REPUBLIC OF KAZAKSTAN

Committee for Water Resources

Ministry of Agriculture

SYRDARYA CONTROL

AND NORTHERN ARAL SEA PROJECT

WATER MANAGEMENT INSTITUTIONS

AND INFRASTRUCTURE O&M

Report

Association

CES Consulting Engineers Salzgitter GmbH

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List of Abbreviations

ADB	Asian Development Bank
ASBP	Aral Sea Basin Program
ASRP	Aral Sea Rehabilitation Program
BA	Basin Agency
BAS	Basin Association Authorities
BC	Basin Council
BWMA	Basin Water Management Association
CWR	Committee for Water Resources
GEF	Global Environment Facility
GOK	Government of Kazakstan
ICSDR	Interstate Commission for Sustainable Development of the Region
ICWMC	Interstate Coordinating Water Management Commission
IFAS	International Found to save the Aral Sea
JICA	Japan International Cooperation Agency
JSC	Joint Stock Company
KZT	Kazak Tenge (local currency)
M&E	Monitoring and Evaluation
MENR	Ministry of Ecology and Natural Resources
MES	Manufacturing Exploitation Site
MMC	Moveable Mechanized Column
MOA	Ministry of Agriculture
MOF	Ministry of Finance
MOH	Ministry of Health
MWMLR	Ministry of Water Management and Land Reclamations
NAS	Northern Aral Sea
O&M	Operation & Maintenance

List of Abbreviations (Continuation)

OECF	Overseas Economic Cooperation Fund
RLWMS	Regional and Local Water Management System
SCWR	State Committee for Water Resources
SIDA	Swedish International Development Agency
SPIU	SYNAS Project Implementation Unit
ROK	Republic of Kazakstan
SRC	Scientific Research Center
SWMS	Syrdarya basin Water Management System
SYNAS	Syrdarya Control and Northern Aral Sea Project
TACIS	Technical Assistance Program to CIS Countries (EU)
USAID	United States Agency for International Development
USSR	Union of Soviet Socialist Republics
WEMP	Water and Environmental Management Project
WU	Water User
WUA	Water Users Association

1 INTRODUCTION

The objective of this report[1] is, as mentioned in the ToR, "to assess the existing institutional and O&M situation -related to water management in the project area and to make proposals for the strengthening of the CWR or alternatively the establishment of an alternative management agency".

The present report is dealing with the institutional water management of the main system, i.e. the hydraulic infrastructure in the Syrdarya and the Northern Aral Sea (NAS) dam and spillway from Chardara dam down to farm boundaries. It is not addressing the water management issues at farm level as they are actually depending on each farm management efficiency and capability and are not in the scope of SYNAS Project although water management at farm level does play a role of a paramount importance for the water economy of the Syrdarya River sub-basin and the NAS.

An analysis of the legal and institutional framework of water management in the Syrdarya River basin and the NAS is given in chapter 2. After summarized references made to the former USSR system the present interstate organizations involved in water management of the Aral Sea basin in general and of the Syrdarya River basin in particular is considered. Then the legal and institutional framework of the Republic of Kazakstan for the management of the Syrdarya sub-basin and the NAS is analyzed with main outline of the functional aspects of the water management.

Chapter 3 is providing a short description of the main components of the Aral Sea Rehabilitation Program (ASRP) and cites other on-going projects and studies relevant to the project area.

Chapter 4 consists of an appraisal of the overall institutional and financial capacity of CWR at central level and at Kzylorda and South Kazakstan Oblasts level.

The actual financial means to face the O&M needs of the main water management system in the project area are analyzed in chapter 5 whilst the future O&M requirements are assessed in chapter 6 in terms of skills and staff, equipment and costs.

In chapter 7 proposals and analyses of possible alternative institution and management options for improved O&M functions within the main management system are made.

Organization facilities for project implementation, Technical Assistance included, is presented in chapter 8.

[1] Preparer: C. Potin, institution specialist, permanent consultant with SOGREAH Snc, with collaboration of A. Kulikov, economist in Kazgiprovodhoz; and Z. Baobosynova, interpreter.

Lastly option proposals of institutional and O&M management plan study during the conditional phase III of SYNAS project detailed design is given in chapter 9.

2 LEGAL AND INSTITUTIONAL FRAMEWORK OF WATER MANAGEMENT IN THE SYRDARYA RIVER BASIN AND THE NORTHERN ARAL SEA

2.1 Foreword

The present situation of water management at every level in the Republic of Kazakstan is resulting from the great collapse of the Soviet Union that occurred in 1992. Thus all the problems and gaps that can be actually recorded in respect with water management and water economy must be understood most of them as the direct consequences of the sudden removal of a highly integrated system based on top down centralized planning, control and budgeting, without emergence of an alternative functional system in the short and medium term. The attempts to create a new market system of water resources undertaken during the last 5 - 6 years did not bring the essential results yet as it should be part of an integrated new water management system oriented towards a liberalized economy with political and financial participation of all the stakeholders and relevant new functional institution arrangements at every level.

2.2 Historical reference of the former Soviet Union

2.2.1 Centralized institutional system at the USSR level

In the former USSR all water management questions and problems of the country were under the authority of the Ministry for Water Management and Land Reclamation (MWMLR) of the USSR. On a planned basis and entirely at the expense of state centralized means the MWMLR directly or through the ministries for water resources of the former united republics was executing all over the country including the Syrdarya river basin the following missions and tasks:

- Water resources management, water distribution and water supply of the economic branches
- Exploitation of the existing water management systems and structures, transportation of water to consumers, water removal
- Protection of water from pollution and exhaustion
- Planning of development of water management, irrigation, agriculture and cattle-breeding, water supply
- Design and construction of operating water management systems, objects of irrigated agriculture and nature protection, water-pipes and infrastructure, services for water management (roads, power lines, etc.)

- Civil construction on irrigated lands(collective farms, enterprises of agriculture production, proceeding plants, etc.)
- Technical policy in the branch of water management planning, construction and exploitation

For realization of the mentioned activity MWMLR had in its composition the corresponding managing organs, own enterprises of construction facilities (materials production plants), irrigation structure and equipment production enterprises, scientific-research institutes, testing sites and a number of other structures.

In the administrative respect all subdivisions of the MWMLR had a 3-level status:

- Central organs of the USSR (Moscow).
- Republican organs, subordinate to the MWMLR of the USSR and to the government or to the relevant ministry of each republic.
- Oblasts and rayons organs subordinate to the relevant ministry of each republic.

Together with the MWMLR the following structures of the USSR were participating in the management process:

- The State Committee for Hydrometeorology (Goskomgidromet)
- The Ministry of Geology (exploration and estimate of subsurface water resources).
- The Ministry of Nature Protection (in relation with control of water resources quality).
- The Ministry of Agriculture (in respect with water management at collective farms and state farms level).
- The Ministry of Municipal Management (water use and water delivery to the settlements, industry, enterprises, etc.).
- The Academy of Sciences of the USSR (institutes for water problems, hydrology, oceanography, etc.)

2.2.2 Water management structures at republican level

At republican level the structure of water resources management and economic sector of water use were practically the copy of that at the USSR level. Particularly the Ministry of Water Management and Land Reclamation of the Kazak Soviet Republic, which had double subordination to the MWMLR of the USSR and to the Government of the Kazak Republic was in charge of:

- Management of water resources of the republic and water supply of economic branches
- Approval and execution of the centralized plans for water distribution to irrigated areas and the management of winter and flood waters in reservoirs
- Supply of water users (collective and state farms, cities and industries) according to the planned quantities of water
- Maintenance of the irrigation networks and equipment (including equipped wells), which belonged to the collective and the state farms, both in pastures and irrigated areas
- Registration of water allocations according to all the elements of the irrigation systems
- Control of the use of irrigation water by the farms and in particular the fight against waterlogging and salinization problems
- Protection of surface and subsurface water resources from pollution caused by releases of industrial enterprises and settlements
- Maintenance of main and distributor canals
- Design and construction of irrigation systems for land development, and rehabilitation and reconstruction of inter-farm and inside-farm irrigation canals and drains systems
- Construction of reservoirs, large water intake structures and pumping stations on rivers
- Execution of irrigation plans

The republican MWMLR used to carry out works related to the water sector with the help of both its construction organizations and its main contractors. The construction organizations of republican MWMLR carried out not only the works, planned in the budget, but also reconstruction works of inter-farm irrigation system and land leveling contracts.

The last structure of the Central Apparatus of the former MWMLR of Kazak SSR revised in 1989 was as follows:

- At the level of MWMLR itself:
  - Central Direction
  - Main department for construction organization
  - Main department of industries
  - Main department for exploitation of water systems and constructions
  - Main department for planned economy

- Financial department
- Department of major buildings

- Subordinate organizations:
  - "Kazvodstroy Complex" (Kazak water construction complex)
  - Design and technological trust "Kazorgtech Vodstroy" (Kazak water equipment) construction
  - "Kazgiprovodhoz" institute
  - "Kazuzhgiprovodhoz" institute
  - Design and construction exploitation union "Kzylorda Melioratie" and analogous organizations in other regions
  - Design and building exploitation union "Kazak Pastbich"

O&M for water service to water users was carried out by the main department of exploitation, which had at oblast and rayon level its own controller service, departments and subdivisions for operation and current repairs, and especially related organizations for major repair works.

Water was free for the farmers and the financing of the water management structures and services was based on equalization through the state marketing system of the agricultural products.

2.3 Present interstate organizations

After the disintegration of the Soviet Union the states of Central Asia, situated in the Aral sea basin had to create new organs for joint management of trans-boundary water resources. During the period 1992-1995 the following organs were formed:

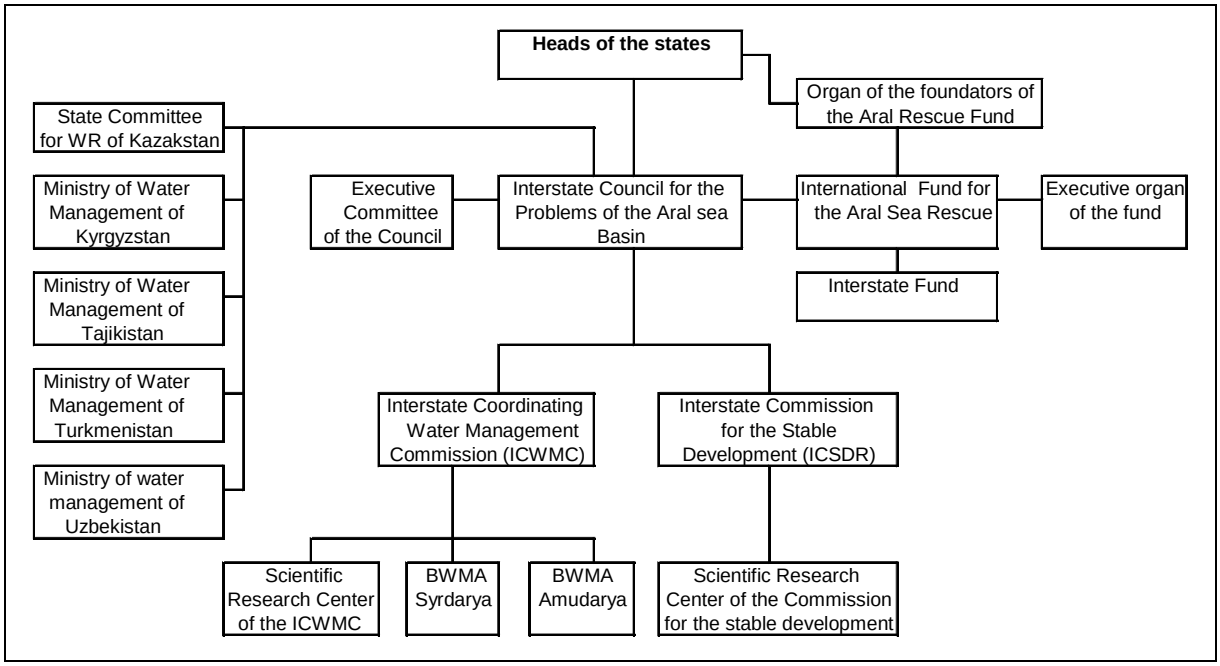
- The **Interstate Council on Aral Sea Problems** (the Council), and later the **Interstate Fund of Aral sea Rescue** (the Fund) established in line with the agreement of the Heads of the five concerned republics of former USSR: Kazakstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan. The ministers for Water Management and the chairman of Kazakstan CWR are members of the Council.
- The **Executive Committee** of the Council and the Fund with headquarters in Tashkent city, which is empowered to execute and finance the resolutions and programs of the Council and the Fund.
- The **Interstate Coordinating Water Management Commission** (ICWMC), which is in charge of the elaboration of the main directions of the united water management policy of

the Aral sea basin. The interstate water policy comprises: (i) general confirmation of limits of annual water consumption of each country in the Aral sea basin and corresponding management of large reservoirs on the two main rivers paying attention to ecological and sanitary standards; (ii) establishment of the annual volumes of water supply to the river deltas and the Aral sea; (iii) elaboration of recommendations to the governments of the five states about water pricing policy and compensation of losses, in relation with the joint use of water resources; (iv) recommendations about the legal basis of water consumption. In that respect ICWMC appears as the second level of the hierarchic structure of the interstate organization of water resources management.

- Two **Basin Water Management "Associations"** (BWMA) called **"Syrdarya"** and **"Amudarya"**, which are responsible to prepare and coordinate the limits of water intakes for all consumers of the states. They have to establish a management plan of reservoirs' cascade, and being the executive organs of ICWMC through their subdivisions, they are also involved in the control of the supply of water resources within the limits established by the Commission, in parallel with state organizations (see below). Besides, these two associations carry on the management of some hydraulic infrastructure given to them for temporary use by the participating states.
- The **Scientific Research Center** (SRC) of ICWMC which elaborates and executes scientific research programs and organizes the information exchange between the states of Central Asia, concerning new technologies and achievements in water management branch. SRC prepares reports, recommendations, solutions, norms and rules, which are to be considered and approved by ICWMC, the Council and the Fund.
- The **Interstate Commission for the Stable Development of the Region** (ICSDR) which has under its responsibility elaboration of solutions for the social, economic and ecological specific issues in the basin.
- The **Interstate Fund** (Bank) which aims at accumulating assets and means for the financing of the Aral sea programs from the five states contribution and in parallel with multilateral and bilateral external financing.

Figure 2.1

Structure of the Interstate Organizations for the Problems of tha Aral Sea



2.4 Present legal and institutional framework at the level of the Republic of Kazakstan

2.4.1 Legal references

The basic legal reference for water resources and water management is the **Kazkstan Water code**, adopted in march 1993. A summary of the water code is given in Appendix 2.1. Water resources of any kind in the Republic of Kazakstan are in the exclusive property of the state. The Water Code defines the roles of the different institutions involved in water management and stipulates different kinds of water use rights: general or special, individual or combined, primary or secondary.

Apart from general water use (simple use without significant modification of the water resource and without technical mean) all the so called "special water uses" are subject to authorization, control and payment. The different categories of water supply are also specified in the Code in term of rights, limitations and obligations for the different categories of water users in each case. Water conservation measures must be taken at water users level in order to avoid any qualitative and quantitative damage to surface water and groundwater resources. The responsibility of the State in accounting and planning water use is stipulated in the Code as well as the way of solving water conflicts and the responsibility engaged in case of violation of water laws.

Although the Water Code provides a first overall complete legal framework for water management it seems that it has never been yet subject to any legal arbitration vis-à-vis water conservation obligations or other violation of water laws. On the other hand, the Code is not explicit concerning the water fees to be levied for permits "for special water use" and water services provided to water users in the different categories of water uses.

Since 1996 a hew water pricing legislation has been under preparation. A first draft law was issued in September 1996 by the Parliament but was not approved by the relevant Ministries as it is stipulated in the RK constitution[2]. Then a inter-agency working group was formed by the Government in order to prepare a Government Resolution which would constitute a legal framework for a new water pricing policy in RK. The State Committee for Water Resources (SCWR) was responsible for coordinating the work of the inter-agency working group. A draft of the new Government Resolution on Payment for Water Resources was issued by CWR after intense discussions within the Working Group. The draft was significantly revised and finally approved as a Government Resolution in august 1997. The most salient principles of the draft were: cost-based water pricing; a separate fund for the collection of water charges to be expended exclusively in the water sector and also a cost-based revenue allocation system to water management organizations from this fund; a progressive increase of water fees for the water users; and, transparency for rate setting and water allocation.

In the whole the final Government Resolution about Payment for Water Resources is making a step back from the very important cost recovery character and principles mentioned above that were in the draft Resolution. The most significant outcomes of the Resolution to be borne in mind are as follows:

(i) Groundwater resources are not subject to the provisions of the Resolution and the royalties levied by the Ministry of Ecology and Natural Resources (composing presently part of the former Ministry of Geology) for groundwater extraction are maintained without consideration of the actual O&M costs of the different groundwater management systems.

(ii) Water charges are in principle divided into two parts:

- a base rate (service charges) which is supposed to cover real O&M costs of the different water management systems;

[2]Laws elaborated by parliament require government and presidential appoval. In the other way presidential decrees "have force of law" and can not be rejected by the parliament. Government resolutions do not need parliament approval. In that way quite a number of laws are issued by executive.

- an additional rate (water charges) for the "right to use water as a natural resource within the limits set by the special water rights".

Water charges were set in the Resolution to an average of KZT 0.03/m^3 for irrigation use[3] but service charges are not currently assessed nor levied for the time being[4].

(iii) The final Resolution does not stipulate what should be gradual introduction of a water charges system aiming in the medium term at reaching a final goal of an actual cost-recovery system. The water charges set in 1997 are well below the levels needed to recover O&M costs (see chapter 6) and the efficiency of the overall water management remains subject to state budget limitations. In parallel both the capability and the psychological attitude of the water users, and in particular the farmers, are not making any step toward an actual participation[5] in water management (financially and politically as well). The water services remain bad, the water economy appears as a minor sectors, agronomy and ecological adverse impacts are unavoidable, and the system is stocked in a vicious circle.

(iv) The principle of creating a specific fund for revenues from water charges is not retained and the yearly water-related budgets remain in fact subject to possible short term re-allocations due to economic circumstances.

Besides the Water Code and the Government Resolution mentioned above three other main legislation corpus deal with water conservation in RK. These are:

The **"Code on Underground Resources and Processing of Mineral Raw Materials"** (may 1992). This code regulates management and utilizations of underground natural resources, including groundwater, which are under the exclusive property of the State. Extraction of underground resources is subject to authorization and payment of royalty (see above).

The **law "on Environment Protection"** (June 1991). This law brings a first general theoretical framework for the conservation of natural resources, including water and land, that are in the whole under state property. It foresees license systems for exploitation of natural resources; establishes standard limits for pollutants emission; and stipulates pollutions fees and fines in case of law violation. The law on Environmental Protection has

[3]Tariffs to be paid for surface water use in Syrdarya sub-basin were in 1997 as follows (in KZT/m^3): public water supply: 3.88; industry: 10.93; agriculture: 3.02; aquaculture: 3.02; hydro-energy: 1.15; water transportation: 0.43.
[4]Service costs for the release and delivery of irrigation water vary upon water systems: from KZT 0.58/m^3 (free-running water) to KZT 5.00/m^3 (pumped water) in a first approach.
[5]The position of the Ministry of Agriculture seems to be somewhat ambigous in that respect, not tasking effectively the major issues of the agricultural prices policy and of a necessary new open marketing system warranting the agricultural profitability at farm level, and not promoting grassroots agricultural organizations of various purposes.

lacked somewhat field of application till now if we consider in particular the present situation of natural resources degradations in Syrdarya sub-basin and Northern Aral sea. (see report on environment)

The **law "on Sanitary-Epidemiological Well-being of the Population"** (July 1994). This legislation aims at preventing and fighting negative environmental health impacts. In respect with SYNAS Project the sanitary-epidemiological conditions of water resources and their management and uses are supposed to be ruled by this law (see report on environment).

2.4.2 Main institutions involved at national level

Since 1991 several institutional and organizational changes concerning the water sector have occurred several times (see former situation in paragraph 2.2 above).

The MWMLR was replaced at the end of 1991 by the State Committee for Water Resources directly subordinate to the Primer Minister, and finally the latter has been incorporated as the Committee for Water Resources (CWR) into the powerful Ministry of Agriculture (MOA) in march 1997. But in the mean time the Department of Irrigation of the MOA which was controlling water use at farm level was abolished which leaves open the issue of supervision of irrigation practices and network at farm level, CWR being mainly responsible for water infrastructure upstream farm level

The State Committee for Hydrometeorology is now the Hydrometeorological Service (Hydromet).

The former Ministry of Geology had responsibility for underground resources in Kazakstan before 1997. In the government reorganization of march 1997, parts of the Ministry of Geology were incorporated in the new Ministry of Energy and Natural Resources. In a further government reorganization in October 1997, the Ministry of Energy and Natural Resources, the Ministry of the Economy and Trade, and the Ministry of Ecology and Bio-Resources were dissolved. In their place a Ministry of Ecology and Natural Resources (MENR), taking over the functions of the former Ministry of Ecology and Bio-Resources and parts of the responsibilities of the former Ministry of Energy and Natural Resources, and a Ministry of Energy Industry and Trade, taking over other parts of functions of the former Ministry of Energy and Natural resources, and parts of the responsibilities of the former Ministry for the Economy and Trade were created.

Presently authority over water resources is thus still divided between CWR of MOA for surface waters and the new MENR for ground waters.

CWR comprises Basin Water Management Associations (BWMA) and Oblast organizations (see details in paragraph 2.4.3 below). At Oblast level all the regional branches of the above institutions are also responsible to the Akims. Sanitary Epidemiological Service of Ministry of Health (MOH) is responsible of control and mitigation of environmental/water negative effects on human health.

Table 2.1 hereafter gives an overview of the main institutions involved in water resources management at national level with their basic functions and sources of financing.

Table 2.1

Main institutions involved in Water resources management at national level

	Water resources management Institutions	**Administrative/ territory level**	**Basic functions**	**Sources of financing**
1.	CWR of MOA	Republic	State management of entire surface water fund and infrastructure. Coordination of Ministries, Oblast Departments, enterprises, organizations.	State budget
1.1	Basin water management Associations (BWMA)	Rivers basins	Water resources management control at river basins level	State budget
1.2	Region organizations	Oblasts and rayons	Administration and O&M of water management systems	State budget and self-financing
2.	Main department of Hydromet and branches	Republic, oblasts and rayons	Hydrometerology and pollution monitoring (weather, water, soil, climate, etc...)	State budget
3.	Ministry of Ecology and Natural Resources(MENR) and region branches	Republic, oblasts and rayons	Groundwater management and environment protection related in particular to water (surface and sub-surface) and land uses	State budget
4.	Sanitary-Epidemi-ological Service of Ministry of Health (MOH)	Republic, oblasts and rayons	Control and mitigation of environment/water negative effects on human health	State budget
5.	RK Presidency, Prime Ministry and oblasts Akims	Republic, oblasts and regions	Control of all Institutions involved	State budget

2.4.3 CWR organization and its related institutions at national level

Water management in RK is executed on the basis of combination of river basins and administrative units concerned while distributing water resources within the limits of river basins, lakes and other water bodies between the administrative-territorial units.

(Surface) water resources management and their use regulation is put on the CWR of the MOA, which carries out its functions directly or through subordinate organizations. Table 2.2 gives an overview of CWR structure at national level. Under CWR Head office, recently moved to Astana, river basins and oblasts' structures comprise 8 BWMAs and 19 oblast CWRs.

BWMA are formally in charge of quite a number of tasks:

(i) controlling distribution of water between canal branches, oblasts and rayons;

(ii) giving out permissions for the special water uses;

(iii) execution of the state control on the rational use and protection of water resources;

(iv) coordination of water consumption standards;

(v) confirmation of regimes of operation of reservoirs and active control of their execution;

(vi) state registration of water and water cadastre keeping;

(vii) approbation of constructions on water bodies, which affect the condition of waters.

Organizations subordinate to CWR are either subordinate to Oblast CWR Head offices or subordinate directly to CWR national Head office.

The formers comprise rayon Basin "Association" Autorithies (BAS), specific Headworks administrations, contractor organizations involved in (major) maintenance works, construction organizations, administrations of some reservoirs and canals, industrial enterprises and other specific local organizations.

The latter correspond to specific national infrastructure administrations (reservoir, canals) or sectoral/thematic institutions (engineering, research, training specific project etc.) they are identified namely in table 2.2[6].

[6] We will note that the following institutions that were during the former Soviet Union period do not exist any more: "Kazvodstay Complex", design and technological trust "Kazgortech Vodstroy", design and building exploitation union "Kazak Pastbich". As for Kazuzhgrprovodhoz Institute it still exists in Shimkent and corresponds to (Kaz) Uzhvodproekt organization with a limited staff.

Other water institutions not subordinate to CWR are also identified in table 2.2 such as Kazak Scientific-Research Institute of Water Management, Dzhambul Hydrotechnical and Land Reclamation Institute, State Joint Stock Company "Tagan" and National Commissions for the combined use and protection of the transboundary water courses.

Oblast CWR, rayon BAS and the other organizations interacting all of them with the local authorities (Akimat), are formally in charge of:

(i) active regulation of water regime of the rivers;

(ii) supply of warranted water allocation and its transportation the consumers;

(iii) keeping of conditions of inter-oblasts and inter-rayons water division;

(iv) programming and operation of sanitary and special nature protection releases for preservation of water bodies;

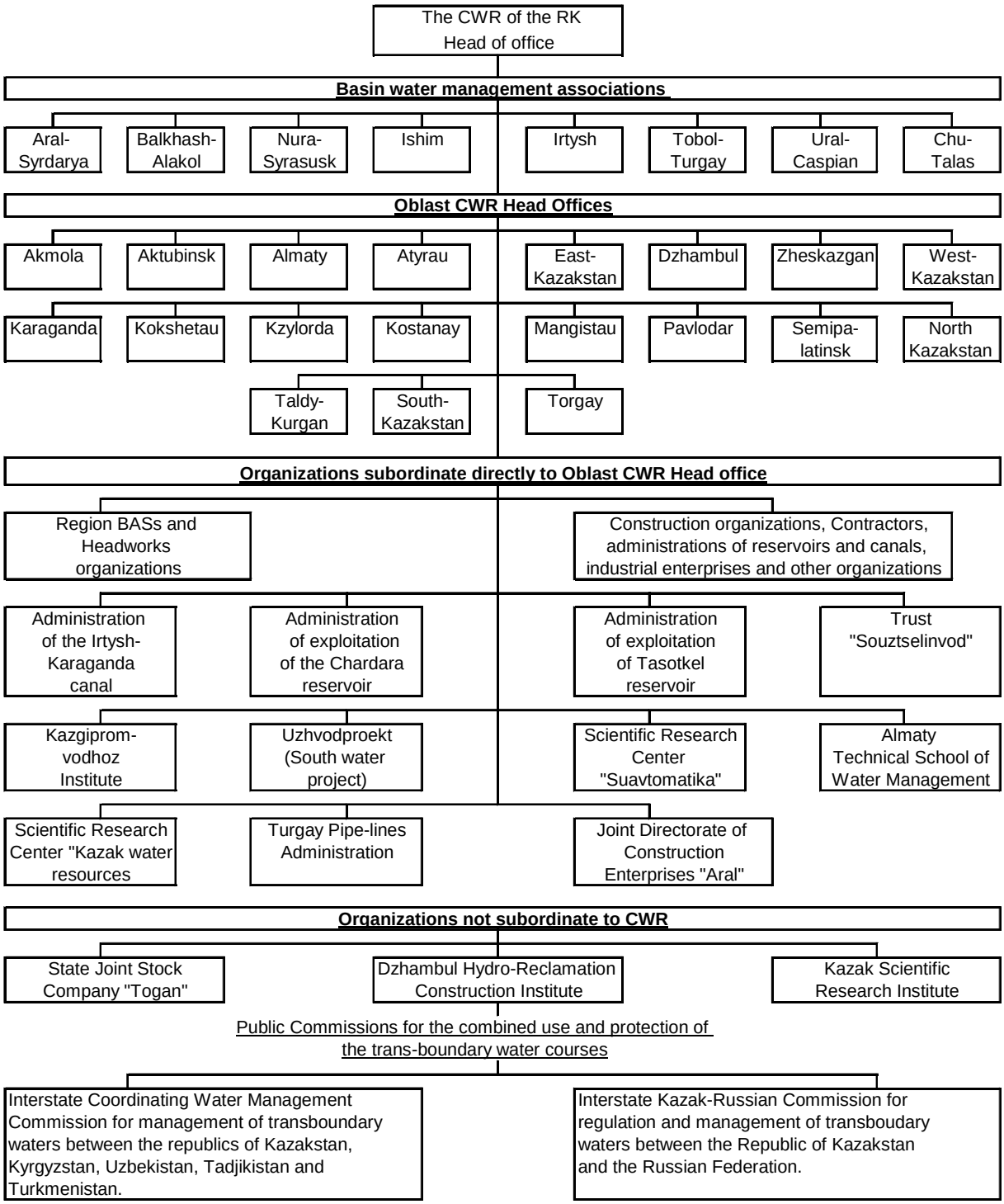
(v) management of accident-free releases of flood waters;

(vi) strict limitation of water consumption during arid years. They have under their responsibility administration, exploitation and maintenance of headworks, main water intake structures, pumping stations and of inter-branches, inter-oblasts, inter-rayons and inter-farms canals and drains.

Juridical status of the different institutions/organizations identified in table 2.2 is also indicated in it: State organizations, Joint Stock Companies (presently being or in process to become), Cooperative Society or other kind of private company. The on-going privatization process is discussed in paragraph 7.1 below.

Figure 2.2

Structure of the Committee for Water Resources in the RK



2.4.4 Institutional set-up of the project area

Administratively the project area comprises the whole Kzylorda oblast with its 9 rayons and parts of mainly 2 rayons (Shaulder and Kzylkum) out of the 13 rayons of South Kazakstan Oblast.

Each oblast is ruled by an Akim who is directly the representative of President of RK and has his administrative services (Akimat). Each rayon is controlled by a rayon Akim responsible to the oblast Akim. There is also an elected regional assembly at oblast level (Mazlikhat), the power and responsibilities of which being foreseen to be enlarged to the future. Akimat controls all oblast technical organizations mentioned below to which they are responsible in parallel to their own national tutelage administration.

CWR organizations concerned with the project area are:

- Aral-Syrdarya BWMA and Chardara dam management organization directly responsible to CWR national Head office in Astana.
- CWR organizations responsible to Kzylorda and South Kazakstan CWR Head offices.

The latters are identified in figures 2.3 and 2.4. There are in total:

- 2 oblasts CWR Head offices
- 3 Headworks/canal administrations financed on state budget in Kzylorda Oblast
- 8 rayons BAS, and Aralsk MES (covering 2 rayons) and Shieli Administration for water management system in Kzylorda Oblast
- 2 contractor organizations (Kazalinsk and Turkestan MM

The two last categories of organizations are self-financed from water users payments.

Rayon BAS exploit and maintain water intake structures, interfarm irrigation canals, and drains, and supply water to consumers.

Contractors organizations are in charge of (major) maintenance works.

At present time, Water Users Associations (WUA) are in a creation process on the basis of former collective farms and farms and agro combinats. They are/should be composed of JSCes, peasant farms, and cooperative farms and must take part in the future in water supply and allocation planning, water distribution and collection of water users payments for water use and services. They should also participate to 0&M of inside farm irrigation network and equipments together with water users themselves.

Other main institutions/organizations involved at oblast level are:

- MOA oblasts and rayons agencies, departments and services
- MENR oblasts and rayons agencies, departments and services
- MOH oblast and rayons Sanitary-Epidemiological Services
- Hydromet oblast and rayon services

Figure 2.3

Structure of Kzylorda Oblast CWR Organizations

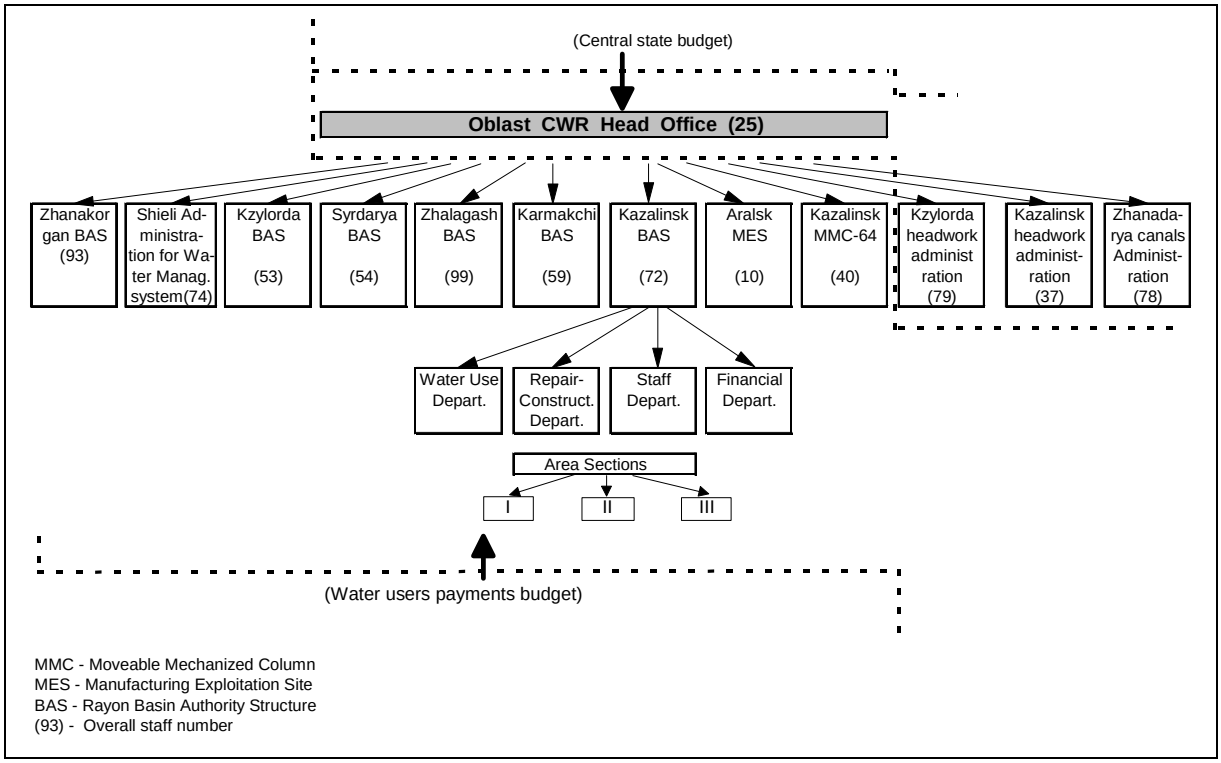
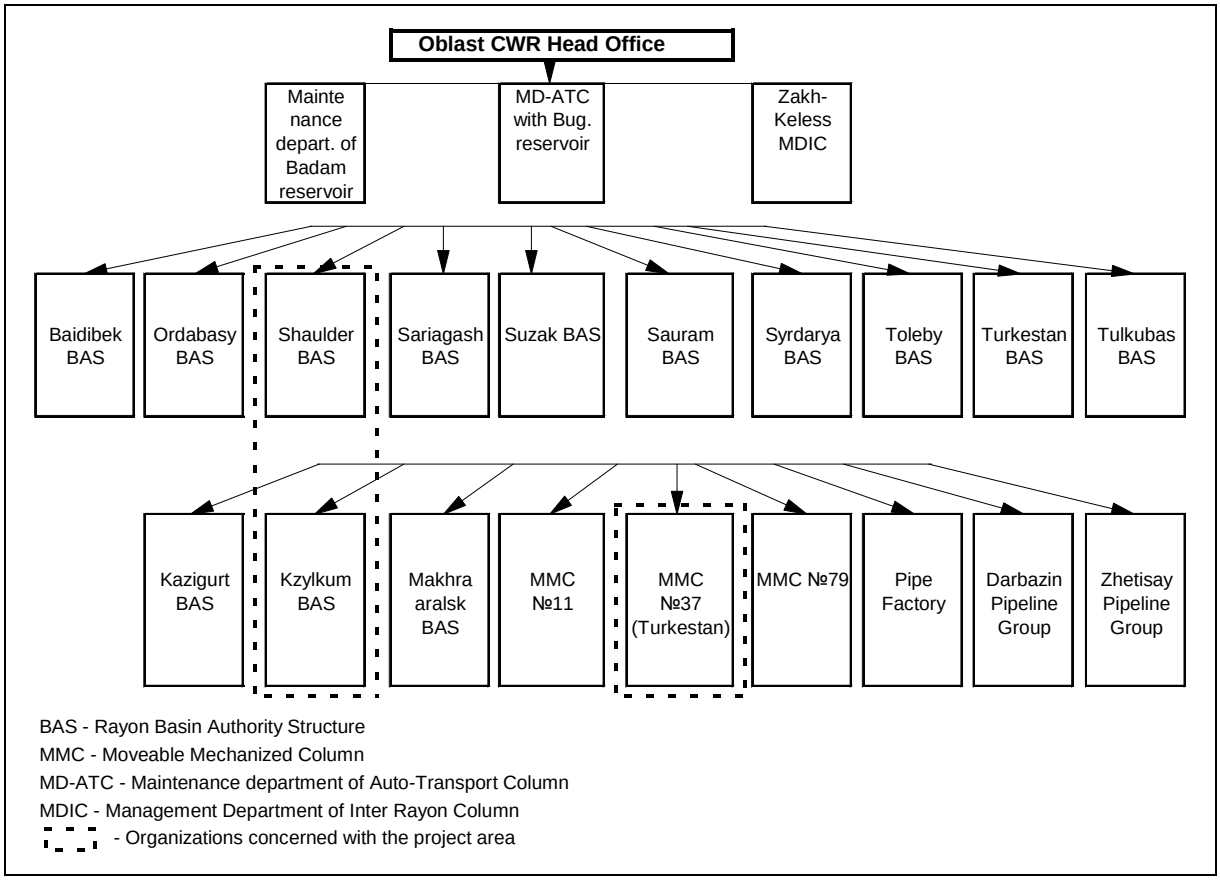


Figure 2.4

Structure of South Kazakstan Oblast CWR Organizations



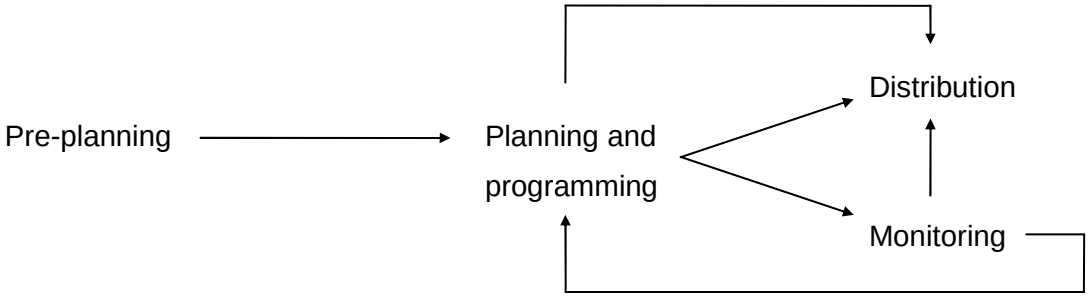
2.5 Overview of the water management system in RK Syrdarya basin

Besides the inventory of institutions/organizations involved in water management and the identification of their missions given above, it is useful to give a sketch of the main features of the water management system in the project area. Figure 2.5 hereafter provides a self-content overview of it, limited to agricultural uses, which represent the major part of water economic consumption (see report "Water management and water allocation study").

Water management system is composed of the following three main functional components:

- pre planning stage (lines 1, 1' and 2 of figure 2.5)
- planning and programming stage (lines 3, 4, 2 and 6 of figure 2.5)
- distribution and monitoring stage (lines 6, 5 and 2 of figure 2.5)

These components are interacting as illustrated below.



Institutions/organizations intervening in each stage are also indicated in figure 2.5. Details concerning operation of hydraulic infrastructure and gauging stations for water delivery and monitoring can be found in report "Water management and water allocation study".

State control of water uses and water conservation (quantitatively and qualitatively) is practiced formally by the following responsible officials:

- Vice-chairman of CWR at national level who is Main State Inspector of water use and water conservation.
- Head of Aral-Sydarya BWMA who is Main State Basin Inspector of water use and water conservation, his vice being Leading State Inspector.
- Chiefs, main and leading specialists of Water Resources Management Department of CWR national Head office are State Inspectors and Leading State Inspectors of water use and water conservation.
- Heads of oblast CWR, Departments, Rayon BASs and equivalent organizations and hydro chemical laboratories are Leading State Basin Inspectors of water use and water conservation.

In the whole the following main limitations and gaps of water management system must be borne in mind:

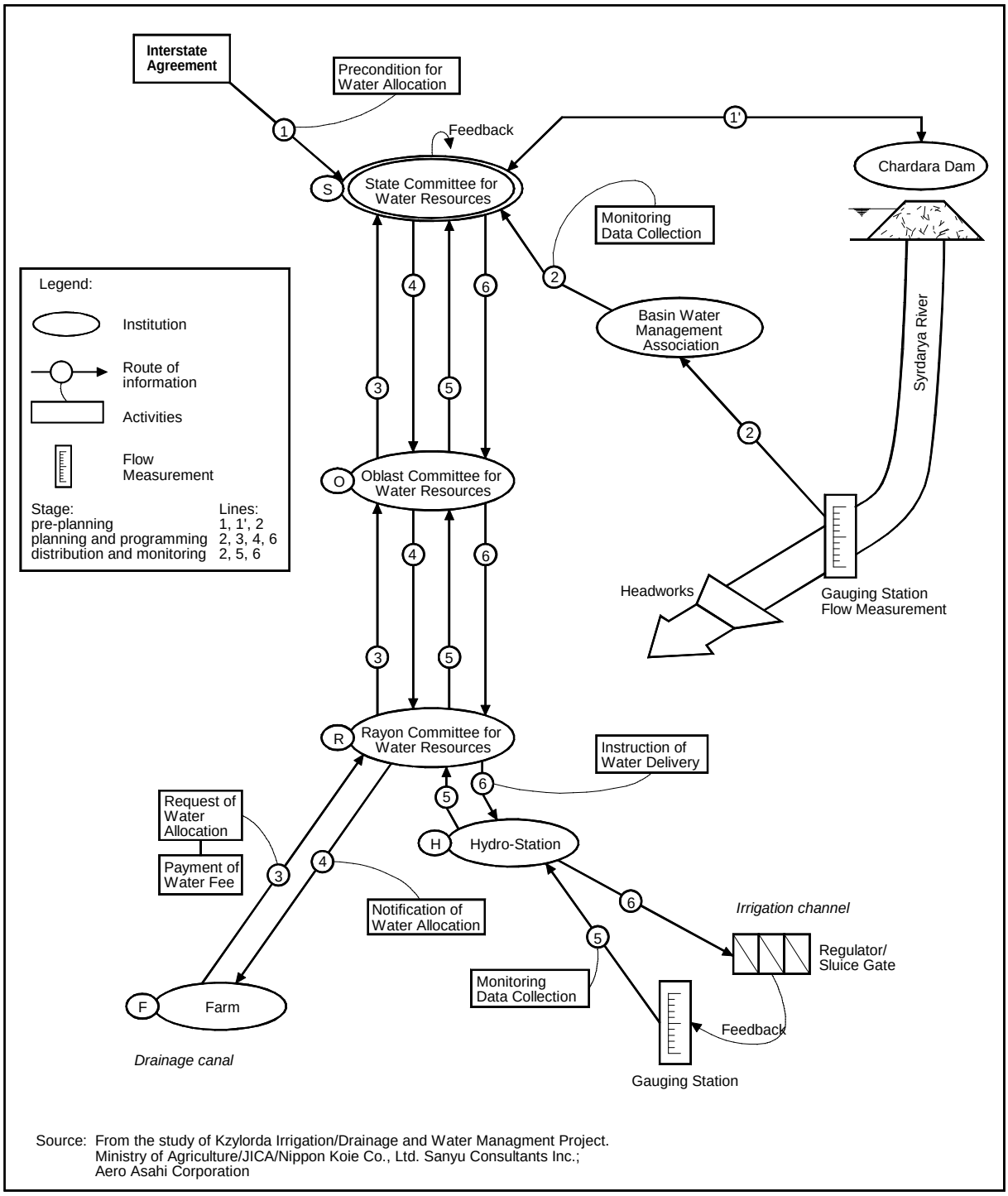
- Although water requirements are formulated by water users (farms) and considered at national level trough the bottom-up communication system (rayon BAS - oblast CWR Head office - CWR national Head office), planning and programming system remains centralized with a top-down decision making, being only at national level without participation of river basin and oblast CWR organizations nor even more water users.
- Oblast Akims control all CWR organizations at oblast level and can intervene at any time during execution of water distribution programs and modify them for political reasons.
- Aral-Syrdaya BWMA and oblast CWR Head offices are each of them directly responsible to CWR national Head office (so is Chardara Dam Administration). They are involved both

in control of water uses, water distribution programs and water conservation and work in parallel with little collaboration. They seem to be even somehow in competition, especially with the perspective of institutional re-arrangement and privatization program, as we have stated during "field" visits (this issue is re-considered in chapter 7 below).

- Water delivery to farms is not actually subject to payment of water fees unlike figure 2.5 seems to show it, and that because of present short term policy of MOA and general political reasons at oblasts level.
- Missions of MENR in ecological quantitative requirements (conservation of NAS and Delta hydrological conditions is particular) and in water quality control are somewhat limited by the fact that it is not really participating in water resources planning and programming process. Same remark can be done for MOH in respect to human health aspects of waters.

Figure 2.5

Scheme of Water Management in RK Syrdarya River Basin



Source: From the study of Kzylorda Irrigation/Drainage and Water Managment Project. Ministry of Agriculture/JICA/Nippon Koie Co., Ltd. Sanyu Consultants Inc.; Aero Asahi Corporation

3 THE ARAL SEA REHABILITATION PROGRAM AND OTHER ON-GOING PROJECTS AND STUDIES

In January 1994 during the Conference of the Heads of the five Central Asian states[7], which took place in Nukus, the “Program of concrete actions for improvement of the ecological situation in Aral sea basin" was adopted, or more simply the Aral Sea Basin Program (ASBP).

The basic statements of the Program are:

(i) Rational use and conservation of water resources

- Water strategy at regional and national levels
- Rise of the efficiency of existing reservoirs use
- Safety of dams and reservoirs

(ii) Monitoring of water resources

- Improvement of regional hydro-meteorological information system, registration and prediction of water resources and monitoring of environment in Aral Sea basin
- Creation of an unified information system (data base, etc.)

(iii) Quality of water resources

- Assessment and management of water quality
- Improvement of water quality for agriculture

(iv) Stabilization and rehabilitation of the Aral Sea

- Creation of artificial damp zones in Amudarya delta and on the dried up shore of the Aral sea
- Rehabilitation of the NAS
- Study of the environment in Aral Sea basin
- Improvement of conveyance capacity of Syrdarya channel downstream Chardara reservoir
- Reclamation of Syrdarya delta

[7] Kazakstan, Kyrgyzstan, Uzbekistan, Tadjikistan and Turkmenistan

(v) Improvement of ecological situation in the Aral area ("Clean water", "Health protection and sanitation", "Water supply")

(vi) Water management and ecological actions for the improvement of runoff

(vii) Automation of management of Amudarya and Syrdarya river

(viii) Institutional and technical support to interstate organizations

We will note that SYNAS project participates to the above program, in particular with respects to its component (iv).

Since the 1994 Paris international conference on the Aral Sea issues about 10 grant and Technical Assistance (TA) donors have financed Aral Sea projects, more or less close to the ASBP, for a total "external" aid of around 33.5 million US$.

On the other hand in March 1997, during a Board meeting of the International Fund to Save Aral Sea (IFAS) the participating states have committed a total of 36.2 million US$[8], while according to IFAS Kazakstan, Uzbekistan and Turkmenistan would have spent a total large amount of 650 million US$ per year on own national socio-economic and environmental projects for the rehabilitation of the disaster zone around the Aral Sea.

Recently a Water and Environmental Management project (WEMP) prepared through a World Bank Global Environment Fund (GEF) assistance has been decided and was foreseen to start in august 1998. Its total budget is 21.2 million US$ with the following distribution: (GEF) - 58%; 5 central Asian Republics - 19%; Netherlands - 11%; European Union/TACIS - 6%; SIDA - 2%; unidentified - 4%. This project is considered presently as the main tool of the ASBP and IFAS to create a common policy, strategy and action programs. It comprises one lead and five support components as follows:

(i) The Water and Salt Management component (6.3 million US$) will prepare for the ASBP the common policy, strategy and action programs;

(ii) A Public Awareness component (3.1 million US$) will educate the general public to conserve water and to accept burdensome political decisions;

(iii) A Dam and Reservoir Management component (2.6 million US$) will complete the independent dam safety assessment, improve dam safety, address sedimentation, and prepare investment plans;

[8] With the following distribution (million US$): Kazakstan - 7.6; Uzbekistan - 14.0; Tadjikistan - 14.0; Turkmenistan 6.0

(iv) A Transboundary Water Monitoring component (3.5 million US$) will create the basic physical capacity to monitor transboundary water flows and quality;

(v) A Wetlands Restoration component (3.9 million US$) will rehabilitate a wetland area near Amudarya delta and contribute to global biodiversity conservation and an increase in local incomes;

(vi) A Project Management Support component (1.9 million US$) will enable the Executive Committee of IFAS to implement the project.

This project must be understood as a first step of a coordinated/integrated joint-external aid to IFAS, aiming more to catalyzing the ASBP than at tackling Aral Sea issues at their roots, in particular in matter of regional/national water management systems and policies, irrigation and environmental policies; WEMP budget being not at the level of such basic issues.

Anyhow we will recommend to decision makers and managers that WEMP should support SYNAS Project in regard with its Water and Salt Management component in general and Public Awareness component in particular.

At RK level other project/studies which are going on or are pending concerning more or less the SYNAS Project area and a synergy should be searched/decided/ between the formers and the latter. They have neither been identified exhaustively nor analyzed in detail in the framework of present study, we will only mention the following projects/studies:

- The on-going **Irrigation and Drainage Improvement Project** (80 million US$) is financed partly by the World Bank and has a sub-project in Kzylorda oblast (Akkumski Farm)
- The foreseen **Kzylorda Irrigation/Drainage and Water Management Project** which has been prepared through a JICA facility and aims at rehabilitating the Kzylorda Left Bank massif; this project should be financed by the Japanese Overseas Economic Cooperation Fund (OECF)
- A **USAID Technical Assistance program** dealing with water legislation and pricing, and Water Users Association at RK level
- A foreseen **Strategy for Economic Development of the Kzylorda oblast** (study worked-out in 1997 by Kzylorda city with TA of the World Bank)
- A **national irrigation sector development project** which is under preparation and is foreseen to be financed by ADB
- TACIS sector studies

4 INSTITUTIONAL CAPACITY AND BUDGET OF CWR

In this chapter the institutional capacity of CWR organizations is analyzed mainly from a financial point of view on the basis of the official CWR's accounts which are kept according to the state accounting system.

These accounts were obtained for the three last fiscal years (1995,1996 and 1997), and for all the organizations part of/or subordinate to CWR and that, firstly in the whole RK and secondly in the project area.

CWR specific accounting system is based on the accounting of three different financial lines:

- State budget line for the financing of CWR entities which don't have other budget source (see above paragraph 2.4.3 and 2.4.4)
- The budget line considered as financing agricultural water supply organizations (rayon BAS and equivalent organizations)
- ''The contractor budget line'' for the financing of contractor organizations that provide maintenance services

Theoretically the two last budget lines are corresponding to the fund settled from payments from water users for ''water use right'' at the rate of 0.03 KZT/m^3 (see above paragraph 2.4.1). Thus the accounting of the second budget lines comprises all the agricultural water supply organizations (Rayon BAS), and the third one the Contractors organizations.

Analysis was made from summarized balance sheets of assets and liabilities for each budget line, other accounting lines and ratios. Detailed analytical tables are given in appendix 4.1 for CWR organizations at national level, in appendix 4.2, 4.4 and 4.6 for Kzylorda Oblast, and in appendix 4.3, 4.5 and 4.7 for South Kazakstan Oblast (CWR organizations concerned by the project area).

4.1 CWR organizations at national level

4.1.1 Self-financed organizations

As already mentioned above CWR self-financed organizations comprise Rayon BAS equivalent area organizations and Contractor organizations.

4.1.1.1 Analysis of assets and liabilities structure

The evolution of the structure of assets over the last three fiscal years with regard to their main components is given in table 4.1. hereafter.

In 1997 value of total assets of CWR self-financed organizations was accounted 19,2 billion KZT (250.7 million US$), which seems very little. The weight of the fixed assets (water management organizations infrastructure and equipment) was only 70% of total assets in 1997 and was decreasing significantly since 1995. This characteristic has to be put in relation with the important depreciation ratio of the fixed assets (41.5% in 1995 and 44.6% in 1997), which indicates that during at least the two decades before 1995 maintenance works (current and major repairs) and re-investments were not done properly, though it was financed under state budget (former Soviet Union system).

The other important fact is the very heavy burden of the debtor's debt in the financial accounts since 1995, amounting nearly 5 billion KZT in 1997 (65.1 million US$) and representing for the same year 26% of total assets and 87% of current assets. This debtor's debt corresponds of course to non payment from agricultural water users (on the basis of 0.03 KZT/m^3 supplied for the ''right of using water'').

This major constraint seems to become structural as debtor's debt increased by 42.5% between 1995 and 1997.

Concerning the liabilities structure (table 4.2) one must take notice of the following main characteristics:

- Almost lack of long term credit facilities in long term liabilities
- Important weight of debtee's debt in total liabilities (21.5% in 1997) and in current obligations (98.7% in 1997). Debtee's debt increased by 63% between 1995 and 1997, main debtee's being state and staff
- Non significant weight of short term credits facilities in current obligations

Analysis of some main balance structure ratios shows in a first approach:

- A decrease of overall liquidity ratio (1.57 in 1995 versus 1.37 in 1997)
- An urgent payability ratio almost equal to zero
- A significant (theoretical) working capital of 1,5 billion KZT in 1997 (20.3 million US$), but decreasing in percentage of current obligations from 60% in 1995 and 1996 to 37% in 1997

But it must be borne in mind that water users' debt should not in fact be considered as current (short term) assets as it is not easily convertible in liquidity in short-term, what distorts somehow meaning of overall liquidity ratio and working capital assessment, the later been ''frozen'' by water users' debt.

Table 4.1

Aggregated Structure of assets of CWR self-financed organizations (national level)

(million KZT)	**1995**	**1996**	**1997**
Total assets	**17,565.3**	**18,974.2**	**19,179.7**
Fixed assets	**13,412.0**	**13,801.4**	**13,445.2**
Total assets %	76.4	72.7	70.1
• Initial value	22,224.3	24,479.2	23,461.7
• Depreciation value	9,227.4	10,950.9	10,472.2
- Depreciation ratio %	41.5	44.7	44.6
Current assets	**4,153.3**	**5,172.8**	**5,734.5**
• out of which Debtors debt	3,495.9	4,533.7	4,982.0
- Total assets %	19.9	23.9	26.0
- Current assets %	84.2	87.6	86.9

Table 4.2

Aggregated structure of liabilities of CWR self-financed organizations and balance structure ratios over the three last fiscal years (national level)

(million KZT)	**1995**	**1996**	**1997**
Total liabilities	**17,565.3**	**18,974.2**	**19,179.7**
Own capital. (theoretical)	**14,982.3**	**15,740.1**	**14,974.3**
Long term credit.	**0.0**	**0.7**	**25.2**
Current obligations	**2,583.0**	**3,223.4**	**4,180.2**
• Total liabilities %	14.7	17.0	21.8
- out of which Debtee's debt	2,529.2	3,184.2	4,125.5
• -total liabilities	14.4	16.8	21.5
• -current obligations %	97.2	98.8	98.7
Balance structure ratios			
Overall liquidity(1)	1.57	1.60	1.37
Urgent payability(2)	0.06	0.08	0.06
Working capital (mio KZT)(3)	1,570.3	1,949.4	1,554.3
Working capital/current obligations	0.60	0.60	0.37

Notes: (1) Current assets/ current obligations

(2) Cash availability/current obligations

(3) Current assets- current obligations (or long-term liabilities - fixed assets)

4.1.1.2 Financial analysis of activities

Activities of CWR self-financed organizations comprise administrative and water management tasks on the one hand, and operation and maintenance of water management systems above water users level on the other hand, the latter being supposed to be the main activity, financially speaking.

In CWR accounting system operating incomes of self-financed organizations are assessed on the basis of the total water resources supplied to water users over one year at the rate of 0.03 KZT/m^3 (see above). From this present norm an estimated value of overall activity of CWR self-financed organizations is obtained and constitutes the basis of their budget programming.

As a matter of fact scheduled operating income is varying according to assessed quantity of water supplied yearly. In 1997 it was counted 4 billion KZT (52.4 million US$) and was respectively 88% and 93% of it for 1995 and 1996. Actual income received from water users was less than the scheduled operating income, representing only 54% in 1995 but improving up to 83% in 1997, with an amount of 3.3 billion KZT (43.7 million US$). Nevertheless the burden of water users' debt increased continuously, as already mentioned above, growing in percentage of scheduled operating income from 77% in 1995 to 124% in 1997.

Actual operation expenditures amounted to 3.8 billion KZT in 1997 (50.0 million US$) diminishing slightly in current value over the three years (see table 4.3). But in the whole although there is a significant trend of financial position improvement through a better recovering rate of water users' payments, overall activity of CWR self-financed organizations remain ''in the red'', as it is illustrated through following indicators:

(i) Positive theoretical ''economic'' operating result (gross margin), but decreasing continuously from 427 million KZT in 1995 down to 189 million KZT in 1997 (representing in percentage of scheduled operating income respectively 9.4% in 1995 and only 4.7% in 1997). This is leading to a low theoretical ''economic'' rentability, in term of percentage of (theoretical) own capital[9], coming to 2.9% in 1995 and falling down to 1.3 in 1997.

(ii) Tremendous structural negative financial result of operating activity (operating deficit), decreasing however from 1.7 billion KZT in 1995 (37 million US$) down to 477 million

[9] Apart from a symbolic initial capital paid-off the most part of ''own capital'' accounted corresponds to former state investments on objects transferred to management responsibility of CWR organizations and cannot be compared to the concept of ''own capital'' of private companies.

KZT in 1997 (6.2 million US$), with an actual financial rentability (in term of percentage of theoretical -own capital) improving but remaining negative.

(iii) Amortization of fixed assets accounted at the average level of 1.7% of fixed assets (initial value) and weighing 9-10% of scheduled operating income over the last three fiscal years, although a negative structural financial cash flow (actual financial result + accounted amortization). But even with such an amortization rate, more than 26 years would be necessary in theory (in term of accounting amortization) to recover the present depreciation ratio of fixed assets (see table 4.1), provided total depreciation reserve would allow major repairs and rehabilitation works, and that regular maintenance will be further carried-out and will be technically feasible with an additional long term life duration of main fixed assets (civil works).

(iv) Theoretical staff productivity, as defined in table 4.3, did not gain ground significantly in current value (9.4% of increase over three last years) whereas average wage grew by 82%. In parallel overall staff number was reduced by 20% over three years. Wage productivity ratio (table 4.3) fell from 7.8 in 1995, down to 4.7 in 1997, and debt on salary reached 332 million KZT (4.3 million US dollars) in 1997, what represents 39% of total annual wage-bill (or almost 5 months of salary).

Table 4.3

Activity analysis of CWR self-financed organizations over the last three fiscal years

	(million KZT)	**1995**	**1996**	**1997**
1.	Estimated value of activity (operating income)	4,565.9	4,307.2	4,011.9
2.	Actual income from water users	2,468.5	2,904.5	3,345.5
	(2)/(1)%	54.1	67.4	83.4
3.	Water users' debt	3,494.9	4,533.7	4,982.0
	(3)/(1)%	76.6	105.3	124.2
4.	Operating expenditures	4,138.4	4,006.3	3,822.7
5.	Theoretical ''economic'' result: (1)-(4)	427.5	300.9	189.2
	(5)/(1)%	9.4	7.0	4.7
6.	Actual financial result: (2)-(4)	-1,669	-1,101.8	-477.2
	(6)/(1)%	-36.6	-25.6	-11.9
7.	Staff number	14500	12770	11650
8.	Theoretical staff productivity (1)/(7) - (1000 KZT)	314.9	337.3	344.4
9.	Average annual wage (1000 KZT)	40.3	59.8	73.3
	Wage productivity ratio:(8)/(9)	7.8	5.6	4.7
10.	Working capital	1,570.3	1,949.4	1,554.3
	(10)/(4)%	37.9	48.7	40.7
11.	Amortization of fixed assets	45.4	406.9	393.7
	Fixed assets % (initial value)	1.9	1.7	1.7
	(11)/(1)%	9.1	9.5	9.8
12.	Theoretical "economic" rentability (5)/own capital %)	2.9	1.9	1.3
13.	Actual financial rentability: (6)/own capital %	-11.5	-7.0	-3.2
14.	Debt on salary	194.3	309.7	332.4
	total wage-bill %	33.2	40.6	38.9

4.1.2 State budget -financed organizations

CWR State budget-financed organizations comprise CWR Head office in Astana, CWR Oblasts Head offices, BWMAes and a number of reservoirs and hydraulic head structures organizations, as already mentioned above (paragraphs 2.4.2 and 2.4.3). CWR Head offices and BWMAs are exclusively involved in administrative and water management tasks whilst Head structures organizations are involved both in administrative and water management tasks on one hand, and on the other hand, in O&M tasks of structures (including sometimes portions of primary canals) which are under their responsibility, the latter being also financed from state budget.

An overall financial analysis of CWR state budget financed organizations is given in table 4.4.

In 1997 accounting value of total assets of CWR state budget-financed organizations was estimated 4.4 billion KZT (58.0 million US$) which seems here again to be very little, while in 1995 and 1996 it was estimated around 7.0 billion KZT in current currency, what does not mean assets transfer but was due to inadequate accounting depreciation ratio on fixed assets in 1995 and 1996, as shown in table 4.4.

Differently from self-financed organizations, fixed assets constitute the essential structural part of total assets (99%), with in correlation poor financial operating conditions (including maintenance tasks) as it is shown below.

After accounting adjustment, depreciation ratio of fixed assets added up to nearly 54%, even more than for self-financed organizations (table 4.1), which points out a very poor level of maintenance works and re-investments during former Soviet Union time.

With neither long term credit nor short term credit, minor current assets and current obligations, overall liquidity ratio (around 1.5 in 1995 and 1997, and 1.1 in 1996) is not significant, whereas urgent payability ratio was almost equal to zero over the last three years, as for self-financed organizations. For same reasons working capital is narrow and fluctuating (see table 4.4), representing only between 3,800 and 18,200 KZT per employee over the analyzed period.

Within this ‘’blackboard’’ a positive point has nevertheless to be borne in mind, i.e. the significant improvement of state budget actually received, which came from 61% of state budget planned in 1995 up to 100% in 1997.

Overall staff number was more drastically reduced by 34%, in comparison with self-financed organizations, and as a matter of fact apparent theoretical staff productivity (state budget

planned/staff) increased by 86% over three years, whilst average wage increase was only 28% (82% for self-financed organizations). Wage productivity ratio came also from 2.6 in 1995 up to 3.7 in 1997. In that way, compared to self-financed organizations, wage productivity ratio of state budget-financed organizations illustrates the fact that in 1997 the former organizations did not appear more significantly involved in services-oriented activity (O&M) than the latter.

Table 4.4

Overall financial analysis of CWR state budget-financed organizations over the last three fiscal years (national level)

(million KZT)	**1995**	**1996**	**1997**
Total assets	6,697.3	7,042.6	4,436.3
Fixed assets	6,871.4	6,970.8	4,385.1
total assets %	98.6	99.0	98.9
Initial value	8,469.5	8,848.5	6,767.4
Depreciation value	1,581.5	1,877.7	2,382.3
Depreciation ratio %	18.7	26.7	53.7
Current assets	95.9	71.3	51.2
Own capital (theoretical)	6,904.1	6,976.9	4,403.3
Current obligations	63.2	65.7	33.0
Overall liquidity (1)	1.52	1.09	1.55
Urgent payability (2)	0.20	0.01	0.06
Working capital (mio KZT) (3)	32.7	5.6	18.2
Working capital/current obligations	0.52	0.09	0.55
State budget planned	239.8	244.6	293.3
State budget received %	60.9	76.5	100.0
Staff number	1800	1473	1181.0
Average annual wage (1000 KZT)	51.1	62.2	65.3
State budget planned/staff (1000 KZT)	133.2	166.1	248.3
- Wage productivity ratio (b)/(a)	2.6	2.7	3.7
Debt on salary	13.6	15.0	4.1
- total wage-bill %	14.8	16.4	5.3

Notes: (1) current assets/current obligations

(2) cash availability/ current obligations (see appendix 4.1)

(3) current assets - current obligations (or long-term liabilities- fixed assets)

Lastly another worthwhile finding of the present financial analysis is the lower level of debt on salary in state budget-financed organizations, which improved from 15% of total wage-bill in 1995 down to 5 % only in 1997. That means for employees that it is more secure for the time being to work under state budget-financed organizations than under self-financed organizations, which could explain, among other reasons, reluctant attitude to privatization, perceived as a first impression at level of engineers of CWR Oblast organizations met.

4.2 CWR organizations in the project area

Structure of CWR organizations and their budgeting have been defined above (paragraph 2.4.2 and 2.4.3). Present paragraph aims at providing overall financial analysis comparable to CWR organizations at national level for self-financed organizations on one side (paragraph 4.2.1) and for state budget-financed organization on the other side (paragraph 4.2.2). In both cases analysis is made for Kzylorda and South Kazakstan Oblast organizations together (more separate analysis could be done from appendices 4.2 to 4.7). Besides staff structure evolution of CWR organizations concerned by the project area is given in paragraph 4.2.3, and equipment inventory of Kzylorda CWR organizations in paragraph 4.2.4.

With respect to Chardara Dam Administration the mission could not obtain information concerning its financial management in Shimkent CWR Head office. This administration is financed on state budget and is directly responsible to CWR national Head office (see paragraph 2.4.4), where no specific information was collected about it.

Aral-Syrdarya BMWA is also financed on state budget and is directly responsible to CWR national Head office. It is only involved in administrative and water management task and not at all in hydraulic infrastructure 0&M. For that reason its budget has not been analyzed but has nevertheless been visited and discussions were held with its Head. Aral-Syrdarya has a total staff of 39 permanent employees out of which 29 are heads of department, engineers, specialists or equivalent.

It is organized in 8 functional units: economic and financial department; accounting department; department of water resources use; department of water resources conservation; department of "central and small rivers" conservation; line personal department; South Kazakstan regional administration of water resources use; hydro-chemical laboratory of South Kazakstan administration. Five cars in working condition are available.

4.2.1 Self-financed organizations

For the reminder CWR self-financed organizations concerned with the project area are:

- In Kzylorda Oblast: 6 rayon BASes, Shieli Water Management system Administration, Aralsk Manufacture Exploitation Site Administration and Kazalinsk Moveable Mechanized Column
- In South Kazakstan Oblast: Kzylkum and Shaulder BAS, and Turkestan Moveable Mechanized Column

4.2.1.1 Analysis of assets and liabilities structure

In 1997 accounting estimated value of total assets of CWR self-financed organizations concerned with the project area was only 1.0 billion KZT (13.7 million US$), representing 5.5% of total assets of all CWR self-financed organizations in RK. The accounting estimate is certainly underestimated if we consider all the hydraulic infrastructure existing in the project area.

Increase of fixed assets over the analyzed period (+23%) was due to inflation accounting adjustments and not to new investments. Weight of fixed assets was 68.5% of total assets in 1997, comparable to all such organizations at national level. Similarly depreciation ratio of fixed assets is critical (50.6% of total assets in 1995 and 54.6% in 1997).

Hydraulic infrastructure was 88% of fixed assets (initial values) and machinery, equipment, and vehicles 8% (see details in appendix 4.6) in 1997, but specific depreciation ratio of main fixed assets categories were not obtained (a detailed inventory of equipment in Kzylorda Oblast CWR organizations, all categories included, is given further in appendix 4.10 and paragraph 4.2.4, with some qualitative information).

As for equivalent organizations at national level water users' debt is a very serious critical burden for organizations financial management. In 1997 it amounted 276 million KZT (3.6 million US$) constituting 26% of total assets and 84% of current assets, and increased by 30% in current value since 1995.

Table 4.5

Aggregated structure of assets of all CWR self-financed organizations in the project area over the three last fiscal years

(million KZT)	**1995**	**1996**	**1997**
Total assets	821.8	962.9	1,048.0
Fixed assets	581.4	658.0	718.1
Total assets %	70.7	68.3	68.5
• Initial value	1,177.9	1,382.3	1,580.5
• Depreciation value	596.5	724.3	862.4
- Depreciation ratio %	50.6	52.4	54.6
Fixed assets structure			
• Hydraulic infrastructure %	85.0	84.8	87.7
• Buildings %	3.4	3.8	3.0
• Machinery, equipment and vehicles %	10.0	10.3	8.0
Current assets	240.4	304.9	329.9
• out of which debtors debt	212.5	286.0	276.3
- total assets %	25.9	29.7	26.4
- current assets %	88.4	93.8	83.7

Note: (1) Percentage of total fixed assets initial value

With respect to liabilities structure (table 4.6) the following main characteristics must be considered:

- Lack of long term credit facilities in long term liabilities
- Debtee's debt relatively less important than for all equivalent organizations at national level (only 9% of total liabilities, and 38% of current obligations in 1997)
- Lack of short term credit facilities in current obligations

Balance structure ratios considered show finally:

- An improvement of (theoretical) overall liquidity ratio (1.4 in 1997, versus 0.8 in 1995, reaching the national ratio of equivalent organizations)
- An urgent payability ratio strictly equal to zero
- A relative improvement of the (theoretical) working capital which was negative in 1995 and came up to 90 million KZT in 1997 (1.2 million US$), representing 37% of current obligations (same as for national level same year)

But here also we should are in mind the theoretical aspect of such working capital and overall liquidity ratio meaning, considering the structural nature of water users' debt that weighs on overall financial management system of self-financed organizations, limits the maintenance works needed even at he first step of the present water pricing rule, and makes them unable to pay their current obligations.

Table 4.6

Aggregated structure of liabilities of all CWR self-financed organizations in the project area and balance structure ratios over the three last fiscal years

(million KZT)	**1995**	**1996**	**1997**
Total liabilities	821.8	926.9	1,048.0
Own capital (theoretical)	530.8	697.6	807.7
Current obligations	291.0	265.3	240.3
Total liabilities %	35.4	27.5	22.9
out of which Debtee's debt	73.2	110.1	91.8
- total liabilities %	8.9	11.4	8.8
- current obligations %	25.1	41.5	38.2
Balance structure ratios			
• Overall liquidity(1)	0.83	1.15	1.37
• Urgent payability(2)	0.00	0.00	0.00
• Working capital (mio KZT)(3)	-50.6	39.6	89.6
• Working capital/current obligations	-0.17	0.15	0.37

Notes: (1) Current assets/ current obligations

(2) Cash availability/current obligations

(3) Current assets- current obligations (or long-term liabilities - fixed assets)

4.2.1.2 Financial analysis of activities

In 1997 scheduled operation income was near 234 million KZT (3.1 million US$) being 96% of the same accounting item in 1996 and 115% in 1995, which was a dry year in the project area. Actual income received from water users were only 47% of scheduled operation income in 1995, but jumped up to 121% in 1996, with thus a relative making-up but decreased to 88% in 1997.

Notwithstanding water users' debt, in percentage of scheduled operating income, continued to climb from 103% in 1995 up to 116% in 1997.

Actual operating expenditures jumped also from 176 million KZT in 1995 to 263 million KZT in 1996 (+50%), reducing to 202 million KZT in 1997 (2.6 million US$). But improvement of water users' payment[10] rate in 1996, was mainly utilized for increasing staff wages, decreasing debt on salary, and elevate fixed assets amortization ratio, what limited maintenance works improvement (see appendixes 4.4 and 4.5). However there was a significant improvement trend of water users' payments recovery since 1995, and overall financial prospect of CWR self-financed organizations in the project area seem to be globally better than for the whole RK (for same organizations) as it could be perceived through the following indicators (to be compared to RK level: see paragraph 4.1.1.2. above):

(i) Positive theoretical ''economic'' operating result, except in 1996 when over-expenses were made, it came to 36 million KZT in 1997 representing 15% of scheduled operating income and leading to a theoretical '''economic'' rentability ratio, (in percentage of theoretical: own capital) of 5.7% in 1996, and 4.4% in 1996. These above two indicators being better than at RK level.

(ii) Significant improvement of actual financial result of operating activity from a deep negative position in 1995 (-78 million KZT or -1.7 million US$) up to +7.6 million KZT in 1997 (+100 thousand US$), which leads to an actual positive financial rentability, in percentage of (theoretical) own capital, of almost 1% versus an exceptional achievement of 5% for the peculiar year 1996. Here also in regard with the indicators situation appears better than at RK level.

(iii) Amortization of fixed assets accounted at the average level of 3% of fixed assets (initial value), that would theoretically allow a better recovering rate of fixed assets depreciation than at RK level (in term of accounting amortization), 17 years of recovering time being necessary with such a rate level, provided same assumption as cited for RK level (paragraph 4.1.1.2, section (iii), that are not in fact reliable if we consider technical assessments of headworks made in the frame work of present study. But on the other hand amortization was in fact too high as it is beyond actual financial result and entailed to negative cash flow[11] (actual income -actual direct expenses, calculated accounting costs not included).

[10] The mission was told in Kzylorda CWR Head office that water users when they pay, used to do it in kind having no cash availability, and that CWR workers are also paid back from these incomes in kind. Anyhow the way such in-kind-payments are actually managed by CWR organizations and are assessed in the accounting remains not perfectly clear.

[11] In a profit-oriented private company in a liberal economy country (France for instance) an amortization reserve in such case would not be legally authorized and should be carried forward on further year.

(iv) Significant improvement of theoretical staff productivity with a total increase of 68% over the three years, while average wage was multiplied by 2.1 (more than at RK level, and with a 1997 average level also higher: 92,300 KZT versus 73,000 KZT).

(v) Overall staff number was more drastically reduced then at RK level (-31.5% over three years). Nevertheless with such an average wage increase, wage productivity ratio decreased from 4 in 1995 down to 3 in 1997, being even less than the same ratio at RK level, which illustrates also the fact that scheduled payable O&M services did not make any significant progress. Debt on salary fell from a high amount of 20.6 million KZT in 1995 (40% of annual wage-bill) down to 10 million KZT in 1997 (135,000 US$), representing only 13% of annual wage-bill (or a little more than 1.5 months of salary).

Table 4.7

Activity analysis of all CWR self-financed organizations in the project area over the last three fiscal years

	million KZT	**1995**	**1996**	**1997**
1.	Estimated value of activity (operating income)	206.0	247.5	237.6
2.	Actual income from water users	97.6	299.7	209.3
	(2)/(1)%	47.4	121.1	88.1
3.	Water users' debt	212.5	286.0	276.3
	(3)/(1)%	103.2	115.6	116.3
4.	Operating expenditures	175.7	263.0	201.7
5.	Theoretical ''economic'' result: (1)-(4)	30.3	-15.5	35.9
	(5)/(1)%	14.7	-6.2	15.1
6.	Actual financial result: (2)-(4)	-78.5	36.7	7.6
	(6)/(1)%	-37.9	14.8	3.2
7.	Staff number	1202	1048	823
8.	Theoretical staff productivity (1)/(7) (1000 KZT)	171.4	236.2	288.7
9.	Average annual wage (1000 KZT)	43.3	69.6	92.3
	Wage productivity ratio:(8)/(9)	4.0	3.4	3.1
10.	Working capital	-50.6	39.6	89.6
	10)/(4)%	-28.8	15.1	44.4
11.	Amortization of fixed assets	36.0	47.0	48.3
	Fixed assets % (initial value)	3.1	3.4	3.1

	(11)/(1)%	17.5	19.0	20.3
12.	Theoretical ''economic'' rentability ((5)/ own capital %)	5.7	-2.2	4.4
13.	Actual financial rentability ((6)/ own capital %)	-14.7	5.3	0.9
14.	Debt on salary	20.6	7.7	10.2
	total wage-bill %	39.6	10.6	13.3

4.2.2 State-budget financed organizations

For the reminder CWR state -budget financed organizations concerned with the project area comprise:

- in Kzylorda Oblast: CWR Oblast Head Office, Kzylorda and Kazalinsk Headworks Administrations and Zhanadarya Canals Administration;
- in South Kazakstan Oblast the self-financed organizations considered as (partially) concerned with the project area (paragraph 4.2 above) are subordinate to CWR Oblast Head Office but the latter is not considered as validly concerned with the project area (see also paragraph 4.2.2 and 2.4.3 and appendix 5.1), and has not been held in present overall financial analysis, detailed figures of which are given in table 4.8.

In 1997 accounting value of total assets of CWR state budget -financed organizations, significantly involved in the project area, was estimated 907 million KZT (11.9 million US$), increasing in current value by 33.5% since 1995 due to inflation adjustments and not to new investments.

Surprisingly fixed assets are accounted at their initial value in CWR state/budget financed organizations of Kzylorda Oblast, although depreciation value estimate is indicated in balance sheet of assets and liabilities, which means that no amortization reserve was made from the very beginning of the accounting management process. Indicative depreciation ratio of fixed assets ranged from 42% (1997) to 50% (1996), which is a comparable level as for CWR organizations at RK level (both categories), and of CWR self-financed organizations in the project area.

As at RK level, without any long-term credit facilities nor short term ones, current assets and current obligations are completely marginal in the total balance, with less than 1%, which means poor financial operating conditions, maintenance tasks included. Overall liquidity ratio was steadily low (1.0/1.2) whereas urgent payability ratio was much higher than at RK level but decreased however from 0.9 in 1995 and 1996 down to 0.3 in 1997.

As at RK level (same organization category) a significant improvement of percentage of staff budget actually received, compared to state budget planned, was raised from 37% in 1995 to 92% in 1997.

Overall staff number was also reduced over the three year period (-39%), while average wage was multiplied by 2.5 and reached in 1997 an equivalent level of the one of CWR self-financed organizations in the project area.

Due to these changes apparent staff productivity (state budget planned/staff) jumped by 116% since 1995, but wage productivity ratio remained at the level of 3 (apart from peculiar year 1996 for which it was less than 2 for reasons already explained above). Here also this latter ratio shows that in project area CWR self-financed organizations do not have significant different structural activities (financially speaking) from state budget-financed organizations, with no deeper involvement in maintenance tasks.

Debt on salary was marginal in 1995 and came equal to zero in 1996 and 1997, what underlined the secure condition of being staff member of such organization for the time being compared to self-financed organizations at RK level.

Table 4.8

Overall financial analysis of CWR state budget-financed organizations in Kzylorda Oblast over the three last fiscal years

(million KZT)	**1995**	**1996**	**1997**
Total assets	679.2	805.7	907.0
Fixed assets	673.4	793.1	903.9
Total assets %	99.1	98.4	99.7
• Initial value	673.4	793.1	903.9
• Depreciation value	293.5	397.6	379.9
- Depreciation ratio %	43.6	50.1	42.0
Current assets	5.8	12.6	3.1
Own capital (theoretical)	673.4	793.2	904.4
Current obligations	5.8	12.5	2.6
Overall liquidity(1)	1.0	1.0	1.2
Urgent payability(2)	0.9	0.9	0.3
Working capital (mio KZT)(3)	0.0	0.1	0.5
Working capital\current obligations	0.0	0.01	0.19
State budget planned	23.7	22.2	31.2
State budget received %	36.7	54.0	92.0
Staff number	238	182	145
Average annual wage (1000 KZT)(a)	33.0	69.2	67.3
State budget planned/staff (1000 KZT)(b)	99.06	122.0	215.2
-Wage productivity ratio:(b)/(a)	3.0	1.8	3.2
Debt on salary	0.4	0.0	0.0
-Total wage bill %	5.1	0.0	0.0

Notes: (1) current assets/current obligations

(2) cash availability / current obligations (see appendix 4.2)

(3) current assets - current obligations (a long term liabilities- fixed assets)

4.2.3 Staff structure evolution in CWR organizations concerned with the project area

Overall staff reduction of CWR organizations over the three last fiscal years in the project area has already been mentioned above; for the reminder: -31.5% for self-financed organizations, and -39% for state budget financed organizations. This reduction is more drastic than at overall RLK level. More detailed data[12] per staff category and per organizations sub-category were collected by the mission (see appendixes 4.7 and 4.8) and allow more in -depth analysis of staff structure evolution of CWR organizations in the project area over the last three fiscal years. Main findings of this analysis are summarized below.

4.2.3.1 Kzylorda Oblast

After reduction total staff of all CWR organizations was 713 in the end of 1997, which represents a heavy overall average ratio of 1 employee for 400 ha of irrigated land and 1 engineer or ''specialist'' for 1090 ha, and that for water management services only above farm boundary. Out of these 713 employee, 67% were working in agricultural water supply organizations, 5% only in the Contractor organization (Kazalinsk MMC-64), and 28% in state budget financed organizations.

Over the three-year analyzed period overall staff reduction was only 10% in state budget-financed organizations but 88% in the contractor organization while surprisingly staff increased by 5% in agricultural water supply organizations. Drastic cut made in Kazalinsk MMC-64 indicated a deep decrease of maintenance works formerly achieved through contractor system, due to budget shortage.

In 1997 overall staff structure of all Kzylorda Oblast CWR organizations was: heads[13]: 3%; specialists[14] 31%; and ''workers''[15] and others: 66%.

According to organization categories one must make note of the difference between state-budget financed organizations and contractor, the former having relatively more ''specialists''

[12] One must note that staff number data given in appendices 4.1,4.2 and 4.3 and analyzed in paragraphs 4.2.1 and 4.2.2 above correspond to average staff number during a fiscal year, where as data given in appendices 4.7 and 4.8 are different corresponding to staff number at the end of each year.
[13] Any head of CWR organization has an engineer background
[14] Specialist are engineers or skilled technicians are graduated from Dzhambul Water reclamation Institute, Chemolgan or Van Technical Schools, or other former Soviet Union Universities or Institutes, all of them being state institutions. On-the-job training was provided by former MWMLRK
[15] ''workers'' include unskilled workers and second level technicians as well. The latter were formerly trained in State Special Politechnical College, now most of such technical training are provided by private Institutions against payment from trainees.

(40%) an less ''workers'' (53%), than the latter (20% of ''specialists'' and 77% of ''workers''). Agricultural water supply organizations are in a middle position.

If we look at the evolution of staff structure since 1995 another worthy fact is the more drastic reduction of heads, all organization categories included. For the other staff categories reduction was made in a more or less homogeneous manner in each organization category case.

4.2.3.2 South Kazakstan Oblast

Out of a total staff of 267 employees in 1997, 87% were in Kzylkum and Shaulder BAS and 13% in Turkestan MMC-37. Between 1995 and 1997 overall staff was reduced by 41% in Turkestan MMC-37, but slightly increased by 2% for Kzylkum and Shaulder BAS. As for Kzylorda Oblast (less) significant cut made in Turkestan contractor staff has to be put in relation with decrease of maintenance works budget.

In 1997 self- financed organizations concerned with the project area in South Kazakstan Oblast had the following staff structure: heads - 3%, ''specialists' -' 36%, and ''workers'' and others - 61%. Difference has to be mentioned here also between Contractor (20% of ''specialists'' and 15% of ''other employees category'') and the two BAS (38% of ''specialists'' and 5% only of other employees category). Since 1995 these two staff categories were increased respectively by 22% and 114%, whilst ''workers'' were reduced by 27%. In Kzylkum and Shaulder BAS staff structure according to staff categories was maintained without any significant change.

4.2.4 Equipment

Weight of machinery and vehicles in fixed assets has been given before for self-financed organizations (paragraph 4.2.1.2). A detailed inventory of available equipment could be collected by the mission only for Kzylorda CWR organizations all together (appendix 4.10). No precise information is available with regard to technical condition of equipment and actual working capacity.

However it is well known that in the whole maintenance of equipment has been poorly achieved since years because of deficient maintenance planning and programming system, state budget cuts, self-financing budget shortage and lack of spare parts. For instance out of 24 excavators only 8 are in order, and out of 20 scrapers only 13 are working.

Besides, following ratios can illustrate equipment level in 1997 of CWR organizations in Kzylorda Oblast (all organizations categories together), without taking into account its order situation:

- Number of heads +''specialists'' per common car: 26
- common car reduction since 1995: 33%
  (but heads +''specialists'' increased by 12%)
- Number of ''workers'' per lorry: 4
- Number of ''workers'' per tractor: 8
- Number of ''workers'' per motorcycle: 48
- Km of interfarm canal +drains per excavator: 135
- Km of interfarm canal +drains per excavator in order: 406
- Km of interfarm canal +drains per lorry: 27
- Km of interfarm canal +drains per common car: 324
- Km of interfarm canal +drains per tractor: 54
- Km of interfarm canal +drains per ''specialist'': 14
- Km of interfarm canal +drains per ''workers'': 7

From these indicators one can make the likely following assumptions:

- ''specialists'' (i.e. engineers and skilled technicians) are mainly ''stocked'' in administrative/bureaucratic tasks with little field investigations. Office data processing is hand made.
- ''workers'' (i.e. second level skilled technicians and simple workers) have (theoretical) potential transport means to carry out field works (4 ''workers''/lorry).
- Number of mechanized maintenance means could be theoretically more or less suitable, but as an important part of them is probably worn out or out of order we could conclude that when maintenance works are made they have to be made by hand in a large part.
- In any case number of ''specialists'' and ''workers'' (i.e. total staff number) seams to be significantly oversized.

5 ACTUAL BUDGETS FOR O&M OF SYRDARYA WATER MANAGEMENT MAIN SYSTEM

5.1 Foreword

This chapter gives main findings from analysis of accounting data of O&M activities of CWR organizations concerned with the project area. Accounting data were collected both in CWR National Head Office (Astana), and in Kzylorda and South Kazakstan (Shimkent) Head Offices. As it will be shown some data incoherence exists between national level and Oblast level.

As already mentioned above, budget of Chardara Dam Administration has not been analyzed.

In present CWR accounting system it is almost impossible to isolate operation costs from ''administrative'' tasks costs (including data processing, information management and decision making for water management, and water conservation control). Staff involved in water infrastructure operation has also to fulfill such administrative tasks (Rayon BAS and state budget-financed Headworks organizations).

Besides operation tasks comprise compulsorily elementary maintenance works, in particular for hydromechanical and electrotechnical equipment and devices.

Maintenance budgets, item-wise, are planned yearly at CWR organizations level. They were collected by the mission in Astana CWR National Head Office for Kzylorda and South Kazakstan Oblast for the three last fiscal years. Detailed data are given in appendices 5.1 and 5.2, with identification of state budget-financed maintenance for Kzylorda Oblast. For the reminder maintenance works are carried-out by CWR Headworks organizations on their hydraulic infrastructure and equipment, other maintenance works being done by CWR self-financed organizations, i.e. agricultural water supply organizations and contractors.

5.2 Kzylorda Oblast

If we compare overall maintenance budgets of CWR organizations (all categories included) to their overall activity (operating) expenditures (appendix 4.4) over the three last fiscal years, difference should give costs of administrative and operation tasks, but unfortunately it reveals some incoherence between these two 1997 accounts data, the former coming from Astana CWR Head Office and the latter from Kzylorda CWR Head Office, which raises again the question of reliability of such accounting information, and limits meaning of following analysis as a matter of fact.

In 1997 overall actual maintenance expenditures were accounted 184.4 million KZT whereas overall operating expenditures were only 177.7 million KZT, accounted (theoretical) amortizations of 34.1 million KZT included. For self-financed organizations overall actual maintenance expenditures were 163.4 million KZT and overall operating expenditures 156.6 million KZT (out of which 34.1 million KZT of accounted amortizations), what would mean that administration and operation costs were settled on debtee's account.

Maintenance expenditures in state budget-financed organizations were in percentage of overall state budget received[16]: 125% in 1995, 151% in 1996 and 73% in 1997. In 1995 and 1996 administration and operation cots were settled on debtee's account.

Overall actual maintenance expenditures for self-financed organizations increased by 8% between 1995 and 1996, and jumped by 124% between 1996 and 1997 according to the accounting of CWR National Head Office. Whereas actual maintenance expenditures on state budget increased by 66% between 1995 and 1996, but only by 17% between 1996 and 1997.

For self-financed organizations administration and operation cost would have been 68.3 million KZT in 1995 and 127.6 million KZT in 1996, making respectively 50% and 64% of overall operating expenditures (theoretical accounted amortizations included), supposed that no part of these costs were settled on debtee's account.

Evolution of payments from water users are also given in appendix 4.4, and analysis of their weight in overall financial management of self-financed organizations in paragraph 4.2. Compared to overall maintenance expenditures they were representing 101% in 1995, 296% in 1996 (catch-up payments, see paragraph 4.2.1.2 above), but only 77% in 1997, what means that they were not covering operation costs in 1995, and even maintenance costs in 1997 as mentioned above.

Overall actual maintenance expenditures in percentage of maintenance budgets planned where:

- for self-financed organizations: only 53% in 1995 and 47% in 1996, but 141% in 1997,
- for state budget-financed organizations: only 46% in 1995, then 82% in 1996, and only 22% in 1997.

Appendices 5.2 and 5.3 provide detailed analytical tables of the evolution of maintenance expenditures per item over the three last fiscal years, respectively for the self-financed

[16] See appendix 4.2.

organizations and on state budget. From these the following main findings must be borne in mind:

(i) Self-financed organizations

- Four categories of items in 1997 in term of level of percentage of total actual maintenance expenditures (in decreasing order): current repairs on hydraulic infrastructure (43%); cleaning of the main irrigation network/"other maintenance expenses" (21%); maintenance staff wage-bill (11%); major repair on hydraulic infrastructure/maintenance of transport means (2%), and maintenance of other equipment (0%).
- Current repairs on hydraulic infrastructure: upholding of its percentage of total actual maintenance expenditures over the three last fiscal years (43/44%) and increase between 1995 and 1997 at the same rhythm as for total actual maintenance expenditures. Compared to budget planned for it current repairs on hydraulic infrastructure were representing (49/47%) in 1995/1996 and reached ten times the level of the former in 1997.
- Cleaning of the irrigation main network: increasing by 119% between 1995 and 1996, and by 1950% between 1996 and 1997; and passing always beyond the budget planned for it for the three analyzed years (by 113-133%).
- "Other maintenance expenses" (not defined): important rise in 1997 (109% of budget planned for it, and increase by 77% between 1996 and 1997).
- Maintenance staff wage-bill: 17% of total actual maintenance expenditures in 1995 and 11% in 1996 and 1997; but increase in current value by 63% between 1995 and 1996 and 67% between 1996 and 1997. Compared to annual budget planned it was varying from 72% in 1995 to -30% in 1996, and 67% in 1997.
- Major repairs on hydraulic infrastructure: out of the total actual maintenance expenditures it decreased from 5/7% in 1995/1997 to 2% only in 1997, while in current value it increased by 16% between 1995 and 1996 but dropped away by -32% between 1996 and 1997. Compared to annual budget planned it also decreased from 49/47% in 1995/1996 down to 23% in 1997.
- Maintenance of transport means: in term of percentage of total actual maintenance expenditures, increase from 11% in 1995, up to 34% in 1996, then drop down to 2% only in 1997. Continuous decrease in current value by -36 / -37% in 1996 / 1997.

Compared to its budget planned it varied from 46% in 1995 to -36% in 1996 and 28% in 1997.

- Maintenance of "other equipment" (not defined): continuous decrease in term of percentage of total actual maintenance expenditures (7% in 1995, 3% in 1996, and almost 0% in 1997), and in current value as well (-48% between 1995 and 1996, and -78% between 1996 and 1997). Compared to its budget planned it was 73/79% in 1995/1996 and in 1997 no budget had been planned for it.

(ii) State budget-financed organizations

- Differently from self-financed organizations the 7 accounted maintenance items mentioned above can be arranged in the four following groups in terms of percentage of total actual maintenance budgets, in 1997: maintenance staff wage-bill (40%); current repairs on hydraulic infrastructure (22%); "other maintenance expenses/cleaning of the irrigation main network/maintenance of transport means (14% / 13% / 8%); maintenance of "other equipment"/major repairs on hydraulic infrastructure (2% / 1%).

- Maintenance staff wage-bill: decreasing trend of its percentage of total actual maintenance expenditures over the three last fiscal years (54% in 1995, 47% in 1996, and 40% in 1997). Increase in current value by 44% between 1995 and 1996 and no change between 1996 and 1997. Compared to budget planned for it, variation from 89% in 1995 to 97% in 1996 and 75% in 1997.

- Current repairs on hydraulic infrastructure: 16% of total actual maintenance expenditures in 1995, 28% in 1996 and 22% in 1997. Important jump in current value by 194% between 1995 and 1996 but decrease by -10% between 1996 and 1997. Large variation in achievement ratio of budget planned for it: 50% in 1995, 123% in 1996, but only 6% in 1997.

- "Other maintenance expenses": relative upholding in percentage of total actual maintenance expenditures over the three last fiscal years (12 - 16%). Continuous increase in current value (+16% between 1995 and 1996, and +36% between 1996 and 1997). Increase of the achievement ratio of budget planned for it from 37 / 31% in 1995 / 1996 up to 55% in 1997.

- Cleaning of the irrigation main network: noticeable relative augmentation in 1997 (+67% in current value between 1996 and 1997); 13% of total actual maintenance expenditures versus 1 / 2% in 1995 / 1996. Improvement of the achievement ratio of budget planned for it in 1996 (54%) and in 1997 (67%) compared to 1995 (4% only).

- Maintenance of transport means: relative upholding in percentage of total actual maintenance expenditures over the three last fiscal years (8 - 11%). Important jump in current value between 1995 and 1996 (58%) but decrease in 1997 (-12%). Important augmentation of the achievement ratio of budget planned for it from 52% in 1995 to 127% in 1996 and 104% in 1997.
- Maintenance of "other equipment": upholding at an insignificant level (1 - 2% of total actual maintenance expenditures over the last three fiscal years), but nevertheless a very important increase in current value by +242% between 1995 and 1996 and then no change between 1996 and 1997. Achievement ratio of budget planned for it: 53 / 58% in 1995 / 1997 versus 71% in 1996.
- Major repairs on hydraulic infrastructure: nil in 1995 and 1996, 60% of budget planned for it in 1997 (but only 1% of the total actual maintenance expenditures).

Besides the maintenance budgets data analyzed above the mission collected "technical" assessment features of maintenance works needed for hydraulic infrastructure in Kzylorda Oblast for 1995 and 1997 as shown below.

Table 5.1

Repair cost estimates of hydraulic infrastructure in Kzylorda Oblast

(source Kzylorda CWR Head Office)

	1995	**1997**
Total repair costs (thous. KZT) (1000 US$)	202,556.2 4,501.2	58,847.8 769.3
Out of which (% of total): **1. Water intake structures (headworks)** • major repairs • current repairs	 **3.6** 3.3 0.3	 **21.2** 19.9 1.3
2. Irrigation main canals • major repairs • current repairs	**76.9** 76.9 (nea)	(nea)
3. Hydraulic equipment on irrigation main canals	**10.5**	**8.7**
4. Main drains	**7.6**	**60.9**
5. Gauging stations	**0.6**	**7.3**
6. Reservoirs • major repairs • current repairs	**0.7** 0.7 (nea)	**1.9** (nea) 1.9

Note: (nea) - no estimate available

Although the estimates above are not complete (no estimate for 1996 and repairs on irrigation main canals missing in particular for 1997) they are interesting to compare to maintenance budgets (planned and actual) given in appendix 5.1.

In 1995. The budget planned [17] for maintenance of hydraulic infrastructures (irrigation main network included) was representing only 46% of the total repair costs estimates given above, and actual maintenance expenditures of hydraulic infrastructure 19% only.

The budget planned for maintenance of irrigation main network (including regulation works) was 9% only of repair costs estimates and the actual corresponding maintenance expenditures a little less than 1%. On the other hand budget planned for major repairs of hydraulic headworks would have been 113% of corresponding cost estimates given above and actual expenditures 53%, whilst for current repairs cost estimates above, would have represented only around 1% of budget planned for it.

In 1997. No cost estimate is available for repair of irrigation main canals. Budget planned for maintenance of irrigation main network (including regulation works) represented 75% of

[17] All categories of CWR organizations together (self financed and state budget-financed ones).

repair costs estimates for only main drains and hydraulic equipment on main canals, and actual expenditures 93%. Budget planned for major repairs of hydraulic headworks would have been 127% of corresponding cost estimates given above, and actual expenditures 30% only. Concerning current repairs for the same item cost estimates above would have been 1% of budget planned for it, and a little less than 1% of actual expenditures.

All these figures and comparisons illustrate the important gaps and unreliability between budget planning, actual budgeting, accounting system and "technical" assessments for maintenance needs of the water management main system.

5.3 South Kazakstan Oblast

In 1997 overall actual maintenance expenditures of Kzylkum and Otrar BAS (agricultural water supply organizations) were accounted only 4.5 million KZT. Their evolution in current value was +14% between 1995 and 1996 and only +5% between 1996 and 1997. The achievement ratio of budget planned for overall actual maintenance expenditures was 87% in 1996 and 100% in 1997 (in 1995 no planning had been made for maintenance works).

Compared to overall (activity) operating expenditures, accounted amortizations included (appendix 4.5), total actual maintenance budget[18] of Kzylkum and Otrar BAS were representing 100% in 1995, 75% in 1996 and 100% again in 1997; what would mean here also that administration and operation costs were entirely settled on debtee's account in 1995 and 1997 and are thus not possible to identify from these data.

In 1996 administration and operation costs would have been 14.3 million KZT (25% of overall operating expenditures accounted amortizations included), suppose that no part of these costs were settled on debtee's account.

Analysis of the weight of payments from water users (appendix 4.5) in overall financial management has been provided already in paragraph 4.2.1 above. Compared to overall maintenance expenditures they were representing 42% in 1995, 127% in 1996 and 148% in 1997. They were not covering maintenance costs in 1995 and even more operation costs, were covering maintenance costs and partially operation costs in 1996, and maybe both of them in 1997.

Appendix 5.5 provides a detailed analytical table of the evolution of maintenance expenditures per item over the three last fiscal years, main findings from it are summarized below:

[18] As for Kzylorda Oblast the source of information is South Kazakstan CWR Head Office for the former account and CWR national Head Office for the latter.

- For 1997 we can make difference between 3 categories of maintenance items in term of percentage of total actual maintenance expenditures: maintenance staff wage-bill and current repairs on hydraulic infrastructure (respectively 28% and 20%); maintenance of transport means and "other maintenance expenses" (4%), major repairs on hydraulic infrastructure, maintenance of "other equipment" and cleaning of irrigation main network (respectively 2%, 1% and 0%).
- In 1995 no planning was made for maintenance works, and in 1996 and in 1997 planning was made for some of them only (see appendix 5.5).
- Maintenance staff wage-bill: 31% of total maintenance expenditures in 1995, 44% in 1996 and 28% in 1997. Increase in current value by 63% between 1995 and 1996 and decrease by -33% between 1996 and 1997. No planning of its budget over the three analyzed years.
- Current repairs on hydraulic infrastructure: relative upholding in percentage of overall maintenance expenditures over the analyzed period (20-26%). Drop down in current value by -50% between 1995 and 1996, and jump by 89% between 1996 and 1997. Achievement ratio of budget planned for it: 23% in 1996 and 100% in 1997.
- Tremendous relative augmentation of maintenance budget of transport means by +492% between 1996 and 1997.
- "Other maintenance expenses" (not defined): important decrease in percentage of total maintenance expenditures from 41% in 1995 and 1996 down to 4% in 1997. Augmentation in current value by +14% in 1996 and 1997. Achievement ratio of budget planned for it: 243% in 1996 and 100% in 1997.
- No expenditures for major repairs on hydraulic infrastructure in 1995 and 1996.

5.4 Conclusion

Detailed analysis above has shown that it is not possible to identify O & M costs planned/effectively disbursed in CWR organizations of the project area through the different accounts and data obtained. Only maintenance budgets are monitored in CWR accounting system but with some incoherences between CWR national Head Office and Kzylorda and South Kazakstan Oblasts CWR Head Offices. Planning and management efficiency of maintenance budgets are much varying according to year, oblast, self financed or state budget financed organizations, and maintenance items.

A balance for overall actual maintenance expenditures (planned/actual), overall operating expenditures and actual budget received (income from water users + state budget) with

analytical ratios, for all categories of CWR organizations in the project area, and over the last three fiscal years is given in table 5.2 below. From this table the following most salient features have to be born in mind:

(i) In 1997 overall actual maintenance expenditures were 2.99 million US$ representing a ratio of 0.022 KZT/m^3 channeled by Syradarya river from Chadara Dam down to NAS in normal year (infiltration losses not included), thus even less than the theoretical rate of 0.03 KZT/m^3 normally to be paid by water users only for the "right of using water". The same year it represented an average of 8.2 US$ per ha of irrigated area.

(ii) Achievement ratio of budget planned for maintenance works increased from 59% in 1996 to 90% in 1997 (no planning had been made in 1995). Maintenance budgets planned were 15.5% / 15.8% of initial value of fixed assets in 1996 / 1997. These rather low values indicate a severe under assessment of maintenance expenditures in CWR accounting system, with adverse consequences in maintenance budget planning, as they seem to be settled on the basis of annual ratios of fixed assets.

(iii) Overall maintenance expenditures were totaling 59% of overall operating expenditures in 1995, 45% in 1996 and 86% in 1997. After having considered accounted amortizations it appears that in 1997 part of maintenance expenditures on the one hand and all administrations and operation costs on the other hand, were settled on debtee's account. While in 1995 and 1996 we can only say that administration and operation costs were equal or superior to respectively 0.9 and 1.01 million US$.

(iv) Budgets received by CWR organizations (payments from water users and state budget) were making 90% of overall maintenance expenditures in 1995, and 104% in 1997. Whilst in 1996 it was 233% (catch-up payment from water users), nevertheless that year maintenance budget decreased in US$ by -24% compared to 1995. Significant additional payments from water users were used in priority to up-grade amortization account and to raise significantly also wage-bill (in spite of staff reduction).

Table 5.2

Overall maintenance expenditures, overall operating and actual budgets received in all CWR organizations of the project area over the last three fiscal year

	Unit	1995	1996	1997
1. Overall actual maintenance expenditures[1]	mio. US$	2.57	1.96	2.99
2. Maintenance costs planned	mio. US$	-	3.31	3.34
3. Overall operating expenditures	mio. US$	4.33	4.32	3.46
4. Actual budget received (water users payment + state budget))	mio. US$	2.31	4.57	3.11
5. Direct operating expenditure (amortizations not included)	mio. US$	3.54	2.97	2.83
6. Total fixed assets (initial value)	mio. US$	27.88	21.34	21.20
• 2. / 6.	%	(-)	15.5	15.8
• 1. / 2.	%		59.0	90.0
• 1. / 3.	%	59.0	45.0	86.0
• 4. / 1.	%	90.0	233.0	104.0
• 5. ÷ 1.[2]	mio. US$	0.97	1.01	-0.16
7. Overall actual maintenance expenditures	KZT/m^3 [3] US$/ha [4]	1.1 7.0	1.3 5.4	2.2 8.2
8. Maintenance costs planned	KZT/m^3 US$/ha	(-) (-)	2.2 9.0	2.4 9.1
9. Overall operating expenses	KZT/m^3 US$/ha	1.9 11.8	2.8 11.8	2.5 9.5
10. Actual budgets received	KZT/m^3 US$/ha	1.0 6.3	3.0 12.5	2.5 8.5

Notes (1) Exchange rate taken in KZT/US$: 45 in 1995, 68 in 1996, 76.5 in 1997

(2) 5. ÷ 1. gives a threshold for administration and operation costs

(3) Total water supply from Syrdarya in normal year: 10,401 million m^3 (Chardara losses and river losses not included)

(4) Regular irrigated arca considered in normal year: 366,000 ha

Evolution of structure of maintenance budgets (planned/actual) over the three fiscal year has been analyzed above for each oblast and per category of CWR organizations (self financed or state budget). We will recall for the reminder that:

- **In Kzylorda Oblast**: for self financed organizations priority in maintenance budget had been put till 1997 on current repairs of hydraulic infrastructure firstly, secondly on cleaning

of the irrigation main network and on "other maintenance expenses" (not defined), and thirdly on maintenance staff wage-bill. Whereas for state budget financed organizations priority was given first to maintenance staff wage-bill, secondly to current repairs on hydraulic infrastructure, and thirdly to "other maintenance expenses", cleaning of irrigation main work and maintenance of the transport means.

- **In South Kazakstan (Kzylkum and Otrat BASes)**: priority was given both to maintenance staff wage-bill and current repairs on hydraulic infrastructure, the other maintenance items been marginal or not significant.

As already mentioned above detailed analysis has revealed significant gaps and unreliability for Kzylorda CWR organizations between budget planning, actual budgeting, formal accounting system and "technical" assessments for maintenance works of the water management main system "needed". In South Kazakstan Oblast no maintenance budget planning was made in 1995 and planning was made only for some items in 1996 and 1997.

6 FUTURE O&M REQUIREMENTS OF THE MAIN WATER MANAGEMENT SYSTEM OF SYRDARYA RIVER AND NORTHERN ARAL SEA

6.1 Foreword

This chapter aims to provide at feasibility level future O&M costs of the main water management system with project.

For the reminder the main water management system in the project area corresponds to management of hydraulic head structures on Syrdarya river from Chardara Dam to the NAS and to main canals and drains upstream farm boundary (i.e. Inter oblast, inter rayons and inter-farms canals and drains).

It must be borne in mind that project components are mainly dealing with hydraulic head structures on the Syrdarya and the NAS (rehabilitation of Kzylorda and Kazalinsk headworks, construction of Aitek, Aklak and Raim weirs and NAS dam), and ancillary structures and equipment in the Delta (15.8 km of canals, ancillary structures, earth fill dams, 130 km of dikes, roads and bridges). Improvement/rehabilitation of main canals and drains upstream farm boundary (2,314 km of canals and 908 km of drains) is not in the scope of SYNAS Project.

Logically, and according to ToR, from an institutional and organizational point of view, O&M management cannot be foreseen only for the specific components of SYNAS Project but must consider the whole main water management system as it has been done above for present situation (chapters 4 and 5). However O&M costs linked to such items not in the scope of the project cannot be counted as project costs, as the corresponding benefits - not assessed in the framework of the present study - should not be considered as project benefits. For the purpose of the economic analysis of the project future O&M costs have been estimated separately for actual project components and for the main canals and drains network upstream farm boundary not in the scope of the project (paragraph 6.4).

A summary of key operational functions and key maintenance functions required is given hereafter respectively in paragraph 6.2 and 6.3.

Assessment of staff needed, by level of skill, and of equipment requirements is given in operation costs estimates. Maintenance costs have been estimated separately from operation costs without prejudging whether they will be achieved directly by future (which?) CWR organizations or indirectly by future (which?) new JSCs/private companies (see chapter 7). According to this principle, maintenance cost estimates have been done in term of global budgeted costs and include amortization of new necessary equipment investments,

maintenance costs of maintenance equipment, staff costs and running costs. And that under the assumption that whatever will be the kind of institution/organization that will carry out maintenance works, actual costs should be, more or less, at the same level.

The only little difference is that JSC/private companies will be normally profit-oriented and will provide maintenance services with a benefit margin. But it is well known that with more efficiency of the private sector and within a competition context maintenance services provided by such firms will be less (or equal in the best case) than in case of maintenance carried out by state-run organizations.

6.2 Key operational functions of operation service

The main operational functions for the exploitation of hydraulic infrastructure and equipment serve management of water supply, water division and water uses.

Besides direct operation tasks "operational functions" comprise also inseparable regular inspections and ordinary maintenance of structures, equipment and devices (daily, weekly, monthly) that we will call "operational maintenance" in order to make a difference with more formal and planned maintenance tasks (see paragraph 6.3), which must be estimated and planned during operation tasks.

Water management includes monitoring of respective rules of water conveyance through river and headworks; organization of water intake and transportation of water to consumer gates according to schedule and agreed volumes; operation of gates on water distribution structures with objectives of level and discharges regulation in rivers, canals and other structures. Mentioned functions need systematic and reliable water leveling, flow estimates and quick reaction on changing situations in water supply regime.

Monitoring of the water management system is provided by constant observation and daily care of hydraulic structures and equipment according to good technical conditions for their exploitation. Such task include in principle:

- Canals: daily inspection; observation of water regime; cleaning of weeds and garbage; observation of slopes and berm erosion, and their minor repairs; removal of vegetation; gates regulation and inspection of structures; lubrication and painting of metal works.
- Dikes, earthfill dams: systematic observation of dikes and dams protection; slope erosion; filtration and crack appearance; and excavated channels; removal of vegetation; minor repairs of lined slopes; minor repairs of access road cover.
- Headworks, sluices, etc: regulation of water levels and discharges; water runoff estimate; flooding conveyance management; winter operation; periodical upstream leaching; water

intakes protection; headworks inspection and protection; operation of gates of water intakes and spillways.

Periodical inspections before and after flooding periods, and detailed inspections in autumn and spring, must be held for river headworks. Periodical inspections are necessary for preparation of ice conveyance, and seasonal inspections for damage estimates. Autumn observance is held with the objective of defining the list and quantities of repair works to be carried-out during autumn and winter.

Visual observations upstream and downstream headworks are mostly held on approach and tailrace channels, and after deformation of concrete and earthfill structures and filtration through them.

All the operational functions are usually made by line personal; regulators, water controllers, mechanicians, electricians and simple workers.

Key operational functions of NAS dam comprise: sea level observance; gates stoplogs operation during spills of excess water; "operational maintenance" and programming of formal maintenance of structures.

Monitoring of the dam, spillway gates and other equipment is made by basic technicians. Observer-regulators must be foreseen for such task, who periodically 1-2 times a month must inspect and make operational repairs according to exploitation rules.

During flooding, setups, or ice formation operation of stoplogs gates is made by special team with truck crane and other necessary equipment.

6.3 Key maintenance functions

Maintenance functions of hydraulic headworks, equipment and canals consist of three kinds of repair works: current, major and emergency. Repair works except emergency must be held in an planned order.

Current repair comprise measures providing constant order of structures and protection from untimely damage. All these measures include: current lining repairs; sealing of walls eroded by water; rehabilitation of upstream and downstream aprons; filling of soil; cleaning and sealing of caverns and holes in concrete structures; painting of metal works; reconstruction of eroded parts of canal slopes; removal of water losses in gates seals; lubrication of rubbing pieces; cleaning of vegetation etc.

Major repair which is held periodically consists of works on larger structures damages, and also works connected with renewal of structures due to their wear. Emergency repair is made for structures severe damages due to natural phenomena (flooding, mud flows).

On NAS dam and spillway repair works may comprise: refill of dam body and fuse dam, protection of slopes, concrete works at spillway and stilling basin (repair of cracks, caverns and holes), rehabilitation of slope protetion, repair of gates.

6.4 Cost estimates

6.4.1 Maintenance costs

Basic principle taken for the estimation of future maintenance costs has been presented above in paragraph 6.1. For each structure forming Syrdarya water management system (Chardara dam not included) maintenance costs have been estimated in applying a maintenance rate to investment costs or shadow values of the considered structure, when it is structurally homogeneous vis à vis maintenance purpose (earth canals, earthfill dams, dikes, roads, bridges), or of its main structural items (civil works, mechanical, hydromechanical or electrotechnical equipment) when it is heterogeneous from a maintenance point of view.

For Kzylorda and Kazalinsk headworks difference has been made between rehabilitated and not rehabilitated structures (main canals and drains upstream farm boundary). Shadow values have been considered on the basis of hypothetical replacement costs diminished by an assessed depreciation ratio of the considered structure/equipment.

Maintenance rates taken are realistic maintenance rates usually applied in engineering (see table 6.1). For not rehabilitated structures, or parts of structures, catch-up maintenance rates have been considered in relation with the poor maintenance conditions that were prevailing during last decades.

More detailed specific explanations are summarized below.

- Kzylorda and Kazalinsk Headworks (weirs):
  - Shadow value of hydromechanical and electrotechnical equipment partially rehabilitated on the basis of the foreseen percentage of equipment to be rehabilitated (see report "Assessment of Hydraulic Structures").
  - Shadow value of not rehabilitated parts (civil works) on the basis of a replacement cost of 18,000 US$/($m^3$/s) of capacity for weir (average estimated cost for foreseen new weirs of Aitek, Aklak and Raim) with a depreciation ratio of 50%.
- Main canals and drains upstream farm boundary:
  - Replacement costs estimated on the basis of 4,700 US$/($m^3$/s) x 1 km (average estimated cost for foreseen new canals in the Delta).

- Total maximum discharge capacity of irrigation main canals: 1,241.8 m^3/s (see report "River profile study").
- Total maximum discharge capacity of main drains: 40% of above.
- Total length of main canals and drains: respectively 2,314 km and 908 km.
- Physical norm assumption for replacement cost estimates.

  2,314 km x 1,241.8 m^3/s x 4,700 US$ = Σ l_i x q_i x c_i US$,

  with Σ l_i = 2,314 km; Σ q_i = 1,241.8 m^3/s; $c_i = C_i / q_i$ m^3/s/ l_i km)

  C_i: replacement cost of canal i; l_i: length of canal i; q_i: design discharge of canal

From the rates norms and assumption's above future maintenance costs estimates are (per year): **925,600 US$ for the project physical components, 72,827,300 US$ for main canals and drains network, and 73,752,900 US$ for Syrdarya water management system in the whole.**

Total future maintenance costs estimates of water management main system represent an average cost of 202 dollars per ha of regular irrigation area (366,000 ha), and 0.56 KZT (0.7 US cent) per m^3 of controlled water supply (10,501 million m^3 per statistical normal year, Chardara and river losses not included). This assessment seems to be realistic, indeed in 1997 water services (O&M) costs were estimated by rayon water management authorities to be in the range of between 0.5 KZT/m^3 for free running water and 5.0 KZT/m^3 for pumped water in different areas of the country[19].

The above estimated costs are 25 times higher than overall actual maintenance budget disbursed for the water management in the main area (see chapter 5) the gap is tremendous and will need certainly more than a couple of years before a sustainable institutional and economic solution will be found.

Table 6.1

Cost estimates of maintenance of Syrdarya water management main system with project (average year)

Structure/Items	Investment costs (1) or (shadow value)	Maintenance rate per year	Maintenance costs per year

[19] Source: M. Kopsobyn K. Kudaybergenov, Deputy chairman of CWR national Head Office until April 1997, and now Head of Balkash-Alakolskoe BWMA, cited by Richard Burger in his report "Water legislation and pricing in Kazakstan", NIS-SEP Project, Harvard Institute for International Development - Harvard University, February 1998 (15p).

		1000 US$	(%)		1000 US$
1.	**Kzylorda Headworks**				**196.6**
	Hydromechanical and electrotechnical equipment	(1,280.1)	2.0		25.6
	Civil works	(17,100.0)	1.0	(2)	171.0
2.	**Kazalinsk Headworks**				**159.1**
	Hydromechanical and electrotechnical equipment	(755.5)	2.0		15.1
	Civil works	(14,400.0)	1.0	(2)	144.0
3.	**Aitek Complex**	13,415.8			**79.6**
	Hydromechanical and electrotechnical equipment	833.0	2.0		17.7
	Civil works	12,582.8	0.5		62.9
4.	**Aklak Headworks**	9,805.4			**58.6**
	Hydromechanical and electrotechnical equipment	465.2	2.0		9.3
	Civil works	8,539.2	0.5		42.7
	Culverts	250.6	0.5		1.3
	Roads (7 km)	519.3	1.0		5.2
	Bridges	31.1	0.5		0.2
5.	**Raim Headworks**	8,977.6			**53.1**
	Hydromechanical and electrotechnical equipment	501.2	2.0		10.0
	Civil works	7,833.6	0.5		39.2
	Culverts	247.2	0.5		1.2
	Roads (2 km)	148.4	1.0		1.5
	Bridges	247.2	0.5		1.2
6.	**Aksay-Kuvandarya-System**	6,148.0			**51.2**
	Culverts	81.2	0.5		0.4
	Canals	1,959.1	0.5		9.8
	Dams and Dikes	4,076.7	1.0		40.8
	Bridges	31.1	0.5		0.2
7.	**NAS Dam and spillway**	10,971.7			**66.5**
	– Dam	6,101.2	0.5		30.5
	– Fuse dam	294.4	0.5		1.5
	– Spillway				
	Mechanical equipment	233.2	1.5		3.5
	Civil works	2,482.9	0.5		12.4
	– Access road (25 km)	1,860.0	1.0		18.6
8.	**Flood Protection Dikes**				**202.8**

	1. Stage	5,758	1.0	57.6
	2. Stage	14,516.1	1.0	145.2
9.	**Terenozek Bridge**	11,616	0.5	**58.1**
	SUBTOTAL PROJECT			**925.6**
10.	**Main canals and drains network not rehabilitated by the project**			**72,827.3**
	– Canals (2314 km)	(6,752.8)	1.0	(2) 67,527.8
	– Drains (908 km)	(1,059.9)	0.5	(2) 5,299.5
	GRAND TOTAL			**73,752.9**

Notes (1) Investment costs without engineering costs (7%), contingencies (10%) and Taxes/VAT (22%)
(2) Catch-up maintenance rate

6.4.2 Operation costs

As for maintenance costs future operation costs have been made separately for project physical components on the one hand, and for the main canals and drains upstream farm boundary on the other hand.

Differently from maintenance costs assessment, future operation cost estimates have been made based on more detailed assessment of staff and cars need norms, other equipment and running costs rates (detailed norms and rates taken are given in table 6.2 with its explanation notes). Investment costs have been distinguished from annual recurrent costs.

Semi detailed calculations are given in table 6.2 (for main head structures of the project more detailed calculations are given in appendix 6.1), cost estimates come to:

For project components: 73,600 US$ of investments only, and 133,670 US$ for annual recurrent cost (project full development stage).

For main canals and drains out of project scope: 660,480 US$ of investments (new cars to be purchased mainly), **and 345,950 US$ for annual recurrent costs.**

Total for the whole Syrdarya water management main system: 734,080 US$ of investments, and 479,620 US$ of recurrent costs, which represents 1.8 US$ only per ha of regular irrigation area and 0.5 KZT/m^3 of controlled water supply (Chardara and river losses not included), and that taking in consideration amortization needs of investments (5 years of life time for cars).

For the reminder, we have seen before that for 1997 it is not possible to identify administration and operation actual expenditures from accounting data (chapter 5). Considering the percentage of administration and operation costs out of the total actual operating expenditures in 1996 (64% in Kzylorda Oblast and 31.8% in the part of South

Kazakstan Oblast in the project area) we can obtain a rough indicative estimate of 1.67 million KZT for administration and operation expenditures in 1997 for water management main system. But it is impossible to proceed to future administration cost estimates for the whole water management main system in the framework of the present study. It is out of project scope and ToR, and would suppose other additional basic data and analysis, and human resources policy guidance from government.

Anyhow our approach and staffing options are based on a structural staff reduction principle as we considered that it is presently oversized (see paragraph 4.2.3 and 4.2.4 above). We will note that the operation staff we have foreseen with project and for the whole water management main system is 196, out of which 33% of simple workers only (see details in table 6.2), whilst in 1997 administration and operation staff was counted 531 according to Kzylorda and South Kazakstan Head offices. Maintenance staff is not identified and its costs are included in foreseen global future maintenance budgets estimated as we cannot prejudge which kind of institution will carry on maintenance tasks in the future (see chapter 7).

In the accounting of CWR national Head office, maintenance staff was considered to be 449 for the all project area (216 only in Kzylorda Oblast and 233 in part South Kazakstan Oblast concerned with the project area), out of which 38% engineers and technical personnel (62% for Kzylorda Oblast and 15% only for South Kazakstan Oblast). Maintenance staff wage-bill for the project area was accounted 38.7 million KZT in 1997 (or 505,200 US$) what represents only 0.7% of future maintenance budget estimated for the whole water management main system.

Finally future O&M annual costs estimates appear, to be according to our assumptions, at the level of (investments amortizations counted):

- **1,079,000 US$ for physical project components**
- **73,305,300 US$ for main canals and drains network upstream farm boundary**
- **74,379,300 US$ for the whole water management main system, which represents 203 US$ per ha of regular irrigation area, and 0.57 KZT/m^3 of controlled water supply in statistical normal year** (Chardara and river losses not included)

Apart from the issue of future administration costs an other very serious issue is still pending for the future: **provision to be identified in water cost for the renewal of hydraulic and ancillary infrastructure**, whatever will be foreseen the share of water users participation for it within the frame of a new dynamic and rational water policy to be elaborated, decided and applied.

Table 6.2

Cost estimates of operation of Syrdarya water management main system with project (Investment costs + annually recurrent costs)

Item	Unit	Number	Unit rate US$	Total 1000US$
I. MAIN HEAD STRUCTURES[1)]				
Staff and recurrent costs				
6 Engineers	month	72	180	12.96
14 "Specialists'' and Technicians (I^{st} level)	month	156	150	23.40
Running costs				85.16
Sub-total recurrent costs per year				121.52
Unforseen recurrent costs per year (10%)				12.15
Total recurrent costs (average year)				133.67
Investment costs				
Cars	unit	8	6,000	48.00
Truck crane	unit	1	16,000	16.00
Other equipment	unit			9.4
Total investment costs - project				73.60
II. MAIN CANALS AND DRAINS NETWORK				
Staff and recurrent costs				
16 Engineers [2)]	month	192	180	34.56
32 "Specialists'' and Technicians (I^{st} level) [3)]	month	384	150	57.60
64 Technicians (II^{nd} level) [4)]	month	768	120	92.16
64 Workers [5)]	month	768	75	57.60
Sub-total staff (wage-bill)	person	176		241.92
Running costs [8)]				72.58
Sub-total recurrent costs per year				314.50
Unforeseen on recurrent costs (10%)				31.45
Total recurrent costs (average year)				345.95
Investment costs				
Cars [6)]	unit	100	6,000	600.00
Other equipment [7)]				60.48
Total investment costs				660.48
GRAND TOTAL I+II RECURRENT COSTS (Average year)				**479.62**

GRAND TOTAL I+II INVESTMENT COSTS				**734.08**

Notes (1) detailed costs per head structure unit are given in appendix 6.1

(2) 200 km of canals and drains per 1 engineer

(3) 100 km of canals and drains per 1"specialist" & technician Ist level

(4) 50 km of canals and drains per 1 technician IInd level

(5) 50km of canals and drains per 1worker

(6) 1 car per 1 "specialist" or technician Ist level

(7) 25% of annual wage-bill, computer equipment included

(8) 30% of annual wage-bill

7 INSTITUTIONAL OPTIONS FOR O&M OF SYRDARYA WATER MANAGEMENT MAIN SYSTEM

7.1 On-going Institutional Change

According to 1996 - 1998 state program of privatization and restructuration of state property in RK and to Decree of State Property and Privatization Department from 08/06/98 (see appendix 7.3), concerning privatization of water management organizations, Territorial Committee of State Property and Privatization has ordered to make privatization of organizations and enterprises subordinated to Kzylorda Head CWR office. Government Decree from 21/08/97 (see appendix 7.2) stipulated that this order must not concern Kzylorda Headworks Administration, Kazalinsk Headworks Administration and Zhanadarya Canal management organization. In South Kazakstan all Oblast CWR organizations concerned with the project area (Shaulder and Otrar BAS and Turkestan MMC) are foreseen to be privatized.

In parallel water users (farms mainly) should be organized in private Water User Associations (WUAs). Organizations which must not be privatized should be given to the balance of new joint stock companies (JSCs) to be created[20], 100%, of stocks having to remain as State property, from which 51% will be given to the Republican CWR for operational management.

Financial means for management of state structures which must not be privatized (see appendices 7.4 and 7.5) will came as formerly from state budget, whereas financial means for all other hydraulic structures and canals managed by Joint Stock Companies, other kind of private companies or Water User Associations must be self-financed through water management activity. All CWR organization hydraulic structures and canals foreseen to be transferred to private ownership must be privatized through a competitive process.

Basic tasks of JSCs, other kinds of private companies or WUAs will be operation and maintenance of hydraulic interfarm structures: water intakes, canals and drains, culverts, pumping stations, banks protection dikes and other structures, in order to guarantee proper provision of water supply, according to established limits and schedules, and proper delivery to the economic branches.

For the moment the privatization program and the program of creation of WUA are only at a starting point in the project area, and many issues and points to be highlighted are pending, such as:

[20] See main characteristics in appendix 7.1

- The list of hydraulic structures to be privatized, in particular the new physical components which are foreseen to be built in the frame of SYNAS project (Aklak and Raim Headworks, Ancillary structures in the Delta, NAS dam, see appendix 7.4).
- The practical and operational aspects of the on-going privatization program seems to need further more detailed indications, as for instance:
  - ways and methods for expertise and assessments of fixed assets of CWR organizations to be privatized;
  - precision of legal status of future private companies and WUA apart from JSC;
  - why and how potential private investors would participate to JSC, other kinds of private companies and WUA?
- The profit-oriented characteristic of a JSC should be warranted as it is a sine qua non condition for participation of future private investors.
- What will become present personnel of CWR organizations to be privatized, and more generally, how to organize a restaffing process according to Government human resources policy?
- What will be the consequences on the present water management system?
- Above all, present water pricing and agriculture products and marketing policies need to be strengthened and put in coherence with the privatization program.

All the points mentioned above (and others) are considered in following paragraphs with option proposals.

Another important institutional change foreseen at national level, to be borne in mind for the future, is power extension of maslikhats and endowment of autonomous budget to oblasts.

7.2 Proposal of Institutional Options

7.2.1 Proposal of Options in the Long Term

The long term options proposed hereafter are based on the following leading principles:

- clear identification of basic functions of the Basin Water Management System:
  - Specific basin water policy function
  - Technical functions: water resources planning, programming and monitoring; infrastructure O&M management for water supply, water division and water delivery to

water users, and water conservation; technical studies engineering and supervision for water sector investments

- Administrative and financial functions of water institutions management: water cadastre keeping; water police; water budgets management (state budget, regional and local budgets, water users payments); contracting and other legal aspects; human resources management (training included)

- Necessity of one main solid institutional set-up at basin top level with clear allocation of the 3 basic functions above among two possible main options defined below
- Flexibility upholding of institutional arrangement inside water basin at regional and local levels in term of juridical status of organizations to be involved, provided technical, administrative and financial functions will be clearly identified and allocated through concession and exploitation contracts to JSCs, WUAs and other kinds of private companies

The long term institutional options proposed and discussed below suppose of course to be in coherence with future long term national institutional options and water legislation and pricing policy which cannot be in the scope of the present study. Some general outlines of possible water policy options in coherence with Aral-Syrdarya water management scheme proposed will be only suggested at the end of present paragraph and in paragraph 7.3.1 below.

If the future, national water policy will fix the frame of Aral-Syrdarya water management system, it seems obvious however that Aral-Syrdarya Basin, as the other basins, has its own specificity in term of water resources, water infrastructure and water organizations, water economic sectors (in particular irrigation) and water-related environment (Delta and NAS in particular). The statement and analysis of present situation made in preceding chapters are leading to propose to elaborate a sound specific basin water policy that should define/precise in particular: water conservation and environment specific objectives and measures to be taken; water division rules between economic sectors and water users categories; water pricing based on basin actual water service costs; annual budgeting proposals to state, oblasts, rayons and municipalities after fixation of respective contribution of different water users categories; regional research and investment policy in basin water sector; socio-economic attending/mitigation policy and measures.

According to the fundamental principle that stakeholders financial participation supposes share of responsibilities but also somehow share of powers at local and regional level, the institutional frame for the elaboration and monitoring of such a basin water policy should be a

Basin Council, which will comprise representatives of all stakeholders and would constitute thus a kind of "water parliament" at basin level.

The following stakeholders should be represented in the Basin Council: oblasts, rayons and municipalities Akims; maslikhats (oblast assemblies); water users (direct representation) and WUAs; state water institutions at basin level (see below), and private water institutions at basin level (JSCs, others); regional departments of ministries and other state institutions involved/concerned (present MOA, MENR, Hydromet, MOH, Ministry of Finance etc.) Such a Basin Council should meet at least twice a year and have a Permanent Secretary office for permanent institutional relations.

In front of this basin water policy body two institutional options are possible at basin top level for "executive" technical, administrative and financial functions of the basin water policy:

- Cumulated functions in one single leading basin institution
- Separated functions in specific basin institutions

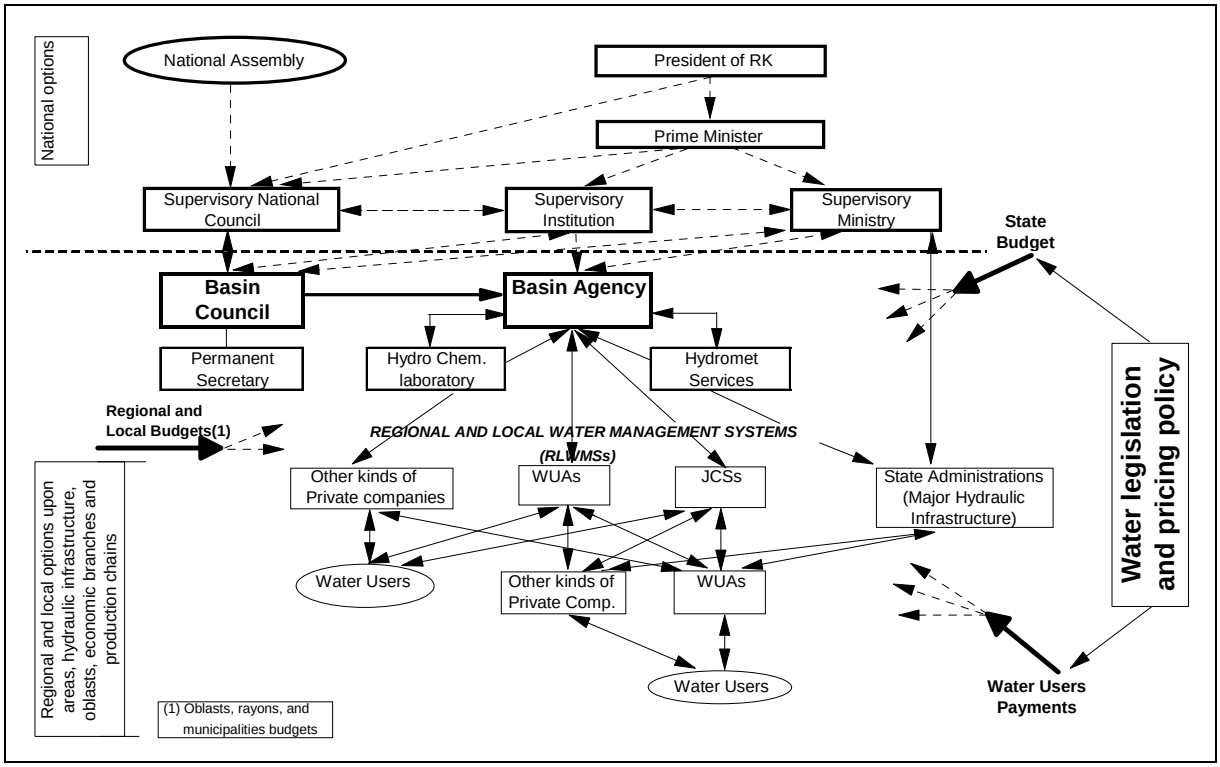
The first option, that we would recommend, is presented in figure 7.1 through the creation of one **Basin Agency**. Such agency would be responsible of the execution of national and Basin Council policies and would control national water legislation observance. It would be in charge in particular of following missions and tasks:

- water resources planning, programming and monitoring;
- control of execution of water supply, water conservation, water division and water distribution programs;
- control of infrastructure management and in particular 0&M of the Regional and Local Water Management Systems (RLWMSs);
- control of observance of ToR of concession and exploitation contracts passed with JSCs, WUAs and private companies involved in RLWMSs;
- control of conventions passed with specialized research institutions, Hydromet services, Hydro-chemical labs or other state institutions;
- water budget collection from state, oblasts, rayons, municipalities and contracting organizations (payments related to concession and exploitation contracts); financial management and partial back-dispatching to JSCs, and basin state administrations in particular situation (see table 7.1 hereafter), and national supervisory institution and/or Ministry of Finance (MOF);
- control of observance of basin water pricing policy in the RLWMSs;

- keeping of water cadastre and water police, collection of water fines and referring water low violations to relevant jurisdiction[21];
- financial and accounting compulsory audit of contracting companies and state administrations involved in RLWMSs;
- execution of Basin Council and State investment policy, technical studies, engineering and project implementation supervision;
- technical assistance and training services to RLWMSs organizations (in the frame of contracts and conventions).

Figure 7.1

Long term institutional main options for water management in Syrdarya River Basin



[21] For the fullfillment of such mission AB should have agents on oath in its staff.

Basin council and Basin Agency would constitute the backbone of Aral-Syrdarya basin water management system from which we could find a number of different juridical kinds of institution/organization that will be engaged in the different specific RLWMSs upon areas, sub-basins, oblasts, rayons, hydraulic infrastructure, economic branches, production chains, water users categories etc. These organizations will be in charge of exploitation, infrastructure O&M of specific regional, local or sector water management systems, and direct or indirect collection of water users payments (and eventually of specific regional/ local/state budgets subsidies channelled through the Basin Agency on convention or contract basis passed with the exploitation organization).

Figure 7.1 shows different possibilities of contractual relations between the Basin Agency and water users, but in our opinion administration and exploitation of major water supply infrastructure such as Chardara dam, NAS dam, large headworks and canals should remain in the future in the hand of state administrations as such large structures do not seem to be adequate for JSC profit-oriented management purpose. On the other hand "formal" and planned maintenance works could be optionally achieved through contracting with specialized private companies. Such specific local state water administrations would be financed by mixed budgets (state, oblast, municipalities, water users) channeled through the Basin Agency which will be responsible of overall basin water budgets management on the basis of equalization made according to the Basin Council policy approved by Government. Specific recommendations are made for major infrastructures in paragraph 7.3 below.

Less strategic hydraulic infrastructure such as main canals and drains networks upstream water user level (in particular farm boundary) could be exploited by private companies (JSCs, WUAs, or other kinds of private companies), either directly or indirectly (see figure 7.1 and below), in matter of operation and "operational" maintenance / "formal" planned maintenance (in particular major repairs) / collection of water fees and eventual specific subsidies.

Like that, RLWMSs will be two-storeyed or three-storeyed (see figure 7.1) between the Basin Agency (BA) and Water Users (WUs), possible arrangements are illustrated in table 7.1 below. **Institutional building process should have been bottom-up, starting from water users level, in order to be socially and economically sound and truly participative.**

Besides, according to RLWMS peculiarities, major maintenance works inside farms can be eventually carried-out by WUAs, JSCs or other private companies through contracts.

Concerning juridical status, WUAs should be (manufacture) service cooperative societies, and private companies could be limited liability partnerships or partnerships with additional liability (see appendix 7.1).

In matter of basin water pricing policy we strongly recommend that at full institutional development stage, in the long run, financial flows between institutions engaged in concession/contract relations should be on real costs basis with the leading principles of self-financing for WUAs, and profit-oriented JSCs and others kinds of private companies in a competition frame for contracting and under BA's control at every level.

If we assume that actual water supply and delivery costs[22] in statistical normal year will be around 0.6 KZT/m^3 (without provision for infrastructure renewal), we must realize that a stepwise increase period of water fee of 10 years before reaching this level, means an average increase of 35% per year for the agricultural sector (present water charge rate: 0.03 KZT/m^3). Water supply of the NAS on the other hand should be financed through oblasts and state budgets as it is both a regional and national patrimony to preserve and manage.

Lastly with regard to possible national options (figure 7.1), we will just mention that:

- Supervisory institution of Basin Council(s) could be a National Water Council with the participation of all national institutions and ministries concerned, such national Water Council would be directly responsible to Prime Minister or President of RK. A permanent Water Commission could also be created in the frame of the National Assembly and represented in the National Water Council.
- Supervisory institution of Basin Agency(ies) could be either a sector Ministry (present MENR, and not MOA as it is for CWR nowadays, or future new Ministry of Water Resources) or a specific National High Committee directly responsible to Prime Minister.

7.3 Possible Transitional Steps: Implications and Issues

The long term institutional arrangement scheme proposed before will need time, different kinds of decision makings, new laws and decrees and quite a number of attending measures within the water sector and in other sectors (agriculture policy in particular) and at different levels. Present paragraph is proposing possible first transitional steps that could be made in

[22] At water users' gate

that way during the following of the project preparation phase and its implementation on the basis of present situation and taking into account on-going changes.

7.3.1 Issues and Policy Decision Making at National Level

Main issues at national level that will govern improvement of the water management system, and in particular O&M management, have been already mentioned here and there in preceding chapters. They are summarized below for the reminder:

- Water pricing policy and accordingly laws, decrees and regulations and decision making within a coherent global water sector financing policy;
- agricultural prices and marketing policy (inputs, agricultural products, credit, subsidies, marketing organization and regulations);
- agricultural organizations development general policy (service cooperatives, strategic production chains organizations, Chambers of Agriculture, social protection policy for agricultural producers etc.);
- Water User Associations development policy and decision making of sound and functional development process measures (grass-roots organizations, federations and unions, participation policy etc.);
- CWR organizations privatization program and participatory process;
- Policy of private customary/property rights on agricultural land and water, and consequent legal provisions;
- water-related environment policy with eventual institutional arrangement needs and legal/juridical/economic practical measures for its real execution;
- water institutions desirable re-arrangement at national top level, CWR becoming in particular in the frame of long term institutional options outlined above (paragraph 7.2).

7.3.2 Short Term Measures Suggested at Project Area Level

7.3.2.1 Institutional Arrangements and Privatization Program

As a first step in the way of a future Basin Council it is suggested that CWR set up a restricted **Consultative Group** within the framework of existing laws and regulations during the following of the project preparation period that would bring together the key stakeholders in the project area. Possible composition of such group could be: Kzylorda and South Kazakstan Oblasts Akims, rayon Akims, representatives of farmers, fishermen and livestock keepers (to be selected by oblast and rayon Akims); Delta and NAS ecological "interests" having to be represented by oblast and rayon Akims.

As suggested by the World Bank preparation mission in Almaty in September 1998, role and functions of the Consultative Group should be as summarized hereafter:

"(i) the Group would discuss volume of water flows to NAS and the delta, and the overall water allocation plans for the region and present suggestions to the Regional Water Resources Committee; (ii) once allocations plans are approved by CWR, the Group would provide user feed back on implementation progress of the allocation plan on a periodic basis; (iii) the Group would recommend further studies and investigations for consideration by the CWR; (iv) the Group would assist the CWR in communication basin issues and activities to various sections of the basin community."

In parallel to the transitional step suggested above the other fundamental step would be to join together Aral-Syrdarya BWMA, Kzylorda CWR Head office and a basin "section" of South Kazakstan CWR Head office in one single new CWR basin organization that could constitute the frameworks basis of a future Basin Agency proposed above. This measure will suppose policy decision and new regulations dispositions at national level on the one hand, and refinement of CWR privatization program and restaffing consequences on the other hand.

With regard to present on-going privatization program it is suggested to consider following adjustments vis a vis institutional becoming of major hydraulic infrastructure.

Hydraulic infrastructure upstream farm boundary	**Institutional frame suggested for exploitation (administration and O&M)[23] at short/medium term**
PROJECT COMPONENTS (rehabilitation or new construction works)	
• Kzylorda and Kazalinsk headworks, Aitek, Aklak and Raim Weirs	CWR/future BA exploitation departments
• Ancillary structures in the Delta (earth canals, earth fill dams, dikes, bridges etc.)	Possible specific JSC in charge of water management in the Delta (Headworks and weirs not included) on concession/exploitation contract basis
• NAS dam	CWR/future BA exploitation departments
•	
OTHER HYDRAULIC INFRASTRUCTURE	
• Chardara Dam	

[23] For maintenance execution see possible relevant options outlined in table 7.1 above.

- Zhanadarya Canals system
- Hydraulic structures and equipment presently managed by the 6 BASs of Kzyl-Orda Oblast and 2 BASs of South Kazakstan oblast, and Shieli Administration for Water Management System

CWR/future BA specific exploitation department - idem/or JSC
JSCs or other kinds of private companies (then possible transfer to WUAs in a second step)

In that way present BASs and Shieli Administration would be re-organized and changed into JSC or limited liability partnership, or partnership with additional liability. Aralsk MES could be incorporated in the future Delta exploitation JSC suggested above, whilst Kazalinsk and Turkestan MMC present "contractors" could be entirely privatized with a legal status of a limited liability partnership.

7.3.2.2 O & M Management Plan

During the project preparation stage CWR should prepare a plan for Operation and Maintenance that will refine in particular first cost assessments made above in chapter 6. As recommended by the World Bank preparation mission in September, such a plan should specify:

"(i) O&M activities required for effective maintenance of the main hydraulic structures, dikes, main and secondary canals; (ii) related budgets (in detail). The budgets should distinguish "establishment" or administrative expenditures (salary, overheads) and "works" (routine maintenance and minor and major repairs) expenditures; (iii) sources of financing for the budgets in the short term (2000 - 2001) and medium term (2000 - 2005); (iv) gaps in financing and how they would be met."

This O&M plan must be coherent with the on-going /re-adjusted CWR privatization program after consideration/decision of orientations given above. It will be decided with key training and redeployment components (future staff to be fired included).

Preparation of such an O&M plan supposes also to start from a technical expertise of the present real working conditions of hydraulic infrastructure. Such expertise should be undertaken during conditional phase III of the present study in order to have a first draft of the O&M plan ready at the end of the project preparation stage: practical proposals are given for that in chapter 9 below.

During the project preparation phase a re-staffing/training/redeployment plan should thus also be prepared by CWR.

7.3.2.3 Other issues and implications

Future institutional arrangements and revised/strengthened privatization program of CWR organizations need in the short term to work out the question of concession and exploitation contracts that will link future new organizations and will warrant it functional. First framing of such contracts should be also carried-on during the project preparation stage.

In parallel to detailed studies of technical and O&M management of SYNAS project it is of the paramount importance to embark already at project preparation stage, on an effective stakeholders/public participation process in project implementation and development. Such a participatory program will have to be precised and must begin with information actions with feed-backs collection. The Consultative Group suggested above could assist the CWR, with also external technical assistance, in systematically disseminating information to people in the project area in particular in matter of: present situation with regard to water balances; economic and ecological benefits from NAS flows; costs of the rehabilitation and of provision of water services; institutional issues and privatization program etc. It has already been mentioned above (chapter 3) that the upcoming GEF project in the frame of the Aral Sea Basin Program has foreseen resources for public awareness and could be tapped by the CWR.

Organization and technical assistance needs for project implementation is defined in chapter 8 below. Out of the scope of project components other technical assistance needs for overall institutional development of the future Syrdarya Water Management System should be also identified during the following of project preparation phase (in parallel to restaffing/training program).

8 ORGANIZATION OF PROJECT IMPLEMENTATION AND TECHNICAL ASSISTANCE

The objective of this chapter is to identify and propose a project implementation organization and technical assistance component of SYNAS project sufficiently justified at feasibility level, and allowing an assessment of its cost estimates. More detailed job descriptions of local staff, specifications of equipment needed and ToR of Technical Assistance will be provided during conditional phase III of the present study.

8.1 Project Organization

8.1.1 SYNAS Project Implementation Unit

The project organization will be ensured through the installation of a functional SYNAS Project Implementation Unit (SPIU) in Kzylorda with national and international Technical Assistance facilities (paragraph 8.1.2 below).

The SPIU will be responsible, on behalf of CWR/future Basin Agency (?) for the daily management, administration and co-ordination of the project implementation. Such an implementation organization should not be maintained after project full development and the future BA (or other former CWR institution) should take over from it for project monitoring. If a BA and the other water institutions building outlined above has made enough progress, SPIU should be incorporated in the future BA and will constitute another strengthening nucleus for it.

The SPIU will be headed by a **Director** with the following main duties:

- responsible for managing all SPIU activities;
- provide direction and leadership in the smooth and timely implementation of the Syrdarya Control and Northern Aral Sea Project;
- refine job descriptions and Technical Assistance ToR;
- establish SPIU office policies and procedures;
- supervise the preparation and implementation of the work programs for SPIU staff;
- negotiate contracts with consultants and construction enterprises;
- coordinate and supervise all consulting and contract activities;
- coordinate the preparation of project budgets and annual work plan;
- ensure sound financial administration of the Loan and of the Investment State budget;

- ensure sub-project approvals and procurement activities carried out in a timely manner;
- supervise procurement of works, goods and services;
- monitor compliance with all World Bank Loan covenants;
- coordinate inter-ministerial and inter-agency activities required for project implementation;
- ensure liaison with World Bank;
- brief CWR management and World Bank on project status on a periodic basis;
- prepare quarterly progress reports to the CWR and World Bank;
- coordinate the preparation of quarterly procurements reports.

The SPIU Director should be a senior civil servant with the following main qualifications:

- a broad based background in civil/hydraulic engineering with exposure to inter-disciplinary, planning and implementation of water resources management projects, including water resources planning and financial/accounting/human resources management know-how;
- proven project management capability;
- good administrator;
- good people and communication skills, motivation and capability for participatory approach of project;
- good knowledge and experience in working with various government institutions and organizations.

The following permanent professional staff will be directly responsible to the SPIU Director (detailed job descriptions will be provided during the conditional phase III of the project study):

- **1 Hydraulic/Geotechnical Engineer**, who will be responsible of planning, programming and supervision of design and construction of hydraulic schemes and river training works. In addition to that, this specialist should have knowledge and experience in water resources planning and management.
- **1 Civil Engineer**, who will be responsible of planning/programming and supervision of design and construction of all the civil works of the project. This specialist should have specific experiences on hydraulic projects implementation.

- **1 Water Institutions Development/Management Specialist**, who be responsible of all the institutional/legal/organizational/O&M management aspects of the project, in particular:
  - follow up, studies and monitoring of overall institutional re-arrangement program (short term/medium term/long term) of the Syrdarya basin Water Management System (SWMS);
  - follow-up, refinement and monitoring of the O&M plan of the SWMS;
  - detailed study and assessment of water service costs at every future institutional level and data base management for it;
  - follow-up, studies and monitoring of privatization and re-staffing/training/ redeployment program for CWR organizations in the project area;
  - programmation and supervision of specific technical assistances to other water institutions;
  - preparation of formats for concession and exploitation contracts for future RLWMSs;
  - follow-up and monitoring of public information and stakeholders participation programs.
- **1 Environmental/M&E Specialist** who will be responsible of the follow-up of all environmental issues related to project implementation, of supervision and monitoring of mitigation programs, and more generally of the organization, programming and supervision of all projects components M&E activities.
- **1 Procurement Officer** (professional level)
- **1 Senior Accountant**;

In addition to that non-professional staff will consist of:

- **1 Office Manager**;
- **3 Secretaries-Interpreters** (russian/english out of which besides 1 russian/kazak/english at least);
- **2 permanent Drivers** .

Necessary equipment for the SPIU will comprise: 4 cars; 4 computer units with adequate software; office furniture and miscellaneous equipment.

Table 8.1

Cost estimates for Synas Project Implementation Unit - (Kzylorda)
without technical assistance

Item	Unit	Number	Unit rate US$	Total costs 1000US$
I. STAFF				
Project Director	month	12	500	6.0
Hydraulic/Geotechnical engineer	month	12	400	4.8
Civil engineer	month	12	400	4.8
Water institutions Management Specialist	month	12	400	4.8
Procurement Officer	month	12	350	4.2
Accountant	month	12	400	4.8
Environmental specialist/M&E	month	12	400	4.8
Office manager	month	12	350	4.2
Secretaries-Interpreters	month	36	400	14.4
Drivers	month	24	400	7.2
Sub-total staff (wage-bill)	person	12		60.0
II. EQUIPMENT				
Cars	unit	4	6,700	26.8
Computers with software	unit	4	2,000	8.0
Office furniture and miscellaneous equipment [1)]				6.0
Sub-total equipment				40.8
III. RUNNING COSTS [2)]				12.0
Sub-total recurrent costs per year				72.0
Unforeseen on reccurent costs (10%)				7.2
TOTAL RECURRENT COSTS PER YEAR				**79.2**
TOTAL INVESTMENT COSTS				**40.8**

Notes Project Implementation Period: 5/6 years

(1) 10% of annual wage-bill

(2) 20% of annual wage-bill

8.1.2 Technical Assistance to the SPIU

In order to fulfill its various missions the SPIU will need both foreign technical assistance and local technical assistance. Annual and total man-months requirements per subject matter specialist needed is given in table 8.2 under the assumption of a 5-year project implementation period. The Technical Assistance facilities identification has been made in relation with the SPIU staff duties. Detailed ToR of the Technical Assistance will be provided within the frame of the conditional phase III of the present study.

8.2 Project implementation organizations costs

On the basis of a 5-year project implementation period, or more precisely of 5 year investment period) functioning of the SPIU will require **40,800 US$ of investments and 79,200 US$ of annual recurrent costs** (see breakdown per item in Table 8.1). **Foreign technical assistance will cost in total 1.006 mio US$ and local technical assistance 57,000 US$.** Detailed breakdown per year and subject matter is given in Table 8.2.

9 INSTITUTIONAL AND O&M MANAGEMENT PLAN STUDIES DURING THE CONDITIONAL PHASE III OF SYNAS PROJECT

9.1 Options proposals

The conditional phase III of SYNAS Project study would concern mainly detailed designs and bidding documents of its technical components. However it is strongly recommended to foresee within this phase III also "detailed design" of its organizational, institutional and O&M management plan components and that as far as possible "technically" and financially speaking. Let us remember mention made in the preset feasibility ToR (page 15, section 36) that has to be supported somehow:

"The long term sustainability of the project will depend on the institutional strength of O&M agency - we would precise O&M System - and adequate budget for O&M" But surprisingly not institutional neither O&M management budget is mentioned in the rough phase III ToR.

Nevertheless we will recommend to foresee more detailed investigations in this subject matter. For that one can imagine two options:

- **A minimum input/outcome limited to the adjustment and partial refinement of proposal made in the present report after GOK/CWR reach on, remarks and orientations.**
- **A more sound and consequent "detail design" of the institutional and O&M management components of the project.**

The **scope of the first option** would be:

- adjustment and relative precision of long term institutional options and of short term/medium term transitional steps decided by the GOK.
- First identification of a training and Technical Assistance program for water institutions of the project area.
- Refinement of O&M cost assessments made in the present report through an equivalent norms approach, and without a real O&M management plan that would require a technical assessment of the hydraulic infrastructure of the project area as the first step for issuing it.
- Adjustment, more and detailed specification of the SPIU staff job description, needed equipment and Technical Assistance ToR. **For such outcome on input of 1.5 man-months of an international institution specialist and 3 man-months of a local counterpart will be necessary.**

The **scope of the second option** would be, through intensive discussions and actual cooperation with CWR and oblast and rayon Authorities in the project area:

- refinement of institutional options decided by the GOK/CWR (in the long run, medium and short term) and detailed study of compulsory transitional steps through a bottom-up institutional building process (WUAs included).
- Assistance to CWR for the preparation of a sound O&M management plan, with a technical expertise of the hydraulic infrastructure of the Syrdarya basin. (See more detailed specifications given in paragraph 9.2 below). Refined study of water services costs at every present and future institutional level and elaboration of a data base management system for it;
- Refined organization study for project implementation with detailed specifications of SPIU job description, equipment needed and ToR of Technical Assistance, disbursements system and financial management; procurement methods; international and local bidding; accounting methods and audit of project budgets; project M&E methods subject matter-wise etc.
- Technical assistance and adjustment/practical methods and process for a functional and coherent progress of the CWR organizations privatization program.
- Elaboration in close cooperation with CWR of a re-staffing/training/redeployment and Technical Assistance program for all present and targeted future water institution in the project area.
- Elaboration of first future format frames of concession and exploitation contracts for the future regional and local water management systems, and "feasibility" study of a Basin Council and a Basin Agency, with foreseen budgets management system.
- Study and preparation of a public information and stakeholders real participation strategy, plan and program, with a realistic/negotiated stepwise increase of water frees in the medium and long term.
- Detailed study of present environment institution capacity in the project area and building/strengthening proposals.

For the fulfillment of the comprehensive outcomes of such option it will be necessary to foresee an input of:

- **3.5 man-months of an international water institution specialist and 10 man- months of adequate specialized counterparts.**

- **3 man-months of a international hydraulic engineer experienced in water infrastructure field assessment and 6 man- months of a local counterpart.**
- Close cooperation of technical staff of CWR organizations of the project area.

9.2 Specifications for the technical expertise and assessment of hydraulic infrastructure (head structures, water intakes main and secondary canals and drains upstream farm boundary)

The objective of such expertise will be: (i) to determine the working and operation conditions of all hydraulic infrastructure, equipment and devices; (ii) to identify and assess in detail needs of minor repairs, major repairs and rehabilitation and replacement; (iii) to elaborate a maintenance/rehabilitation plan and program with technical specifications and equipment, and skills needed; (iv) to provide detailed unit costs item-wise for such plan and program, in reference to actual practices and facilities in RK, with two options: works made by state-run organizations or works made by private enterprises; (v) to define bidding technical specifications and ToR for maintenance and rehabilitation works per category.

Rough description of the expertise methodology is summarized below:

- Selection of sample structures per category through the following main sampling criteria: discharge categories (headstructures and water intakes, canals and drains); sample of homogeneous hydraulic elementary units including head, mid and tail locations; geographic sampling from Chardara dam down to the NAS; soil conditions (for earth structures); present operation and maintenance conditions as reported by local CWR organizations in charge. In a first approach around 400 km of canals and 950 km of drains of different categories and locations with associated headstructures and water intakes would be sampled.
- Collection of available checking-plans, photographs, drawings, logbooks, inspection reports.
- Field exhaustive expertise of sample structures, canals and drains with the help of available documents above, measurements and record of their physical and operational conditions. Description sheets will be as follows:
  - structures: constructional aspects; functioning conditions; design and operational performance; civilworks degradation degree; metal works; hydromechanical and electromechanical and electrotechnical equipment and devices working conditions and wear degree etc.

  - main and secondary canals and drains, embankments and ancillary structures: seepages; cracks; erosion; sedimentation; transversal hydraulic shape evolution; operation and maintenance conditions etc.

- Measuring of discharges and evaluation of different kinds of losses and water conveyance efficiency.
- Identification, technical assessment and unit cost estimates of operation, maintenance and rehabilitation works needed per structure and canal and drain category. Extrapolation to the whole Syrdarya basin water management system (Chardara dam included).
- Elaboration of a detailed technical O&M management plan with specifications as defined above (first section of present paragraph).

APPENDIXES

Appendix 2.1

Summary of Kazakstan Water Code

CHAPTER 1

All waters in the territory of Kazakstan are Water Fund of RK. Water Fund includes:

- rivers, water reservoir, swamps, other resources, and also canals and major pipe waters;
- underground waters;
- glaciers;
- waters of Caspian and Aral seas included in State boarders of RK.

Waters in the Republic of Kazakstan are State property. Use of water and other activities must be done through State organ of water resources management. Water supply for use in other countries, companies or people must be on contract basis.

CHAPTER 2

Organs which participate in water management are as follows:

- The government:
  - defines national policies of water management;
  - works out and improves governmental legal acts;
  - controls water use;
  - defines water tariffs.
- Parliament:
  - elaborates water laws;
  - ratifies international treaties.
- Maslikhats (Regional Assemblies):
  - define general water use;
  - control water use;
  - define the condition of common use of inter rayon structures.
- Local executive organs are in charge of:
  - division of water limits among different branches;
  - giving water construction to different companies for temporary use;
  - regulation of water use among different regions;
  - control of water use.
- State organ of water management is responsible for:
  - defining limits of water use;
  - state accounting of water and its limits;
  - holding measures on water protection;
  - giving approval for water use to different users.

CHAPTER 3

Acting on objects which influence water is prohibited. Projects or construction works must not hurt water resources.

CHAPTER 4

Everybody has right to use water. Water use can be:

- general (for drinking and other needs of population) or special (for agriculture, industry, energy, etc.; with the use of special constructions and tools);
- individual (companies or people for activities where individual use is necessary) and combined (several users);
- primary (companies and people who make water intake according to special approval) and secondary (water use of those who receive water from primary water users).

Water users must:

- use water properly and according to the condition of water use;
- not harm environment and nature;
- economize water;
- not disturb rights of other water users;
- keep in proper order cleaning and other structures, which influence the water condition;
- respect other functions according to regulations.

CHAPTER 5

Water payment must be taken according to quality of water and conditions of water use.

Water payments must be divided into:

- cleaning measures, services and equipment;
- water supply works;
- reconstruction, building and maintenance;
- measures for helping natural accidents (floods, draught, etc.);

CHAPTERS 6 - 15

Water supply:

Drinking and other domestic needs of population	• quantity of water must be as in State standards • divided in centralized (when one company distributes certain amounts among people and must check quality and quantity of water) and non centralized (people and companies taking water directly from resources of water)
Health and recreation	approval must be received from State organs (Government, Health Ministry, etc.). Health water bodies and recreation bodies must be defined as such, but affirmation is not obligatory
Agriculture	Companies and people using water for such purposes must: • keep to their limits; • do everything for saving the water; • equip the water by block off the fish; • not pollute the water; It is forbidden for them: • to build new constructions, such as pumping station, etc. • to drill water wells. • etc.
Industry	Water users must follow technical instructions, defined limits, rules of water users. It is prohibited to use drinking water for such purposes.
Hydropower	water must be used according to the projects with approval of State organs, all technical conditions must be followed
Transportation	Government defines the water which is considered as water for navigation. Such water users must: • rationally use water; • do not disturb water life.
Fishery	Local executive organs define the water as water for fishery. Restriction must be put for saving some special kinds of fish.
Hunting activities	Local executive organs with approval of State organs define the water which is considered as water for hunting.
Water bodies in natural reserves	Government issues the status of natural reserves
Antifire needs	such water can be used for any kind of water resources. Government defines the order of use.

CHAPTER 12

Exploitation of

1. Reservoirs	Companies and people exploiting such constructions must keep regime of filing and draw-off, follow sanitary and natural protection instructions
2. Diversion and other hydrotechnical structures on the rivers and canals,	Companies and people exploiting such constructions must keep regime of filing and draw-off, follow sanitary and natural protection instructions
3. Water bodies situated on the territory of several countries	It is managed according to the International treaties signed between concerned countries.

Water Protection and Preventing its harming impact

All waters must be protected from damages and pollution. Water protection includes economic, sanitary, ecological and other aspects. All companies and people which activity influences the water condition are responsible for holding such measures.

- Water protection from pollution

  State organs define the amount of water polluted. Water protection includes economical, ecological and other aspects. All companies and people which activity influences water condition are responsible for holding such measures.

- Water protection from over exploitation

  Over exploitation of water is reducing the minimum runoffs and the ground water reserve in the borders of one region.

  During oil drilling works underground waters must be isolated, drilling is allowed if State organ gave its positive conclusion.

- Protection of small rivers

  Small rivers are ones with length less than 200 km. Companies and people whose activity influences the conditions of small rivers must protect them; list of work which must be done by water users is defined by local authorities.

State accounting and Planning of water use

The purpose of State accounting is to assess the quantity and quality of waters used by population and organizations. It is also necessary for:

- working out basic directions of social and economic development and placement of manufacture forces on the territory of the republic;
- drafting the schemes of complex use and water protection;
- projecting transportation water management, manufacture and other objects connected with water use;
- management of water systems;
- regulations of relations between water users and other organizations connected with water;
- other needs foreseen by legal acts of the Republic.

The state water Cadaster gathers information on conditions, use and protection of water (it includes information on water accounting of quality and quantity, certification of water users and information on water use).

Monitoring of water system through remote sensing and ground measurements aims identifying changes evaluating, preventing and removing negative processes.

Water management balances has to be made per basin, economic region and in the Republic for evaluation of existing and possible water use.

Schemes of Complex water use and protection serve for provision of most effective and rational use and protection of waters by regulation of runoff; taking steps to economized water use and improvement of the water conditions.

Works of State Accounting and Planning of water use (items measured above) are financed from the republican budget.

Water conflicts appear during supply, confiscation, use or protection of water

- between companies and inhabitants of RK

  Water Conflicts must be solved in courts

- between different countries

  Water conflicts must be solved according to the International Treaties.

Responsibility for violation of water laws. The following is considered as violation:

- self-decided water use;
- water intake with wrong limits;
- water pollution;
- not proper payment for water;
- self-decided drilling and building of water intakes;
- damages on hydraulic structures
- etc.

Companies and people making such offenses must repay all losses and penalty according to legislation.

International treaties

If Kazakstan is a member of an International Treaty with different rules than this law, then treaty's rules must be used.

Appendix 6.1

Operation costs of the Main Head Structures of Syrdarya Water Management Main System with project (cruising year)

1. Kzylorda headworks

	Item	Unit	Quantity	Unit rate ($)	Total costs (1000US$)
1	electrical power consumption* 13 kW/(m^3/s) · 1900m^3/s · 24h	1000 kWh	529.8	0.05	29.64
2	1 engineer	month	12	180	2.16
3	2 technicians	month	24	150	3.60
4	1 car	unit	1	6000	6.0
5	1 office with heating and air-conditioning system, furniture, office equipment (available)	unit	1	1200	1.20
6	communication (telephone, mobile com.)	unit	1	900	0.90
7	gasoline and lubricants	ton	3.0	232	0.70

2. Kazalinsk headworks

	Item	Unit	Quantity	Unit rate ($)	Total costs (1000US$)
1	electrical power consumption* 13 kW/(m^3/s) · 1600m^3/s · 24h	1000 kWh	499.20	0.05	24.96
2	1 engineer	month	12	180	2.16
3	2 technicians	month	24	150/	3.60
4	1 car (UAZ -469)	unit	1	6000	6.0
5	1 office with heating and air-conditioning system, furniture, office equipment (available)	unit	1	1200	1.20
6	communication (telephone, mobile com.)	unit	1	900	0.90
7	gasoline and lubricants	ton	3.0	232	0.70

*) Calculation of annual electrical power consumption according to:

Norms for O&M Costs, Souzvodproject, 1984

3. Aitek weir

Item	Unit	Quantity	Unit rate ($)	Total costs (1000 US$)
1 electrical power consumption* 13 kW/(m^3/s) · 700m^3/s · 24h	1000kWh	218.4	0.05	10.92
2 1 engineer	month	12	180	2.16
3 1 technician	month	12	150	1.80
4 1 car (UAZ-469)	unit	1	6000	6.0
5 communication (telephone, mobile com.) (portable radio is available)	unit	1	900	0.90
6 gasoline and lubricants	ton	3.0	232	0.70

4. Aklak weir

Item	Unit	Quantity	Unit rate ($)	Total costs (1000 US$)
1 electrical power consumption* 13 kW/(m^3/s) · 400m^3/s · 24h	1000kWh	124.80	0.05	6.24
2 1 engineer	person	1	180	2.16
3 1 technician	unit	1	150	1.80
4 1 car	unit	1	6000	6.0
5 communication means (telephone, portable radio)	unit	1	900	0.9
6 gasoline and lubricants	ton	3.0	232	0.70

5. Raim weir

Item		Unit	Quantity	Unit rate ($)	Total costs (1000 US$)
1	electrical power consumption* 13 kW/(m^3/s) · 500m^3/s · 24h	1000kWh	156.00	0.05	7.80
2	1 engineer	month	12	180	2.16
3	1 technician	month	12	150	1.80
4	1 car	unit	1	6000	6.0
5	communication means (telephone, portable radio)	unit	1	900	0.9
6	-gasoline and lubricants	tone	3.0	232	0.70

6. Karaozek branch structures

Item	Unit	Quantity	Unit rate ($)	Total costs (1000 US$)
1 1 technician	month	12	150	1.80
2 1 car	unit	1	6000	6.0
3 communication means (telephone, portable radio)	unit	1	900	0.9
4 gasoline and lubricants	tone	3.0	232	0.70

7. Dikes

Item	Unit	Quantity	Unit rate ($)	Total costs (1000 US$)
1 3 specialist	month	36	150	5.4
2 1 car	unit	1	6000	6.0
3 communication means (telephone, portable radio)	unit	1	900	0.9
4 gasoline	ton	3.0	232	0.7

8. NAS - Dam and spillway

Item	Unit	Quantity	Unit rate ($)	Total costs (1000 US$)
1 1 engineer	month	12	180	2.16
2 2 specialists	month	24	150	3.60
3 1 car	unit	1	6000	6.0
4 communication means (mobile phone, portable radio)	unit	1	900	0.9
5 gasoline	ton	3.0	232	0.70
6 truck crane (16t, Kraz)	unit	1	16000	16.0

9. Total operation costs

Item	Unit	Quantity	Unit rate ($)	Total costs (1000 US$)
• engineers	month	72	180	12.96
• specialists	month	60	150	9.00
• technicians	month	96	150	14.40
• Running costs electricity, lubricants, gasoline				85.16
Subtotal recurrent cost per year				121.52
Unforeseen recurrent cost, (10%)				12.15
Total recurrent costs (average year)				**133.67**
• car	unit	8	6000	48.00
• truck crane	unit	1	16000	16.00
• Other equipment offices, telecomunication				9.60
Total investment costs				**73.60**

Appendix 7.1

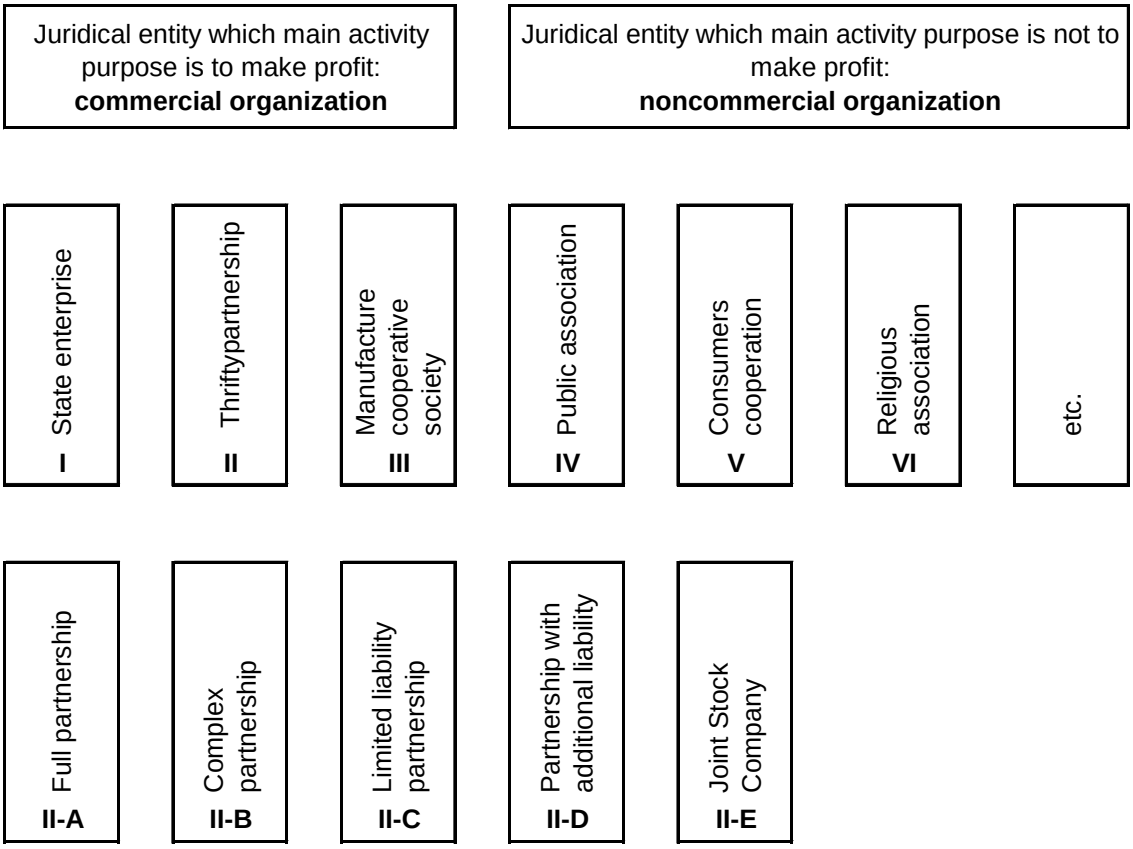
Main Characteristics of Juridical Entity Categories in RK Civil Code[24]

[24] Detailed information is given in this present appendix only for all categories of thrifty partnership juridical entity and for Manufacture Cooperative society.

A Juridical entity is an organization which has separate property and is responsible by this property on its obligations, can for its name, acquire property rights and obligations, be plaintiff and defendant in the court. Any Juridical entity must have its own balance or accounts estimates. Juridical entities can unite and make associations.

All Juridical entities must have Foundation Charter or Foundation Treaty or both. Foundation Charter must be approved by its members and Foundation Treaty must be signed between them.

Juridical entity



II. Thrifty Partnership-commercial organization, juridical entity with divided on shares Charter Capital, and the main purpose of Thirty Partnership is to make profit.

II-A Full partnership

Definition	**Full partnership** is a thrifty partnership when members take joint and several liabilities through their entire own individual property:
Rights of members in Full Partnership	• participate in management of Full Partnership as defined in Foundation documents and take share of profit; • receive full information about company activity, including financial reports; • receive profit from the company activity according to the size of shares in company ownership, left after settling accounts with Creditors; • leave in established order from Full Partnership • in case of liquidation of Full Partnership receive part of its ownership, according to their shares held. Partner has no right to reject his rights, or lower them.
Charter Capital	• not less than 25 min. monthly wages
Management organs	• Highest Organ is General Meeting (decisions are taken by all members, but might be changed) • Executive Organs are mentioned in Foundation documents, must report on their activity
Foundation documents	Foundation Charter and Foundation Contract

II-B Complex partnership

Definition	**Complex partnership** is a thrifty partnership which has not only all members taking joint and several liabilities through their own entire individual property, but has in addition members one or more whose responsibility is limited to sum of given deposit to Capital (depositors), and do not take part in commercial activity of the company.
Rights of Depositors in Complex Partnership	• to receive part of profit proportionate to their share in property of the company in order as defined in Foundation documents; • to make acquaintance with financial reports and balances; • can give their shares to other depositors or other people according to the Foundation Documents; property of Partnership. • to leave the Partnership as defined in Foundation Documents Order Partner has no right to reject his rights, or lower them.
Charter Capital	is not less than 100 min monthly salaries: part of Depositors not more than 50%
Management organs	Management of Complex Partnership is held by Full Partners, depositors do not have right to manage. • Highest Organ is General Meeting (decisions are taken by all members, but might be changed) • Executive Organs (as mentioned in Foundation documents) which must report on their activity
Foundation documents	Foundation Charter and Foundation Contract

II-C Limited liability partnership

Definition	**The limited liability partnership** is a partnership established by one or several persons, the charter capital of which is divided into shares, defined by the foundation documents. The limited copartners are not liable on their own individual property for obligations of the partnership and bear risk of possible losses related to the activity of partnership only within limits of their contributions in the capital. The exceptions of this rule is provided by the Civil Code of the Republic of Kazakstan and by the present Law. • The limited liability company is considered as created for uncertain term, unless the foundation documents of the partnership provide that it is created for a defined term or for achievement of a definite purpose. • The limited liability company has to be considered as a legal entity. • The limited liability company is liable for its obligations by all its assets. • The partnership is not be liable for obligations of the participants. • The copartners who have not completely paid their contributions to the charter capital, must bear joint and several liabilities for obligations of the partnership within the limits of cost of shares which has not been paid in by each of the participants.
The limited copartners have the right:	• to participate in management of the partnership in order provided by the present Law and by the charter of the partnership; • to receive information about activity of the partnership and familiarize with accounting and other documentation of the partnership in the order provided by the charter of the partnership; • to receive profit gained from activity of the partnership according to the present Law, foundation documents of the partnership and decisions of its general meeting; • to receive cost of the part of assets left after payments to its creditors, in case of liquidation of the partnership, or, under the agreement of all copartners, part of this assets in nature; • to terminate participation in partnership by disposal of the share in the order provided by the present Law. The limited copartners can have other rights provided by the present Law and by the foundation documents.
Charter Capital	Not less than the sum equivalent to hundred sizes of a monthly index on date of submission of the documents for state registration of the partnership. The contribution to the charter capital of the limited liability company can be money, securities, goods, property rights, including right of land use and right on results of intellectual activity and other assets.
Management organs	• Supreme body of the partnership: the general meeting of the participants; • executive board of the partnership (sole or collegiate). The charter of the limited liability company can provide the creation of observation (supervisory council) and (or) controlling (revision commission, auditor) organs of the partnership. Competence of organs of the limited liability company, as well as method of adoption of the decision by them or actions on behalf of the partnership must be defined by the present Law, other legislative acts and by charter of the partnership.

Foundation documents	The charter of the limited liability company is the document defining the legal status of the partnership as of the legal entity. The charter of the partnership has to be considered as the foundation document for purpose of state registration of the partnership. The charter of the additional liability company should contain: • company name, location and address of the partnership; • the list of the copartners with indication of their name, location, address, bank requisites (if the founder is the legal entity) or name, place of residence and requisites of the document certifying the personality (if the founder is the natural person); • Information concerning the size of the charter capital of the partnership; • Order of forming and competence of organs of the partnership; • Conditions of reorganization and termination of the partnership. If the partnership is established by one person, the charter of such partnership determines the order of formation of assets and distribution of profit. The charter can contain other provisions which must not contradict the legislation of the Republic of Kazakstan.The subject and purposes of activities of the partnership can be provided in the charter of the partnership. The charter must be affirmed by the general meeting of the founders unanimously and must be signed by all founders or their authorized representatives. The charter of partnership must be subject to notary certification. Copies of the charter of the partnership, as well as all documents related to its subsequent alternations, which have been notary certified, must be deposited in the organ which has carried out state registration of the partnership. All interested persons have the right to familiarize with the charter of the partnership. The partnership has right to carry out the activity on the basis of the Specific Charter of the limited liability company affirmed by Government of the Republic of Kazakstan. In such case submissions of the charter for purpose of state registration of the partnership are not required.

II-D Partnership with additional liability

Definition	**The additional liability partnerships** has to be considered as a partnership, in which members are liable for obligations of the partnership only according to their contributions paid into the charter capital, and at inadequacy of these sums - by assets belonging to them in proportion to their contributions in the charter capital. In case of bankruptcy of one of the participants, his responsibility by the obligations of the additional liability partnership must be distributed between the other members in proportion to their contributions, unless another order of distribution of the responsibility is not provided by the foundation documents
The additional copartners have the right:	• to participate in management of the partnership in order provided by the present Law and by the charter of the partnership; • to receive information about activity of the partnership and familiarize with accounting and other documentation of the partnership in order provided by the charter of the partnership; • to receive profit gained from activity of the partnership according to the present Law, foundation documents of the partnership and decisions of its general meeting; • to receive cost of the part of assets left after payments to its creditors, in case of liquidation of the partnership, or, under the agreement of all copartners, part of this assets in nature; • to terminate participation in partnership by disposal of the share in order provided by the present Law. The additional copartners have other rights provided by the present Law and by the foundation documents.
Charter Capital	Not be less than sum equivalent to hundred sizes of a monthly index on date of submission of the documents for state registration of the partnership.
Management organs	Supreme body of the partnership: the general meeting of the participants; Executive board of the partnership (sole or collegiate). The charter of the additional liability company can provide the creation of observation (supervisory council) and (or) controlling (revision commission, auditor) organs of the partnership. Competence of organs of the additional liability company, as well as method of adoption of the decision by them or action on behalf of the partnership must be defined by the present Law, other legislative acts and by charter of the partnership.

Foundation documents	The charter of the additional liability company is the document defining the legal status of the partnership as of the legal entity. The charter of the partnership must be considered as the foundation document for purpose of the state registration of the partnership. The charter of the additional liability company must contain: • company name, location and address of the partnership; • the list of the copartners with indication of their name, location, address, bank requisites (if the founder is the legal entity) or name, place of residence and requisites of the document certifying the personality (if the founder is the natural person); • information concerning the size of the charter capital of the partnership; • order of formation and competence of organs of the partnership; • conditions of reorganization and termination of the partnership. If the partnership is established by one person, the charter of such partnership must determine the order of formation of assets and distribution of profit. The charter can contain other provisions which must not contradict the legislation of the Republic of Kazakstan. The subject and purposes of activities of the partnership can be provided in the charter of the partnership. The charter must be affirmed by the general meeting of the founders unanimously and must be signed by all founders or their authorized representatives. The charter of partnership must be subject to notary certification. Copies of the charter of the partnership, as well as all documents related to its subsequent alternations, which have been notary certified, must be deposited in the organ which has carried out state registration of the partnership. All interested persons must have the right to familiarize with the charter of the partnership. The partnership must have right to carry out the activity on the basis of the Specific Charter of the additional liability company affirmed by Government of the Republic of Kazakstan. In such case submissions of the charter for purpose of state registration of the partnership are not required.

II-E Joint stock company

Indexes	**General characteristics**	**Specifications**	
		Open	**Closed**
Definition:	JSC - association, the charter capital of which is divided into definite quantity of stocks of equal nominal value. Members of a JSC are not responsible on their own property for its liabilities and have a property risk within the limits of their stocks' share.	Members can sell their shares without permission of the other members. Quantity of members is not limited.	Quantity of members can not exceed 50.
Foundation documents	A foundation contract. Statute. Other documents according to decision of members.		
Charter capital	Defines the minimal volume of the JSC property, which guarantees the debtees' interests. In case of reduction of the charter capital in the end of a fiscal year a JSC has to declare and register the reduction of the charter capital in the established legal way. Increase of the charter capital with the help of production of new shares might be arranged accordingly to the decision of 2/3 of the full assembly of the JSC members and has to be declared and registered.	Minimum 10.000 minimal wages	Mini-mum 5.000 mini-mal wages
Stocks	Stocks are securities, which certify the right of a stockholder on a share of the JSC property, delivering of the dividends and participation in the JSC management. A stock can not be shared even if it belongs to several stockholders. A JSC can issue inscribed stocks and stocks to bearer. Accordingly to the decision of the full members' assembly a JSC can issue senior stocks, which give the right of delivery of the guaranteed dividends irrespective of the JSC profit . Their holders do not have a vote in JSC. The cost of senior stocks can not top the sum of 25 % of the charter capital.		
Organs of a JSC	Supreme management organ: full assembly of the members. Observance organ: observant council. (not necessary if number of a JSC members doesn't exceed 500 people) Executive organ: board of directors. Controlling organ: audit commission.		

III Manufacture cooperative society (MCS)

Definition:	A voluntary society executing joint business, based on the personal participation of its members in the work and on unification of their property or assets. MCS is a commercial organization and a juridical entity.
Activity:	Any kind of business undertaking, not prohibited by the law. A license is necessary for some kinds of activity. The subject and purposes of the activity are defined by the members.
Foundation:	On the basis of a resolution of the constituent assembly. If one or several members are foreigners, the Decree about MCS can be applied taking into account the specifications, provided by the “Foreign investments” Law.
Foundation documents	Activity of a MCS has to be based on the Charter or Foundation Contract and Charter.
Prime capital and dues	Prime capital is formed by the property dues of members and is provided for the covering of the expenses on MCS foundation and organization of activity. The volume, terms and ways of dues payment are defined by the members. Every member of a MCS is given a document, which certifies the volume and kind of the paid fees.
Members	Not less than two. Any physical person older than 16 and able to participate in the work of MCS. Members of MCS have subsidiary responsibility for their society’s obligations
Organs of a manufacture cooperative society	Supreme organ: the general assembly of MCS. (in MCSes, which have more than 100 members, the functions of a supreme organ can be given accordingly to the Charter to the Assembly of the representatives). Observance organ: the observant council. Controlling organ: the audit commission. Executive organ: the board of directors and its chairman.
Funds	Charter capital: defined by the Charter of MCS. Reserve fund: formed by the annual profit deductions for the covering unforeseen expenses. Other necessary funds.
Profit	Is calculated in the end of a year. Distributed between the members according to their work if another procedure is not provided by the Charter of MCS.
Liquidation and reorganization	On the basis of the decision of the members of a MCS or in necessary according to the Civil Code.

Appendix 7.2

Kzylorda Territory Committee of State Property and Privatization - Resolution No. 161

Kzylorda, from June 25,1998

About privatization of exploitation and other organizations, which are under the control of Oblast CWR

According to State Privatization and Restructuring Program of state property in RK on 1996-1998 and Resolution of Department of State Property and Privatization from 08.06.98 № 317 ''About Privatization of water organizations and enterprises'' Territory Committee of State Property and State Property declines to:

1. Order to Basic branches of Manufacture and Joint Stock company Department (Serdalieva S.)

1.1 To make privatization of exploitation and other organizations under Oblast CWR except:

- Management Department of Kzylorda headworks;
- Management Department of Zhanadarya canals;
- Management Department of Kazalinsk headworks

(according to Resolution of Government of RK № 1273 from 21.08.97). Appointed organizations must not be privatized, but can be included in the balance of created JSC, with including to its Fund through agreement of Ministry of Agriculture CWR.

Stocks must be State Property., 51% of them will be given to CWR of Ministry of Agriculture.

1.2 Prepare draft of Contract with first chief on management of JSC.

1.3 Make restriction with mentioned structures of social sphere to balance of executive organs.

2. Order to head of Oblast CWR Mr. Kutzhanov:

2.1 Create the commission of privatization;

2.2 Define official worker responsible for preparation of questions and problems connected with privatization;

2.3 Define values and costs of property;

2.4 Make plan of privatization;

2.5 Make the statute of JSC and emission of securities.

3. Define that created JSC is receiver of property rights and responsible for exploitation and other organizations under subordinate to CWR.

4. Control for fulfillment of this resolution is put on Tarasenko- first vice of head of the Committee of State Property and Restructuring.

Head of Committee Kaliev

Appendix 7.3

Order from June 22, 1998 No. 48

According to the Program of privatization and State Property in RK on 1996-1998 and Resolution of the Department of Sate Property and Privatization of Ministry of Finance from June 8,1998 № ''About privatization of water organs and enterprises''

Order:

1. Heads of Oblast CWR with Territory Committees of State property and Privatization must organize commissions on privatization for creation of JSC on the basis of water organs and enterprises.
2. Commission must value property, make privatization plan and Statute of JSC and give to the Territorial Committee of State Property or CWR.
3. Exclude objects which must not be privatized, according o the Resolution of the Government of RK from 21.08.97 №1273.
4. Remember that coordination of activity of water management systems 51% of shares of new JSC must be State Property and given to CWR.

Vice head Ryabtsev

Appendix 7.4

List of Water Management Structures under State Ownership of the Kzylorda Oblast CWR and not Subject to Privatization

#	Nomination of operating organizations and water management structures
Zhanakorgan BAS	
1	Sumagar main canal
2	Musakhanov main canal
3	Taynakol main canal
4	Kandyaral main canal
5	Sunakata main canal
6	main drain K-I
7	main drain K-2
8	Besaryk reservoir
9	Moveable Pumping Station # 07 (Shoktaral)
10	Moveable Pumping Station # 13 (Kayndyaral)
11	Zhidely reservoir
Kzylorda BAS	
1	Zhanarik main canal
2	Kzylorda right bank main canal
Shiely BAS	
1	Novoshiely main canal
2	Zadarya main canal
3	Main drain K-I
4	Main drain K-3
5	Main drain K-4
6	Main drain K-9
7	Main drain Nanoie
8	Novosolotubinsk main drain
9	Pumping station -70
Zhanadarya canals administration	
1	Botabai main canal
2	Irrigation, water supply Zhanadarya canal
3	Irrigation, water supply Kuvan-darya canal
4	Koksu main drain
5	Southern main drain
6	Northern main drain
7	Moveable Pumping Station #47

Kzylorda headworks	
1	Kzylorda Left-bank canal
2	Kzylorda headworks
3	Main Right-bank canal
Syrdarya BAS	
1	Aitek main canal
2	Aitek Spillway dam
3	Main drain K-12
4	Main canal Zhetykul- Zharma
Zhalagash BAS	
1	Main drain K-16
2	Main drain SK-15G
3	Main Left bank canal
Karmakchi BAS	
1	BKK Main drain
2	ZKK main drain
3	Kashkanou main drain
4	OK-1 main drain
5	Moveable pumping station -11/8
6	Right bank main canal
7	Kuraily main canal
Kazalinsk BAS	
1	Kazalinsk left-bank main canal
2	Kazalinsk right -bank main canal
3	Baskyra main canal
4	Main drain K-2
5	Main drain K-2-1
6	Main drain K-22
Kazalinsk headworks	
1	Kazalinsk headworks
Aralsk Manufacture Exploitation Administration	
1	Basykara Main canal

Appendix 7.5

List of Water Management Structures Serving the Project Area which are under State Ownership of the South-Kazakstan CWR and are not Subject to Privatization

#	Nomination of operating organizations and water management structures	Supplying rayon
Kzylkum BAS		
1	Kzylkum main canal from Shardara reservoir with head structures in offtakes and gauging stations	Syrdarya, Issyk,Otrar
2	Main drain spilling network:	
3	East main drain, I turn	Zhanadarya
4	East main drain, II turn	Zhanadarya
5	West water spilling structure	Zhanadarya
6	Main drain IV-K-24	Zhanadarya
7	Administrative building and industrial premises in Zhardara town.	
Administration for Arys-Turkestan canal and Bugun reservoir operation		
1	Bugun reservoir: Karasnan dam water intake headworks on the Arys River, Arys main canal, reservoir dam with outlet, Karazhantak dam, administrative building and industrial premises.	Ordabas, Turkestan, Otrar, Baidybek, Arys
2	Turkestan main canal with all structures, gauging stations, industrial premises and living accommodations	Aldabas, Baidibek, Otrar, Turkestan
Shaulder BAS		
1	Shaulder dam water intake headworks on the Arys River with head structure and gauging station of Shaulder Main canal	Otrar
2	Syrdarya-Arys supplying canal with a floating pump station	Otrar
3	Head structure with gauging station of Kok-Mardan Main canal from the Arys River	Otrar
4	Head structure with gauging station of Sumagat Main canal from the Syrdarya River	Otrar
5	Administrative building in the Shaulder Village	Otrar