

**Aral Sea Basin Program
(Kazakhstan, Kyrgyz Republic,
Tajikistan, Turkmenistan and
Uzbekistan)**

Water and Environmental Management Project

Project Document
May 1998



GEF Documentation

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

WATER AND ENVIRONMENTAL MANAGEMENT PROJECT

PROJECT DOCUMENT

Volume I - Main Report
May 1998

Rural Development and Environment Sector Unit
Europe and Central Asia Region

WEIGHTS AND MEASURES

Metric System

ABBREVIATIONS AND ACRONYMS

ADB	- Asian Development Bank
ASBP	- Aral Sea Basin Program
BVO	- River Basin Organization (Amu Darya and Syr Darya)
CA	- Central Asia
CIDA	- Canadian International Development Agency
CMU	- Component Management Unit
EC-IFAS	- Executive Committee of IFAS
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 Kazakhstan, Kyrgyz Republic and Uzbekistan
ICWC	- Interstate Commission for Water Coordination
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
OECF	- 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
SIC	- Scientific Information Center of the ICWC
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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Component A - Water and Salt Management

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- A2 - Detailed Description – Participation in Water Conservation

Component B - Public Awareness

- B1 - Draft TORs

Component C - Dam Safety and Reservoir Management

- C1 - Draft TORs – Dam Safety Assessment
- C2 - Detailed Description – Early Warning Systems
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Component E - Wetland Restoration

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**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 equivalent.

Financing Plan:
(US\$ million)

Source	Amount	% of Total
Global Environment Facility	\$12.2	58
Five Central Asian Republics	\$4.1	19
Netherlands	\$2.3	11
European Union/TACIS	\$1.4	6
SIDA	\$0.3	2
Unidentified	\$0.9	4
<i>Total</i>	\$21.2	100
Associated Investments in Improved Water Management*	\$65.2	
(of which World Bank =	\$45.6)	
<i>Grand Total</i>	\$86.4	

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

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

ARAL SEA BASIN PROGRAM

WATER AND ENVIRONMENTAL MANAGEMENT PROJECT

I. INTRODUCTION

1.1 This is the 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 by 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 of the Annex of Tables and serves as an Executive Summary of the project.

A. Background

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)¹. 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 the drainage area of two large rivers (the Amu Darya and the Syr Darya), the Aral Sea, and the Sea's 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 mountains 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 then flow through the plains of the downstream countries of Uzbekistan, Kazakhstan 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 size². The rivers end at the Aral Sea, in deltas located in northwestern Uzbekistan (Amu Darya) and in southwestern Kazakhstan (Syr Darya). Until the 1960s the Aral Sea was, with an area of 67,000 km², the world's fourth-largest inland body of water³.

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

² For comparison, the Mississippi River has a flow of 170 km³/year.

³ For comparison, the area of Belgium is 31,000 km².

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. 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 entities 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. The budget decline led 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. 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 (e.g., the Interstate Council of Kazakhstan, Kyrgyz Republic and Uzbekistan, ICKKU) 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) instruments for interstate cooperation, with the commitment of sovereign states the big challenge.

Root Causes

1.7 The roots of these fundamental problems can be traced to two developments: the massive expansion of irrigation; and the transition from a centrally-planned to a market economy following the breakup of the Soviet Union. 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 hectares (ha) were under irrigation. Expansion accelerated in the 1920s after the Russian revolution. By 1950 the irrigated area had almost doubled to 4.7 million ha. When the large-scale irrigation projects began in the 1950s, 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', the Soviet Union became independent of cotton imports.⁴ From 1950 to 1990, the irrigated area almost doubled again as 3.2 million ha of new land came under cultivation, bringing the total irrigated area to 7.9 million hectares⁵. 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 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 one of the major economic assets of the region⁶. Nevertheless, central planning promoted inefficient use and pollution of water and degradation of land resources, by under-pricing natural resources and allocating them to users by administrative means, which led 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 break-up of the Soviet Union and the transition from a centrally-planned to a market economy created a number of 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 an emphasis on quantity (resource productivity) over quality. The inherited management as well as pricing and incentives systems were not conducive to the rational use of scarce (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, the increasing salinization of irrigated land and water is the most serious⁷. The process of salinization is as old as the land itself in Central Asia. Much of the soil is high in salt. Since man's first agricultural exploitation of that land,

⁴ At its height, Central Asia was the third largest producer of cotton in the world after China and the USA. Uzbekistan alone was the third largest cotton exporter in 1996.

⁵ For comparison, Pakistan has 11 million ha of irrigated land and Egypt has 3.5 million.

⁶ 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.

⁷ There are a variety of other major environmental problems such as loss of biodiversity, water pollution, 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 more the salt is dissolved. Surplus irrigation water collects salt. The drainage system, if well designed and maintained, collects the saline surplus water, and feeds it back to the river or deposits it in desert sinks where additional salt is mobilized, and percolation may affect the groundwater. 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 water. If drainage is deficient in the irrigated areas, which is the case in much of the Aral Sea Basin, groundwater levels and salinity in the irrigated areas rise. Deep groundwater, which usually has high salt concentrations, can mix with shallow groundwater and increases its salinity. Groundwater moves under its own pressure in the whole basin. Once the shallow groundwater level rises to about 2 meters, depending on the soil structure, capillary forces pull it to the surface. There the water evaporates and the salts stay, reducing agricultural yields, affecting all flora and fauna, and often attacking the foundations of buildings etc.

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 that threatens life in the basin, and traditional control approaches can no longer cope with it. Salinization even affects 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) 31 percent of the 7.9 million hectares under irrigation 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 contained⁸;
- (d) water salinity peaks at over 2.0 g/l (in low water years) in the delta areas 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 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 the key leverage points have been identified. There is consensus among the experts on the core measure: reducing the amount of water used in irrigation. Decreasing water used in irrigation means that: (a) less salt is mobilized in the soil and the groundwater; (b) less saline water reaches the rivers and the groundwater; (c) more water is freed for environmental considerations, such as the 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 until the potential of other less costly alternatives have been exhausted. A reduction of some irrigated areas might be considered for regions with high marginal cost and low water efficiency. But a large-scale reduction of irrigated areas would have immediate detrimental economic and social impacts. 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.

1.13 The key issues are how to implement such savings and to complete a salinity strategy. The level of awareness among the population and policy makers about the need for and type of common action is low. Price and incentive systems conducive to water saving are not yet in place in the main water consuming countries. 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

⁸ USAID report.

the region does not exist. For a workable strategy and action plan, several key elements are lacking, namely: (a) identification of the main water polluting irrigation areas; (b) evaluation of the future potential extent of the problem; (c) delay time between cause and effect on the groundwater system; and (d) agreement on 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 Sea⁹. By 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 water. 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 almost 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 floods, and falling groundwater levels near the seabed. 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 are often contaminated by latrines. As a result, life expectancies in the districts near the sea are significantly lower than in surrounding areas. Moreover, 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, agriculture and service sectors. Huge tracts of agricultural lands were degraded by wind and water-borne salt from the rivers, soil, groundwater, the desiccated seabed, and the dried up wetlands.

1.16 The strategy towards restoring the Aral Sea itself is outdated and needs correction. Experts and practitioners agree that full restoration of the Aral Sea is impossible and act accordingly. Yet there are still a number of suggestions for full restoration (including the old Soviet Union plans of diverting Siberian rivers or pumping water from the Caspian Sea). None is economically or environmentally feasible.¹⁰ Full restoration through water savings is also unrealistic. At best, what

⁹ The level of the sea dropped by 17 meters between 1960 and 1996 at about 1 m/year, and 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 two 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.

¹⁰ Restoring the Sea within 100 years to a size of about 50,000 km², a level at which salinity would be about 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

could be expected is a retardation of the rate of the Sea's decline and future maintenance of the Sea at a sustainable level. For the populated areas in the vicinity of the Sea (mainly the delta areas), this implies adjustment to the fact of a much smaller Aral Sea and a reorientation of the local economies and a restructuring of the past strategy of alleviating, containing and counteracting the negative impacts of the environmental disaster. At the basin level, the most important measure would be to arrive at joint actions to reduce the salinity and increase the flow of the rivers to the deltas.

Water Management in the Basin

1.17 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.

1.18 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 quantity needs to be agreed between national users 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. Seasonal water quantities are also a major problem, because the upstream States would like to use water resources for their own winter power generation needs, which is in conflict with the downstream States' summer irrigation needs. Any uncertainty over water quantity increases the risk to investments in the water sector and undermines national initiatives to improve water management. Therefore, supply and allocation of water must be established on a reliable long-term basis, not only on a year-to-year basis. For the upstream States, long-term issues of watershed protection also have to be addressed. Similar issues arise on the topic of water quality. Unfortunately, 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 pollutant of salt (para 1.12). While salt mobilization can be achieved through localized means, salt storage needs a broader, strategic view. Contrary to the present dispersed institutional structure, water quantity and quality problems must be dealt with together as they are physically linked and managerially intertwined.

1.19 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 State was planned for the benefits of other States. The largest dams and reservoirs are located in the mountainous but poorer upstream States, while stored water mainly benefits the larger and richer downstream States. The operational responsibility and provision of maintenance for transboundary water infrastructure are

would demand a cut in current irrigation water use by 40 km³/year or by 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.

now in dispute. There are also issues regarding the 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 an unstable natural dam constitutes a potential disaster of regional dimensions. Although the 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. Furthermore, siltation threatens the 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, because institutional investors such as the World Bank require an assessment of dam safety for all major investments potentially affected by the operation of an upstream dam.

1.20 Ineffective and excessive use of water in irrigation and other sectors is a core problem inherited from the Soviet system. Correcting this problem is not only key to solving the salinization issue, but also key for the competitiveness of Central Asia's agriculture in which irrigation constitutes the bulk of production costs¹¹. Approximately 35 percent of the water delivered to the farms are not used by the crops¹². In comparison, for well-managed irrigation systems, the comparable figure is only 10-15 percent. Water use in the basin is about 12,000 m³/ha. Israel, the world leader in irrigation technology in a comparable environment, uses less than half that. Because water is being supplied at no cost to the user, in the principal water consuming States of the region there are no incentives to conserve water (e.g., through better irrigation timing and land leveling). Private production structures, non-distorted pricing systems for water and drainage inputs, and a means for penalizing pollution are absent or only in initial stages of development. 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 the need and options for water saving is limited among politicians, water suppliers, and users. This limited understanding needs to be addressed on a broad front yet with specifically targeted initiatives.

1.21 Maintenance and improvement of irrigation and drainage infrastructure are also major problem areas. As a consequence of the general cut in maintenance budgets, most of the irrigation and drainage infrastructure has been poorly maintained. An increasing percentage of farm drainage, often of the vertical drain type, is out of operation and difficult to rehabilitate. This has contributed massively to soil salinization 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 range¹³. 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 to mobilize such resources for efficient on-farm investment and maintenance as well as for

¹¹ A detailed calculation of economic costs of irrigation is not available but a rough estimate puts it around 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.

¹² Numbers as high as 50 percent have been mentioned by some sources.

¹³ Rehabilitation and improvement costs of irrigated land are of the order of the US\$2,000/ha, but can be as high as US\$4,500/ha. Close to half of the irrigation infrastructure needs urgent rehabilitation.

cost recovery for the public infrastructure. Again, changing the incentive system and mobilizing awareness are important, but equally vital are the demonstration of low-cost technologies, organization of private farms into groups based on common interest, and adequate priority setting for irrigation maintenance, reconstruction and improvements in the basin States.

Instruments of Interstate Cooperation

1.22 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 considered after independence were: (a) is there a need for new regional institutions, or are regular interstate consultations and existing agencies¹⁴, 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?

C. Responding to the Challenges

1.23 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

1.24 The Central Asian (CA) States 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 water resources management in the basin 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 management of the annual water allocations for each State and the schedules for the operation of reservoirs. The River Basin Organizations (BVOs) were maintained and given the task of carrying out ICWC decisions¹⁵. The ICWC meets quarterly or whenever the need arises. Its decisions have to be unanimous and then are immediately binding on all five States.

1.25 A more systematic and structured approach came from the Aral Sea Basin Program (ASBP). In preparation since 1992 with the help of UNEP and the World Bank, the ASBP was launched in 1994. In a June 1994 meeting in Paris, the international donor community agreed to

¹⁴ At independence the existing institutions of "regional" nature were two river basin management institutions (called BVOs), 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.

¹⁵ Financing of the BVOs was not clearly addressed.

support the ASBP¹⁶. The long-term objectives of the ASBP were defined as (a) stabilizing the environment of the Aral Sea Basin, (b) rehabilitating the disaster zone around the Sea, (c) improving the management of the international waters of the Basin, and (d) building the capacity of the regional institutions. The objectives relate closely to the regional basic problems outlined previously (para 1.6). The ASBP was conceived as a broad program comprised of 8 programs and 19 projects, with a planned preparation phase of 18 months. Starting with an small-scale implementation phase lasting three to four 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 program 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.

1.26 In coordination with regional and donor representatives, the World Bank undertook a review of the ASBP in July 1996. Appreciating the program's 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 CA 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 BVOs. For the Bank, it suggested more concentration on financing of investment projects in support of the ASBP, a gradual reduction of its technical assistance role, and a focus on the speedy preparation of the present project.

1.27 Further changes resulted when the five CA Heads of State met in Almaty in February 1997 to discuss the ASBP and made the following decisions: (a) adopting the recommendations of the above review as a general guideline for reform of the ASBP; (b) merging the ICAS and IFAS into a new restructured IFAS; (c) rotating the 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 States¹⁷. 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 1.24 and 1.25) were clarified. EC-IFAS was to provide overall ASBP 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 Aral Sea 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

¹⁶ Afghanistan shares a common border with Tajikistan, Uzbekistan and Turkmenistan (approx. 800 km) and was invited to join the ASBP but not surprisingly did not respond. 12.5 percent of the ASBP's water resources originate in the country (between 3-5-km³ water/year flow to the Amu Darya), yet only a fraction is used for irrigation.

¹⁷ The Heads of State also stressed the need to restrain the use of foreign consultants.

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\$14,000¹⁸.

1.28 The achievements to date of the ASBP, as measured against its own long-term goals, are substantial¹⁹. While the environment of the Basin is today far from stabilized, the preparation phase of the ASBP created a clearer vision of the problems and was instrumental in catalyzing action. It also created an internationally accessible knowledge base comprised of some 20 analytical and many strategic reports (see Vol. II Part IV and document list), a regional database on water and land use, as well as a pool of local experts. 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)²⁰.

1.29 The disaster zone around the Sea is also far from rehabilitated, but major strides have been made by the national governments (para 1.34) and 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 UNDP, UNICEF, USAID, and a series of other donors are all underway. IFAS and the World Bank reacted to increasing concerns about delays in 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 that the ASBP would also contribute to relief support for the Aral Sea region. Delta development studies led 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 (biodiversity, salt and dust storms, and 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 nationally-based social transformation funds.

1.30 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 keeping the peace. 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, and priorities emerged, such as transboundary water monitoring, 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 interests. A dam safety assessment was started in 1997. Coming from the energy side and under the ICKKU (para 1.5) umbrella,

¹⁸ 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 dollars.

¹⁹ The fact that Phase I lasted over 3 years instead of 18 months was largely the result of overly optimistic expectations at the start of the ASBP.

²⁰ Those programs include water strategy (Program 1.1), water quality (Program 3), delta development (Program. 4) and water supply (Program. 5).

USAID supported work towards agreements on the management of the upper Syr Darya reservoirs²¹.

1.31 Capacity of regional institutions to plan and implement the ASBP was created under the program. There is now a grid of institutions capable of providing basic regional water and environmental management. The core institutions 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 1998, enough financial resources for basic self-reliant operation²². It still has weaknesses in management, sector coverage, and outreach to the population, donors, and the scientific community, but EC-IFAS has a fairly consistent and focused vision about future needs and program objectives (see Vol. II Part II). It is also addressing its weaknesses systematically, through staff training, hiring and increased outreach programs. Capacity building assistance has been agreed recently with the UNDP using 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, disseminating information, and exchanging knowledge. ICWC has its own Scientific Information Center (SIC)²³, home of the regional data base (para 1.28). It can deliver advice on a wide variety of water management issues. The two BVOs operating the interstate water management infrastructure²⁴ are related to ICWC.
- (c) The Sustainable Development Commission, an analogue institution to ICWC in the field of environment, is still in its early stages of development.

National Initiatives

1.32 As in all interstate efforts, success depends on what the States actually do in 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 actions. Below, is a brief review of the status of national initiatives with respect to the ASBP objectives and actions.

1.33 Each State has its own environment policy 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 priorities. 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

²¹ 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 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, but its details have yet to be worked out.

²² EC-IFAS has a staff of 41, with an operational budget of about US\$180,000/year (1998). Staff costs represent about 85 percent of its budget.

²³ SIC reportedly has a staff of 40 and an annual budget of US\$200,000.

²⁴ The two Soviet-era BVOs suffered since independence from uncertainty and limitations in their financing.

National Environmental Action Plan (NEAP), Uzbekistan is about to finish its own NEAP, and Kazakhstan is also nearing completion. Upper watershed States usually place more emphasis on erosion control, protection from mining pollutants, glacier protection, and biodiversity protection in their mountain refuge areas. The lower riparian States stress water and soil salinization, water pollution from the upstream States (from industry and communes) and biodiversity in wetlands. Salinization is usually dealt with as an issue for localized curative action on symptoms, such as providing consumers of drinking water cleaner sources or purification plants, improving drainage in specific areas, etc. The economic and environmental potential of joint regional action in water conservation is not yet fully appreciated.

1.34 Rehabilitation of the disaster zone around the Sea has been a major burden for Kazakhstan, 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 the EC-IFAS. Compared to this amount, the assistance provided by donors at national and regional levels is small. Measures include substantial investment in economic and social infrastructure (gas, water supply, irrigation and drainage, housing, health, education), 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 incentive schemes for economic activity (salary level incentives, tax breaks, development funds). 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 1.29) and through active intervention on the water and environment side such as in the proposed project.

1.35 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 States²⁵. The operation, maintenance and development of infrastructure for water storage, water control, irrigation and drinking water constitute huge costs to the budgets. Yet the accumulated backlog of deferred maintenance has reached daunting proportions (para 1.19). It is not surprising, therefore, that steeply rising pressure for reform originates in the macro and finance bureaucracies of the States. The States have also started to promote efficient water use, and basin-wide, a reduction of 5 percent has been achieved in the last five years. Economic reform has started throughout Central Asia, particularly in Kazakhstan and the Kyrgyz Republic. In these States, privatization efforts in agriculture are forcing fundamentally new relations between the State and the water users. The users are left to maintain and manage 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. 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.

²⁵ 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 with 180,000 sector employees. In the Kyrgyz Republic the comparable figures are US\$20 million (218 million sums) or 4 percent of budget and 5,400 employees.

Donor Support

1.36 Donor support to the ASBP at the regional level amounted to some US\$32 million thus far; approximately 20 donor agencies pledged funds at the 1994 Paris conference. To date, about 10 grant and Technical Assistance (TA) donors have financed Aral Sea projects in close or loose connection with the ASBP. The largest grant donors were according to donor records²⁶: (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 with US\$6 million (for water quality assessments, preparation of wetland restoration, capacity building, including preparation support to this project, contributions to UNDP and UNICEF's ASPERA program, and recently-agreed UNDP support for SDC and EC-IFAS capacity building); (c) EU-TACIS with US\$7 million (the WARMAP project focusing on the preparation of interstate water agreements, the regional water and land management database, pilot projects, and monitoring of on-farm water management issues); (d) the World Bank with 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 with 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).

1.37 **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 1.30). The five States formally requested GEF assistance for the Aral Sea Basin Program in April 1996. The present project with a total costs of US\$21.2 million and a GEF contribution of US\$12.2 million is likely to constitute the single most important operation at the regional level for the coming 4 - 5 years²⁷.

1.38 Information about the nature and volume of donor support to the national level is not readily available. The information 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 US\$605 million in support of improved land and water management. 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

²⁶ The EC-IFAS account is different as it only takes into consideration support measures coordinated by it or its predecessors.

²⁷ 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.

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

1.39 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 CA 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 one 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 States, Uzbekistan and Turkmenistan, will most likely 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 budgetary relief. On the contrary, State budgets will remain extremely tight throughout the coming years, particularly in the poorer States 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.

1.40 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. Yet the pressure from the financial side will be serious as national governments look for savings, and regional expenditures will be natural targets for cost cutting. Donor funding for the regional activities will also be tough to realize. The Aral Sea crisis 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.

1.41 The EC-IFAS will face a host of major challenges and meeting them will not be easy. It will have to continue to prove its usefulness and efficiency to its 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 the peace over water in the region; (b) role as the 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) finally, 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, donors will likely stress: (a) 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 1.27) 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.

Strategic Action Program

1.42 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 validity of objectives and targets is reviewed. 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). Feasibility and detail of such plans decrease necessarily with the increasing distance of the time horizon.

1.43 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 basic review process (para 1.26), and the review concluded in essence that the original program objectives are still valid, that the program had to balance its work better between study and action on the ground, that the ASBP should become more self-reliant and focused, that a SAP should be prepared along the general lines prescribed by them, and that the program should be put into action without delay.

1.44 The results of the preparation phase have been summarized in a Transboundary Diagnostic Analysis (TDA)(Annex Table 7), which 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/GEF, would be approved by the Member States as a condition of grant effectiveness. The draft SAP accepts the objectives of the ASBP. 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 the time horizon and that it was prepared under a tight deadline by the new EC-IFAS.

1.45 For the short term, the four overarching strategic action program directions are:

- (a) sharp focus 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) visible action on the ground and 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 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 also engage the outside world

through focused contacts with the press, as well as the intellectual and the aid communities.

1.46 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 developing its manpower resources. EC-IFAS manpower in reporting and planning is particularly weak, and the UNDP capacity building project would address the issue. 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.

1.47 As for the ASBP finances, the SAP only focuses on the GEF project framework and not on the whole of the ASBP. The fact is that the States have earmarked funds for the ASBP in their 1998 national budgets in a global manner (para 1.27), but they reserve the right to decide on the exact use of the funds. 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, Alternatives Considered, and Status of Preparation

1.48 This proposed project dates back to the beginning of the ASBP and the GEF preparatory assistance grant of US\$500,000 in 1994. Preparation was delayed along with the preparation phase of the ASBP 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. 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, the project's components and content were prioritized. 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 World Bank report, but its contents have been reviewed by and agreed with the clients and donors in substance.

Consideration of Alternatives. Based on the objectives of the ASBP and the SAP, and the framework of what GEF funds could support, various alternatives were considered:

- (a) *National versus regional activities.* Although a regional project, its success depends on strong ownership by national states. To anchor such ownership, four main approaches were used, namely: founding regional strategic work on inputs from the national level; devoting a substantial share of project funds to ground level action (by nature on national territories); instituting control of certain project elements by national governments rather than by the regional EC-IFAS; and providing equal finance shares for the five states, whenever technically possible.

- (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 strong need for action on the ground (paras 1.21 and 1.34) 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 was agreed upon.
- (c) *Water Management and Biodiversity versus Poverty Alleviation.* After the Almaty Conference, and the message from the five heads of State to contribute to short-term poverty alleviation, EC-IFAS sought to add poverty alleviation elements to the project. The discussion ended with short-term poverty objectives being partially addressed under the wetlands biodiversity element of the project and EC-IFAS using other instruments to better address poverty alleviation. In the longer term, 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 were held on the adequacy of the present knowledge base for formulating a consistent water and 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 project funds for further analytical studies of salinity issues. A compromise was agreed based on the realization that water issues cannot be divorced from salinity issues (para 1.12).
- (e) *Location of Action for Biodiversity Conservation.* To have the maximum impact on biodiversity, the project should focus on delta wetlands. 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 Kazakhstan²⁸, it was decided to concentrate effort and scarce project funds on the Amu Darya delta, which had great biodiversity potential.
- (f) *Foreign Consultant Costs.* Notwithstanding the need for foreign expertise, the costs had to be carefully reviewed. 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 cost, still considerable.
- (g) *Pilot Projects versus Public Participation in Water Conservation.* Initially, pilot projects were considered essential to demonstrate and build support for 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 and an awards scheme for water conservation by water users and suppliers.
- (h) *Technology Choices.* For transboundary water monitoring, the choice was between inexpensive scientific instruments with limited analysis and recording capacity and more

²⁸ The Northern Aral Sea Project.

advanced electronic logging systems and equipment with greater capacity. The more modern, battery-driven equipment was chosen. For the wetlands restoration, 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 and manpower.

1.49 **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, project management, and financing, with the president and members of the IFAS Board. A Bank 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, which were successfully completed on April 16, 1998.

1.50 Draft final terms of references are available for all major consultant assignments and represent a value of US\$11.00 million (70 percent of all consultant expenditure or 52 percent of total project cost). Outline descriptions of all major equipment procurement are presented in the component descriptions and the cost-tables. They cover a value of US\$3.85 million (93 percent of all equipment procured under the project or 18 percent of total project cost). For civil works, representing US\$3.43 million or 17 percent of total project cost, the basic parameters have been established, and detailed design will precede implementation. The Draft Strategic Action Program of the ASBP and a detailed Project Implementation Plan are also available.

**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 (SAP). 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: (a) stabilizing the environment; (b) rehabilitating the disaster zone around the Sea; (c) improving the management of international waters; and (d) building the capacity of the regional institutions.

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

2.3 The main objectives of the ASBP in environmental stabilization and management of international waters for the next four and a half years are twofold: (a) to start effectively reducing water consumption in the productive sectors, mainly in irrigation, with an expected 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.

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

B. Project Description

2.5 The project constitutes the main tool of the ASBP and EC-IFAS to create the common policy, strategy and action programs. It is packaged into one lead and five support components as follows²⁹:

- (a) The lead *Water and Salt Management* component will prepare for the ASBP the common policy, strategy and action programs;
- (b) A *Public Awareness* component will educate the general public to conserve water and to accept burdensome political decisions;

²⁹ Detailed descriptions of the components appear in Vol. II Part I.

- (c) A *Dam and Reservoir Management* component will complete the independent dam safety assessment, improve dam safety, address sedimentation, and prepare investment plans;
- (d) A *Transboundary Water Monitoring* component will create the basic physical capacity to monitor transboundary water flows and quality;
- (e) A *Wetlands Restoration* component will rehabilitate a wetland area near the Amu Darya delta and contribute to global biodiversity conservation and an increase in local incomes;
- (f) A *Project Management Support* component 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, and the other components will support it one way or another. Component A is the main vehicle for implementing the SAP and has 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 A.1-National and Regional Water and Salt Management* would prepare, over a period of four years, the framework for interstate agreements for improved regional water and salt management (paras 1.17 and 2.9). Specifically, the sub-component would prepare:

- (a) for the regional level, various scenarios which would satisfy the demands on water allocations including those from the environment. These scenarios would enable political decision-makers to reach agreements for improved water and salt management.
- (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 1.31). 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 percent over the project period, thus reducing salinity and releasing the water saved for improving environmental uses and the quality of the river deltas and making proposed new interstate water sharing agreements feasible;

- (d) participation of water users and suppliers in the formulation of regional and national proposals; and
- (e) regular regional and national review of decision-making steps at crucial junctures; this will ensure the gradual build up of consensus and of the capability to reach interstate agreements.

2.9 Interstate Agreements. The need to avoid conflict over water through strengthened interstate agreements was noted as a key objective of the ASBP. Work is currently underway in two areas: under EC-IFAS/ICWC leadership and with EU-TACIS assistance, a revised interstate water sharing agreement, which would increase the share of water for environmental uses and provide a mechanism for dispute resolution. Work is also underway, led by ICKKU, with EC-IFAS participation and USAID assistance, on the principles of operation for the Toktagul reservoir on the Syr Darya in the Kyrgyz Republic (including cash compensation and dispute resolution mechanisms). A framework agreement was signed on March 17, 1998 by the Kyrgyz Republic, Kazakhstan and Uzbekistan. It is expected that the updated SAP will provide the basis for further agreements, especially in the water quality area.

2.10 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 a 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.

2.11 *Sub-Component A.2-Participation in Water Conservation* (US\$1.0 million) will be implemented from 1999 to 2002. Its objective is to encourage waters users and providers to participate in the generation and implementation of ideas for low-cost water conservation measures and their practical application on a pilot level. Conceived as a grassroots participation in water saving instead of state-led pilot operations, the results will be monitored and fed back into the regional and national strategy work under A.1; thus it will help improve the realism of recommendations made under A.1 and their acceptance by policy makers. Additional co-finance is being sought to expand pilot effort in on-farm water conservation.

2.12 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 A.1. A regional consultant firm would provide monitoring and analysis. The regional and national teams under A.1 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.

2.13 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 for saving water and acting in common; this would also stimulate and facilitate respective political action; and (b) induce behavioral change among water users, thus reducing their water consumption by about 5 percent at the end of the campaign in 2002.

2.14 Key features of the component are:

- (a) a public awareness campaign to cover the five CA States, with content and instruments adapted to the particular conditions in each State, developed and led by a specialized consultant firm selected under competitive conditions;
- (b) development of an appropriate communication strategy that uses adequate up-front thematic research, target group identification, and selection of appropriate communication instruments. Up to 15 percent of the available funds will be devoted to the detail design stage once the firm has been selected;
- (c) campaign messages would rely on real examples of water saving chosen from existing cases. If available in time and found suitable by the consultant, examples initiated under the A.2 sub-component could be drawn upon;
- (d) monitoring from a baseline will ensure corrective action during implementation and measurement of behavioral change and impact on water conservation; and
- (e) 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.

2.15 Dam and Reservoir Management (Component C) (US\$2.6 million or 12 percent of total cost). This activity will provide key inputs to ensure the sustainability of dam and reservoir infrastructure and remove major impediments for investment in improved interstate water management (para 1.19) and feed into the national and regional proposals under Component A. This component will fund:

- (a) upgrading of monitoring and warning systems at selected dam sites on a pilot basis, with a total of nine dams³⁰, including training in the 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 and operation of equipment;
- (b) preparing 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;
- (c) gathering priority data and preparation of a program for the Sarez Lake dam in Tajikistan at a cost of US\$130,000;
- (d) continuing a safety assessment of dams in the region by independent foreign and local experts at a cost of US\$80,000.

2.16 **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). Actions taken under this component are thus a precondition for effective agreements on regional water management, which Component A will help prepare.

2.17 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.³¹ To measure water flow, the each equipment set would consist of a battery powered 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 Aral Sea Project; 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 BVOs, and support to the national services during the installation phase; this will cost US\$360,000.

2.18 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

³⁰ Two dams in each state except Tajikistan where one dam is included. Tajikistan's Lake Sarez dam is addressed separately.

³¹ There are no known measuring stations in operation on the Afghan side. Under this project a new measuring station on the upper Amu Darya in Tajikistan will permit greater accuracy in measuring the flow from Afghanistan.

data to interested parties such as the national water agencies as well as the BVOs. If needed EC-IFAS will assure budgetary support for recurrent costs (operation, consumables and maintenance) of the stations for States with chronic budget problems such as the Kyrgyz Republic and Tajikistan.

2.19 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 1.29 and 1.34). Lake Sudoche is proposed by Uzbekistan to be recognized as a RAMSAR site³². 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 birds, notably 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) developing the 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 with 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 season³³. 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) improving the access road to the lake for project development and improved project supervision and installing a pumping station on a nearby collective farm to counter potential drainage problems caused by the rising lake level, which together will cost US\$1.2 million;
- (c) monitoring of project impacts on biology, local incomes, and social structure which would provide lessons for improved natural resources management around the lake and for similar future projects, with a cost of US\$460,000³⁴; and
- (d) project management, based in Karakalpakstan, will supervise the project as well as prepare and implement a lake management plan, including management of water, hunting and fishing. The costs amount to US\$190,000.

³² 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 a Wetland of International Importance.

³³ The requirements are estimated at 300 million m³ of fresh water in a bad year and 600 million m³ in a good year during the autumn and winter seasons.

³⁴ Recurrent operation and maintenance costs of the infrastructure will amount to about US\$105,000 a year and will be funded by the KKP Government and the farm operating the pumping station

2.20 Project Management Support (*Component F*) (US\$1.9 million or 9 percent of total cost). This component will enable EC-IFAS to implement the project. It will create and support the operation of a Project Management and Coordination Unit (PMCU). 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 its technical assistance resources, with the WARMAP II project.

C. Project Costs and Financing

2.21 The Project 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 detailed tables, schedules and appendices. A summary is provided in the sections below.

2.22 To better illustrate the impact of the GEF grant on total investments in improved water management, related World Bank projects in irrigation and drainage improvement have been included in the project cost table. These projects, in Kazakhstan, the Kyrgyz Republic and (prospectively) in Uzbekistan, aim to improve water use and the productivity of irrigated agriculture. Other projects in the Bank's program, as well as those of other donors, would increase the investment total by at least \$200 million.

2.23 The total cost of the project, including associated investments in improved water management, is estimated at US\$86.4 million. Associated financing amounts to US\$ 65.2 million; it is for irrigation and drainage projects in Kazakhstan, the Kyrgyz Republic and Uzbekistan financed by the World Bank and the states plus technical assistance from EU-TACIS, USAID and others.

2.24 The direct costs of the project, without the above Bank investments, amount to US\$ 21.2 million. 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 is needlessly complicated. Physical and price contingencies equal US\$0.9 million. 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.

2.25 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 58 percent of total project costs. The five Central Asian Republics would finance US\$ 4.1 million or 19 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

2.26 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 Aral Sea delta areas.

2.27 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 leverage a substantial volume of other donor support from EU-TACIS as well as 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, the BVOs, the Hydromets, the water ministries and agencies, the dam authorities, and the

Karakalpakstan agencies. For the first time, many were exposed to the methods of project preparation used by multilateral development institutions. 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 have 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 draft NEAP gives top priority to safe water supply, meaning clean water of low salinity, the core issue addressed by the project.

E. Project Implementation

2.28 The Chairman of EC-IFAS will have overall project coordination and implementation responsibility. For all ASBP activities, he will rely on the services available within the Executive Committee, in particular, a group of advisors from the five States. To implement the project EC-IFAS has established a Project Management and Coordination Unit (PMCU)³⁵. A Project Director will head the PMCU. Component Management Units (CMUs) headed by a Component Director will manage the components, except for Component F, Project Management Support, which will be implemented by the PMCU itself. Key staff of the PMCU has already been selected competitively in the region. The PMCU will receive technical assistance from EU-TACIS sources. Technical assistance will concentrate on the first years and comprise 46 man-month of foreign experts mainly in procurement, accounts, administration and water and salt management.

2.29 The PMCU will work with a National Liaison Person appointed by each State. National counterpart agencies (NCPAs) will collaborate with the PMCU and the CMUs in project implementation. The NCPAs for Component A.1 will be national water ministries and for sub-component A.2 selected Oblasts. For Component B, implementation will include national committees constituted from the water and communication sectors, and for Component C, the national dam authorities. For Component D implementation will include the national hydro-meteorological services, and for Component E, the Government of Karakalpakstan in Uzbekistan.

³⁵ In Russian it is called GEF Project Implementation Agency

Component-specific arrangements will stipulate their mutual responsibilities, including the facilitating roles of the EC-IFAS branches in the various States. Involvement can vary, however; in some instances only clearances or decisions are required, in others the NCPAs will directly implement items. 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 of national detail design teams); Component D (civil works, installation and operation of water monitoring stations). A small project implementation unit in Karakalpakstan will implement Component E, with the PMCU providing finances, supervision and technical assistance.

F. Procurement and Disbursement

2.30 Procurement under the project will be the responsibility of the PMCU except that, for Component E, procurement will be managed by the Project Implementation Unit in Karakalpakstan under the supervision 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 and detailed specifications. The CMUs in turn would coordinate with the NCPAs. The CMUs, and as required the NCPAs, would participate in the bid selection and evaluation committees. A project launch workshop will be organized for the PMCU and the CMU staff and will include training in procurement based on the procurement arrangements for the project.

2.31 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*³⁶. The few elements not financed by the GEF under Bank guidelines 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 GEF participation, the Bank's procurement rules will be applied. A general procurement notice was published in the *Development Business* of May 31, 1998. The procurement of consultants would be conducted in accordance with the guidelines *Selection of Consultants by World Bank Borrowers*³⁷. The Standard Bidding Documents for goods, small works, and Letters of Invitation as well as Standard Form of Consultants' Contracts would be used. The Project Implementation Plan (Vol. II Part II) includes a detailed procurement plan.

2.32 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 Sudoche³⁸. 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.

³⁶ Published in January 1995 and revised in January and August 1996 and September 1997.

³⁷ Published January 1997 and revised in September 1997.

³⁸ Procurement of other civil works would follow local rules as they are fully financed from local sources.

2.33 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 2.32 or this para, will be subject to the post review in accordance with the guidelines.

2.34 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.

2.35 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.

2.36 EC-IFAS will establish and maintain a US dollar Project Account managed by the PMCU. The account will receive the local counterpart funds in US dollars. The initial deposit of US\$ 500,000 would have to be made before Effectiveness.

2.37 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

2.38 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 impact 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 Project Management Component.

2.39 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

2.40 The project's projected performance regarding sustainability and participation is positive. Detail is shown in Table 6 in the Annex of Tables. It examines sustainability at various levels - technical, financial, institutional, environmental and economic - and describes the participation arrangements for each component.

I. Environmental Impact

2.41 The project has been rated environmental category B. The technical assistance activities which constitute the bulk of the project would have no adverse direct environmental impacts. However, Component E could have some impact if the measures to improve salinity and oxygen content do not work. This risk will be mitigated by careful project design and a comprehensive monitoring program (para 2.19c). Minor adverse impacts could come from construction activities under Component E. These would be minimized through conditions in the contract documents regarding dust and noise emissions.

J. Lessons Learned

2.42 The project design applies the many lessons learned from the preparation phase of the ASBP as well as from the water resources projects of the World Bank. Annex Tables 4 and 5 show the lessons learned and how they were applied. The lessons learned under the ASBP are summarized below:

- (a) adequate program or project design, including 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, including client leadership in project preparation and implementation, even at high costs; enhanced interest of States through equal treatment and systematic consensus building; insistence on financial contributions by the client;
- (c) solid institutions and management, including 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 supervisory positions; training in management; competition and consultants rather than force accounts and working groups.
- (d) rational use and integration of foreign consultants and clear rules for remuneration of local staff; ownership of output by client; and
- (e) adapting to differences in culture and economic systems, including multilingual staff and consultants; free access to information; regular reviews and public participation instead of centralism and secrecy; clear distinctions between civil servants and consultants; assurances against weak performance of financial sector and currency controls; insistence on competitive procurement and strong governance.

K. Project Benefits and Justification

2.43 The project will generate major benefits and a 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 also contribute to maintaining peace in the region. Other benefits consist of increased safety of dams, increased biodiversity, increased incomes, and increased strength of the ASBP, the EC-IFAS, and cooperating agencies.

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

- (a) creating 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) enhancing the capability of 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 increase during the project as the process of joint decision making under Component A deepens and advances over time;
- (c) improving acceptance 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) accelerating and rising the 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 and reservoir rehabilitation under Component C, and by the practical lessons for wetlands and delta development under Component E. Once these components have been implemented, investments are expected to rise from private, public and donor sources.
- (e) Reducing water consumption and consequently improving 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 reform process and the changes in the incentives framework and interstate agreements. These reductions, measured against the baseline in 1998 will be limited during the project period but visible and measurable. IFAS target for water conservation is expected to be 15 percent for the end of the project period, of which Component B is expected to contribute 5 percent; and
- (f) creating the 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.

2.45 The other benefits are:

- (a) increasing dam safety by 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) increasing biodiversity as a result of Component E;
- (c) increasing incomes due to increased sustainability in water and land from reducing 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;

- (d) last but not least, strengthening ASBP, EC-IFAS and national counterpart agencies. By covering two core areas of the ASBP (paras 2.3 and 2.5) and by creating a strategy base for later ASBP phases, the project will contribute to anchoring the ASBP as a tool of the CA 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.

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

2.47 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.

2.48 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\$800,000 per year. The biodiversity benefits are likely to exceed by far this switching amount.

2.49 The above benefits of improved sustainability (para 2.44) 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 salinization³⁹. 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 proposed project investment would be money well spent.

L. Project Risks

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

2.51 **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 2.42). This

³⁹ Damages due to salinization have been estimated at US\$2 billion annually discounted by the opportunity cost of capital of 12 percent, the damages have a net present value of about US\$15 billion.

project requires different procedures 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 traditional and the innovative 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 that need 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 A.1, B, E,) to ease management stress; (d) the programming of sufficient supervision capacity on the Bank side that assists but does not stifle ownership of the project by EC-IFAS; (e) the programming of annual reviews to correct potential problems early on; and (f) close collaboration with the UNDP capacity building project.

- (b) a hiatus in the project could arise from a change in the Presidency and the Chairmanship of the EC-IFAS (para 1.27) in the first half of 1999. It could lead to EC-IFAS delays 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. The IFAS Board has appointed the present Chairman of EC-IFAS as Project Leader who would continue to guide the project during and after such a change; also assurances were received during negotiations that key PMCU staff would not change unless agreed with the Bank (para 3.3). Thus continuity would be assured.

2.52 Potential Disunity. To coordinate water and land use in five different States, all with sovereign rights and interests, within the four and half year 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 each other personally from years of common work under the Soviet Union. Also, there is still a strong sense of doing things in common. To further minimize this risk, the project has built in many consensus-building features.

2.53 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 1.38).

2.54 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, assurances were received during negotiations about the availability of counterpart funds in convertible currency throughout the project period and linking effectiveness to their availability (para 3.5).

2.55 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.

2.56 Uncertain Cost Estimates. There is some uncertainty about the cost estimates for civil works, as their design is not yet available, and cost estimates are difficult due to the absence of historical data from competitive construction work. The risk is largest under the Wetlands Restoration Component with major civil works estimated to cost US\$2.6 million. Project contingencies in the order of US\$900,000 would be able to cope with a cost increase of 35 percent, which is unlikely. For the project as a whole, however, the risk is limited, as civil works only constitute US\$3.4 million of total project cost. The risk of underestimating the transboundary water monitoring and dam and reservoir management costs is shared among EC-IFAS and the CA States for the US\$830,000 which they finance and potential increases could be covered by them with relative ease.

2.57 Cofinancing from Donors. The cofinancing from donors must be considered as uncertain until 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, effectiveness of the GEF grant would be linked to effectiveness of other donor agreements (para 3.5).

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

III. AGREEMENTS AND RECOMMENDATION

- 3.1 Before appraisal/negotiations, EC-IFAS provided the following:
- (a) the complete draft project documentation comprising the project document, in two volumes and including the drafts of all component descriptions and terms of references, of the PIP, of the SAP, as well as the cost tables;
 - (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 the Wetlands Restoration Component; and
 - (h) authorization by the IFAS Board of the EC-IFAS Chairman to sign the GEF grant Agreement.
- 3.2 During appraisal/negotiations, agreement was reached on the following:
- (a) Project Implementation Plan;
 - (b) draft GEF Grant Agreement;
 - (c) draft agreement between EC-IFAS and the Government of Karakalpakstan; and
 - (d) in principle, on the remainder of the project documentation.
- 3.3 During appraisal/negotiations, assurances were obtained on the following:
- (a) reduction of the risk of discontinuity in project management (para 2.51 b) by the IFAS Board having designated the present Chairman of EC-IFAS as Project Leader and by changes in project implementation/ management being agreed with the Bank ;
 - (b) EC-IFAS support in assembling and accessing information by project staff and consultants at equal terms (para 2.42);
 - (c) minimum water supply in autumn/ winter to Lake Sudoche in line with the detailed design (para 2.19).
- 3.4 There are no Conditions of Board Presentation
- 3.5 Conditions of Effectiveness would be:
- (a) Cofinancing Arrangements have been concluded between EC-IFAS and the other Donors, namely the Dutch Government, EU-TACIS and Sweden;

- (b) EC-IFAS has received and deposited in the Project Account the amount of about US\$ 500,000 estimated to cover the Member States' contribution during the first year of Project implementation;
- (c) the SAP has been endorsed by the Member States, and
- (d) the agreement between EC-IFAS and the Government of Karakalpakstan has been concluded.

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

Country	Pop. Millions 1996	GNP per Cap US\$ 1996	GNP US\$ billions 1996	Population average annual growth % 90-96	GDP billions US\$ 1996	GDP average annual growth 1996	GNP / cap average annual growth 1996	Agriculture % age GDP 1996	Industry % age GDP 1996	Services % age GDP 1996	Agriculture average annual growth 1996	Industry: average annual growth 1996	Services average annual growth 1996	Consumer prices % age change 1996
Kazakhstan	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 Republic	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
Kazakhstan	0	0.74	0.74	9	-	11.0	11.0	9	-	9.7	9.7	10	88
Kyrgyz Republic	0	0.46	0.46	6	-	5.1	5.1	4	-	4.6	4.6	5	90
<i>Sub-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	6.58	11.23	100	71.2	45.9	117.1	100	62.6	74.8	100	100	91

Source: SIC-ICWC

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

Components	Costs						Financing (including contingencies)						
	Local	Foreign	Total	% of Total	% Foreign Exch.	% of Total Base Cost	GEF	Central Asia*	Netherlands	EU TACIS	SIDA	Total	% of Total
A. Water and Salt Management	0	6.27	6.27	30	100	31	4.11	1.16	1.0	0	0	6.27	30
B. Public Awareness	0	3.10	3.10	15	100	15	2.79	0.31	0	0	0	3.10	15
C. Dam Safety 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	0.45	1.3	0	0	3.88	18
F. Project Management Support	0.30	1.59	1.89	9	85	9	0.47	0.64	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	12.22	4.06	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 Management⁴⁰

KAZ: Irrigation and Drainage Imp.(FY96) ⁴¹	11.80
KYR: Irrigation Rehabilitation (FY98) ⁴²	23.40
UZB: Irrigation Improvement (FY00, proposed)	<u>30.00</u>
<i>Grand Total</i>	86.40

*Includes unidentified donor contributions of \$0.9 million.

⁴⁰ Other investments, at a less advanced stage of preparation, include Bank projects in KYR, TRK and KAZ, the UZB Drainage Project as well as planned investments by the ADB, Japan and other donors.

⁴¹ Portion in Aral Sea Basin.

⁴² Portion in Aral Sea Basin.

Table 4: Lessons Learned from the Preparation Phase of ASBP

Problem	Cause of Problems	Application of Lessons in ASBP and Project
<i>Adequate Program and Project Design</i>		
<ul style="list-style-type: none"> ▪ 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 	<ul style="list-style-type: none"> ▪ Project duration of 4.5 years is target assumption. ▪ Project and component implementation plans ▪ Annual reviews planned ▪ Project has clear financing frame; core financing from GEF, Dutch and CA follows same conditions
<ul style="list-style-type: none"> ▪ 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 	<ul style="list-style-type: none"> ▪ Project with 6 components is far less complex ▪ Project also new but lessons have been applied; partners know each other ▪ Project and component implementation plans
<ul style="list-style-type: none"> ▪ 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 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 	<ul style="list-style-type: none"> ▪ Project outputs clearly defined through detail TORs, descriptions etc. ▪ 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 Components 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)
<i>Need for Strong Client Commitment</i>		
<ul style="list-style-type: none"> ▪ CA over-reliance on donors funding and initiative 	<ul style="list-style-type: none"> ▪ CA inexperience with donors; financial constraints; optimism of independence 	<ul style="list-style-type: none"> ▪ 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 	<ul style="list-style-type: none"> ▪ 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
<i>Need for strong institutions</i>		
<ul style="list-style-type: none"> ▪ 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
<ul style="list-style-type: none"> ▪ Unclear ICAS Mandate 	<ul style="list-style-type: none"> ▪ Initial haste 	<ul style="list-style-type: none"> ▪ Clear mandate of new IFAS ▪ Relation to ICKKU needs to be clarified
<ul style="list-style-type: none"> ▪ <i>Executive leadership of ICAS:</i> ▪ Not political enough, lack of decision making ▪ Too technical, sectoral imbalances, managers 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 	<ul style="list-style-type: none"> ▪ <i>EC- IFAS:</i> ▪ Has political leadership now ▪ Has broad regional representation in staff and branches ▪ <i>Project:</i> ▪ 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 adequate links to national level in all components
<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 	<ul style="list-style-type: none"> ▪ <i>Project:</i> ▪ Implementation via competitive contracts (consultant, works and goods) firms
<i>Rational Use and Integration of Foreign Consultant's Services</i>		
<ul style="list-style-type: none"> ▪ The large difference in remuneration of donor-financed foreigners and locally-financed staff is tremendous and 	<ul style="list-style-type: none"> ▪ Difference in labor markets between CA and donor countries 	<ul style="list-style-type: none"> ▪ <i>EC-IFAS:</i> ▪ Applies local "UN-Rules"

Problem	Cause of Problems	Application of Lessons in ASBP and Project
<p>creates problems and distortions</p> <ul style="list-style-type: none"> ▪ 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"> ▪ Skills gap in client countries, especially in economics, management and written expression ▪ Lack of attention to links between foreign consultants and local experts 	<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
<i>Adaptation to Differences in Culture</i>		
<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; ▪ Training <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
<i>Adaptation to Differences in Economic Systems</i>		
<ul style="list-style-type: none"> ▪ Difference between civil servants and consultants blurred 	<ul style="list-style-type: none"> ▪ Legacy of the Soviet; everything was state owned and public ▪ Slow institutional change 	<p><i>Project:</i></p> <ul style="list-style-type: none"> ▪ No topping up of civil servants salaries ▪ Consultants are not allowed to draw other salary remuneration than that of the 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 	<p><i>Project:</i></p> <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 	<p><i>EC-IFAS:</i></p> <ul style="list-style-type: none"> ▪ Has some experience from the past <p><i>Project:</i></p> <ul style="list-style-type: none"> ▪ Procurement plan ▪ TA in procurement ▪ Training ▪ Strong supervision

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. 	<p>Need for:</p> <ul style="list-style-type: none"> ▪ 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 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 will create understanding for political decisions on decentralization, pricing and incentive policies; ▪ Component D strengthens 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)					
<ul style="list-style-type: none"> ▪ Not an issue; study and decision process of limited duration 	<ul style="list-style-type: none"> ▪ Same as under technical ▪ Decision scenarios proposed have to be financially sustainable 	<ul style="list-style-type: none"> ▪ In narrow sense same as under technical ▪ Component has strong institutional sustainability aspects in form of participation of States in development of decision scenarios 	<ul style="list-style-type: none"> ▪ In narrow sense, same as under technical ▪ Overall aim is environmental sustainability in the Aral Sea Basin 	<ul style="list-style-type: none"> ▪ In narrow sense, same as under technical ▪ Economic and environmental sustainability are identical in this case 	<ul style="list-style-type: none"> ▪ States participate in selection of consultant teams and in critical decisions ▪ Stakeholders participate: outreach to water user groups, NGOs, and BVOs
A2 Participation in Water Conservation (para 2.11)					
<ul style="list-style-type: none"> ▪ Not an issue; measure of limited duration ▪ Field level initiated by beneficiaries themselves 	<ul style="list-style-type: none"> ▪ Same as under technical 	<ul style="list-style-type: none"> ▪ Same as under technical 	<ul style="list-style-type: none"> ▪ In narrow sense, same as under technical ▪ Aim is environmental sustainability of the Basin 	<ul style="list-style-type: none"> ▪ In narrow sense, same as under technical ▪ Economic and environmental sustainability are identical in this case 	<ul style="list-style-type: none"> ▪ The whole sub-component is designed for participation of beneficiaries in finding and applying solutions to water conservation
B: Public Awareness (para 2.13)					
<ul style="list-style-type: none"> ▪ Not an issue; measure of limited duration 	<ul style="list-style-type: none"> ▪ Same as under technical 	<ul style="list-style-type: none"> ▪ 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 	<ul style="list-style-type: none"> ▪ In narrow sense, same as under technical ▪ In wider sense, the component is crucial for environmental sustainability through: changes in behavior of the public 	<ul style="list-style-type: none"> ▪ Not tested, but expected to be high 	<ul style="list-style-type: none"> ▪ Participation of large number of people is the rationale of the component
C: Dam Safety and Reservoir Management (para 2.15)					
<ul style="list-style-type: none"> ▪ Early warning systems will be designed for ease of maintenance and hence sustainability ▪ No issue for dam rehab. detail design studies of limited duration 	<ul style="list-style-type: none"> ▪ 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 	<ul style="list-style-type: none"> ▪ For early warning pilots institutional sustainability given through anchoring activities in dam authorities and their demonstrated commitment through civil works ▪ Given for dam rehab. detail design via involvement of national teams 	<ul style="list-style-type: none"> ▪ Dam safety is a crucial feature of environmental sustainability 	<ul style="list-style-type: none"> ▪ For early warning pilots economic sust. not tested in detail, but evident ▪ Rehab. activities, whether dam or other, usually have high economic rates of return 	<ul style="list-style-type: none"> ▪ Participation of States and dam authorities ▪ Popular participation will be required for emergency preparedness plans
D: Transboundary Water Monitoring (para 2.16)					
<ul style="list-style-type: none"> ▪ Design of measuring stations covers technical sustainability through installation of equipment, which is easy to maintain 	<ul style="list-style-type: none"> ▪ 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 	<ul style="list-style-type: none"> ▪ Institutional sustainability given, as national Hydromet services are well established 	<ul style="list-style-type: none"> ▪ Env. Sustainability very high; focus on water flow and quality measurement for sustainable water management 	<ul style="list-style-type: none"> ▪ Not tested quantitatively; however rate of return most likely high due to high return from sustainability of water use in the region. 	<ul style="list-style-type: none"> ▪ Participation of States and Hydromet authorities ▪ Popular participation technically not required
E: Wetland Restoration (para 2.19)					
<ul style="list-style-type: none"> ▪ Expected to be high; monitoring of pilot project will prove or disprove technical sustainability 	<ul style="list-style-type: none"> ▪ Examined in calculations and found to be OK (Vol. II Part 1); 	<ul style="list-style-type: none"> ▪ Issue addressed through development of participatory management 	<ul style="list-style-type: none"> ▪ Expected to be high; monitoring of pilot project will prove or disprove environmental sustainability ▪ Minor negative effects through earth moving 	<ul style="list-style-type: none"> ▪ Given, under condition of non-tangible economic benefits from biodiversity is double the size of tangible local benefits. This is assumed to be the case 	<ul style="list-style-type: none"> ▪ During design stage through social assessment ▪ During implementation through special efforts to build local lake management and socio-economic monitoring
F: Project Management Support (para 2.20)					
<ul style="list-style-type: none"> ▪ Not an issue as PMCU can be dismantled at the end of the project 	<ul style="list-style-type: none"> ▪ Same as under technical 	<ul style="list-style-type: none"> ▪ Same as under technical; EC-IFAS will gain in institutional strength through component experience 	<ul style="list-style-type: none"> ▪ Same as under technical 	<ul style="list-style-type: none"> ▪ High; project not possible without this component 	<ul style="list-style-type: none"> ▪ Given through participation of States and NCPAs

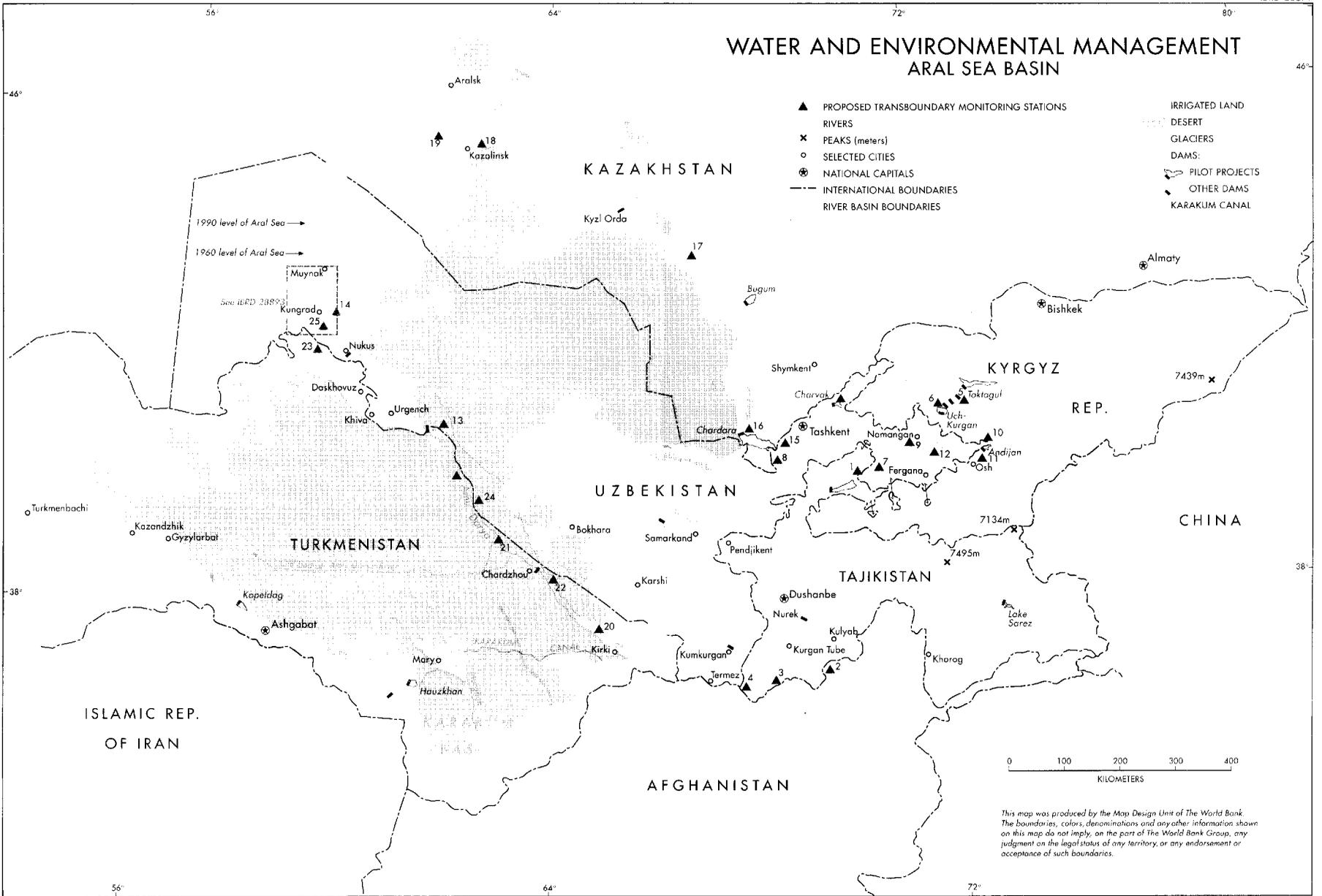
Table 7: Transboundary Diagnostic Analysis

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

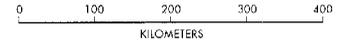
Main Problems	Transboundary Elements	Root Causes	Strategic Action Program	Project Activities	Other Activities
A. Environmental degradation					
<ul style="list-style-type: none"> Mobilization of salt and salinization of rivers, groundwater and agricultural land constitute a serious threat to sustainability and competitiveness of Central Asia 	<ul style="list-style-type: none"> 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 increases salt mobilization, depletes freshwater in rivers, and increases salt load in rivers and groundwater Inefficient water use, mainly in irrigation, mobilizes excessive salt Absence of adequate incentives for water conservation Absence of awareness about link between water use and salinization Diminished effectiveness of drainage system due to lack of maintenance and investment 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 with a target of a 15 % water saving by the end of 2002 over 1998 levels 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"> Salinity issues central to Comp. A1 and others Water conservation is focus of Comps. A and B 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 Comp. A1 Consistent policies, strategies and action programs are focus of Comp. A1 	<ul style="list-style-type: none"> Natural resources degradation highlighted in five CASS Safe drinking water high priority in NEAPs Water supply projects of the Bank under implementation or preparation in Kazakhstan, the Kyrgyz Republic, Turkmenistan, and Uzbekistan Irrigation and Drainage Rehabilitation projects under implementation or preparation in all five countries Major drainage project under preparation in Uzbekistan
<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 transboundary regulation 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"> Stresses need for long-term supply of water and capacity of water regulation and for conservation of upper watersheds 	<ul style="list-style-type: none"> Comp. A1 covers all three SAP issues Comp. B includes some work on reservoir sedimentation 	<ul style="list-style-type: none"> NEAP in the Kyrgyz Republic and policies of Tajikistan stress protection of upper water sheds ASBP program 6
B. Deterioration of environment, incomes and poverty in the disaster zones close to the Aral Sea					
	<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 zones constitute a major drain on the budgets and investment capacity of the downstream States 	<ul style="list-style-type: none"> Excessive water use in irrigation in upstream regions and States 	<ul style="list-style-type: none"> 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"> 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 with start in disaster zone under preparation;
C. Deficient transboundary water management					
<ul style="list-style-type: none"> Present management of 	<ul style="list-style-type: none"> Main problem is inherently 	<ul style="list-style-type: none"> Over-expansion of and excessive use 	<ul style="list-style-type: none"> Focus on: 	<ul style="list-style-type: none"> Comps. A and B focus on water 	<ul style="list-style-type: none"> USAID and EU-WARMAP

Main Problems	Transboundary Elements	Root Causes	Strategic Action Program	Project Activities	Other Activities
transboundary water quantity and quality is economically and environmentally unsustainable, and could lead to conflict (Sec A)	transboundary	<p>of water in irrigation</p> <ul style="list-style-type: none"> • 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 	<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 	<p>conservation</p> <ul style="list-style-type: none"> • Comp. A prepares these common policies and agreements • Comp. D creates basic monitoring capacity • Comp. B focuses on Public Awareness 	<p>support work on agreements via IFAS and ICKKU</p>
<ul style="list-style-type: none"> • Water storage & control facilities, built to serve the whole region, has been divided among States, and new interstate relationships on management and financing have to be developed • Absence of common policies on above facilities constrain investments in water and 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 among 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 • Absence of awareness of politicians and populations of the 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 met only with improvements in irrigation and drainage infrastructure 	<ul style="list-style-type: none"> • Lack of maintenance of infrastructure in years of economic transition due to budget constraints • Unclear and inconsistent national and regional policies transition limit investment in infrastructure 	<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)
D. Institutional weakness	<ul style="list-style-type: none"> • Transboundary management requires a common interstate institutional capacity and infrastructure 	<ul style="list-style-type: none"> • 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

WATER AND ENVIRONMENTAL MANAGEMENT ARAL SEA BASIN

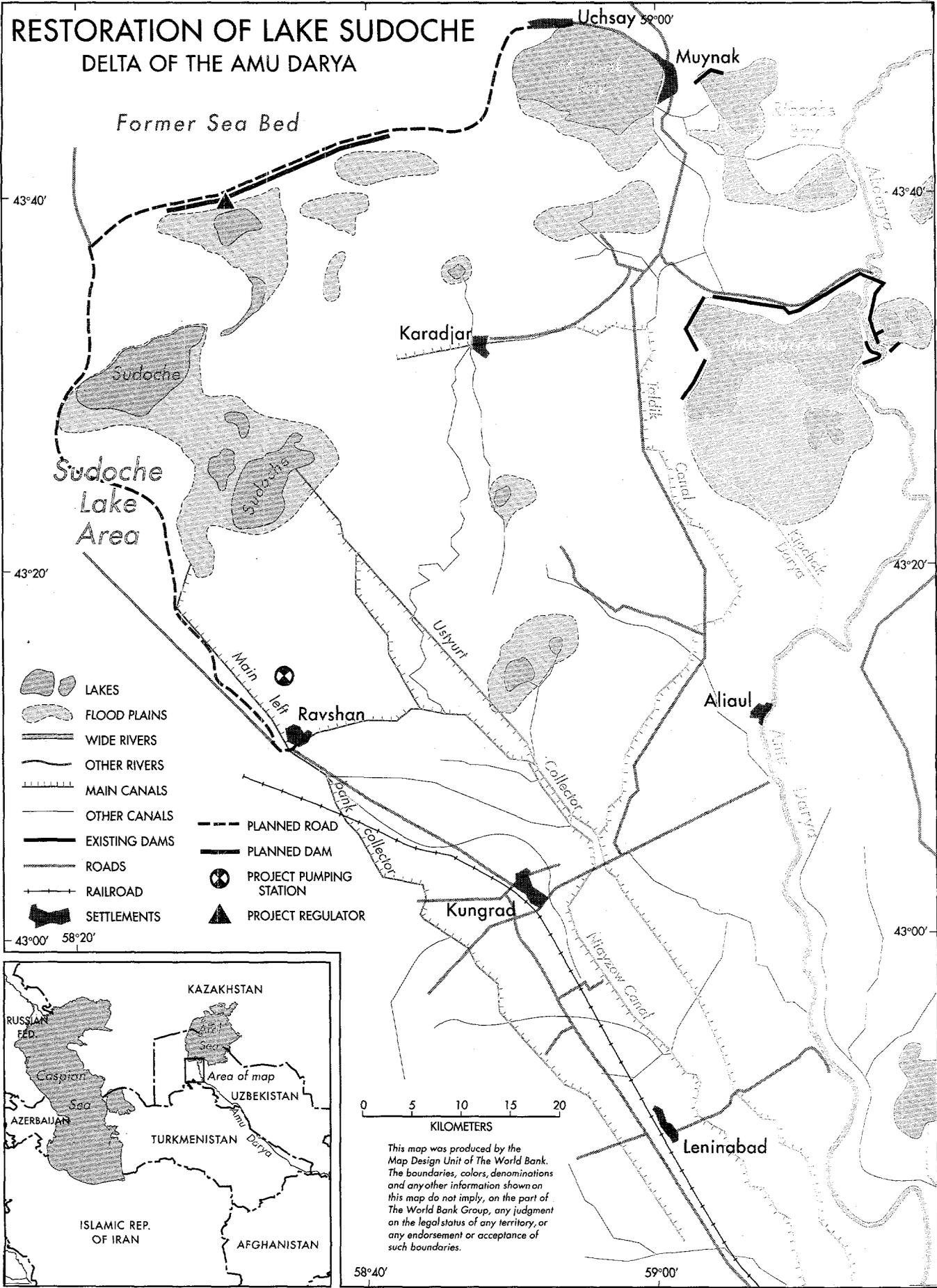


- ▲ PROPOSED TRANSBOUNDARY MONITORING STATIONS
- RIVERS
- × PEAKS (meters)
- SELECTED CITIES
- ⊙ NATIONAL CAPITALS
- INTERNATIONAL BOUNDARIES
- RIVER BASIN BOUNDARIES
- ▨ IRRIGATED LAND
- ▤ DESERT
- ⋯ GLACIERS
- DAMS:
- PILOT PROJECTS
- OTHER DAMS
- KARAKUM CANAL

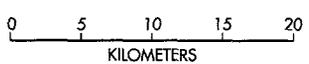


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RESTORATION OF LAKE SUDOCHÉ DELTA OF THE AMU DARYA



- LAKES
- FLOOD PLAINS
- WIDE RIVERS
- OTHER RIVERS
- MAIN CANALS
- OTHER CANALS
- EXISTING DAMS
- ROADS
- RAILROAD
- SETTLEMENTS
- PLANNED ROAD
- PLANNED DAM
- PROJECT PUMPING STATION
- PROJECT REGULATOR



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EURASIA FLYWAYS OF MIGRATORY BIRDS

-  FLYWAYS
-  NESTING AREAS
-  SELECTED CITIES
-  RIVERS

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