners who opt for indemnification rather than the resettlement will be compensated in cash. The overall program has been drawn up by the provincial Directorate of Real Estate and Expropriation. The detailed resettlement program will be in three parts. The first part covers all the population (between 300 and 400 families) which will be affected in the first year. These landholdings cover a 100-hectare area required for the construction of the dam, access roads, and construction camp. Negotiations with these landowners have already been concluded. All opted for the cash compensation proposed by the provincial expropriation committee rather than resettlement. None appealed to the courts. CEAS has already signed contracts for the construction of a replacement school, health center and police station. The second part of the program will cover the land affected during the second and third years by the completion of the diversion works and the third part will cover the land to be flooded on completion of the dam in 1990. CEAS has agreed to furnish to the Bank, not later than March 31, 1987, a detailed plan of action satisfactory to the Bank for the areas affected during the first three years of project execution and a similar comprehensive plan for the remaining affected areas by December 31, 1987, and to promptly carry out the resettlement program in accordance with those plans. In view of the satisfactory record of the Government in handling resettlement issues, these proposals are considered acceptable. The resettlement program will be closely monitored by the Bank during project implementation. A sociologist will be included in supervision missions to provide technical assistance to the implementing agencies.

#### Environmental Impact

72. Cukurova University, Adana, conducted a study (September 1984) of the environmental impact of the Sir and Duzkesme dams. The report states that the forests in the project area have been depleted by fires, and felling for lumber and firewood. The Sir and Duzkesme dam reservoirs are expected to have beneficial effects on the climate of the region, and would assist plant life and reforestation. There are no endangered plant species or plant types that need preservation in the areas to be flooded by the two dams. The geology and mineralogy of the reservoir area is such that no significant changes in water quality are anticipated. The formation of the new shoreline around the reservoir would create a new ecosystem with milder climatic conditions. Presently the fishing potential in the river and streams in the project area has not been developed. The report suggests introducing productive fish species in the reservoir area. It also recommends recreational use of the proposed reservoirs. The report identifies six sites with potential archeological value. CEAS is discussing the environmental and archeological issues with the Government to ensure timely and appropriate action on the part of the concerned agencies.

#### Project Cost and Financing

73. The total cost of the proposed project, including physical and price contingencies and interest during construction, would be about \$259 million of which about \$132 million would be in foreign exchange (all in July 1985 prices). CEAS is exempt from import taxes and duties for projects under construction. Although CEAS will pay Value Added Tax (VAT) on project expenditures, these amounts would subsequently be recovered by CEAS and therefore VAT is not included in the project cost. Overall physical

contingencies of about 10% have been added except for the items of land acquisition, preliminary works and civil works, for which about 15% physical contingencies have been included. These overall contingencies are in addition to the specific allowances of 25% (excavation) and 5% (concreting) included in estimates of quantities for the dam and upstream coffer dam. Similarly, specific allowances of 5% have been included for the hydraulic and electro-mechanical equipment. These overall contingencies and specific allowances are considered adequate. The above estimates include price escalation at 7.2 percent for 1986, 6.8 percent for 1987 and 1988, 7 percent in 1989, 7.1 percent in 1990 and 4 percent thereafter. While local costs in TL are expected to increase at a faster rate, it is assumed that the Government will maintain current exchange rate policies which compensate for differences between local and foreign inflation. It is estimated that 102 man-months of consultants are required for completing the four studies included in the technical assistance component.

74. The total foreign and local ex-factory cost of the project, including interest during construction (US\$132 million), is proposed to be covered by the Bank loan to the Government. It would be onlent on at least the same terms to CEAS. <sup>1/</sup> The Bank loan would finance: (a) the foreign cost of civil works, the engineering consultants and experts required for engineering and supervision of the project, and the technical assistance (studies, training, and equipment); and (b) the foreign and local ex-factory cost of supply and installation of material and equipment. In addition, in view of the considerable foreign exchange cash flow needs during the construction period of the project, the loan amount would also cover the interest during construction on the Bank loan. All local costs would be borne by CEAS. The signing of a subsidiary loan agreement on terms and conditions acceptable to the Bank would be a condition of loan effectiveness.

#### CEAS's Financial Position

75. CEAS has enjoyed a very healthy financial position in recent years, due largely to the Government's pricing policy and the regulatory environment. While electricity tariffs increased steadily in real terms from the beginning of 1984 to April, 1985, the operating costs of CEAS' existing hydropower stations remained low. Given that between 1970 and 1983 CEAS was not authorized to begin construction of new generating facilities, and distribution investments were also outside its realm, CEAS had been incurring minimal annual capital expenditures before beginning investments on the Sir Hydropower Plant in 1985. As a result of these factors, CEAS has been able to accumulate substantial reserves in recent years. The estimated return on net revalued assets in service in 1984 was 11%. Net income in 1985 was 19% of gross revenues of TL86 billion (approximately \$150 million equivalent) on sales of 2,800 GWh.

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<sup>1/</sup> The borrower may charge CEAS a one time fee of no more than 3 percent in addition to the standard Bank terms.

76. CEAS has exercised cautious cash management practices. It has no major customers in arrears; receivables over three months old amount to less than 1% of total sales. CEAS has maintained a current ratio of over 1.2 since 1980. Debt service coverage to date has been more than adequate given that CEAS has contracted no new borrowings, other than limited medium-term local debt, since 1971. In 1985 cash generation covered debt service obligations about 8 times.

77. Since CEAS is adequately capitalized and not highly leveraged, it is presently in a strong position to undertake the proposed project. The debt/equity ratio for CEAS at the end of 1984 was about 10/90, when equity is restated to reflect estimated asset revaluation. CEAS presently has an authorized share capital of TL 15 billion of which TL 3.6 billion (about \$6 million in book value) has been paid in, following an issue of new shares in 1983 and again in 1985. CEAS is subject to the provisions of the Capital Markets Law, issued in 1981, and to the Capital Markets Board (SPK), which was established to carry out the Government's policy of strengthening the regulation of capital markets and protecting the rights of shareholders. For any capital increase up to the authorized level, CEAS must obtain clearance from the SPK, the application being accompanied by a three-year financial forecast, which will allow the SPK to determine whether the company is likely to be in a strong enough financial position to pay an adequate return to its shareholders. To date CEAS has had no difficulty in obtaining permission for new share issues. Agreement was reached during negotiations that CEAS would supply the Bank by December 31 of each year an updated financing plan for the entire implementation period of the project. Agreement was also reached that CEAS would not carry out major new investments (costing more than \$25 million) without the consent of the Bank, except for those facilities included in the project and the Duzkesme Berke Hydropower project.

78. Turkey has a policy of uniform tariffs across regions; the tariffs applicable to consumers throughout other parts of Turkey have always applied to customers within the CEAS concession area as well. The timing and level of tariff increases on the national level to date have been determined by power subsector financing requirements and by fuel cost adjustments, and occur in response to an application from TEK and/or CEAS to the Government. It was agreed during negotiations that CEAS would continue to charge its customers prices in accordance with procedures currently in force.

#### Audits

79. CEAS prepares its financial statements on a timely basis. The Turkish Commercial Code requires that the annual financial report be submitted by mid-March, two weeks prior to the annual shareholders meeting. The audit is carried out subsequently by qualified independent Turkish auditors. Agreement was reached during negotiations that CEAS would submit its annual financial statements to the Bank not later than five months and audited financial statements not later than nine months after the close of each year.

#### Procurement and Disbursement

80. All Bank-financed procurement for civil works, and supply and installation of material and equipment, would be according to the Bank's Procurement Guidelines. Procurement of consultants' services would be done according to the Bank's Guidelines for the Use of Consultants.

81. International Competitive Bidding (ICB) according to the Bank's procurement guidelines would be followed for the following:

- (a) civil works (excluding river diversion tunnel);
- (b) supply and installation of hydraulic equipment;
- (c) supply and installation of electro-mechanical equipment;
- (d) supply and installation of powerhouse switchyard equipment;
- (e) supply and erection of towers and erection of transmission lines;
- (f) supply of transmission line conductors and accessories;
- (g) supply of insulators and hardware;
- (h) supply and installation of substation switchgear equipment including cables; and
- (i) supply and installation of transformers.

It is likely that domestic manufacturers may submit bids against items (b) and (e) through (i). In case a contract is awarded to domestic manufacturers, the Bank would finance the ex-factory amount of the contract. Qualifying domestic manufacturers will receive preference in bid evaluation of 15% or the prevailing import duty, whichever is lower. For electromechanical equipment, the domestic content of each bid will be given preference by adding the applicable tariff or 15%, whichever is less, to the CIF component representing the imported elements in the package.

82. International shopping according to the Bank's Guidelines would be used for procurement of: (a) training equipment; and (b) miscellaneous tools, instruments, and relays for substations and transmission lines. Such procurement would involve obtaining offers from at least three foreign suppliers and would be limited to US\$20,000 per contract and US\$200,000 in the aggregate. Direct contracting would be used for upgrading of CEAS's existing computer facilities. Total foreign expenditure under this procedure would be limited to about \$500,000.

83. CEAS has already appointed the engineering consultant for the dam and the powerhouse, and has also appointed an International Board of Experts to review the dam design and associated problems during construction, and to review the progress of construction works. CEAS would appoint engineering consultants for engineering and supervision during construction of the transmission lines and for studies under the technical assistance component.

84. The Bank would not finance the following costs of the civil works and supply and installation of material and equipment procured according to local competitive bidding procedures: (a) river diversion tunnel; (b) the owners camp; and (c) materials and equipment for transmission lines and substations. Local shopping procedures would be used for: (a) miscellaneous civil works; (b) temporary bridge and site access roads; (c) miscellaneous boring and drilling required for the site investigation; and (d) engineering consultants

for the engineering and supervision during construction of the substations. Considering the amount involved (about 13% of the project cost), the above proposals for procurement following local competitive bidding and local shopping procedures are economical and efficient. The Bank would permit the use of Statements of Expenditure for contracts valued up to \$20,000 equivalent to assist CEAS in making timely payments to contractors. CEAS would retain the supporting documents and make them available for inspection by Bank supervision missions and external auditors. All payment requests would be fully documented. A special account of \$10.0 million would be established to maintain an adequate flow of funds. Retroactive financing of up to \$5 million would be allowed to cover expenditures for engineering consultants and the advance payments for the main civil works contract, to ensure maintaining the project's implementation schedule. Because of the seasonal nature of rainfall in the project area, a short delay in placing the main civil works contract may lead to a significant delay in project completion and commissioning. The estimated disbursement schedule follows the Bank's standard disbursement profile for EMENA power projects.

85. The procurement arrangements are summarized in the table below:

Summary of Procurement Arrangements

	US\$ Million				Total Cost
	(Procurement Method)				
	ICB	LCB	Other	N.A. d/	
1. Land Acquisition	-	-	-	25.9	25.9
	(-)	(-)	(-)	(-)	(-)
2. Preliminary Works	-	13.0	4.0		17.0
	(-)	(-)	(-)		(-)
3. Civil Works	76.3	5.0	-		81.3
	(31.0)	(-)	(-)		(31.0)
4. Hydraulic Equipment <u>a/</u>	6.3	-	-		6.3
	(5.5)	(-)	(-)		(5.5)
5. Electro-Mechanical Equipment <u>a/</u>	41.6	-	-		41.6
	(29.4)	(-)	(-)		(29.4)
6. Switchyard Equipment <u>a/</u>	11.3	-	-		11.3
	(10.2)	(-)	(-)		(10.2)
7. Engineering and Supervision	-	-	10.0	6.8	16.8
	(-)	(-)	(6.8)	(-)	(6.8)
8. Transmission Lines & Substation	32.0	5.1	1.4 <u>/b</u>	0.4	38.9
	(28.9)	(-)	(0.3) <u>/c</u>	(-)	(29.2)
9. Technical Ass. & Training Eqpt.	-	-	1.9	-	1.9
	(-)	(-)	(1.8)	(-)	(1.8)
<u>Total</u>	167.5	23.1	17.3	33.1	241.0
	(105.0)	(-)	(8.9)	(-)	(113.9)

/a Includes installation and erection of the equipment.

/b Includes engineering and supervision for substations.

/c Includes engineering and supervision for transmission lines.

/d The column "N.A." indicates the costs of land acquisition, engineering and supervision to be carried out directly by CEAS.

Notes: 1. Figures in parentheses are the amounts to be financed by the Bank.

2. US\$5.0 million provided under the column "LCB" for civil works is for the river diversion tunnel contract, not being financed by the Bank.

### Project Justification

86. In addition to promoting the role of the private sector in all aspects of the electricity subsector, an important component of the Government's energy strategy is the economic and least-cost development of indigenous resources, especially hydropower. The role and importance of hydropower resource development has been reviewed in a Bank sector study. Under the Kayraktepe Hydropower project financed by the Bank (Loan. 2655-TU), the Government will undertake a systematic review of all hydropower resources within Turkey and rank them on a comparable cost basis. This will be of major assistance to the Government in planning the optimal development of the hydropower subsector.

87. In connection with the preparation of the proposed project, the Bank reviewed a number of studies on hydropower projects and concluded that the Sir Hydropower Project fell well within the range of economically viable hydropower projects in Turkey. In addition, as part of the appraisal of the Elbistan Rehabilitation Project (Ln. 2650-TU), an extensive review of the cost of thermal alternatives was carried out, which shows that the proposed Sir Hydropower Project would generate electricity at lower cost than any other baseload thermal plant included in the expansion program for the power subsector and most of the hydropower plants.

88. Since the project forms a part of the national 1985-1995 expansion program, the economic rate of return on the whole timeslice power investment program for 1985-1995 was calculated. The return on the program is estimated at just over 11.5% compared to an estimated opportunity cost of capital of 12%, reflecting the fact that tariffs are slightly below the economic cost of supply as measured by the long-run marginal cost. However, this calculation understates the real economic return since the measurement of benefits underestimates the willingness to pay for electricity.

### Project Risks

89. The geological investigation carried out in the foundation area of the dam and other structures was generally adequate. Results of additional investigations carried out at the suggestion of the Bank's consultant have been taken into account in the final design. There is a risk that unexpected geological difficulties during construction might cause unexpected delays and increase the project cost. This risk would be mitigated by providing expert geological supervision during excavation of foundation and foundation grouting. Furthermore, where it is difficult to assess the quantity of work with accuracy, sufficient contingency allowances have been included in the project cost.

90. It is expected that during the course of project implementation CEAS will be restructured to allow for the expansion of its operations in the Cukurova Region. This restructuring may also have implications for the financial viability of the company. Accordingly the Government and CEAS would undertake to discuss with the Bank any proposals involving the restructuring or reorganization of the company.

Project Justification

Part V - Recommendation

91. I am satisfied that the proposed loan would comply with the Articles of Agreement of the Bank and recommend that the Executive Directors approve the proposed loan.

In connection with the preparation of the proposed project, the Bank reviewed a number of studies on hydroelectric projects and concluded that the hydroelectric project will yield the range of economic benefits. In addition, as part of the appraisal of the hydroelectric project, an economic review of the cost of the project was carried out, which shows that the proposed hydroelectric project would generate electricity at lower cost than other available thermal plants included in the expansion program for the power sector and most of the hydroelectric plants.

The project is part of the National 1987-1992 expansion program. The economic rate of return on the hydroelectric power investment program has been calculated. The return on the program is estimated to be just over 10% which is slightly above the economic cost of capital. It is estimated that the project will generate electricity at a cost of 1.2¢ per kWh, which is slightly below the economic cost of supply as measured by the long-run marginal cost. However, this calculation underestimates the real economic return since the measurement of benefits underestimates the willingness to pay for electricity.

**B. B. Conable  
President**

**Attachments**

**August 1, 1986  
Washington D.C.**

The geological investigation carried out in the foundation area of the dam and other structures was particularly satisfactory. Results of additional investigations carried out at the suggestion of the Bank's consultant have been taken into account in the final design. There is a risk that unexpected geological difficulties during construction might cause unexpected delays and increase the project cost. This risk would be mitigated by providing expert geological supervision during construction of foundation and foundation structures. Furthermore, where it is difficult to assess the quantity of work with accuracy, sufficient contingency allowances have been included in the project cost.

It is expected that during the course of project implementation OAS will be requested to allow for the extension of its operations in the hydroelectric project. This restructuring would also have implications for the financial stability of the company. Accordingly the Government and OAS would be asked to discuss with the Bank any proposals involving the restructuring of the company.

TABLE 3A

PAGE 1

TURKEY	- SOCIAL INDICATORS DATA SHEET			REFERENCE GROUPS (WEIGHTED AVERAGES) /a	
	1960/b	1970/b	MOST RECENT ESTIMATE /b	MIDDLE INCOME EUROPE	(MOST RECENT ESTIMATE) /b INDUSTRIAL MARKET ECONOMIES
AREA (THOUSAND SQ. KM)					
TOTAL	780.6	780.6	780.6	.	.
AGRICULTURAL	368.7	381.8	366.8	.	.
GDP PER CAPITA (US\$)	..	..	1240.0	2144.3	11062.9
ENERGY CONSUMPTION PER CAPITA (KILOGRAMS OF OIL EQUIVALENT)	170.0	362.0	570.0	1119.8	4991.3
POPULATION AND VITAL STATISTICS					
POPULATION, MID-YEAR (THOUSANDS)	27509.0	35321.0	47279.0	.	.
URBAN POPULATION (% OF TOTAL)	29.7	32.9	45.1	47.5	76.7
POPULATION PROJECTIONS					
POPULATION IN YEAR 2000 (MILL)			65.4	.	.
STATIONARY POPULATION (MILL)			111.0	.	.
POPULATION MOMENTUM			1.8	.	.
POPULATION DENSITY					
PER SQ. KM.	35.2	45.2	60.6	84.7	140.8
PER SQ. KM. AGRI. LAND	74.6	92.5	126.3	166.9	522.2
POPULATION AGE STRUCTURE (%)					
0-14 YRS	41.2	41.0	37.6	31.2	21.3
15-64 YRS	55.2	54.3	57.9	61.5	66.6
65 AND ABOVE	3.5	4.6	4.3	7.2	12.0
POPULATION GROWTH RATE (%)					
TOTAL	2.8	2.5	2.2	1.6	0.8
URBAN	6.1	3.6	4.8	3.7	1.3
CRUDE BIRTH RATE (PER THOUS)	43.1	37.9	30.6	23.4	13.5
CRUDE DEATH RATE (PER THOUS)	15.8	12.2	8.6	8.9	8.9
GROSS REPRODUCTION RATE	2.9	2.6	2.0	1.5	0.9
FAMILY PLANNING					
ACCEPTORS, ANNUAL (THOUS)	..	65.6	..	.	.
USERS (% OF MARRIED WOMEN)	5.3 /c	32.0 /d,e	38.0 /f	..	71.1
FOOD AND NUTRITION					
INDEX OF FOOD PROD. PER CAPITA (1969=71=100)	96.0	100.0	110.0	109.1	107.2
PER CAPITA SUPPLY OF					
CALORIES (% OF REQUIREMENTS)	109.0	112.0	125.0	131.5	132.9
PROTEINS (GRAMS PER DAY)	84.0	80.0	83.0	92.4	101.0
OF WHICH ANIMAL AND PULSE	25.0	23.0	25.0 /g	34.5	61.4
CHILD (AGES 1-4) DEATH RATE	42.5	27.5	8.0	4.7	0.4
HEALTH					
LIFE EXPECT. AT BIRTH (YEARS)	50.5	55.9	63.2	67.2	75.5
INFANT MORT. RATE (PER THOUS)	177.8	136.2	82.0	53.3	9.9
ACCESS TO SAFE WATER (%POP)					
TOTAL	..	52.0	76.0 /h	70.2	..
URBAN	..	51.0	95.0 /h	89.4	..
RURAL	..	53.0	62.0 /h	57.0	..
ACCESS TO EXCRETA DISPOSAL (% OF POPULATION)					
TOTAL	..	..	..	59.6	..
URBAN	..	..	60.1 /h	65.9	..
RURAL	..	..	..	47.6	..
POPULATION PER PHYSICIAN	2800.0	2230.0	1630.0 /h	1070.6	553.2
POP. PER NURSING PERSON	16300.0 /i	1860.0	1130.0 /h	769.5	166.8
POP. PER HOSPITAL BED					
TOTAL	600.0	490.0	490.0 /f	328.3	120.9
URBAN	340.0 /i	270.0 /i	270.0 /g	201.9	143.2
RURAL	5100.0 /i	6510.0 /i	5650.0 /g	4519.7	778.8
ADMISSIONS PER HOSPITAL BED	..	20.2	22.3 /g	20.0	17.8
HOUSING					
AVERAGE SIZE OF HOUSEHOLD					
TOTAL	5.7 /k	5.9	..	..	..
URBAN	..	..	..	..	..
RURAL	..	..	..	..	..
AVERAGE NO. OF PERSONS/ROOM					
TOTAL	2.4 /k	2.2	..	..	..
URBAN	2.0 /k	1.9	..	..	..
RURAL	2.7 /k	..	..	..	..
PERCENTAGE OF DWELLINGS WITH ELECT.					
TOTAL	29.0	41.1	..	..	..
URBAN	..	78.7	..	..	..
RURAL	2.0	18.0	..	..	..

TABLE 3A

PAGE 2

TURKEY	- SOCIAL INDICATORS DATA SHEET				
	REFERENCE GROUPS (WEIGHTED AVERAGES) /a				
TURKEY	(MOST RECENT ESTIMATE) /b				
	1960/b	1970/b	MOST RECENT ESTIMATE/b	MIDDLE INCOME EUROPE	INDUSTRIAL MARKET ECONOMIES
<b>EDUCATION</b>					
ADJUSTED ENROLLMENT RATIOS					
PRIMARY: TOTAL	75.0	110.0	102.0	101.9	101.2
MALE	90.0	124.0	110.0	106.2	102.6
FEMALE	58.0	95.0	95.0	97.5	102.4
SECONDARY: TOTAL	14.0	27.0	39.0	57.5	87.1
MALE	20.0	38.0	50.0	64.9	80.3
FEMALE	8.0	15.0	27.0	50.0	84.1
VOCATIONAL (% OF SECONDARY)	17.7	13.7	21.9	21.0	18.4
PUPIL-TEACHER RATIO					
PRIMARY	46.0	38.0	28.0	25.1	16.7
SECONDARY	19.0	28.0	19.0	19.1	11.6
<b>CONSUMPTION</b>					
PASSENGER CARS/THOUSAND POP	1.7	3.9	11.5 /i	54.2	366.3
RADIO RECEIVERS/THOUSAND POP	49.1	87.7	93.0	170.7	1093.2
TV RECEIVERS/THOUSAND POP	0.0	1.8	105.8	149.3	492.3
NEWSPAPER ("DAILY GENERAL INTEREST") CIRCULATION PER THOUSAND POPULATION	51.3	40.6	89.1 /m	97.0	320.4
CINEMA ANNUAL ATTENDANCE/CAPITA	1.1	7.0	1.4 /h	2.7	3.3
<b>LABOR FORCE</b>					
TOTAL LABOR FORCE (THOUS)	13782.0	15829.0	20660.0	.	.
FEMALE (PERCENT)	40.2	37.0	36.3	36.3	36.2
AGRICULTURE (PERCENT)	78.5	67.7	53.5 /h	40.8	6.2
INDUSTRY (PERCENT)	10.5	12.1	12.8 /h	23.3	37.7
PARTICIPATION RATE (PERCENT)					
TOTAL	50.1	44.8	43.7	43.1	46.0
MALE	58.7	55.7	54.8	55.1	59.5
FEMALE	41.2	33.6	32.2	31.4	32.7
ECONOMIC DEPENDENCY RATIO	0.9	1.0	1.0	0.9	0.7
<b>INCOME DISTRIBUTION</b>					
PERCENT OF PRIVATE INCOME RECEIVED BY					
HIGHEST 5% OF HOUSEHOLDS	33.0 /c	32.8 /d	..	..	..
HIGHEST 20% OF HOUSEHOLDS	61.0 /c	60.6 /d	..	..	43.1
LOWEST 20% OF HOUSEHOLDS	4.2 /c	2.9 /d	..	..	5.4
LOWEST 40% OF HOUSEHOLDS	10.6 /c	9.4 /d	..	..	16.4
<b>POVERTY TARGET GROUPS</b>					
ESTIMATED ABSOLUTE POVERTY INCOME LEVEL (US\$ PER CAPITA)					
URBAN	..	..	342.0 /e	..	..
RURAL	..	..	270.0 /e	..	..
ESTIMATED RELATIVE POVERTY INCOME LEVEL (US\$ PER CAPITA)					
URBAN	..	..	..	..	..
RURAL	..	..	220.0 /e	..	..
ESTIMATED POP. BELOW ABSOLUTE POVERTY INCOME LEVEL (%)					
URBAN	..	..	..	..	..
RURAL	..	..	..	..	..

.. NOT AVAILABLE  
 . NOT APPLICABLE

## NOTES

/a The group averages for each indicator are population-weighted arithmetic means. Coverage of countries among the indicators depends on availability of data and is not uniform.

/b Unless otherwise noted, "Data for 1960" refer to any year between 1959 and 1961; "Data for 1970" between 1969 and 1971; and data for "Most Recent Estimate" between 1981 and 1983.

/c 1963; /d 1968; /e Ages 15-44; /f 1978; /g 1977; /h 1980; /i 1962; /j 1972; /k 1965; /l 1976; /m 1979.

## DEFINITIONS OF SOCIAL INDICATORS

Notes. Although the data are drawn from sources generally judged the most authoritative and reliable, it should also be noted that they may not be internationally comparable because of the lack of standardized definitions and concepts used by different countries in collecting the data. The data are, nonetheless, useful to describe orders of magnitude, indicate trends, and characterize certain major differences between countries.

The reference groups are (1) the same country group of the subject country and (2) a country group with somewhat higher average income than the country group of the subject country (except for "High Income Oil Exporters" group where "Middle Income North Africa and Middle East" is chosen because of stronger socio-cultural affinities). In the reference group data the averages are population weighted arithmetic means for each indicator and shown only when majority of the countries in a group has data for that indicator. Since the coverage of countries among the indicators depends on the availability of data and is not uniform caution must be exercised in relating averages of one indicator to another. These averages are only useful in comparing the value of one indicator at a time among the country and reference groups.

## AREA (thousand sq. km.)

**Total**—Total surface area comprising land area and inland waters; 1960, 1970 and 1983 data.

**Agricultural**—Estimate of agricultural area used temporarily or permanently for crops, pastures, market and kitchen gardens or to lie fallow, 1960, 1970 and 1982 data.

**GNP PER CAPITA (US\$)**—GNP per capita estimates at current market prices, calculated by same conversion method as *World Bank Atlas* (1981-83 basis); 1983 data.

**ENERGY CONSUMPTION PER CAPITA**—Annual apparent consumption of commercial primary energy (coal and lignite, petroleum, natural gas and hydro-, nuclear and geothermal electricity) in kilograms of oil equivalent per capita; 1960, 1970, and 1982 data.

## POPULATION AND VITAL STATISTICS

**Total Population, Mid-Year (thousands)**—As of July 1; 1960, 1970, and 1983 data.

**Urban Population (percent of total)**—Ratio of urban to total population; different definitions of urban areas may affect comparability of data among countries; 1960, 1970, and 1983 data.

**Population Projections**

**Population in year 2000**—The projection of population for 2000, made for each economy separately. Starting with information on total population by age and sex, fertility rates, mortality rates, and international migration in the base year 1980, these parameters were projected at five-year intervals on the basis of generalized assumptions until the population became stationary.

**Stationary population**—Is one in which age- and sex-specific mortality rates have not changed over a long period, while age-specific fertility rates have simultaneously remained at replacement level (net reproduction rate = 1). In such a population, the birth rate is constant and equal to the death rate, the age structure is also constant, and the growth rate is zero. The stationary population size was estimated on the basis of the projected characteristics of the population in the year 2000, and the rate of decline of fertility rate to replacement level.

**Population Momentum**—Is the tendency for population growth to continue beyond the time that replacement-level fertility has been achieved; that is, even after the net reproduction rate has reached unity. The momentum of a population in the year  $t$  is measured as a ratio of the ultimate stationary population to the population in the year  $t$ , given the assumption that fertility remains at replacement level from year  $t$  onward, 1985 data.

**Population Density**

**Per sq. km.**—Mid-year population per square kilometer (100 hectares) of total area; 1960, 1970, and 1983 data.

**Per sq. km. agricultural land**—Computed as above for agricultural land only, 1960, 1970, and 1982 data.

**Population Age Structure (percent)**—Children (0-14 years), working age (15-64 years), and retired (65 years and over) as percentage of mid-year population; 1960, 1970, and 1983 data.

**Population Growth Rate (percent)—total**—Annual growth rates of total mid-year population for 1950-60, 1960-70, and 1970-83.

**Population Growth Rate (percent)—urban**—Annual growth rates of urban population for 1950-60, 1960-70, and 1970-83 data.

**Crude Birth Rate (per thousand)**—Number of live births in the year per thousand of mid-year population; 1960, 1970, and 1983 data.

**Crude Death Rate (per thousand)**—Number of deaths in the year per thousand of mid-year population; 1960, 1970, and 1983 data.

**Gross Reproduction Rate**—Average number of daughters a woman will bear in her normal reproductive period if she experiences present age-specific fertility rates; usually five-year averages ending in 1960, 1970, and 1983.

**Family Planning—Acceptors, Annual (thousands)**—Annual number of acceptors of birth-control devices under auspices of national family planning program.

**Family Planning—Users (percent of married women)**—The percentage of married women of child-bearing age who are practicing or whose husbands are practicing any form of contraception. Women of child-bearing age are generally women aged 15-49, although for some countries contraceptive usage is measured for other age groups.

## FOOD AND NUTRITION

**Index of Food Production Per Capita (1969-71 = 100)**—Index of per capita annual production of all food commodities. Production excludes animal feed and seed for agriculture. Food commodities include primary commodities (e.g. sugarcane instead of sugar) which are edible and contain nutrients (e.g. coffee and tea are excluded); they comprise cereals, root crops, pulses, oil seeds, vegetables, fruits, nuts, sugarcane and sugar beets, livestock, and livestock products. Aggregate production of each country is based on national average producer price weights; 1961-65, 1970, and 1982 data.

**Per Capita Supply of Calories (percent of requirements)**—Computed from calorie equivalent of net food supplies available in country per capita per day. Available supplies comprise domestic production, imports less exports, and changes in stock. Net supplies exclude animal feed, seeds for use in agriculture, quantities used in food processing, and losses in distribution. Requirements were estimated by FAO based on physiological needs for normal activity and health considering environmental temperature, body weights, age and sex distribution of population, and allowing 10 percent for waste at household level; 1961, 1970 and 1982 data.

**Per Capita Supply of Protein (grams per day)**—Protein content of per capita net supply of food per day. Net supply of food is defined as above. Requirements for all countries established by USDA provide for minimum allowances of 60 grams of total protein per day and 20 grams of animal and pulse protein, of which 10 grams should be animal protein. These standards are lower than those of 75 grams of total protein and 23 grams of animal protein as an average for the world, proposed by FAO in the Third World Food Supply; 1961, 1970 and 1982 data.

**Per Capita Protein Supply From Animal and Pulse**—Protein supply of food derived from animals and pulses in grams per day; 1961-65, 1970 and 1977 data.

**Child (ages 1-4) Death Rate (per thousand)**—Number of deaths of children aged 1-4 years per thousand children in the same age group in a given year. For most developing countries data derived from life tables; 1960, 1970 and 1983 data.

## HEALTH

**Life Expectancy at Birth (years)**—Number of years a newborn infant would live if prevailing patterns of mortality for all people

at the time of its birth were to stay the same throughout its life; 1960, 1970 and 1983 data.

**Infant Mortality Rate (per thousand)**—Number of infants who die before reaching one year of age per thousand live births in a given year; 1960, 1970 and 1983 data.

**Access to Safe Water (percent of population)—total, urban, and rural**—Number of people (total, urban, and rural) with reasonable access to safe water supply (includes treated surface waters or untreated but uncontaminated water such as that from protected boreholes, springs and sanitary wells) as percentages of their respective populations. In an urban area a public fountain or standpost located not more than 200 meters from a house may be considered as being within reasonable access of that house. In rural areas reasonable access would imply that the housewife or members of the household do not have to spend a disproportionate part of the day in fetching the family's water needs.

**Access to Excreta Disposal (percent of population)—total, urban, and rural**—Number of people (total, urban, and rural) served by excreta disposal as percentages of their respective populations. Excreta disposal may include the collection and disposal, with or without treatment, of human excreta and waste-water by water-borne systems or the use of pit privies and similar installations.

**Population per Physician**—Population divided by number of practising physicians qualified from a medical school at university level.

**Population per Nursing Person**—Population divided by number of practicing male and female graduate nurses, assistant nurses, practical nurses and nursing auxiliaries.

**Population per Hospital Bed—total, urban, and rural**—Population (total, urban, and rural) divided by their respective number of hospital beds available in public and private, general and specialized hospitals and rehabilitation centers. Hospitals are establishments permanently staffed by at least one physician. Establishments providing principally custodial care are not included. Rural hospitals, however, include health and medical centers not permanently staffed by a physician (but by a medical assistant, nurse, midwife, etc.) which offer in-patient accommodation and provide a limited range of medical facilities.

**Admissions per Hospital Bed**—Total number of admissions to or discharges from hospitals divided by the number of beds.

## HOUSING

**Average Size of Household (persons per household)—total, urban, and rural**—A household consists of a group of individuals who share living quarters and their main meals. A boarder or lodger may or may not be included in the household for statistical purposes.

**Average Number of Persons per Room—total, urban, and rural**—Average number of persons per room in all urban, and rural occupied conventional dwellings, respectively. Dwellings exclude non-permanent structures and unoccupied parts.

**Percentage of Dwellings with Electricity—total, urban, and rural**—Conventional dwellings with electricity in living quarters as percentage of total, urban, and rural dwellings respectively.

## EDUCATION

### Adjusted Enrollment Ratios

**Primary school - total, male and female**—Gross total, male and female enrollment of all ages at the primary level as percentages of respective primary school-age populations. While many countries consider primary school age to be 6-11 years, others do not. The differences in country practices in the ages and duration of school are reflected in the ratios given. For some countries with universal education, gross enrollment may exceed 100 percent since some pupils are below or above the country's standard primary-school age.

**Secondary school - total, male and female**—Computed as above; secondary education requires at least four years of approved primary instruction; provides general, vocational, or teacher training instructions for pupils usually of 12 to 17 years of age; correspondence courses are generally excluded.

**Vocational Enrollment (percent of secondary)**—Vocational institutions include technical, industrial, or other programs which operate independently or as departments of secondary institutions.

**Pupil-teacher Ratio - primary, and secondary**—Total students enrolled in primary and secondary levels divided by numbers of teachers in the corresponding levels.

## CONSUMPTION

**Passenger Cars (per thousand population)**—Passenger cars comprise motor cars seating less than eight persons; excludes ambulances, hearses and military vehicles.

**Radio Receivers (per thousand population)**—All types of receivers for radio broadcasts to general public per thousand of population; excludes un-licensed receivers in countries and in years when registration of radio sets was in effect; data for recent years may not be comparable since most countries abolished licensing.

**TV Receivers (per thousand population)**—TV receivers for broadcast to general public per thousand population; excludes unlicensed TV receivers in countries and in years when registration of TV sets was in effect.

**Newspaper Circulation (per thousand population)**—Shows the average circulation of "daily general interest newspaper," defined as a periodical publication devoted primarily to recording general news. It is considered to be "daily" if it appears at least four times a week.

**Cinema Annual Attendance per Capita per Year**—Based on the number of tickets sold during the year, including admissions to drive-in cinemas and mobile units.

## LABOR FORCE

**Total Labor Force (thousands)**—Economically active persons, including armed forces and unemployed but excluding housewives, students, etc., covering population of all ages. Definitions in various countries are not comparable; 1960, 1970 and 1983 data.

**Female (percent)**—Female labor force as percentage of total labor force.

**Agriculture (percent)**—Labor force in farming, forestry, hunting and fishing as percentage of total labor force; 1960, 1970 and 1980 data.

**Industry (percent)**—Labor force in mining, construction, manufacturing and electricity, water and gas as percentage of total labor force; 1960, 1970 and 1980 data.

**Participation Rate (percent)—total, male, and female**—Participation or activity rates are computed as total, male, and female labor force as percentages of total, male and female population of all ages respectively; 1960, 1970, and 1983 data. These are based on ILO's participation rates reflecting age-sex structure of the population, and long time trend. A few estimates are from national sources.

**Economic Dependency Ratio**—Ratio of population under 15, and 65 and over, to the working age population (those aged 15-64).

## INCOME DISTRIBUTION

**Percentage of Total Disposable Income (both in cash and kind)**—Accruing to percentile groups of households ranked by total household income.

## POVERTY TARGET GROUPS

The following estimates are very approximate measures of poverty levels, and should be interpreted with considerable caution.

**Estimated Absolute Poverty Income Level (US\$ per capita)—urban and rural**—Absolute poverty income level is that income level below which a minimal nutritionally adequate diet plus essential non-food requirements is not affordable.

**Estimated Relative Poverty Income Level (US\$ per capita)—urban and rural**—Rural relative poverty income level is one-third of average per capita personal income of the country. Urban level is derived from the rural level with adjustment for higher cost of living in urban areas.

**Estimated Population Below Absolute Poverty Income Level (percent)—urban and rural**—Percent of population (urban and rural) who are "absolute poor."

## TURKEY - COUNTRY DATA

Population: 48.8 million (1984)  
GNP Per Capita: US\$1200 (1984)

Indicator	Amount (million US\$ at current prices) 1984	Average Annual Increase (%) (at constant 1980 prices)				Share of GDP Market Prices (%) (at current prices)				
		1965-70	1970-75	1975-80	1980-84	1965	1970	1975	1980	1984
<b>NATIONAL ACCOUNTS</b>										
Gross domestic product <u>a/</u>	49,672	6.6	7.5	2.8	4.7	100.0	100.0	100.0	100.0	100.0
Agriculture	9,199	3.1	4.4	2.7	2.5	30.7	26.4	26.2	21.4	18.5
Industry <u>b/</u>	13,952	9.5	9.5	2.8	7.4	16.6	17.2	18.0	28.6	28.1
Services	24,304	8.2	8.0	3.7	4.6	42.9	46.5	46.0	44.3	48.9
Consumption	42,039	5.8	7.0	1.7	3.2	84.6	82.8	85.2	81.8	84.5
Gross investment	9,929	11.7	12.9	-0.1	2.5	16.7	20.1	23.3	26.4	20.2
Exports of goods and NFS	8,590	7.9	7.3	4.4	31.0	6.1	5.8	6.1	7.1	17.4
Imports of goods and NFS	10,886	11.2	13.8	-3.1	10.0	7.4	8.7	14.5	15.2	22.1
Gross national savings	8,530	11.6	11.9	9.6	12.1	15.8	18.8	18.1	18.3	17.4

	1984	Average Annual Increase (%) (At constant 1980 prices)			Composition of Merchandise Trade (%) (at current prices)			
		1972-75	1975-80	1980-84	1972	1975	1980	1984
<b>MERCHANDISE TRADE <u>c/</u></b>								
Merchandise exports	7,134	-6.1	2.8	29.4	100.0	100.0	100.0	100.0
Primary	1,989	-6.3	4.0	15.5	72.6	64.1	64.0	27.9
Industrial products	5,145	-5.8	0.9	45.3	27.4	35.9	36.0	72.1
Merchandise imports	10,757	11.2	1.2	9.5	100.0	100.0	100.0	100.0
Agriculture and livestock	418	27.9	-23.8	87.1	2.2	4.3	0.7	3.9
Mining and quarrying	271	17.4	6.8	22.2	1.2	1.6	1.8	2.5
Petroleum	3,373	5.4	11.0	-1.2	9.9	17.1	48.8	31.3
Machinery and equipment	2,252	14.0	-12.1	18.5	45.0	35.6	18.2	20.1
Other industrial products	4,443	9.9	4.5	15.1	41.7	41.4	30.5	42.2

## PRICES AND TERMS OF TRADE

	1978	1979	1980	1981	1982	1983	1984
GDP deflator (1980 = 100)	29.0	49.4	100.0	142.1	181.8	233.3	351.1
Exchange rate	24.3	31.1	76.0	111.2	162.6	225.5	366.7
Export price index	63.0	78.2	100.0	95.8	94.4	82.6	83.6
Import price index	61.2	71.9	100.0	101.2	100.3	93.4	94.0
Terms of trade index	102.9	108.8	100.0	94.7	94.1	88.4	88.9

As % of GDP (at current prices)				
1965	1970	1975	1980	1984

## PUBLIC FINANCE (Central Government)

Current revenue	15.0	22.6	22.0	19.4	15.5
Current expenditure	10.0	11.8	12.6	12.1	10.1
Surplus (+) or deficit (-)	-2.0	-2.3	-0.4	-5.4	-4.9
Investment expenditure	4.7	5.7	4.2	3.9	3.7
Transfers	5.0	7.5	5.5	8.7	6.6
Foreign financing	1.8	1.6	0.3	1.7	1.8

1965-70    1970-75    1975-80    1980-84

## OTHER INDICATORS

GNP growth rate (%)	6.8	7.7	2.6	4.7
GNP per capita growth rate (%)	4.1	5.0	0.3	2.1
ICOR	2.9	2.9	5.7	4.7
Marginal savings rate (%)	28.2	19.5	30.8	39.0
Import elasticity	1.7	1.8	0.5	2.1

a/ At market prices; components are expressed at factor cost and will not add due to exclusion of net indirect taxes and subsidies.

b/ Includes mining and quarrying, manufacturing, and electricity, gas, and water.

c/ In accordance with Turkish Government's specifications, which are not compatible with SITC's.

**TURKEY - BALANCE OF PAYMENTS, EXTERNAL CAPITAL, AND DEBT /a**  
(million US\$ at current prices)

Population: 48.8 million (1984)  
GDP Per Capita: US\$1200 (1984)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
	Actual			Estimate			Projected				
<b>BALANCE OF PAYMENTS /b</b>											
Net exports of goods & NFS	-4588	-3491	-1906	-2332	-2296	-1865	-1215	-1311	1541	-1741	-1888
Exports of goods & NFS	3266	5366	6980	6689	8590	10015	10552	11846	13733	15957	18555
Imports of goods & NFS	7854	8857	8886	9221	10886	11880	11767	13157	15271	17698	20443
Workers' remittances	2071	2490	2140	1513	1807	1714	1900	2014	2135	2263	2399
Net transfers	5	16	105	216	213	216	200	200	200	150	150
Current account balance	-3408	-1919	-935	-1898	-1407	-1013	-417	-505	-644	-830	-927
Direct private investment	18	95	55	46	113	99	120	140	160	180	200
Public M&LT (gross) /c	2110	1645	1833	1792	1794	782	3603	3568	3894	3952	3930
Amortisation on M&LT /c	-1556	-1220	-1603	-1928	-1549	-1860	-2175	-2261	-2849	-3198	-3614
Public M&LT (net) /c	554	425	230	-136	245	-1108	1428	1307	995	794	316
Other capital /d	2833	982	668	2084	1174	2275	80	56	-41	97	257
Change in reserves (- = increase)	3	417	-18	-96	-125	-154	-1310	-998	-470	-191	154
International reserves	1463	1730	2028	2253	3254	3199	4509	5507	5977	6166	6014
Reserves as months of imports	2	2	3	3	4	3	5	5	5	4	4

	1980	1981	1982	1983	1984	1985 e/
<b>GROSS DISBURSEMENTS</b>						
Gross disbursements	2300	2193	2232	1768	2424	3260
Official grants	-	300	200	150	-	-
Concessional	830	638	431	364	400	296
Bilateral	756	604	404	340	325	288
IDA	0.3	-	-	-	-	-
Other multilateral	74	34	27	24	75	8
Non-concessional	1470	1255	1621	1234	2024	2964
Official export credits	288	290	270	155	516	457
IBRD	313	454	500	686	628	630
Other multilateral	154	167	207	127	158	76
Private	715	344	644	466	722	1801

	1980	1981	1982	1983	1984	1985
<b>EXTERNAL DEBT</b>						
Debt outstanding and disbursed	15195	15542	15976	15444	15774	17112
Official	10004	10593	11016	10751	11018	11453
IBRD	1158	1546	1962	2336	2823	3284
IDA	189	188	187	184	181	177
Other	6657	8859	8867	8231	8014	7992
Private	5191	4949	4960	4693	4756	5659
Debt outstanding including undisbursed	18704	19115	18721	18969	19911	22748

	1980	1981	1982	1983	1984	1985
<b>DEBT SERVICE</b>						
Total debt service /f	1027	1327	1779	2184	2226	3131
Payments	410	515	818	1059	1178	1922
Interest	617	812	961	1125	1048	1209
Total debt service as % exports of GNFS + workers' remittances	19.2	16.9	19.5	26.0	21.4	26.7
Average interest rate on new loans (%)	8.2	7.7	11.1	8.3	9.6	8.9
Official	5.9	6.7	10.0	7.6	8.3	-
Private	17.0	15.6	14.9	9.7	11.3	-
Average maturity of new loans (years)	16.1	15.4	13.6	14.1	14.2	11.9
Official	19.1	16.5	15.6	17.7	14.8	-
Private	5.2	6.3	6.7	6.5	9.1	-

	1980	1981	1982	1983	1984	1985
<b>BANK GROUP EXPOSURE (X)</b>						
IBRD IAD/total IOD	7.6	9.9	12.3	15.1	17.9	19.2
IBRD disbursements/total gross disbursements	13.6	20.7	22.2	27.8	25.9	19.3
IBRD debt service/total debt service /f	13.0	12.4	11.9	12.5	15.3	14.4
IDA IAD/total IAD	1.2	1.2	1.2	1.2	1.1	1.0
IDA disbursements/total gross disbursements	-	-	-	-	-	-
IDA debt service/total debt service /f	0.2	0.2	0.2	0.2	0.2	0.2

As % of Debt Outstanding  
at End of Most Recent  
Year (1984)

<b>TERMS STRUCTURE</b>	
Maturity structure of debt outstanding (X)	
Maturities due within 5 years	47.2
Maturities due within 10 years	81.5
Interest structure of debt outstanding (X)	
Interest due within first year	6.1

/a All entries on external capital debt section are defined as in the Bank's Debtor Reporting System (only public and private guaranteed M&LT debt).  
/b Based on new balance of payments classification.  
/c Includes private guaranteed and non-guaranteed debt and grants. For 1980-84, includes rescheduled debt.  
/d Includes errors and omissions, other long-term capital, short-term and undesignated capital inflows for historical period. For the projected period, includes short-term and net IMF only.  
/e Estimate.  
/f Takes account of debt relief due to debt rescheduling, and excludes interest on short-term debt and private non-guaranteed debt.

STATUS OF BANK GROUP OPERATIONS IN TURKEY

A. STATEMENT OF BANK LOANS AND IDA CREDITS /a  
(As of March 31, 1986)

Loan Number	Fiscal Year	Borrower	Purpose	Amount (\$ millions) /b		
				Bank	IDA	Undisbursed
Forty-eight loans and fourteen credits fully disbursed				3086.86	196.15	
1585-TU	1978	Republic of Turkey	Northern Forestry	86.00		30.26
1606-TU	1978	Republic of Turkey	Erdemir Steel Stage II	95.00		9.87
1742-TU	1979	Republic of Turkey	Grain Storage	79.00		74.24
1754-TU	1980	Industrial Development Bank of Turkey (TSKB)	Private Sector Textiles	65.00		0.13
1755-TU	1980	Industrial Investment and Credit Bank (SYKB)	Private Sector Textiles	15.00		1.97
1844-TU	1980	Republic of Turkey	Karakaya Hydropower	120.00		2.38
1847-TU	1980	Republic of Turkey	Sumerbank Cotton Textiles	83.00		0.45
1862-TU	1980	Republic of Turkey	Livestock V	51.00		20.42
1916-TU	1981	Republic of Turkey	Petroleum Exploration	25.00		3.06
1917-TU	1981	Republic of Turkey	Oil Recovery	62.00		14.84
1952-TU	1981	Republic of Turkey	Labor Intensive Industry	40.00		2.50
1967-TU	1981	Republic of Turkey	Second Fruit and Vegetables	32.00		8.79
1985-TU	1981	Republic of Turkey	Fertilizer Industry Rehabilitation	110.00		47.52
1996-TU	1981	State Investment Bank (DIB)	State Industrial Enterprise Finance	70.00		24.54
2093-TU	1982	TSKB	Export-Oriented Industries	100.00		13.88
2094-TU	1982	Republic of Turkey	Erzurum Rural Development	40.00		26.84
2131-TU	1982	Republic of Turkey	Second Fertilizer Rehabilitation	38.00		28.50
2137-TU	1982	Republic of Turkey	Highway	71.10		11.20
2159-TU	1982	Istanbul Water Supply and Sewerage General Directorate (ISKI)	Istanbul Sewerage	88.10		70.60
2318-TU	1983	TCZB	Second Agricultural Credit	150.40		102.79
2322-TU	1983	Turkish Electricity Authority (TEK)	Third TEK Transmission	163.00		140.23
2327-TU	1983	Turkish Petroleum Corporation (TPAO)	Thrace Gas Exploration	55.20		46.05
2399-TU	1984	Republic of Turkey	Industrial Training	36.80		33.97
2400-TU	1984	Republic of Turkey	Technical Assistance for S&Es	4.65		3.34
2405-TU	1984	Republic of Turkey	Agr. Extension and Research	72.20		67.30
2433-TU	1984	Republic of Turkey	IARE Irrigation	115.30		108.29
2439-TU	1984	Republic of Turkey	Second Highway	186.40		159.42
2535-TU	1985	Republic of Turkey	Third Ports	134.50		129.57
2536-TU	1985	Republic of Turkey	Industrial Schools	57.70		55.67
2537-TU	1985	Republic of Turkey	Osdurova Neg. Urban Devt.	9.20		5.94
2545-TU	1985	Republic of Turkey	Pulp and Paper Rehab.	55.10		54.13
2585-TU	1985	Republic of Turkey	Agric. Sector Adjustment Ln.	300.00		221.18
2586-TU	1985	Turkish Electricity Authority (TEK)	Fourth TEK Transmission	142.00		141.54
2602-TU	1986	Turkish Electricity Authority (TEK)	Power System Operations Asst.	140.00		140.00
2647-TU	1986	Republic of Turkey	Small & Medium-Scale Industry	100.0		0.00 /c
2650-TU	1986	Turkish Electricity Authority (TEK)	Elbistan Operation and Maintenance Assistance	10.0		0.00 /d
2655-TU	1986	Republic of Turkey	Kayraktepe Hydropower	200.0		200.00
2663-TU	1986	Republic of Turkey	Drainage & On-Farm Develop.	255.0		0.00 /e
Total				6544.50	196.15	2001.41
of which has been repaid				832.20	19.13	
Total now outstanding				5712.30	177.02	
Amount sold						
of which has been repaid				3.55		
				- 0 -	- 0 -	
Total now held by Bank and IDA /f				5343.74	177.02	
Total undisbursed				2001.41	- 0 -	

/a The status of the projects listed in Part A is described in a separate report on all Bank/IDA financed projects in execution, which is updated twice yearly and circulated to the Executive Directors on April 30 and October 31.

/b Net of cancellations.

/c Became effective on May 13, 1986.

/d Became effective on May 12, 1986.

/e Not yet effective.

/f Prior to exchange adjustments.

STATUS OF BANK GROUP OPERATIONS IN TURKEYB. STATEMENT OF IFC INVESTMENTS  
(As of March 31, 1986)

Fiscal Year	Obligor	Type of Business	Amount \$ Millions		
			Loan	Equity	Total
1964/67/69/ 72/73/75/76/ 77/80/83	TSKB	DFC	60.00	4.77	64.77
1966/69/ 71/72	SIFAS I	Nylon Yarn	3.15	1.42	4.57
1970/71/ 82/83	Viking I	Pulp and Paper	2.50	0.82	3.32
1970/86	ACS	Glass	10.00	1.68	11.68
1971/76/ 83/84	NASAS	Aluminum	8.58	1.46	10.04
1973	Akdeniz	Tourism	0.33	0.27	0.60
1974/77	Borusan	Steel Pipes	3.60	0.49	4.09
1974	AKSA	Textiles	10.00	-	10.00
1975	Kartaltepe	Textiles	1.30	-	1.30
1975	Sasa	Nylon Yarn	15.00	-	15.00
1975	Aslan	Cement	10.60	-	10.60
1975/78/83	DOKIAS	Steel	7.50	1.53	9.03
1976/79	Asil Celik	Steel	12.00	4.00	16.00
1979	Ege Mosan	Engines for Mopeds	2.15	-	2.15
1979/80/82/84/85	ISAS	Motor Vehicles & Access.	8.85	2.34	11.19
1986	Cam Elyaf	Fiber Glass	7.81	-	7.81
1979/81/ 83/84	Trakya Cam	Glass	33.15	3.23	36.38
1980	MENSA	Textiles and Fibers	4.00	-	4.00
1981	Kirklareli Cam Sanayii A.S.	Glass Tableware	12.95	-	12.95
1982	M.A.N. Motors	Motor Vehicles & Access.	7.88	-	7.88
1984	Pinar	Food and Food Processing	3.90	-	3.90
1985	MANAS	Motor Vehicles & Access.	6.47	-	6.47
	Total Gross Commitments		231.72	22.01	253.73
	Less Cancellations, Terminations, Exchange Adjustments, Repayments and Sales		174.76	9.78	184.54
	Total Commitments now held by IFC		56.96	12.23	69.19
	Total Undisbursed		7.81	-	7.81

TURKEY

Sir Hydropower Project  
Supplemental Project Data Sheet

I. Timetable of Key Events

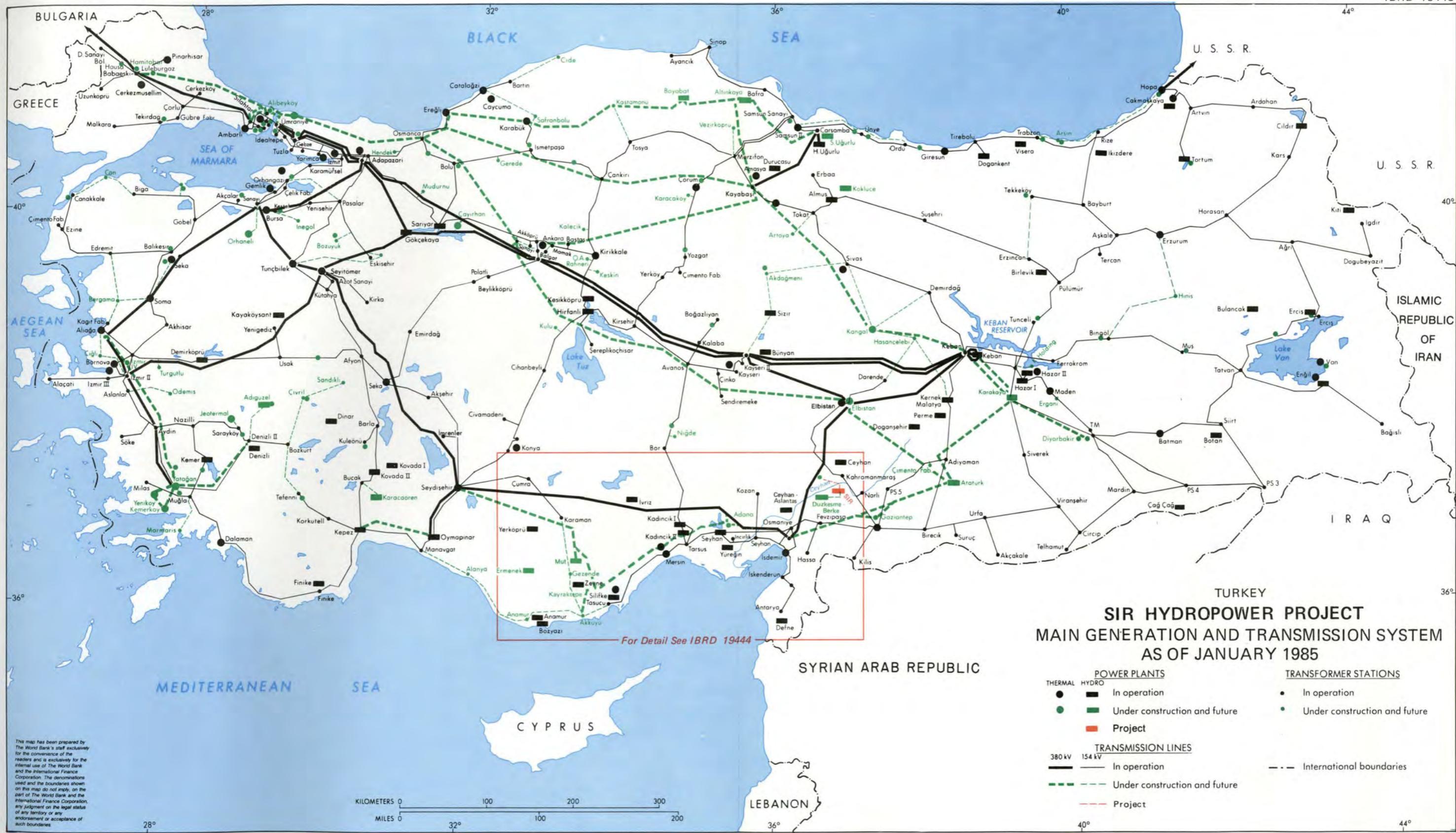
- |   |               |
|---|---------------|
| (a) Time taken by country to prepare project:   | 15 months     |
| (b) Project preparation agency:                 | CEAS          |
| (c) First Bank mission to consider the project: | March 1984    |
| (d) Appraisal mission departure:                | June 1985     |
| (e) Negotiations completed:                     | July 8, 1986  |
| (f) Planned date of loan effectiveness:         | November 1986 |

II. Special Bank Implementation Actions

None

III. Special Conditions

- (i) The Borrower would:
- (a) exchange views with the Bank on proposed changes resulting in the restructuring of CEAS (para 59).
- (ii) The Beneficiary would:
- (a) not carry out any major investments (estimated at \$25 million or more) without the consent of the Bank except for those facilities included in the Project and in the Duzkesme Berke project (para. 75); and
  - (b) continue to charge prices for electricity sold in accordance with tariff setting procedures currently in force (para. 76); and
  - (c) annually update and review its financing plan in consultation with the Bank (para. 75).



TURKEY  
**SIR HYDROPOWER PROJECT**  
 MAIN GENERATION AND TRANSMISSION SYSTEM  
 AS OF JANUARY 1985

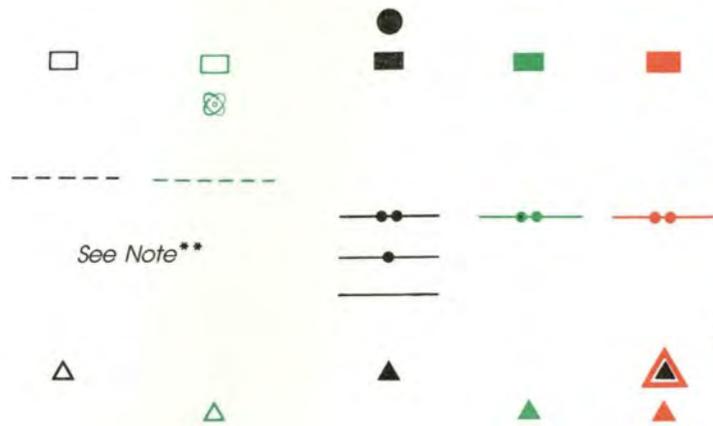
- | POWER PLANTS       |                               | TRANSFORMER STATIONS |                               |
|--------------------|-------------------------------|----------------------|-------------------------------|
| ●                  | Thermal                       | ●                    | In operation                  |
| ●                  | Hydro                         | ●                    | Under construction and future |
| ■                  | In operation                  | ■                    | In operation                  |
| ■                  | Under construction and future | ■                    | Under construction and future |
| ■                  | Project                       |                      |                               |
| TRANSMISSION LINES |                               |                      |                               |
| —                  | 380 kV                        | —                    | In operation                  |
| —                  | 154 kV                        | —                    | Under construction and future |
| ---                | Project                       | ---                  | International boundaries      |

This map has been prepared by The World Bank's staff exclusively for the convenience of the readers and is exclusively for the internal use of The World Bank and the International Finance Corporation. The denonations used and the boundaries shown on this map do not imply, on the part of The World Bank and the International Finance Corporation, any judgment on the legal status of any territory or any endorsement or acceptance of such boundaries.

# TURKEY SIR HYDROPOWER PROJECT TRANSMISSION SYSTEM Cukurova Region

**OTHER POWER COMPANIES**  
IN OPERATION    UNDER PLANNING OR CONSTRUCTION

**C. E. A. S.**  
IN OPERATION    UNDER PLANNING OR CONSTRUCTION PROJECT



**Power Plants:**

- Thermal
- Hydro
- Nuclear

**Transmission Lines:**

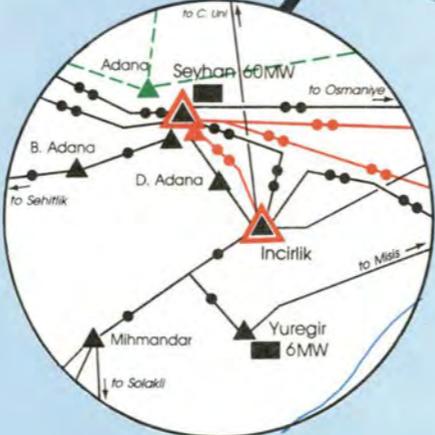
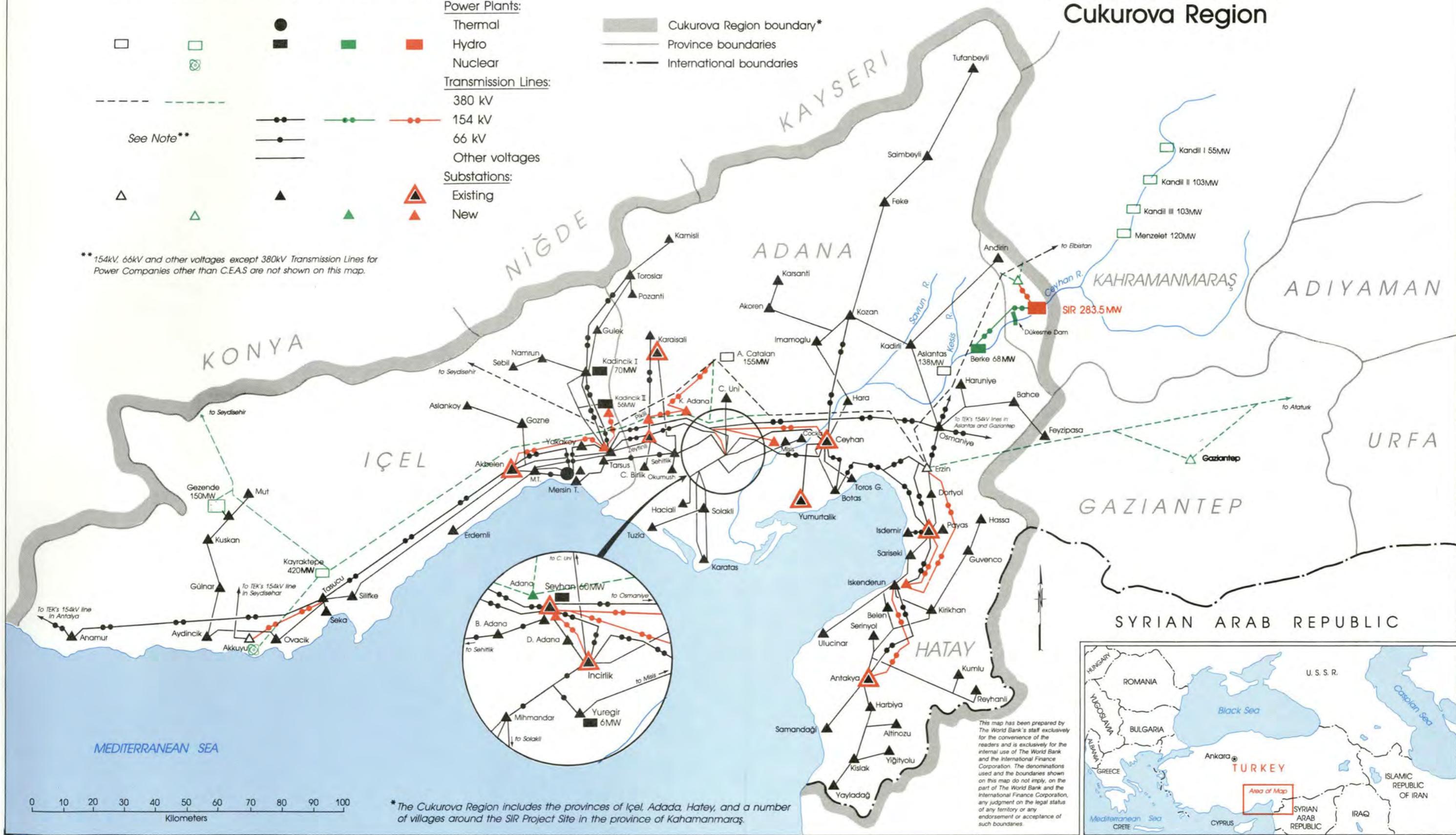
- 380 kV
- 154 kV
- 66 kV
- Other voltages

**Substations:**

- Existing
- New

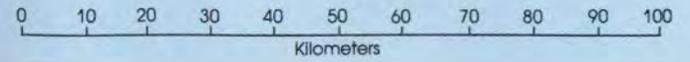
- Cukurova Region boundary\*
- Province boundaries
- International boundaries

\*\* 154kV, 66kV and other voltages except 380kV Transmission Lines for Power Companies other than C.E.A.S are not shown on this map.



This map has been prepared by The World Bank's staff exclusively for the convenience of the readers and is exclusively for the internal use of The World Bank and the International Finance Corporation. The denominations used and the boundaries shown on this map do not imply, on the part of The World Bank and the International Finance Corporation, any judgment on the legal status of any territory or any endorsement or acceptance of such boundaries.

\*The Cukurova Region includes the provinces of İçel, Adana, Hatay, and a number of villages around the SIR Project Site in the province of Kahramanmaraş.





Mr. Wapleham

W.K.  
8/1/51

As we discussed on the telephone, soon after the loan is made, a mission with a sociologist should go to Turkey to review with the authorities the settlement aspect of the project. The President's Report should also mention that the settlements will be closely monitored and that a sociologist will be associated with this.

Shaw-Watson

8/1

# OFFICE MEMORANDUM

DATE July 31, 1986

TO Mr. S. Husain, OPSVP

FROM W. A. Wapenhans, Acting SVPOP

EXTENSION 32676

SUBJECT TURKEY - Sir Hydroelectric Project  
Resettlement Issue

1. During the review of the draft grey cover Board documents for this project it became evident that there was inadequate compliance with the Bank's policy on resettlement issues. In part this arose because of acceptable performance of the Borrower on earlier projects, in part the matter had been inadequately dealt with in the process of project appraisal and documentation. Moreover, in this particular case it is a marginal issue with very limited numbers of people and small areas involved.

2. I have asked that the case be reviewed and until resolved the project be removed from the Board schedule. The Region now seeks the concurrence of the Loan Committee to proceed in the light of the fuller treatment of the issue in the Loan Documents. I should like to get your advice on the matter in view of the position taken by Mr. Cernea of the Agriculture Department. The documents are attached.

Atts

cc: Mr. V. Rajagopalan  
Ms. P. Donovan

WAW/nks

## OFFICE MEMORANDUM

Date: July 30, 1986

To: Mr. W. A. Wapenhans, EMNVP

Through: Mr. V. Rajagopalan, EMP *VR*

From: R. Reekie, Chief, EMPPE

Ext: 32600

Subject: Turkey - Sir Hydroelectric Project

1. As indicated in Ms. Donovan's note of July 29, we have not complied with the requirement of OMS 2.33 regarding the preparation of the resettlement plan for the above project. In common with most other parts of the Bank, we had been rather remiss in this respect and the attention of all power divisions was drawn to this in Mr. Fish's (EGY) memo of October 31, 1985. At that date we had already issued the yellow cover SAR, and the resettlement plan had not been prepared although other environmental aspects had been adequately addressed. Since that date the borrower and the project entity have made substantial progress to remedy the deficiency. Since they were unable to prepare the full plan in the time available, they divided the program into three phases related to the time in which the individual parcels of land are required to meet the construction schedule. The first phase has been completed, and agreement has already been reached with all the population who will be affected in the first year. The programs for the second and third phases are to be submitted to the Bank for approval by March 31, 1987 and December 31, 1987, respectively. During negotiations the Turkish delegation stressed that these programs are being prepared and will be carried out in accordance with well-established procedures under Turkish law. We believe they would strongly resist changes involving amendments to legislation or existing procedures.

2. Given the Turkish Government's satisfactory performance in the past relating to resettlement issues, we believe the proposed arrangements are acceptable. The paragraph relating to resettlement did not adequately reflect the actions taken by the Turkish Government so far. Revised paragraphs relating to resettlement are attached.

3. Unfortunately, although copies of the yellow and green cover SAR were sent to EGY and PPD for review, they were not sent to Mr. Cernea, Sociology Advisor in the Agricultural Department, until this week. Mr. Cernea considers that the most appropriate course of action would be to postpone presentation of the project to the Board until a further mission, including a sociologist, can visit Turkey and fully evaluate the proposals. We believe that if it is decided to make Board presentation conditional on the prior submission of an acceptable resettlement program for all the affected population, the Government may choose to withdraw the proposed project.

4. We therefore suggest that the concurrence of the Loan Committee be sought to submitting the documents to the Board with the proposed revision of the paragraphs relating to resettlement.

cc: Messrs. Chaffey, Cernea, EMENA & Chron. Files

RReekie:wc  
Attachments

July 29, 1986

Mr. Wapenhans:

TURKEY - Sir Hydropower Project

Attached is the draft grey cover report and a copy of the Loan Committee comments dated April 30, 1986, in which Mr. Stern asked that the Bank's resettlement policy should be "followed carefully".

Based on the draft grey cover, it appears that the Bank resettlement policy has not been followed. The policy requires that preparation of the resettlement component proceed at the same pace as other project elements and requires completion of detailed resettlement planning before the negotiation of the proposed loan (paras 21 and 26 of OMS 2.33). Mr. Cernea in AGR (OPS), the Rural Sociology Advisor charged with monitoring the adequacy of resettlement issues said that he was shown the green cover report last week, but has otherwise not been involved in any consultations on this project.

I understand that the Board has raised questions on the adequacy of resettlement plans in recent months in both the Kayraktepe Hydropower Project and in the Andra Pradesh Irrigation Project (March 1986). In the latter case, the staff were requested to bring to the Board a status report on the resettlement plan by this September.

The draft grey cover proposes to obtain detailed resettlement plans for the areas affected during the first three years of project execution by March 31, 1987 with the remainder to be provided by December 31, 1987. The green cover report proposed that details of the full resettlement program would be available by December 1986. However, even this earlier date was not consistent with the resettlement policy.

*April '86, at negotiations. The Borrower, however, did not produce the program.*

Bob Reekie tells me that there are very few people involved in the dislocation and that the flooding is 6 years down the road. Also, he says that the Turkish record on resettlement is good and that the process proposed is identical to that pursued satisfactorily in other Turkish projects. Furthermore, following the OMS would require changes in the Turkish legal system. These considerations may warrant an exception to the OMS, but in that case, I would suggest that some of this background would need to be built into the President's Report, and probably, tighter monitoring of progress would also be useful.

*No  
11??*

*Paula,*

*Thank you for the cc. The matter is now temporarily over, since the project was cleared for the Board.*

*However, one important point: the justification given that the OMS would "require" changes in the Turkish*

Paula Donovan

cc: Messrs. Cernea, Clements (o/r)

*legal system" is not valid. This was not, and is not, a problem. We could have a resettlement plan fully within the recent 1983 Turkish law.*

*Michael Cernea*

July 29, 1986

Mr. Wapenhans:

TURKEY - Sir Hydropower Project

Attached is the draft grey cover report and a copy of the Loan Committee comments dated April 30, 1986, in which Mr. Stern asked that the Bank's resettlement policy should be "followed carefully".

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Bob Reekie tells me that there are very few people involved in the dislocation and that the flooding is 6 years down the road. Also, he says that the Turkish record on resettlement is good and that the process proposed is identical to that pursued satisfactorily in other Turkish projects. Furthermore, following the OMS would require changes in the Turkish legal system. These considerations may warrant an exception to the OMS, but in that case, I would suggest that some of this background would need to be built into the President's Report, and probably, tighter monitoring of progress would also be useful.



Paula Donovan

cc: Messrs. Cernea, Clements (o/r)

# OFFICE MEMORANDUM

DATE April 30, 1986

TO Files

FROM Horst Eschenberg, Senior Loan Officer, EM2DA

EXTENSION 32854

SUBJECT TURKEY - Sir Hydropower Project -  
Loan Committee Comments

1. Mr. Clements called to say that Mr. Stern has cleared the Loan Committee package for the above project.
2. In view of the continuing negotiations regarding CEAS becoming a regional utility, Mr. Stern suggests that, pending final agreement, the Government be asked to confirm that a decision in principle has been taken in the matter. Regarding the resettlement program, Mr. Stern expects that relevant Bank policy be followed carefully.

Cleared with & cc: Mr. Clements ✓

cc: Messrs. Sheorey, Geary, Schroeder (EMP)

HEschenberg:bem

UU/PD

Received 7/25/86 (SPN)

# OFFICE MEMORANDUM

Comments by c.o.b. 7/30/86

DATE July 23, 1986

TO Mr. W. A. Wapenhans, Acting Senior Vice President, Operations

FROM Edmond E. Asfour, Acting Director, EM2

EXTENSION 3-2400

SUBJECT TURKEY - US\$132 Million Loan for the Sir Hydropower Project

*The documents should be revised as suggested in the follow-up activities taken in the light of Mr. Hussein's advice.*  
8/1 [Signature]

1. Attached for your approval is a copy of the draft President's Report on a proposed loan of \$132 million to the Republic of Turkey for the Sir Hydropower Project. This report and the related Staff Appraisal Report are scheduled to be distributed to the Executive Directors on August 7, 1986. The Government's and Cukurova Elektrik A.S.'s (CEAS) final agreement on the negotiated legal documents have been received.

2. The following changes were made in the draft documentation during negotiations:

- (a) the proposed loan amount was reduced from \$146.6 million to \$132 million to reflect revised cost estimates. Retroactive financing was increased from \$600,000 to \$5 million to cover expenditures for engineering consultants and the advance payment for the civil works contract, to help maintain the implementation schedule;
- (b) the loan was to have been made to CEAS with a Government guarantee; the Turkish delegation informed us during negotiations that under Turkish Law the Government cannot guarantee the debt of corporations operating under the Turkish Commercial Code (as CEAS is). Accordingly we acceded to the Government's request that the loan be made to the Republic of Turkey with onlending to CEAS, as the normal terms of 17 years, with four years grace. Onlending would be on at least the same terms as the Bank's with CEAS bearing the foreign exchange risk. Under such an arrangement, the Borrower is normally required, under the Loan Agreement, to "... take or cause to be taken all action, including the provision of funds, facilities, services and other resources, necessary or appropriate to enable CEAS to perform ... its obligations under the Project Agreement." Both the Government and CEAS have objected to any commitment from the Government to provide additional funding in the event of cost overruns. Since CEAS is expected to be able to finance any cost overruns incurred in the Project out of its own resources, we do not consider it essential to have such a commitment from the Government and accordingly agreed to the deletion of the word "funds" from the standard provision in the Loan Agreement. CEAS' obligation to provide cost overrun financing is reflected in the Project Agreement.

- (c) the Government confirmed during negotiations that, subject to a satisfactory outcome of negotiations between the Ministry of Energy and Natural Resources and CEAS, it expects that CEAS will become a regional utility as provided under Law 3096; and
- (d) the requirement that CEAS and TEK complete a wheeling agreement by January 1, 1987 was adjusted to reflect that the agreement is subject to the outcome of a CEAS study of power transmission needs of the Cukurova region. The study is to be submitted to the Bank by January 15, 1987.

3. This memorandum and the accompanying document have been cleared by the Departments concerned. Please convey any comments you may have on the attached report to Mr. H. Eschenberg (ext. 3-2854).

Cleared with & cc: Messrs. Chaffey (EM2DA), Reekie (EMP), Mills (LOA)  
Mesdames Hunt (LEG), O'Donnell (EM2)

HEschenberg:bem

# International Bank for Reconstruction and Development

SecM86-819

FROM: The Deputy Secretary

July 10, 1986

## STATUS OF NEGOTIATIONS

### TURKEY

#### SIR HYDROPOWER PROJECT

Negotiations have been substantially completed and documents will be submitted to the Executive Directors for consideration on a date to be determined.

The following is a description of the proposed loan:

<u>Borrower:</u>	Republic of Turkey
<u>Beneficiary:</u>	Cukurova Elektrik S.A. (CEAS)
<u>Amount:</u>	US\$ 132 million equivalent
<u>Interest Rate:</u>	Standard variable
<u>Commitment Charge:</u>	Standard
<u>Term:</u>	17 years including four years of grace.
<u>Onlending Terms:</u>	Same as the Bank's.
<u>Purpose:</u>	The proposed project would support the Government's strategy of developing Turkey's indigenous energy resources and of helping to bring about greater involvement of the private sector in energy development. Financing would be provided for the 283.5 MW Sir Hydropower Station on the Seyhan river; the project would also include transmission lines to connect the power station to the national grid, technical assistance and training.

### Distribution

Executive Directors and Alternates  
President  
Senior Vice Presidents  
Senior Management Council  
Vice Presidents, IFC  
Directors and Department Heads, Bank and IFC

# OFFICE MEMORANDUM

DATE April 30, 1986

TO Files

FROM Horst Eschenberg, Senior Loan Officer, EM2DA

EXTENSION 32854

SUBJECT TURKEY - Sir Hydropower Project -  
Loan Committee Comments

1. Mr. Clements called to say that Mr. Stern has cleared the Loan Committee package for the above project.
2. In view of the continuing negotiations regarding CEAS becoming a regional utility, Mr. Stern suggests that, pending final agreement, the Government be asked to confirm that a decision in principle has been taken in the matter. Regarding the resettlement program, Mr. Stern expects that relevant Bank policy be followed carefully.

Cleared with & cc: Mr. Clements ✓

cc: Messrs. Sheorey, Geary, Schroeder (EMP)

HEschenberg:bem

# International Bank for Reconstruction and Development

SecM86-488

FROM: The Deputy Secretary

April 29, 1986

## NOTICE OF INVITATION TO NEGOTIATE

### TURKEY - SIR HYDROPOWER PROJECT

The Bank is inviting representatives of the Republic of Turkey and the Cukurova Electric Company (CEAS) to negotiate a loan of US\$146.6 million equivalent for a proposed Sir Hydropower Project.

The proposed project would support the Government's strategy of developing Turkey's indigenous energy resources and of helping to bring about greater involvement of the private sector in energy development. Financing would be provided for the 283.5 MW Sir Hydropower Station on the Ceyhan river; the project would also include transmission lines to connect the power station to the national grid, technical assistance and training.

#### Distribution:

Executive Directors and Alternates  
President  
Senior Vice Presidents  
Senior Management Council  
Vice Presidents, IFC  
Directors and Department Heads, Bank and IFC

THE WORLD BANK/INTERNATIONAL FINANCE CORPORATION  
OFFICE MEMORANDUM

E1231

DATE April 29, 1986

TO Mr. H. Eschenberg, EM2DA

FROM K. Stichenwirth, PPDPR

EXTENSION 75348

SUBJECT TURKEY: Sir Hydropower Project  
Loan Committee Review

On behalf of Mr. S. Shahid Husain, OPSVP, we have cleared for negotiations the documents of the above project on April 24, 1986. During the review the following points emerged which should be taken into account during negotiations and in the gray cover documents:

- a. the "Financial Rate of Return" should be eliminated;
- b. PR 59. Which "additional remedy" has been included in the event that new legislation might have an adverse impact on the project?
- c. PR 64. Who collects the bills prepared by CEAS from the retail customers in the 200 villages?
- d. PR 66. What is the significance of quoting Sir's projected production "without irrigation"? Is Sir a multi-purpose plant or does a possible multi-purpose operation of other plants on the same river affect Sir's output?
- e. PR 71. Kindly eliminate the man-month cost for consultants;
- f. PR 76. It may help the reader of the President's Report if some background on excluding a CEAS-specific tariff covenants would be provided (for instance such as contained in para. 4.23 of SAR); and
- g. PR 82. The amount of US\$10 million for the special account seems to be excessive.

cc: Messrs. Clements/Kopp (SVPOP), Pranich (EMPDR), Reekie (EMPPE),  
Sheorey (EMPPE), Schraeder (EMPPE)  
EMENA Regional Information Center

KS/mpv

THE WORLD BANK INTERNATIONAL FINANCE CORPORATION  
OFFICE MEMORANDUM

DATE August 29, 1985

TO Files

FROM Horst Eschenberg<sup>VA</sup> Senior Loan Officer, EM2DA

EXTENSION 3-2854

SUBJECT TURKEY - Sir Hydropower Project  
Decision Memorandum

Mr. Köpp called to convey Mr. Knox' (Acting SVPOP), comments on the above:

1. Since the cost estimates are still subject to revision and the legal status of CEAS is not yet clear, Mr. Knox feels that the appraisal is not yet complete and he wishes to reserve judgement.
2. Regarding the legal status of CEAS, he suggests that the matter should be resolved hopefully before negotiations, but certainly before Board presentation. He wondered if the suggested concession extension for CEAS to cover the economic life of the project would not be too long as hydropower projects have a life of some 50 years. I explained that if, contrary to expectation, CEAS's application for status as an entrusted company should not be approved eventually, CEAS would require the use of the new asset for its economic life to raise the financing for the project. Under present rules CEAS would have to turn over the asset to TEK on expiration of its concession without compensation. An alternative to an extension of the concession would be a reasonable compensation agreement. The latter could be negotiated.
3. Regarding paragraph four of the Decision Memorandum Mr. Knox questioned if the Government planned to hold all types of cofinancing for Bank financed projects in Turkey pending the outcome of the arrangements for the Kayraktepe project and suggested that cofinancing forms other than "B" Loans should be further pursued. I explained that recently the Government had resisted all cofinancing proposals for a number of reasons. In particular the Government questioned if such funds would be additional to resources available to Turkey. Also the Government is concerned because of negative experiences, particularly delays, in connection with earlier cofinancing for Bank project.

4. Finally, Mr. Knox felt that the rationale for Bank involvement for the project is far from clear from the IP/DM which only provides a justification for the project. I explained that, at the Government's request, the Bank had been involved in an energy sector dialogue for some time to help resolve some of the sector's problems which are constraining the economy. In the course of the dialogue a strategy was developed and agreed which, inter alia, includes objectives such as reducing Turkey's dependence on imported oil, and greater involvement of the private sector in financing and managing the sector. Continued Bank support through proposed project is important for the realization of agreed sector objectives.

Cleared & cc: Mr. Köpp ✓ (3)

Distribution: Messrs. Wapenhans, Hasan, Patel (EMNVP), Stoutjesdijk, Asfour,  
Chaffey, Murli, Balkind (EM2), Picciotto, Pranich,  
Grosdidier de Matons, Liebenthal, Jones, Schertz,  
Reekie, Roa, Schroeder, Sheorey, Geary, McKechnie,  
Johnson (EMP), Dherse (VPEIS), Rajagopalan (5) (PPD),  
Swahn (EDT), Rovani (5) (EGY), Hittmair (CTRVP),  
Watanabe (OED), Prosser (EMPED), Lee (PPDES)  
Mesdames Foote, El Saifi, Chassard (EMP), Hunt (LEG),  
O'Donnell (EM2)

HEschenberg:bem

IP 2 / DM<sup>2</sup> National for Bk  
 involvement -- -- govt  
 case for inv. r. -- but why Bk?

Program for " full of cost →  
 are we doing enough in  
 cofinancing ?

App. premature?

DM 7 — ~~around~~ extend conc<sup>n</sup>  
 area / some reg. before  
 Ad

but extend concerns for life of  
 project ?

THE WORLD BANK  
DECISION MEMORANDUM TRANSMITTAL SHEET

TO: Distribution

DATE: August 19, 1985

FROM: <sup>JM</sup> James Chaffey, Division Chief

Chairperson, Decision Meeting

COUNTRY/PROJECT: TURKEY: Sir Hydropower Project

Issues Paper Date: July 30, 1985	Decision Meeting Date: August 6, 1985	Loan Committee Date: December 5, 1985	Scheduled Board Presentation Date: March 3, 1986	Yellow Cover Review: Waived <input type="checkbox"/> Not Waived <input checked="" type="checkbox"/>
Estimated Costs: Total: \$268.9 m Foreign: \$162.7 m	Proposed Loan/Credit Amount: \$162.7 million	Amount in Approved Lending Program: \$120.0 million	Amount and Source of Co-Financing: None	
<b>1. DECISIONS SOUGHT</b>				
None				
<b>2. SPECIAL FEATURES</b>				
None				
<b>3. SECTOR POLICY ISSUES</b>				
(a) List major covenants not in compliance in sector:				
(b) List major policy issues covered by proposed project. Use simple descriptions, e.g. prices, staffing, maintenance, etc.:				
Private sector involvement in energy sector				
(c) List problem projects in sector (name and Loan/Credit number):				
(d)				
No. of Problem Projects:	<u>In Sector</u> none	<u>In Country</u> 4		
Total No. of projects under supervision:	7	36		

DISTRIBUTION

1. Mr. Stern, SVPOP, through RVP <sup>A. ell</sup> (initial)  
2. Standard Distribution: SEE ATTACHED MEMORANDUM

(3 copies with Issues Paper and Project Brief)

## OFFICE MEMORANDUM

DATE August 16, 1985

TO Distribution

FROM Horst Eschenberg, Senior Loan Officer, EM2DA

EXTENSION 3-2854

SUBJECT TURKEY - Sir Hydropower Project  
Decision Memorandum

1. A Decision Meeting, chaired by Mr. Chaffey, was held on August 6, 1985 to discuss the Issues Paper on the above project dated July 20, 1985. The meeting was attended by representatives from LEG, EMP and EM2. (See attached attendance list.) The recommendations contained in the Issues Paper were approved with modifications and clarifications as described below.
2. Rationale for Bank Involvement - The Bank's involvement is justified because it will assist in achieving the following objectives: reducing Turkey's dependence on imported oil through exploitation of hydroelectric resources; involving the private sector in the management and financing of the power subsector; and expanding power supply to meet expected growth in energy demand.
3. Project Cost - The mission reported that a meeting of experts to determine the optimum dam design will take place on August 19 and that TEK and CEAS have been asked to determine jointly the extent of needed investments in transmission and substation facilities for the Sir project. It was agreed that the cost estimates would be refined in the light of the decisions taken on the design of the dam and coordination of transmission and substation investments between TEK and CEAS.
4. Financing Plan - In the light of Government's recent decision to seek major cofinancing ("B" loan) for the Kayraktepe Hydroelectric Project and to postpone such a decision for other projects until the benefits of cofinancing can be shown, it was agreed that in the case of the proposed project the Bank loan should cover the full foreign exchange cost including interest during construction. The latter, of course, would be subject to justification in the appraisal report. The present estimate of foreign exchange cost is \$162.7 million, but this is subject to change as discussed in para. 3 above.
5. Status of CEAS - The mission explained that CEAS's ability to finance the local costs of the project was subject to two factors: (a) Power tariffs would have to be maintained in real terms. Given the Government's recent performance in increasing power tariffs, this was a reasonable assumption; and (b) The Bank would need to be assured that any changes made to CEAS's legal status should not be such as to materially and adversely affect CEAS's ability to fulfill its obligations under the Project.

6. New legislation allowing for private sector participation in the power sub-sector was enacted in December 1984. This will not be put into effect until the accompanying regulations are issued. The new law will allow companies other than TEK to assume responsibility for power distribution as well as for generation and transmission. CEAS has submitted an application to the Government under the new law requesting that it be allowed to expand its activities. If CEAS's application is approved and reasonable arrangements are made for compensating TEK for the transfer of the related assets, CEAS should be able to generate adequate funds to cover the local costs of the Project. Since the Government indicated the regulations would probably not be issued within this calendar year, the mission also considered the possibility of proceeding with the Project on the basis of CEAS's existing legal status. CEAS operates under a concession agreement which would require modification. The site for the proposed Project is slightly outside of CEAS's concession area. Although CEAS has been given permission by the Government to construct and operate the new facility, it would not be able to sell its output directly to its own customers unless the concession area is extended. The concession agreement expires in 2002, well before the end of the economic life of the proposed Project. Unless adjustments are made, CEAS would have to turn over the assets to TEK without compensation at that time.

7. It was agreed that the Government and CEAS be informed that the Bank would proceed to prepare the Project on the assumption that in the absence of the issuance of the regulations (para. 6) prior to negotiations, the CEAS concession agreement would be amended to include within its area of responsibility the site for the Sir Hydropower Project and to extend the concession to cover the economic life of the Project.

Cleared with & cc: Messrs. Roa, Sheorey (EMP), Murli (EM2)  
Mesdames Foote (EMP), Hunt (LEG)

Distribution: Messrs. Wapenhans, Hasan, Patel (EMNVP), Stoutjesdijk, Asfour, Chaffey, Balkind (EM2), Picciotto, Pranich, Grosdidier de Matons, Liebenthal, Jones, Schertz, Reekie, Schroeder, Geary, McKechnie, Johnson (EMP), Dherse (VPEIS), Rajagopalan (5)(PPD), Swahn (EDT), Rovani (5)(EGY), Hittmair (CTRVP), Watanabe (OED), Prosser (EMPED), Lee (PPDES),  
Mesdames El Saifi, Chassard (EMP), O'Donnell (EM2)

HEschenberg:bem

SIR HYDROPOWER PROJECT

Decision Meeting Attendance List

Mr. Chaffey	EM2
Mr. Eschenberg	"
Mr. Murli	"
Ms. O'Donnell	"
Mr. Pranich	EMP
Ms. Foot	"
Mr. Geary	"
Mr. Roa	"
Mr. Sheorey	"
Ms. Hunt	LEG

## OFFICE MEMORANDUM

DATE: July 30, 1985

TO: Mr. A. Roa, Actg. Div. Chief, EMPPE

FROM: L. Meek Foote, K.N. Sheorey, I. Johnson, EMPPE

SUBJECT: TURKEY - Appraisal of Sir Hydropower Project  
- ISSUES PAPER

Introduction

1. In accordance with Terms of Reference dated June 13, 1985, we visited Turkey to appraise the above project. A detailed aide-memoire was left (Annex 1). The proposed project--a 273-MW hydropower plant and a 116 meter high concrete arch dam on the Ceyhan River in South Central Turkey--is described in the Project Brief of 5/14/84. The project will also include extension/upgrading of Cukurova Elektrik A.S. (CEAS) sub-transmission systems and technical assistance to CEAS in carrying out studies to improve the utilization of its existing facilities. CEAS, a semi-private utility in which TEK is a shareholder, will implement the project. The Treasury has indicated that the Government will be the Borrower and the proceeds of the loan will then be on lent to CEAS, the same practice which was followed in the case of four previous loans and credits for CEAS prior to 1971.

2. The rationale for the Bank's involvement in this Project is that it will assist with achieving the following objectives: reducing Turkey's dependence on oil through exploitation of domestic hydroelectric resources; expanding power supply to meet the expected growth in energy demand in the 1990s; and, mobilizing private management and financial resources for investment in power facilities.

3. CEAS' engineering consultants, Coyne and Bellier/Aknil were present during the mission and are now in the process of completing a detailed engineering report covering proposed modifications to the design of the diversion tunnel, spillway, dam and powerhouse. These modifications constitute technical improvements to the original design done by ENERGOPROJEKT, and will also produce cost savings through reducing the volume of concrete and the necessary excavation.

4. The project issues at this time concern the project cost, the financing plan, and the legal status of CEAS.

Project IssuesProject Cost

5. Project costs are still preliminary. Modifications to the design of the dam and power plant, which will be discussed during an engineering review

meeting the week of August 19, could reduce the foreign cost by up to US\$10 million. On the other hand, additions to the 380-kV transmission grid and related substations which CEAS has proposed could increase the project cost.

6. At the time of the appraisal mission, CEAS and the Turkish Electricity Authority (TEK) had not yet collaborated to carry out load flow studies to determine the least cost solution for Sir energy transmission (para 12 of Annex 1). CEAS may have the option of connecting the Sir Plant to the existing 380-kV grid (the Elbistan-Erzin line) which is owned and operated by TEK; in this case CEAS would need to pay TEK a "power wheeling" fee. Another alternative, which has been proposed by CEAS, would involve CEAS constructing its own 380-kV line and substations. Only after the load flow studies are completed and the proposal is submitted to the Bank (expected by end of August 1985) will it be possible to determine which investments in transmission are justified. The present project cost estimates are based on the solution which the mission expects to be the most economic.

7. The estimated project cost with contingencies is US\$268.9 million, of which the foreign cost is US\$163 (including interest during construction of US\$23.3 million).

	(Millions of US\$)		
	<u>Local</u>	<u>Foreign</u>	<u>Total</u>
a) Sir Hydropower Plant	68.7	75.1	143.8
b) Extension and upgrading of CEAS sub-transmission system	6.2	19.1	25.4
c) Technical assistance	0.1	0.9	1.0
BASE COST (mid-85 prices)	75.1	95.1	170.2
Physical Contingencies	7.5	9.5	17.0
Price Contingencies	23.6	34.8	58.4
TOTAL PROJECT COST	106.2	139.4	245.6
Interest during construction	-	23.3	23.3
FINANCING REQUIREMENTS	106.2	162.7	268.9

#### Recommendation

8. The mission should follow-up with CEAS and the Turkish authorities, in order to assure that decisions on the remaining modifications to the project definition can be reflected in the yellow cover SAR.

#### Project Financing Plan

9. The loan amount presently in the lending program is US\$120 million. The Government has requested Bank financing for the full foreign cost of the project. The Government has indicated it intends to concentrate its efforts on co-financing for another larger hydro project being processed in parallel

(Kayraktepe). Discussions have been held with IFC, but IFC management has indicated that this project does not meet their criteria for participation. CEAS will not have alternate sources of foreign exchange to finance the interest during construction. The local cost of the project, however, could be fully financed through CEAS internal cash generation and new equity capital, as long as electricity tariffs are maintained at present levels in real terms.

#### Recommendation

10. It is recommended that US\$163 million be allocated from the lending program for the Sir Project so as to cover the total estimated foreign cost of the project.

#### Legal Status of CEAS

11. CEAS has applied for a small enlargement of its three-province service area to include the immediate Sir Project site. The Treasury and the Ministry of Energy and Natural Resources (MENR) indicated that Government approval was expected by the end of the summer. Such a change is important as it will assure that CEAS can sell the equivalent of Sir electricity production to its customers rather than selling to TEK at a lower bulk rate at the powerhouse switchyard.

12. As for more fundamental legal changes, the Government indicated that the regulation dealing with the establishment of regionally integrated utilities is expected to affect CEAS (ie. CEAS might take over TEK's distribution facilities within the region): however, this regulation was not expected to be finalized within the next year. In the interim, the CEAS concession is still scheduled to expire in 2002, only ten years after the commissioning of Sir. Extension to the concession period might be necessary, unless CEAS becomes a more autonomous utility with no time limit on ownership and operating rights. In any case, the Treasury and MENR indicated that any legal changes would not be intended to detract from CEAS' capacity to finance the local costs of the Sir Hydropower Project.

#### Recommendation

13. It is recommended that: (a) the mission proceed to prepare the SAR based on the existing legal status and scope of responsibilities of CEAS; (b) the Bank follow-up to determine when the service area will be extended to include the Project site; and (c) assurances be sought at negotiations that legal changes anticipated for CEAS will not be detrimental to the financial viability of CEAS or to its ability to implement the project.

Timetable

14. The present timetable for processing the loan is as follows:

White cover SAR	09/20/85
Yellow cover SAR	10/28/85
Start negotiations	01/06/86
Board presentation	03/04/86

Distribution:

Messrs. Wapenhans, Hasan, Patel (EMNVP), Stoutjesdijk, Asfour, Chaffey (4) (EM2), Picciotto, Pranich, Jones (EMP), Reekie, Roa, Schroeder, Geary, Sheorey, McKechnie, Johnson (EMPPE), Dherse (VPEIS), Rajagopalan (5) (PPD), Schertz, Swahn (EDC), Rovani (5) (EGY), Hittmair (CTRVP), Watanabe (OED), Prosser (EMPED), Lee (PPDES), R. Harris (EMPA3), Grosdidier de Matons, Liebenthal, Eschenberg, Balkind.  
Mesdames Hunt (LEG), Foote, Ladhivi, El Saifi, Chassard (EMPPE), O'Donnell  
cc: EMENA & Chron Files, Div. Black Book

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SIR HYDROPOWER PROJECT  
Aide-Memoire  
Mission of June / July, 1985

1. To carry out the appraisal of the above project, meetings were held with : Çukurova Elektrik A.Ş., its Engineering consultants—Coyne et Bellier/Aknil, the Treasury and the Ministry of Energy and Natural Resources, and a visit to the project site was conducted on June 29. The mission would like to thank ÇEAŞ managers and staff and the Government for all the cooperation received. This aide-memoire summarizes the mission's findings and the outstanding points to be resolved.

Project Description

2. The proposed project, to be implemented and owned by ÇEAŞ, would include three components :
  - a) a 273-MW power station and a thin concrete arch dam 116-m high on the Ceyhan River at Sir, and connection of the power plant to the 380-kV grid.
  - b) extension and upgrading of ÇEAŞ /<sup>sub-</sup>transmission facilities within the concession area including about 317 circuit km of sub-transmission lines and about 570 MVA of transformer capacity.
  - c) Technical assistance as follows :
    - i) study of improvements in existing hydro facilities (Kadınçık and Seyhan)
    - ii) pre-feasibility and possibly a feasibility study for improving the efficiency and increasing the generation capacity of Mersin Thermal Power Station
    - iii) study of efficient load dispatch and improvements in load dispatch facilities of ÇEAŞ
    - iv) training for ÇEAŞ personnel
    - v) equipment for training, computer hardware

Project Cost and Proposed Financing

3. Project costs are still preliminary and will need to be revised on the basis of (a)

- 2 -

design changes for Sir HPP, and (b) discussions on transmission facilities between ÇEAŞ and TEK (see para 12). The following estimates, which include physical and price contingencies, would be revised in August and in December, 1985.

	<u>Component</u>	<u>Millions of US \$</u>		
		<u>Local</u>	<u>Foreign</u>	<u>Total</u>
a)	Sir HPP	97.2	110.3	207.5
b)	Extension (upgrading of ÇEAŞ sub-transmission system)	8.9	28.1	37.0
c)	Technical assistance	0.1	1.0	1.1
		<u>106.2</u>	<u>139.4</u>	<u>245.6</u>

Interest during construction is estimated to amount to an additional US \$ 25.0 million. The total foreign cost is thus estimated to be about US \$ 165.0 million

4. Project cost estimates exclude taxes and duties. It is understood that the project would qualify for exemption from import duties. Value added tax would be payable only on local costs, and the total amount of VAT paid on the project would be credited against other VAT liabilities in the first year of operation. The treatment of duties and taxes on project expenditures would need to be confirmed during negotiations.
5. The mission notes the request of ÇEAŞ and the Treasury that the Bank finance the total foreign cost of project components. The Treasury indicated it would confirm within the next week whether Bank financing for interest during construction would also be requested.
6. Based on discussions with ÇEAŞ and the Treasury, it is understood that the Borrower for the loan will be the Government, and the loan would then be onlent to ÇEAŞ on the same terms. The possibility of lengthening the grace period to 4.5 years and shortening the repayment period was discussed; this will be decided at negotiations.
7. Retroactive financing for the engineering consultants contract, which has been awarded according to the Bank guidelines, would be included in the proposed loan.  
  
A special account will be established, with the amount to be determined at negotiations.
8. The local cost of the Project would be (in addition to new equity capital and local borrowing as needed) financed principally by the internal cash generation of ÇEAŞ. According to present estimates ÇEAŞ would have adequate local

- 3 -

funds under the following circumstances :

- a) electricity tariffs stay at present levels in real terms
- b) any changes in ÇEAŞ status would not reduce the funds available for the local cost of the project.

The relation between the financial viability of the project and legal matters is discussed below in para. 13.

#### Project Implementation Schedule

9. A detailed procurement and construction timetable has been developed for Sir HPP through discussions between the mission, ÇEAŞ and its engineering consultants. (Annex 1). Award of the contract for the site access road on July 4, 1985, was an important first step. The next critical step will be the completion of the engineering report and design modifications by ÇEAŞ consultants. Timely decisions by ÇEAŞ on the consultants' recommendations will be necessary, in order to enable release of the civil works bid documents by November 15, 1985.

Furthermore, ÇEAŞ will need to make arrangements quickly for additional bore hole samples needed at the site to provide information required by the consultants and the contractors. Award of the diversion tunnel works to a local contractor by January 1, 1986, will also be essential to permit the main civil contractor to start work by the end of 1986, and to start the coffer dams by June, 1987. It is understood that ÇEAŞ would finance the diversion tunnel contract with its own funds.

10. The project implementation schedule could permit commercial operation of Sir HPP starting in 1991.

#### Procurement Documents

11. The mission provided detailed comments on the draft bidding documents for the civil works contract to assist ÇEAŞ and its consultants, in preparing final bid documents according to the Bank's procurement guidelines.

The civil works contract documents (excluding drawings) would need to be received by the Bank by August 30, 1985, permit timely Bank approval.

#### Outstanding Issues

12. Transmission of Sir Power Production and Distribution to ÇEAŞ load center

12.1- The power generated at Sir HPP (and in future that generated at Berke HPP) has to be transmitted at 380-kV over a distance of about 100 km to ÇEAŞ load centers and ÇEAŞ has proposed a network of 380-kV lines and sub-stations.

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TEK also has 380-kV lines and sub-stations in the same area and has planned additional 380-kV lines and sub-stations (including sub-station extensions) in the area, some of which are being funded by the Bank under a separate loan. Therefore, to avoid duplication of efforts and in the interest of country's economy, the mission feels that TEK and ÇEAS should jointly discuss the development of 380-kV lines and sub-stations in the region, carry out appropriate load flow studies and then decide and agree upon the additional 380-kV lines and sub-stations required to distribute power generated at Sir and Berke HPP.

12.2- The mission, after discussions with ÇEAS, divided the ÇEAS estimates for transmission and distribution of power generated at Sir HPP into three parts:

- a) Sub-transmission lines and sub-stations in the ÇEAS region necessary for distribution of Sir HPP generation,
- b) 380 kV lines and sub-stations (including extension) in the concession area of ÇEAS; and
- c) About 30 km of 380 kV line which is essential to connect Sir HPP to the existing 380 kV grid; This was agreed by the mission for inclusion in the Sir HPP cost estimates.

12.3- As mentioned above, the cost of part (c) is included in Sir HPP cost estimates. The local and foreign cost of the remaining parts (a) and (b) are :

	<u>In million US \$</u>		
	<u>Local</u>	<u>Foreign</u>	<u>Total</u>
a) Subtransmission lines and sub-stations agreed by the mission	8.9	28.1	37.0
b) 380 kV lines and sub-stations to be finalized after discussion with TEK	14.3	41.8	56.1
	<u>23.2</u>	<u>69.9</u>	<u>93.1</u>

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12.4— The cost estimates given in para 3 include only the cost indicated for part (a) above. The costs of part (b) to be included in the Project would be finalized after ÇEAŞ and TEK discuss the development of 380-kV lines and sub-stations (Para. 12.1) and submit to the Bank by the end of August 1985, for its review.

AN AGREED PROPOSAL

#### Legal Status of ÇEAŞ

13. Some aspects of the legal status of ÇEAŞ directly affect the financial situation of ÇEAŞ, and therefore the local funding of the project. The mission requests a Government response on the following three points:

- a) present financial forecasts assume that ÇEAŞ will sell the equivalent energy production of Sir to ÇEAŞ customers within the ÇEAŞ concession area. However, presently this is not legally assured. It was understood that the Government is considering a regulation defining "service areas" which would extend the present ÇEAŞ concession area to include the Sir and Düzkesme/Berke sites and passage of the regulation is expected soon. The Treasury indicated the Bank would be notified when the regulation is issued.
- b) The present concession agreement expires in 2002. Under this agreement, ÇEAŞ would be required to transfer Sir HPP to the Government free of charge after only 10–12 years of operation. The mission understood that ÇEAŞ has applied for extension of the concession period, and awaits the Government's decision.
- c) Finally, the future regulation of Law 3096 regarding the establishment of utility or entrusted companies is of relevance to the project. If ÇEAŞ were to become an "entrusted utility company", then management and financial resources of ÇEAŞ might need to be diverted away from the Sir project. The mission requests the Government's views on the general direction of institutional change expected for ÇEAŞ.

The Government indicated that decisions on points (b) and (c) were not expected soon, but acknowledged that if these matters were still pending at the time of negotiations, appropriate assurances could be provided at that time.

14.

#### Timetable for Bank Loan Processing

To complete the appraisal report, the mission is awaiting ÇEAŞ decision on Sir HPP design revisions and the definition of the transmission component. It was agreed with ÇEAŞ that the first revision of the project cost for the Sir HPP component, and the related financial forecasts would be provided to the Bank by August 15, 1985.

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15. Subject to clarification of the outstanding points (Paragraphs 12-13), the present schedule (Annex 1) would permit :

- |   |                   |
|---|-------------------|
| a) Loan negotiations  | January, 1986     |
| b) Presentation of the loan the Board<br>of Directors of the Bank | March/April, 1986 |

(The opening of bids for the civil works contract would be March 1, 1986, prior to Board presentation.)

*mf*  
L. MEEK FOOTE  
K.N. SHEOREY  
I. JOHNSON

12 JULY 1985

THE WORLD BANK / INTERNATIONAL FINANCE CORPORATION  
**OFFICE MEMORANDUM**

*Chron*

DATE **May 14, 1984**

TO **Distribution**

FROM **R. Reekie, Chief, EMPPE**

EXTENSION **3 2600**

SUBJECT **TURKEY - Sir Hydropower Project - Project Brief.**

Attached is the initial Project Brief for a proposed hydropower project at Sir on the Ceyhan River in Southern Turkey. Please address any comments you may have to Mr. A. Posada, Room H 10-091, Ext. 32610.

**Distribution:**

Messrs. Lari, Hasan, Gregory (EMNVP); Stoutjesdijk, Asfour, Chaffey (4), Eschenberg, Milanovic (EM2); Picciotto, Dewey, Finzi, Elliott, Jones (EMP); Reekie, Roa, Schroeder, McKechnie (EMPPE); Dherse (VPEIS); Rajagopalan (5) (PPD); Swahn (EDC); Rovani (5) (EGY); Hittmair (CTRV); Kapur (OED); Prosser (EMPED)  
Mesdames Hunt (LEG); El Khatib (EM2); Foote, El Saifi (EMPPE)  
EMENA & Chron Files, Div. Black Book

*AP*  
AP:tth

Sector : Power  
Project Code : Not yet available  
Appraisal Date : 10/00/84  
Project Officer: A. Posada

Date This Brief: 5/14/84  
Date Last Brief: NA  
Loan Officer : H. Eschenberg  
Project Advisor: J. Fish

TURKEY

SIR HYDROPOWER PROJECT

PROJECT BRIEF NO. 1

MANAGEMENT SUMMARY

- (i) In contrast to the problem-ridden public electric sector characteristic of state-run enterprises, Turkey's private electric utilities are efficiently managed and have been able to attract and retain competent professionals. However, the Cukurova Electric Company (CEAS), which supplies electric power in Cilicia in Southern Turkey, has become increasingly dependent on the Turkish Electric Authority (TEK) for supply to its customers as a result of legislation which prevented private utilities from developing their own generation sources. Recent legislation has reversed this situation and enables private utilities to provide for their future electricity requirements. Because of delays in TEK's power generation program, the demand for electricity in Turkey is not likely to be fully met until well into the 1990s, and TEK will be unable to supply CEAS's increasing power demand. CEAS is, therefore, planning to decrease its dependence on TEK by developing a number of hydropower sites in or near its concession area. The proposed project, which consists of harnessing the Ceyhan River by means of a hydropower dam at Sir, has been selected by CEAS as the most attractive of all the hydro sites thus far examined. Its capital cost, including price contingences, is estimated at about US\$255 million with US\$126 million in foreign currency. Design studies have been completed, and technical specifications are available for this project. CEAS contacted the Bank in April 1984 to request consideration of Bank financing for the proposed project.
- (ii) Although the proposed hydropower project -- which would have an internal rate of return exceeding the opportunity cost of capital in Turkey -- is economically more advantageous than thermal alternatives, and is scheduled for commissioning in 1991 in TEK's generation expansion program, it is not possible at this time to determine conclusively that it is part of a least-cost program for Turkey, because Turkey does not have a homogeneous ranking of hydroelectric resources. However, it is certainly one of the lowest cost projects that can be developed in Turkey in the coming years and would greatly assist CEAS in meeting electricity requirements in the Cukurova area in the 1990s.

- (iii) It is proposed to include in the project the ranking of hydroelectric resources of Turkey and studies to improve CEAS's power system performance and to reduce inefficiencies in industrial power usages in the CEAS' service area. The cost of all these studies would add about US\$1.5 million to the proposed project cost, which would reach a total of US\$256 million, of which about US\$127 million in foreign costs.
- (iv) Recent discussions with TEK on the subject of a project to rehabilitate its steam power plants (for which the FY85 Lending Program proposed a loan of US\$100 million) were not positive, and the project will have to be redefined and rescheduled. In lieu thereof, it is proposed to substitute a loan for the same amount to assist in the implementation of the proposed Sir hydropower project. Cofinancing of the order of US\$25-30 million can be sought for the main power plant equipment, and bilateral aid for the ranking of hydroelectric resources. CEAS has not yet formed definite plans concerning the financing of local expenses and interest during construction on the foreign loans, but for the time being foresees meeting these funding requirements from internal sources.
- (iv) CEAS revenues have been adequate to cover all operating expenses, debt service obligations, and dividend payments to its shareholders. Since CEAS had not been allowed to expand its generation capacity in the last 12 years (its investments have been only for the extension of the concession's network), capital expenditures have not been a major drain in resources.
- (vi) The proposed project was identified in March 1984. If inserted in the FY 85 Lending Program as proposed in this project brief, the project could be appraised in September-October 1984 given its advanced stage of preparation, and presented to the Board in May 1985. A US\$100 million loan is proposed for this project.

#### A. SECTORAL CONTENT

##### Sectoral Issues, Bank's Role, and Sector Lending Strategy

1. These topics were most recently presented in the project brief for the Karakaya Hydroelectric Project supplemental loan (January 27, 1984), therefore, they are not repeated here. The main beneficiary of the proposed project would be the Cukurova Electric Company (CEAS), one of the two private electric utilities in Turkey. CEAS is well known to the Bank having already been the beneficiary of four Bank operations (Credit/Loans 34/59/763/773-TU) for power projects within its concession area. In contrast to the public electric sector which is beset by serious institutional and managerial problems characteristic of state-run enterprises, the private electric sector is efficiently run and has managed to attract and retain competent professionals.

2. CEAS, a limited partnership in which 25% of the shares are held by the Turkish Electric Authority (TEK), was granted a concession in 1953 for the supply of electricity in the Cukurova Region. It was formed initially to operate the power portion of the multipurpose Seyhan Dam, which was built with the help of Bank Loan 63-TU (1952). Its concession area covers the provinces of Icel, Adana and Hatay in Southern Turkey including the fertile and highly developed Cilician plain (Figure 1 shows the location of CEAS' service area). Under its 1953 concession charter, which expires in 2013, all fixed assets revert free to the Government at the end of the concession period. Proposed amendments to this charter were under consideration by the Ministry of Energy and Natural Resources in early 1984. The operating facilities of CEAS consist of: the 54-MW Seyhan Hydroelectric Plant, the 100-MW fuel oil-fired Mersin Steam Power Station, the 70-MW Kadincik I Hydroelectric Plant, the 50-MW Kadincik II Hydroelectric Plant, and about 2,200 km of transmission and subtransmission lines at 154, 66, 30 and 15 kV. CEAS interconnects with TEK's 400-kV national power grid at TEK's 154/380 kV Erzin substation. Two additional interconnection points at 154 kV exist with TEK at Toroslar and Osmaniye substations. The operation of CEAS' power system is controlled from a telephone-operated dispatch center at Seyhan. CEAS has no distribution system of its own, and all its sales are in bulk to industrial customers and to TEK for the national grid or for distribution in the local municipalities.

3. CEAS has not received any Bank financial assistance since 1971, but earlier (para. 1) the Bank made four credits/loans to the Government of Turkey which were onlent to CEAS: (1) in 1963, Credit 34-TU of US\$1.7 million for an additional third 18-MW unit at Seyhan Hydroelectric Power Plant; (2) in 1964, Credit 59-TU of US\$24.0 million for the construction of the Mersin Steam Power Station and the Kadincik I Hydroelectric Power plant; (3) in 1969, Loan 623-TU of US\$11.5 million for the construction of the Kadincik II Hydroelectric Power Plant; and (4) in 1971, Loan 775-TU of US\$17.0 million for transmission lines and cost overruns related to the Kadincik II power plant. CEAS' performance under all these projects was judged satisfactory.

## B. PROJECT FORMULATION AND PREPARATION

### Project Origin and Description

#### Sir Hydropower Dam

4. Although CEAS historically had an energy surplus and was able to sell electricity to TEK, since 1970, it has become increasingly dependent on TEK for power to supply its customers. The result of legislation creating TEK in 1970 which prohibited private utilities from building their own generating plants. This situation has been corrected recently by new legislation (Law 2705 of September 9, 1982) which enables private utilities to undertake construction of new power plants subject to the approval of the Ministry of Energy and Natural Resources and the State Planning Organization. Because of delays in TEK's power generation expansion program, the demand for electricity in Turkey is likely to exceed available supply well into the 1990s and TEK will be unable to supply CEAS' increasing power demand. CEAS, therefore, is facing the prospect of a shortage of power in the near future. In order to

decrease its dependence on power supplied by TEK, CEAS plans to develop a number of hydroelectric projects on the rivers flowing through or near its concession area. The most attractive of these projects is the 273-MW Sir Hydropower Dam on the Ceyhan River. CEAS contacted the Bank and Government in April 1984 to request consideration of Bank financing for the proposed Project and has applied to the Government for extension of its concession to cover the proposed new generating facility.

5. The position of this dam in the framework of the Ceyhan River profile is shown in Figure 2. The project involves the establishment of a regulating reservoir having a 720 million m<sup>3</sup> useful storage through the construction of a 116-m high thin arch dam (420,000 m<sup>3</sup> of concrete) with a lateral overflow spillway, power intakes, and penstocks. The powerhouse located at the foot of the dam will house three 91-MW units with Francis turbines and 100-MVA synchronous generators. Figure 3 shows the proposed general layout of this power scheme, and Figure 4 a cross-section through the powerhouse. Output of the power plant will be fed into the CEAS transmission network by way of a 3 x 100 MVA step-up substation and 120 km of 154-kV transmission lines. Average annual power generation is estimated at 725 GWh before upstream irrigation is developed, and at 550 GWh after upstream irrigation is fully developed. No definite timing exists for irrigation development, but for power yield calculations, it has been assumed that development would proceed gradually during the course of the decade following completion of the Sir dam.

#### Studies

6. In conjunction with the construction of the Sir dam and power plant a number of other study components are proposed for inclusion in the project. These components are described in the following three paragraphs.

##### (a) Feasibility Study for Conversion of Mersin Plant

7. Since the Mersin steam power station presently provides about one-third of CEAS' total gross generation, the management of CEAS is examining ways of improving the power units' relatively low efficiency -- 26% in 1983. Besides housekeeping measures currently being taken, CEAS is looking into the possibility of converting the power plant into combined cycle operation by adding gas turbines. This solution, if feasible, could raise the efficiency to about 42% and reduce the fuel cost per kWh by about 40%. The cost of such a feasibility study is estimated at about US\$100,000.

##### (b) Improvements in Dispatching and Distribution -- Energy Audits

8. CEAS' dispatch center is outdated and should be replaced by a modern data processing facility. The studies to define the characteristics of a new dispatch center would cost about US\$50,000. Other studies concerning improvements to and extension of the distribution systems operated by TEK in the CEAS service area and energy audit of the main industrial customers would require another US\$350,000. Studies to improve the power system's performance and to reduce energy inefficiencies in industry would thus cost a total of about US\$500,000.

(c) Hydroelectric Resources Ranking

9. Investment planning of power generation expansion in Turkey is hampered by the lack of a systematic inventory of hydroelectric resources and a homogeneous ranking of these resources based on a uniform technical and economic methodology (The implication of this problem for power sector investment planning has been signaled in: Turkey -- Electricity Planning and Investment, Yellow Cover, March 1984). It is, therefore, proposed to include in the project scope a component: (a) for development of this methodology, (b) to apply it to the resources for which studies exist, and (c) to complete the energy profile of the different river basins. The cost of this study is estimated at around US\$1.0 million.

Project Status

10. The feasibility and design studies for the Sir Hydropower Dam were completed in 1980/83 for the State Electric Studies Institute (EIE) by ENERGOPROJEKT (Belgrad, Yugoslavia). ENERGOPROJEKT is a competent consulting engineering firm acceptable to the Bank. Technical specifications for the civil works and for the dam and power plant equipment have been prepared, so that tender documents can be finalized without a major effort.

11. Although the geological conditions at the dam site seem favorable, it would be necessary to have the design reviewed by specialists of international reputation in the fields of engineering geology, thin arch dam design and construction, and seismic-proof design of dams. This is particularly necessary because the Cukurova area is considered to be of high seismicity. CEAS would be asked to establish a Board of Consultants, satisfactory to the Bank, for this review and for specialized advice during construction.

Project Cost

12. The capital cost before escalation of the Sir dam and power plant is estimated by CEAS at US\$182.5 million equivalent (in January 1984 prices), of which roughly 48% (US\$90.4 million) is foreign cost. Adding price contingencies (about US\$72 million), the capital outlay for the dam and power plant would reach US\$254.5 million of which US\$125.9 million would be in foreign currency. Including additional components mentioned in paras. 6, 7, 8, and 9, the total project cost would reach the equivalent of US\$256 million, with about US\$127 million in foreign costs. A summary of the project cost is shown in the following table.

Sir Hydropower Project

Summary of Project Cost

(in US\$ million)

	Local	Foreign	Total
<u>I. Dam and Power Plant</u>			
Preparatory and civil works	39.9	26.5	66.4
Electrical and mechanical equipment	10.3	36.5	46.8
Penstocks and hydraulic gates	4.2	2.8	7.0
Related transmission lines	1.2	4.8	6.0
Subtotal	<u>55.6</u>	<u>70.6</u>	<u>126.2</u>
Engineering and administration	12.6	9.2	21.8
Subtotal	<u>68.2</u>	<u>79.8</u>	<u>148.0</u>
Land acquisition	9.8	-	9.8
Road relocation	5.8	-	5.8
Base Cost (in Jan. 1984 prices)	<u>83.8</u>	<u>79.8</u>	<u>163.6</u>
Physical contingencies	8.3	10.6	18.9
Price contingencies	<u>36.5</u>	<u>35.5</u>	<u>72.0</u>
Total Cost of Dam and Power Plant	128.6	125.9	254.5
II. Studies (see paras. 6,7,8 and 9)	<u>0.4</u>	<u>1.1</u>	<u>1.5</u>
TOTAL PROJECT COST	129.0	127.0	256.0

Financing Plan

13. The FY85 Lending Program includes a proposed loan of US\$100 million for a project in Turkey to assist TEK in modernizing its major steam power plants. Recent discussions with TEK's management on the subject were not positive and the project will, therefore, have to be redefined and rescheduled. In lieu thereof, it is proposed to substitute a loan for the same amount for the proposed Sir Hydropower Project. Cofinancing of the order of US\$25-30 million is possible in connection with the procurement of the main power plant equipment (Suitable contract packages will be arranged during project preparation to facilitate such cofinancing). Moreover, bilateral aid is likely to be available for the proposed inventory of hydroelectric resources, judging from the experience with other developing countries. As regards the financing of local costs and interest during construction on the foreign loans, CEAS has not yet formed any definite plans, but for the time being is planning to meet these expenses from internal sources by the company's share capital. This matter and the matter of cofinancing would be explored during project preparation.

### Borrower and Beneficiaries

14. As in prior loans, the Republic of Turkey would be the Borrower and the beneficiaries and for executing agencies or governmental departments would be as follows:

- CEAS for the construction of the Sir Hydropower Dam, studies for the conversion of the Mersin power plant and for a new dispatch center;
- EIE for energy audit of the main industrial customers in CEAS' service area;
- TEK for studies to prepare a Master Plan for Distribution in the Cukurova Region; and
- SPO <sup>1/</sup> for the preparation of a hydroelectric inventory of Turkey. SPO would require the assistance of EIE, DSI and TEK to complete this inventory.

### Project Justification

15. CEAS' service area, with a population of 3.5 million inhabitants, is one of the most economically dynamic regions of Turkey. <sup>2/</sup> This dynamism is reflected in the pattern of power demand growth during the past decade. CEAS' gross generation plus net energy purchased from TEK doubled during 1974-1983, increasing from 1,200 GWh in 1974 to 2,397 GWh in 1983 (7% annual average), although peak demand increased in the same period at a somewhat slower rate -- from 230 MW in 1974 to 414 MW in 1983 (6% annual average) -- due to load restrictions for the industrial customers. If these restrictions had not been applied (20% at peak load), the unrestricted peak demand would have followed the same trend as electric energy demand and reached about 460 MW in 1983. Up to 1977, CEAS was a net supplier to TEK's national grid system, but in the following years, because of CEAS' inability to increase its own generation, there has been a steadily increasing net supply from TEK to CEAS, reaching 950 GWh in 1983 or 40% of the electric energy demand in the CEAS service area.

16. Given the dynamic industrial growth in the Cukurova region, CEAS forecasts that unrestricted electric power demand could reach between 4,500 and 5,000 GWh in 1990 with an average annual increase of 9 to 11%. On the other hand, CEAS' annual generation with average hydrological conditions is about 1,700 GWh. If no generating facilities are developed by CEAS in this decade, the deficit -- about 3,300 GWh or 2/3 of CEAS' requirements -- would have to be supplied entirely by TEK's national grid. Since Turkey is likely to suffer from power supply deficits well into the 1990s (para. 4), CEAS has decided to proceed with the construction of the Sir Hydropower Dam, followed by the 168-MW Dukesme-Berke hydropower project immediately downstream (average

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<sup>1/</sup> State Planning Organization.

<sup>2/</sup> The Urban Planning Division is preparing a Regional Development Project for the Cukurova area.

annual generation, 800 GWh 1/). In addition, CEAS plans to modify the Mersin power station for combined cycle operation subject to its feasibility. This project, if technically feasible, could be developed in about three years, and would increase CEAS' generation by about 310 GWh per year with no additional fuel cost 2/ (para. 7). These three projects would add, therefore, about 1,955 GWh before upstream irrigation is developed and about 1,660 GWh after upstream irrigation is fully developed.

17. Although the Sir Hydropower Dam appears scheduled for commissioning in 1991 in TEK's generation expansion program (studied in 1982), it is not possible at this time to determine conclusively that it is part of a least-cost program for Turkey, since Turkey does not have a homogeneous ranking of hydroelectric resources (para. 9). However, it is certainly CEAS least cost expansion and one of the lowest cost projects (about US\$0.038 per kWh at the bulk supply level) that can be developed in Turkey in the coming years, and would greatly assist meeting Cukurova's and Turkey's electric energy requirements in the 1990s. Based on preliminary estimates, the proposed hydropower dam would have, moreover, an internal rate of return of 12% computed by taking the revenues obtained by CEAS at the current bulk supply rate as proxy for benefits.

18. The only reasonable alternatives to the proposed Sir Hydropower Dam for the Cukurova region would be a new combined cycle power plant with 290-M installed capacity, or a 300-MW (2 x 150 MW) coal-fired steam power station burning imported coal. With 42% efficiency, the sole cost of fuel for the combined cycle power plant would be of US\$0.038 per kWh (this cost is equivalent to the generation cost of the proposed project -- see preceding paragraph). Adding the capital cost plus operation and maintenance expenses, the generation cost of the combined cycle alternative reaches US\$0.087 per kWh. The cost of coal for the imported coal-fired power station would be US\$0.024 per kWh (at US\$65 per ton) and adding capital cost plus operation and maintenance, the cost of generation with this alternative would be US\$0.0842 per kWh.

#### Financial Performance of CEAS

19. CEAS sells bulk electricity at the same rate to all its customers including TEK, which averaged TL 8.4/kWh (about US\$0.03/kWh) in 1983. 3/ This regulated level of tariffs has been adequate to generate revenues for CEAS to cover all operating expenses, debt service obligations and dividend payments to its shareholders (55% over shareholders' equity in 1983). CEAS has a satisfactory working capital situation, with a current ratio of 1.3 at the end of 1983.

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1/ After full irrigation development upstream. (Average annual generation capacity before upstream irrigation development is estimated at 920 GWh.)

2/ Capital cost of additional generation represents about US\$0.01/kWh.

3/ The average bulk supply rate was increased January 1, 1984 to TL 11.55/kWh, and again in May 1984 to TL 13.5/kWh.

20. To maximize the company's net income, the management of CEAS has attempted to minimize reliance on the Mersin Steam Power Station, but low river flows in the last two years have necessitated relying more heavily on Mersin for electricity generation, with fuel expenses rising to about 41% of operating expenses in 1983. The next most significant expense for CEAS has been the purchase of electricity from TEK (about 39% of operating expenses), which reached 1,174 GWh in 1983, nearly three times the 1981 level, for which CEAS paid TEK a price of TL 2.1/kWh. CEAS also reimburses DSI for part of the cost of the Seyhan dam through a water charge of TL 0.015 per kWh produced by the Seyhan hydropower plant.

21. Because the investments of CEAS since 1971 have been only for the extension of the transmission network in the concessional area, capital expenditures have not been a major drain on resources. For example, in 1983 when net income amounted to TL 1.2 billion (US\$4.3 million), investments were only TL 0.5 billion, representing only 5% of the net book value of assets in service. (By contrast, TEK's annual investment program represents two to three times the net book value of its assets in service.) In anticipation of launching an expanded construction program, CEAS increased its share capital threefold to TL 1.2 billion in 1983. <sup>1/</sup> However, the long-term debt equity ratio is still high (80/20), partially due to the restatement of the value of previous World Bank loans following TL devaluation. The actual and forecast debt service coverage of CEAS will need to be examined during appraisal.

#### Project Issues

22. The main issues to be examined in connection with the proposed project are: (a) the impact of the recent changes in the status of CEAS' concession, including the composition of the ownership of CEAS, and financial obligations of the company to its shareholders; (b) the financing plan for the proposed project; (c) the lending arrangement between the Government and the beneficiaries; (d) the geological conditions at the dam site; (e) the organizational set-up for the hydroelectric resources ranking exercise; and (f) the establishment of appropriate financial operating targets for CEAS.

### C. BANK PROCESSING OF THE PROJECT

#### Critical Path for Loan Processing

23. A Bank mission identified the proposed project in March 1984. The project's technical aspects are at an advanced stage of preparation (para. 10). If the proposal is accepted to substitute in the Lending Program for FY85 the proposed project in the place of the project for modernization of steam power plants (para. 13), loan processing could proceed tentatively as follows:

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<sup>1/</sup> CEAS has requested recently permission from the Capital Market Committee and the Ministry of Commerce to increase the top limit of the company's share capital to TL 15 billion.

Identification	01
Project Brief	02
Preappraisal	04
Appraisal Departure	04
Appraisal Return	10
Decision Memorandum	10
Yellow Cover	11
Loan Committee	01
Start Negotiations	01
Final Agreement	01
Board Presentation	01

manpower problems are anticipated. The project will  
in coordination with EM2A, the assistance of the office of  
the evaluation of the ecological impact of the project  
assessing the development schedules of irrigations p  
. A US\$100 million loan is proposed for this project

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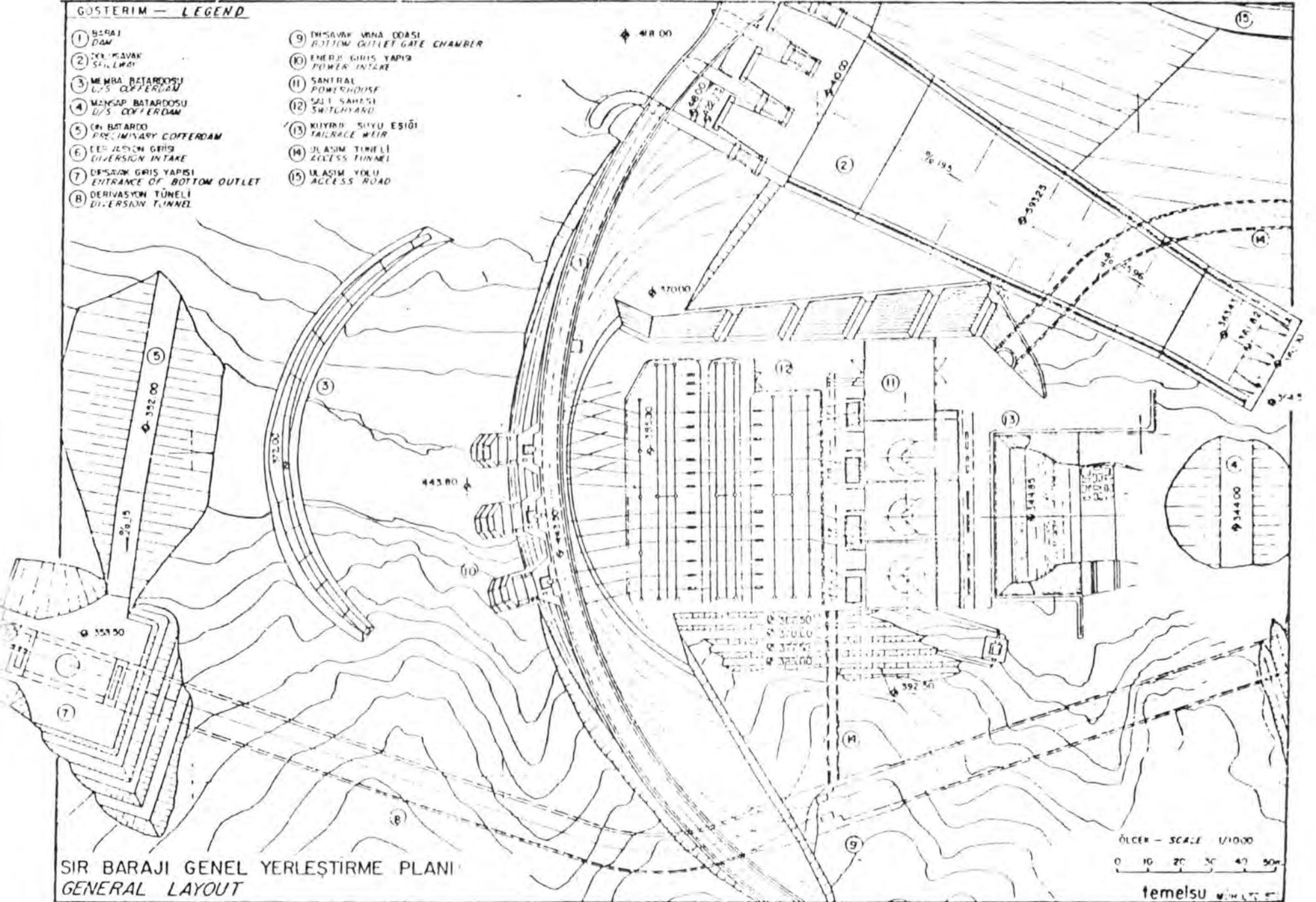


Figure 1



GÖSTERİM — LEGEND

- |   |   |
|---|---|
| ① BİRAJ<br>DAM                                  | ⑨ İNŞAVALIK VİNA ODASI<br>BOTTOM GUILLET GATE CHAMBER |
| ② YER KAVAK<br>SKILLWAY                         | ⑩ ENERJİ GİRİŞ YAPISI<br>POWER INTAKE                 |
| ③ MEMBA BATARDESI<br>U/S COFFERDAM              | ⑪ SANTRAL<br>POWERHOUSE                               |
| ④ MANSAP BATARDESI<br>U/S COFFERDAM             | ⑫ SAĞI SAHESI<br>SHUTTERYARD                          |
| ⑤ İN BATARDE<br>PRELIMINARY COFFERDAM           | ⑬ KUYRUK SUYU ESİĞİ<br>TAILRACE WEIR                  |
| ⑥ İZLEN GİRİŞİ<br>DIVERSION INTAKE              | ⑭ ULASIM TUNELİ<br>ACCESS TUNNEL                      |
| ⑦ İNŞAVALIK GİRİŞİ<br>ENTRANCE OF BOTTOM OUTLET | ⑮ ULASIM YOLU<br>ACCESS ROAD                          |
| ⑧ DERİVASYON TUNELİ<br>DIVERSION TUNNEL         |   |



SİR BARAJI GENEL YERLEŞTİRME PLANI  
GENERAL LAYOUT

ÖLÇEK — SCALE 1/1000  
0 10 20 30 40 50m  
temelsu

Figure 3

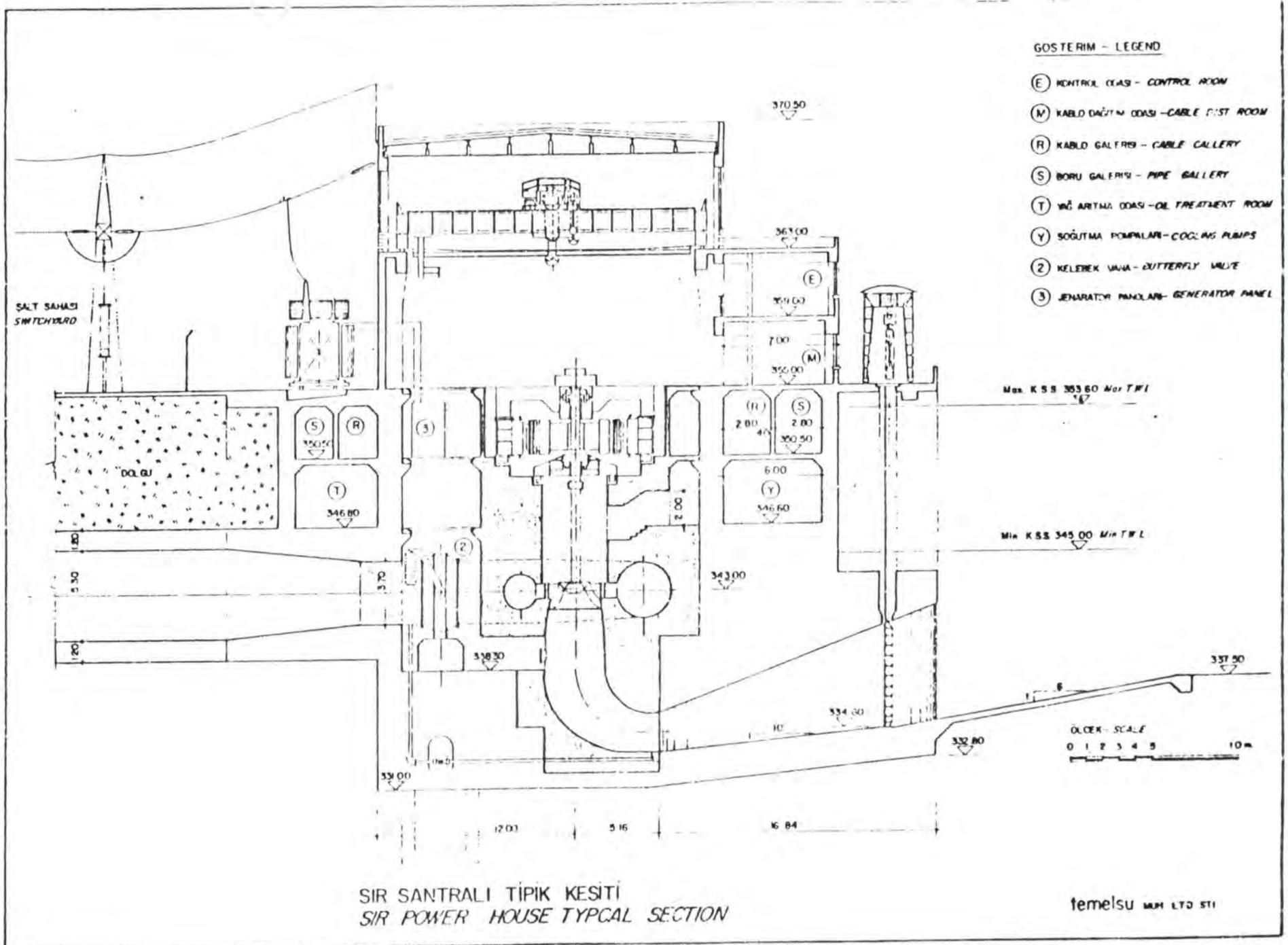


Figure 4