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Report No. 6232

PROJECT PERFORMANCE AUDIT REPORT
SOCIALIST FEDERAL REPUBLIC OF YUGOSLAVIA
IBAR MULTIPURPOSE WATER PROJECT
(LOAN 777-YU)

June 3, 1986

Operations Evaluation Department

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GLOSSARY OF ACRONYMS

ILE	-	Ibar Lepenac Enterprise
SFRY	-	Socialist Federal Republic of Yugoslavia
SAPK	-	Socialist Autonomous Province of Kosovo
UNDP	-	United Nations Development Program
FAO	-	Food and Agriculture Organization
SAR	-	Staff Appraisal Report
SAS	-	Social Accounting Services
WHO	-	World Health Organization
ZEPS	-	Association of Electricity Producers of Serbia

ABBREVIATIONS

Gwh	=	Giga Watt Hours
ha	=	Hectare
m ³ /s	=	Cubic meters per second
Mw	=	Megawatt

THE WORLD BANK
Washington, D.C. 20433
U.S.A.

Office of Director-General
Operations Evaluation

June 3, 1986

MEMORANDUM TO THE EXECUTIVE DIRECTORS AND THE PRESIDENT

SUBJECT: Project Performance Audit Report on the Socialist Republic of Yugoslavia - Ibar Multipurpose Water Project (Loan 777-YU)

Attached, for information, is a copy of a report entitled "Project Performance Audit Report on the Socialist Republic of Yugoslavia - Ibar Multipurpose Water Project (Loan 777-YU)" prepared by the Operations Evaluation Department.

A handwritten signature in black ink, appearing to be 'A. P. ...', is written over the right side of the page.

Attachment

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PROJECT PERFORMANCE AUDIT REPORT
SOCIALIST FEDERAL REPUBLIC OF YUGOSLAVIA
IBAR MULTIPURPOSE WATER PROJECT
(LOAN 777-YU)

PREFACE

This report presents the results of a performance audit of the Ibar Multipurpose Water Project (Ln. 777-YU), for which a loan of US\$45 million was made to the Socialist Federal Republic of Yugoslavia, for on-lending to the Ibar-Lepenac Enterprise (ILE) which would implement the project. The loan was approved in June 1971, but did not become effective until May 1972, because of the need to obtain ratification of subsidiary agreements by the numerous organizations concerned.

The original closing date of December 31, 1976 was postponed three times to December 31, 1981, because of delays arising, first from the bankruptcy and withdrawal of contractors responsible for the water transmission network, with a three year delay in rebidding, and the inordinately long time spent in developing land consolidation for the irrigation component. Final disbursement was made on January 14, 1982, though physical construction continued until 1984.^{1/}

This Project Performance Audit Report comprises an Evaluation Summary and a Project Performance Audit Memorandum (PPAM), prepared by the Operations Evaluation Department (OED); and a Project Completion Report (PCR) prepared by the Europe, Middle East and North Africa Regional Office in May 1985, based inter alia on the findings of a project completion mission to Yugoslavia in February 1985. OED has reviewed the PCR, the Bank files, the legal documents, Appraisal and President's Reports and the transcripts of the meeting of the Executive Directors when the loan was approved. An audit mission visited Yugoslavia in January 1986 and discussed the project with officials of ILE.

The audit finds the PCR to be comprehensive, factual and candid, and concurs with its findings.

Following OED procedures, copies of the draft PPAR were sent to the Borrower and the Ibar-Lepenac Enterprise for comments. Comments received from Ibar-Lepenac have been reproduced as Attachment A to the report.

^{1/} Completion of land consolidation will not be achieved until 1990.

PROJECT PERFORMANCE AUDIT BASIC DATA SHEET

SOCIALIST FEDERAL REPUBLIC OF YUGOSLAVIA

IBAR MULTIPURPOSE WATER PROJECT
(LOAN 777-YU)

KEY PROJECT DATA

	<u>Appraisal</u> <u>Estimate</u>	<u>Actual or</u> <u>Current Estimate</u>
Total Project Cost (US\$ million)*	93.3	203.7
Project Cost Overrun (%)	-	119
Loan Amount (US\$ million)	45.0	45.0
Disbursed (US\$ million)	45.0	45.0
Date Physical Components Completed	-	Dec. 84
A - Water Supply Component	1975	1984
B - Irrigation Component	1975	1985
C - Power Plant	1975	1981
Proportion completed by Above Date (%)	-	30
Proportion of Time Overrun (%)	-	180
Economic Rate of Return (%)	15.6	13.0
Financial Performance	-	mixed
Institutional Performance	-	good

* Exclusive of interest during construction

STAFF INPUT
(Man-weeks, per TRS)

	FYs	<u>74</u>	<u>75</u>	<u>76</u>	<u>77</u>	<u>78</u>	<u>79</u>	
Supervision /a		7.1	10.6	13.8	18.2	20.7	13.5	
	FYs	<u>80</u>	<u>81</u>	<u>82</u>	<u>83</u>	<u>84</u>	<u>85</u>	<u>TOTAL</u>
Supervision /a		12.9	19.6	8.2	1.4	0.3	23.9	158.2

/a Previous inputs to FY74 (Preparation, Appraisal, Negotiations and early Supervision) not recorded, partly because they preceded introduction of TRS.

CUMULATIVE DISBURSEMENTS
(US\$ Millions)

<u>Fiscal Year</u>	<u>Appraisal Estimate</u>	<u>Actual</u>
1972	1.0	-
1973	6.1	1.0
1974	17.1	3.5
1975	31.4	7.2
1976	45.0	13.3
1977	-	23.6
1978	-	29.5
1979	-	34.6
1980	-	42.0
1981	-	43.7
1982	-	45.0

OTHER PROJECT DATA

	<u>Original Plan</u>	<u>Revisions</u>	<u>Actual</u>
First Mention in Files	-	-	07/31/68
Government's Application	-	-	07/31/68
Negotiations	-	-	03/12/71
Board Approval	-	-	06/10/71
Loan Agreement Date	-	-	06/30/71
Effectiveness Date	09/30/71	02/28/72	05/31/72
Closing Date	12/31/76	12/31/78	12/31/81/a
Borrower	Federal Republic of Yugoslavia		
Executing Agency	Ibar Iepenac Enterprise (ILE)		
Fiscal Year of Borrower	January 1 - December 31		

/a Final disbursement was on January 14, 1982.

MISSION DATA

	<u>Month/year</u>	<u>No. of Weeks</u>	<u>No. of Persons</u>	<u>Staff Weeks</u>	<u>Date of Report</u>
Reconnaissance	04/69	0.4	1	0.4	
Identification	07/69	0.6	2	1.2	05/19/69
Preparation	05/70	2	2	4	06/15/70
Appraisal (water & agric.)	06/70	2	5	10	04/19/71
Appraisal (power)	08/70	1	2	2	04/19/71
Pre negotiations	01/71	0.6	4	2.4	02/01/71
Supervision I	09/71	0.8	4	3.2	10/28/71
Supervision II	09/72	0.8	2	1	09/29/72
Supervision III	05/73	1.2	3	3.6	07/09/73
Supervision IV	06/74	1.5	4	6	07/15/74
Supervision V	11/74	2	1	2	11/25/74
Supervision VI	01/75	0.6	2	1.2	02/05/75
Supervision VII	03/75	1.4	1	1.4	04/24/75
Supervision VIII	09/75	1	2	2	11/07/75
Supervision IX	05/76	0.8	4	3.2	06/14/76
Supervision X	09/76	1.2	2	2.4	09/27/76
Supervision XI	11/76	1	2	2	01/07/77
Supervision XII	02/77	1.2	2	2.4	04/01/77
Supervision XIII	03/77	1	2	2	04/29/77
Supervision XIV	09/77	1	2	2	10/17/77
Supervision XV	12/77	0.2	2	0.4	01/20/78
Supervision XVI	05/78	1.4	2	2.8	06/09/78
Supervision XVII	04/79	1.2	2	2.4	04/16/79
Supervision XVIII	05/79	0.4	1	0.4	05/30/79
Supervision XIX	10/79	1.6	3	4.8	11/21/79
Supervision XX	06/80	0.6	2	1.2	07/16/80
Supervision XXI	09/80	0.2	2	0.4	10/17/80
Supervision XXII	10/80	1.4	2	2.8	11/07/80
Supervision XXIII	03/81	0.8	2	1.6	04/17/81
Supervision XXIV	10/81	1.4	2	2.8	11/13/81
Supervision XXV	02/81	0.6	2	1.2	02/26/82
Completion	02/85	2	4	8	03/29/85

COUNTRY EXCHANGE RATES

Name of Currency (Abbreviation)

Dinar (D)

Year:

Exchange Rate:

Appraisal Year Average	1971
Intervening Years Average	1972
	1973
	1974
	1975
	1976
	1977
	1978
	1979
	1980
	1981
	1982
	1983
Completion Year Average	1984

US\$1 =	15.00
US\$1 =	16.31
US\$1 =	15.44
US\$1 =	15.95
US\$1 =	17.45
US\$1 =	18.20
US\$1 =	18.32
US\$1 =	18.59
US\$1 =	18.98
US\$1 =	25.18
US\$1 =	36.48
US\$1 =	51.74
US\$1 =	99.55
US\$1 =	163.90

PROJECT PERFORMANCE AUDIT REPORT

SOCIALIST FEDERAL REPUBLIC OF YUGOSLAVIA

IBAR MULTIPURPOSE WATER PROJECT
(LOAN 777-YU)

EVALUATION SUMMARY

Introduction

i. Loan 777-YU for US\$45 million was the first attempt in Yugoslavia to provide financing for comprehensive water resource development for an entire region. The region concerned, Kosovo Province, is one of the poorest in Yugoslavia, but could expand agricultural and industrial output if larger and more assured supplies of water could be developed (PPAM, para. 1).

Project

ii. The project, estimated to cost US\$93.3 million excluding interest during construction, was designed to harness the Ibar River by means of a dam and storage reservoir, a hydroelectric generating station and a system of tunnels and canals to transport the water so impounded to two major industrial centers, to municipal water supply systems and to a new irrigation network serving 30,000 ha of agricultural land, together with ancillary facilities (pumping station, feeder roads and on-farm development services, PPAM, para. 2). The project also included training for the staff of Ibar-Lepenac Enterprise (ILE), the implementing agency, and a number of project-related studies.

Objectives

iii. The objectives of the project were to remove the constraints on industrial and agricultural expansion in Kosovo province and also to provide incidental benefits by way of quickly-available reserves of hydro-power and improved supplies of water for human consumption in the communities in the area (PCR, para. 2.03).

Implementation and Experience

iv. The physical construction of the project was satisfactorily executed, though with severe delays in respect of two components--the water conveyance system, where one contractor went bankrupt and another abandoned the job, causing a three-year delay in finalizing a new contract and completing the works; and the irrigation system, where slow execution of civil works and the delays caused by a multitude of administrative, legal and socio-political problems in land consolidation meant that this development will not be fully completed until 1990 and only then for two-thirds of the area originally planned (PCR, para. 3.08 and PPAM, para. 7). Project costs showed an overrun of 475% in dinars, but of 119% in US\$ terms (PCR, para. 3.11).

v. Because of the delays in completion of the irrigation component, and the economic recession which has held up the industrial expansion that was intended to take large quantities of water, ILE's water sales have fallen far short of estimates, and the enterprise is having to be subsidized by the Federal Government in payment of debt service (PCR, para. 5.05).

vi. Subject to the financial constraints just mentioned, the physical benefits of the project can be sustained and increased. The project has also provided non-revenue earning benefits in the form of flood prevention and erosion control, particularly in 1979 when flood damages would have been catastrophic in the absence of the project (PCR, para. 8.02[b]).

Findings & Lessons

vii. The PPAM concurs with the findings and comments of the PCR:

- (a) notwithstanding the large sunk investment and still unused capacity represented by the project, this was a worthwhile investment and will provide substantial long-term benefits (PCR, para. 8.1);
- (b) While some of the delays and frustration in project implementation could not have been foreseen, the time needed to bring in land consolidation with all its socio-political problems was greatly under-estimated at appraisal; and appraisal should only have taken place after final design had been established (PCR, para. 9.2); and
- (c) institutional development has been satisfactory; ILE is a well-run entity, ready to tackle the follow-on Lepenac River project (PCR, para. 9.1).

PROJECT PERFORMANCE AUDIT MEMORANDUM

SOCIALIST FEDERAL REPUBLIC OF YUGOSLAVIA

IBAR MULTIPURPOSE WATER PROJECT
(LOAN 777-YU)

I. PROJECT SUMMARY

The Project

1. The Ibar Multipurpose Water Project (Loan 777-YU) signed on June 30, 1971, represented the first attempt in Yugoslavia to provide comprehensive development of water resources for an entire region. The region concerned, Kosovo Province, is the least developed region of Yugoslavia with average per capita income of only about one-third of the national average (PCR, para. 1.01). The principal opportunities for economic development open to the province lay in improving agricultural output and in expansion of industries; the two main industrial centers comprised a major producer and exporter of lead, zinc, fertilizer and chemicals, and a group of coal, gas and thermal power plants serving the steel industry at Skopje in Macedonia. However, expansion of both industry and agriculture was constrained by lack of water; and a master plan was developed to harness the two main rivers in Kosovo, the Ibar and the Lepenac, to provide water for industry, municipalities, irrigation and hydropower generation.

2. The project, appraised in 1970, covered the first phase of the master plan, the Ibar scheme. Its components included a rockfill dam and a 350 million m³ storage reservoir, a regulatory dam, a 34 mw hydroelectric plant and 147 km of water conveyance works (canals, tunnels, syphons and aqueducts); together with pumping stations and works to irrigate and drain 30,000 ha of agricultural land, feeder roads, on-farm development and other ancillary works (PCR, para. 2.04). The power plant in the project, though very small, was considered a desirable adjunct as a quickly available standby and peaking reserve; for example, the gasification plant in the area might have to shut down for two days if it suffered a cut of more than five minutes in its normal power supply.

3. Total cost was estimated at US\$93.3 million^{1/} excluding capitalized interest during construction. Foreign exchange requirements were estimated at US\$23 million (32%) but the Bank agreed to finance 42% of total cost, plus US\$6.2 million interest during construction, a total of US\$45 million. The balance of cost would be financed by Ibar-Lepenac Enterprise (ILE), the organization founded to execute the project, with the help of local loans, its own internal cash generation, and a small contribution from a downstream hydro enterprise.

^{1/} Additional works, outside the Bank-financed scheme, amounted to US\$8.9 million (erosion and flood control works, etc.).

4. Project preparation seems to have been comprehensive, and numerous requirements were insisted on by the Bank by way of safeguards: revision of the ongoing levee construction to reflect changes in the hydrological situation because of the dam, the need for dam operating rules, future maintenance of feeder roads, studies on irrigation charges, land classification, consolidation and drainage, studies for utilization of urban water, firm contracts for sale of power and water, and studies to prevent downstream pollution by industry were all agreed to be necessary (PCR, 2.05 and SAR).

Project Execution

5. The project was executed as planned, except for the irrigation component which had been appraised on the basis of inadequately detailed topographical information and a reconnaissance soil survey (PCR, para. 3.02). The detailed land classification study carried out under the project, however, showed that only about two-thirds of the area originally estimated to be available for irrigation would in fact be suitable--the remainder being ruled out by reason of urban and industrial encroachment, or unsuitable soil conditions (PCR, para. 3.03). Even then, of this reduced area of 20,100 ha, the Bank had doubts about an area of 5620 ha on the grounds of high pumping cost and poor soil, but a further study justified both economic viability and water availability (PCR, paras. 3.05-3.06). It was also found necessary, on consideration of cost, to irrigate the entire area by sprinklers rather than surface irrigation, as against only 30% sprinklers planned at appraisal (PCR, paras. 4.06-4.07).

6. The audit mission inspected the physical works and found them to be well-designed and competently constructed. They also appeared to be well-maintained and efficiently operated.

Time Overruns

7. Over and above the usual delays caused by procedural matters, and by insufficiently advanced studies and designs for the dam and canals (PCR, para. 3.08)^{2/}, two major sources of delay arose, which combined to set the project completion back by some ten years. The first was the collapse of the contracts for construction of the tunnels and canal; one contractor went bankrupt and the other abandoned the work, with a consequent three-year delay in rebidding (PCR, para. 3.08). This could not reasonably have been foreseen; but the other delay might well have been anticipated, namely the time required to introduce land consolidation or redistribution, and to gain acceptance by farmers. At the outset, the Provincial Government made little progress in fulfilling its responsibilities under the Project Agreement, in the introduction of land consolidation and agricultural extension services; it had in fact tried to pass these responsibilities to ILE. Continuing delays, compounded by the lack of an overall coordinating authority, caused the Bank finally to make presentation of the Metohija Multipurpose Project (Ln. 1360-YU, February 1977) to the Board conditional on definite progress in

^{2/} Yet the SAR claimed that designs had already been completed for the dam and multipurpose water conduits (para. 3.08).

this matter; approval of additional irrigation tenders was also held up pending such progress (PCR, Annex II). Eventually, the scheme got underway, but the first land consolidation did not take place until 1984, and irrigation (apart from some trial schemes) not until 1985--ten years later than originally forecast. The land consolidation law is now in force for the whole province and it is understood that farmers are well satisfied with the results achieved by the project.

Project Costs

8. Total project costs came out at nearly six times the appraisal estimate (Din 8048 million, as against Din 1400 million), reflecting the very high inflation in Yugoslavia during the long period of project implementation. In US\$, the cost overrun was 119% (US\$204 million, compared with US\$93.3 million estimated at appraisal). The largest absolute increase was on the water conveyance systems, accounting for US\$108 million of the total overrun, no doubt attributable to the costs of having to rebid the works abandoned by the defaulting contractors. The largest relative overrun was in respect of land acquisition (some fourteen times the appraisal estimate, PCR, Annex 2). ILE blames this on poor estimating, which did not allow for severance compensation, loss of access and replacement of the catchment basin; moreover, since the irrigation network was laid before land consolidation, compensation had to be paid to many farmers, sometimes for three years.

Institutional Performance

9. The audit found, during its visit to ILE, no reason to disagree with the PCR's assertion that ILE has matured into a capable and efficient organization (PCR, para. 3.12).

Sales and Financial Performance

10. The appraisal report estimated that as from the first year of operation of the project (1977) ILE would be able to earn a rate of return of 7% - 8% annually on net fixed assets in service, and these targets were embodied in loan conditions. In the event, ILE had no revenues at all until 1981, and then only from electricity generation; sales of water did not begin until 1983 (1985 for irrigation water), and have fallen far below the volumes estimated. The sales for 1985, compared with appraisal estimates for that year were:

	<u>Appraisal Estimate</u>	<u>Actual /a</u>
Agricultural Water (million m ³)	95.0	8.4
Industrial Water (million m ³)	278.3	70.1
Municipal Water (million m ³)	6.1	8.7
Electricity (Gwh)	95.0	50.6

/a These statistics replace the re-estimate for 1985 in the PCR (Annex 4).

11. On this basis, though ILE's 1985 accounts are not yet available, the operating surplus of Din 1,068 million forecast for 1985 (PCR, Annex 5) will not have materialized. If it had, there would have been a rate of return of over 10% on the net fixed assets in the balance sheet (Din 9,911 million). However, it is not clear that these have been revalued to reflect local inflation and exchange rate movements on assets financed by foreign loans; it is noteworthy that the Bank loan appears in ILE's projected 1985 balance sheet at the minuscule amount of Din 107 million (about US\$350,000 at present exchange rates); it is understood that this is due to a provision of Yugoslav accounting law whereby future liabilities under foreign loans can be written off against the surplus arising from fixed asset revaluation, until they fall due for payment. In any case, the Bank loan is being serviced by the Federal Government, and it is understood that the Government is budgeting to subsidize ILE up to the year 2000, taking into account the soaring cost of debt service in currencies which have appreciated so markedly against the dinar since the funds were disbursed.

12. The reasons why ILE's revenues have fallen so far short of expectations are fairly obvious. This was a large and indivisible project, and some 70% of the capacity of the system was earmarked for industrial use, represented by two major enterprises. Thus, in a sense, ILE is a captive of its two biggest customers; because of the economic recession, these industries did not embark on expansion programs planned at the time of appraisal. It will therefore likely be several years before revenues begin to accrue at the hoped for levels. The Bank sought to guard against this eventuality by requiring "take-or-pay" contracts with industry, but obviously these are not being applied in the manner anticipated. Irrigation, likewise, will not reach its peak until 1990. Supplies to municipalities, on the other hand, are exceeding expectations,^{3/} and helping to remedy deficiencies in urban water systems in the area, where polluted supplies are prevalent.

Economic Evaluation

13. While financial results have been comparatively unremunerative as yet, the long-term benefits are likely to be substantial. In addition, the project has produced social and economic benefits not reflected in revenues, in particular the damage averted from the 1979 floods, quantified at Din 875 million in 1971 prices (PCR, para. 8.2[b]). ILE in fact contends that the project may be said to have justified itself by this achievement alone, and by the water afforded to farmers during the 1985 drought. Based on projections of future sales, which may or may not prove over optimistic, the PCR recalculates the internal economic rate of return as 13% with which the audit agrees (compared with 15.6% at appraisal, PCR, para. 8.4); this includes the value of the flood damage averted, without which the rate of return would be about 8%.

^{3/} The Bank has also developed a municipal water supply project in Kosovo Province (Loan 2055-YU).

Bank Performance

14. The appraisal of the project by Bank staff appears to have been comprehensive and painstaking, except for the irrigation component which was based on inadequate topographic information, more accurate data not being available (PCR, para. 3.02). No fewer than eleven persons had a part in the appraisal, reflecting the project's complexity. Field supervision was equally intensive, averaging two missions a year for ten years and reaching a peak of four missions in 1977. From FY76 through FY81, total average annual supervision was 16.4 staff weeks, well exceeding Bank averages. Towards the end, however, there was some concern felt by agriculture staff that insufficient attention was being paid to the water supply and overall financial aspects of the project. The projected time schedule of five years for project execution, even discounting unforeseeable delays, was far too optimistic (PCR, para. 3.08).

15. ILE staff speak highly of the advice and assistance afforded by Bank missions, and express a wish to receive the same high standard of assistance for the Lepenac Project (the second portion of the Master Plan for River Basin Development).

II. CONCLUSIONS

16. Before loan approval, doubts were expressed about this project, from both within and without the Bank to the effect that irrigation benefits were overestimated, that water demand estimates were too high, that it would never earn a profit and would consume a disproportionate share of resources. Up to the present, some or all of these criticisms might be hard to refute. It is also true that, notwithstanding the lengthy time overrun, the project is still in some respects premature, and represents a very large sunk cost. Yet once commenced, there was little option but to go on; the project could not be scaled down or phased to any extent. No one could have foreseen the economic depression which has curtailed industrial expansion or indeed the problems with the tunnel contractors, or the depreciation of the dinar which has undermined ILE's finances. Despite the considerable unused capacity still existing, and the large amount of capital locked up in the project, the audit feels that this was still a worthwhile investment; 92% of the cost has been financed by local contributions, an indication of the value placed on the scheme by local taxpayers and investors.

17. The objectives of the project were to develop and harness the water resources in the Northern Kosovo plain, as a means toward accelerating economic development of that underdeveloped region. The resources have been effectively harnessed, achieving the first objective and lifting the restrictions on economic development caused by limited available water, besides providing substantial additional benefits in flood protection and erosion control. To this extent, the project was successful; but its full benefits will not materialize until industry in the area begins once again to expand, and having regard to the type of industry and the lead-time required for construction, the major expansion in water demand cannot occur in the next several years.

COMMENTS FROM IBAR-LEPENIC ENTERPRISE

ZCZC DIST0988 WUI287
OEDOD
REF : TCP HC
WUI287
12979 ENERGO YU

12979 ENERGO YU BEOGRAD, 30.4.86. TLX RD 9374

WORLD BANK

WASHINGTON DC

ATTN. MR. YUKINORI WATANABE

DIRECTOR OPERATION EVALUATION DEPARTMENT

WE RECEIVED YOUR FINAL REPORT FOR IBAR MULTIPURPOSE PROJECT
YU JJJ AND YOUR CABLE DATED APRIL 22, 1986 ASKING FOR OUR
COMMENTS.

IN OUR OPINION THE REPORT IS COMPREHENSIVE AND REALISTICALLY
REFLECTS THE CONSTRUCTION WITH EXISTING PROBLEMS AS WELL AS
FINAL STAGE WITH ECONOMIC EFFECTS. WE HAVE NO REMARKS ON YOUR
REPORT.

WE CONSIDER THE REPORT SHOULD EXAMINE THE EXTENTION POSSIBILITIES
FOR IRRIGATED LANDS FROM ALREADY CONSTRUCTED CHANNELS PARTICULARY
FOR AREAS BEING ABOVE THEM AS IT WAS DONE FOR THE PREVIOUSLY
CONSTRUCTED IRRIXGATION SYSTEM (1976 - BRACANICA F.ELD)

FOR 2.300 HA.

FENERAL DIRECTOR ILE

XXXXXXXX

DR. BASKIM KABASI

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ALT RTD FROM:OEDM

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MAY 1 - 1986

SOCIALIST FEDERAL REPUBLIC OF YUGOSLAVIA

LOAN 777-YU

IBAR MULTIPURPOSE WATER PROJECT

PROJECT COMPLETION REPORT

I. INTRODUCTION

Background Data

1.01 The Socialist Autonomous Province of Kosovo, in which the project is located, is the least developed region of Yugoslavia in which the average per capita income amounts to only US\$600 per year or about one third of the national average (1983). Its population growth rate of 2.8% is about double the national rate. The main opportunities for economic growth are expansion of mineral based industries and increased agricultural output, both of which were constrained by the lack of an appropriate water supply. The Provincial Government therefore initiated in the nineteen sixties engineering studies to determine the optimum development of the available water resources. The result of these studies was a master plan to develop the principal rivers in the region, Ibar and Lepenac, to provide water for industry, communities, irrigation and power generation.

The Project

1.02 The Ibar Multipurpose Water Project is the first phase of the Province's water resource development plan and provides sufficient water for industrial expansion until 1995 and for irrigating about 21,000 ha. Additional benefits of the project include the provision of a convenient source of potable water for several communities, improving the public health in the region, flood protection in the Ibar valley downstream of the Gazivode Dam and power generation. The main physical components of the project include two dams, a 34 megawatt hydroelectric plant, 135 km of main water conduits, two pumping stations, a 21,000 ha irrigation and drainage scheme and related feeder roads.

Borrower and Executing Agency

1.03 The borrower was the Socialist Federal Republic of Yugoslavia (SFRY) which onlent the proceeds of the loan to the Ibar-Lepenac Enterprise (ILE). This enterprise was created in 1967 specifically to undertake the development of the Ibar and Lepenac river systems and has implemented the project.

Project Financing

1.04 The Bank loan of US\$45.0 million has financed US\$40.6 million or 20% of the project cost (US\$204.0 million) and US\$4.4 million for interest during construction. The remaining financing was covered by loans from the "Federal Fund for Underdeveloped Republics" channeled through the Braka Kosova, grants from both the Federal and Provincial Governments, and a small grant from the Djerap Enterprise towards the construction of the Gazivode Dam.

Bank Role in the Sector

1.05 Bank involvement in the water supply and sewerage sector in Yugoslavia was initiated in 1971 and has continued through the execution of nine projects. The Bank has actively assisted the Borrower in project development and implementation, as well as in the establishment of new institutions and appropriate financial strategies. Lending in the sector has been in accordance with Bank country policy focusing on the less developed regions and removing water supply constraints for sustained economic development.

II. PROJECT PREPARATION AND APPRAISAL

Project Origin

2.01 The main opportunities for economic growth in SAP Kosovo are in the expansion of mineral-based industries and in increasing agricultural output, both of which were constrained by a limited water supply. The Provincial Government therefore commissioned consultants to prepare a water resource study which resulted in a master plan for developing the major water resources of the Kosovo plain. After the feasibility study became available, the Federal Government requested a Bank loan of US\$45.0 million to help finance the Ibar Multipurpose Water Project, which was the first phase of the master plan. The Bank was interested in, and encouraged the project because it was a first attempt in Yugoslavia to resolve the problem of water resource development for an entire region on a comprehensive basis.

Preparation and Appraisal

2.02 Following completion of the feasibility study and detailed design of some of the Ibar project components by Yugoslav consultants a Bank reconnaissance mission visited the Pristina area in April 1969. FAO/IBRD cooperative program missions were in Yugoslavia in September 1969 and January 1970, to prepare the agricultural component of the project. After a preappraisal mission of combined Bank and FAO staff in May 1970, the water supply and irrigation components of the project were appraised in June 1970. The power component was appraised in August 1970.

Project Objective

2.03 The main objective of the project was to remove the restrictions put on the economic development of the Kosovo province by the limited available water supply, particularly in the industrial and agricultural sectors, by implementing the first phase of the long term development plan as conceived in the master plan (para. 2.01). In particular, the project was to make 8.8 m³/s of water available to industries, 0.2 m³/s of water to communities, and water for irrigation of 30,000 ha. In addition the project would also generate 95 Gwh of electricity annually. Although the project was slightly modified during implementation (see para. 3.02) and water demand has fallen

behind forecast because of a general slowdown in economic development, the project objectives have been achieved. Substantial additional benefits of the project are in the areas of flood protection and soil erosion control.

Project Description

2.04 The main components of the project were:

- (a) Gazivode rockfill dam and storage reservoir with capacity of 350 million m³;
- (b) a 34 Mw hydroelectric plant;
- (c) Pridvorica regulating dam, intake structure and compensation basin;
- (d) 147 km of main conduits (canals, tunnels, syphons and aqueducts) for conveying untreated water to industries, communities and irrigated areas;
- (e) two main pumping stations;
- (f) irrigation and drainage system serving 30,000 ha;
- (g) feeder roads (about 91 km) and maintenance roads (about 633 km) along irrigation canals and drains;
- (h) on-farm development in the irrigated area (land-levelling, tile drainage);
- (i) soil erosion control works (hydraulic structures for training the small torrential streams flowing intermittently as tributaries to the Ibar River);
- (j) telecommunications system for project operation;
- (k) equipment for operation and maintenance of project facilities;
and
- (l) training of ILE staff for project operation.

2.05 The project also included the following studies:

- (a) a study for the purpose of preparing operating rules for the storage reservoir included in the project to ensure optimum allocation of the water stored;
- (b) a land classification study of the farmland area of the project;

- (c) a study to determine the economic viability of draining about 3500 ha of low-lying lands along the Sitnica River included in the farmland area of the project;
- (d) a study of charges for irrigation water supplied to the farmland area of the project, taking into account the farmers' capacity to pay; and
- (e) a study of the methods of treating liquid wastes produced by two industries, Kombinat Kosovo and Kombinat Trepca, in accordance with river water quality standards acceptable to Kosovo.

2.06 Related project facilities not included in the Bank funded project included:

- (a) soil conservation works in the watershed above the project area, to be undertaken by the Provincial Government;
- (b) levees along the Sitnica River, to be undertaken by the Provincial Government;
- (c) transmission line from the hydroelectric station to the regional power system, to be constructed by Kombinat Kosovo; and
- (d) treatment and distribution systems to use the untreated supplies of bulk water supplied by ILE to industries and communities in the project area, to be undertaken by those water users.

2.07 Inputs required to ensure the realization of benefits in agriculture included:

- (a) maintenance of feeder roads;
- (b) extension services;
- (c) farm inputs (fertilizers, machinery services, etc.); and
- (d) long-term credit for supplementary on-farm investments and annual short-term production credit.

Loan Covenants and Conditions of Effectiveness

2.08 A Loan Agreement (Loan 777-YU) was entered into between the Bank and SFR Yugoslavia (the Borrower), a Project Agreement between the Bank and SAP Kosovo and the Ibar-Lepenac Enterprise (ILE), and a Lenders Agreement between the Bank and Banka Kosova, Pristina was also signed.

2.09 The major covenants required: (i) the Borrower to cause ILE to execute the project; (ii) the Borrower to take all necessary measures to enable SAP Kosovo and ILE to perform their obligations under the Project and

Subsidiary Loan Agreement; (iii) ILE to employ consultants for project preparation and supervision and the carrying out of the studies included in the project; (iv) after completion of, and agreement on the tariff study included in the project Kosovo to guarantee ILE minimum revenue over the first four years of operation; (v) ILE to cause the dams and power conduit included in the project to be inspected every three years. (vi) Banka Kosova to provide ILE with sufficient funds to carry out the project, including cost overruns; (vii) ILE's accounts to be audited and reports submitted within four months after the end of each fiscal year; (viii) ILE's revenues to produce an annual rate of return of 7% after the first year and 8% after the fifth year of operation of the dams, reservoirs and water conveyance systems and; and (ix) a debt limitation covenant.

2.10 The conditions of effectiveness included:

- (a) signing of a contract with engineering consultants satisfactory to the Bank for project supervision;
- (b) conclusion of purchase contracts for water between ILE and the principal industrial consumers, Kombinat Kosovo and Kombinat Trepca;
- (c) conclusion of a contract between ILE and Kombinat Kosovo for the construction of a power transmission line, operation of the hydroelectric plant and purchase of power generated at Gazivode;
- (d) conclusion of a loan agreement between ILE and Banka Kosova for the provision of local funds necessary to complete the project, including possible cost overruns;
- (e) ratification of a Lenders Agreement between the Bank and Banka Kosova and a Project Agreement;
- (f) conclusion of a subsidiary loan agreement between the Federal Government and ILE; and
- (g) conclusion of a Grant Agreement between Djerdap and ILE.

2.11 The loan covenants were comprehensive, and adequately covered the requirements for project implementation and subsequent operations. All covenants were substantially complied with.

III. PROJECT IMPLEMENTATION

Effectiveness and Start-Up

3.01 The loan became effective on May 31, 1972, almost a year after the signing of the Loan Agreement on June 30, 1971. This delay was caused by difficulties in obtaining agreement and in concluding the various subsidiary and sales agreements (para. 2.10). This delay also affected project start-up which was also about a year late. The Loan and Project Agreements were

amended on April 25, 1973 to reflect changes due to the delays in effectiveness and project start-up. Prequalification for the first contracts for the construction of the diversion tunnel and the dams was advertised on June 10, 1971. Actual works on the diversion tunnel started in May 1972.

Revisions

3.02 The project was basically executed as conceived except for the irrigation component which had to be revised. At the time of appraisal, only preliminary designs existed for the irrigation network based on preliminary topographic information (1:50,000 and 1:10,000 maps), and a reconnaissance soil survey carried out in 1961-1965. Using this information, the farm land available for irrigation was estimated at 30,000 ha, and appraisal of the irrigation component was carried out on this basis.

3.03 With the objective of verifying the size of the area suitable for irrigation, the Loan Agreement required that a detailed land classification study be carried out for the entire area. The study, which was conducted by consultants, was found acceptable to the Bank in mid-1974. Subsequently, final designs of the irrigation network were then mapped on a scale of 1:2,500, with the result that it was necessary to reduce the land area for irrigation by 33% to 20,100 ha due to the following factors:

- (i) improved topographic information, indicating that certain fields would not be suitable for irrigation;
- (ii) exclusion of areas on pedological grounds;
- (iii) rapid and unrestricted growth of towns and villages in the project area;
- (iv) major expansion of industrial plant sites at Kosovska Mitrovica and Obilic; and
- (v) expansion of the lignite mining operations of Kombinat Kosovo near Obilic.

3.04 In summary, the reduction in irrigated area was basically due to inadequate project planning (based on very preliminary topographic and soils information), followed by explosive and uncontrolled urban and industrial growth in Kosovo. The revised irrigation network was subdivided into four subsystems as follows:

Irrigated Area Subsystems
Preliminary Study Revision
----- ha -----

Ibar Field	2,500	880
Kosovo Field I	20,800 ^{1/}	6,300
Kosovo Field II	-	7,300
Drenica Polje	<u>6,700</u>	<u>5,620</u>
Total	<u>30,000</u>	<u>20,100</u>
	=====	=====

^{1/} Kosovo Fields I and II combined.

3.05 In mid-1976, the Bank raised two issues concerning the question of irrigating or not the 5,620 ha of subsystem Drenica Field. The first involved the possibility of inadequate water to supply users by 1985, and the second involved the economic viability of irrigating Drenica Field given the high cost of pumping (86 m), and the poorer soils prevailing in the area. Consequently, the Bank recommended to ILE that no further construction proceed on this subsystem until ILE had carefully reviewed water resource availability and the economic viability of this particular subsystem.

3.06 ILE, with the assistance of consultants, prepared revised cost estimates and calculated returns from the project. Subsequent review and analysis by the Bank demonstrated that Drenica Polje was economically viable (ERR over 10%). The results of this analysis along with indication from the project and Government authorities that the total requirement for irrigation, amounting to 65 million m³, could be considered guaranteed for the life of the project, prompted the Bank to lift the construction embargo on this subsystem.

3.07 The project's net cultivable area increased 8% over the pre-project situation (from 18,595 ha to 20,100 ha) due to reclamation of meadows and wet areas, which previously were unsuitable for cultivation. Also, through the process of land consolidation the overgrown borders between the small parcels of land were eliminated and converted into useable cropland.

Implementation

3.08 The original implementation schedule grossly underestimated the time necessary to construct the various components of the project and an eight year implementation period as originally proposed by the Borrower would have been more realistic than the Bank's estimate of five years. In retrospect, even the Borrowers estimate would have been optimistic (see Construction Schedule, Annex 1). Delays in dam and canal construction were caused by insufficiently advanced studies and designs, late start up and unforeseen geological problems necessitating a more complicated foundation. For construction of the canals, the local joint venture which won the contract went bankrupt and finalizing a new contract and subsequent implementation resulted in a three year delay in

completion. Delays in the implementation of the irrigation component were mainly caused by tardy completion of civil works and a multitude of legal, administrative and socio-political problems in the land consolidation aspect, where many agencies had to agree on the procedures and the resulting Land Consolidation Law was only enacted on July 22, 1976. Details are contained in Annex 11. It was not until 1984 that the first land was fully consolidated in a portion of the Ibar project area, comprising 1,850 ha in Drenica Field. The schedule for completion of land consolidation is summarized in the following table.

	<u>Phasing of Land Consolidation</u>					
	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>
Annual	5,608	4,747	7,345	1,100	500	800
Cumulative	5,608	10,355	17,700	18,800	19,300	20,100

For 1985, besides the 1,850 ha already consolidated in 1984, the remaining 3,758 ha of 5,608 ha total is expected to be completed for the 1985 irrigation season (May-September). Completion of revised cadastral maps of each plot, evaluation of the plots, and final distribution of land to farmers is progressing satisfactorily in varying stages within each subsystem. Consequently, the above schedule appears to be realistic.

Reporting

3.09 ILE prepared comprehensive quarterly reports of a good quality which were submitted in a timely manner which assisted the Bank in monitoring the project.

Procurement

3.10 All contracts were procured on the basis of international competitive bidding in accordance with the Bank's guidelines except some very small contracts with a total estimated value of less than 1% of project cost which were procured directly in accordance with local regulations after Bank's approval. All civil works contracts were won by Yugoslav contractors, while 20% of the value of equipment contracts was won by foreign contractors. The value of all procured equipment amounted to about 7% of the project cost.

Project Cost

3.11 The total project cost amounted to Dinar 8048.0 million compared with the appraisal estimate of Dinar 1400.0 million, or a cost overrun of 475%. Expressed in US\$ the actual and estimated costs are US\$204.0 million and US\$ 93.3 million or an overrun of 119%. Annex 2 gives detailed actual costs compared to estimates, which are summarized below.

	-----Estimates-----			-----Actual-----		
	Local	Foreign	Total	Local	Foreign	Total
-----DINAR (millions)-----						
Gazivode and Pridvorica dams	186.0	120.7	306.7	560.8	373.8	934.6
Hydroelectric Plant	36.5	24.5	61.0	223.9	183.1	407.0
Water Conveyance Systems	367.1	112.5	479.6	3870.5	1675.7	5546.2
Miscellaneous Works and Equipment	41.5	9.3	50.8	29.9	23.6	53.5
Land Acquisition	16.4	-	16.4	586.3	-	586.3
Engineering, Training and Administration	<u>54.3</u>	<u>1.5</u>	<u>55.8</u>	<u>513.9</u>	<u>6.7</u>	<u>520.9</u>
Subtotal	701.8	268.5	970.3	5785.3	2262.9	8048.2
Physical Contingen- cies	114.7	25.5	140.2	-	-	-
Price Contingencies	238.5	51.0	289.5	-	-	-
TOTAL	1055.0	345.0	1400.0	5785.3	2262.9	8048.2

The cost overruns were mainly due to delayed implementation, insufficient provision of physical contingencies and the very high inflation (30%-60% per annum) in Yugoslavia, particularly during the later years of project implementation which could not have been foreseen. The foreign exchange component was estimated at between 18 and 25% at appraisal. At completion it was about 28%.

Performance of Consultants, Contractors and the Executing Agency

3.12 The performance of the consultants and the contractors was in general satisfactory, except for the contractors in charge of the dam and canal construction who, because of bankruptcy (para. 3.08), caused substantial delays in the completion of the project. Considering that at the outset few of its staff had any experience in executing a project of this complexity and magnitude, ILE performed well. It has developed into a capable organization.

IV. OPERATING PERFORMANCE

Water and Power Production and Sales

4.01 As a result of the delayed completion of the project, water and power sales could not start in 1974 and 1976, respectively, as estimated at the time of appraisal. Power was sold for the first time in 1981 and has since been at levels forecast at the time of appraisal.

4.02 Sale of water to industry which would consume about three-fourths of the water available in the Ibar system has been delayed. This is mainly because the investments which the industries were to make, have been postponed due to the overall economic situation in Yugoslavia and the resulting scarcity of investment funds. These investments are now being made and starting in 1983 industries have begun taking about 10% of the water which they were supposed to use. While demand will grow, water sales to industry will reach the originally forecast level only in 1994.

4.03 Sale of water for domestic use also started only in 1983. The water allocated for this purpose is a very small proportion of the total and the demand has been about 50% higher than forecasted and is expected to double in 1987, when a new water treatment plant in Titova Mitrovica is inaugurated. Given the relatively small amounts involved, this higher demand can be accommodated.

4.04 For irrigation, the appraisal estimated that farmers would irrigate 1,500 ha in 1974, 2,000 ha in 1975, 19,000 in 1976, and that by 1977 the total area of 30,000 would be under irrigation. In reality, systematic use of the irrigation network will only commence in 1985, mainly due to the delayed completion of civil works and problems associated with land consolidation. The following table shows the planned schedule for bringing cropland under irrigation between 1985 and 1990.

Phasing of Irrigated Cropland

	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>
	-----ha-----					
Annual basis, plus	11,608	2,347	3,745	1,100	500	800
Second crops ^{1/}	<u>4,712</u>	<u>939</u>	<u>1,498</u>	<u>440</u>	<u>200</u>	<u>320</u>
Total annual	<u>16,320</u>	<u>3,286</u>	<u>5,243</u>	<u>1,540</u>	<u>700</u>	<u>1,120</u>
Accumul. basis, plus	11,608	13,955	17,700	18,800	19,300	20,100
Second crops ^{1/}	<u>4,712</u>	<u>5,651</u>	<u>7,149</u>	<u>7,589</u>	<u>7,789</u>	<u>8,109</u>
Total accumulative	<u>16,320</u>	<u>19,606</u>	<u>24,849</u>	<u>26,389</u>	<u>27,089</u>	<u>28,209</u>

^{1/} Second crops consist of maize silage and vegetables following wheat, barley and rape seed through a system of double cropping.

4.05 By 1990, the total project area of 20,100 ha is expected to be under irrigation, which is also expected to support 8,109 ha of second crop maize silage and vegetables for a grand total of 28,209 ha. Prior to 1985, through the efforts of ILE and the cooperatives, portions of the sprinkler system were put in use on a demonstration/pilot basis (120 ha and 200 ha in 1981 and 1982, respectively) and by farmers on an ad hoc informal basis, without any charge for use of the water (400 ha in 1982, 1,200 ha in 1983, and 2,250 ha in 1984).

4.06 Also at the time of appraisal approximately 70% of the area proposed for irrigation had been envisaged for surface irrigation, while 30% was allocated to sprinklers. However, it became apparent that the entire project area presented a conflict since land levelling, though necessary for surface irrigation, could not be implemented due to shallow soil depths and very high costs per hectare for moving earth. This again highlights the need for sufficiently advanced project design prior to appraisal.

4.07 In mid-1976 at the Bank's request, ILE carried out a comparative analysis of irrigation methods which showed higher investment costs for surface methods of irrigation, if these were physically possible, as compared to sprinklers. During November of the same year a supervision mission further reviewed the situation in the field. As a result, the Bank in January 1977 approved the sprinkler method of irrigation for the entire project area of 20,100 ha.

Irrigation Water Demand, Supply and Quality

4.08 The irrigation water requirements were calculated using the USDA modified Blaney-Criddle method based on the projected cropping pattern consisting mainly of wheat, maize, sugarbeet, alfalfa and vegetables. The estimated seasonal irrigation demand below reservoir was calculated to be 105 million m³ or 3,500 m³/ha, based on an irrigated area of 30,000 ha.

During 1976, the distribution of water allocation between industry, agriculture and for domestic purposes was an issue. Finally, due to an upward revision in the industrial demand and a reduction in the size of the irrigated area to 20,100 ha, the amount allocated to agriculture was reduced to 65 million m³, with Bank's agreement after a technical review of the issue. The Bank's concurrence was reinforced by the Government's indication that this allocation is for the life of the project. Data on the quality of the Ibar water indicated that the soluble salt content was very low (less than 370 mg/l) and that bicarbonate ion was dominant. The water was considered suitable for continuous irrigation with practically no salinity or sodium hazard.

Support Services

4.09 An essential element in support of irrigated agricultural development in the individual sector (7,800 farmer households) was a program of agricultural extension, which although delayed, was formally established in mid-1978. The agricultural cooperatives have the dominant role in providing this assistance, and by end-1984 there were 16 cooperatives in the project area with a total of 21 graduate-level extension agents (plus about 30 technicians) to serve the needs of the farmers. This level of manpower is sufficient to meet the requirements of the project through 1986; however, as additional cropland comes under irrigation in later years, the number of agents will have to increase in order to provide adequate technical assistance (Annex 10, paras. 29-31).

V. FINANCIAL PERFORMANCE

Introduction

5.01 The appraisal forecast and actual Income Statements, Cash Flow Statements and Balance Sheets for ILE from 1971-1985 are in Annexes 5 to 7. An analysis of ILE's financial performance follows.

Operating Results

5.02 ILE's actual operating results, as well as overall financial performance differs substantially from appraisal estimates principally due to two facts: (i) the project was executed between the years 1971-1984 instead of the planned 1971-1976 period, and (ii) the inflation in Yugoslavia during the implementation period, coupled with dramatic devaluation of the Yugoslav Dinar during 1981-1984, could not have been anticipated. Given this background and the fact that the major components of the project have been completed only recently, there is little by way of actual performance which could form the basis of any proper assessment.

5.03 ILE was set up as an "investment" organization to become an "operating" organization once the Ibar project was completed. It had little or no revenues until recently and depended completely on the Government for all its finances. The hydro-power plant started producing electricity in 1981

and has since provided ILE with some revenues, although lately "Elektrokosovo", the power company, has not been paying ILE on time resulting in a high level of accounts receivable. Industries and domestic water consumers started using water in 1983, with industries consuming much less for the time being than originally planned. This also has a rather negative effect on ILE's financial position since the industries presently plan to use all the water allocated to them only by 1994. Similarly all the water allocated for agriculture will be fully utilized only in 1990. ILE has in the meantime agreed with the industries on a revised level of charges and has also prepared a program for charging agricultural water using a graduated scale whereby agricultural users will pay the full cost by the end of the fifth year (see Annex 10, paras 22-24 for further details). ILE's present tariffs are as follows:

Water (Industry)	-	Din 9.5/m ³
Water (Irrigation)	-	Din 9.5/m ³ ^{1/}
Water (Domestic)	-	Din 8.0/m ³
Electricity	-	Din 3.91/Kwh

^{1/}Farmers will initially pay 16% of the tariff and pay 100% in the fifth year. Provincial Government will pay ILE the difference.

Overall, ILE's financial future depends largely on its industrial consumers since two-thirds of its revenues are expected from them. Given the difficult overall economic situation in Yugoslavia, some slippages may be unavoidable.

Sources and Application of Funds

5.04 The appraisal forecast (1971-1976) and the actual (1971-1984) sources and application of funds can be summed up as follows:

<u>Requirements</u>	Appraisal (1971-76)		Actual (1971-84)	
	Din (mil.)	(%)	Din (mil.)	(%)
Project Expenditures	1400.0	90	7327.8	66
Interest During Construction	93.0	6	1841.4	17
Other Capital Expenditure	3.0	-	425.3	4
Working Cap. incl. Cash	54.6	4	1463.8	13
Total Requirements	1550.6	100	11058.3	100
<u>Sources</u>				
Internal Cash Generation	152.4	-	1753.1	-
Less: Debt Service	41.8	-	(992.4)	-
Net Int. Cash Gen.	110.6	7	760.7	7
IBRD Loan	675.0	44	855.8	8
Banka Kosova Loan	695.0	45	7221.5	65
Djerdap Contribution	70.0	4	70.0	1
Other Contributions (Fed. Govt. and Bank Kos.)	--	--	2150.3	19
Total Sources	1550.6	100	11058.3	100

5.05 Overall funds requirements were about seven times higher, again due to the extended implementation period and very high inflation. Almost 60% of the total investments were made during 1981-1984, a period when the average exchange rate went from US\$1 = Din. 25 in 1980 to US\$1 = Din. 164 in 1984. The Bank loan was largely disbursed by 1980 (93%) and the remaining costs were financed by loans from the Banka Kosova. In the absence of any substantial revenues, the Federal Government has serviced the World Bank loan until now and this is likely to continue in the foreseeable future until ILE's revenue base grows. An additional factor which further complicates ILE's financial future is the dramatic decline in the value of the Dinar and its consequences for ILE's debt servicing capacity. This is a problem which affects all projects in Yugoslavia financed by foreign loans in the last 5 years and in ILE's case the problem is particularly severe since the Bank loan funds were disbursed when US\$1 = Din 18 on the average, whereas the exchange rate presently stands at US\$1 = Din 250. In spite of all this, however, if ILE could sell all the water and electricity it produces it could service all its debts from its revenues. Until then the Federal and Provincial Governments will continue to service ILE's debts to the extent necessary.

Financial Covenants

5.06 ILE was expected to achieve an annual rate of return on its net fixed assets in operation of 7% after the first year of operation of the dams, reservoirs and the water conveyance system and of 8% after the fifth year. The above mentioned facilities were completed only in 1984 and therefore the covenant would not be operative until the end of 1985. However, based on the present status of water utilization by the various user groups, ILE will not meet its financial covenant. This situation is likely to continue for several years until the industries which were to have taken about three-quarters of the water from the Ibar system complete their expansion programs and start taking all the water allocated to them. ILE should then be able to achieve its financial targets.

VI. INSTITUTIONAL PERFORMANCE

Organizational Development

6.01 ILE was created in 1969 to implement the Ibar-Lepenac Project, with the Ibar component to be constructed first. Once the Ibar project was finished it was also to operate and maintain the facilities.

6.02 Until the end of 1984 ILE was strictly an "investment organization". Now that the project is completed, its organizational structure has been changed which includes the operation of the Ibar system and the development of the Lepenac system. The organization chart is in Annex 9.

6.03 ILE started out with about 30 people and its total staff at present is 240. As activities in irrigation increase ILE's staff is expected to grow to about 280 by the year 1990. Also, since the establishment of the agricultural extension service in mid-1978 through 16 cooperatives in the project area, 21 graduate-level agents (plus about 30 technicians) currently are serving the needs of the project farmers.

Training

6.04 The project provided for training of ILE's staff for the purpose of operation and maintenance of the project facilities. The project financed close to 100 man-months of training (compared to 90 planned), locally and abroad, of ILE professionals in the fields of operation and maintenance of irrigation systems, drainage, irrigated agriculture and farm economics. Also the agricultural extension service operated by the cooperatives in the project area and ILE are collaborating in organizing training programs for farmers. The programs consist of both theoretical and practical courses and seminars covering a wide range of subjects from sprinkler irrigation methodology to the agronomy of irrigated crop production. Staff from the Faculty of Agriculture of the University of Pristina also offer lectures in many of the courses. In addition, descriptive pamphlets prepared by ILE on such subjects as cropping pattern and water use are widely used and distributed. Experience has proven

that farmers are very receptive to the overall training effort, which not only imparts new knowledge but also stimulates general interest among the rural population in the Ibar project.

6.05 From the very beginning the Bank encouraged ILE to set up demonstration areas in the various subsystems to expose farmers to sprinkler irrigation prior to its formal introduction through the total system. In 1981, 120 ha was organized on a demonstration basis, through the effort of cooperatives and ILE, whereby water was pumped from an adjacent river to the sprinkler equipment which already had been procured under the project. This demonstration was expanded to 200 ha in 1982. The demonstrations have been effective methods of familiarizing farmers with sprinkler irrigation.

Agricultural Research

6.06 By 1971, ILE was already financing a four hectare irrigation experimental area, run by the Agricultural Research Institute of Agrokosovo, on which wheat, barley, alfalfa, sunflower and maize were grown using surface and sprinkler irrigation - the result, of which were passed on to the extension service through seminars and printed material. More recently, double cropping systems have been under observation on social sector farms and because of the encouraging results, these systems will be introduced on the individual farms in the project area as irrigation becomes available.

6.07 The Faculty of Agriculture of the University of Pristina (founded in 1974) is responsible for agricultural research in the Province through four research institutes or departments; namely, Crop Production, Livestock Improvement, Economics and Development, and Plant and Seed Production. The Faculty has been active in collaborating with the extension services through organizing special intensive courses, work shops and seminars in a variety of subjects important to the agricultural development of Kosovo in general, and the Ibar project in particular.

The Cooperative Movement and Individual Farmers

6.08 Between project start-up and end-1984 increasing numbers of farmers have become associated with agricultural cooperatives, either as full members or through short and/or long-term production-market contracts. By end-1984, some 9,000 farmers had formed some type of association with the 16 cooperatives established in the project area. This development will enhance the provision of farm inputs to individual farmers, including technical assistance, as well as effective utilization of sprinkler irrigation.

VII. BANK PERFORMANCE

7.01 A good rapport existed between the Bank, the Federal and Provincial Governments and ILE throughout project preparation and implementation. Bank made many recommendations and requests for additional analysis which were carried out by ILE. ILE considers Bank interventions to have been timely and

beneficial. The Bank has also played a catalytic role in the implementation of the land consolidation program, benefits from which will not be limited to this project alone. The fact that ILE has now requested Bank assistance to carry out the Lepenac Project confirms the existing good relationship between the Bank and ILE.

7.02 Bank supervised the project three to four times annually during the early years of project implementation and once a year after construction of major project components was underway. Missions fielded by the Bank were balanced, provided sufficient continuity and had the necessary expertise to provide the level of guidance and supervision necessary for the various stages of project implementation. On the whole, the Bank's performance in guiding this project has been effective.

VIII. PROJECT JUSTIFICATION

Project Objective

8.1 The main objective of the project, to remove the constraint on industrial and agricultural development caused by an insufficient water supply, has been achieved albeit with some delay. While the demand for domestic water is greater than expected and electricity is being produced as projected, the demand for industrial water has lagged because of slower than expected industrial development caused by the general difficult economic situation in the country. The demand in agricultural water has also lagged because of the slow implementation of civil works and land consolidation in the project area. The long term development in the agricultural component of the project will be substantial. In brief, it will increase annual agricultural production six fold over the present level of output. Details pertaining to agricultural development are elaborated in Annex 10. Overall progress is being made in both the industrial and agricultural areas and there is little reason to doubt that all the potential benefits of this project will be fully derived by 1990 and beyond. Indeed the Government considers this project as one of the most important carried out in Kosovo and has instructed ILE to start preparation of the second phase which will aim at regulating the water of the Lepenac River.

8.2 In addition to the main benefits of permitting continued economic development in the industrial and agricultural sector in the Kosovo Province, the project provides a number of other benefits which are as follows:

- (a) the 135 km long water conveyance system built under this project is a convenient source of raw water for domestic water supply in the communes in the Sitnica Valley. At appraisal it was estimated that 6.4 million m³/year of water would be used for this purpose. Interest is however much greater and by 1987 about three times this amount will be used for potable water supply. This would also generate considerable, but difficult to quantify, health benefits.

- (b) the flood protection aspect, which was not considered very important at the time of appraisal, has been highly beneficial. In an average year prior to the construction of the dam, floods damaged agricultural land, public utilities, housing and also disrupted economic activity in the project area with an estimated value of Dinar 11.0 million (US\$0.7 million) in 1971 prices. Furthermore, in 1979 exceptionally heavy rains in the Ibar basin upstream of the Gazivode dam would have caused a devastating flood, had the dam not been in place. It is estimated that about 60% of the housing in Titova Mitrovica would have been damaged, some completely destroyed. Floods would have also damaged 8 kms of railway lines and 7 kms of roads. Kombinat Trepca, the major industry in the area, would have been severely damaged, as would other smaller industries and handicraft establishments resulting in a minimum of one month of lost production. In addition, public utilities would have been affected and the entire economic life in the area would have been disrupted. It has been estimated that the damages averted by the existence of the dam amounted to Dinar 875.0 million in 1971 prices (US\$58.3 million).
- (c) the project has provided employment to an average of 2000 laborers/year during the construction period, and will continue to provide employment to about 600 persons on a permanent basis for operation and maintenance purposes. This is without counting the additional agricultural labour force both in production and processing which will find employment by virtue of the project.
- (d) the project also has a positive influence on the country's balance of payments through savings on imported cereals (mainly wheat) through the increased production in the area.

Least Cost Solutions

8.3 The chosen technical solutions were based on the least cost solution. Further cost reductions could only have been achieved by more expeditious project implementation.

Economic Rate of Return

8.4 At the time of appraisal the internal economic rate of return (ERR) of the project of 15.6% was calculated based on a five year implementation period with benefits to follow thereafter. It is understandable that because of the much longer project implementation period (14 years) and the delayed accrual of benefits this high rate of return could not be maintained. Revised calculations have shown an ERR of 13%. This is satisfactory, in particular since a number of unquantifiable benefits (health, employment) have not been taken in account. (Annex 8).

IX. CONCLUSIONS

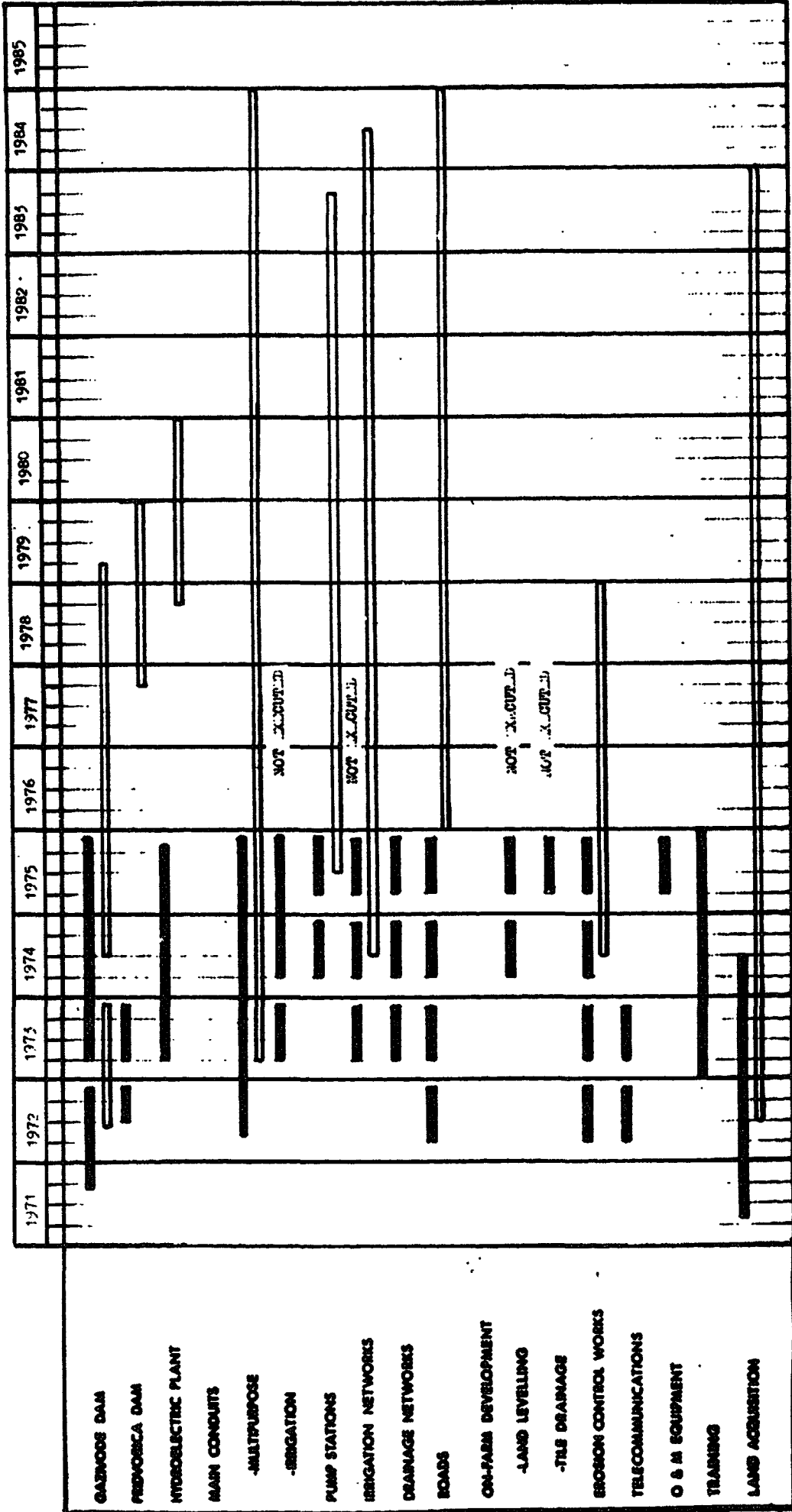
9.1 The project was well conceived and represents the least cost solution. Notwithstanding the considerable delays in project implementation the project has been one of the most beneficial ones implemented in the Kosovo Province with significant long-term developmental implications. All physical project objectives have been achieved, and the institution created to implement the project has developed into a viable, well-run entity, ready to tackle the follow-up project of regulating the Lapanac River and expanding irrigation to an additional 43000 ha. The Bank has been requested to consider providing financing for the new project.

Lessons Learned

9.2 The lessons learned from this project can be summarized as follows:

- (a) project appraisal should take place only after final design is sufficiently advanced in order to provide a firm project description and reliable cost estimates;
- (b) final designs and bid documents for critical elements of the project should be ready for tender soon after Board presentation. This aspect has taken an added importance due to the reduction of grace periods for Bank loans;
- (c) conditions of effectiveness should be kept to a minimum and most of them should be dealt with as part of project preparation to the extent possible; and
- (d) land consolidation presents difficult legal, technical, and particularly social problems, which are not amenable to reliable implementation planning and, therefore, the Bank should be more cautious and realistic in establishing implementation schedules where social issues are involved.

YUGOSLAVIA
 IBAR MULTIPURPOSE WATER PROJECT
 LOAN 777-YU
 COMPLETION REPORT
 FORECAST AND ACTUAL CONSTRUCTION SCHEDULE



ACTUAL

FORECASTED

YUGOSLAVIA
IBAR MULTIPURPOSE WATER PROJECT
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ACTUAL AND ESTIMATED PROJECT COST

	-----SAR Estimates-----			-----Actual-----			-----SAR Estimates-----			-----Actual-----		
	D in millions			US\$ Million			US\$ Million			US\$ Million		
	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total
Gazivode and Pridvorica dams	186.0	120.7	306.7	560.8	373.8	934.6	12.4	80	20.4	14.2	9.5	23.7
Hydroelectric Plant	36.5	24.5	61.0	223.9	183.1	407.0	2.4	1.7	4.1	5.7	4.6	10.3
Water Conveyance Systems	367.1	112.5	479.6	3870.5	1675.7	5546.2	24.5	75	32.0	98.0	42.4	140.4
Miscellaneous Works and Equipment	41.5	9.3	50.8	29.9	23.6	53.5	28	06	3.4	0.5	0.3	0.8
Land Acquisition	16.4	-	16.4	5863	-	586.3	1.1	-	1.1	14.8	-	14.8
Engineering Training and Administration	54.3	1.5	55.8	513.9	6.7	520.9	3.6	0.1	3.7	13.0	0.2	13.2
Subtotal	701.8	268.5	970.3	5785.3	2262.9	8048.2	46.8	17.9	64.7	146.2	57.0	203.7
Physical Contingencies	114.7	25.5	140.2	-	-	-	7.6	1.7	9.3	-	-	-
Price Contingencies	238.5	51.0	289.5	-	-	-	15.9	3.4	19.3	-	-	-
TOTAL	1055.0	345.0	1400.0	5785.3	2262.9	8048.2	70.3	23.0	93.3	146.2	57.0	203.7

YUGOSLAVIA
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COMPLETION REPORT

ACTUAL PROJECT COSTS
(in mill. din.)

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	TOTAL
1. Gazivode Dam	5.6	79.8	94.8	138.6	190.7	126.4	42.2	39.4	33.8	24.3	35.4	13.8	4.6	7.9	837.3
2. Hydroelectric Plant		0.2	6.8	23.7	39.6	38.6	90.8	68.7	35.7	12.7	10.5	20.7	2.0	11.8	361.8
3. Pridvorica Dam		3.6	14.9	23.2	7.1	19.6	5.4	4.6	9.9	2.8	0.8	1.7	0.9	2.8	97.3
4. Multipurpose conduits		19.4	66.1	77.3	76.2	97.9	110.1	442.7	638.0	693.2	549.9	81.9	239.8	75.7	4068.2
5. Pump stations			0.1	8.4	7.8	6.3	8.3	7.4	1.6	0.6	13.2	39.9	22.5	2.2	118.3
6. Irrigation networks				4.9	6.3	9.7	83.0	74.9	101.2	121.8	326.4	318.0	211.1	102.4	1359.7
7. Erosion control works			2.8	8.5	4.8	3.0	0.9	0.2							20.2
8. Telecommunications															-
9. Power Line	1.1	2.8	1.1	1.6	1.5	4.1	2.7	0.9	0.4	1.0		10.2	17.8		45.2
10. O & M Equipment									3.8	1.2	0.8	4.6	22.9		33.3
11. Land acquisition	0.4	1.2	8.1	15.8	30.8	67.0	66.3	62.2	15.2	15.7	23.9	131.4	86.8	61.5	586.3
12. Training															-
13. Consultants	2.8	4.6	4.8	9.9	5.3	1.9	3.6	2.7	5.2	2.1	1.0	9.6	3.1	2.2	58.8
14. Administrative buildings	0.3	2.6	4.2	0.1				0.7							7.9
15. Administrations	<u>4.3</u>	<u>7.0</u>	<u>11.8</u>	<u>11.9</u>	<u>10.7</u>	<u>15.0</u>	<u>20.6</u>	<u>28.0</u>	<u>27.8</u>	<u>41.9</u>	<u>59.1</u>	<u>70.4</u>	<u>116.8</u>	<u>28.6</u>	<u>453.9</u>
TOTAL 1-15	14.5	121.7	215.5	323.9	380.8	389.5	433.9	732.4	872.6	917.3	1021.0	1602.2	728.3	295.1	8048.2

YUGOSLAVIA
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ESTIMATED AND ACTUAL AND REESTIMATED (AFTER 1985) WATER AND POWER PRODUCTION

Water in 10 ⁶ m ³ Electricity Gwh	-----Appraisal Estimate-----					-----Actual 1971-1985 and Reestimate-----				
	Agriculture Mm ³	Industry Mm ³	Commercial Mm ³	Total Mm ³	Electricity Gwh	Agriculture Mm ³	Industry Mm ³	Commercial Mm ³	Total Mm ³	Electricity Gwh
1971										
	4.5	56.7		61.2						
1975	6.3	63.0		69.3						
	59.4	172.8	2.9	235.1	95					
	77.4	183.3	3.2	263.9	95					
	90.4	194.3	3.6	288.3	95					
	95.0	203.2	4.0	302.2	95					
1980	95.0	212.5	4.3	311.8	95					
	95.0	225.9	4.6	325.5	95					70.5
	95.0	240.2	5.0	340.2	95					84.8
	95.0	282.8	5.4	353.2	95		28.0	11.0	39.0	74.8
	95.0	265.4	5.8	366.2	95		68.5	9.5	78.0	118.3
1985	95.0	278.3	6.1	379.4	95	37.1	164.0	9.5	210.6	95
						44.7	187.3	9.5	241.5	95
						56.6	198.4	18.9	273.9	95
						60.2	210.0	18.9	289.1	95
						61.8	222.0	18.9	302.7	95
1990						64.3	241.6	18.9	324.8	95
						64.3	257.3	18.9	340.5	95
						64.3	287.3	18.9	370.5	95
						64.3	298.3	18.9	362.6	95
						64.3	310.6	18.9	393.8	95
1995						64.3	310.6	18.9	393.8	95

YUGOSLAVIA
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COMPLETION REPORT
IBAR-LEPENAC ENTERPRISE

INCOME STATEMENTS
(in mill. din.)

	1974		1975		1976		1977		1978		1979		1980		1981		1982		1983		1984		1985	
	esti- mated	act- ual	esti- mated	act- ual	esti- mated	act- ual	esti- mated	act- ual	esti- mated	act- ual	esti- mated	act- ual	esti- mated	act- ual	esti- mated	act- ual	esti- mated	act- ual	esti- mated	act- ual	esti- mated	act- ual	esti- mated	act- ual ¹
Total Water Consump- tion (mill. m ³)	61.2	-	69.3	-	235.1	-	263.9	-	288.3	-	302.2	-	311.8	-	325.5	-	340.2	-	353.2	-	366.2	-	379.4	210.6
Agriculture	4.5	-	6.3	-	59.4	-	77.4	-	90.4	-	95.0	-	95.0	-	95.0	-	95.0	-	95.0	-	95.0	-	95.0	37.1
Industry	56.7	-	63.0	-	172.8	-	183.3	-	194.3	-	203.2	-	212.5	-	225.9	-	240.2	-	240.2	28.0	265.4	68.5	278.3	164.0
Communities	-	-	-	-	2.9	-	3.2	-	3.6	-	4.0	-	4.3	-	4.6	-	5.0	-	5.0	11.0	5.8	9.5	6.1	9.5
Energy (mill. kWh)	-	-	-	-	95.0	-	95.0	-	95.0	-	95.0	-	95.0	-	95.0	70.5	95.0	84.8	95.0	74.8	95.0	118.3	95.0	95.0
Revenue from Water																								
Agriculture	1.0	-	2.0	-	16.0	-	30.0	-	30.0	-	30.0	-	30.0	-	30.0	-	30.0	-	30.0	-	33.0	-	33.0	352.4
Industry	27.7	-	30.9	-	84.7	-	89.8	-	96.2	-	99.6	-	104.1	-	110.7	-	105.7	-	111.2	196.1	100.9	651.0	105.7	1,557.0
Communities	-	-	-	-	0.9	-	1.0	-	1.1	-	1.2	-	1.3	-	1.4	-	1.5	-	1.6	77.3	1.7	75.9	1.8	75.7
Electricity	-	-	-	-	12.4	-	12.4	-	12.4	-	12.4	-	12.4	-	12.4	102.7	12.4	151.7	12.4	171.5	12.4	326.9	12.4	371.5
Total Revenue	28.7	-	32.9	-	114.0	-	133.2	-	139.7	-	143.2	-	147.8	-	154.5	102.7	159.6	151.7	155.2	444.9	148.0	1,053.8	152.9	2,357.5
Operating Costs																								
Agriculture	1.0	-	1.9	-	8.8	-	9.7	-	12.1	-	12.5	-	12.6	-	13.3	-	13.7	-	14.1	-	14.5	-	14.9	201.4
Industry and Communities	1.4	-	1.7	-	6.5	-	6.1	-	6.3	-	6.5	-	6.6	-	6.8	-	7.0	-	7.2	-	7.5	-	7.7	255.7
Energy	-	-	1.9	-	1.9	-	1.9	-	1.9	-	1.9	-	1.9	-	1.9	-	1.9	-	1.9	-	1.9	-	1.9	87.5
Investors Expenses	2.0	11.8	2.0	11.9	-	10.7	-	15.0	-	20.6	-	28.0	-	27.8	-	41.9	-	59.1	-	70.4	-	116.8	-	28.6
Total Oper. Costs	4.4	11.8	5.6	11.9	17.2	10.7	17.7	15.0	20.3	20.6	20.9	28.0	21.4	27.8	22.0	41.9	22.6	59.1	23.2	70.4	23.9	116.8	24.5	573.2
Less:																								
Cap. Oper. Costs	2.0	(11.8)	2.0	(11.9)	-	(10.7)	-	(15.0)	-	(20.6)	-	(28.0)	-	(27.8)	-	(41.9)	-	(59.1)	-	(70.4)	-	(116.8)	-	(28.6)
Net Oper. Costs	2.4	-	3.6	-	17.2	-	17.7	-	20.3	-	20.9	-	21.4	-	22.0	-	22.6	-	23.2	-	23.9	-	24.5	544.6
Depreciation																								
Agriculture	-	-	-	-	7.1	-	7.1	-	10.8	-	14.4	-	14.4	-	14.4	-	14.4	-	14.4	-	14.4	-	14.4	111.3
Industry and Communities	0.3	-	0.3	-	7.1	-	7.1	-	10.8	-	14.4	-	14.4	-	14.4	-	14.4	-	14.4	-	7.3	-	7.4	532.1
Energy	-	-	-	-	3.3	-	3.3	-	3.3	-	3.3	-	3.3	-	3.3	-	3.3	-	3.3	-	3.3	-	3.3	101.2
Total Depr.	0.3	-	0.3	-	17.2	-	17.8	-	21.4	-	28.1	-	28.0	-	28.1	-	28.0	-	28.1	-	28.0	-	25.1	744.6
Net Inc. before Interests																								
Agriculture	-	-	0.1	-	0.1	-	13.2	-	7.1	-	3.1	-	2.7	-	2.3	-	1.9	-	1.5	-	4.1	-	3.7	-
Industry and Communities	26.0	-	26.9	-	71.8	-	77.3	-	83.7	-	86.9	-	91.5	-	97.9	-	92.9	-	98.2	-	87.8	-	92.4	-
Energy	-	-	-	-	7.2	-	7.2	-	7.2	-	7.2	-	7.2	-	7.2	-	7.2	-	7.2	-	7.2	-	7.2	-
Net Oper. Income	26.0	-	29.0	-	79.1	-	97.7	-	98.0	-	97.2	-	101.4	-	107.4	102.7	102.0	151.7	106.9	444.9	99.1	1,053.8	103.3	1,058.3
Interests																								
Paid	19.6	8.5	32.9	12.9	64.7	20.2	66.0	36.9	65.3	48.0	64.1	80.5	62.5	129.8	61.1	196.9	59.4	209.7	57.8	462.0	55.9	623.2	54.0	786.9
Less: Capitalized	(19.6)	(8.5)	(32.9)	(12.9)	(22.9)	(20.2)	-	(36.9)	-	(48.0)	-	(80.5)	-	(129.8)	-	(196.9)	-	(209.7)	-	(462.0)	-	(623.2)	-	(786.9)
Total Interests	-	-	-	-	41.8	-	66.0	-	65.3	-	64.1	-	62.5	-	61.1	-	59.4	-	57.8	-	55.9	-	54.0	-
Net Income	26.0	-	29.0	-	37.3	-	31.7	-	32.7	-	33.1	-	38.9	-	46.3	102.7	42.6	151.7	49.1	444.9	43.2	1,053.8	49.3	1,058.3

¹ Estimated

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COMPLETION REPORT
IBAR-LEPENAC ENTERPRISE
CASH FLOW STATEMENTS
(in mill. din.)

	1971		1972		1973		1974		1975		1976		1977		1978		1979		1980		1981		1982		1983		1984		1985		
	esti-	act-	esti-	act-	esti-	act-	esti-	act-	esti-	act-	esti-	act-	esti-	act-	esti-	act-	esti-	act-	esti-	act-	esti-	act-	esti-	act-	esti-	act-	esti-	act-	esti-	act-	
	mated	ual	mated	ual	mated	ual	mated	ual	mated	ual	mated	ual	mated	ual	mated	ual	mated	ual	mated	ual	mated	ual	mated	ual	mated	ual	mated	ual	mated	ual	
SOURCES OF FUNDS																															
Net Oper. Income	-	-	-	-	-	-	26,0	-	29,0	-	79,1	-	97,7	-	97,0	-	97,2	-	101,4	-	107,4	102,7	102,0	151,7	106,9	444,9	99,1	1053,8	103,3	1068,3	
Depreciation	-	-	-	-	-	-	0,3	-	12,2	-	17,8	-	21,4	-	25,1	-	25,0	-	25,0	-	25,1	-	25,0	-	25,1	-	25,0	-	25,1	-	246,6
Inter. Cash Gen.	-	-	-	-	-	-	25,3	29,3	96,8	-	118,8	-	118,4	-	122,3	-	126,4	-	132,8	-	132,5	182,7	127,0	151,7	132,0	444,9	124,1	1053,8	128,4	1812,9	
IBRD Loan	4,3	-	54,3	8,0	136,3	25,2	198,7	40,5	228,4	80,5	53,0	102,2	-	221,0	-	36,2	-	120,4	-	196,0	-	62,2	-	3,6	-	-	-	-	-	-	-
Banka Kosova Loan	25,0	-	103,0	-	212,0	-	227,0	-	123,0	-	5,0	138,8	-	183,9	-	489,0	-	700,2	-	701,4	-	934,5	-	1080,8	-	1878,5	-	1114,4	-	714,4	
Liab. to Contr.	0,4	-	7,4	-	9,9	-	22,1	-	8,4	-	(47,3)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tot. Inc. in Debt	29,7	-	164,7	8,0	357,3	25,2	447,8	80,5	359,8	80,5	18,7	241,8	-	494,9	-	525,2	-	820,6	-	857,4	-	996,7	-	1084,4	-	1878,5	-	1114,4	-	714,4	
Cap. Contrib.	1,6	-	9,3	-	18,4	-	22,7	-	18,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Federal Govt.	-	-	-	13,2	-	165,4	-	131,6	-	161,9	-	124,7	-	-	-	-	-	35,2	-	99,5	-	137,9	-	203,9	-	371,0	-	582,2	-	859,8	
Kosovo Govt.	-	-	-	-	-	-	-	-	-	50,3	-	50,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23,6	
HE DIZBOP	-	-	-	-	-	-	5,8	-	14,6	-	2,4	-	35,7	-	11,0	-	0,9	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tot. Srcs of Funds	31,3	-	174,0	21,2	375,7	196,1	496,8	186,6	402,1	295,1	182,5	451,4	115,5	415,9	118,4	526,1	122,3	855,8	126,4	955,9	132,5	1237,3	127,0	1440,0	132,0	2694,4	124,1	2773,9	128,4	2409,9	
APPLIC. OF FUNDS																															
Debt Service:																															
Amort.-IBRD Loan	-	-	-	-	-	-	-	-	-	-	-	-	11,8	13,6	11,8	14,6	12,6	16,1	13,6	22,6	14,6	35,0	15,7	57,6	16,9	112,9	18,1	197,5	19,4	278,4	
Amort.-Banka Kosova	-	-	-	-	-	-	-	-	-	-	-	-	-	10,1	-	20,5	-	21,1	-	21,5	-	22,1	-	22,5	240,2	23,2	282,3	23,8	292,3		
Total Amort.	-	-	-	-	-	-	-	-	-	-	-	-	-	11,8	13,6	21,9	14,6	33,1	16,1	44,2	36,1	57,0	37,8	80,1	40,1	353,1	41,3	479,8	43,2	570,8	
Int.-IBRD Loan	2,1	-	5,8	6,7	9,7	6,1	19,6	8,5	32,9	12,9	47,4	20,2	48,7	29,3	47,9	45,1	47,1	49,3	46,1	76,9	45,1	102,9	44,0	146,3	42,8	258,1	41,6	384,7	40,3	577,4	
Int.-Banka Kosova	-	-	-	-	-	-	-	-	-	-	-	-	17,3	-	17,3	7,6	17,4	2,9	17,9	31,2	16,4	52,9	16,0	94,0	15,4	63,4	15,8	203,9	15,3	238,5	
Total Interest	2,1	-	5,8	6,7	9,7	6,1	19,6	8,5	32,9	12,9	64,7	20,2	66,0	26,9	65,3	48,0	64,1	80,5	62,5	129,8	61,1	196,9	59,4	209,7	57,8	462,0	55,8	623,2	54,0	789,9	
Total Debt Svc.	2,1	-	5,8	6,7	9,7	6,1	19,6	8,5	32,9	12,9	64,7	20,2	72,0	80,5	82,2	62,6	97,2	98,6	97,2	162,4	97,2	231,9	97,2	267,3	97,2	815,1	97,2	1103,0	97,2	1357,2	
Investments	-	-	-	10,2	-	114,2	-	203,7	-	312,0	-	370,1	-	374,5	-	413,3	-	704,4	-	844,8	-	875,4	-	961,9	-	1531,8	-	611,5	-	266,5	
Other Cap. Expend.	-	-	-	4,3	-	7,0	-	11,8	-	11,9	-	10,7	-	15,0	-	20,6	-	28,0	-	27,8	-	41,9	-	59,1	-	70,4	-	116,8	-	28,6	
Total	23,8	-	167,6	14,5	361,3	121,2	465,3	215,5	385,0	323,9	-	380,8	-	389,5	-	433,9	-	732,4	-	872,6	-	917,3	-	1021,0	-	1602,2	-	728,3	-	295,1	
Inc/dec in wk cap.	0,2	-	-	-	-	68,8	4,9	(37,4)	2,9	(41,7)	40,3	50,4	4,3	(24,1)	1,4	29,6	1,0	26,8	-	(68,1)	-	88,1	-	151,7	-	277,1	-	942,6	-	1757,1	
Tot. App. of Funds	26,1	-	173,4	21,2	371,0	196,1	489,8	186,6	420,8	295,1	105,0	451,4	81,3	415,9	88,6	526,1	98,2	855,8	97,2	956,9	97,2	1237,3	97,2	1440,0	97,2	2694,4	97,2	2773,9	97,2	3409,9	

YUGOSLAVIA
IBAR MULTIPURPOSE WATER PROJECT
LOAN 777-YU
COMPLETION REPORT
BALANCE SHEET
(in mill. din.)

	1971		1972		1973		1974		1975		1976		1977		1978		1979		1980		1981		1982		1983		1984		1985			
	esti- mated	act- ual	esti- mated	act- ual	esti- mated	act- ual	esti- mated	act- ual	esti- mated	act- ual	esti- mated	act- ual	esti- mated	act- ual	esti- mated	act- ual	esti- mated	act- ual	esti- mated	act- ual	esti- mated	act- ual	esti- mated	act- ual	esti- mated	act- ual	esti- mated	act- ual	esti- mated	act- ual		
ASSETS																																
Fixed Assets in Operation	0,8	-	1,1	11,0	1,1	24,1	220,6	44,4	1398,8	69,2	1426,0	100,1	1426,0	152,0	1426,0	220,6	1426,0	329,1	1426,0	486,7	1426,0	725,5	1426,0	994,3	1426,0	1526,7	1426,0	2266,7	1426,0	10656,3		
LESS: Acc. Deprac.	-	-	-	-	-	-	0,3	-	0,6	-	18,3	-	36,1	-	57,5	-	82,6	-	107,6	-	132,7	-	157,7	-	182,8	-	207,8	-	232,9	284,6		
Net Fixed Assets in Operation	0,8	-	1,1	11,0	1,1	24,1	220,3	44,4	1398,2	69,2	1407,7	100,1	1389,9	152,0	1368,5	220,6	1343,4	329,1	1318,4	486,7	1293,3	725,5	1268,3	994,3	1243,2	1526,7	1218,2	2266,7	1193,1	9911,7		
Work in Progress	23,5	-	187,3	10,2	539,9	124,4	782,6	325,3	4,3	628,8	-	994,1	-	1365,6	-	1778,0	-	2482,2	-	3127,0	-	4202,4	-	5164,3	-	6696,1	-	7387,6	-	-		
Sedimentation Mts.	1,6	-	10,9	-	29,3	-	82,0	2,8	70,0	11,3	70,0	16,1	70,0	19,1	70,0	20,0	70,0	20,2	70,0	20,2	70,0	20,2	70,0	20,2	70,0	20,2	70,0	20,2	70,0	20,2		
Total NFA	28,2	21,2	199,3	188,5	579,3	372,8	1084,9	709,3	1472,8	1110,3	1477,7	1826,7	1489,9	2818,6	1828,6	2831,6	1413,4	2832,7	1288,4	2833,9	1283,3	4248,1	1238,3	6178,8	1213,2	8263,8	1288,2	9294,8	1263,1	9221,8		
Current Assets (Inc). Cash	5,4	-	6,0	68,8	10,7	31,4	22,6	(10,3)	11,8	40,1	54,6	16,0	93,1	45,6	124,3	72,4	149,4	4,3	178,6	4,3	213,9	92,4	243,7	244,1	278,5	521,2	305,4	1463,8	336,5	3220,9		
Total Assets	21,3	21,2	208,3	217,3	581,8	483,9	1077,8	699,8	1484,3	1150,4	1532,3	1582,7	1583,8	2964,2	1862,8	2903,9	1862,8	2903,9	1862,8	2838,2	1577,2	5040,3	1882,0	6422,9	1891,7	8764,2	1893,6	11088,3	1599,7	12152,8		
LIABILITIES																																
Earned Surplus	-	-	-	-	-	-	26,0	-	55,0	-	92,3	-	124,0	-	155,7	-	188,8	-	227,7	-	274,0	102,7	316,6	254,4	365,7	699,3	488,9	1763,1	458,2	2821,4		
Contr. for Sed. Mts.	1,6	-	10,9	-	29,3	5,5	82,0	20,0	70,0	22,4	70,0	56,1	70,0	69,1	70,0	70,0	70,0	70,0	70,0	70,0	70,0	70,0	70,0	70,0	70,0	70,0	70,0	70,0	70,0	70,0		
Equity Contrib.	-	-	-	13,2	-	178,6	-	310,2	-	522,4	-	697,1	-	697,1	-	697,1	-	722,3	-	831,8	-	969,7	-	1179,6	-	1544,6	-	2150,3	-	3032,9		
Total Equity	1,6	-	10,9	13,2	29,3	184,1	78,0	330,2	125,0	544,8	162,3	755,2	194,0	766,2	225,7	767,1	258,8	802,3	297,7	901,8	344,0	1142,4	386,6	1498,0	435,7	2313,9	478,9	3973,4	528,2	5924,3		
Long Term Debt																																
IBRD	4,3	-	55,6	8,0	194,9	33,2	393,6	73,7	622,0	154,2	675,0	256,4	664,0	463,8	652,2	485,4	639,6	589,7	626,0	723,1	611,4	750,3	595,7	696,3	678,8	883,4	560,7	385,9	541,3	107,5		
Kosovo Bank	25,0	-	125,0	-	340,0	-	567,0	-	690,0	-	695,0	138,8	695,0	322,7	684,9	811,7	664,4	1511,9	643,3	2213,3	621,8	3147,0	599,7	4228,6	577,2	5864,9	584,0	6696,0	530,2	7121,0		
Current Liabilities	0,4	-	7,8	-	16,8	-	38,9	-	47,3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
TOTAL LIABILITIES	21,3	-	288,3	21,2	581,8	217,3	1077,8	483,9	1484,3	1150,4	1532,3	1583,8	1582,7	2964,2	1862,8	2903,9	1862,8	2903,9	1862,8	2838,2	1577,2	5040,3	1882,0	6422,9	1891,7	8764,2	1893,6	11088,3	1599,7	12152,8		

YUGOSLAVIA
IBAR MULTIPURPOSE WATER PROJECT
LOAN 777-YU
COMPLETION REPORT

ECONOMIC ANALYSIS
(in Mill. Din.)

	-----COSTS-----				-----BENEFITS-----						
	Financed by ILE	Financed by Others	Operation & Maint.	Total Cost	Power	Irrigation	Water Supply (Industry)	Water Supply (Domestic)	Flood Control	Sedimentation Control	Total Benefits
1971	12.5			12.5						0	-12.5
	88.5			88.5					4.0	4.0	-84.5
	125.3		6.7	132.0					8.4	8.4	-123.6
1975	149.3		5.5	154.8					1.1	1.1	-153.7
	160.0		4.5	164.5					15.0	15.0	-149.5
	143.7	15.8	5.5	165.0					4.1	4.1	-160.9
	140.9	15.0	6.7	162.6					0.3	0.3	-162.3
	185.3	20.7	7.5	213.8						875.0	661.2
1980	178.8	10.0	5.7	194.5					11	11.0	-183.5
	127.9	3.9	5.8	137.6	14.3				11	25.3	-112.3
	109.7	2.8	5.6	118.1	16.3				11	27.3	-90.8
	123.9	1.2	5.4	130.5	13.3		15.2	6.0	11	45.5	-85.0
	35.5	0.3	5.7	41.5	15.9		31.8	3.7	11	62.4	20.9
1985	9.3		18.0	27.3	10.1	24.4	76.0	3.7	11	225.0	206.2
			17.8	17.8	10.1	53.0	80.8	3.7	11	166.6	148.8
			18.8	18.8	18.1	89.7	86.0	7.4	11	212.2	193.4
			19.6	19.6	18.1	129.4	91.5	7.4	11	257.4	237.8
			20.6	20.6	18.1	170.3	97.4	7.4	11	304.2	283.6
1990			21.5	21.5	18.1	192.0	103.6	7.4	11	332.1	310.6
			22.5	22.5	18.1	208.4	110.2	7.4	11	355.1	332.6
			23.6	23.6	18.1	216.2	117.3	7.4	11	370.0	357.5
			24.7	24.7	18.1	221.0	127.7	7.4	11	382.2	357.5
			25.8	25.8	18.1	226.0	132.7	7.4	11	395.2	369.4
1995	20		27.0	47.0	18.1	226.0	133.0	7.4	11	395.5	348.5
	30		27.0	57.0	18.1	226.0	133.0	7.4	11	395.5	338.5
	20		27.0	47.0	18.1	226.0	133.0	7.4	11	395.5	348.5
			27.0	27.0	18.1	226.0	133.0	7.4	11	395.5	368.5
			27.0	27.0	18.1	226.0	133.0	7.4	11	395.5	368.5
2000			27.0	27.0	18.1	226.0	133.0	7.4	11	395.5	368.5

All costs and benefits are expressed in 1971 prices.

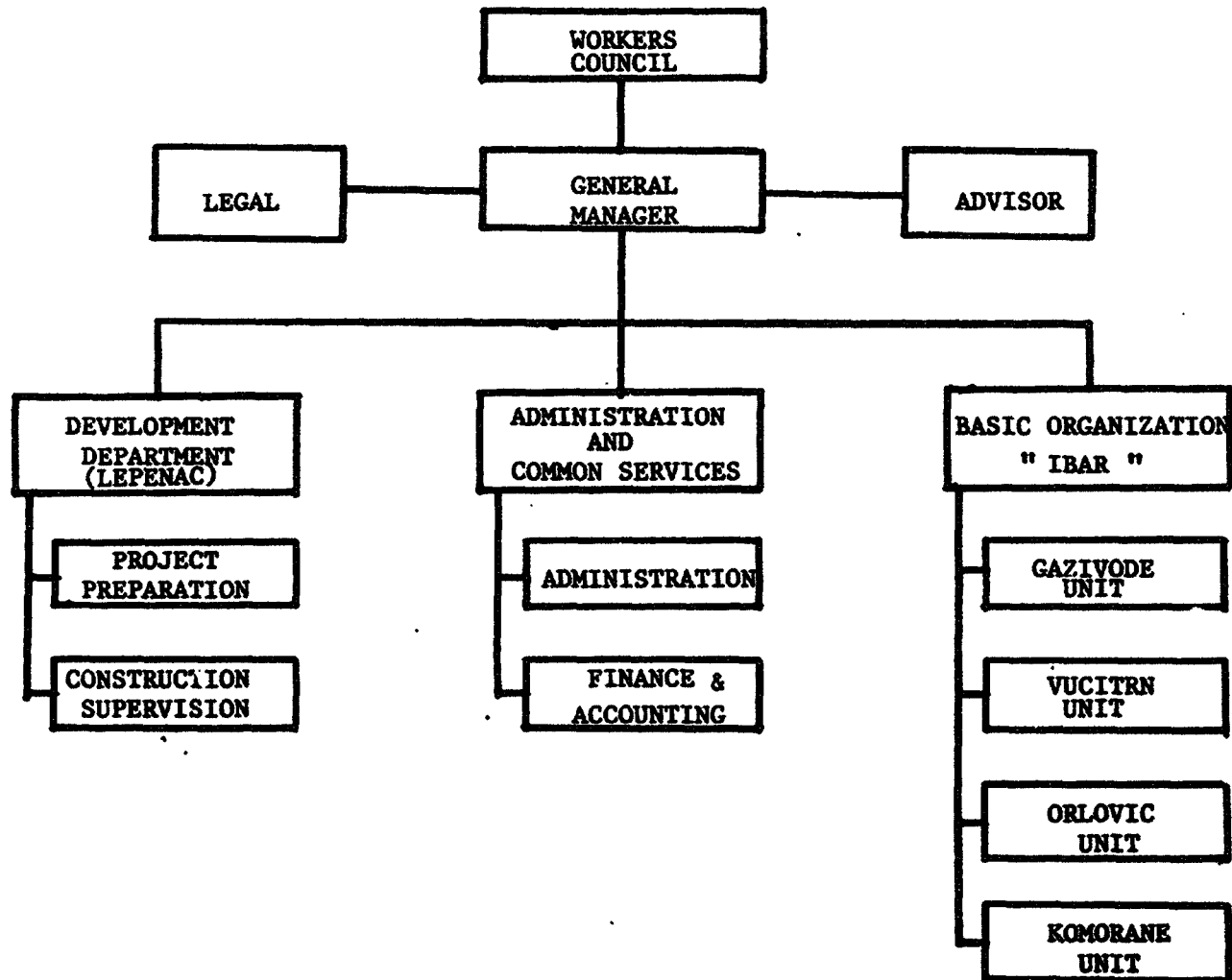
ROR = 13.0%

YUGOSLAVIA
IBAR MULTIPURPOSE WATER PROJECT

LOAN 777-YU

COMPLETION REPORT

ORGANIZATION CHART OF IBAR-LEPENAC ENTERPRISE



AGRICULTURAL DEVELOPMENT UNDER
THE IBAR PROJECT

Agricultural Production

1. Background - About 83% of the land in the revised project area is owned by some 7,800 individual farmer households. Prior to the project, about two-thirds of them were at the subsistence level, cultivating farms smaller than two hectares under rainfed conditions and providing for large families averaging 5.6 persons. Besides being small, farm holdings were fragmented into as many as eight separate parcels.

2. The rest of the land in the project area (17%) belongs to the social sector. This consists of one agro-industrial enterprise, Kombinat Kosmet-Export, and six production cooperatives. The Kombinat operates various factories (sugarbeet, oil, animal feed, milk and meat), as well as produces part of the raw material needs for the processing facilities on its own land. At the time of appraisal about one quarter of the area farmed by individual farmers obtained farm inputs and advisory services from the Kombinat and production cooperatives by entering into contracts with these organizations for sale of their crops. If a contract was not entered into, these services could only be obtained by individual farmers on a cash basis, which in actuality was next to impossible given the farmers' meager disposable income.

3. Cereals were the most important crop prior to the project, accounting for 70% of the cultivated land. Sugarbeet, sunflower and alfalfa were also produced, mainly in the social sector, while in the individual sector farmers grew some vegetables under partial irrigation using traditional water-wheels or by pumping from the river. Although there is some evidence of modern farming practices, many of the individual farms still practice traditional farming methods. Livestock production was limited to the hill pastures, complemented by grassland areas in the plain. A limited amount of beef fattening took place during the summer in the social sector, while on the small holdings poultry production was popular. The livestock census for 1984 is given in Table 1.

4. Cropping Pattern and Yields with the Project - With the introduction of irrigation, there is a shift from traditional rainfed winter-cereal farming to greater emphasis on high value summer crops (maize, vegetables, sugarbeet and sunflower), which are responsive to irrigation. This trend is shown in the following summary table, and details on the cropping pattern before and with the project are given in Tables 2 and 3.

	<u>Cropping Pattern</u>			
	<u>Pre-project</u>		<u>With Project</u>	
	<u>Area</u>		<u>Area</u>	
	<u>ha</u>	<u>%</u>	<u>ha</u>	<u>%</u>
Winter crops	8,038	44	6,658	23
Summer crops	<u>10,557</u>	<u>56</u>	<u>21,551</u>	<u>77</u>
Total	<u>18,595</u>	<u>100</u>	<u>28,209</u> /1	<u>100</u>
	=====	===	=====	===

/1 Includes 8,109 ha of second crops.

As seen above, the area planted to summer crops has doubled with the project, and their percentage in the cropping pattern has increased from 56% to 77%. Even though the cropping pattern at the present time contains 56% summer crops, their production is usually poor due to unreliable moisture during the summer months in the absence of irrigation.

5. Another significant feature of the with-project cropping pattern is the introduction of a double cropping system made possible with irrigation, in which maize for silage (5,773 ha) and vegetables (2,336 ha) are planted following the harvest of wheat, barley and rape seed in early summer. As a result of this system the cropping intensity has increased to 140%.

6. Even without the benefit of irrigation from the project, crop yields improved between 1971 (taken as the present-situation at appraisal) and 1984 (the revised present-situation) (Table 4). For example, yield_i in the individual sector increased an average of 40% (average of 3% annually) during this 13-year period for the four major crops of wheat, maize, alfalfa hay, and vegetables. In the social sector the yield increase averaged about 30%. Project authorities subscribe this achievement to the application by increasing numbers of farmers of more modern farming technology over the past decade, and particular importance was attached to the greater availability and use of improved quality seeds by farmers.

7. Crop yields with the project are expected to increase substantially as irrigation is introduced. Yield targets have been established bearing in mind the present yield levels; results obtained in pilot areas with sprinkler irrigation; improved agronomic practices, including expanded use of fertilizers and improved seeds; greater and more efficient use of mechanization made possible because of land consolidation; and better technical services to farmers through an improved extension service (paras. 29-31). For example, in 1984, maize grain yields reached 11 t/ha in some parcels in the pilot area, and even without irrigation some farmers have achieved yields of 7 t/ha in years of exceptionally good soil moisture by using modern crop technology.

8. Crop yields in both sectors, prior to the project and at full development, are shown in detail in Table 4, and they are summarized for the main crops in the following table.

Crop Yields

	Not Irrigated		Irrigated	
	Pre-project		With Project at Full Development	
	<u>Individual S.</u>	<u>Social S.</u>	<u>Individual S.</u>	<u>Social S.</u>
	-----t/ha-----			
Wheat	2.6	3.2	4.5	5.0
Maize grain	2.0	4.0	7.0	8.0
Maize silage	20.0	30.0	40.0	45.0
Alfalfa hay	5.0	6.0	14.0	14.5
Sugarbeet	20.0	25.0	50.0	60.0
Vegetable	10.3	-	33.2	-

In the individual sector, average yields of the principal crops at full development are expected to increase 160%, while those in the social sector are estimated to increase 100%.

9. Incremental Agricultural Production - At appraisal, full development of agricultural production was expected in 1983, following a development period of five years in the social sector and seven years for the individual farmers, from the time that water first became available for irrigation in any given area. Due to delays in bringing the cropped areas under irrigation full development is now expected to be attained only in 1994. The period required to reach full development of crop production on newly irrigated land has been revised for purposes of the completion report to five years for both sectors.

10. The project would boost agricultural production through an increase in cropped area and more intensive and efficient utilization of land, water and other factors of production. The build-up of crop production from 1985 (first year of irrigation) to full development in 1994 is presented in Table 5. At full development in 1994, the total annual volume of agricultural production is expected to increase six fold over the present annual production as seen in the following summary table and shown in more detail in Table 6.

Incremental Crop Production

	<u>tons</u>
1. Pre-project (1984)	95,806
2. Future without project (1994)	105,777
3. Full development with project (1994)	<u>592,226</u>
4. Net incremental due to the project (3 less 2)	<u>486,449</u>

For the future situation without the project, it was assumed at appraisal that production would grow annually at the rate of 1.5%, but that no further significant increases would be obtained in the social sector. For the completion report, the annual growth rate without the project has been taken as 2% in both sectors over a five-year period, based on the yield levels currently obtained (1984) and on the trend over the past 13 years. Beyond a period of about five years, it can be expected that moisture would be the limiting factor to further production increases.

11. Benefits of the project to agriculture are estimated as the increase in farm-gate value of agriculture production, less production costs, comparing the project area under irrigation with the future situation that would have prevailed without the project. Compared with the net value of production in 1994 without the project investment of Din 839 million, the provision of water to irrigate 20,100 ha would cause the net value of annual production in 1994 at full development to rise to Din 6,140 million, representing an annual incremental net value of production due to irrigation of Din 5,301 million (Table 7).

On-farm Development and Infrastructure

12. In the context of the project, land-levelling (5,000 ha) and tile drainage (2,000 ha) are the only aspects that are considered as on-farm development. In a broader sense, however, on-farm development should also include organizational aspects related to effective utilization of the sprinkler irrigation system by farmers—a subject which will be expanded in later paragraphs.

13. With the decision to irrigate the entire project area by sprinklers, it was not necessary to proceed with a program of land-levelling. During appraisal about 3,500 ha of low-lying land along the Sitnica River (Kosovo Fields I and II) was suspect of requiring reclamation through subsurface drainage. Consequently, the project provided for a study to determine the economic viability of draining this area (Project Agreement, Section 2.11).

The study, which was carried out by consultants, was completed in mid-1974. Its recommendation that only drainage by open ditches would be required was accepted by both ILE and the Bank.

14. By early 1980, the Bank concluded that the slow progress in organizing on-farm development, in the broader sense, was the lack of commitment and/or a clear understanding among the various entities in Kosovo concerning their specific responsibilities in this regard, and particularly, for developing cooperation among farmers for use of sprinkler irrigation. The appraisal report specified that ILE would operate and maintain the irrigation system, supervise the portable sprinkler equipment supplied to farmers, and consult with the extension service to ensure consistency between the farmers' crop plans and the water delivery schedule.

15. Consequently, in the fall of 1980, the Bank organized a major mission with the objective of bringing together all participants in the Ibar project: ILE, Secretariats of Agriculture and Water Economy, Union of Cooperatives, Bank of Kosovo, University of Pristina, and the Executive Council of SAPK, to seek agreement on a plan of action to accelerate on-farm development. A seven point action plan, recommended by the Bank, was accepted and endorsed by the Government of Kosovo. It was designed to define the responsibilities of each organization, facilitate cooperation among them, develop work plans for ILE, Union of Cooperatives, and the University of Pristina. Consensus was reached that ILE would continue to be responsible for construction of civil works, and operation and maintenance of the irrigation system, while on-farm development in the broader sense would be entrusted to the Union of Cooperatives and the University would provide training and carry out research. A Provincial-level Coordination Board was formed to coordinate all activities related to on-farm development, utilization of the sprinkler system, and agricultural production in the Ibar project area.

16. It was generally agreed that land consolidation was going to be an extremely long-drawn out process and that, although desirable, it was not necessarily a pre-requisite for the introduction of sprinkler irrigation in the Ibar project provided farmers could agree on a common cropping pattern and organize themselves around the sprinkler laterals and hydrants. Several approaches to organizing farmers for the common use of a sprinkler hydrant had been under discussion for several years with no clear-cut decision forthcoming. The one which was finally adopted on a modest scale (400 ha) for the 1981 irrigation season required the Union of Cooperatives to organize about 20 farmer "units" of about eight farmers each. Each unit would be alongside a hydrant and the local cooperative and ILE would develop a cropping pattern with the eight farmers in that unit to irrigate approximately 20 ha total. Unfortunately, no irrigation water became available through the system in 1981 due to extensive repair work required on the main conduit. However,

ILE did succeed in installing several mobile pumps along a river to introduce sprinkler irrigation in 1981 on 120 ha for demonstration purposes with about 50 farmers. This was expanded to 200 ha in 1982. Also, in 1982 the Ibar Field subsystem (880 ha) was operational on a trial basis. Farmers were encouraged to avail themselves of the facilities on an informal-no charge basis without any organized approach to agricultural production among the farmers. It was estimated that about 400 ha were irrigated in this ad-hoc manner in 1982. On a similar basis, 1,200 ha were irrigated in 1983 and 2,250 in 1984. Beginning with the 1985 irrigation season, the cooperatives will have the key role in organizing farmers along the hydrants to utilize the sprinklers in a coordinated and harmonious manner.

17. Concerning infrastructure, the project provided for the construction and reconstruction of about 90 kilometers of feeder roads and the construction of about 633 kilometers of maintenance roads along the main conduits and along the irrigation canals and drains. By mid-1979 approximately 65% of the road work had been completed, the remainder consisting of feeder roads, which is gradually being done in conjunction with the land consolidation process.

18. Project Agreement, Section 5.03 required the Government of Kosovo to carry out erosion control and soil conservation works designed to minimize erosion and sediment production in the watersheds in the project area and to protect the main conduits against floods. In mid-1974 the Bank agreed to Government's request to transfer this responsibility to ILE, provided adequate funds were made available to ILE for this purpose. The appropriate measures, which included afforestation and terracing, were completed by end-1978.

Land Consolidation

19. To permit the optimum utilization of the irrigation and drainage facilities included in the project a program of land consolidation or adjustment of farm boundaries was considered desirable because of the preponderance of small and fragmented land holdings. There are about 7,800 individual farmer holdings in the project area, with an average size of 2.8 ha, with each holding divided into seven or eight parcels. The Project Agreement, Section 5.05, provides that the Government of Kosovo would begin to carry out a program of land consolidation or boundary adjustment no later than July 1, 1972, and that it would be completed before beginning construction of the irrigation and drainage facilities. Since loan effectiveness had been delayed by nearly one year, the Project Agreement was subsequently amended thus postponing the target date from July 1, 1972 to September 1, 1973. A summary of the most significant events surrounding the difficult issue of land consolidation, and the schedule for completion of land consolidation are given in Annex 11.

Operation and Maintenance of the Irrigation System

20. The responsibility for operation and maintenance of the system was entrusted to ILE by the Government of Kosovo. A special section was created in early 1979 within ILE for operation of the irrigation system and distribution of water up to the farm hydrants. It consists of a chief engineer, two technical engineers, two agriculturalists, six mechanics, four skilled workers, and two supporting staff.

21. Physical movement of the on-farm sprinkler equipment during irrigation will be done by the farmers themselves, under the supervision and control of the cooperatives, who are also responsible for organizing the agricultural production in the individual sector. However, at the end of every irrigation season, the sprinkler equipment is returned to ILE's organization for maintenance and repairs. Plans for the use of the system are prepared for the cooperatives by the engineers of ILE; such as, defining the rules for water rotations, movement of sprinklers, and duties and obligations of the farmers.

Water Charge for Irrigation

22. The Project Agreement (Section 2.12 a) required ILE to submit an irrigation water charge study to the Bank for review by June 30, 1973, which was subsequently postponed with Bank concurrence on several occasions. Several studies prepared by the project consultants were submitted in draft to the Bank for review--the last being in May 1977, on which occasion the Bank offered several suggestions.

23. The Bank reiterated to ILE that water charges should not be too low to encourage excessive use, nor so high as to discourage use by the farmers. The subsidy, constituting the difference between the required water charges for debt-service and maintenance and operation of the system; and the farmers' ability to pay, during the first four years, was to be worked out jointly by the Provincial Government and ILE, with the former transferring funds to ILE equivalent to the shortfall.

24. In early 1984, ILE's tariff proposal was accepted by the Provincial Government. The water charge is based on the average annual requirement of 3,225 m³/ha at a price of 9.5 dinar/m³ (total Din 30,640/ha). During the first four years, beginning in 1985, the Provincial Government will subsidize the water charge on a declining scale basis as seen in the following table.

Water Charge for Irrigation

<u>Year of Irrigation</u>	<u>Paid to ILE</u>		<u>Paid by Farmers</u>		<u>Paid by Government</u>	
	<u>Din/ha</u>	<u>%</u>	<u>Din/ha</u>	<u>%</u>	<u>Din/ha</u>	<u>%</u>
1985	30,640	100	4,840	15.8	25,800	84.2
1986	30,640	100	7,660	25.0	22,980	75.0
1987	30,640	100	16,852	55.0	13,788	45.0
1988	30,640	100	24,512	80.0	6,128	20.0
1989	30,640	100	30,640	100.0	-	-

In addition to the four year Government subsidy, the social sector enterprise, Kosovexport, has offered to pay the farmers' share of the water charge in 1985 upon negotiating a production/marketing contract, whereby the farmers would deliver their produce to the enterprise's processing plants.

Farm Income

25. Following the methodology of appraisal, in the evaluation of project benefits for farms at full development, three typical farm units were examined: (i) individual 1.5 ha farm; (ii) individual 4.5 ha farm; and (iii) 500 ha farm in the social sector with dairy production. Farm budgets for the typical farms at full development are presented in Tables 8, 9, and 10, using constant end-1984 local currency values (Table 11). Net farm income per ha, after deducting an average water charge of Din 30,640 and making allowance for family subsistence on the individual farms, is projected as follows: Din 162,000 on 1.5 ha farms, Din 237,700 on 4.5 ha farms, and Din 52,100 in the social sector.

Markets and Marketing

26. Incremental agricultural output from the project is to be marketed primarily within Kosovo to help meet existing deficits. An estimated 27% population increase during the ten-year period, 1983-1993 is expected to generate substantial incremental demand within Kosovo which, together with current production deficits, would exceed the anticipated production increases from the project. In 1984, Yugoslavia, as a whole, imported over one half million tons of wheat. Per capita consumption of meat in Kosovo is low (21% of the national average), and Kosovo imports from other parts of Yugoslavia about 12,000 tons annually to help offset local production deficit. Kosovo's per capita consumption of milk (77% of the national average) exceeds local production, and Kosovo is expected to be a net importer during the next decade. Although very little of the output is expected to be exported, much of it would contribute indirectly to Yugoslavia's foreign exchange earnings or savings by reducing import requirements. All sugarbeet production would be

processed by an existing factory nearby in Pec, which currently is operating below full capacity. Similarly, sunflower seed production will permit better utilization of an existing factory adjacent to the project area. Wheat is used mainly for human consumption and maize for animal feed. Unlike the other produce referred to above, which is sold through social sector enterprises, the vegetables are sold by farmers in the markets of the major towns in the Province.

Prices

27. A new price law became effective as of January 1985, which allows greater autonomy to the organizations of associated labor in setting prices of agricultural inputs and outputs. Table 11 presents financial and economic prices for inputs and outputs in constant end-1984 terms for those commodities where both prices were available. The distortions between the two for the inputs of phosphate and potash are large. Part of the reason for these distortions appears to be acute domestic shortages of particular chemicals. These ingredients could not be imported due to foreign exchange shortages, which in turn caused the demand and therefore prices of certain fertilizer to escalate at the farm level. Output prices from the project followed a somewhat similar trend. The conversion factors will need to be re-assessed because of recent financial and economic developments affecting the exchange rate and prices in Yugoslavia vis-a-vis the rest of the world.

Agricultural Extension

28. The project required the Government of Kosovo to prepare a program for the coordination and expansion of the agricultural extension services to be provided by agricultural organizations and provincial institutions to all farmers (including non-associated farmers) located in the project area, and submit the program to the Bank for review by December 31, 1971, prior to its implementation no later than July 1, 1972 (Project Agreement, Section 5.06). Since project effectiveness had been delayed by about one year, the Bank, in April 1973, agreed to postpone these two actions until September 30, 1973 and January 1, 1974, respectively.

29. An agricultural extension service was not formally put in place until mid-1978. The main causes for delay were: (i) the Government's initial reluctance to assume its obligation under the Project Agreement; (ii) delayed preparation of a draft law in 1976 and reluctance of Government to proceed in the Ibar project area without formal legislation covering the whole Province; and (iii) delayed in the basic concept of organization of the extension services, which finally led to a new law in 1978. Details surrounding the afore-mentioned events are contained in Annex 12. The following table summarizes information concerning cooperatives, extension agents and farmer participation in the cooperatives as of 1984. Details are contained in Annex 12, Table A.

Cooperatives and Agricultural Extension - 1984

<u>Farmers /1</u> <u>Commune</u>	Number of	Number of	<u>Number of Cooperating</u>	
	<u>Cooperatives</u>	<u>Grad-Level Agents</u>	<u>Associated</u>	<u>Short-term</u>
T. Mitrovica	3	3	584	216
Vucitrn	2	2	186	2,503
Pristina	8	9	1,541	1,965
Glogovac	<u>3</u>	<u>7</u>	<u>860</u>	<u>1,510</u>
Total	16	21	3,171	6,194
	===	===	=====	=====

/1 The area covered by some cooperatives also includes farmland beyond the limits of the project area.

For each university graduate-level agent there are from two to three technician-level extension staff. Associated farmers are either full members of farmers cooperatives or have long-term association arrangements with other types of organized labor for farmers. Short-term members are those farmers who have specific production/marketing contracts from one to five years duration with the cooperatives; consequently, the number of short-term members varies from year to year. In view of the development of the cooperative movement in the project area, all farmers have some degree of association with the cooperatives, and thus, are able to obtain technical assistance.

30. The current level of manpower in the extension service is reasonably adequate to serve the requirements of the project through 1986, since each agent and/or technician would cover about 90 households or a total of about 200 ha. Beginning in 1987, if the number of extension personnel is not increased, there is danger that technical assistance for the individual farmer may be inadequate as additional cropland comes under irrigation in the Ibar system.

Input Supply

31. Provision of inputs is covenanted by Section 5.07 of the Project Agreement; whereby, the Government of Kosovo agreed to take all measures to ensure that farmers have access to credit, inputs and farm machinery services. The major source of farm credit for these purposes has been three Bank supported agricultural credit projects (Loans 1129-YU, 1477-YU and 1801-YU) and the Kosovo Regional Development Project (Loan 2306-YU), which was channeled through Kosbanka, Pristina (KBP). The first and second projects have been completed, while the third is still in progress. Under the third credit US\$13.0 million of the loan is allocated to the individual sector in

Kosovo for on-farm development, also including some support services to farmers. Since roughly one-tenth of the total number of farmers in the Province are within the Ibar project area, it can be estimated that about US\$1.3 million (plus US\$1.95 million in counterpart funds) would be available as credit to farmers in the Ibar system. Under the Regional Development Project, a total of about US\$40 million is provided as on-farm development credit to individual farmers within the Province. Although demand for credit from the individual sector has been less than anticipated, it is expected to increase markedly as farmers obtain irrigation water from the Ibar system.

YUGOSLAVIAIBAR MULTIPURPOSE WATER PROJECTLOAN 777-YUPROJECT COMPLETION REPORTLivestock Census

	<u>Social Sector</u>		<u>Individual Sector</u>		<u>Total /1</u>	
	<u>APR /2</u>	<u>Actual /3</u>	<u>APR</u>	<u>Actual</u>	<u>APR</u>	<u>Actual</u>
Cattle, of which	1,076	1,821	19,100	19,611	20,200	21,400
milk cows and						
heifers	704	1,700	10,700	11,767	11,400	13,500
Pigs, of which	10,025	27,716	3,500	4,500	13,500	32,200
sows	1,090	2,716	600	770	1,700	3,500
Sheep, of which	33	-	7,200	10,614	7,200	10,600
ewes	27	-	5,400	7,960	5,400	8,000
Horses	-	-	3,700	-	3,700	-
Poultry	-	398,900	44,000	118,389	44,000	517,300
Buffalo	-	-	2,900	-	2,900	-

/1 Rounded to nearest hundred.

/2 1971.

/3 1984.

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Pre-project Net Returns from Agriculture /1
1984

	Area		Yield t/ha	Production t	Price Din/t	Gross value '000 Din	Production Cost Din/ha	Total Cost '000 Din	Net Return Din million
	ha	%							
Wheat									
Social Sector	1,162	6.2	3.2	3,718	22,600	84,027	62,084	72,142	11.9
Individual sector	4,385	23.5	2.6	11,401	22,600	257,663	36,856	161,614	96.0
Subtotal	5,547	29.7		15,119		341,690		233,756	107.9
Maize									
Social Sector	1,025	5.5	4.0	4,100	24,300	99,630	84,510	86,623	13.0
Individual Sector	4,579	24.6	2.0	9,158	24,300	222,539	32,173	147,320	75.2
Subtotal	5,604	30.1		13,258		322,169		233,943	88.2
Maize silage									
Individual Sector	1,100	5.9	20.0	22,000	5,000	110,000	53,800	59,180	50.8
Alfalfa									
Social Sector	478	2.6	6.0	2,868	20,000	57,360	78,664	37,601	19.8
Individual Sector	858	4.6	5.0	4,290	20,000	85,800	44,416	38,109	47.7
Subtotal	1,336	7.2		7,158		143,160		75,710	67.5
Sugarbeet									
Social Sector	308	1.7	25.0	7,700	6,200	47,740	115,792	35,664	12.1
Individual Sector	162	0.9	20.0	3,240	6,200	20,088	33,754	5,468	14.6
Subtotal	470	2.6		10,940		67,828		41,132	26.7
Vegetable									
Individual Sector	938	5.0	10.3	9,680	23,480	227,290	74,700	70,069	157.2
Sunflower									
Social Sector	171	1.0	2.0	342	63,500	21,717	83,663	14,306	7.4
Individual Sector	275	1.5	1.4	385	63,500	24,448	33,823	9,301	15.2
Subtotal	446	2.5		727		46,165		23,607	22.6
Barley									
Social Sector	205	1.1	3.0	615	29,200	17,958	57,028	11,691	6.3
Individual Sector	1,392	7.5	1.8	2,506	29,200	73,175	41,501	57,769	15.4
Subtotal	1,597	8.6		3,121		91,133		69,460	21.7
Rape seed									
Social Sector	68	0.4	2.1	143	57,900	8,280	70,910	4,822	3.5
Individual Sector	162	0.9	1.8	292	57,900	16,907	43,835	7,101	9.8
Subtotal	230	1.3		435		25,187		11,923	13.3
Other /2									
Individual Sector	1,327	7.1	10.0	13,234	12,400	164,548	33,754	44,792	119.8
Total	18,595	100.0		95,672		1,539,170		863,572	
	=====	=====		=====		=====		=====	
Net return from crops									675.7
Net return from livestock /3									92.6
Total net return									768.3
									=====

- /1 Expressed in constant end-1984 local currency farm-gate values.
/2 Includes grain legumes, vetch-rye, sorghum, clover, etc.
/3 Net return from livestock was estimated on the same basis as was done at appraisal.

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Projected Net Returns at Full Agricultural Development /1
1994

	Area		Yield t/ha	Production t	Price Din/t	Gross value '000 Din	Production Cost Din/ha	Total Cost '000 Din	Net Return Din million
	ha	%							
Wheat									
Social Sector	1,162	4.1	5.0	5,810	22,600	131,306	100,862	117,202	14.1
Individual Sector	3,504	12.4	4.5	15,768	22,600	356,357	74,833	262,215	94.1
Subtotal	4,666	16.5		21,578		487,663		379,417	108.2
Maize									
Social Sector	1,025	3.6	8.0	8,200	24,300	199,260	124,955	128,079	71.2
Individual Sector	4,271	15.1	7.0	29,897	24,300	726,497	76,911	328,487	398.0
Subtotal	5,296	18.7		38,097		925,757		456,566	469.2
Maize silage									
Social Sector	1,435	5.1	45.0	64,575	5,000	322,875	123,417	177,103	145.8
Individual Sector	4,338	15.4	40.0	173,520	5,000	867,600	103,240	447,855	419.7
Subtotal	5,773	20.5		238,095		1,190,475		624,958	565.5
Alfalfa									
Social Sector	478	1.7	14.5	6,931	20,000	138,620	125,506	59,992	78.6
Individual Sector	2,569	9.1	14.0	35,966	20,000	719,320	93,360	239,842	479.5
Subtotal	3,047	10.8		42,897		857,940		299,834	558.1
Sugarbeet									
Social Sector	308	1.1	60.0	18,480	6,200	114,576	158,545	48,832	65.7
Individual Sector	1,034	3.7	50.0	51,700	6,200	320,540	73,710	76,216	244.3
Subtotal	1,342	4.8		70,180		435,116		125,048	310.0
Vegetable									
Individual Sector	5,155	18.4	33.2	171,043	23,100	3,951,091	113,927	587,294	3,363.8
Sunflower									
Social Sector	171	0.6	4.0	684	63,500	43,434	123,385	21,099	22.3
Individual Sector	767	2.7	3.5	2,684	63,500	170,434	73,008	55,997	114.5
Subtotal	938	3.3		3,368		213,868		77,096	136.8
Barley									
Social Sector	205	0.7	4.3	881	29,200	25,725	94,648	19,403	6.3
Individual Sector	1,385	4.9	3.5	4,847	29,200	141,532	81,330	112,642	28.9
Subtotal	1,590	5.6		5,728		167,257		132,045	35.2
Rape seed									
Social Sector	68	0.2	3.5	238	57,900	13,780	111,901	7,609	6.2
Individual Sector	334	1.2	3.0	1,002	57,900	58,016	82,672	27,612	30.4
Subtotal	402	1.4		1,240		71,796		35,221	36.6
Total	28,209	100.0		592,226		8,300,963		2,717,479	
	=====	=====		=====		=====		=====	
Net return from crops									5,583.4
Net return from livestock /2									558.3
Total net return									6,141.7
									=====

/1 Expressed in constant end-1984 local currency farm-gate values.

/2 Net return from livestock is estimated on the same basis as was done at appraisal.

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Yield of Major Crops

	<u>Pre-project /1</u>				<u>Full Development /2</u>			
	<u>Individual Sector</u>		<u>Social Sector</u>		<u>Individual Sector</u>		<u>Social Sector</u>	
	<u>APR</u>	<u>Actual</u>	<u>APR</u>	<u>Actual</u>	<u>APR</u>	<u>Revised</u>	<u>APR</u>	<u>Revised</u>
	-----t/ha-----							
Wheat	1.6	2.6	3.0	3.2	3.5	4.5	5.0	5.0
Maize	1.8	2.0	3.5	4.0	6.0	7.0	7.5	8.0
Maize silage	-	20.0	-	30.0	28.0	40.0	35.0	45.0
Alfalfa hay	3.3	5.0	4.5	6.0	12.0	14.0	13.5	14.5
Sugarbeet	-	20.0	-	25.0	45.0	50.0	55.0	60.0
Vegetable	7.5	10.3	-	-	16.0	33.2	-	-
Sunflower	-	1.4	1.5	2.0	2.8	3.5	3.4	4.0
Barley	-	1.8	1.6	3.0	-	3.5	4.3	4.3
Rape seed	-	1.8	-	2.1	-	3.0	-	3.5

/1 At appraisal, pre-project was taken as 1971; whereas, in actuality it was 1984.

/2 At appraisal, full development was estimated as 1983; whereas, it is now estimated to be in 1994.

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Crop Production with the Project

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994 onward /2
Irrigated /1										
Wheat	2,494	5,489	9,287	13,322	17,465	19,286	20,607	21,125	21,405	21,578
Maize	4,404	9,692	16,746	23,521	30,836	34,051	36,383	37,297	37,792	38,097
Maize silage	27,524	60,571	102,476	147,000	192,714	212,809	227,381	233,095	236,190	238,095
Alfalfa	4,959	10,913	18,463	26,485	34,721	38,341	40,967	41,996	42,554	42,897
Sugarbeet	8,113	17,854	30,205	43,329	56,804	62,727	67,022	68,706	69,619	70,180
Vegetable	19,773	43,513	73,617	105,602	138,442	152,878	163,346	167,451	169,675	171,043
Sunflower	389	857	1,450	2,079	2,726	3,010	3,216	3,297	3,341	3,368
Barley	662	1,457	2,465	3,536	4,636	5,120	5,470	5,608	5,682	5,728
Rape seed	143	315	534	766	1,004	1,108	1,184	1,214	1,230	1,240
Subtotal	68,461	150,661	255,243	365,640	479,348	529,330	565,576	579,789	587,488	592,226
Unirrigated	42,390	31,285	12,459	6,878	4,315	-	-	-	-	-
Total	110,851	181,946	267,702	372,518	483,663	529,330	565,576	579,789	587,488	592,226

/1 All cropland to be irrigated by 1990.

/2 Year of full development is estimated to be 1994.

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Incremental Crop Production

	<u>Pre-project</u> <u>(1984)</u>	<u>Future Without</u> <u>Project /1</u> <u>(1989 onward)</u>	<u>Full Development</u> <u>(1994)</u>	<u>Incremental</u>
Wheat	15,199	16,781	21,578	4,797
Maize	13,225	14,601	38,097	23,496
Maize silage	22,000	24,290	238,095	213,805
Alfalfa	7,161	7,906	42,897	34,991
Sugarbeet	10,951	12,091	70,180	58,089
Vegetable	9,680	10,688	171,043	160,355
Sunflower	727	803	3,368	2,565
Barley	3,194	3,526	5,728	2,202
Rape seed	435	480	1,240	760
Other /2	<u>13,234</u>	<u>14,611</u>	<u>-</u>	<u>(14,611)</u>
Total	<u>95,806</u>	<u>105,777</u>	<u>592,226</u>	<u>486,449</u>

/1 It is assumed that production would increase at the rate of 2% annually for 5 years in the future without the project.

/2 Includes grain legumes, vetch-rye, sorghum, clover, etc.

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Incremental Net Returns from Agriculture /1

<u>Year</u>	<u>With Project</u>			<u>Without Project</u>	<u>Incremental due to Project</u>
	<u>Irrigated /2</u>	<u>Non-Irrigated</u>	<u>Total</u>	<u>Non-irrigated</u>	
	----- Din million -----				
1985	1,024.5	334.9	1,359.4	781.8	577.6
1986	1,800.4	247.1	2,047.5	795.5	1,252.0
1987	2,831.7	98.4	2,930.1	809.6	2,120.5
1988	3,828.1	54.4	3,882.5	823.8	3,058.7
1989	4,830.1	34.1	4,864.2	838.5	4,025.7
1990	5,370.5	-	5,370.5	838.5	4,532.0
1991	5,753.8	-	5,753.8	838.5	4,915.3
1992	5,931.8	-	5,931.8	838.5	5,093.3
1993	6,049.4	-	6,049.4	838.5	5,210.9
1994	6,139.8	-	6,139.8	838.5	5,301.3

/1 Expressed in constant end-1984 local currency farm-gate values.

/2 Project area to be totally irrigated by 1990.

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Farm Budget of Typical Private Farm of 1.5 ha at Full Development /1
1994

	<u>Area</u>		<u>Production</u>	<u>Gross Value</u>
	(ha)	(%)	(t)	of Production (Din)
<u>Crops</u>				
Wheat	0.32	15.24	1.44	32,544
Barley	0.12	5.71	0.42	12,264
Maize	0.38	18.10	2.66	64,638
Sugarbeet	0.10	4.76	5.00	31,000
Rape seed	0.03	1.43	0.09	5,211
Alfalfa /2	0.23	10.95	3.22	-
Sunflower	0.07	3.33	0.25	15,875
Vegetable	0.25	11.90	8.25	192,142
Vegetable (sc) /3	0.20	9.53	6.68	153,039
Fodder crops (sc) /2, /3	0.40	19.05	16.00	-
Total	<u>2.10</u>	<u>100.00</u>	<u>44.01</u>	<u>506,713</u>
<u>Livestock</u>				
Milk (liter)			3,000	112,500
Meat (kg)			110	26,983
Total				<u>139,483</u>
Total gross value of production				<u>646,196</u> =====
<u>Production Costs /4</u>				
Crops				127,921
Livestock				41,845
Miscellaneous (including Water Fund levy)				<u>42,500</u>
Total				<u>212,266</u> =====
Net income before water charge				433,930
Water charge /5				<u>45,960</u>
Net income after water charge				<u>387,970</u>
US\$ equivalent				<u>1,805</u>
Net cash income after deducting farm consumption /6				<u>242,970</u>
US\$ equivalent (exchange rate: 1US\$ = 215 dinars)				<u>1,130</u> =====

- /1 Expressed in constant end-1984 local currency farm-gate values.
 /2 Alfalfa and fodder crops will be consumed by the livestock on the farm.
 /3 Second crop following wheat, barley, and rape seed.
 /4 All labor requirements will be provided by the family and have not been posted.
 /5 Water charge based on project-wide average of Din 30,640 per ha.
 /6 Farm consumption valued at about Din 145,000 is based on 600 kg of wheat, 600 kg of maize grain, 3 liters of milk per day and the production of 0.1 ha of vegetables.

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Farm Budget of Typical Private Farm of 4.5 ha at Full Development /1
1994

	<u>Area</u>		<u>Production</u>	<u>Gross Value</u> <u>of Production</u>
	<u>(ha)</u>	<u>(%)</u>	<u>(t)</u>	<u>(Din)</u>
<u>Crops</u>				
Wheat	0.95	15.08	4.28	96,728
Barley	0.35	5.56	1.23	35,916
Maize	1.15	18.25	8.05	195,615
Sugarbeet	0.30	4.76	15.00	93,000
Rape seed	0.10	1.59	0.30	17,370
Alfalfa /2	0.70	11.11	9.80	-
Sunflower	0.20	3.17	0.70	44,450
Vegetable	0.75	11.91	24.75	576,427
Vegetable (sc) /3	0.60	9.52	20.04	459,116
Fodder crops (sc) /2, /3	<u>1.20</u>	<u>19.05</u>	<u>48.00</u>	-
Total	6.30	100.00	132.15	<u>1,518,622</u>
<u>Livestock</u>				
Milk (liter)			6,000	225,000
Meat (kg)			1,130	<u>277,189</u>
Total				502,189
Total gross value of production				<u>2,020,811</u>
<u>Production Costs /4</u>				
Crops				383,997
Livestock				150,660
Miscellaneous (including Water Fund levy)				<u>133,700</u>
Total				<u>668,357</u>
Net income before water charge				
				1,352,454
Water charge /5				<u>137,880</u>
Net income after water charge				<u>1,214,574</u>
US\$ equivalent				<u>5,649</u>
Net cash income after deducting farm consumption /6				<u>1,069,574</u>
US\$ equivalent (exchange rate: 1US\$ = 215 dinars)				<u>4,975</u>

-
- /1 Expressed in constant end-1984 local currency farm-gate values.
 /2 Alfalfa and fodder crops will be consumed by the livestock on the farm.
 /3 Second crop following wheat, barley, and rape seed.
 /4 All labor requirements will be provided by the family and have not been posted.
 /5 Water charge based on project-wide average of Din 30,640 per ha.
 /6 Farm consumption valued at about Din 145,000 is based on 600 kg of wheat, 600 kg of maize grain, 3 liters of milk per day and the production of 0.1 ha of vegetables.

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Farm Budget of Typical 500 ha Farm in the Social Sector at Full Development /1

1994

	Area		Production	Gross Value of Production
	(ha)	(%)	(t)	(000's Din)
<u>Crops</u>				
Wheat	170	23.94	850	19,210
Barley	30	4.22	129	3,767
Maize	150	21.13	1,200	29,160
Sugarbeet	45	6.34	2,700	16,740
Sunflower	25	3.52	100	6,350
Rape seed	10	1.41	35	2,026
Alfalfa /2	70	9.86	1,015	-
Fodder crops (ac) /2, /3	210	29.58	9,450	-
Other (by-products)	-	-	-	-
Total	710	100.00	15,479	77,253
<u>Livestock</u>				
Milk (000's liters)				28,125
Meat (tons)				38,512
Total				66,637
Total gross value of production				143,890
<u>Production Costs /4</u>				
Management				8,500
Crops				50,070
Livestock				26,650
Subtotal				85,220
Other costs				3,450
Loan repayment				7,800
Taxes and duties (including Water Fund levy)				6,100
Total				102,570
Net income before water charge				41,320
Water charge /5				15,320
Net income after water charge				26,000
US\$ equivalent (exchange rate: 1US\$ = 215 dinars)				120,930

/1 Expressed in constant end-1984 local currency farm-gate values.

/2 Alfalfa and fodder crops will be consumed by the livestock on the farm.

/3 Second crop following wheat, barley and rape seed.

/4 Including labor.

/5 Water charge based on project-wide average of Din 30,640 per ha.

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Farmgate Prices for Major Inputs and Outputs

	<u>Financial /1</u>	<u>Economic /2</u>
	- - - - - dinars	- - - - -
<u>Farm Inputs (per kg)</u>		
Fertilizer (100% active substance)		
Nitrogen (N)	50.8	50.2
Phosphate (P205)	93.5	45.1
Potash (K20)	62.3	21.9
Pesticides	357.0	267.8
Herbicides	340.0	255.0
Seeds		
Wheat	29.5	22.1
Maize	66.5	49.9
Sugarbeet	100.0	75.0
Vegetables	920.0	690.0
Cattle concentrate feed (14% protein)	43.0	32.3
Mechanization (hire rate per hour)		
Tractor 40 hp	1,700.0	1,275.0
Farm wages (gross per hour in social sector)		
Unskilled	39.3	20.83 /3
Skilled	52.3	46.02
<u>Farm Outputs (per kg)</u>		
Maize	24.3	19.6
Barley	29.2	15.7
Wheat	22.6	27.6
Sugarbeet	6.2	2.2
Alfalfa	20.0	15.0
Maize silage	5.0	3.8
Vegetables	23.3	17.5
Cow milk	37.5	28.1
Cattle (250 kg liveweight)	254.0	190.5

/1 End-1984 farm-gate prices.

/2 Prices for commodities not internationally traded are adjusted by the Standard Conversion Factor of 0.75.

/3 Adjusted by a labor conversion factor of 0.53 for unskilled labor and 0.88 for skilled labor.

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Summary of Events Concerning Land Consolidation

Early supervision missions referred to the lack of progress by the Government of Kosovo in the implementation of commitments agreed in the Project Agreement, particularly those concerned with land consolidation (and the formation of agricultural extension services) as major problems. Much of 1974 was devoted to reconfirming the obligations of the Government of Kosovo as the party legally responsible for land consolidation (and extension)--a responsibility which it had sought to pass to ILE, despite ILE's objections.

Because of continued delays during 1975, the Bank in November of the same year linked progress in land consolidation to two major events; namely, as a condition to recommending the Metohija Multipurpose project to the Board, and to approving additional tenders for irrigation networks in the Ibar project. Finally, the Provincial Government signed a contract with a consulting firm in March 1976 to survey, map and prepare a proposal for new cadastral maps, for which field work began in Ibar Field (880 ha) in May 1976. With this positive development, the Bank lifted its embargo on the two items mentioned above.

Also, 1976 was a year of active legislation, in which the Kosovo Assembly on July 22, 1976 passed a law entitled "Field Redistribution, Consolidation and Land Parcellation", to permit reorientation of boundaries to be carried out for irrigation purposes. This law supplemented two existing laws; namely, "Kosovo Cadastre Law" and "Land Consolidation and Distribution Law". These laws required that actual changes in the field must be implemented by a land consolidation commission, nominated by the communes and composed of a president, two judges, an agricultural expert and a surveyor. Their purpose was to initiate the consolidation plans, redistribute land and hear farmers' appeals, implementation of which was estimated to take from one to three years after preparation of new cadastral maps. Having completed the cadastral maps for Ibar Field in February 1976, the consultants continued their field work in other subsystems during 1977.

During 1978, the Government appointed a Provincial-level group of experts under the auspices of the Secretariat of Agriculture to intensify implementation of land consolidation by establishing contact with the land consolidation commissions in the communes. Besides the Secretariat of Agriculture, the group comprised the Secretariat for Finance, Secretariat for

Legislation and Organization, Geodetic Administration, Administration of Property Right Affairs, and ILE. The Government also provided a fund of Din 36 million for land consolidation in the Ibar project and ILE was made responsible for its administration. The first local land consolidation commission was formed in July 1978 in the Commune of Titova Mitrovica for consolidating the 880 ha in Ibar Field.

Beginning in 1979, attention focused on various schemes designed to utilize the irrigation network irrespective of land consolidation, because it was apparent that land consolidation would be further delayed and portions of the system were close to becoming operational. The first was a Government proposal in April 1979 to enforce mono-culture among farmers, consisting of a coordinated three-year crop rotation on the area served by each sprinkler hydrant. Since cooperative farming under conditions of mono-culture would yield the same results as land consolidation, the Bank supported this plan as a suitable alternative, until such time as land consolidation was achieved. Later in November 1979, the Bank suggested a slightly more formalized plan based on the formation of farm-level organizations (Water Users' Associations) where the users of irrigation water would get together and develop a coordinated cropping scheme around each water hydrant. However, local authorities claimed that there was no legal instrument for use of irrigation through sprinkler systems, although subsequently it was found that independent organizations on the basis of "water economy units of interest" were permitted by law.

During 1980, the remaining three communes in the Ibar project established their land consolidation commissions. In October of the same year the Government of Kosovo established a high-level Provincial Coordination Commission for Land Consolidation comprising 29 members. Besides high ranking authorities from all the Secretariats, the presidents of the Communal Land Consolidation Commissions were also represented. The Provincial Commission prepared land consolidation work plans and schedules, and coordinated all related tasks, including socio-political activities. In addition, a special working group of nine members, chaired by the Secretary of Water Economy, was entrusted to monitor progress specifically in the Ibar project. Between 1980 and 1982 all four communes in which the project area is located passed a referendum approving land consolidation.

During 1981, the Kosovans concentrated on implementing the land consolidation plans and the action plan to accelerate on-farm development. A decree was passed by the Government of Kosovo in February 1981, which requires that parcel adjustments and redistribution be done solely through the process of land consolidation and not through any form of boundary adjustment. This decree had minimal repercussions for the Ibar project since efforts were already directed towards land consolidation in the true sense and not boundary adjustment. However, the decree adversely affected the Metohija Multipurpose Project (Loan 1360-YU) near Prizren, since considerable progress had already been made towards achieving boundary adjustment when the decree was passed.

From 1982 onward gradual progress was made in carrying out the multitude of tasks related to land consolidation, which ultimately culminated in the first land to be consolidated in 1984. Table A to this Annex shows the schedule for completion of land consolidation.

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Phasing of Land Consolidation

<u>Subsystems</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>
	-----ha-----					
Ibar field						
Annual	-	-	880	-	-	-
Accumulative	-	-	880	880	880	880
Kosovo field I						
Annual	1,653	2,847	1,200	600	-	-
Accumulative	1,653	4,500	5,700	6,300	6,300	6,300
Kosovo field II						
Annual	2,105	-	3,395	500	500	800
Accumulative	2,105	2,105	5,500	6,000	6,500	7,300
Drenico field						
Annual	1,850	/1 1,900	1,870	-	-	-
Accumulative	<u>1,850</u>	<u>3,750</u>	<u>5,620</u>	<u>5,620</u>	<u>5,620</u>	<u>5,620</u>
Total						
Annual	5,608	4,747	7,345	1,100	500	800
Accumulative	<u>5,608</u>	<u>10,355</u>	<u>17,700</u>	<u>18,800</u>	<u>19,300</u>	<u>20,100</u>

/1 Actually completed in 1984.

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Summary of Events Concerning Agricultural Extension

As in the case of land consolidation, the Government of Kosovo initiated steps to reassign its responsibility for extension work to ILE; consequently, most of 1974 was spent in reconfirming Government's obligation in accordance with the Project Agreement. During 1975 and 1976, the Bank repeatedly raised its concern over the lack of progress in preparing a plan for agricultural extension, and each time the Government's revised target dates were not met.

Finally, in late 1976 the Bank received a draft Law entitled "Social Compact on the Formation of the Specialized Services for the Improvement of Agriculture in the Private Sector". It provided for a centralized-type of extension service. Since this draft law did not constitute a specific proposal for an extension service in the Ibar project area, the Bank requested the Government to submit such a proposal and expressed the belief that an extension program for the Ibar project could be set up even before passage of the law.

However, in late 1977 the Bank was informed that the Government had formulated a new proposal, which would supersede the draft law, whereby, in broad terms the expansion of extension services at farm level would be through cooperatives. At this point, the Bank mounted a major effort aimed at accelerating progress in the establishment of an effective extension program for the Ibar project. In order to more fully understand the current status of agricultural extension in SAPK and the implications of the new law, which became effective in June 1978, the Bank contracted the services of an agricultural extension expert, who visited Kosovo in mid-1978 as part of a supervision mission. The new law is broad based and covers all aspects of extension activities in the Province. The agricultural cooperatives have the dominant role in providing direct technical assistance to the individual farmer through the formation of basic specialized services in the cooperatives or other forms of farmer associations so that each of the 22 communes in the Province would be covered by one such basic service. Each service would consist of two to three specialists. The law also provides that the Union of Cooperatives (founded in February 1977 at the Provincial Government level) be responsible for coordinating the system through its Department for Specialized Service. The Government advertised new positions to staff the system. At the time of the supervision mission's review there were 40 cooperatives in the

Province and 15 new ones were planned for 1978. The special consultant offered a number of observations on the new system, principal among which were: (i) probably only those farmers cooperating with the social sector would be reached; (ii) specialists could possibly be overburdened with administrative and input supply work not related directly to extension activities; and (iii) insufficient provision for overall coordination, training and monitoring of the new system. The consultant recommended some modifications to the existing system, which incorporated several features of the "training and visit" approach. Ultimately some of the training aspects were adopted. The Bank also suggested to Government the assignment in Kosovo of an expatriate extension specialist to assist in the organization of the extension service, which ultimately was never requested by Government.

Specifically within the Ibar project area, by early 1979, 11 cooperatives had been established; ten extension agents had been enrolled; and a total of Din 50 million had been made available during 1978 for salaries, transportation, travel allowance and printed material. It was concluded at this stage that sufficient progress had been made in the formation of new cooperatives and staffing them with extension agents to service the farmers in the first subsystem, which was expected to be operational in 1980; however, this was not achieved. The Bank also commented favorably on the dissemination program aimed at farmers, which included specialized courses, seminars and supporting brochures and audio-visual aids, covering subjects, such as soil-water-plant relationships, irrigation methods and handling of sprinkler equipment. Much of this valuable material was prepared by the staff of ILE, although ILE was not directly responsible for extension-type activities.

After a rapid start-up in the late 1970s, the number of cooperatives in the project area remained at 12 during the early 1980s, and ultimately reached 16 by 1984 with a total number of 21 graduate level extension agents, as shown in Table A.

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PROJECT COMPLETION REPORT

Agricultural Extension

<u>Commune</u>	<u>Location of Cooperative</u>	<u>Number of Extension Agents</u>	<u>Number of Cooperating Farmers</u>	
			<u>Associated Members</u>	<u>Short-term</u>
T. Mitrovica	Bare	1	186	55
	T. Mitrovica	1	224	100
	Zubin Potok	1	174	61
	Subtotal	<u>3</u>	<u>584</u>	<u>216</u>
Vucitrn	Vucitrn	1	125	2,240
	Priluzje	1	61	263
	Subtotal	<u>2</u>	<u>186</u>	<u>2,503</u>
Pristina	D. Jugovica	1	104	480
	Obilic	1	30	350
	Bresje	1	100	300
	Graconica	1	451	270
	Slatina	1	140	210
	K. Polje	2	142	180
	Prekovce	1	229	25
	Kecivol	1	345	150
	Subtotal	<u>9</u>	<u>1,541</u>	<u>1,965</u>
Glogovac	Komorane	3	380	470
	Trstenik	2	100	240
	Glogovac	2	380	800
	Subtotal	<u>7</u>	<u>860</u>	<u>1,510</u>
Total		21	3,171	6,194
		==	=====	=====