

OFFICE MEMORANDUM

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GEF SECRETARIAT

DATE: April 16, 1998

TO: Mr. Mohamed El-Ashry, CEO/Chairman, GEF

FROM: Lars Vidaeus, GEF Executive Coordinator

EXTENSION: 34188

SUBJECT: **Aral Sea Basin Program Water and Environmental Management Project
Final Council Review/CEO Endorsement**

Please find attached 75 copies of the Project Document for the above-mentioned project circulation to Council members prior to GEF CEO endorsement.

The project document is fully consistent with the overall objectives of the document reviewed and approved by the GEF Council as part of the May, 1997 Work Program. The document was revised to take into account comments made by various Constituencies.

Since GEF Council approval, the Executive Committee of the International Fund to Save the Aral Sea has worked closely with the World Bank and other donors to more clearly define priorities and needed political commitments to successfully implement the Program. Consequently, there have been some changes in the project's implementation, though the objectives, scope, and cost remain the same. Attached is a complete listing of all the changes for ease of reference.

Please send us a copy of the out-going letter to Council Members for our records.

Files

cc: Messrs/Mmes. Whitford, Roider, Hayward, Cleaver, Garvey (ECSRE); Husain, Watts (ECCOI), Albert, Bossard, Nikolov (ENVGC), ENVGC ISC

Maria Nikolov
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ARAL SEA BASIN PROGRAM
Water and Environmental Management Project
List of Principal Changes Since GEF Council Approval

1. Since the proposed project was submitted to the GEF Secretariat and Council, through Ms. Kimes' memo of March 4, 1997, there have been a number of changes both in substance and presentation, although the project objective and basic thrust remain the same.
2. Changes in substance arose from the following circumstances:
 - the need for close consultation with the client to ensure that their priorities were fully reflected and that the project will be fully "owned";
 - changes to accommodate the wishes of co-financiers, resulting in some shifts of activities from the GEF column to a co-financier or vice-versa; and
 - refinement of the project approach, in the light of advancing knowledge of the problems and potential solutions.
3. The consultation process is also the principal reason why the final preparation and appraisal has taken considerably longer than expected.

Timing of the Strategic Action Program (SAP)

4. In the March 1997 Proposal for Review (Proposal), it was proposed to summarize previous work under the preparation stage of the project into a SAP document in an initial 6-month phase of the project. Upon further discussion, it became clear that the value of the SAP would be greatly enhanced if it were drafted prior to appraisal. Consequently, a draft SAP has been prepared by EC-IFAS and is now being reviewed by the Bank. It is expected to be agreed during appraisal and approved by the Council of the International Fund for the Aral Sea as a condition of grant effectiveness.

Interstate Agreements

5. The Proposal included interstate agreements on water sharing and the operation of reservoirs as project components. The client insisted that the project cannot force such agreements as direct project outputs since such agreements are the result of a political process involving the sovereignty of parliaments. Therefore we have adapted the project. While reaching interstate agreements for improved transboundary water management is still a key objective of the project, for which technical assistance from EU-TACIS and USAID is available, the project itself will focus on preparing decision scenarios based on consensus with the executive branches of Government and facilitating agreements on country actions in a revised SAP.

Regional Water and Salinity Management

6. The Proposal referred to this central core of the project as Salt Management Strategy including Associated Water Management, a title intended to emphasize the crucial importance of finding a solution to the complex salinity issue. EC-IFAS felt that this formulation did not do justice to the need to improve water use efficiency, where some early gains appear possible without major investments or analysis. Consequently, the title of the

core component (A.1) was changed to National and Regional Water and Salt Management and additional components (A.2 and B) defined to encourage actions by individual farmers to improve water management in the short term.

Dam and Reservoir Operations

7. Originally an activity under reservoir management, the dam safety sub-component was enlarged following initial field work last June, which indicated the need for a broad-scale effort including training, instrumentation and projects to ensure the safety of the basin's 57 large dams and thus facilitate investment in downstream water management projects. Nevertheless, GEF financing was kept at the original US\$ 500,000 level, the remainder of costs being in essence borne from Central Asian sources. Work on improving the operation of major reservoirs to recognise the tradeoffs between irrigation, power generation, environmental and other interstate uses will continue with USAID support (para. 5).

Decision Support System

8. The transboundary water monitoring component remains essentially unchanged as Component D. The regional information system will be funded by EU-TACIS and thus is no longer described as part of this project. The program of training, study tours and workshops has been left to UNDP and bilateral donors, in order to simplify the GEF project.

Public Awareness and Participation

9. Public awareness is now the focus of Component B, while participation has been built into Components A.1, A.2 and E.

Wetlands Restoration

10. Apart from some design simplifications, this component is essentially unchanged.

Cost Estimate

11. The Proposal included pilot projects (\$24 million) and expansion of wetlands restoration (\$24.5 million) as co-financed activities, in order to attract additional donor support to the GEF-funded project core. As this support has been slow to materialize, these elements are no longer shown in that form, although they remain valuable. The Bank is committed to seeking additional co-funding to continue pilot testing of promising means of addressing water and salinity management issues, in addition to the funded components A.2 and B. As Bank support for improving water management through full-scale rehabilitation of irrigation and drainage systems has accelerated, three near-term Bank projects are now shown as associated investments in the project cost table, resulting in a grand total project cost of \$ 86.4 million, compared to \$ 71.5 million earlier. A number of other Bank projects with the same objectives are at an earlier stage of preparation. The core costs in the Proposal - \$23.0 million - are closely comparable with the present estimate of \$21.2 million, though the distribution between components varies, reflecting changes in formulation and scope. Proposed GEF support has increased marginally from \$12.0 million to \$12.2 million.

Some of the proposed savings from 245.0 million to 212.5 million

being made in form of loan and grants. Proposed
cost estimate of 221.2 million through the distribution
of the loan to the project - 223.0 million

and other Bank projects are now shown as associated
costs, resulting in a grand total project cost of 280.4 million.
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FINAL PROPOSAL

1. IDENTIFIERS:

PROJECT NUMBER:

PROJECT NAME:

Aral Sea Basin Countries (Kazakstan, Kyrgyz Republic, Tajikistan, Turkmenistan, Uzbekistan): Water and Environmental Management in the Aral Sea Basin

DURATION:

4.5 years

IMPLEMENTING AGENCY:

World Bank

EXECUTING AGENCY:

Executive Committee of the Interstate Council for the Aral Sea Basin

REQUESTING COUNTRY OR COUNTRIES:

Kazakstan, Kyrgyz Republic, Tajikistan, Turkmenistan, Uzbekistan

ELIGIBILITY:

GEF eligibility on the basis of IBRD eligibility International Waters

GEF FOCAL AREA:

GEF PROGRAMMING FRAMEWORK:

Integrated Land and Water Multiple Focal Area

2. SUMMARY: The project addresses the major transboundary issues identified by the Transboundary Diagnostic Analysis undertaken over the past 2 years--issues which can only be successfully addressed by a basin-wide approach. The Aral Sea Basin countries have agreed to pursue joint work under the project on : (a) water and salt management; (b) public awareness regarding necessary fundamental changes in water use; (c) transboundary water monitoring; (d) dam and reservoir management; and (e) wetlands restoration.

3. COSTS AND FINANCING (MILLION US):

GEF:	-Project-	US\$12.2 m
	- PPA	US\$ 0.525 (includes \$25,000 PDF A)
	Subtotal GEF	US\$12.725m
CO-FINANCING:	:	
	-Governments:	US\$ 4.1m
	-Other International:	US\$ 1.4m European Union/TACIS
		US\$ 3.2m Netherlands
		US\$ 0.3m SIDA
TOTAL PROJECT COST:		US\$21.725
4. ASSOCIATED FINANCING (MILLION US\$)		US\$65.2m

Investments in Improved Water Management (of which World Bank financing totals \$45.6m)

5. OPERATIONAL FOCAL POINT

ENDORSEMENT:

NAME: MR. YURI BOBKO

Title: Deputy Chairman

ORGANIZATION: Executive Committee

Inter state Council on the Aral Sea Basin. **Date:** July 30, 1996

6. IA CONTACT:

Jocelyne Albert, Sr. Regional Coordinator
Eastern Europe and Central Asia 202-473-3458
Fax: 202-522-3256, Internet: jalbert@worldbank.org

**Document of
The World Bank
Global Environmental Facility**

FOR OFFICIAL USE ONLY

**Draft
CONFIDENTIAL
Report No.17587 UZ**

PROJECT DOCUMENT

**ARAL SEA BASIN PROGRAM
(Kazakstan, Kyrgyz Republic, Tajikistan,
Turkmenistan and Uzbekistan)**

WATER AND ENVIRONMENTAL MANAGEMENT PROJECT

Volume I - Main Report

April 15, 1998 2:46 PM

**Rural Development and Environment Sector Unit
Europe and Central Asia Region**

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WEIGHTS AND MEASURES

Metric System

ABBREVIATIONS AND ACRONYMS

ADB	- Asian Development Bank
ASBP	- Aral Sea Basin Program
BWO	- Basin Wide Organization (Amu Darya and Syr Darya)
CA	- Central Asia
CIDA	Canadian International Development Agency
CMU	- Component Management Unit
EC-IFAS	- Executive Committee of IFAS
EEP	- Emergency Preparedness Plans
EU	- European Union
FSU	- Former Soviet Union
GDP	Gross Domestic Product
GEF	- Global Environment Facility
g/l	- Grams per liter
GoU	- Government of Uzbekistan
IBRD	- World Bank
ICAS	- Interstate Council of the Aral Sea (now abolished)
ICB	International Competitive Bidding
ICKKU	- Interstate Council of Kazakstan, Kyrgyz Republic and Uzbekistan
ICWC	- Interstate Commission for Water Coordination
IERR	- Internal Economic Rate of Return
IFAS	- International Fund to Save the Aral Sea
IIP	- Immediate Impact Project
IS	- International Shopping
KfW	- German Development Bank
NCPA	- National Counterpart Agency
NEAP	- National Environmental Action Plan
NGO	- Non Governmental Organization
NS	- National Shopping
OECD	- Overseas Economic Cooperation Fund (Japan)
PHRD	- Policy and Human Resource Development (Japan)
PIP	- Project Implementation Plan
PIU	- Project Implementation Unit
PMCU	- Project Management and Coordination Unit
QCBS	Quality and Cost Based Selection
SA	- Special Account
SAP	- Strategic Action Program
SDC	- Sustainable Development Commission
SIDA	- Swedish International Development Agency
SOE	- Statement of Expenditure
TA	Technical Assistance
TACIS	Technical Assistance Program to CIS countries (EU)
TDA	Transboundary Diagnostic Analysis
TOR	- Terms of Reference
UNDP	- United Nations Development Program
UNEP	- United Nations Environment Program
UNICEF	- United Nation Children's Fund
USAID	- US Agency for International Development
WARMAP	- Water Resource Management and Agricultural Production in the Central Asian Republics (Program of EU/TACIS for ASBP)

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WATER AND ENVIRONMENTAL MANAGEMENT PROJECT
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K. Project Risks

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Management

Map 1: Arab Sea Basin

Map
Map

VOLUME II - SUPPLEMENTARY REPORT

Part I - Detailed Descriptions of Project Components /TORs

Component A - Water and Salt Management

- A1 - Draft TORs – National and Regional Water and Salt Management**
- A2 - Detail Description – Participation in Water Conservation**

Component B - Public Awareness

- B1 - Draft TORs**

Component C - Dam Safety

- C1 - Draft TORs – Dam Safety Assessment**
- C2 - Detail Description – Early Warning Systems**
- C3 - Draft TORs – Dam Rehabilitation Detail Design**
- C4 - Draft TORs – Lake Sarez**

Component D - Transboundary Water Monitoring

- D1 - Detail Description**

Component E - Wetland Restoration

- E1 - Detail Description**
- E2 - Draft TORs – Detail Design for Infrastructure Development**
- E3 - Draft TORs – Biological Monitoring**
- E4 - Draft TORs – Socio-Economic Monitoring**

Part II - Project Implementation Plan

Part III - Strategic Action Program

Part IV - The Project Context

Text

Review of 1996

Description UNDP Capacity Building Project

Description WARMAP II project

Outline of future USAID program on the ASBP

List of Reports Prepared in the Preparation Phase of the ASBP

Part V - GEF - Incremental Costs and Global Environmental Benefits

Vice President:	Johannes F. Linn, ECAVP
Director:	Kevin M. Cleaver, ECSRE
Sector Leader:	John Hayward, ECSRE
Task Team Leader:	Werner Roeder, ECCUZ

TABLE

TABLE

Detailed Description of Project

Component A - Water and Soil Management

- A1 - Data TOR - National and Regional Water and Soil Maps
- A2 - Detail Description - Participation in Water Conservation

Component B - Assessment

Data TORs

1 - Data TORs

C1 - Data TOR - Data Safety Assessment

C2 - Data TOR - Early Warning Systems

C3 - Data TOR - Data Reliability and Data Quality

Component C - Monitoring

Data Description

Component D - National Assessment

B1 - Detail Description

B2 - Data TOR - Detail Design for Implementation

B3 - Data TOR - Biological Monitoring

B4 - Data TOR - Socio-Economic Monitoring

Project Implementation Plan

Project Action Program

Part IV - The Project Context

Part V

Review of 1992

Designated UNEP Group

Designation of the Project

Outline of the Project in the Project Phase of the

List of Reports Prepared in the Project Phase of the

GEF - Investment Costs and Global Environment

General

Ver. 1.0	1992
Ver. 1.1	1993
Ver. 1.2	1994
Ver. 1.3	1995
Ver. 1.4	1996
Ver. 1.5	1997
Ver. 1.6	1998
Ver. 1.7	1999
Ver. 1.8	2000
Ver. 1.9	2001
Ver. 2.0	2002

**ARAL SEA BASIN PROGRAM
WATER AND ENVIRONMENTAL MANAGEMENT PROJECT**

PROJECT SUMMARY

GEF Focal Area: International Waters and Global Biodiversity.

GEF Eligibility: Under 9 (b) of the Instrument for the Restructured GEF.

Implementing Agency: The Executive Committee of the International Fund to Save the Aral Sea.

GEF Grant Amount: US\$12.2 million.

Financing Plan:
(US\$ million)

Source	Amount US\$ million	% of Total
Global Environment Facility	12.2	58
Five Central Asian Republics	4.1	19
Netherlands	3.2	15
European Union/TACIS	1.4	6
SIDA	0.3	2
Total	21.2	100%
Associated Investments in Improved Water Management ¹ (of which World Bank	65.2 45.6)	
Grand Total	86.4	

Estimated Start Date: August 1, 1998.

Project Duration: 4.5 years.

GEF Preparation Costs: US\$25,000 PDF Block A grant and US\$500,000 in a Project Preparatory Assistance Grant.

Maps: IBRD No. 28879, 28893 and 28894.

Project ID Number: AC-GE-8326

¹ Projects for irrigation and drainage improvement in Kazakhstan, Kyrgyz Republic and Uzbekistan plus technical assistance from EU-TACIS, USAID and others.

APR 1964 EASTERN AFRICA
HYDROLOGICAL MANAGEMENT

PROJECT 30

1. Introduction

Order 9 (b) of the Instrument for the Projected GFE.

The Executive Committee of the International Fund to Save the Aral Sea.

US\$12.2 million

(28 million)

Source

	Collected	Collected
Global Environment Facility	12.2	12.2
Five Central Asian Republics	4.1	19
Non-Communist	3.2	13
European Union (EUCIS)	1.4	6
IDA	0.3	2
Total	14.2	100%
Assisted investments in		
Improved Water Management	12.2	
(of which World Bank)	12.2	
Source: (a)	12.2	

August 1, 1998

Project

US\$12,200,000 in a Project Waterway Assistance

Grant

IBRD No. 2507, 2508 and 2509

AG-GE-2326

Project ID

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Project ID

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ARAL SEA BASIN PROGRAM WATER AND ENVIRONMENTAL MANAGEMENT PROJECT

I. INTRODUCTION

A. Background

1.1 This is the Draft Project Document for the Water and Environmental Management Project of the Aral Sea Basin Program. The project addresses those issues of the Aral Sea Basin which have been identified in a Transboundary Diagnostic Analysis (TDA) and which can only be addressed in a regional approach. As such they meet two of the criteria for GEF eligibility for International Waterways, namely priority issues and need for a regional approach. The TDA is summarized in Table 7 in the Annex; it may serve as an Executive Summary of the project.

1.2 Located in the heart of Central Asia, the Aral Sea Basin (see map 1) covers an area of 2.2 million km² and is home to some 38 million people (1995)². Overall, population density in the basin is 17 inhabitants/km², compared to Central Asia as a whole with only 13 inhabitants/km². The basin comprises of the drainage area of two large rivers, the Amu Darya and the Syr Darya, the surface of the Aral Sea and its surrounding natural region. The source of the Amu Darya is the northern flank of the Pamir mountain range. The Syr Darya rises in the Tien Shan about 500 km to the north. The rivers run approximately 2,500 km through the mountainous upstream countries of Afghanistan, Tajikistan and the Kyrgyz Republic before flowing through the plains of the downstream countries of Uzbekistan, Kazakstan and Turkmenistan. The Amu Darya, to the south, is the larger river with a flow of approximately 70-80 km³/year. The Syr Darya, to the north, is about half this size³. Both rivers end at the Aral Sea, in deltas located in northwestern Uzbekistan (Amu Darya) and in southwestern Kazakstan (Syr Darya). Until the 1960s the Aral Sea was, with an area of 67,000 km², the world's fourth-largest inland body of water⁴.

1.3 Water is the most precious resource in arid Central Asia. Rainfall is in the order of 100 mm/year in the vast desert and steppe areas of the three downstream countries and rises to 400 mm/year in the two mountainous upstream countries. The waters of the two rivers and the Aral Sea have been vital to life in Central Asia since its earliest human occupation. The waters supported the development of economically and culturally rich civilizations in and around the oasis and gave rise to a highly diversified flora and fauna. Irrigated agriculture has been practiced in the region for thousands of years. Population is concentrated in the irrigated areas where densities average 45 inhabitants/km² and rise to over 400 inhabitants/km² in the Khorezm region of Uzbekistan.

1.4 Over 90 percent of the waters of the Amu Darya and the Syr Darya are used for irrigation (see Table 2 in the Annex of Tables). The consumers of water are, in declining order of importance, Uzbekistan, Turkmenistan, Tajikistan, Kazakstan and the Kyrgyz Republic. The Aral Sea, which used to receive some 60 km³/year of water up to the 1960s, now only receives between 5 and 10 km³/year of water, with recorded variations of 0 to 20 km³/year.

1.5 The land-locked Central Asian States are in a phase of deep socio-economic transition, absorbing the effects of the breakdown of the Soviet Union and the shift from a centrally planned to a market economy. Independence in 1991 was invariably followed by several years of decline in GDP, employment, incomes and budget revenues. Severance of the administrative and economic links with the former Soviet Republics was difficult. Depending on their specific economic and socio-political situation, the States adopted particular economic and social reform measures. Transition speed and extent varied among States, as reform measures oscillated between conservation of existing structures to avoid economic, social and political disruption and rapid reforms to advance the transition process. All States have started to address inefficiencies and lack of competitiveness of state sector units in industry, agriculture and services. Distortions in the pricing of goods, services, and natural resources are being rectified. Reform in agriculture proved particularly burdensome, as input and output prices remain distorted over most of the region. Salaries and operating expenditure declined dramatically in the large public sector. The budget decline lead

² Population was 16 million in 1960; population growth is in the order of 2.5 percent a year.

³ For comparison, the Mississippi River has a flow of 170 km³/year.

⁴ For comparison, the area of Belgium is 31,000 km²

to deferred maintenance and degradation of the vast infrastructure assets created in Soviet times. Rules of economic activity and taxation are still frequently uncertain, with the once strong bureaucracies slow to adjust to their new, less interventionist role. Accumulation of capital in the production units is limited and access to capital from the banking sector is very limited, particularly for the smaller economic operators and farms. Central Asia also suffered from the continuing war in Afghanistan. It destabilized its southern flank, diverted resources for protection against conflict spill-over and impeded surface links to the Indian subcontinent. Tajikistan, the least resource rich country, suffered from long internal strife at high economic and social costs. Overall, the States have tried to form new economic alliances among themselves (the Interstate Council of Kazakstan, Kyrgyz Republic and Uzbekistan, ICKKU, is an example) and with overseas partners.

B. Basic Problems in Water and Environmental Management

1.6 The four basic problems in water and environmental management of the basin are:

- (a) environmental degradation, with the increase in land and water salinization the gravest problem;
- (b) the gradual drying up of the Aral Sea, with huge adverse socio-economic and environmental effects;
- (c) water management in the basin, with its in-built potential threat to peace in the region; and
- (d) institutions for interstate cooperation, with relevance and commitment of the national State the big challenges.

Root Causes

1.7 The roots of these fundamental problems can be traced to two developments in recent history, the massive expansion of irrigation and the transition from a centrally planned to a market economy following the breakup of the Soviet Union and its inherited legacy. The expansion of irrigated agriculture for cotton and rice production began under Czarist Russia in the late 19th century. By the end of the century about 2.5 million ha were under irrigation. Expansion accelerated in the 1920s after the Russian revolution. By 1950 the irrigated area had reached 4.7 million ha. When the large-scale irrigation projects began, vast tracts of the Central Asian desert were reclaimed, watered from the two river systems and planted mainly with cotton. With Central Asia as its 'cotton belt'⁵, the Soviet Union became independent of cotton imports. From 1950 to 1990, the irrigated area almost doubled. 3.2 million ha of new land came under cultivation, bringing the total irrigated area to 7.9 million hectares⁶. This increase only came to a halt in recent years.

1.8 The expansion of irrigation yielded major benefits, but with large economic and environmental costs, still not yet fully evaluated. It increased and stabilized food production in the region and created a home, a production basis, employment and incomes for some 8 million people settled in the newly developed areas. The water control, irrigation, drainage and other infrastructure, although now degraded, still constitutes a major economic asset of the region⁷. Nevertheless, central planning promoted inefficient use and pollution of water and degradation of land resources, by underpricing natural resources and allocating them to users by administrative means, leading to: (a) increased land and water salinization threatening the sustainability of life and production in the basin; and (b) the gradual drying up of the Aral Sea.

1.9 The breakup of the former Soviet Union and the transition from a centrally planned to market economy is at the root of the water management and institutional problems. At independence, cooperation between the newly created States, each with different positions and interests with respect to water, had to be developed more or less overnight. The States were faced with legacies of the soviet system, such as the neglect of environment and sustainability in favor of short-term economic gains as well as of quantity (resource productivity) over quality. The inherited management as well as pricing and incentives systems were not conducive to the rational use of scarce

⁵ At its height, Central Asia was the third largest producer of cotton in the world after China and the USA

⁶ For comparison: Pakistan has 11 million ha of irrigated land; Egypt has 3.5 million.

⁷ This infrastructure includes over 80 storage reservoirs with a capacity of 10 million m³ or more and a total storage capacity of over 60 km³, 47,000 km of partly lined main and secondary irrigation canals, 270,000 km of tertiary irrigation canals, 145,000 km of collector drains, 8,000 vertical drainage wells, and hundreds of large pumping stations and water control structures

(water) resources. Budgetary problems during the transition led to a massive backlog in maintenance and modernization of infrastructure.

Environmental Degradation

1.10 Among the environmental problems of the basin, increasing salinization of irrigated land and water is the most serious⁸. The process of salinization is as old as the land itself in Central Asia. Since man's first agricultural exploitation of that land, techniques to counter its effects, such as drainage and leaching, were developed. But the expansion of irrigation increased the magnitude of the problem to a level at which it threatens life in the basin and traditional control approaches can no longer cope with it. The effects of salinization even affect the cultural heritage of Central Asia; high groundwater levels and salinity threaten the historic monuments in such famous towns as Bukhara and Khiva.

1.11 The dimension of the problem can be illustrated by the following facts and figures:

- (a) 7.9 million hectares are under irrigation in the basin, 31 percent have a water table of less than two meters and 28 percent have medium to high levels of salt, with agricultural yields decreased by 20 to 30 percent;
- (b) an estimated 137 million tons (about 18 tons of salt per hectare/year or about six times the average yield of raw cotton) is the average annual discharge from the irrigated land;
- (c) an estimated US\$2 billion (about 5 percent of Central Asia's GNP) is lost annually due to salinization, and losses will rise unless salinization is contained⁹;
- (d) water salinity peaks at over 2.0 g/l (in low water years) in the delta area of the Amu Darya and Syr Darya. This exceeds the World Health Organization and European Union recommended maximum levels of 1.5 g/l for the salt content of drinking water; and
- (e) in Turkmenistan, 37 percent of the country's irrigated land is now either waterlogged or high in salt or both. In Tajikistan over 15 percent of irrigated land suffers from salinity. Salinization therefore affects mostly the downstream areas but is not confined to them.

1.12 Strategies and action plans to cope with the scale of the salinization problem have not yet been fully developed, but enough is known on the key leverage points to start acting. There is consensus among the experts on the core measure, that of reducing the amount of water used in irrigation because over 90 percent (see Table 2 in the Annex of Tables) of the basin water is used for this. The less water used in irrigation means that, (a) less salt is mobilized directly and in the groundwater; (b) less saline water reaches the rivers or the ground water; (c) more water is freed for the environmental components, such as rivers, deltas, wetlands or the Aral Sea itself; and (d) less burden is placed on the irrigation and drainage systems. A large-scale reduction of irrigated areas is not considered a feasible strategy, at least not while the potential of other, less costly, alternatives have not been exhausted. A reduction of some irrigated areas might be considered for regions with high marginal cost and low water efficiency.

⁸ There are of course a variety of other major environmental problems such as loss of biodiversity, water pollution from pesticides and industry, air pollution etc. But none of them constitutes a threat of such a fundamental and difficult nature as salinization. For the interested reader a summary explanation of the salinization processes is given. The salt content of soils and subsoils in arid zones is comparatively high. Irrigation water and groundwater dissolve these salts. The more water used in irrigation and the higher the groundwater level, the bigger the amount of salt dissolved. Irrigation water not used by the crops enriches itself with salts. The drainage system, if well designed and maintained, collects the saline surplus water, feeds it back to the rivers or deposits it in desert sinks where additional salt is mobilized and percolation may affect the ground water. A delicate balance has to be struck between reduced river flow, increased river salinity and long-term damages to the ground water. Rising river salinity or reduced river flow invariably have a negative effect on the downstream users of the water. If drainage is deficient in the irrigated areas, and this is the case in much of the Aral Sea Basin, ground water levels and salinity in the irrigated areas itself rise. Deep ground waters, which usually have high salt concentrations, can mix with shallow ground waters and increase their salinity. Groundwater moves under its own pressure in the whole basin. Once the shallow groundwater level rises to close to 2 meters, depending on soil structure, capillary forces pull it to the surface. There the water evaporates and the salts stay and reduce agricultural yields, affect all flora and fauna and can attack the foundations of buildings etc.

⁹ USAID report.

But obviously, a large-scale reduction of irrigated areas would have immediate detrimental economic and social impact. High costs could be anticipated for the creation of employment in sectors other than agriculture and for resettlement of the concerned populations. Fortunately, there is evidence that savings in irrigation water use of 20-30 percent are possible at relatively low cost, without constraining production (see para 1.19).

1.13 The key issue is how to implement such savings and to complete a salinity strategy. Price and incentive systems conducive to water saving are not yet in place among the main water consuming countries. The level of awareness among the populations and policy makers about the need for and type of common action is low. Regional management of salt movements is lacking in the basin. Upstream riparian States have little incentive to manage salinization or agricultural runoff. The overall situation is not helped by the fact that a credible system of water quality monitoring in the region does not even exist. For a fine tuned strategy and action plan, several key elements are lacking, namely: (a) identification of the main polluting irrigation areas; (b) evaluation of the future potential extent of the problem; (c) delay time between cause and effect on and via the groundwater system, and (d) fine tuning of technically and economically feasible options for curative action.

Decline of the Aral Sea

1.14 The decline of the Aral Sea started in 1960 as increasing amounts of water were diverted to irrigation and less, but more saline, water entered the Sea¹⁰. As of the mid-1980s, only small amounts of water were flowing into the Aral Sea. In 1990 the Aral Sea split into a small northern sea and a large southern sea as the waters receded. The salinity of the northern sea is gradually decreasing as inflows from the Syr Darya dilute the salt water and fish have even been reintroduced. Today, the whole of the former Aral Sea has shrunk by approximately 70 percent in volume and 50 percent in area. The water level in the southern body continues to drop and the salinity to increase. In 1997 the southern Aral Sea was practically biologically dead with salinity levels at around 40 g/l (for comparison, sea water is 35 g/l). Some aquatic life, however, survives near the Amu Darya delta.

1.15 Severe environmental and socio-economic impacts have affected the delta areas of the Amu Darya and Syr Darya. Large sections of the Amu Darya and Syr Darya delta wetlands and agricultural lands dried up as a consequence of reduced river flow, absence of annual inundation, and falling ground water levels near the seabed¹¹. One of the most important migratory bird feeding grounds in Asia is now less than one fifth its former size. The climate around the Sea has become more continental, with greater annual fluctuations in temperature and humidity. Water-borne diseases have always been a common threat to human health in the region, a situation not helped by the environmental degradation and decline in drinking water quality. There is a high incidence of diarrhea disease (especially among children) and other water related health problems. In towns, sewage systems are attacked by salinization and in rural areas high water tables risk contamination by latrines. Life expectancies in the districts near the sea are significantly lower than in surrounding nations. The approximately 3.5 million people living in the vicinity of the Aral Sea have become economically impoverished. Tens of thousands of jobs were lost in the former fishing industry, agriculture and service sector. Huge tracts of agricultural lands were degraded with salt from the rivers, ground, the ground water, the exposed seabed and the dried up wetlands and its aeolian dispersal.

1.16 The strategy towards the Aral Sea itself is outdated and needs correction. The dream of restoring the Sea to its former level is still alive¹². Experts and practitioners, however, know that restoration is impossible and they act accordingly. Among the spectrum of suggestions for full restoration (including the old Soviet Union plan of diverting Siberian rivers or pumping water from the Caspian Sea), none are economically or environmentally feasible. Full restoration through water savings is also unrealistic¹³. At best, what could be expected is a retardation

¹⁰ The level of the sea dropped by 17 meters between 1960 and 1996 due to uncompensated evaporation of the order of 1 m/year; its surface declined from 67,000 km² to 30,000 km². The annual inflow used to be about 60 km³. In the past decade, inflow was between 5-10 km³ (in 2 dry years no water entered the Sea at all). At this average inflow level, the Sea will further decline and probably stabilize at a size of 13,000 km². Without intervention, in about 15 years, its salinity will be at about 100 g/l, comparable to that of the Dead Sea in Israel.

¹¹ Annual loss of land to desertification is estimated at 100,000 ha.

¹² The name IFAS includes the restoration of the Sea. The formal strategy sanctioned by the Heads of State in 1994 aims at restoring the Sea's production level to former levels.

¹³ Several restoration scenarios have been developed. Restoring the Sea within 100 years to a size of about 50,000 km², a level at which salinity would be at a level of 12 g/l and acceptable for diverse aquatic life, would require about 45 km³/year of water from the Amu Darya and the Syr Darya. This would demand a cut in current irrigation water use by 40 km³/year or by

of the rate of the Seas' decline and future maintenance of the lake at a rational sustainable level. For the populated areas in the vicinity of the Sea, in essence the delta areas, this implies adjustment to the fact of a much smaller Aral Sea, reorientation of the local economies and commitment to continue improving and refining the past strategy of alleviating, containing and counteracting the negative impacts of the environmental disaster. At basin level, the most important measure would be to arrive at joint action to reduce salinity of and increase the flow of the rivers to the deltas.

Water Management in the Basin

1.17 The regional water management problems concern four core areas: (a) water quantity and quality; (b) water storage and control facilities; (c) water use; and (d) irrigation and drainage infrastructure. Management of water quantity and quality embodies several potential conflict areas. Water shares between regions of a centrally managed and rigorously policed state such as the Soviet Union constitute merely a technical and administrative problem. But water shares between independent national states in arid areas are a potential source of conflict of critical dimension. Therefore, transparent and accepted dispute settlement mechanisms (and indeed credible water control and monitoring systems on which to base them) are indispensable for eventual conflict resolution. Water shares need to be agreed between the national economic and social sectors such as agriculture, hydro-power, communes, industry and recreation, on the one hand and the regional environmental users such as the rivers, the wetlands, and the Aral Sea on the other. Any uncertainty over water availability increases the risk to investment in the water sector and undermines any national initiatives to improve water management. The mountainous upstream countries tend to raise the question of ownership of the water resources because they want to participate in the benefits of water use in the downstream countries. Management related problems are those of seasonal water allocation, as the upstream countries would like to use water resources for their own winter power generation needs which is in conflict with the downstream countries' summer irrigation needs. Supply and allocation of water must be established on a reliable long-term basis, not only on a year-to-year basis, otherwise public and private investment becomes riskier. On the supply side, long-term issues of watershed protection have to be dealt with. Very similar issues arise on the topic of water quality. Quite simply, there is no water quality management at the moment. There is a need for regional water quality stipulations covering all pollutants with the priority to the key pollutants such as salts (para 1.12). While salt mobilization can be achieved through localized means, salt storage needs a broader, strategic view. The parallel need is for monitoring and control. Water quantity and quality problems must be dealt with together as they are physically linked and managerially intertwined¹⁴.

1.18 Problems in the management of the water storage and control infrastructure have appeared since independence. In the soviet period, infrastructure was built to serve the needs of the entire Aral Sea basin. In many cases, infrastructure located in one country was planned for the benefit of other countries. The largest dams and reservoirs are located in the poorer mountain of upstream countries, while stored water benefits the larger and richer downstream countries. The operational responsibility and division of maintenance for transboundary water infrastructure is now in dispute. Then there are issues of sustainability of dams and reservoirs. For instance, an earthquake and landslides created Lake Sarez in Tajikistan in 1911. Today 20 km³ of water trapped behind a potentially unstable natural dam constitutes a disaster potential of regional dimensions. Although man-made dams in the basin are considered structurally safe, maintenance is also a problem and early warning instrumentation is nonexistent, out of operation or outdated. Siltation threatens sustainability and the capacity of the reservoirs for interstate water management, as they grow older. There is no existing mechanism for independent assessment of dam safety. This is problematic, as institutional investors such as the World Bank require such an assessment of dam safety for all major investments to address regional water management problems.

1.19 Ineffective and excessive use of water in irrigation as well as other spheres is a core problem inherited from the soviet system in which attention to resource productivity was low. Correcting this problem is not only key to

about 50 percent. Restoring the Sea to the same level within 50 years would mean stopping all irrigation and other water uses. Both scenarios are unrealistic at a time when even water savings of 3 to 5 percent encounter major problems of acceptance in the region. Current targets under discussion are to increase the annual flow to 20 km³ /year. This corresponds to about 20 percent savings in irrigation water and would stabilize the Sea within some 20 years at a size of about 23,000 km² and salinity in the order of 60 g/l.

¹⁴ The institutional set-up, however, does not reflect well this need for integrated management. Watersheds, rivers, groundwater and environment are dealt with by different sectoral or sub-sectoral institutions.

solving the salinization issue, but also for the competitiveness of Central Asia's agriculture where irrigation constitutes the bulk of production costs¹⁵. Some 35 percent¹⁶ of the water delivered to the farms are not taken up by the crops. In comparison, for well-managed irrigation systems, the comparable figure is only 10-15 percent. Water use per ha in the basin is about 12,000 m³/h. Israel, the world leader in irrigation technology in a comparable environment, uses less than half that. In the principal water consuming countries of the region there are no incentives to conserve water (e.g., through better irrigation timing and land leveling, or reduction of drainage water salinity etc.). This is understandable, as water is being supplied at no cost to the user. Private production structures, non-distorted pricing systems for inputs such as irrigation water and drainage and water and means for penalizing pollution are absent or only in their very initial stages. Their development would stimulate the creativeness and responsibility of the owner/operators and encourage more effective water use. Pressure for change is surprisingly low, as awareness about need and options for water saving is limited among politicians and water suppliers and users. This rather vicious circle needs to be addressed on a broad front yet with specifically targeted initiatives.

1.20 Maintenance and improvement of irrigation and drainage infrastructure are also major problem areas. As a consequence of the general cut in maintenance budgets (para 1.5), most of the irrigation and drainage infrastructure has been poorly maintained. An increasing percentage of farm level drainage, often of the vertical drainage type, is out of operation and difficult to reconstruct. This has contributed massively to soil salinization (para 1.10) and low productivity due to water logging of fields. A major maintenance backlog has built up and continuing to defer maintenance could have disastrous affects on the economy and environment. Degradation could reach a point where costly total replacement rather than repair is the only option. The financial resources needed for reconstruction and improvement are enormous; estimates lie in the US\$10-20 billion range¹⁷. Amassing funds of such magnitude is hardly feasible without mobilizing a wide range of funding sources, among which the private user must figure prominently. Only the private sector is large enough and has the creativity to mobilize such resources for efficient on-farm investment and maintenance as well as for cost recovery for the main public infrastructure. Again, changing the incentive system and mobilizing awareness (par. 1.17) are important; also vital are the demonstration of low-cost technologies, organization of private farms into groups around common concerns, and adequate priority setting for maintenance, reconstruction and improvement in the basin States.

Instruments of Interstate Cooperation

1.21 Concerning the instruments of interstate cooperation, a number of key questions, common to other cases of interstate cooperation, arose at independence and some of them still continue to occupy policy makers today. The key questions were: (a) is there a need for new regional institutions; or are regular interstate consultations or existing agencies¹⁸, in their present or a modified manner, sufficient to study, prepare, implement and monitor interstate agreements? (b) what would be the roles of any new interstate organizations, particularly with respect to sector focus and to the delimitation of regional and national responsibilities? (c) is there a need for one or several regional institutions, depending on tasks (narrow vs. Broad, solely regulatory vs. operationally active) and on geographic conditions (the whole basin or for each river)? Once a decision in favor of establishing new interstate institutions is made, other questions arise. Typically these are: (a) who leads them? (b) how are the institutions financed? (c) where should the interstate institutions be located? and (d) how is equality between the large and the smaller states guaranteed and efficiency, as opposed to costly representation and empty debate, achieved?

¹⁵ A detailed calculation of economic costs of irrigation is not available but a rough estimate puts it at the order of US\$500/ha/year. Currently, Uzbekistan spends about US\$85/ha on running its irrigation system. Taking into account the deferred maintenance, sustainable annual spending should probably be three times larger or about US\$250/ha. The annual damages due to salinization are estimated at US\$250/ha.

¹⁶ Some reports speak of over 50 percent.

¹⁷ Rehabilitation and improvement costs of irrigated land are of the order of the US\$2000/ha, but can be as high as US\$4500. Close to half of the irrigated area needs rehabilitation urgently.

¹⁸ At independence the existing institutions of "regional" nature were two river basin management institutions (called BWOs), for the Amu Darya and the Syr Darya. They had been created in 1987. Their task was water distribution among the various CA Soviet Republics and the construction and operation of key water diversion structures.

C. Responding to the Challenges

1.22 Following independence, the Central Asian States responded to the above challenges in water and environmental management with a series of regional and national initiatives. Donors supported these efforts in various ways.

Regional Initiatives

1.23 The Central Asian States (CA) responded quickly to the need for a new legal basis for water allocations. Water Ministers of the newly independent CA States jointly declared on September 12, 1991 that mutual water resources management would be on the basis of equity and joint benefits. An interstate agreement of February 18, 1992 reflected this commitment and established an Interstate Commission for Water Coordination (ICWC). It was made responsible for joint water management on the basis of agreed obligations, which determine annual water allocations for each State and schedules for the operation of reservoirs. The Basin Wide Organizations (BWOs) were maintained and given the task of carrying out ICWC decisions¹⁹. The ICWC meets quarterly or whenever the need arises. Its decisions have to be unanimous and then are immediately binding on all five States.

1.24 A more systematic and structured approach followed by means of the Aral Sea Basin Program, (ASBP, Vol. II Part IV). In preparation since 1992 with the help of UNEP and the World Bank, it was launched in 1994. In a June 1994 meeting in Paris, the five Central Asian States proposed, and the international donor community agreed, to support the ASBP²⁰. The long-term objectives of the ASBP are to: (a) stabilize the environment of the Aral Sea basin; (b) rehabilitate the disaster zone around the Sea; (c) improve the management of the international waters of the Aral Sea Basin; and (d) build the capacity of regional institutions to plan and implement the above programs. The objectives relate very closely to basic problems outlined previously (para 1.6). A sub-objective was to create a specific forum for world and donor attention to the Aral Sea disaster. The ASBP was conceived as a broad program comprising of 8 programs and 19 projects, with a planned preparation phase of 18 months. Via an interim phase of smaller-scale implementation lasting 3 or 4 years it was to develop into a large-scale investment program of many hundred of millions of dollars. In 1993 three new institutions were created: (a) the Interstate Council of the Aral Sea (ICAS) with its office in Tashkent, Uzbekistan, whose task was overall coordination; (b) the International Fund of the Aral Sea, IFAS with its office in Almaty, Kazakhstan, whose task was to receive and manage funds; and (c) the Sustainable Development Commission (SDC) with an office in Ashgabad, Turkmenistan, whose task was to focus on the regional environment issues.

1.25 In coordination with regional and donor representatives, the Bank undertook a review of the ASBP in July 1996. Appreciating its many achievements, it also recommended major changes, such as: (a) stronger leadership by regional institutions as opposed to donor influence in program formulation and implementation; (b) increased political and financial commitment by the Central Asia States towards the regional institutions; (c) clearer priority setting between national and regional tasks and more focus on quickly implementable activities; and (d) clarification of roles of the various institutions, particularly ICAS, IFAS, ICWC, SDC and BWOs. For the Bank, it suggested more concentration on financing of investment projects in support of the ASBP, a gradual reduction of its TA role, and a focus on the speedy preparation of the present project.

1.26 Quick action followed. The five Central Asian Heads of State met in Almaty in February 1997 to discuss the ASBP and made the following major decisions: (a) adoption of the recommendations of the above review as a general guideline for reform of the ASBP; (b) merger of ICAS and IFAS into a new restructured IFAS; (c) rotation of leadership in a two year cycle among the Presidents of the five States (the President of Uzbekistan was to start); and (d) annual financial contributions to the ASBP of 0.3 percent of national budget revenues of the three richer downstream States and of 0.1 percent of the two poorer upstream States²¹. Again rapid action followed. In May 1997 a high-level Uzbek official was appointed Chairman of the Executive Committee (EC) of IFAS. The mandate and status of the new IFAS was rapidly reformulated and adopted. IFAS' relations to the other institutions (paras 1.23

¹⁹ Financing of the BWOs was not clearly addressed.

²⁰ Afghanistan shares a common border with Tajikistan, Uzbekistan and Turkmenistan (approx. 800 km). It had been invited to join but is too weak to even respond to the invitation. About 12.5 percent of the ASBP's water resources originate in the country, yet only a fraction of it is used for irrigation. It contributes between 3-5-km³ water/ year to the Amu-Darya.

²¹ The Heads of State also stressed the need to contain the use of foreign consultants.

and 1.24) were clarified. EC-IFAS was to provide overall coordination. The number of staff of EC-IFAS was increased and its regional base widened. In October 1997 EC-IFAS organized a technical donor meeting in Tashkent and EC-IFAS' involvement in the formulation of the present project accelerated and deepened. EC-IFAS also formulated plans for poverty alleviation in the disaster zone. The Board of EC-IFAS has met three times since May 1997, compared to two times in the period from 1994 to 1996. During the latest Board meeting of March 12, 1998, the States confirmed that the budget commitments for 1998 have been made according to the above decision of the Heads of State. Uzbekistan has committed US\$14 million, Kazakhstan US\$7.6 million, Turkmenistan US\$600,000 and Tajikistan US\$14,000²².

1.27 The achievements of the ASBP, as measured against its own long-term objectives (para 1.24) are substantial²³. Evidently the environment of the Aral Sea Basin is far from stabilizing. However, the preparation phase of the ASBP created a clearer vision of the problems and was instrumental in catalyzing action. It has created an internationally accessible knowledge base. The base comprises of some 20 analytical and many strategic reports (Vol. II Part IV and document list), a regional database on water and land as well as a pool of many hundreds of local experts. Particular advances were made in the fields of water use, agricultural economics, upper water shed protection, and wetlands and delta development. Concrete action on the ground was limited to small-scale demonstrations and laboratory development. Increasing salinization was addressed in a dispersed manner under several programs²⁴. Awareness about transboundary and inter-regional issues of salinity was increased, first attempts to estimate its economic cost were made, and strategies for further work developed. (para 1.10).

1.28 The disaster zone around the Sea is far from rehabilitated, but major strides have been made mainly by the national governments (para 1.32) and also under the ASBP umbrella. As for the latter, the water supply and sanitation projects of the World Bank, activities in water, health and forestry supported by USAID, UNICEF and a series of other donors are all underway. IFAS and the Bank reacted to increasing concerns about delays of concrete action on the ground and mounted an Immediate Impact Project (IIP) with a poverty alleviation focus (Vol. II Part IV). Although small, it helped to build confidence in that the ASBP would also contribute to immediate relief support for the Aral Sea region. Delta development studies lead to large-scale project developments (Kazakhstan: Restoration of the Northern Aral Sea, which is close to implementation) and to strategies of delta and wetlands development including the identification of the wetlands component of the present project. Several planned technical studies related to the Aral Sea itself (fisheries, dust storms, climate change) were, however, not undertaken due to lack of interest from ICAS and corresponding lack of funds and donor involvement. Small-scale business support activities were sponsored by UNDP. The Bank undertook economic strategy studies in 1997 and EC-IFAS reports that it has started to develop models for national-based social transformation funds.

1.29 The management of the international waters of the Aral Sea Basin has not improved in the sense of a major break-through, but many important steps were taken under the ASBP. Most importantly, peace over water was maintained and the ASBP may claim its fair contribution to that. Water quantity and quality problems were addressed by a range of analytical work, on which the present project builds (See Vol. II Part IV with document list: Principal priorities). First attempts were made to formulate national and regional strategies. Priorities emerged, such as concentration on transboundary water, the need for basin-wide water conservation, and the recognition of the Aral Sea as the "sixth state", with a right to water. Three interstate agreements covering institutions, water use and joint planning were drafted. Water storage and control infrastructure issues were addressed relatively late in the program due to funding constraints and problems of bridging the irrigation and energy interest; but a dam safety assessment was started in 1997. Coming from the energy side and under the ICKKU (para 1.5) umbrella, USAID supported work towards agreements on the management of the upper Syr Darya reservoirs²⁵. Water use efficiency

²² The Kyrgyz Republic could not attend the meeting and its contribution will be known later. Its contribution will be in the order of several tens of thousands of US\$.

²³ The fact that Phase I lasted over three years instead of 18 months as planned must be booked mainly on the account of overly optimistic expectations at the start of the ASBP.

²⁴ Those programs include water strategy (Program 1.1), water quality (Program 3), delta development (Program. 4) and water supply (Program. 5).

²⁵ ICKKU is charged with improving economic interstate relations between these three states. By the nature of the close interrelations between irrigation and energy, substantial study work was done under USAID auspices on themes of the ASBP. This causes some irritation to EC-IFAS. A framework agreement on the management of the Syr Darya waters, was

was one of the key concerns of the ASBP's water strategy work. Maintenance and improvement of irrigation and drainage infrastructure was correctly considered a predominantly national task. The ASBP made valuable contributions through project preparation studies such as Uzbekistan Drainage Project.

1.30 Capacity of regional institutions to plan and implement the ASBP was created. There is now a grid of institutions capable of providing basic regional water and environmental management. The core of the grid consists of:

- (a) the reformed IFAS, for overall coordination of interstate and donor relations in the basin, with branches in all states. IFAS has a clear mandate for coordinating all regional water and environment related issues and, as of 1988, enough financial resources for basic self-reliant operation²⁶. EC-IFAS can relate to a vast network of ministries, institutes etc. in the various states. It still has weaknesses in management, sector coverage, outreach to the population, to donors, to the scientific community in universities etc., but EC-IFAS has a fairly consistent, agreed and focused vision about future needs and program objectives (Vol. II Part II), the commitment of the States and the required strong leadership. It is also addressing its weaknesses systematically, through staff training and renewal and increased outreach to the donor community. Capacity building assistance has been agreed recently with UNDP under Dutch funding. The fact of some duplication with ICKKU causes some concern, but is the subject of an ongoing dialogue.
- (b) ICWC is IFAS' tool for solving annual water management issues, preparing the general lines of water development, disseminating information, and exchanging knowledge. ICWC has its own Scientific Information Center (SIC)²⁷, home of the regional data base (para 1.27). It can deliver advice on a wide variety of water management issues. Both are well established. The two BWOs operating the interstate water management infrastructure²⁸ are related to ICWC.
- (c) SDC, an analogue institution to ICWC in the field of environment is still in its very early stages of development.

National Initiatives

1.31 As in all interstate efforts, success depends on what happens on the ground and on what the states actually do on their territory. Regional action is mainly a question of coordination, stimulation and support for national action. It is handicapped without the full support in the form of related national policies, legislation and bureaucratic or other action. Below, is a brief review of the status of national initiatives with respect to ASBP objectives and action.

1.32 As for the objective of stabilizing the environment of the Aral Sea Basin, each basin State has its own environment policy in one form or another and its own institutions such as specific Ministries or State Committees on environment. All national policies have the protection of water and the provision of clean drinking water invariably at the top of the agenda. Clean air and the protection of biodiversity follow directly on the priority list. All national environmental services have to struggle with severe budget constraints and difficulties of implementation and enforcement. There are also major differences in advancement and priority setting between States. Regarding policy formulation, the Kyrgyz Republic has prepared a National Environmental Action Plan (NEAP); Uzbekistan is about to finish its own and Kazakhstan is starting. Upper watershed countries usually place more emphasis on erosion control, protection from mining pollutants, glacier protection and biodiversity protection in their mountain refuge areas. The lower riparian countries stress water and soil salinization, water pollution from the upstream countries (from industry and communes) and biodiversity in wetlands. Salinization is usually dealt with as an issue for localized curative action on symptoms, such as linking consumers of drinking water to cleaner sources of water and to purification plants, improving drainage in specific areas etc. The economic and

signed between Kazakhstan, the Kyrgyz Republic and Uzbekistan was signed on March 17, 1998. It establishes basic rules of compensation for water uses between irrigation and energy mechanisms; its details have yet to be worked out.

²⁶ EC-IFAS has a staff of 41; its operational budget is about US\$180,000/year (1998); staff costs represent about 85 percent of its budget.

²⁷ SIC reportedly has a staff of 40 and an annual budget of US\$200,000.

²⁸ Established under soviet times, the two BWOs suffered, since independence, from uncertainty and limitations as to their financing.

environmental potential of joint regional action in water conservation is not yet fully appreciated. The institutional and intellectual links between national services and the ASBP are multiple²⁹.

1.33 Rehabilitation of the disaster zone around the Sea has been a major burden for Kazakstan, Uzbekistan and Turkmenistan (even if the latter does not have a direct share in the seashore). These States had spent large amounts on socio-economic and environmental stabilization; around US\$650 million per year, according to EC-IFAS. Compared to this amount, the assistance provided by donors, at national and regional levels is small. Measures range from substantive investment in social and economic infrastructure (gas, water supply, irrigation and drainage, housing, health, education, industry, etc.), specific social safety nets (employment schemes, special assistance to the poor), subsidies to industrial and agricultural units for environmental action (artificial lakes, wetlands, and afforestation) and for incentive schemes for economic activity (salary level incentives, tax breaks, development funds, etc.). EC-IFAS has contributed, in the past, through involvement in the Immediate Impact Project (IIP). Currently it is helping through coordination and demonstration of common approaches on the socio-economic side (para 1.28) and through active intervention on the water and environment side such as in the proposed project.

1.34 On water management, the States are also the key players. They have their own national water laws. The ministries and agencies in charge of irrigation and drainage are usually among the larger funded and staffed national bureaucracies, even in the upstream countries³⁰. The operation, maintenance and development of infrastructure for water storage, water control, irrigation and drinking water constitute huge costs to the budgets. The accumulated backlog in deferred maintenance has reached daunting proportions (para 1.19). It is not surprising therefore, that steeply rising pressure for reform with devolution of costs to the emerging private sector and for comprehensive policies, strategies and action in water management originates in the macro and finance bureaucracies of the States. Rising costs have induced the states to promote water use efficiency and, basin-wide, a reduction of 5% has been achieved in the last five years. Economic reform has started all over Central Asia, particularly in Kazakstan and the Kyrgyz Republic. In these countries, privatization moves in agriculture are forcing fundamentally new relations between the State and the water users. The users are left to maintain, and manage themselves, the tertiary irrigation and drainage network of the farms (state and collective) and to contribute directly to the cost of operation and maintenance of the secondary grid, through water charges. Out of necessity, the users have to reorganize themselves in new ways. Similar developments are taking place in the drinking water supply all over Central Asia. The reform also was accompanied by efficiency driven mergers of agencies in agriculture and irrigation, in irrigation and hydropower and in town and rural water supply etc. The incentives system has started to promote change in the right direction and this augurs well for the future. Exchanges between national and regional action on water management have been intense over the past years and are strengthening. Work on regional strategies under the ASBP has influenced national policies and vice versa, with the increasing recognition that interstate aspects, such as water availability and reservoir management often need to be resolved prior to project implementation.

Donor Support

1.35 The Aral Sea basin issues previously attracted substantial donor interest at regional and national level and continue to do so. Donor support to the ASBP at regional level amounted to some US\$32 million in the past; approximately 20 donor agencies had pledged funds at the 1994 Paris conference. To date, about 10 grant and TA donors have financed Aral Sea projects in close or loose connection with the ASBP institutions. The largest grant donors were, according to donor records³¹; (a) USAID with about US\$7 million (the largest items being water supply, energy and water management policy including reservoir operation issues and health; (b) the Netherlands US\$6 million (for water quality assessment and environmental impact; preparation of wetland restoration measures, capacity building, including preparation support to this project; contributions to UNDP and UNICEF's ASPERA program; most recently they have agreed to finance UNDP support to SDC and EC-IFAS capacity building); (c) EU/TACIS US\$7 million (WARMAP project focusing on the preparation of interstate water agreement, the regional

²⁹ The environment ministries are in the working groups preparing IFAS decisions and have thus a chance of linking national and regional concerns. Also, the ongoing measures to reinforce SDC (Vol. II, Part IV) are likely to yield substantial benefits regional collaboration on environment issues.

For example: Uzbekistan irrigation sector's budget for 1997 was about US\$340 million (24 billion Uzbek sums) or about 13 percent of total budget. The number of employees in the sector is about 180,000. In the Kyrgyz Republic the comparable figures are US\$20 million (218 million sums) or 4 percent of budget and 5,400 employees.

³¹ The EC-IFAS account is different as it only takes into consideration support measures coordinated by it or its predecessors.

water and land management database, pilot projects and monitoring of on-farm water management issues); (d) the World Bank about US\$5.5 million in the form of Special Grants for ASBP institution building and the IIP and TA support from its budget in the preparation phase of the ASBP; (e) UNDP US\$2 million; and (f) a series of other donors with assistance totaling in the order of US\$6 million (Canada, Finland, Switzerland, UK, Italy, Denmark, Sweden, Japanese PHRD funds and the Kuwait Fund).

1.36 **GEF Support to Regional Initiatives.** GEF assistance with the Aral Sea Basin Program began in 1994 with a Project Preparatory Assistance grant of US\$500,000; it served for the initial work on a regional water strategy (para 1.29). The five States formally requested GEF assistance for the Aral Sea Basin Program in April 1996 and the present project with a total costs of US\$21.2 and a GEF contribution of US\$12 million is likely to constitute the single most important operation at the regional level for the coming 4 -5 years²².

1.37 Information about nature and volume of donor support to the national level is not readily available. It is important, however, to have a perception of the present and planned volume and direction of the larger aid streams of the larger institutional lenders²³, as one of the ultimate objectives of the ASBP is being able to catalyze large-scale investment for its concerns. The information available suggests that the World Bank is, for the moment, the largest institutional investor addressing ASBP concerns directly with a volume of US\$182 million in signed commitments for drinking water and sanitation projects in the Aral Sea disaster zone and for irrigation and drainage projects in Kazakhstan. At the national level, the Bank has made or is planning through FY00, 16 loans and credits for \$ 605 million in support of improved land and water management (Volume II, Part IV)[to be checked/. The Bank also has a number of operations which have an indirect bearing on Aral Sea concerns. These includes nine policy-based operations for sector reforms, two projects for land registration, eight for support services, and several projects for cotton production and sheep husbandry development. The Bank is currently in the process of formulating, together with the individual States, its country specific assistance strategies for the coming years, and Aral Sea concerns are being systematically raised in the strategy discussions. It is expected that the ASBP institutions will make themselves heard or participate in future strategy discussions at the level of their respective governments. Other institutional lenders have started to join. The Kuwait fund and the KfW are engaged with some US\$40 million in parallel financing of the World Bank's water supply project in Uzbekistan. The Asian Development Bank (ADB) has taken up lending for the irrigation sector in Kazakhstan and the Kyrgyz Republic and is about to review its options in the Uzbek agriculture sector in detail. The Japanese OECF is also planning to enter the irrigation and water supply sectors and has created a new environment fund instrument.

D. The Challenges Ahead

General

1.38 The ASBP is facing major challenges ahead. However, the conditions for success have improved when compared to the situation at the start of the Program in 1994. On the macro-economic side, the Central Asian States, perhaps with the exception of Tajikistan, are over the worst period of the economic transition and current trends are encouraging. The GDP decline has stopped and all States are credibly projecting moderately positive growth rates. However, transition is far from complete; it may take one or two decades to finish it. To accelerate the process, substantial investments and transfer of technology from the outside will be required. Looking ahead for the coming three to four years we can anticipate the following: peace will be generally prevail as all parties are aware that without it prosperity would be impossible. Regional cooperation in all spheres will, most probably, receive higher priority as post-independence preoccupation with nation building recedes and the importance of cooperation for growth is better understood. The large water consuming countries, Uzbekistan and Turkmenistan will most likely also start basic reforms in agriculture, while the early reformers, such as Kazakhstan and the Kyrgyz Republic, will start reaping reform benefits of higher sector growth rates. On the budget side, it would be unrealistic to assume that the yet timid growth will lead to major relief. On the contrary, State budgets will remain extremely tight

²² GEF is also involved in other operations in CA: the Central Asia Biodiversity project with a total cost of US\$14 million and a GEF contribution of US\$10 million. It is planned to start in the second half of 1998.

²³ Institutional lenders, such as the World Bank, the European Investment and Development Banks, the Asian Development Bank, the Japanese OECF, the German KfW, the Kuwait fund, the Arab Development Fund, the International Fund for Agricultural Development etc. It will be one of the tasks of IFAS in the future to closely monitor investments.

throughout the coming years, particularly in the poorer countries such as the Kyrgyz Republic and Tajikistan. The demands on the budgets from the social side (employment, social security, health, education etc.) will be extremely heavy. The directly productive sectors will have to fend largely for themselves for investment and maintenance, most likely within a much less distorted price environment. Institutional change will accompany reforms and there will be a fair amount of stress through uncertainties over work relationships and budgets in the public sector and over the nature of relationships between the public and the private sectors.

1.39 On the level of regional water and environment the "worst is over" also applies but the challenges ahead are formidable. The general policy and macro-environment can be expected to be in many ways more favorable than in the past. The deepening reform process, particularly in agriculture, will improve the incentives system and help on many core themes such as water use efficiency and salinization. The trends towards regional cooperation will improve the general climate for the ASBP institutions. On the other hand, the pressure from the financial side will be serious as national governments clean out their budgets and look for savings; regional expenditures will be natural targets for cost cutting. Donor funding for the regional activities will also be tough to realize. The Aral Sea phenomena has lost its initial 'glamour' as 'the unknown crisis' and faces increasing competition for grant funds from other emergencies around the world. Overriding factors affecting funding are general budget cuts in the donor countries and rising donor fatigue.

1.40 The EC-IFAS will face a host of major challenges and meeting them will not be easy. They will have to continue to prove their usefulness and efficiency to their sponsors, primarily the national governments but also the donors. The national governments will measure usefulness and efficiency in several ways, such as through EC-IFAS: (a) active contribution to keeping peace over water in the region; (b) its role as innovative and politically smooth leader for practical solutions to water and environment problems; (c) contribution to their policy and strategy formulation agenda in water and salinity management; (d) assistance in mobilizing donor funds for their national concerns; (e) effective mediation and impartiality in conflict resolution; (f) non-interference in national affairs; (g) visible shares in donor funds provided to the regional level; (h) capacity to balance action on the ground and action of the coordination and strategy type; and (i) last but not least, institutional culture compatible with their budget constraints and their standards in the use of scarce funds, particularly for staff remuneration and facilities. The donors will most likely apply similar criteria for judgment. Additionally, they will most likely stress: (a) the States living up to the promises of increased commitment and financial contributions to the ASBP; (b) EC-IFAS presenting objectives, programs and projects which meet high standards of analysis and presentation; (c) outreach to the private sector and NGOs; (d) transparency and rigor in financial and other management issues; and (e) flexibility and understanding of constraints imposed by their parliaments and/or administrations. A change to a rotating IFAS presidency (para 1.25) will also constitute a major institutional challenge. Whether the change will effectively occur in 1999 is not known yet. It could entail a major internal change for IFAS, if not handled with care (para 2.47).

Strategic Action Program

1.41 Efforts for addressing major interstate issues, such as water and environmental management under the ASBP, are always long-term. They typically consist of rolling programs with phases of three to five years duration. At intervals coinciding with the beginning of new phases, the position is assessed and objectives are reviewed as to their validity. Then, if necessary, revisions are made, and future actions are delimited and cut into phases and steps. The result of such exercises are laid down in Strategic Action Programs (SAPs) for the use of all concerned, regional institutions, national states and other financiers. Feasibility and detail of such plans decrease necessarily with the increasing distance of the time horizon.

1.42 The ASBP has completed its three-year preparation phase and is embarking on a new phase of approximately four years duration. It has gone through the above basic review process (para 1.24). The process started with the Bank's review of 1996, continued with months of follow-up internal reviews and culminated in the Heads of States decisions of Almaty in early 1997. The review concluded in essence, even if not stated in that form, that the four original program objectives (para 1.24) are still valid, that the program had to balance its work better between study and action on the ground, to become more self-reliant and focused, to prepare a SAP along the general lines prescribed by them, and to put the program into action without delay.

1.43 The results of the preparation phase have been summarized in a Transboundary Diagnostic Analysis (TDA)(Table 7), which has formed the basis for a draft SAP, prepared by EC-IFAS (Vol. II Part II). A final version

of the SAP, satisfactory to the Bank, would be approved by the IFAS Board as a condition of grant effectiveness. The main lines of the draft SAP are as follows: on the level of policies and overall objectives it accepts the four objectives of the ASBP as stated at its beginning. As we have seen in the preceding review of major problems and the history, this seems perfectly appropriate. As to strategy, the SAP divides time into the short, medium and long-term, defined as the periods from 1998/1999 through 2001/2, from 2002 through 2010, and from 2011 through 2040. It does not specify strategies and actions for the last two periods; this is understandable given that it had to be prepared under time pressure by the new EC-IFAS.

1.44 For the short term, four overarching program directions are stated as follows:

- (a) sharp focus of program and action on measures which have high priority, are technically, financially and managerially feasible and in which the regional level has a comparative advantage and meets the keen interest of the States;
- (b) push for results in the sense of visible action on the ground and of effective advances on the policy, strategy and action program side;
- (c) development of common national and regional policies, strategies and action programs for water and environmental management which would allow improved agreements between the States, and regionally cohesive national water and environment policies, strategies and action as well as investment programs at national level, which facilitate the introduction of market mechanisms, such as water charges, to ensure the rational allocation of resources; and
- (d) outreach to the general public, explaining the Aral Sea Basin issues and preparing the psycho-social preconditions for action. Outreach would be in a variety of forms such as public information campaigns, participation of users and suppliers of water and of NGOs in the design and implementation of programs etc. Outreach would also engage the outside world through focused contacts with the press, as well as the intellectual and the aid communities.

1.45 The four directives are then applied to the three thematic objectives of the ASBP. Applied to the objective of stabilizing the environment of the Aral Sea Basin the consequence is:

- (a) focus on the core issue of salinization, placing water pollution by chemicals from agriculture and industry in second rank. Concentration would be on water conservation with a preliminary target of savings of 15 percent over the 1998 level. Key leverage points would be improvements: (i) in public awareness about the causes of the ASBP problems and a change in behavior of the water users towards water conservation; (ii) the installation of basic and trustworthy capacity to monitor water flow and quality between States; (iii) improvements in water sharing between States with a view towards the environment; and (iv) the better understanding of leverage points for salinity control;
- (b) visible results will be: (i) the above reduction in water use; (ii) field-tested low-cost solutions for salinity control; (iii) the monitoring installations; (iv) respective proposals for regional and national policies and strategies; (v) better interstate agreements on water sharing and quality; (vi) increased investment in the water sector; and (vii) lower salinity levels in rivers; and
- (c) good presentations of the above in an appropriately modified manner would feature in investment action proposals for States and donors.

1.46 Application of the directives to the objective of rehabilitating the disaster zone results in:

- (a) focus on (i) correcting the blurred and politically dangerous vision about the possibilities of restoring the Aral Sea; (ii) assistance to national governments through mobilizing donor funds for the implementation of projects started or prepared during the preparation phase and their expansion; for example, wetlands development, re-forestation, special economic strategies etc.; (iii) elaboration of project proposals for activities such as, but not limited to, social transformation funds; and (iv) mobilizing funding through outreach action;
- (b) visible results would be mainly: (i) the implementation of the wetlands restoration project under the project (para 2.18); (ii) the design and start of other wetlands projects; with proven results in

biodiversity conservation and better and sustained incomes of the population; (iii) better project proposals; (iv) increased and more efficient investment by donors in the disaster zone; and

- (c) again, good presentation of the above in an appropriately modified manner would serve as investment proposals for States and donors.

1.47 Application of the directives to the objectives of regional water management results in:

- (a) focus on: (i) improved interstate agreements on such paramount issues as reduction of water use with a view of reducing soil, ground water and river salinization (para 1.10), increasing the volume and quality of water for environmental uses, such as instream use and restoring the environment of the river deltas; improving the seasonal management of water resources and cost sharing of infrastructure; and improving water quality in the rivers, with reduced salinity the key indicator; and (ii) eliminating constraints for investment through measures such as completion of dam safety assessments (para 1.18) and initiating corrective action on dam safety (para 2.14) as well as preparation of national policies, plans and action program plans for investment in the water sector, in general, and for maintenance and improvement of irrigation, drainage and storage infrastructure, in particular (para 2.7);
- (b) Visible results would be: for (i) agreements or agreed documents with feasible scenarios for decision making by the governments/parliaments; and for (ii) the dam assessment reports as well as the start of corrective action and strategic plans for the whole region based on and broken down into national plans; and increased investment itself;

- (c) and (d) would be in analogy to the same in paras 1.45 and 1.46 above.

1.48 The SAP does not apply the directives to the institutional objectives of the ASBP, nor does it present a complete picture of all the ASBP measures and financing. It focuses rather on the immediate environment of the ASBP objectives of stabilizing the environment of the Aral Sea Basin, of improving transboundary water management and of the present GEF supported project. This reflects the reality that the level of formal programming of the whole ASBP is still relatively modest. This can be explained by the fact that the new EC-IFAS is still settling in and must be rather economical in using its, mostly new, manpower resources. EC-IFAS manpower in reporting and planning is particularly weak; the UNDP capacity building project, which would address the issue, is just getting underway. EC-IFAS focused its human resources on the immediate priority needs, which in this case is to get the Water and Environmental Management Project agreed and started.

1.49 As for the finances, the SAP only focuses on the GEF project framework and not on the whole of the ASBP. On one hand this is due to the above limited formulation of the whole ASBP, on the other it reflects financial reality. The fact is that the States have earmarked funds for the ASBP in their 1998 national budgets in a global manner (para 1.26), but they reserve themselves the right to decide on the exact use of the funds. In their minds, the funds are essentially earmarked for national concerns related to the ASBP such as the rehabilitation of their respective disaster zones. A transfer to the regional level is only intended for the operational needs of the regional institutions and on a case by case basis, for specific measures, such as the GEF project.

E. Project Origins, Formulation and Status of Preparation

1.50 This proposed project dates back to the beginning of the ASBP and the GEF preparatory assistance grant of \$500,000 (para 1.36) in 1994. Preparation, planned to be finished by the end of 1995, was delayed along with the preparation phase of the ASBP (para 1.24) but resulted in a set of reports laying out the main issues in water quantity and quality management and a work program for their resolution (Volume II, Part IV).. Things accelerated in 1997. In March 1997 the GEF Board approved a grant of US\$12 million for the project. This occurred more or less simultaneously to the establishment of the new EC-IFAS (para 1.26). It took some time before both parties were synchronized. ASBP responsibility within the Bank was transferred to Tashkent in mid-1997 allowing a more intimate interaction between the Bank and the new EC-IFAS. In October 1997, components and content were prioritized on a principle level. In December 1997, an EC-IFAS mission to Washington, Amsterdam and Brussels deepened project content and donor support. Since then, both sides have been working together on a daily basis to prepare the documentation, while solving many detail issues. The present report is a Bank report; its contents have been reviewed by and agreed with the client in substance.

1.51 Consideration of Alternatives³⁴. Many alternatives were discussed and choices had to be made. However, there was a solid common base for discussion with two pillars. The first pillar was staying within the four objectives of the ASBP (para 1.24) and applying the four main directives of the SAP (para 1.44). The second pillar was staying within the framework of what GEF funds could support, meaning strong focus on sustainability, regional water management and biodiversity conservation.

1.52 Most of the discussion on alternatives focused on eight areas as follows.

- (a) **National versus regional activities.** Success of the project depends on strong ownership by national states (paras 1.26 and 2.38). Four instruments were used to achieve such ownership: (a) founding regional strategic work, such as under component A, on inputs from the national level; (b) devoting a substantial share of project funds to ground level action (by nature on national territories); (c) instituting responsibility as well as control of certain project elements by national governments rather than by the regional EC-IFAS; and (d) whenever technically possible, providing equal finance shares for the five States.
- (b) **Ground level action versus strategic or preparatory work.** The question was, what to do with the limited amount of project funds in face of such a huge need for ground action (paras 1.20 and 1.33) and the request of the Heads of States for a short-term balance between ground action and strategic and preparatory work. It was obvious that the scarce GEF project funds would be best used for leveraging increased investment by the public sector, the private sector and the donors. A fifty-fifty balance in allocation of project funds emerged finally. Key ground level action elements are: Component D, (Transboundary Water Monitoring, para 2.15), Component E (Wetland Restoration, para 2.18), substantive parts of Component C (Dam Safety; para 2.14) and component A2 (Participation in Water Conservation; para 2.10). Key study and preparatory elements are contained in component A.1 (para 2.7) and component F (Project Management Support, para 2.19).
- (c) **Water management and biodiversity versus poverty alleviation.** After the Almaty Conference, (para 1.26) and the strong message from the five heads of State to contribute to short-term poverty alleviation, EC-IFAS sought, during 1997, to insert poverty alleviation elements into the project. The discussion ended with short-term poverty objectives being addressed under the wetlands biodiversity element of the project (para 2.18) and EC-IFAS using instruments other than the project funded by sustainability focused GEF funds to address its short-term poverty alleviation objective. Both sides were in accord that the sustainability focus of the project would ultimately translate itself into poverty alleviation.
- (d) **Water versus salinity.** The fact that salinization is the core sustainability issue was accepted by all. However, in-depth discussion was required to sort out questions about the adequacy of the present knowledge base for formulating a consistent water cum salinity strategy. Considering the large funds already spent on analytical work during the preparation phase of the ASBP, there was doubt about the need to allocate substantive project funds for further analytical studies on salinity issues. A compromise was arrived at in Component A1; this is a manifestation of the realization that water issues cannot be divorced from salinity issues (para 1.12).
- (e) **Location of action for biodiversity conservation.** It was clear that the project would have to focus on wetlands in or near the deltas. However, a choice had to be made between the Syr-Darya and the Amu-Darya deltas. Since a larger project was under preparation for the Syr Darya delta in Kazakhstan³⁵, it was

³⁴ To understand the discussion of alternatives it is advisable to read the project description (para 2.5 and following). The project has six components as follows: Water and Salt Management (prepares for the ASBP the integrated policy, strategy and action program base); Public Awareness (sensitize the general public to conserve water and to accept burdensome political decisions); Dam and Reservoir Management (completes the independent dam safety assessment, improves dam safety, addresses sedimentation and prepares investment plans); Transboundary Water Monitoring (creates the basic physical capacity to monitor transboundary water flows and quality); Wetlands Restoration (rehabilitates a wetland area near the Amu Darya delta and contributes to global biodiversity conservation and an increase in local incomes); and Project Management Support (enables EC-IFAS to implement the project).

³⁵ The Northern Aral Sea Project.

decided to concentrate effort and scarce project funds on the Amu Darya Delta, which had great biodiversity potential but no funding for a large project in the immediate pipeline (Para 1.28).

- (f) Foreign consultant costs. Notwithstanding the need for foreign expertise, its cost had to be contained (para 2.38). Long and precise discussion on each foreign consultant position was necessary to arrive at a rational use of funds. The share of funds for foreign consultants is, with some 25-30 percent of total project costs, still considerable.
- (g) Pilot projects versus public participation in water conservation. Initially, pilot projects were considered essential to demonstrate and support acceptance of strategies developed under the project. Moreover, they had the attraction of constituting visible ground action at the national level. However, they were conceptually difficult, of doubtful sustainability and their ground level effects were limited to a small area. Out of this dilemma grew the concept of a public awareness campaign based on real life success stories under component B³⁶.
- (h) Technology choices. On these, the major decisions needed to be made in component D and Component E. For Component D, Transboundary Water Monitoring, the choice was between scientific instruments independent from grid electricity but limited in analysis / recording capacity and more modern electronic logging systems and equipment with greater capacity. The more modern, battery driven equipment was chosen, taking into account the local maintenance capacity. For Component E, the choice was between constructing infrastructure with the technology chosen by the contractor or imposing restrictions in favor of the local population. It was decided that the selection of the contractors will favor firms demonstrating high use of local resources, manpower and others.

1.53 Status of Project Preparation. The project is fully prepared (see Vol. II). Preparation was a collaborative effort between the Bank and the EC-IFAS team, with both sides having to make compromises. As the project evolved, the Chairman of EC-IFAS cleared principal features, such as components and sub-components as well as project management and financing, with the president and members of the IFAS Board. A decision meeting, held on March 30, 1998 and chaired by the Director of the responsible Country Department of the Bank's Europe and Central Asia Region, cleared appraisal and negotiations in the field.

1.54 Draft final terms of references are available for all major consultant assignments, such as under components A1, A2, B, D and E; they represent a value of US\$11 million or 97 percent of all pure consultant expenditure or 52 percent of total project costs. Outline descriptions of all major equipment procurement such as under Components C, D and E figure in the component descriptions and the cost-tables. They cover a value of US\$3.85 million or 93 percent of all equipment procured under the project or 18 percent of total project costs. For civil works, under components E, D and C, representing US\$3.43 million or 17 percent of total project costs, the basic parameters have been established; detailed design will precede implementation. A Draft SAP of the ASBP and a detailed Project Implementation Plan (PIP) are also available.

³⁶ The debate should not be misunderstood as a global condemnation of the pilot project concept. It can be an extremely powerful tool for testing concrete technical and managerial approaches on a small scale such as under the wetland component of the project.

**ARAL SEA BASIN PROGRAM
WATER AND ENVIRONMENTAL MANAGEMENT PROJECT**

II. THE PROJECT

A. Project Objectives

2.1 The objective of the project is to address the root causes of the overuse and degradation of the international waters of the Aral Sea Basin by assisting the Central Asian States in implementing the Strategic Action Program. After the ASBP's analytical and preparatory phase, this next phase is to stimulate and achieve substantive and concrete progress towards the four objectives of the ASBP of: (a) stabilizing the environment; (b) rehabilitating the disaster zone around the Sea; (c) improving the management of the international waters; and (d) building the capacity of the regional institutions (para 1.23).

2.2 In line with the mandate of the main funding source of the project, the GEF, the project focuses on the core ASBP objectives of (a) stabilizing the environment and (c) improving the management of the international waters. The project constitutes in itself the core of the ASBP's program of action in these two areas. The project will also contribute to the two other ASBP objectives. In substance and focus, these will, however, be pursued by EC-IFAS with other instruments such as assistance to national governments in the rehabilitation of the disaster zone (para 1.45) and capacity building with the help of UNDP (para 1.47 and Vol. II Part IV) and others.

2.3 The objective of the ASBP in environmental stabilization and management of international waters for the next four and a half years are those stated in paras 1.45 and 1.47 above and are in essence twofold: (a) to start effectively to reduce water consumption in the productive sectors, mainly in irrigation, in favor of increased sustainability; IFAS is expected to set itself a target of at least a 15 percent reduction of water use by the end of the next phase; and (b) to pave the way for increased investment in the water sector by the public and private sectors as well as donors; plans are still too vague for quantitative target setting.

2.4 To achieve the objective, the ASBP intends to create a common policy, strategy and action program base and framework for political decision making, including adequate interstate agreements on water and environmental management, and to implement a number of measures supporting such decision making and facilitating investments.

B. Project Description

2.5 The project constitutes the main tool of the ASBP and EC-IFAS to create the above common policy, strategy and action program base. It is packaged into one lead and five support components as follows³⁷:

- (a) **Water and Salt Management**; it will prepare for the ASBP the integrated policy, strategy and action program base;
- (b) **Public Awareness**; it will sensitize the general public to conserve water and to accept burdensome political decisions;
- (c) **Dam and Reservoir Management**; it will complete the independent dam safety assessment, improve dam safety, address sedimentation and prepare investment plans;
- (d) **Transboundary Water Monitoring**; it will create the basic physical capacity to monitor transboundary water flows and quality;
- (e) **Wetlands Restoration**; it will rehabilitate a wetland area near the Amu Darya delta and contribute to global biodiversity conservation and an increase in local incomes;

³⁷ Detailed descriptions of the components appear in Vol. II Part I.

(f) Project Management Support; it will enable EC-IFAS to implement the project.

2.6 Water and Salt Management (Component A) (US\$6.3 million or 30 percent of total cost) is the lead component. The other components will support it one way or another. Component A is the main vehicle for implementing the SAP (para. 1.43), through two sub-components: A.1-National and Regional Water and Salt Management (US\$5.3 million) and A.2-Participation in Water Conservation. (US\$1.0 million).

2.7 Sub-component A1-National and Regional Water and Salt Management will prepare, over a period of four years, the framework for interstate agreements for improved regional water and salt management (paras 1.17, 1.47 and 2.8'). The sub-component will prepare:

- (a) for the regional level, the decision scenarios which would satisfy the various demands on water including those from the environment. These scenarios would enable political decision-makers to reach agreements for improved water and salt management. Such agreements would become possible during the project period, if the political level would follow.
- (b) for the national level, water and salinity policies, strategies and action plans which would remove constraints and provide guidance for investment.

2.8 Crucial features of the sub-component are:

- (a) harmonization of national and common regional interests, with emphasis on national commitments (para 1.30). Work at the national level will have to follow a core common framework that can be aggregated to the regional level. An iterative process of national and regional analysis and proposals, of reviews and decision-making is expected to lead towards an integrated set of compatible national and regional policies, strategies and action programs. The resulting country commitments would be included in an Updated Strategic Action Program for water and salt management in the basin that might extend 5 to 10 years;
- (b) improvement of the knowledge base on salinity to a level sufficient for well-founded choices on integrated water and salt management. This will, in essence, consist of a technical and economic analysis of data on land, river and groundwater salinity for the whole basin and its natural and administrative zones (para 1.13);
- (c) emphasis on water conservation (para 1.12), with a target of reducing withdrawals of water for irrigation by 15% over the project period, thus reducing salinity and releasing the water saved for improving instream environmental uses and the quality of the river deltas and making feasible proposed new interstate water sharing agreements (para 2.8');;
- (d) participation of water users and suppliers in the formulation of regional and national proposals; and regular regional and national review and decision-making steps at crucial junctures; this will ensure the gradual build up of consensus and of the capability to reach relevant interstate agreements.

2.8' Interstate Agreements. The need to avoid conflict over water through strengthened interstate agreements was noted as a key objective of the ASBP in para 1.17. Work is currently underway in two areas: a revised interstate water sharing agreement, which would increase the share of water for environmental uses and provide a mechanism for dispute resolution (funded by EU-TACIS) is progressing towards final negotiation; and, work on the principles of operation of Toktagul reservoir (including cash compensation and dispute resolution mechanisms), for which a framework agreement was signed on March 17, 1998 by the Kyrgyz Republic, Kazakhstan and Uzbekistan, following support from USAID. It is expected that the Updated SAP (para 2.8(a)) will provide the basis for further agreements, especially in the water quality area. As support from the EU and USAID is expected to continue, development of interstate agreements has not been included as a project component.

2.9 The sub-component will finance, under one consultant umbrella, a team of foreign and local consultants operating on the regional level (US\$3.9 million) and five national teams (US\$1.4 million in five equal shares). The regional team will concentrate, in collaboration with the national teams, on methodology, modeling, overall planning as well as basic salinity specific work, and prepare regional reports as well as the final integrated reports; it

will provide overall guidance and render technical assistance to the national consultant teams. The national teams would have a strong link to the national authorities. This sub-component has been prepared in great detail.

2.10 Sub-component A.2-Participation in Water Conservation (US\$1.0 million) will be implemented during 1999 through 2002. Its objective is to incite waters users and providers to participate in the generation and implementation of ideas for low-cost water conservation measures and their practical application at a pilot level. Conceived as a grassroots participation in water saving instead of state-led pilot operations (para 1.52, g), the results will be monitored and fed back into the regional and national strategy work under A1; thus it will help improve the realism of recommendations made under A1 and their acceptance by policy makers. Additional co-finance is being sought to expand pilot effort in on-farm water conservation.

2.11 Crucial features of the sub-component are:

- (a) launching a scheme of a limited number of small competitive awards for demonstrated substantial reductions in water use without a decline in production; it would be operated in each State over a period of three and a half years. The awards will go to selected water users, such as small individual farms as well and as larger farm groups, and to district level water supply agencies. Selection will be in two steps, pre-selection and final selection. In the pre-selection stage participants will be screened for originality and feasibility of proposals. In the final selection stage a limited number of participants will be monitored and the winners selected. The cash awards are designed to compensate for a small part of the costs incurred by the participants in achieving water savings. The awards themselves are estimated to cost less than US\$36,000 per year/ state or US\$540,000 for all states over the whole project period. Awards will be in the order of US\$500 for individual farms and US\$5000 for large farm groups and water supply agencies;
- (b) monitoring of various performance indicators of each water saving initiative and feedback to national and regional services as well as to sub-component A1. A regional consultant firm would provide monitoring and analysis. The regional and national teams under A1 would pick up lessons learned, in particular field proven low cost water saving measures;
- (c) transparency in award allocation through national panels comprising one representatives each from Government, Universities, NGOs and donors.

2.12 Public Awareness (Component B) (US\$3.1 million or 15 percent of total cost). This component would consist of a public awareness campaign to: (a) sensitize the general public, the irrigation water users and providers in particular, to the key issues and strategies of the ASBP and to the need to save water and to act in common (paras 1.23 and 1.45); this would also stimulate and facilitate respective political action; and (b) incite behavioral change among water users, which would lead to a reduction in water consumption in the order of 5-10 percent at the end of the campaign in 2002.

2.13 Key features of the component are:

- (a) the public awareness campaign will cover the five CA States, but adapt content and instruments to the particular conditions in each State;
- (b) it will be developed and lead by a specialized consultant firm selected under competitive conditions;
- (c) development of an appropriate communication strategy will be crucial. It will follow the classical steps of adequate up-front thematic research, target group identification and selection of appropriate communication instruments. Up to 20 percent of the available funds will be devoted to the detail design stage once the firm has been selected;
- (d) campaign messages would rely on real live examples of water saving chosen from existing cases; if available in time and found suitable by the consultant, examples initiated under the A2 sub-component could be drawn-upon;
- (e) monitoring from a baseline will ensure corrective action during implementation and measurement of behavioral change and impact on water conservation; and

- (f) advisory committees with representatives from the water and communication sectors in the States and from the communication profession will assist EC-IFAS in the selection of consultants and the communication strategy and the clearance of messages. This is to insure commitment of the States and address concerns over the political implications of the campaign.

2.14 Dam and Reservoir Management (Component C) (US\$2.6 million or 12 percent of total cost); complementing parallel work on reservoir operations, funded by USAID (para 2.6), this activity will provide key inputs to ensure the sustainability of interstate water management infrastructure and remove major impediments for investment in improved interstate water management (paras 1.18 and 1.47) and feed into the national and regional proposals under component A. This component will fund:

- (a) the continuation of the already started safety assessment of dams in the region by independent foreign and local experts (US\$80,000);
- (b) the upgrading of monitoring and warning systems at selected dam sites on a pilot basis, with a total of nine dams³⁸, including training in latest developments in risk management and safety monitoring. The cost of this is estimated at US\$1.55 Million, with US\$1.1 Million for equipment and the rest for training, preparation of emergency preparedness plans, and installation as well as operation of equipment;
- (c) the preparation of detailed design studies for priority dam rehabilitation measures (including cost-effective means to reduce sedimentation) in each State at a cost of US\$790,000; and
- (d) the gathering of priority data and preparation of a program for the Sarez Lake dam in Tajikistan at a cost of US\$130,000.

2.15 Transboundary Water Monitoring (Component D) (US\$3.5 million or 16 percent of total cost). This component will create a basic capacity to monitor transboundary water flows and quality. Without the establishment of such a capacity, management of regional water flows is very difficult and management of water quality impossible (para 1.17 and 1.47). Actions taken under this component are thus a precondition for effective agreements on regional water management, which Component A will help prepare.

2.16 The component will fund:

- (a) purchase and installation of water flow and quality monitoring equipment in 25 crucial locations at the borders of the five States.³⁹ To measure water flow, the core equipment set would consist of a battery driven automatic water level recorder with electronic logger and water flow meters, operated from boats. The boats (or barges) would be operated from cable stations in the locations where the wide Amu Darya constitutes a safety hazard. For water quality measuring, the stations would be equipped with battery driven water quality measuring devices; they would record the essential data for measuring salinity and oxygen level as indicator for pollution from organic compounds. The necessary operational tools such as transmitters etc. would also be supplied. Total equipment cost is US\$2.1 million for the five States. Civil works with a cost of US\$570,000 would be funded by the States and comprise the base structure of the cable stations, equipment support structures, landing sites for boats and the rehabilitation or construction of minimal office space;
- (b) technical training for station operators, in liaison with the Swiss Technical Assistance Project to the Uzbekistan Hydro-Meteorological Service; this will cost US\$270,000; and
- (c) improvements in data management in the national centers and its transmission among the States, including regional organizations such as the BWOs, and support to the national services during the installation phase; this will cost US\$360,000.

³⁸ Two dams in each state excluding Tajikistan where one dam is addressed and a separate program is foreseen for Lake Sarez.

³⁹ There are no known measuring stations in operation on the Afghan side. It is possible, however, to roughly estimate the Afghan flow into the Amu Darya from an existing measurement station in Uzbekistan at Kerky. Under this project a new measuring station on the Upper Amu Darya in Tajikistan will permit greater accuracy in measuring the flow from Afghanistan.

2.17 The stations would be part of the national hydro-meteorological services. Neither users nor, suppliers or polluters of water, these services are unbiased and trustworthy. They will provide the data to interested parties such as the national water agencies as well as the BWOs. If needed EC-IFAS will assure budgetary support for recurrent costs (operation, consumables and maintenance) of the stations for countries with chronic budget problems such as the Kyrgyz Republic and Tajikistan (para 3.2).

2.18 **Wetlands Restoration (Component E)** (US\$3.9 million or 18 percent of the total cost). The component will finance the implementation of a wetland restoration project in and around the Sudoche Lake in the northeastern part of Uzbekistan's Karakalpakstan province close to the Amu Darya delta (paras 1.28, 1.33 and 1.46). Lake Sudoche is proposed by Uzbekistan to be recognized as a RAMSAR site⁴¹. The project is self-contained with its own benefits in biodiversity conservation, and income generation. The biodiversity gains will be in form of providing staging grounds for many bird, notably the threatened species such as the Marbled Teal and White-headed Duck. The project constitutes a pilot project for similar larger investments in wetlands development in and near the deltas. Application of experiences gained under it will reinforce the realism of the national and regional policy strategies and action program under component A, particularly with respect to biodiversity conservation and rehabilitation of the disaster zones. This component will finance:

- (a) the development of infrastructure to render the lake itself sustainable, at a cost of US\$1.9 million. The infrastructure will consist of a series of low earthen dams completing a natural barrier against the dry bed of the Aral Sea and a water regulator in the barrier. This will allow the regulation of lake level and size. The lake, now fed only with saline drainage water just sufficient to keep it at a minimum level, would be flushed and raised with fresh water available during the autumn and winter season⁴². This would result in lowering salinity and raising oxygen levels of the lake, thus increasing its bio-productivity. This in turn would provide, (i) improved environmental conditions and feeding capacity for endangered migrating birds which use the lake as a staging ground and (ii) improve incomes of impoverished local residents from livestock, fisheries and controlled hunting and gathering;
- (b) ancillary infrastructure in the form of improved road access to the lake for project development, improved supervision and a pumping station on a nearby collective farm to counter potential drainage problems caused by the rising lake level will cost US\$1.2 million;
- (c) project management, based in Karakalpakstan. This will supervise the project and include preparation and implementation of a lake management plan, including management of water, hunting and fishing. The local population would have increased responsibility and participation in resources management as well as incomes, which currently are siphoned off by outsiders. The costs amount to US\$190,000; and
- (d) monitoring of impact of project measures on biology as well as on incomes and structure of the local society would provide lessons for improved natural resources management around the lake and similar future projects. Its cost will be US\$460,000⁴².

2.19 **Project Management Support Component (Component F)** (US\$1.9 million or 9 percent of total cost) is a pure project support element enabling EC-IFAS to implement the project. It will create and support the operation of a Project Management and Coordination Unit (PMCU), which is to be dismantled at the end of the project or, depending on the circumstances, to be continued in a modified manner to support EC-IFAS activities in the following phase. The component will finance overall project management, component management as well as technical assistance in such areas as general management practices, procurement and accounting. The component will have links to the UNDP supported Capacity Building Project and, by on its TA resources, with the WARMAP 2 project.

2.19' **Associated Investments.** In order to recognise the impact of the GEF grant on total investments in improved water management, selected, related near-term Bank projects in irrigation and drainage improvement have been

RAMSAR is the name place where the "Convention on Wetlands of International Importance especially as Waterfowls Habitat" has been signed. The Convention, normally called the RAMSAR convention, foresees that each signatory designates one site as Wetland of international importance.

⁴¹ The requirements are: 300 million m³ of fresh water in a bad year and 600 million m³ in a good year during the autumn and winter seasons (see para 3.2).

⁴² Recurrent operation and maintenance costs of the infrastructure will amount to about US\$67,000 a year.

included in the project cost table. These projects, in Kazakhstan, Kyrgyz Republic and (prospectively) in Uzbekistan, aim to improve water use efficiency and the productivity of irrigated agriculture (Table 3). Other projects in the Bank's program, as well as those of other donors, would increase the investment total by at least \$200 million. Water saved through improved water management under Bank investment projects would be allocated for sustaining the water environment.

2.20 Implementation Plan (PIP) (see Vol. II Part I) provides a detailed discussion of project costs, financing, procurement arrangements, the organization of project implementation, procurement, disbursement, reporting requirements, auditing and project supervision. The PIP includes the accompanying tables, schedules and appendices. A summary is provided below.

C. Project Costs and Financing

2.21 The total cost of the project, including near-term associated Bank investments in improved water management (para 2.19') and an allowance for physical and price contingencies of US\$0.9 million, is estimated at US\$86.4 million. US\$ 63.7 million or 74 percent represents the foreign exchange component (Table 3 in the Annex of Tables). The cost estimates were prepared by consultants and reviewed during pre-appraisal. The estimated cost per component is summarized in Table 3 in the Annex of Tables. Prices, including local costs, have been calculated in US\$, because calculation in five different national currencies with high inflation rates would have been too complicated. Price contingencies are based on an average estimated, international inflation rate of 2.8 percent per year during the duration of the project. It is also assumed that the exchange rates will, on average, maintain purchasing power parity during the project implementation period. Price contingencies on the local costs (expressed in US\$) are based on the same foreign inflation rate. Physical contingencies of 10 percent for civil works and equipment were included. Base costs are expressed in April 1998 prices.

2.22 Table 3 in the Annex of Tables also sets out the project financing plan. A GEF grant of US\$12.2 million is recommended for the proposed project. This would provide about 14 percent of total project costs. The five Central Asian Republics would finance US\$ 23.7 million or 27 percent of total project costs. Additional grants would be provided under their respective terms by the Netherlands, SIDA and the European Union's TACIS. Generally, there are no taxes included because IFAS (the implementation agency) has tax exempt status. Implicit taxes on local salaries have, however, been included in an indicative manner.

D. Rationale for GEF Financing

2.23 The proposed project is an International Waters project with a biodiversity component. It is an "Integrated Land and Water Multiple Focal Area Operational Program" as discussed in the October 1995 GEF Operational Strategy. Its activities fall within the category of the "International Waters Operational Programs". The proposed Wetlands Restoration activity also directly supports biodiversity, given that the Lake Sudoche area is one of the official wetlands of the Amu Darya (proposed by Uzbekistan as a RAMSAR site). Its stabilization will provide habitat to several globally threatened bird species as well as serving as a pioneer project for further wetland restoration in the delta areas.

2.24 The proposed project meets much of the criteria set out in the *GEF Operational Strategy*.

- (a) *Diversity of Threats.* The proposed project will address the threat of regional water quality and quantity disputes and create a basis for cooperation. It will also address the threats of transboundary water resource degradation caused mainly by salt incursions from land-based activities, salt accumulation in some of the basin, inadequate water management, and degradation of wetland habitat that sustains several globally threatened species;
- (b) *Severity.* If nothing is done, the unsustainable use of land and water resources in the Aral Sea basin will lead to greater economic losses, especially in agriculture and drinking water supply in the downstream areas, and perpetuate unsustainable economic development in the Aral Sea basin as a whole. Local incomes in the Amu Darya delta will continue to decline, bringing increased hardship. The eventual consequences would be social degradation and ecological devastation. The habitat of several globally endangered species (such as the Marbled Teal and the White-headed Duck) would disappear, as the

Amu Darya delta becomes more saline and desiccated. Moreover, continued environmental degradation in the Aral Sea basin may influence wind-borne salt transfer in the atmosphere;

- (c) *Irreversibility.* There is hope that damage to incomes and human health, degradation of river and groundwater and of agricultural and wetlands in the basin can be partly or fully reversed through activities initiated under this project. Several globally threatened fish and bird species would be protected by activities under this project, along with several other animals on the Uzbekistan/USSR Red List of threatened species;
- (d) *Leveraging of Other Assistance.* GEF support is expected to directly lever a substantial volume of other donor support from EU / TACIS, Dutch, and Swedish agencies. Through the project's focus on preparing the conditions for investment included under components A, C, and E, it is expected to catalyze substantial external support for investments in the water sector. However, it must be emphasized that these investments will remain as modest rehabilitation efforts unless and until progress is made in resolving the issues of interstate water management that are at the heart of the project;
- (e) *Capacity Building.* The preparation of the project itself has had a major capacity building effect on EC-IFAS, on associated institutions such as SIC-ICWC or the BWOs on regional level or the Hydromets, the water ministries or agencies, the dam authorities and the Karakalpakstan agencies, on national level. For the first time, they were exposed to the rigors of project preparation under Bank auspices. Project implementation will also have a major capacity building effect through 'learning by doing' and through multiple built-in capacity building elements such as the project management support component, improvements in management of the institutions involved in the various component and specific training and information elements;
- (f) *Commonality.* The observed problems of the region are only an advanced example of a trend seen worldwide, especially around enclosed water bodies and in semi-arid regions such as Lake Chad, the Okovanga Delta, the Murray-Darling Basin, the Indus Basin and the western United States. Project activities could have important demonstration benefits for other water-scarce regions and serve as a model framework for trans-national river basin management. The accumulated experience could be used as an example for international and regional cooperation in rehabilitating a damaged ecosystem as well as practical water management in large water basins on a real-time basis; and
- (g) *Consistency with National Environmental Action Plans (NEAPs).* The Project is fully consistent with the NEAP prepared by the Kyrgyz Republic. It gives priority to natural resource conservation issues, particularly regarding water, including the ASBP. The other nations do not yet have NEAPs, though Uzbekistan and Kazakhstan initiated preparation of NEAPs, with the assistance of the World Bank and the Asian Development Bank. Funds are being sought to prepare NEAPs in the other basin States. The Uzbekistan NEAP gives top priority to safe water supply, meaning clean water of low salinity, the core issue addressed by the project.

E. Project Implementation

2.25 The Chairman of EC-IFAS will have overall project coordination and implementation responsibility. For all ASBP activities, he relies on the services available within the Executive Committee, in particular, a group of ten advisors from the States. To implement the project EC-IFAS will establish a *Project Management and Coordination Unit* (PMCU). A Project Director will head the PMCU. Except for Component F, *Project Management Support*, which will be implemented by the PMCU itself, Component Management Units (CMUs) headed by a Component Director will manage the components. Staff of the PMCU will be selected competitively in the region. Key staff is currently being selected on the basis of newspaper advertisements in the five States. The PMCU will receive technical assistance from the EU/TACIS sources; TA will concentrate on the first years and comprise 46 man-month foreign experts mainly in procurement, accounts, management and water and salt management.

2.26 National counterpart agencies (NCPAs) will collaborate with the PMCU and the CMUs in project implementation. The Incas for Component A1, will be national water ministries; for A2 selected Oblates, for B, national committees constituted from the water and communication sectors; for C, the national dam authorities; for D, the national hydro-meteorological services; and for E, the Government of Karakalpakstan in Uzbekistan.

Component-specific agreements will stipulate their mutual responsibilities, including the facilitating roles of the EC-IFAS branches in the various States. Such agreements would be concluded prior to implementation and in line with the agreed component descriptions or Terms of Reference (TORs). NCPAs are involved in all project activities. Involvement can vary, however; in some instances only clearances or decisions are required, in others the NCPAs directly implement. Parts of the following components would be implemented by NCPAs: Component A2 (Participation in Water Conservation); Component C (installation and operation of dam safety equipment and the selection national detail design teams); Component D (Civil works, installation and operation of water monitoring stations). A small PIU in Karakalpakstan will implement Component E, with the PMCU providing finances, supervision and technical assistance.

F. Procurement and Disbursement

2.27 Procurement under the project will be the responsibility of the PMCU. It will have one senior procurement officer supported by two others. An experienced technical assistant would support them during the first year when most procurement action is scheduled to take place. The CMUs would provide technical inputs to the PMCU for the preparation of bidding documents, such as letters of invitation etc. The CMUs in turn would coordinate with the NCPAs. The CMUs and, as required, the NCPAs, would participate in the selection and evaluation committees. A project launch workshop will be organized for the PMCU and the CMU staff will include training in procurement designed around the procurement arrangements for the project.

2.28 The procurement of goods and works under the project would be conducted in accordance with the Bank's guidelines "Procurement under IBRD Loans and IDA Credits"⁴³. The few elements not financed by the Bank would be procured in accordance with national regulations imposed on EC-IFAS or the cofinancing institutions' procurement regulations. In the case of mixed financing with Bank participation, the Bank's procurement rules will be applied. A general procurement notice was published in the Development Business of ?? 1998. The procurement of consultants would be conducted in accordance with the "Guidelines- Selection of Consultants by World Bank borrowers"⁴⁴. The Standard Bidding Documents for goods, small works, and Letters of Invitation as well as Standard Form of Consultants' Contracts would be used. The PIP (Vol. II Part II) includes a detailed procurement plan and the Procurement arrangements are shown in Table 4 of it.

2.29 All International Competitive Bidding (ICB) contracts (both for goods and works) will be subject to the Bank's Prior review. All contracts for goods above US\$300,000 will be procured under ICB; contracts under US\$300,000 through International Shopping (IS); and those under US\$50,000 through National Shopping (NS). Local shopping would be used for operational costs. The project includes only one contract for civil works under Bank rules, i.e. the contract for building the infrastructure for Lake Sudoche⁴⁵. QCBS, Least Cost Method and Direct Contracting would be used for the selection of consultants. The awards under Component A2 would be provided after the selection has been made by the appropriate committees and clearance provided by the Bank.

2.30 The first IS and NS contracts will also be subject to the prior review of the Bank. All consultant contracts estimated to cost US\$100,000 or more for firms and US\$50,000 or more each for individuals will be reviewed by the Bank on a prior review basis. TORs for each consultant assignment regardless of the value, and qualification and experience of individual experts will be submitted for the Bank's prior review. All other contracts, not covered by para 2.29 or this para, will be subject to the post review in accordance with the guidelines.

2.31 Project finances are expected to be disbursed over a period of four and a half years. The anticipated completion date is December 31, 2002 and the closing date June 30, 2003. Disbursements will follow normal World Bank and cofinanciers' procedures and will be made against eligible expenditures

2.32 To facilitate disbursements, a Special Account for the GEF funds will be established by EC-IFAS prior to grant effectiveness and maintained until project completion. The Special Account would be drawn upon to meet payments to contractors, suppliers and consultants under the project. The initial allocation to the Special Account would be limited to US\$1 million.

⁴³ Published in January 1995 and revised in January and August 1996 and September 1997.

⁴⁴ Published January 1997, revised September 1997.

⁴⁵ Procurement of other civil works would follow local rules as they are fully financed from local sources.

2.33 EC-IFAS will establish and maintain a US\$ project account managed by the PMCU. The account will receive the local counterpart funds in foreign currency;

2.34 Statements of Expenditures (SOEs) will be used for: (a) goods and contracts costing less than US\$300,000 each; (b) consultant contracts with firms costing less than US\$100,000 each; and (c) with individuals costing US\$50,000 each. Full documentation in support of SOEs should be retained by EC-IFAS for at least two years after the closing date of the grant.

G. Project Supervision

2.35 The World Bank's Resident Mission in Uzbekistan will supervise the project on a continuing basis. The Resident Mission will ensure the participation of donor staff in supervision. Bank technical specialists from headquarters will participate actively in supervision missions. These supervision missions will be fully coordinated with other project donors. Success in project implementation and results will be measured against performance indicators shown in the PIP. The project will be reviewed annually. A completion mission is scheduled for calendar year 2003 to prepare an Implementation Completion Report. The supervision inputs and schedule of the Bank are detailed in the PIP. Some independent expert inputs into the annual reviews have been programmed under the "pool" heading the Project Management Component.

2.36 EC-IFAS should have its accounts (including the project accounts, the operations of the special account, and the use of SOEs) audited annually by independent auditors acceptable to the Bank. The audited accounts, together with the auditors' statement should be forwarded to the Bank not later than six months after the end of its fiscal year.

H. Sustainability and Participation

2.37 The project's projected performance regarding sustainability and participation is positive. Detail is shown in Table 4 in the Annex of Tables.

I. Lessons Learned

2.38 The project design tries to apply the many lessons learned from the preparation phase of the ASBP as well as from the many water resources projects of the World Bank. Annex tables numbers 5 and 6 show the lessons learned and how they were applied. Below the lessons learned under the ASBP are summarized:

- (a) adequate program or project design (detailed plans; regular project reviews; clear financing framework; mix between study or strategy work and ground level action; link between the project and the political level as opposed to the academic level; good outreach and participatory elements; sectoral and regional balance in project staff.)
- (b) strong client commitment (client leadership in project preparation and implementation, even at high costs; enhanced interest of States through equal treatment and systematic efforts and stages of consensus building; insistence on substantive financial contributions by the client);
- (c) solid institutions and management (regular meetings of supervisory bodies; ownership of regional programs by the national states; clear institutional mandates without duplication; political leadership of regional institutions; managers rather than specialists in managerial positions; training in management; competition and consultants rather than force account and working groups.)
- (d) rational use and integration of foreign consultants and clear rules for remuneration of local staff (balance of project costs; ownership of output by client); and
- (e) adaptation to differences in culture and economic systems (multilingual staff and consultants; free access to information; regular reviews and public participation against centralism and secrecy; clear distinction between civil servants and consultants; assurances against weak performance of financial sector and currency controls; insistence on competitive procurement and strong governance).

J. Project Benefits and Justification

2.39 The project will generate major benefits and the comparison of costs and benefits reveals high rates of return. The main benefit will be major advances towards sustainability of water and land management in the region; this will be also a contribution to maintenance of peace in the region. Other benefits consist of increased safety of dams, increased biodiversity; increased incomes, and increased strength of the ASBP, of EC-IFAS and cooperating agencies.

2.40 The major advances towards sustainability of water and land in the region will be achieved through

- (a) the creation of an integrated, transparent and agreed framework of national and regional policies, strategies and action programs for improved water and salinity management under Component A, with support from the other components. The result in the form of a regional and five national water and salinity management plans would be available at the end of the project;
- (b) the enhanced capability of improved interstate agreements on water sharing between states and sectors, on water quality and salinity, on the seasonal management of water and on cost-sharing for water infrastructure. This capability would gradually rise in the course of the project as the process of joint decision making under Component A deepens and advances over time;
- (c) the improved acceptance by the population in the region of difficult reform measures, such as pricing and recovery of costs for water supply and disposal services, bureaucratic measures of water conservation, and interstate agreements associated with more sustainable water and land management. This is expected to be achieved mainly through Component B;
- (d) the acceleration and rise in level of investment in the water sector, in order to increase efficiency of water use and cope with the maintenance backlog. This would be made possible through the provision of a transparent and stable policy framework (and the initiation of reforms) by the water and salinity management plans under component A, by the dam rehabilitation plans under Component C and the practical lessons for wetlands and delta development under Component E. Investments are expected to rise from the private, public as well as donor side. During the project period they are not expected to rise as a direct consequence from the plans under A, since the plans are scheduled to be completed only in the last project year. Contributions are, however, likely through spill over into and influence on the ongoing investment processes. Under component E the results and substantive lessons would also only be available in the last year of the project. In the case of Component C, the plans are scheduled to be delivered in the third year of the project;
- (e) the effective start of reductions in water consumption and consequent improvements in river salinity and flow to the deltas and the Aral Sea through: (i) changes in behavior of water users under the public awareness campaign of Component B; and (ii) the gradual deepening and effectiveness of the process of reform, of changes in the incentives framework and of inter-state agreements. These reductions, measured against the baseline in 1998 will be limited, but visible and measurable; during the project period itself. IFAS targets for water conservation are expected to be 15 percent for the end of the project period. Component B is expected to contribute 5-10 percent; and
- (f) the creation of a physical capacity to monitor water flow and quality between states, as a precondition for monitoring the effect of changes in water use and compliance with interstate agreements; Component D will create this capacity.

2.41 The other benefits are

- (a) increased dam safety by drawing attention to and installation of and training on early warning systems in nine dams and by developing an action plan for the Lake Sarez under Component C;
- (b) increased biodiversity as a result of component E (para 2.18);
- (c) increased incomes due to increased sustainability in water and land (para 2.40) or the reduction of damages due to salinization; and, in a direct manner under Component E, due to increased revenues

from livestock, fisheries and agriculture for about 2500 people living in the immediate vicinity of lake Sudoche (Vol. II, Part I, detail description of Wetland Rehabilitation).

- (d) last but not least, a strengthened ASBP, EC-IFAS and national counterpart agencies. By covering two core areas of the ASBP (paras 2.3 - 2.5) and by creating a strategy base for later ASBP phases, the project will contribute to anchor the ASBP as a tool of the Central Asian States to solve their common water and environmental problems. The preparation and implementation experience of the project will strengthen EC-IFAS (and the other agencies) and demonstrate its capacity to the donor community.

2.42 Quantitative comparison of project costs and benefits, speculative in nature and only capable of indicating broad directions, was attempted in three ways, through: (a) GEF's incremental cost analysis; (b) for the Wetlands Restoration component, a simple economic rate of return calculation; and (c) speculative calculations of present value and economic rate of return on the basis of benefits from damage reduction.

2.43 The incremental cost and global environmental benefits analysis (Volume II, Part V) shows a US\$17.8 million difference between the cost of the base line scenario of US\$3.4 million and of the GEF alternative of US\$21.2 million. This represents an incremental cost for achieving the global environmental benefits of reduced degradation of international waters and of protection of biodiversity, and exceeds the GEF contribution of US\$12.2 million.

2.44 The economic rate of return calculation for the Wetlands Restoration Component shows that: (a) benefits in the form of incremental income for the local population are substantial; and (b) the economic rate of return would switch above the opportunity cost of capital, subject to global biodiversity benefits of the same size as the tangible local benefits of US\$?? per year would arise. The biodiversity benefits are likely to exceed by far this switching amount.

2.45 The above benefits of improved sustainability (para 2.40) will reduce the damages caused by water and soil salinity. For these, there is an estimate of US\$2 billion annually (para 1.11). The cost of the GEF project represents only 0.1 percent of the net present value of these estimated damages due to salinization⁴⁶. The economic rate of return on the project investment would be very attractive, say 20 percent, if the project would generate annual benefits in the order of only US\$4 million, as of the year 2003. Both comparisons show that even minor tangible benefits suffice to make the project economically justifiable. As the expected benefits are substantial, the conclusion must be that the project investment is money well spent.

K. Project Risks

2.46 The project faces seven main risks: the managerial capacity of EC-IFAS; potential disunity; pace of reform; local funding; cost estimates for civil works; and unintended consequences.

2.47 **Managerial Capacity.** The biggest risk is that the coordination and implementation of the project could strain the nascent capacity of the new EC-IFAS. The challenges will be:

- (a) the capacity of EC-IFAS and the NCPAs to internalize the many innovations in the style of management underlying the donor conditionality (in procurement, particularly of local consultants; in financial management; in transparency and democratic style of decision making; in delegation of responsibility to consultants etc.; para 2.38). This conditionality is different from the bureaucratic traditions in which all EC-IFAS staff evolved in the past. The EC-IFAS leadership is aware of this and is fully committed to accept it. However, clashes between the tradition and the innovations will be unavoidable when it comes to the day to day business. To minimize this risk a less complex project with fewer components could have been formulated. However, this would have negated the reality of the complex issues to be addressed simultaneously. The instruments of choice for risk minimization were therefore, (a) the creation of a strong PMCU, with well selected key staff; (b) the provision of technical assistance to the PMCU in sufficient quantity but not of a size that will suffocate ownership; (c) the use of internationally renowned and experienced firms for key components and large contract packages (example A1, B, E,) to ease management stress; (d) the programming of sufficient supervision capacity on the Bank side; it

⁴⁶ Damages due to salinization have been estimated at US\$2 billion annually (para 1.11); discounted by the OCC of 12 percent the damages have a net present value of about US\$15 billion.

will have to be carefully dosed in order not to stifle ownership of the project by EC-IFAS; (e) the programming of annual reviews to correct potential problems early on; and (d) close collaboration with the UNDP capacity building project.

- (b) the hiatus in the project could arise from a change in the Presidency and the Chairmanship of the EC-IFAS (para 1.25) in the first half of 1999. It could lead to delays in EC-IFAS or weakness in political leadership and thus jeopardize the project. This risk can be minimized by having, as is the case, the project well rooted in the various national Governments. Also assurances will be sought during negotiations that key PMCU staff would not change unless agreed with the Bank (para 3.2); thus continuity would be assured.

2.48 Potential Disunity. To coordinate water and land use in five different countries, all with sovereign rights and interests, within the four and half years period of the project, would be a major achievement. Yet the likelihood of success is perhaps higher in Central Asia than elsewhere. The project timing is opportune. The present generation of political leaders and top bureaucrats in the region still know themselves personally from years of common work under the Soviet Union. Also, there is still a great sense of doing things in common. To further minimize this risk the project has build in many consensus building features described in para 1.52a.

2.49 Pace of Reform. Achieving major reductions in water use in irrigation and other "productive sectors" in favor of the environment will depend to a large extent on the pace of macro-economic reforms in the countries and the associated incentives framework for water saving and investments in the water sector. This has been taken into account in estimating the time frame for the project. Slower progress would tend to erode the commitment of all parties (states and donors) to joint solutions. The Bank is addressing this risk through its Country Assistance Strategies (para 1.37).

2.50 Local Funding. There is some risk that, given the economic constraints of the countries, counterpart funds would not be available when needed. To minimize this we would seek assurances during negotiations about the availability of counterpart funds in convertible currency throughout the project period and linking board presentation to their effective availability (para 3.4).

2.51 Unintended Consequences. While the flushing of the Sudoche wetlands would roughly simulate a flood year in the delta, and as such is a natural phenomena, there is a risk that unforeseen environmental impacts such as the introduction of species, changes in water temperature, silt loading, loss of fish, etc., could have negative environmental consequences. The level of risk is unknown. What is known, however, is that if nothing is done, Sudoche would become even more saline, the oxygen content of the waters would continue to drop, and the wetlands would lose much of its biodiversity and fish life.

2.52 Uncertain Cost Estimates. There is some uncertainty about the cost estimates for civil works as their design is not available yet and cost estimates are difficult due to the absence of a history of data from competitive construction work. The risk is biggest under the Wetland Restoration component with a major civil works item of an estimated cost of US\$2.6 million. For the project as a whole, however, the risk is limited, as civil works only constitute US\$3.4 million or 16 percent of total project cost. The risk of an underestimation of costs is shared among EC-IFAS and the Central Asian States for US\$830,000 which they finance under the transboundary water monitoring and dam safety components and potential increases could be covered by them with relative ease. As to the civil works under the wetland component, to be financed by GEF and the Netherlands, project contingencies in the order of US\$900,000 would be able to cope with a cost increase of 35 percent, which is unlikely.

2.53 Cofinancing from Donors. At this stage the cofinancing from Donors must be considered as uncertain. Cofinancing can only be considered as safe when respective agreements have been signed. An agreement exists with EU TACIS, but needs to be adapted. New agreements are required for the Dutch and Swedish contributions. Therefore respective assurances would be sought before appraisal and negotiations about the availability of such funds and effectiveness of the GEF grant would be linked to effectiveness of other donor agreements

**ARAL SEA BASIN PROGRAM
WATER AND ENVIRONMENTAL MANAGEMENT PROJECT**

III. AGREEMENTS AND RECOMMENDATION

3.1 Before appraisal/negotiations EC-IFAS provided the following:

- (a) Draft Strategic Action Program;
- (b) Assurances about financing of local counterpart funds from the CA States;
- (c) Confirmation of respective budget allocations in 1998 ;
- (d) Proof of its capacity to handle unrestricted foreign exchange transactions ;
- (e) Establishment of a PMCU;
- (f) Appointment of a Project Director;
- (g) Draft agreement with Karakalpakstan for Wetlands Restoration Component.

3.2 During appraisal/negotiations agreement were sought on the following

- (a) Content of the Supplementary Volume II, in particular the Project Implementation Plan, the Strategic Action Program, as well as the Detail Descriptions and draft TORs of the project components and sub-components;
- (b) Draft GEF Grant Agreement;
- (c) Level of the advance to the GEF Special Account.

3.3 During appraisal/negotiations assurances were sought on the following

- (a) Availability of cofinancing from Donors;
- (b) Availability of CA funding, covering investment costs as well as recurrent operation and maintenance funding of assets created by the project;
- (c) The establishment of adequate project accounts and their annual audits;
- (d) Preparation of semi-annual plans for project implementation;
- (e) Arrangements with national counterpart agencies (para 2.26);
- (f) Minimum water supply in autumn/ winter to lake Sudoche (para 2.18);
- (g) Time and nature of reports;
- (h) Free Access to all information (para 2.38);
- (i) No change in PMCU structure or key staff without Bank concurrence (para 2.47).

3.4 The Condition of Board Presentation would be the establishment by EC-IFAS of a Project Account (CA-Account) in convertible currency and the deposition of the first year contribution of CA funds in the account.

3.5 Conditions of Effectiveness would be:

- (a) Cross-effectiveness with Swedish Government Contribution
- (b) Cross-effectiveness with Dutch/or establishment by Bank of a trust fund for managing Dutch Grant;
- (c) Cross-effectiveness with EU/TACIS (Contribution to Project Management and Dam Safety Component including prolongation WARMAP II contract); and
- (d) Establishment of a Project Special Account for Dutch funds (Dutch -Account).
- (e) Approval by the IFAS Board of a Strategic Action Program acceptable to the Bank.

3.6 Recommendation. With the above agreements and conditions, the proposed project would be suitable for a GEF grant of US\$12.2 million.

ARAL SEA BASIN PROGRAM

WATER AND ENVIRONMENTAL MANAGEMENT PROJECT

ANNEX OF TABLES

Table 1: Central Asia: Selected Socio-Economic Indicators

	Pop. Millions 1996	GNP per Cap US\$ 1996	GNP US\$billio ns 1996	Populatio n average annual growth % 90-96	GDP billions US\$ 1996	GDP average annual growth 1996	GNP / cap average annual growth 1996	Agri culture % age GDP 1996	Industry % age GDP 1996	Services % age GDP 1996	Agri culture average annual growth 1996	Industry: average annual growth 1996	Services average annual growth 1996	Consumer prices % age change 1996
Kazakstan	16.7	1,310	21.9	0.0	21.0	1.1	0.0	12.3	25.4	62.4	3.9	-4.6	2.0	38.5
Kyrgyz Rep.	4.6	570	2.6	0.6	1.7	5.6	4.5	51.9	19.3	28.8	-	-	-	35.0
Tajikistan	6.0	330	2.0	1.9	2.0	-5.0	-6.8	26.2	49.3	24.1	1.1	-3.0	-12.5	419.6
Turkmenistan	4.6	940	4.4	3.9	2.1	-3.0	-5.2	-	-	-	-	-	-	992.0
Uzbekistan	23.1	1,010	23.5	2.1	10.0	1.6	-	26.0	27.4	46.6	-7.0	1.7	2.0	54.0
Total / Average	55.0	990	54.4	1.5	36.8	1.1	-	-	-	-	-	-	-	-

Source: World Bank

Table 2: Irrigated Areas and Water Use in the Aral Sea Basin (1995)

Country / User	Irrigated land Million ha				Total Water Use Km ³ /year				Water use for irrigation Km ³ /year				Irrigation share in total water use %
	Amu Darya Basin	Syr Darya Basin	Aral Sea Basin		Amu Darya Basin	Syr Darya Basin	Aral Sea Basin		Amu Darya Basin	Syr Darya Basin	Aral Sea Basin		
			Σ a+b	% of total			Σ e+f	% of total			Σ i+j	% of total	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)
Uzbekistan	2.48	1.80	4.28	54	34.9	23.1	58.0	50	33.2	19.8	53.0	53	91
Turkmenistan	1.74	0	1.74	22	23.1	0	23.1	20	22.4	0	22.4	22	97
Tajikistan	0.43	0.29	0.72	9	8.1	3.9	12.0	10	7.0	3.3	10.3	10	86
Kazakstan	0	0.74	0.74	9	-	11.0	11.0	9	-	9.7	9.7	10	88
Kyrgyz Rep.	0	0.46	0.46	6	-	5.1	5.1	4	-	4.6	4.6	5	90
<i>S/Total</i>	4.65	3.29	7.94	100	66.1	43.1	109.2	93	62.6	37.4	100	100	
Aral Sea	0	0	0	0	5.1	2.8	7.9	7	0	0	0	0	
Total	4.65	3.29	7.94	100	71.2	45.9	117.1	100	62.6	37.4	100	100	91

Source: SIC-ICWC

Table 3: Summary of Project Cost Estimates and Financing (US\$ million)

<i>Components</i>	<i>Costs</i>						<i>Financing (including Contingencies)</i>						
	<i>Local</i>	<i>Foreign</i>	<i>Total</i>	<i>% of Total</i>	<i>% Foreign Exch.</i>	<i>% of Total Base Cost</i>	<i>GEF</i>	<i>Central Asia</i>	<i>Nether lands</i>	<i>EU TACIS</i>	<i>SIDA</i>	<i>Total</i>	<i>% of Total</i>
A. Water and Salt Management	0	6.27	6.27	30	100	31	3.87	0.82	1.58	0	0	6.27	30
B. Public Awareness	0	3.10	3.10	15	100	15	2.95	0.15	0	0	0	3.10	15
C. Dam and Reservoir Management	0	2.54	2.54	12	100	13	0.50	1.17	0	0.55	0.35	2.57	12
D. Transboundary Water Monitoring	0.10	3.02	3.12	15	97	15	2.22	1.23	0	0	0	3.45	16
E. Wetlands Restoration	2.33	1.03	3.36	16	31	17	2.13	0.13	1.62	0	0	3.88	18
F. Project Management Support	0.30	1.59	1.89	9	85	9	0.53	0.58	0	0.82	0	1.93	9
Total Base Cost	2.73	17.55	20.28	97	87	100							
Physical Contingencies	0.20	0.21	0.41	1	52	2							
Price Contingencies	0.21	0.30	0.51	2	57	3							
Total Project Cost	3.14	18.06	21.20	100	85	105	12.20	4.08	3.20	1.37	0.35	21.20	100
% of Total Project Cost	15	85	100				58	19	15	6	2	100	

Associated Investments in Improved Water Management⁴⁷

KAZ: Irrigation and Drainage Imp.(FY96 ⁴⁸)	11.8
KYR: Irrigation Rehabilitation (FY98) ⁴⁹	23.4
UZB: Irrigation Improvement (FY00, prop.)	30.0
Grand Total	86.4

⁴⁷ Other investments, at a less advanced stage of preparation, include second Bank projects in KYR and KAZ, the UZB Drainage Project and a project in TRK, as well as planned investments by ADB, Japan and other donors.

⁴⁸ Portion in Aral Sea Basin.

⁴⁹ Portion in Aral Sea Basin.

Table 4: Lessons Learned from the Preparation Phase of ASBP

Problem Experience	Cause of Problems	Application of Lessons in ASBP and Project
Adequate Program and Project Design		
Duration of preparation phase underestimated: plan 18 months; actual: 3 years	<ul style="list-style-type: none"> Underestimation of problems Absence of implementation plan No early review Unclear financing from a multitude of different financing sources with different conditions 	<p>Project duration of 4.5 years is target assumption. Project and component implementation plans Annual reviews planned</p> <ul style="list-style-type: none"> Project has clear financing frame; core financing from GEF, Dutch and CA follows same conditions.
Complex program; 19 components; no clear priority setting	<ul style="list-style-type: none"> Design default Zeal and politeness of new partners in new program Absence of implementation planning 	<p>Project is with 6 components far less complex; Project also new but lessons have been applied; partners know each other Project and component implementation plans</p>
Weak balance between analysis and concrete output and action	<ul style="list-style-type: none"> Design weakness and nature of preparation Outputs (TORs etc.) not clearly enough defined Not enough practical project expertise, too much scientific, technical expertise; Weak link to political action level Weak outreach to population Weak balance between technical long-term and social short-term relevance 	<p>Project outputs clearly defined through detail TORs, descriptions etc.</p> <ul style="list-style-type: none"> Project has strong action orientation; comprises ground level action elements (Components A2, B, C, D, E) and focus on practical and investment recommendations in strategy component A1 Link to political level improved by new IFAS structure and systematic links to states in each component Outreach major focus in A2, B. Social relevance improved within project (A2, B, E) but limited due to focus of funding sources on transboundary water and biodiversity issues; poverty alleviation activities under ASBP covered by other ASBP measures
<ul style="list-style-type: none"> Weak balance between sectors 	<ul style="list-style-type: none"> Domination of irrigation sector in institutions and staff as opposed to hydropower, environment, health sectors 	<ul style="list-style-type: none"> Corrected somewhat through better regional balance of new IFAS Hydro-power sector interested in component C (Dam Safety) Environment concerns in the center of the project through focus on water quality and salinity (A1, A2, B, D), wetlands and biodiversity (E)
Need for Strong Client Commitment		
CA over-reliance on donors funding and initiative	<ul style="list-style-type: none"> CA inexperience with donors; financial constraints; optimism of independence 	Corrected through review of 1996 and Almaty conference; increased self-reliance, CA contributions
<ul style="list-style-type: none"> Weak interest of states 	<ul style="list-style-type: none"> Lack of involvement, equity in program 	Project seeks equal treatment and shares of states and regional/national consensus
<ul style="list-style-type: none"> Experience from other parts in the world about firm commitment in form of finance and leadership not applied 	<ul style="list-style-type: none"> Probably time pressure, politeness to new partners 	<ul style="list-style-type: none"> Corrected in review of 1996; through new IFAS leadership and financial contribution from states
<ul style="list-style-type: none"> Donor domination in program formulation and implementation 	<ul style="list-style-type: none"> Weak institutions and time pressure 	<ul style="list-style-type: none"> Project formulation was done together with client in every detail
Need for strong institutions		
Lack of regional cooperation and reluctance to place scarce funds in regional operations	<ul style="list-style-type: none"> Economic and political complexity of regional situation 	<ul style="list-style-type: none"> Realization of mutual benefit of managing the Basin on a regional scale is turning into action and Governments financial involvement
Unclear ICAS Mandate	<ul style="list-style-type: none"> Initial haste 	<p>Clear mandate of new IFAS</p> <ul style="list-style-type: none"> Relation to ICKKU needs to be clarified

Problem Experience	Cause of Problems	Application of Lessons in ASBP and Project
<ul style="list-style-type: none"> Executive leadership of ICAS : Not political enough:-lack of decision making; Too technical:- sectoral imbalances, managers got involved in technical detail and blocked out advice from varied sources Links to national level weak 	<ul style="list-style-type: none"> Possibly due to over-reliance on donors and weak commitment Prevailing "experts culture" as opposed to "management culture" in the institutions Inexperience with multi-state programs on CA side; 	<p><i>EC-IFAS:</i></p> <ul style="list-style-type: none"> has political leadership now; has broad regional representation in staff and branches <p><i>Project:</i></p> <ul style="list-style-type: none"> gives preference in selection for managerial position given to balance between technical and managerial background provides management assistance and training in collaboration with UNDP capacity building project provides attention to good links to national level in all components. <p><i>Project:</i></p> <ul style="list-style-type: none"> Implementation via competitive contracts (consultant, works and goods) firms
<ul style="list-style-type: none"> Reliance on force-account implementation, working groups, public and in-house services leads to lack of control of timeliness and quality of outputs 	<ul style="list-style-type: none"> Legacy of the Soviet system of monopoly services, bureaucratic empire building and slow institutional change 	
Rational Use and Integration of Foreign Consultant's Services		
<ul style="list-style-type: none"> The large difference in remuneration of donor financed foreigners and locally financed staff is tremendous and creates problems and distortions; TA share in projects costs out of proportion Local experts feel professionally underrated and want to participate in higher foreign remuneration Long debates, normally not free from personal interest, about local salary levels Situation is complicated by differences in remuneration levels between CA States themselves and the public and emerging private sector. 	<ul style="list-style-type: none"> Difference in labor markets between CA and donor countries Skills gap in client countries, especially in the economy, management and written expression Lack of attention to links between foreign consultants and local experts 	<p><i>EC-IFAS:</i></p> <ul style="list-style-type: none"> Applies local "UN-Rules" <p><i>Project:</i></p> <ul style="list-style-type: none"> Does not finance IFAS staff, only project consultants Design gives preference to local consultants and keeps foreign consultants to areas where expertise not available in CA Remuneration levels will be fixed by market forces in case of larger consultant contracts Problem of remuneration for individual consultants solved by market survey, check by representatives of States and UNDP capacity building project and payment according to performance;
Adaptation to Differences in Culture		
<ul style="list-style-type: none"> Communication problems ; frequent misunderstandings; distrust and suspicion 	<ul style="list-style-type: none"> Lack of mutual exposure on both sides Lack of common language (English/Russian) Culture Gap (In CA lack of attention to reports and precision in written word) Different conception of organization and decision making; 	<p><i>EC-IFAS:</i></p> <ul style="list-style-type: none"> Staff increasingly speaking English and regional language in addition to Russian; <p><i>Training</i></p> <p><i>Project:</i></p> <ul style="list-style-type: none"> Selection of project management and consultants gives preferences to English/ Russian language knowledge Constant direct and steady personalized contact between parties
<ul style="list-style-type: none"> Information: CA tradition is guardedness, rather than openness; this creates friction and leads to difficulties in access to available information 	<ul style="list-style-type: none"> Tradition from Soviet "culture" of secrecy and power; Low remuneration leads to sale of information; 	<p><i>EC-IFAS:</i></p> <ul style="list-style-type: none"> Attention to problem; strictness against information sale training under capacity building project (UNDP) rules for access to information, including recovery of cost for publication and operation of information base is under preparation; <p><i>Project:</i></p> <ul style="list-style-type: none"> Assurances on information access in grant agreements
<ul style="list-style-type: none"> Hierarchy and centralization versus team and delegation leads to inflexibility at the working level 	<ul style="list-style-type: none"> Tradition from Soviet "culture" decision making at top level; 	<p><i>EC-IFAS:</i></p> <ul style="list-style-type: none"> Strict attention to problem training under capacity building project (UNDP) <p><i>Project:</i></p> <ul style="list-style-type: none"> Regular open reviews of the project Preference to younger generation in selection of staff, consultants; Stress on public participation

Problem Experience	Cause of Problems	Application of Lessons in ASBP and Project
Adaptation to Differences in Economic Systems		
<ul style="list-style-type: none"> • Difference between civil servants and consultants blurred 	<ul style="list-style-type: none"> ▪ Legacy of the Soviet; system everything was state owned and public ▪ Slow institutional change 	<i>Project:</i> <ul style="list-style-type: none"> ▪ no topping up of civil servants salaries ▪ Consultants are not allowed to draw other salary remuneration that that of project
<ul style="list-style-type: none"> • Financial flows difficult due to foreign currency controls 	<ul style="list-style-type: none"> ▪ Government restrictions ▪ Lack of distinction between strictly commercial activity and assistance activity 	<i>Project:</i> <ul style="list-style-type: none"> ▪ Strong assurances and proofs of project specific exceptions for free flow of project funds ▪ Appropriate finance and procurement packages
<ul style="list-style-type: none"> • Lack of tradition of competitive procurement 	<ul style="list-style-type: none"> ▪ Legacy of state monopoly of supply 	<i>EC-IFAS:</i> <ul style="list-style-type: none"> ▪ Has some experience from the past <i>Project:</i> <ul style="list-style-type: none"> ▪ Procurement plan ▪ TA in procurement ▪ Training ▪ Strong SPN

Table 5: Lessons learned by the World Bank in Water Resources Management

Main Causes of Problems	Lessons Learned	Application of Lessons in ASBP and Project
<ul style="list-style-type: none"> Fragmented sector management not taking into account interdependencies among states, economic sectors, and agencies. 	<ul style="list-style-type: none"> Need for: A stable institutional framework (legislation and cooperative arrangements) for river basins to achieve common goals such as water quality targets; equitable, efficient and sustainable allocation of water across states, economic sectors, and environmental uses; Consistent policies and strategies for water management and sub-strategies on specific problems on basin, national and local level in a multi-sectoral dimension, based on knowledge of problems and actual data from the field; Strong stakeholder and community participation in planning and delivery. Communities should get involved in identification of local natural resources issues, development and implementation of management plans for locality, in adoption of improved management practices, and communication to government of aspirations and concerns at the local, national and basin-wide level. 	<ul style="list-style-type: none"> The whole project, and component A1 in particular, intends to create such a stable framework including water quality targets and sustainable allocations of water; Component A1 is creating the policy, strategy and action program base that is common to the region's states and acceptable to all sectors. Field level knowledge will be built in through participation elements in A1, and (sub) components A2 and B; The TORs for component A1 ask the consultants to develop policies, strategies etc. with strong stake holder participation.
<ul style="list-style-type: none"> Excessive reliance on over-extended government agencies that have neglected the need for economic pricing, financial accountability, and user participation, and have not provided services effectively to the poor 	<p>Need for:</p> <ul style="list-style-type: none"> Decentralized management of water services supported by a legal framework and adequate regulatory capacity Pricing and incentive policies that achieve cost recovery, water conservation, and better allocation of water resources, and endow water entities with operational and financial autonomy for efficient and sustainable delivery of services Strengthened capacities of governments to carry out their essential roles of servicing the needs of decentralized water management services, water users and community action 	<ul style="list-style-type: none"> A1 TORs take care of all these concerns; Component B Public awareness will create understanding for political decisions on decentralization, pricing and incentive policies; Component D (transboundary monitoring) strengthens Government's capacity in the essential service role of monitoring water use and quality; Component E provides an example of decentralized management in an environment of centralization
<ul style="list-style-type: none"> Policies, public investments and regulations that have neglected water quality, health, and environmental concerns. 	<p>Need for :</p> <ul style="list-style-type: none"> Policies and action programs that restore and conserve aquatic ecosystems and guard against pollution and over-exploitation of groundwater resources, and give priority to the provision of adequate water and sanitation services to the poor 	<ul style="list-style-type: none"> Component A1 will provide policies and action programs which cover these concerns; Aquatic ecosystem conservation is addressed by the overall project aiming at an increase of the discharge of the rivers for environmental concerns including aquatic ecosystems and by Component E. Over exploitation of groundwater resources is not an issue in CA Water and sanitation are directly addressed by respective ASBP/Bank projects

Source: *Water Resources Management, a World Bank Policy Paper (1993); Integrated Lake and Reservoir Management-World Bank Approach and Experience, World Bank Technical Paper No. 358 (1996); The Experience of the World Bank in the Legal, Institutional and Financial Aspects of Regional Environmental Programs: Potential Applications and Lessons Learned for the ROPME and PERSGA Programs. Background Paper for the Sea to Sea Conference (1995).*

Table 6: Sustainability and Participation in the Project

Sustainability					Participation
Technical	Financial	Institutional	Environmental	Economic	
A: Water and Salt Management					
A1 National and Regional Water and Salt Management(para 2.7)					
Not an issue; study and decision process of limited duration.	Same as under technical	In narrow sense same as under technical; Decision scenarios proposed have to be financially sustainable	In narrow sense same as under technical; Component has strong institutional sustainability aspects in form of participation of states in development of decision scenarios.	In narrow sense, same as under technical; Overall aim is environmental sustainability in the Aral Sea Basin	States participate in selection of decisions consultant teams and in critical decisions
					Stakeholders participate: outreach to water user groups, NGOs, and BWOs
A2 Participation in Water Conservation(para 2.10)					
Not an issue; measure of limited duration; field level initiated by beneficiaries themselves	Same as under technical	Same as under technical	Same as under technical	In narrow sense, same as under technical; Aim is environmental sustainability of the Basin	The whole sub-component is designed for participation of beneficiaries in finding and applying solutions to water conservation
					Economic and environmental sustainability are identical in this case
B Public Awareness (para 2.12)					
Not an issue; measure of limited duration	Same as under technical	Similar to technical; Communication and awareness campaigns are expected to be part of EC-IFAS activities after the project, based on positive experience under the project	In narrow sense, same as under technical; In wider sense, the component is crucial for environmental sustainability through: changes in behavior of the public.	Not tested, but expected to be high	Participation of large number of people is rationale of the component
C Dam Safety(para 2.14)					
Early warning systems will be designed for ease of maintenance and hence sustainability No issue for dam rehab. detail design; studies of limited duration	Sustainability of early warning pilot systems will depend on availability of maintenance funds; not a big issue at the low level of investment; moreover project is covered by assurances from EC-IFAS on maintenance funds (For early warning pilots inst activities in dam authorities and their demonstrated commitment through civil works; Given for dam rehab. detail design via involvement of national teams	Dam safety is a crucial feature of environmental sustainability Rehab. Activities, whether dam or other, usually have high economic rates of return	For early warning pilots economic sust. not tested in detail, but evident; Participation of states and dam authorities	Popular participation will be required for emergency preparedness plans;
D Transboundary Water Monitoring(para 2.15)					
Design of measuring stations covers technical sustainability through installation of equipment, which is easy to maintain.	Sustainability depends on maintenance funds; could be an issue for the Kyrgyz Republic and Tajikistan. Issue covered by assurances from EC-IFAS on maintenance funds	Inst. Sustainability given, as national Hydromet services are well established	Env. Sustainability very high; focus on water flow and quality measurement for sustainable water management	Not tested quantitatively; However rate of return most likely high due to high return from sustainability of water use in the region.	Participation of states and Hydromet authorities
					Popular participation technically not required
E Wetland Restoration(para 2.18)					
Expected to be high; monitoring of pilot project will prove or disprove technical sustainability ;	Examined in calculations and found OK. (Vol. II Part I);	Issue, addressed through development of participatory management	Expected to be high. Monitoring of pilot project will prove or disprove environmental sustainability.	Given, under condition of non-tangible local benefits. This can be assumed to be the case	During design stage through social assessment; During implementation through management and socio-economic monitoring
F Project Management Support (para 2.19)					
Not an issue as PMCU can be dismantled at the end of the project	Same as under technical	Same as under technical; EC-IFAS will gain in institutional strength through component experience	Same as under technical	High; project not possible without this component	Given through participation of states and NCPAs

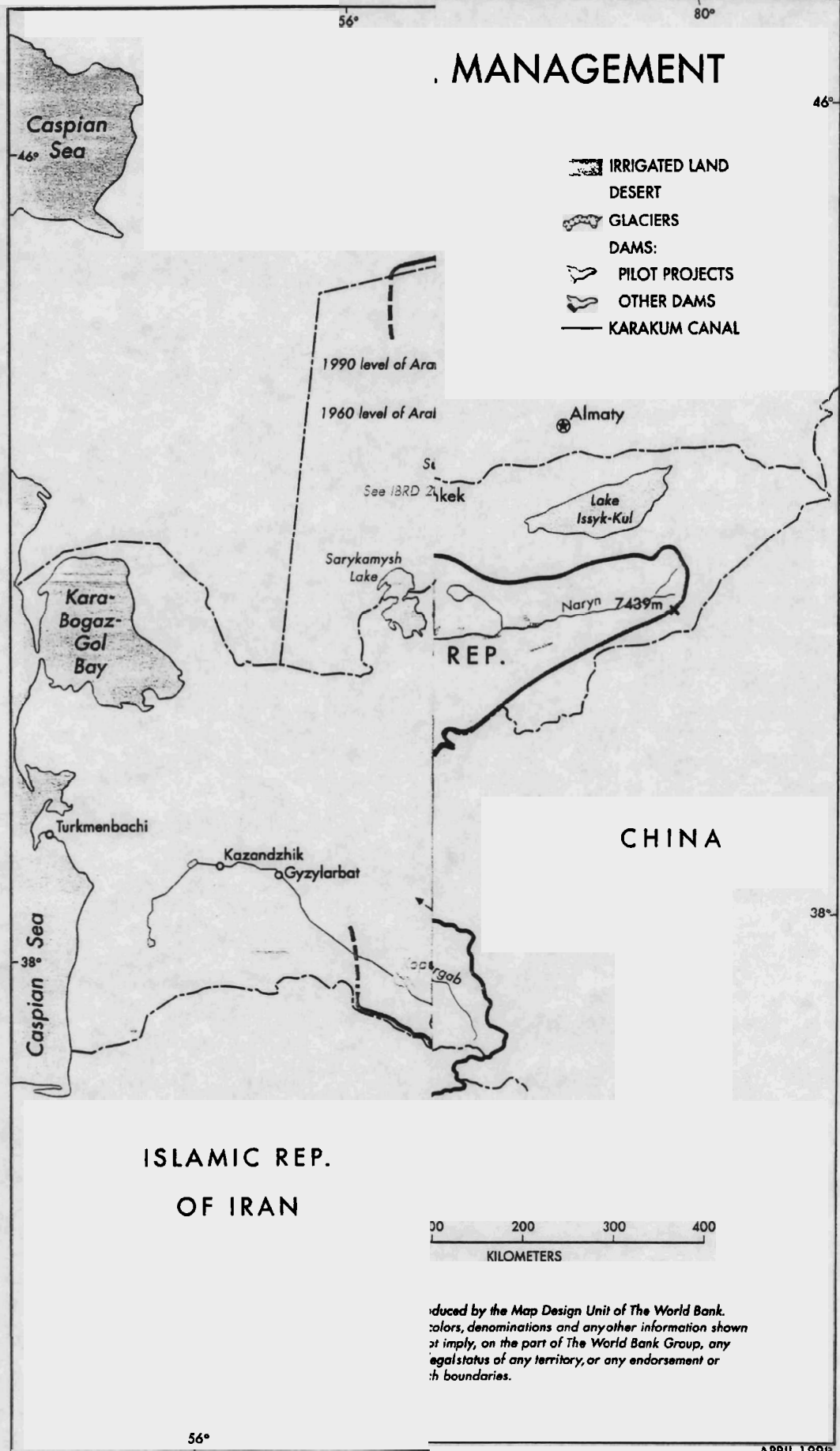
Table 7 : TRANSBOUNDARY DIAGNOSTIC ANALYSIS

Summary of Main Problems, Transboundary Elements, Root Causes, Strategic Action Program, Project Activities and Other Actions

Main Problems	Transboundary Elements	Root Causes	Strategic Action Program	Project Activities	Other Activities
<p>A. Environmental degradation</p> <ul style="list-style-type: none"> • Mobilization of salt and salinization of rivers, groundwater and agricultural land constitute a serious threat to sustainability and competitiveness of Central Asia • Salinized river and ground water crosses state borders • Downstream states and regions suffer from decreased water quality for irrigation and drinking water supply • Degradation of land and loss of productivity in downstream states and regions 	<ul style="list-style-type: none"> • Over-expansion of irrigation freshwater in rivers and salt load in rivers and groundwater • Inefficient water use, mainly in irrigation, mobilizes excessive salt (See B) • Absence of adequate incentives for water conservation • Absence of awareness of about of link between water use and salinization • Diminished effectiveness of drainage system due to lack of maintenance and investment (See C) • Lack of transboundary agreements on and monitoring of water quality 	<ul style="list-style-type: none"> • Focus on salinity issues, in general, and reduced salinity reduction in rivers, in particular; water conservation • Public awareness • Monitoring of transboundary water quantity and quality • Transboundary water quality agreements; • Consistent policies, strategies and action programs for improved incentives for water conservation and investments 	<ul style="list-style-type: none"> • Stresses need for long-term supply of water and capacity of water regulation and for conservation of upper watersheds • Target of 15% water conservation by 2002 starts addressing root causes; increase investments in productive and social sectors of the disaster zone by states and donors; • Restoration of wetlands; Preparation of economic development strategies and action programs; 	<ul style="list-style-type: none"> • Restoration of one wetland under Comp.E; • Root causes addressed under Comp. A and other components; 	<ul style="list-style-type: none"> • Salinity issues central to Comp. A1 and others; • Water conservation is focus of public awareness is core of Comp. B • Monitoring of transboundary water quality is Core of Comp. D • Transboundary water quality agreements will be outgrowth of A1 • Consistent policies, strategies and action programs are focus of Comp. A1
<ul style="list-style-type: none"> • Excessive erosion in upper watersheds leading to mud slides and sedimentation of transboundary rivers 	<ul style="list-style-type: none"> • Loss of reservoir storage and capacity 	<ul style="list-style-type: none"> • Poverty and human pressure on marginal lands in the upper watersheds • Absence of incentives preventing deforestation and over-grazing 	<ul style="list-style-type: none"> • Excessive water use in irrigation in upstream regions and states (See C) 	<ul style="list-style-type: none"> • Decrease in water flow to downstream areas causes retreat of the Aral Sea, desiccation of deltas and consequent loss of incomes as well as loss of biodiversity, including globally endangered species, in the Sea and deltas. • Increase of river and groundwater salinity in the downstream areas causes drinking water problems and health hazards • Costs of rehabilitation and subsidization of disaster constitute a major drain on the budgets and investment 	<p>B. Deterioration of environment, incomes and poverty in the disaster zones close to the Aral Sea</p>
<ul style="list-style-type: none"> • Economic development strategies prepared by Bank for disaster zones in three states; • IFAS is preparing social transformation Funds • Water supply projects of the Bank in the three concerned states; • Uzbekistan Small Scale Credit Agency Project will start in disaster zone under preparation; 	<ul style="list-style-type: none"> • NEAP in Kyrgyzstan and policies of Tajikistan stress protection of upper watershed projects • Bank water shed projects proposed in Kyrgyzstan ASBP program 6 	<ul style="list-style-type: none"> • NEAP in Kyrgyzstan and policies of Tajikistan stress protection of upper watershed projects • Bank water shed projects proposed in Kyrgyzstan ASBP program 6 	<ul style="list-style-type: none"> • ASBP program 6 	<ul style="list-style-type: none"> • ASBP program 6 	<ul style="list-style-type: none"> • ASBP program 6

<i>Main Problems</i>	<i>Transboundary Elements</i>	<i>Root Causes</i>	<i>Strategic Action Program</i>	<i>Project Activities</i>	<i>Other Activities</i>
	capacity of the downstream states				
C. Deficient transboundary water management					
<ul style="list-style-type: none"> • Present management of transboundary water quantity and quality is economically and environmentally unsustainable, and could lead to conflict (See A); 	<ul style="list-style-type: none"> • Main problem is inherently transboundary 	<ul style="list-style-type: none"> • Over-expansion of and excessive use of water in irrigation; • Integrated long-term and seasonal transboundary water management is a new requirement due to the break-up of the Soviet Union; • Policies and monitoring infrastructure are not yet geared to the new requirements; • Population and policies in the new states, with different interests, are unprepared for difficult choices required by sustainable transboundary water management • Water quality is new in transboundary water management as salinization becomes more urgent; 	<p>Focus on :</p> <ul style="list-style-type: none"> • water conservation • Integrated national and regional policies, strategies and action programs • Interstate agreements focusing on reduced water consumption and increased water and land productivity; • Creation of transboundary water monitoring capacity • Outreach and public awareness campaign 	<ul style="list-style-type: none"> • Comps A and B focus on water conservation; • Comp A prepares these common policies and for agreements; • Comp. D. creates basic monitoring capacity; • Comp. B focuses on Public Awareness 	<ul style="list-style-type: none"> • USAID and EU/WARMAP support work on agreements via IFAS and ICKKU
<ul style="list-style-type: none"> • Water storage & control facilities, built to serve the whole region, has been divided among states and new interstate relations on management and financing have to be developed. • Absence of common policies on above facilities constrain investments in water and other related sectors 	<ul style="list-style-type: none"> • The main problems are core transboundary issues. There are disputes over operational responsibility and division of maintenance costs and funding of joint water management institutions; 	<ul style="list-style-type: none"> • Break-up of Soviet Union forces new relationships between states; • New outside investors require independent assessment of dam safety • Absence of adequate transboundary agreements on water storage and control facilities 	<p>Focus on:</p> <ul style="list-style-type: none"> • Safety and sustainability of dams and reservoirs • Independent assessment of dam safety; • Preparation for agreements on water storage and control facilities including cost sharing 	<ul style="list-style-type: none"> • Comp. C focuses on safety and reservoir sustainability; • Comp C prepares independent assessment of dam safety; • Comp. A prepares integrated policy base for agreements and increased investments; 	<ul style="list-style-type: none"> • USAID work will continue to support work on improved management of water storage facilities;
<ul style="list-style-type: none"> • Water use is inefficient and unsustainable; 	<ul style="list-style-type: none"> • Rational water use in irrigation and other sectors of the various states is a precondition for sustainable development for the whole region 	<ul style="list-style-type: none"> • Absence of adequate incentives for water conservation and productivity as well as for private investments in irrigation, drainage, water supply infrastructure; • Absence of awareness of politicians and populations of costs of inefficient water use; • Absence of field tested low-cost solutions for water conservation; 	<ul style="list-style-type: none"> • Stresses need for correction of all three root causes 	<ul style="list-style-type: none"> • Comp. A prepares common policy Framework with focus on improved incentives; • Comp B will address Public awareness issue; • Comp A2 - will create such field tested low-cost solutions 	
<ul style="list-style-type: none"> • Deficient Irrigation and Drainage infrastructure; 	<ul style="list-style-type: none"> • Long-term water conservation and quality as well as salinity management objectives can be 	<ul style="list-style-type: none"> • Lack of maintenance of infrastructure in years of economic transition due to budget constraints; 	<ul style="list-style-type: none"> • Prepare consistent policy framework for increased investment; 	<ul style="list-style-type: none"> • Comp. A prepares this framework, including national strategies and investment plans 	<ul style="list-style-type: none"> • Bank projects (See A)

Main Problems	Transboundary Elements met only with improvements in national irrigation and drainage infrastructure	Root Causes	Strategic Action Program	Project Activities	Other Activities
D. Institutional Weakness	<ul style="list-style-type: none"> Transboundary management requires a common interstate institutional capacity; infrastructure 	<ul style="list-style-type: none"> Unclear and inconsistent national and regional policies transition limit investment in infrastructure Sustainable economic development in the basin requires joint action 	<ul style="list-style-type: none"> Strengthen and improve coordination of interstate institutions such as EC-IFAS, ICWC and SDC 	<ul style="list-style-type: none"> Project preparation and implementation will strengthen IFAS and other regional and national institutions 	<ul style="list-style-type: none"> UNDP Capacity Building project;



REP 28879

MANAGEMENT

IRRIGATED LAND
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SALT GLACIERS
DAM
PLOT COLLECT
OTHER DAM
FOREIGN CANAL

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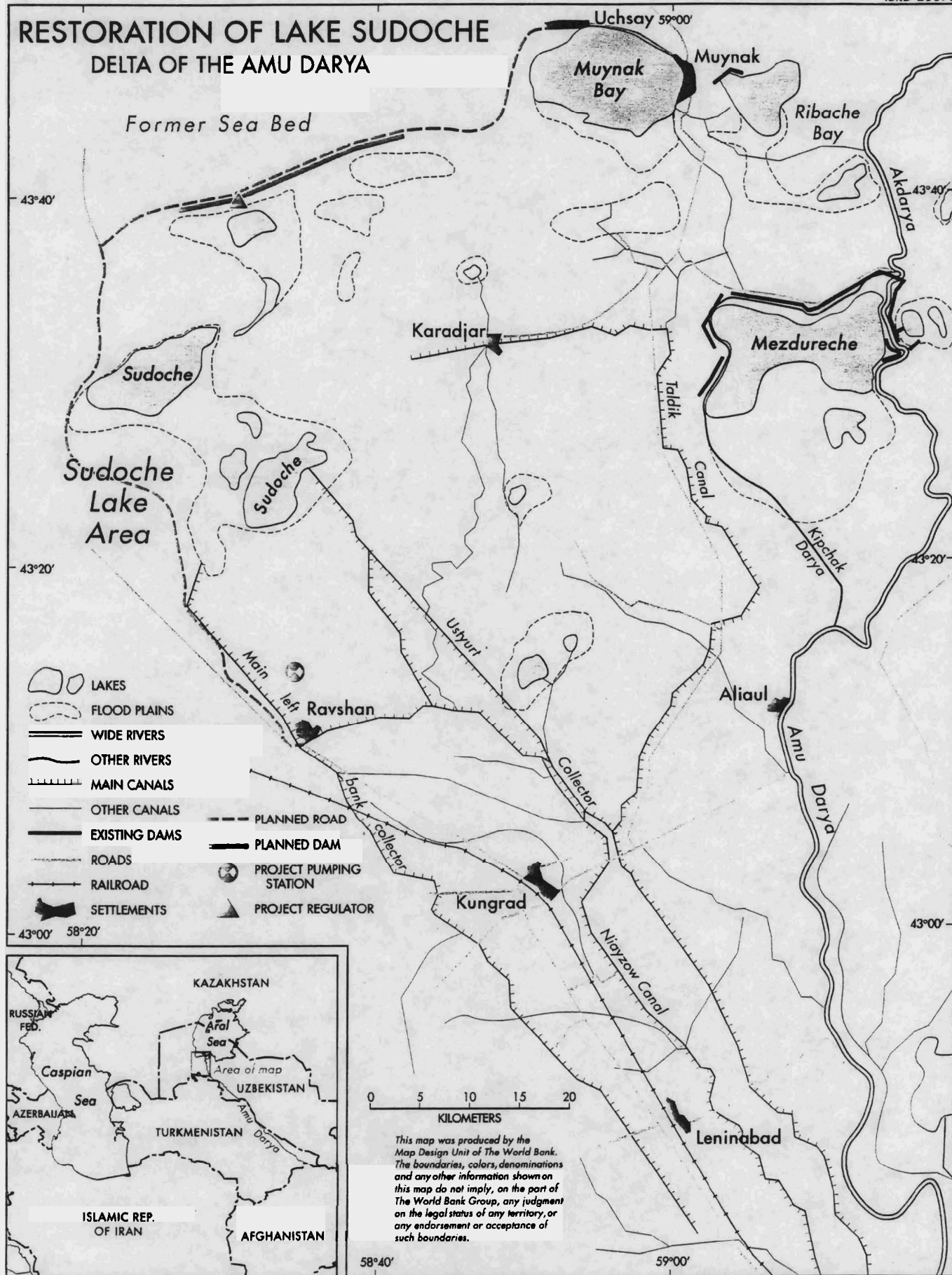
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RESTORATION OF LAKE SUDOCHE DELTA OF THE AMU DARYA

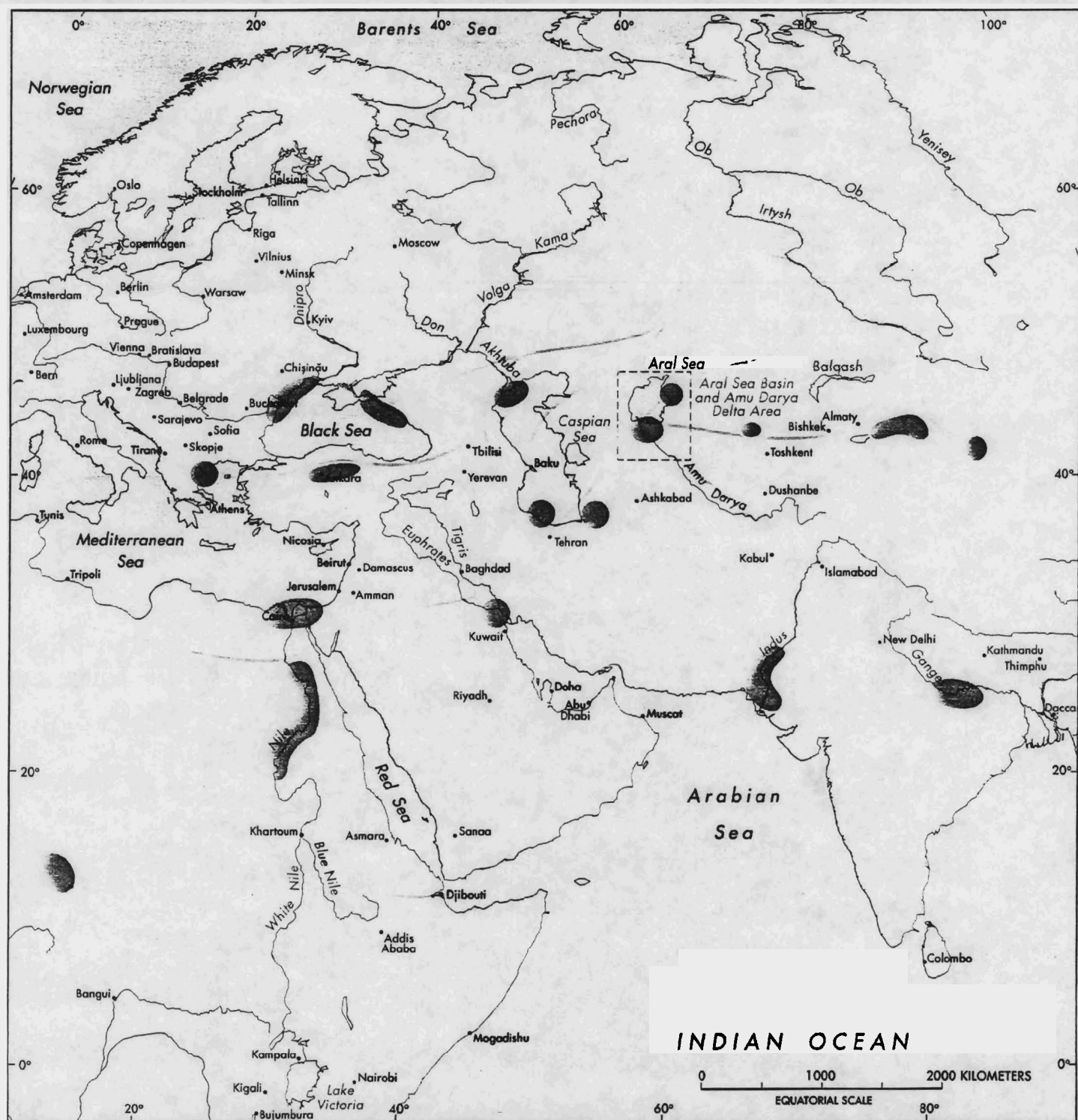




EURASIA FLYWAYS OF MIGRATORY BIRDS

- FLYWAYS
 NESTING AREAS
 • SELECTED CITIES
 RIVERS

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