

## **2.6 Institutional Framework for Water Supply and Financial Status of Water Supply Utilities**

### **2.6.1 Institutional Framework**

#### **(1) Institutional Aspects at the National Level**

##### **1) General**

The administration of the water supply and sewerage sector, except for Capital Chisinau, in a broad sense, comes under the jurisdiction of the Ministry of Environment, Construction and Territorial Development (MECTD). The sector administration used to be the responsibility of the former Ministry of Public Utilities and Communal Services. At the time of the latter's restructuring in 1996, the function of the sector administration was transferred to the MECTD and the newly established State Water Resources Management Concern "Apele Moldovei" (hereinafter referred to as Apele Modovei). The water utility of (Capital) Chisinau City is owned by the Apa Canal Chisinau, an independent and self-supporting entity, and administered by the city under the supervision of the Cabinet of Ministers.

The MECTD thus assumes to be an administrative and policy-making body, among other things, in the water supply and sewerage sector at the national level. However, there is no department and sections in the ministry which chiefly handles the sector administration. At the time of this Study the ministry was taking steps to create a new department for the sector administration. Apele Modovei, which is directly in charge of the Cabinet of Ministers, is responsible, among other things, for licensing of water supply utilities in terms of water rights to be used by the utilities. In respect to water right, The National Geological Direction and the Ecological Inspection also issue licenses in the use of water for other uses than drinking water supply.

Apele Modovei undertakes the technical part of sector administration for water supply, sewerage, irrigation, flood control, etc. Apele Modovei carries out, inter alia, planning, design, procurement, construction supervision of water supply and sewerage projects in Moldova except for Capital Chisinau. It also provides long-term development plans and design criteria for the respective sectors. The President of Apele Modovei is currently not appointed by the MECTD but the Ministry of Agriculture and Food Industry (MAFI).

Apele Modovei drafts laws and government ordinances related to, among other things, the water supply and sewerage sector, which are then submitted to the Cabinet of Ministers for their enactment.

The first national water supply and sewerage development master plan was provided in 1991 for the design horizon (year) of 2005. The plan is presently being revised by the Water Resources

Management System Design Institute "ACVAPROIECT" under a contract with Apele Modovei for the design year of 2015. The revision work is scheduled to be completed in 2002.

After the independence of the Republic of Moldova, the government announced that all the water supplies should be run on themselves institutionally and financially.

There is no administrative mechanism at the county level for the water supply and sewerage sector in Moldova. Licensing of new and altered water utilities within the counties is not the responsibility of counties however the utility is small. However, the governors of the two counties meet to discuss such an issue as the status of Apa Canal Soroca-Balti (ACSB) since its customers (retailers) situated in respective counties.

## 2) Apele Modovei

### (i) General

Apele Modovei is the central and unique water resources management body of Moldova under the Government decrees No. 678 - October 6, 1995 and No. 317 - June 10, 1996. Apele Modovei declared its complete independence from the government on 6 August 2001. Apele Modovei, a judicial person, has its own operational accounts, bank accounts, trade name and registered brands. It operates state properties within the jurisdiction defined by the Ministry of Economy.

Apele Modovei is in general responsible for the administration of the exploitation of water resources (surface or ground), the operation of national properties related to the use and preservation of water; and the protection of land and properties from floods and erosion.

### (ii) Operation

Apele Modovei elaborates, checks and approves construction and rehabilitation projects for water resources management, irrigation, water supply, sewerage and so forth.

Apele Modovei is headed by a President, and there are two vice presidents. One of them is First Vice President cum Chief Engineer, under whom Deputy Chief Engineer, five section chiefs and a legal advisor are incumbent (See Figure 2.6.1). The First Deputy President cum Chief Engineer also supervises 11 DAPREs (District Association for Production, Repair and Exploitation). The total staff size of Apele Modovei is 46. President also supervises the Main Branch Calculate Center. The Associations "Ameliorares", formerly being components of Apele Modovei, have been privatized. The staff size of "Ameliorares" is 343. The main function of Ameliorares is the maintenance of state-owned irrigation facilities. As Apele Modovei is at present in the process of transformation,

the functions and job description of each department and section are underdeveloped and not well defined. Likewise, there are no written job descriptions specifically for the administration of the water supply sector to be used by the section in charge of water supply.

(iii) Financial Status

The Apele Modovei's assets consist of state properties (fixed and current assets, plus the non-material assets), totaling 6,393,548 lei as of 1 April 1996. Despite the above-declared independence from the government, Apele Modovei is still actually a budget organization. However, it also earns, if not sufficient, income from fees from planning, design, procurement, construction supervision works and rents from real estates. Apele Modovei, within the power vested in by the Department of Privatization, operates and maintains state-owned properties; and proposes the formation of a joint-stock company to would-be stakeholders for the ownership and operation of such properties.

3) DAPREs

There are 11 DAPREs under Apele Modovei. DAPREs operate the state-owned hydraulic facilities including irrigation and flood control installations, provide maintenance and repair services of such installations in the respective districts. The operational expenses of DAPREs are met by budget allocations from the government. The total staff size of DAPREs as a whole is 1,780.

4) ACVAPROIECT

The Water Resources Management System Design Institute "ACVAPROIECT" (hereinafter referred to as ACVAPROIECT), under contracts with Apele Modovei on a project-to-project basis, carries out planning, design, procurement and construction supervision works in the fields of water supply, sewerage, irrigation, flood control, etc. Although Apele Modovei, under its statute, assumes its responsibility to provide such works, it actually lets them over to ACVAPROIECT. ACVAPROIECT also works for other agencies than Apele Modovei on a contract basis.

ACVAPROIECT is headed by the General Manager, who directs five departments, one technical council, and four task units (See Figure 2.6.2). Its total staff size is 262.

ACVAPROIECT, under a contract with Apele Modovei, is providing national development plans in water resources sector and undertakes field level works for water supply and sewerage and other sectors related to water resources and their use. Its tasks consist of, among other things, (1) preparation of a national long-term development plan for the sector; (2) planning and design of major water supply and/or sewerage projects; (3) preparation of bidding documents of such a project, and evaluation of bids; (4) construction supervision of such a project; (5) initial operation of the

completed facilities, and the transfer of the property to the incumbent municipality or judicial body as the owner, and (6) renting out of its real estate.

#### 5) Drinking Water Quality Standards

The present standards (GOST 2874-82) were provided under the Soviet regime. In Moldova, Apele Modovei, the MECTD and the Ministry of Health are at present in the process of revising the standards. The new standards will be categorized as those of Moldovan National Standards.

### (2) Status of the Sector at the Local Level

#### 1) General

Almost all of Apa Canals (water supply utilities) are owned by respective municipalities. The majority of them are retail water suppliers while, like ACSB, a few of them are bulk (wholesale) water supply utilities. Despite the policy of the government that all the public utilities should be self-dependent in institutional and financial terms, only a few of them are organized as such, especially in the water supply sector, including ACSB and Apa Canal Chisinau.

Major challenges facing water utilities in Moldova are institutional weakness and financial difficulties. At the time of Soviet Regime, water utilities' responsibility was simply to produce and distribute water to the citizens. The cost of such operation was met with budget allocations from the government. Cost recovery of the operation was someone else's matter. The government charged water tariffs to the citizens, and collected them via housing departments in each city as part of charges for public utility services such as water, heating, sewer system and garbage collection and disposal. As a result, water supply utilities never had the concept of running their operation as a business. Besides, such a law as the local public utilities law is non-existent, which would assure them of their right to set and use tariffs so as to make their operation profitable. Such background significantly influences the programming and implementation of institutional reform in the sector at the local level as well as the national level.

As to the financial hardship of Apa Canals, they lacked a fundamental principle how to set the water rate so that they would become financially viable when they were forced to go self-reliant, namely, with no subsidies any more, by the government after the independence of Moldova. Since then, the historical water rates were set not based on financial projections, in which the operation of Apa Canals would have been proved financially viable for the foreseeable future. In effect, water rates have never been sufficient to recover the cost of operation. As influenced by the custom prevailing in the former regime, the water rate for non-domestic users has been set as high as ten times the

domestic users to partially make up the low revenue from the latter. Hence the non-domestic users used to contribute more to the utility's revenue than domestic users.

On the part of domestic users, since the Soviet era, they take it for granted that drinking water should be provided to them almost for free. To make the situation worse, the household income have been diminishing, which has brought many defaulters among the domestic users. Moreover, significant part of non-domestic users also has become defaulters in payment of water charges. Some non-domestic users have resorted to their own wells for water to evade the high water tariff. Non-domestic defaulters and evasion from using the public water supply has given heavier impact on the financial operation of the water utilities than domestic users. Thus, unlike before, the system of cross subsidy from non-domestic users to domestic users is now not working. Another reason for the much less revenue than before to the water utilities is the decline in water demand, which is chiefly caused by the shrinking number of industries as water users due to their liquidation and the reduced average water consumption by the industries due to the fewer production lines and fewer operating hours than before.

As to the typical domestic water rate (e.g., 1.44 Lei /m<sup>3</sup> currently used by Apa Canal Balti) used to be low compared with the average household income. However, as the household income in general decreasing due to the shrinking economy, the water charges as percent of the disposable household income is rising.

Whenever the water rate is to be raised, there is strong resistance from the consumers. Therefore, directors of Apa Canals, who are normally appointed by the city council, and city mayors are reluctant to propose water rate hikes to respective city assemblies. This is a typical and difficult institutional problem in Moldova as well as other CIS countries.

Apa Canal Chisinau is in the best position in Moldova in terms of operational and financial performance as it serves a very large population, of which income level is significantly higher than the national average, and as a number of large profitable commercial and industrial users are included in its customers. As the Chisinau's users can afford a higher water rate, Apa Canal Chisinau realized 32% tariff increase in 2000.

Like water utilities in other cities in Moldova, Apa Canal Chisinau first applies a request for water rate hikes to City Mayor; he proposes it to the City Assembly; the Assembly vests its consideration in its special committee; after a recommendation has been made by the committee, the Assembly deliberates the proposal; and the Mayor executes the rate hike according to the Assembly's resolution.

Apa Canal Chisinau has been undertaking a large water supply rehabilitation project under EBRD's financing. Since Apa Canal Chisinau possesses an autonomous status, the project was formulated and is being implemented by its own initiative in cooperation with the project implementation committee, which consists of representatives from Apa Canal Chisinau, Chisinau City and the Bank.

Apa Canals including Apa Canal Chisinau typically employ a system of intermediaries (the community service unions), who collect water charges from houses, irrespective of apartment houses or individual houses, and pay them to Apa Canal in accordance with readings of the block meter installed to record the total water flow to the above houses. Although this system has an advantage of saving the cost (to the respective water utilities) of water charges collection, it is practicably difficult to cut water service to the entire group of houses even if only small part of houses fail to pay the water bills.

In Moldova, sewer service charges are collected together with water charges. However, gas, power and garbage charges are collected on separate bills. Telephone charges are paid by the owner of the telephone directly to the telephone company. The charges for the heating and hot water supply are collected by the intermediaries and paid to the heat service company.

The performance and prospect of other Apa Canals tend to decline as their size diminishes. As for tariff increase, for example, Apa Canal Chisinau can operationally sustain for itself with a tariff increase affordable to its customers even without subsidies from Chisinau City. In contrast, Apa Canals in other small cities/towns including Falesti and Riscani cannot keep going without a subsidy from the respective cities/towns since it is impossible to recover all the cost by a rate affordable to the consumers.

## 2) Apa Canal Soroca-Balti

Apa Canal Soroca-Balti (ACSB) was formed in 1984 as a wholesale state enterprise for water supply to Soroca and Balti Cities. As a result of the restructuring of the sector administration, it became a joint-stock company in 1998 in light of the Joint-Stock Company Law. It is rather independent, and does not directly come under the administration of the MECTD or Apele Modovei. As to the ownership of the ACSB's property and corporate representation, there have been disputes between the Counties of Soroca and Balti. The two counties are at present negotiating for their solution.

The main body (excerpts) of the statute of ACSB is as follows:

As general provisions, the enterprise is named "The Joint-Stock Venture Soroca-Balti Pipeline", established under the Law on Joint-Stock Enterprises, the Law on Privatization Program for

1997-1998, the Stock Exchange Law, and other legal norms. The Scope of Existence is defined as the generation of permanent profits; and the types of activities include intake, treatment and transportation of potable water to the municipalities of Balti, Soroca and others in the Soroca and Balti Counties. It is clearly assumed that all activities are performed on the principle of self-financing and self-administration. The supreme decision-making organ of ACSB is the General Assembly of shareholders. The ACSB is operated under the administration of Director, who reports to the General Assembly, and his staff. The performance of ACSB is audited by the Censor.

As for the organizational structure of ACSB, there are five senior staff members under Director, namely, (1) Chief Engineer, (2) Personnel Manager, (3) Labor Safety Engineer, (4) Lawyer, and (5) Chief Accountant. Chief Engineer supervises chiefs of (a) Boiler house, (b)Garage, (c)Laboratory, (d)Filtration Plant, (e) Pumping Stations, (f) Electric Works, (g) Water Dispatch, (h) Logistics, and (i) Shiftsmen (See Figure 2.6.3).

The main staff members by function (in the order of salary scale as well) of ACSB are as follows:

1. Director General
2. Chief Engineer
3. Chief Accountant
4. Chief of Electrical Works
5. Chief Pump Operator
6. Chief Filtration Plant Operator
7. Laboratory Chief
8. Deputy Chief, Electric Works
9. Deputy Chief, Chemical Treatment
10. Deputy Chief, Filtration Plant
11. Shift men (1) and (2)
12. Biologist
13. Bacteriologist
14. Legal Advisor
15. Accountant, etc.

The organizational structure of ACSB is complex and rather underdeveloped from the market economy point of view.

Financial assets of the ACSB consist of resources generated as a result of sales of goods produced, services rendered, sales of fixed assets, rents, contributions of stakeholders and third parties, issues and distribution of shares.

Statutory Fund of the ACSB is stated at 70,850,287 lei. The nominal number of shares is 2,361,676 to be issued at 30 lei per share. The ACSB may issue non-material shares in the form of inscriptions to the analytic accounts of shareholders or nominal holders in the registry of ACSB's shareholders.

The very major problem facing ACSB is insufficient and unstable revenue (See Section 2.6.2). The sole reason for this situation stems from a large amount of unpaid water bills for its customers, namely, Apa Canal Soroca (ACS) and Apa Canal Balti (ACB). Although the wholesale agreement between ACSB and ACS and ACB sets forth the basic conditions of sale, e.g., the period of the contract, price and the disposition in the case of failure due to uncontrollable situation such as power failure, it does not state the minimum quantity of water the customers are obliged to receive under any circumstances.

The present institutional status of ACSB is very weak. Due to the long-lasting suspension of its operation, it has laid off a large portion of its staff (total 169), and, as a result, the outstanding number of staff members, who are always available, is only 22. Although ACSB assures that all the necessary staff can be available in a short notice, it is afraid that some of principal technical staff may have left ACSB for good for a new job elsewhere when in need.

Although the above statute sets forth that ACSB stands as a joint-stock corporation, stocks have never been issued. There is no actual future schedule for ACSB to do so. Likewise, the General Assembly of stakeholders has never been held.

The statute sets forth a number of rights, duties and responsibilities of the ACSB and the stakeholders. In an advanced market-rule economy most of such aspects can be covered by related laws, and there will be no need to state all of them in the statute. It is impracticable, and rather impossible, for a company statute to cover every thing.

ACSB has been selling water to its customers, namely, at present, ACB and ACS at a tariff considerably lower than the actual cost. There is lack of a legislative provision, which guarantees the establishment of viable mutual business relationship, namely, the cost recovery principle, between ACSB and its customers.

There is neither system of human resources development working within ACSB nor at the national level in the sector.

As to the maintenance of facilities, ACSB has the typical problem like other water utilities in the sector. All facilities in the pumping stations and the water treatment plant look very old as the surface of their steel components is rusted, and some parts are broken after the use only for 17 years.



Some units in a battery, e.g., pumps and filters, have been derailed because of malfunction. ACSB has no written manuals for the maintenance of equipment. The functions to be performed by respective divisions and sections of ACSB are not clearly defined. The existence of job descriptions of principal staff members including maintenance staff is unknown. There have been no practices of preventive maintenance, facility function evaluation, and planned facility replacement. As a result, there is no clear chronological record of maintenance as well as the inventory of facilities, equipment and spare parts. There is lack of the procurement system of materials to be used for facility maintenance.

### 3) Apa Canal Balti

Apa Canal Balti (ACB) is a publicly owned enterprise, but not a joint-stock corporation. The head of the organization is Director, who supervises (1) Chief Engineer, (2) Deputy Director, (3) Personnel Manager, (4) Chief Accountant, (5) Customer Manager, and (6) Planning Manager (See Figure 2.6.4). Chief Engineer directs (a) Distribution Network Section, (b) Sewer Network Sec., (c) Wastewater Treatment Plants, (d) Pumping Stations, (e) Mechanical Maintenance Sec., (f) Electrical Engineering Sec., (g) Civil Protection Sec., (h) Security Engineering Sec. (i) Logistics and Supplies Sec. (j) Main laboratory, etc. Deputy Director takes charge of Garage, Metering Sec., and Construction and Repair Sec. The total staff size is 437 persons.

The major issue with the organization of ACB is its complex structure. For example, there are too many sections and job units directly placed under Director. Likewise Chief Engineer has too many subsections to supervise directly

ACB owns groundwater supply facilities in addition to those for receiving water to be supplied from ACSB, which are to be used when the water from ACSB is unavailable. Some of production wells are out of commission due to insufficient yields, broken well pumps or unsatisfactory water quality. The maintenance of those facilities is definitely insufficient mainly because of shortage in financial resources. If the duration of the suspension of wholesale water supply is prolonged, during which groundwater facilities are used, the switching from groundwater to wholesale water is highly costly to ACB when the wholesale water supply becomes available again.

### 4) Apa Canal Soroca

The institutional status of Apa Canal Soroca (ACS) is identical to that of ACB. The staff size is 119 persons. ACS also owns groundwater supply facilities in addition to those for receiving water from ACSB. The condition related to maintenance is virtually the same as for ACB.

#### 5) Apa Canal Falesti

The institutional status of Apa Canal Falesti (ACF) is identical to that of ACB. The staff size is 63 persons. ACF owns groundwater supply facilities. The maintenance of facilities is inadequate for the same reason as ACS. The quality of source water is markedly bad due to high contents of fluorides and ammonia. Although the director of ACF and his staff know this problem, no other means are available. They eagerly hope that the forthcoming project would include ACF among its retailers.

There is an unfinished surface water supply facility in Falesti, of which construction was initiated in the Soviet era, but suspended after the independence of Moldova. The facilities have never been completed. Besides, the ownership of the facility is not definitely defined. The economic rehabilitation of the facility appears doubtful (See Section 2.5.1).

#### 6) Apa Canal Riscani

The institutional status of Apa Canal Riscani (ACR) is identical to that of ACF. The staff size is 75 persons. ACR owns groundwater supply facilities. The maintenance of facilities is inadequate for the same reason as ACF. They have the same problem in water quality as ACF. They also ardently hope to receive water from the forthcoming project.

There is also an unfinished surface water supply facility in Riscani under the same situation as that in Falesti. The economic rehabilitation of the facility appears doubtful (See Section 2.5.2).

#### 7) Financing

Major development projects in the water supply sector are in general financed by the government for approximately 80 % of the total cost, and the rest by the respective recipient municipalities and respective Apa Canals. There is no established system of sector financing by private funding facilities.

#### 8) Consultants

Professional engineering consultants are actually non-existent. There are some professionals employed by a certain organization together with expatriate consultants or domestic organizations such as ACVAPROIECT on ad hoc basis.

## 9) Contractors

The construction industry in Moldova is rather underdeveloped. There are no local contractors, which can be classified as "major" contractors for undertaking large-scale civil works including water supply and sewerage projects as well as architectural constructions.

### (3) Legislative Aspects at the National Level

#### 1) General

For the rational administration of the water supply sector, there must be certain legislative provisions. Principal legislative requirements shall consist of, but not necessarily limited to, the following:

1. Water law
2. Public utilities law
3. Local governments law
4. Local finance law
5. Value Added Tax law
6. Law on the financing corporation for public utilities
7. Local government officials law
8. Labor union law
9. Labor standards law
10. Labor safety and sanitation law
11. Building code law
12. Environmental Protection Law
13. Water Pollution Protection Law
14. Land Acquisition law
15. River and lake law, etc.

#### 2) Legislative Provisions for the Sector in Moldova

Legislative provisions of Moldova related to the water supply and sewerage sector mainly consist of the following:

##### (a) Laws and ordinances related to water supply

1. Water Act [Code of Water] (date of enactment: June 1993),
2. Law on Potable Water (No. 272, February 1999),
3. Decree on the Formation and Management of Public Utilities (No. 530: June 2000),

4. Law on Joint-Stock Companies (No. 1134-XIII, April 1997)
5. Law on State Enterprises (No. 146-XIII, June 1994)
6. Ordinance for the Approval of Water Tariff (November 1999),
7. Resolution on state sanitary-epidemiological control,
8. Ordinance for the approval of the water tariff, etc.

The Water Act ("Act" and "code" are interchangeably used in Moldova) sets forth mainly the following:

- a) to ensure the rational use of water for the needs of the population and the national economy,
- b) to protect water against pollution and exhaustion,
- c) to prevent and liquidate destructive effects of water,
- d) to improve the condition of water installations and their preservation for present and future generations,
- e) to protect the rights of physical and juridical persons,
- f) to strengthen the legal framework of water relations.

The Water Act also stipulates the following aspects:

- i) the rights and obligations of beneficiaries of water use,
- ii) the causes and procedure of ceasing the right of water use,
- iii) the domains of use of water installations.

Although the title of "Decree on the Formation and Management of Public Utilities" has been identified by the counterpart of the Study Team, the contents of the decree are unknown. The existence of a local governments law and a building standards law is unknown.

(b) Laws and ordinances related to sewerage and environmental protection

1. Law on Natural Resources
2. Law on Environmental Protection
3. Law on Sanitary Epidemiological Protection of Population
4. Law on Elements of Town Planning and Territorial Development
5. Law on natural state protection zones and belts
6. Law on Ecological Expertise and Environmental Impact Assessment
7. Law on Air Pollution
8. Law on Industrial and Domestic Wastes

9. Law on Renewable Material Resources
10. Law on Taxes on Environmental Pollution
11. Law on Regime of Dangerous Products and Substances
12. Rules for the Protection of Surface Waters against Pollution

The existence of legislative provisions on (1) local governments, (2) local finance, (3) financing corporations, and (4) building code has yet to be identified.

#### **(4) Issues**

##### **1) Institutional Issues**

There is lack of a functional administrative structure at the national level in the water supply and sewerage sector. The MECTD is apparently responsible for the administration of the activities related to, inter alia, the sector at the national level. Apele Modovei is said to be responsible for the administration of the sector in respect to technical matter. Such demarcation, however, is unclear. The above Ministry, however, embodies no specific department and section, which handle national policy matter and legislative provisions (as of 1 October 2001).

Although it has been advised by the Ministry that it will create a new department (division?), which is responsible for the administration of the Moldova's water supply and sewerage sector, details have yet to be provided. Although Apele Modovei is the licensing agency, there is no established rule for a new water utility on what procedure and conditions it can have a license and start its business. The requirements such as delineation of service area, population served, type of water source, water demand, method of water treatment, and description of water transmission and distribution facilities for such licensing are not clearly defined.

There is no information on how a new, rehabilitation or expansion project of water supply is to be financed for (1) foreign exchange cost component, and (2) local currency cost component, respectively. There must be a rule how to finance the local currency component of the project cost as the remainder after obtaining a foreign loan or grant. For planning, design, construction and operation of water supply and sewerage projects, there must be technical guidelines such as design criteria and a standard operation and maintenance manual to be provided at the national level.

While the MECTD and Apel Moldovei are expected to handle all procedures of licensing and monitoring of water utilities, there is no administrative system of water utilities at the country level.

At the local level, despite the general policy of the government, which requires all the public utilities, including water supply, to be self-sufficient in institutional and financial terms, only a few water

supply utilities are reorganized as joint-stock companies; and all others remain as municipality-owned entities. Even those which have been transformed to joint-stock companies in general fall short to be self-sufficient except for Capital Chisinau. They are financially weak and institutionally underdeveloped in light of market economy. Rational rules of rate-making is non-existent both at national and local levels. The irrationally low domestic water rate and steep cross subsidy from industrial and commercial users to domestic users promote the lack of obligation-to-pay sense and neglect of water wastage and losses (leakage).

One of major issues in the water supply sector as a whole is the serious financial deficiency. Major reasons are (1) backspread and low water rates, (2) low rate of water charge collection, (3) leakage and wastage of water, (4) poor quality of service (water quantity, quality and service pressure), which lead to low willingness-to-pay of customers, and (5) redundant and inefficient personnel. One cause of the low water charge collection rate is grossly insufficient customer metering. Another cause is the conceptual lack of obligation to pay of consumers which had been habitually acquired by people under the Soviet regime. Due to the recession water sales to the non-domestic users has been largely reduced; and there are a large amount of water bills in arrear or remaining as bad debt.

In particular, although ACSB has been transformed to be a joint-stock company, its institutional and financial bases are very weak. First of all, its ownership is unstable as it has been disputed among the Counties of Sorooca and Balti. Its organizational structure is complex, but premature and inefficient from the market economy point of view. While it cannot obtain subsidies from the government to make up deficits, it lacks firm legislative foundation to establish a water rate, which makes it financially viable. The statute of ACSB lacks an article related to the composition, function and authority of the board of directors. The board of directors shall, under the General Assembly, be responsible for important decision-making in operation. The Director is to be one of members of the board. Moreover, the organization structure of ACSB is premature and inadequate as a joint-stock company while it is quite complex.

The water utilities under this Study, namely, Apa Canal Sorooca, Apa Canal Balti, especially Apa Canal Falesti and Apa Canal Riscani are also suffering from serious financial problems. They also have complex, but immature organizational systems to do water supply business based on the market economy principles. Financial difficulties of Apa Canals are partially brought as the result of the low rate of water bill collection, which may be caused by the deficiency of the organization of Apa Canals. Like ACSB, the organization structures of the above Apa Canals are premature and inadequate as a public utility enterprise, even if publicly owned, while they are quite complex.

## 2) Legislative issues

The legislative provisions of Moldova are inadequate. There are two general laws on water supply: (a) Water Act [Code of Water], and (b) Law on Potable Water. Although the details are not known, some parts of them are redundant and some other parts are contradictory to each other. The Water Act does not set forth the administrative and technical requirements for licensing new or altered water utilities. There are no provisions of a public utilities law, local finance law, law on the protection of water sources, etc. which are required for enhancing the performance, obligation and protection of water utilities. There must be a law, which stipulates the general rule for the financing of a new or rehabilitation water supply project. Water utilities lack legal base for reasonable cost recovery due to the absence of public utilities law.

As the general technical standards, GOST also applies to water supply. Since most parts of GOST were developed in the 1970s, some of them are already obsolete and in need of demolition, alteration, upgrading, or substitution with ones which have been in use in the western world in light of the forthcoming new era when the water supply sector of Moldova would receive goods and technologies from there.

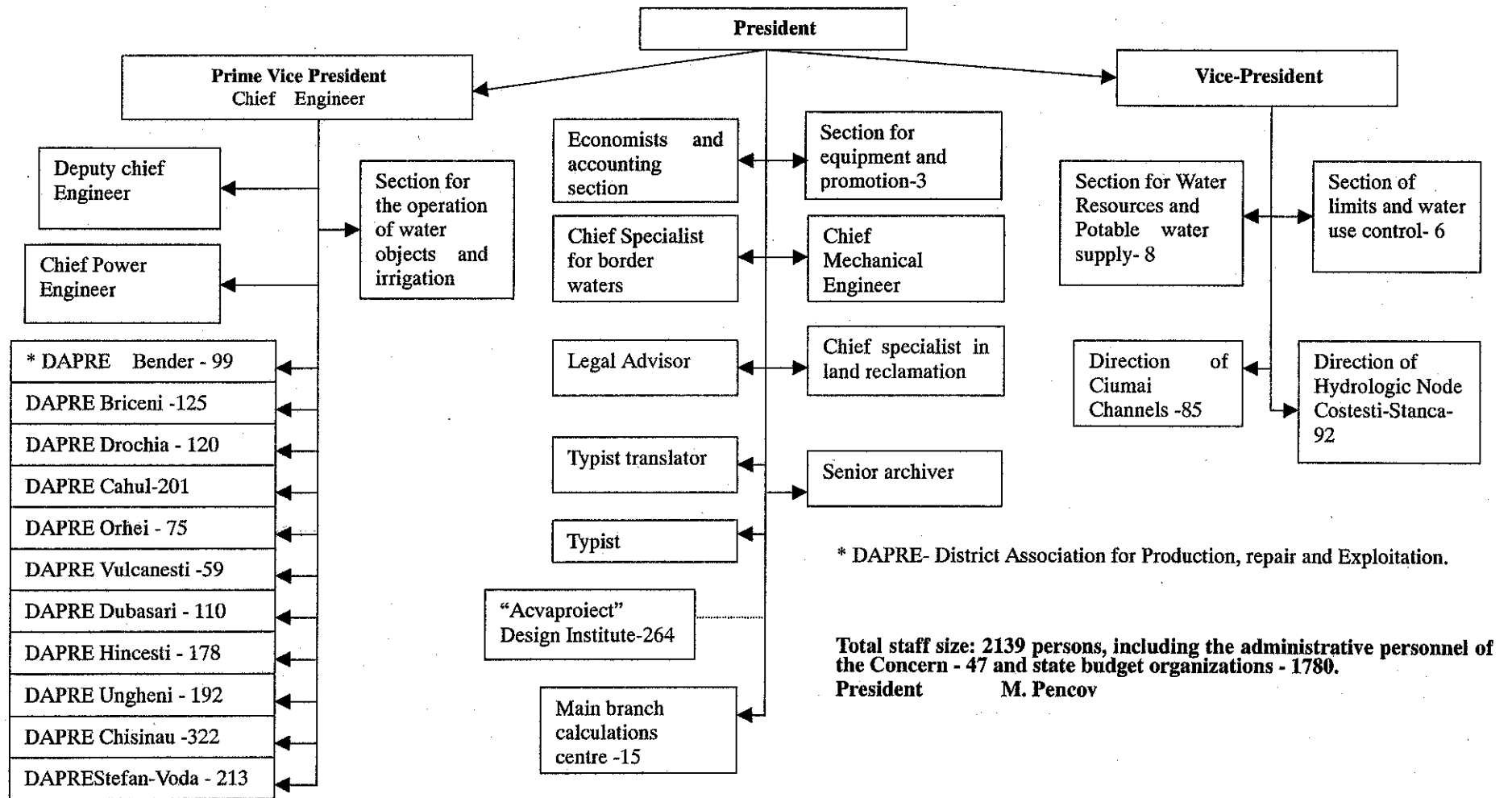


Figure 2.6.1 Organizational Structure of Republic Concern "Apele Moldovei" Since 1<sup>st</sup> January 2001



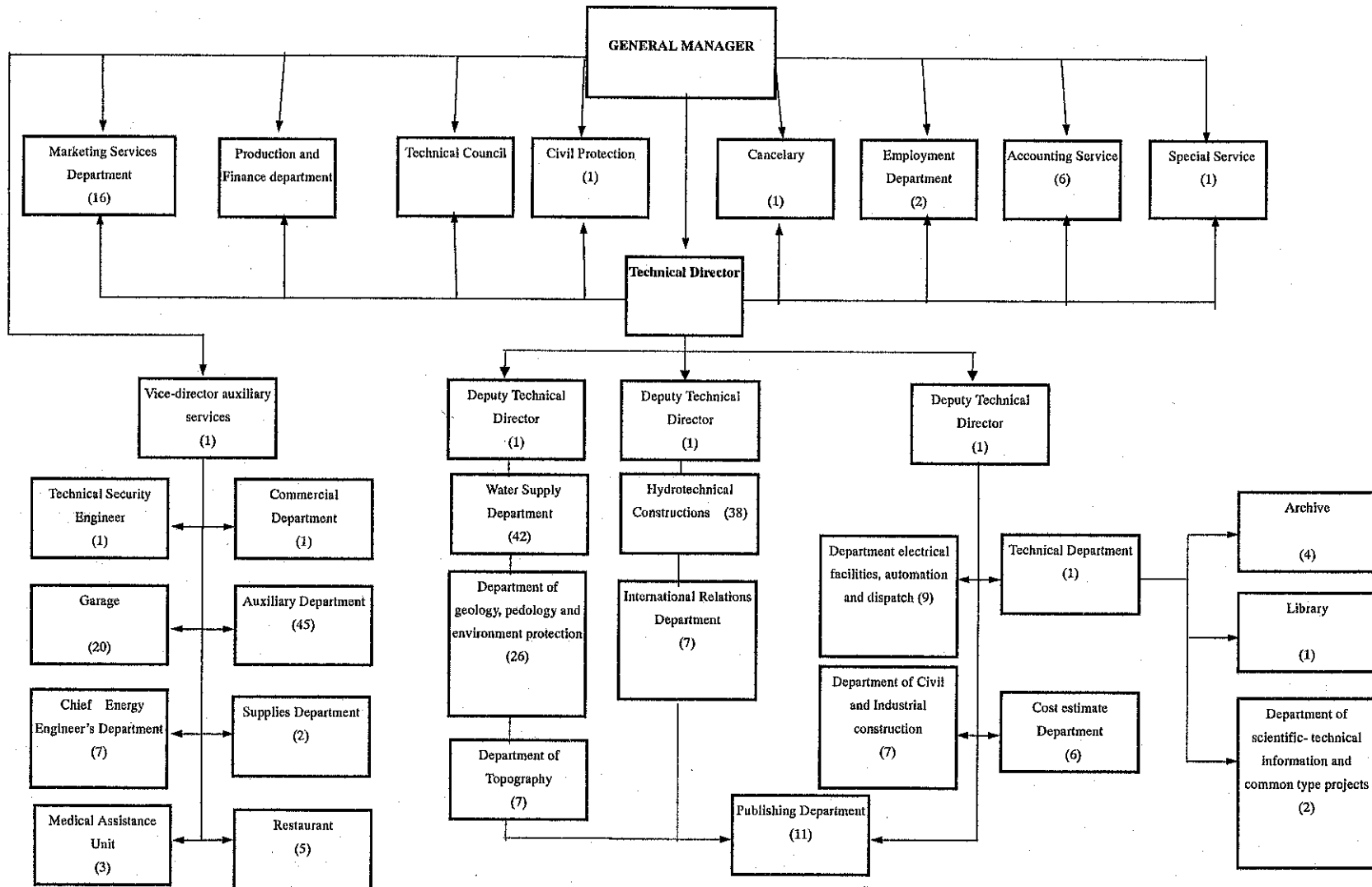


Figure 2.6.2 Organization Chart of Acvaproiect

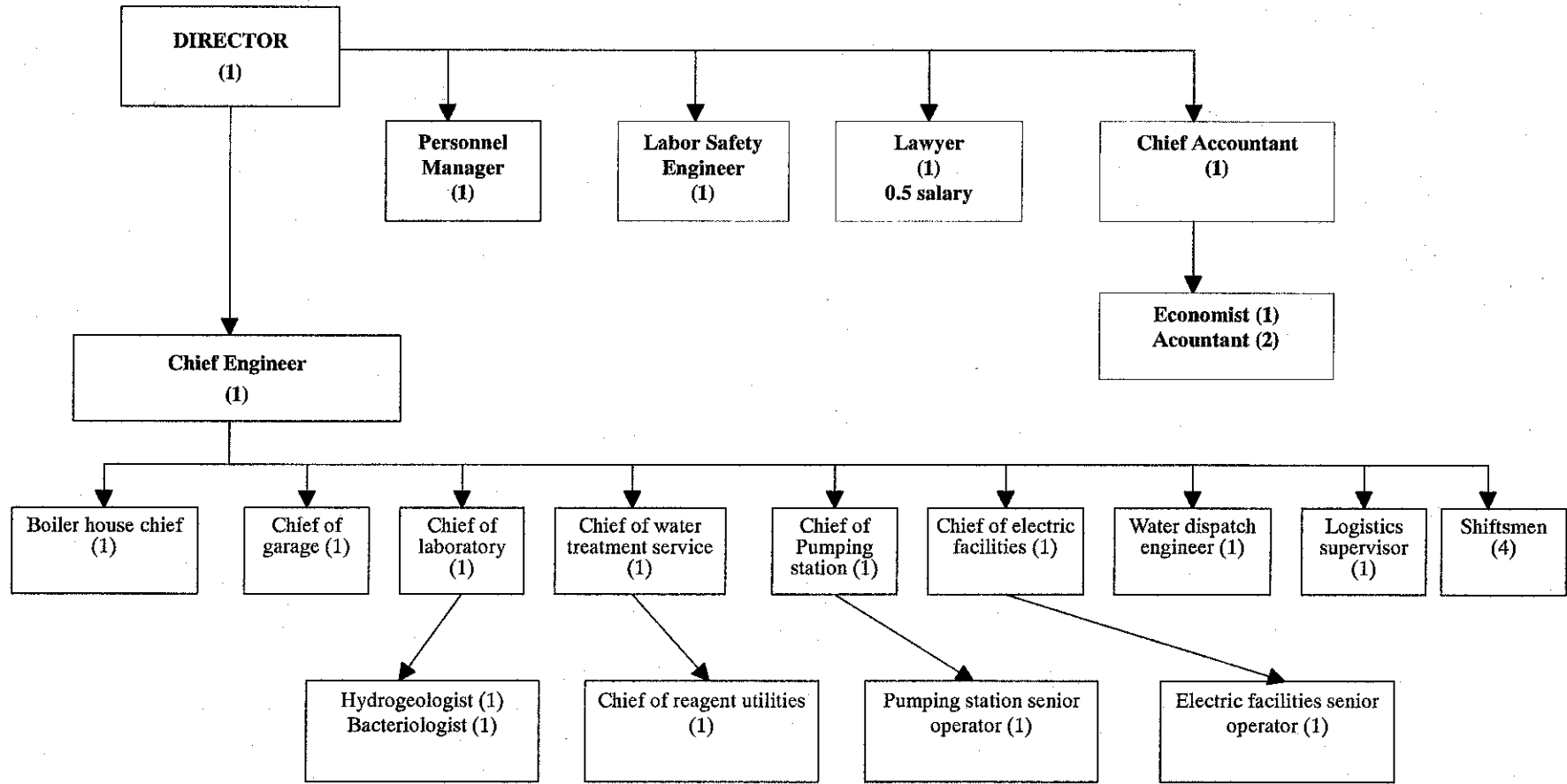
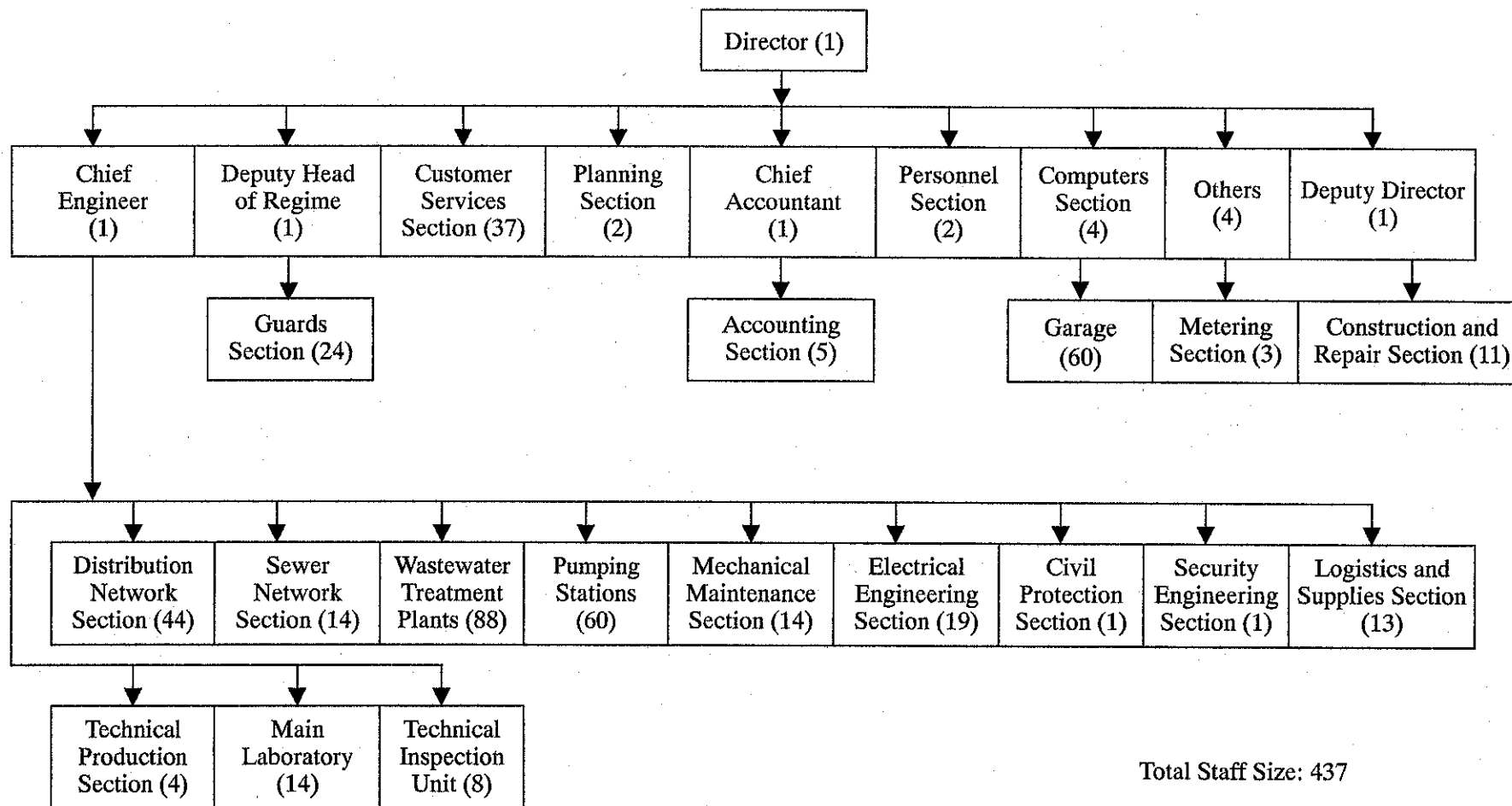


Figure 2.6.3 Organizational Structure of Apa Canal Soroca-Balti



**Figure 2.6.4 Organizational Structure of Apa Canal Balti and the Number of Personnel**

## **2.6.2 Financial Status of Water Supply Utilities**

### **(1) Introduction**

In this master plan, the main target of financial analysis is the financial issue of Apa Canal Soroca-Balti (ACSB), water supply wholesaler. The largest bottleneck that the water supply from ACSB does not go smoothly is the financial problem of Apa Canal Balti (ACB) and Apa Canal Soroca (ACS).

The water supply from ACSB was suspended on September 2000 because ACSB was not able to pay the electricity bill and accumulated arrears. ACSB resumed the water supply on 1 August 2001 under a tentative arrangement with the electricity supplier. But the supply of electricity was again suspended by default of the bill payment on 23 August 2001

As for the financial problems of ACSB, there are two causes. The first cause is that the wholesale price of water to two retail Apa Canals (ACB and ACS) is less than its water production cost of ACSB. The second cause is the significant delay of the payment to water bill from the two retail customers.

Then the problem is turned to the two retail Apa Canals. The reason why the two Apa Canals are unable to pay the wholesale water bill has two factors. The one factor is the average retail water price is less than the water supply cost of these two retail Apa Canals. The other factor is the delay of collection of water charge at retail level.

Although ACSB is independent organization from two retail customers, the financial sustainability of ACSB is completely dependent upon financial performance of these two Apa Canals. Without the solution of the financial problems of the retail Apa Canals, ACSB is unable to achieve financial sustainability.

The relative size of financial scale of Apa Canals is shown in Figure 2.6.5 and Figure 2.6.6. The largest organization in terms of financial scale is ACB. ACSB and ACS follow the first one. The scale of Apa Canal Falesti (ACF) and Apa Canal Riscani (ACR), which are included in to the master plan, is very small, although they are not receiving water from ACSB now. Therefore financial rehabilitation of ACB is crucial to the whole system, which this master plan intends to cover. The sales of ACSB (2000) have decreased due to the suspension of operation significantly from that of 1999.

## **(2) The issue of tariff structure**

The wholesale water price of ACSB is currently 1.43 lei per m<sup>3</sup> and it is less than water production cost of the Apa Canal. But as the two customers have their own substitute wells, they are reluctant to accept tariff increase up to break-even level.

As for retail tariff, in Moldova there is huge discrepancy between the tariff for domestic customers and tariff for business customers. Customers are usually divided into three categories, i.e., population, business and budget organization. In case of Apa Canal Balti, the tariff for population is 1.435 lei per m<sup>3</sup> and the one for non population (business and budget organizations) is 14.01 lei per m<sup>3</sup>. Recently, the water demand of business enterprises decreased dramatically as a lot of them have been closed after the independence and many business customers have switched to own wells in order to avoid high water tariff. Now, population (domestic customers) consumes the 70-80 percent of the water supply but the tariff structure that heavily relies upon business customers continues. Table 2.6.1 shows water sales volume and corresponding revenue by customer categories for Apa Canal Balti (2000). Other three retail Apa Canals included in this master plan have very similar tariff structures too.

## **(3) The problem of tariff collection**

Every retail Apa Canal has substantial receivables from customers. Especially enterprises and budget organizations accumulated arrears. While most enterprises pay water bill eventually in some case with products, budget organizations do not receive money to pay from the government. Worst budget organizations are heating supply corporations in their municipalities that accumulated water bills but this kind of community service have been suspended due to water bill arrears and will not return to operation forever.

Figure 2.6.7 shows account receivables of ACB (2000). These arrears then cause the delay of payment, i.e., the short-term trade and other payables. Figure 2.6.8 shows the account payables of ACB (2000). As for both ACB and ACSB, the electricity bills are the largest amount of expenses and the cause of arrears. All Apa Canals postpone taxes and social security payment as the least priority then eventually cause budget deficiency and arrears of water bill in budget organization.

## **(4) The cost structure of Apa Canal.**

The cost structure of ACB (2000) is shown in Table 2.6.2. The largest cost item is electricity. Water bill decreased after the suspension of water supply from ACSB. In case of ACSB, the old inefficient water pumps should be replaced to more efficient ones to save electricity cost.

## **(5) Financial statement.**

The financial situations of five Apa Canals are as follows. These five Apa Canals adapted European style accounting systems on 1998. Therefore financial statements of new format are available for the two years, 1999 and 2000. As for the data before 1997, the collection of data is very hard and the accounting format does not base on dual accounting system. In addition, the economic condition of the country has changed completely after Russian Economic Crisis in 1998.

### **1) Assets (Table 2.6.3)**

Tangible Fixed Assets are the extremely largest items (Figure 2.6.9). It reflects investment cost of the past and assets re-appreciation due to inflation. Therefore asset turnover is extremely low with respect to sales (Figure 2.6.12 and Figure 2.6.13). The depreciation expense is unable to be covered with current and foreseeable future's water revenue. Account receivable is too large in comparison to annual sales and therefore average collection period is very long (Figure 2.6.14). The amount of cash in hand is extremely low and daily financial payments do not work smoothly.

### **2) Liability and shareholder's equity**

Long-term financial liabilities almost non-exist except for Apa Canal Falesti. Under current financial performance introduction of long-term investment from external sources is impossible. Short-term trade payables and other payables are increasing. The largest payables are electricity bills. Penalty is imposed on arrears of electricity bill and power supply is to be suspended for the default of payment. Therefore the payment for electricity bill has first priority. Next comes the payment of salaries and wages for employees. Apa Canals except for ACB, the delay of salaries and wages amounts to five and six months. Some times the good received from business customers are distributed as the substitute of cash to employees.

As shown in Figure 2.6.11, Short-term liabilities exceed whole account receivables. Even if Apa Canals collect all receivables, they are unable to pay all short-term liabilities. It is the result of insufficient tariff structure. We have to say that all Apa Canals are financially not sustainable at current tariff structure.

Owner's equity is huge amount and it is merely reflection of huge amount of tangible fixed assets. If the value of tangible fixed assets is reassessed at real value, the volume of owner's equity will decrease dramatically (Figure 2.6.10).

Typical financial ratios such as current ratio and quick ratio are very low. But the problem is the collection of receivables, which is near cash assets in standard accounting, but here substantial part of them is actually bad debts. The allowance for bad debt is not prepared in all Apa Canals.

### 3) Income statement

In all five Apa Canals, revenues are less than their costs (Figure 2.6.12). They are unable to recover their costs from tariff revenue. But the revenue in this data is actually not realized. Accrual accounting does not express the real financial performance of Apa Canals. It is fundamental issue.

As for the relationships between annual sales and balance sheet items, Assets turnover is less than 40% of annual sales. In the extreme case of Apa Canal Falesti, it takes more than fifty years for total assets to turn over. Due to the slow velocity of assets turnover, the depreciation of fixed assets is impossible even if the tariff structure is modified in favorable way in near future (Figure 2.6.13 and Figure 2.6.14).

Account receivables are more than 50% of annual sales in all Apa Canals. Due to the suspension of the operation, the ratio for 2000 is abnormal to Apa Canal Soroca-Balti (Figure 2.6.15).

The liabilities to annual sales are high also. In Apa Canal Soroca and Apa Canal Falesti the ratio exceeds 100%. In ACSB, the situation is the same as the case of account receivables.

### 4) Cash flow statement (Table 2.6.6)

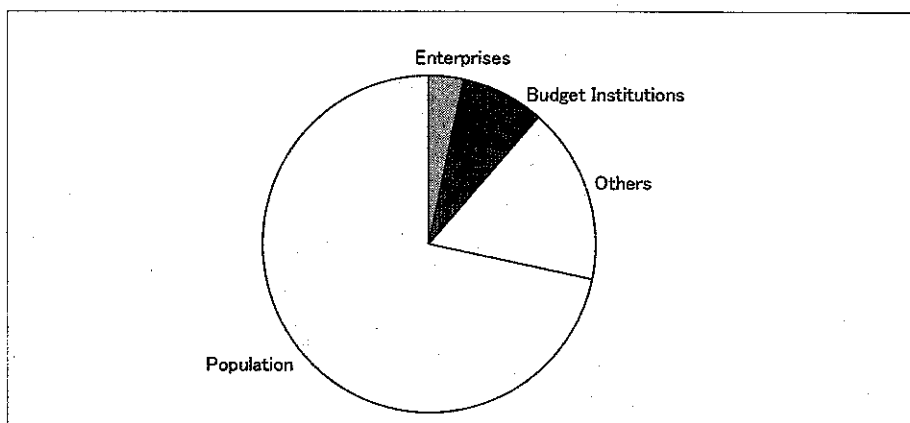
Although there are three categories in cash flow, i.e., operational flow, investment flow and financial flow, investment and financial cash flow do not exist actually. In three Apa Canals (ACSB, ACB and ACS), the net cash flow in operational activities is negative and cash position is decreasing further (Figure 2.6.17).

**Table 2.6.1 Water Sales of Apa Canal Balti (Volume and Revenue)**

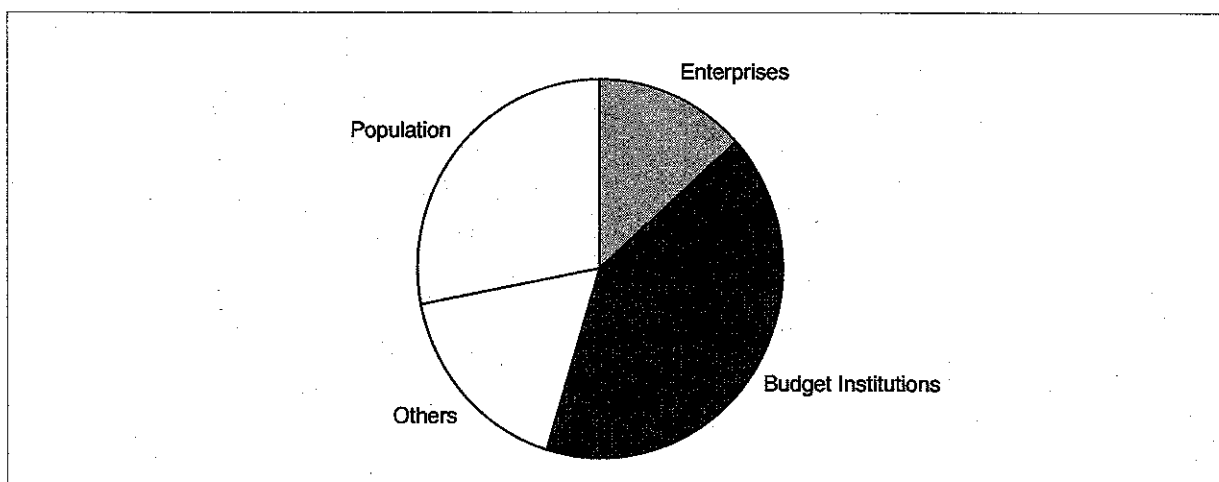
Water Volume (Th m <sup>3</sup> )	1999		2000	
Enterprises	606,3	5,4%	272	3,4%
Budget Institutions	1 236,5	11,1%	632	8,0%
Others	1 273,3	11,4%	1 357	17,1%
Population	8 067,2	72,1%	5 682	71,5%
Total	11 183,3	100,0%	7 942	100,0%

Water Sales (Th lei)	1999		2000		Unit price (2000)
Enterprises	5 079,4	37,8%	2 825,3	13,3%	10,39
Budget Institutions	2 385,7	17,8%	8 795,1	41,4%	13,92
Others	2 107,6	15,7%	3 623,9	17,1%	2,67
Population	3 855,0	28,7%	5 978,2	28,2%	1,05
Total	13 427,7	100,0%	21 222,5	100,0%	2,67

**Water Volume (2000)**



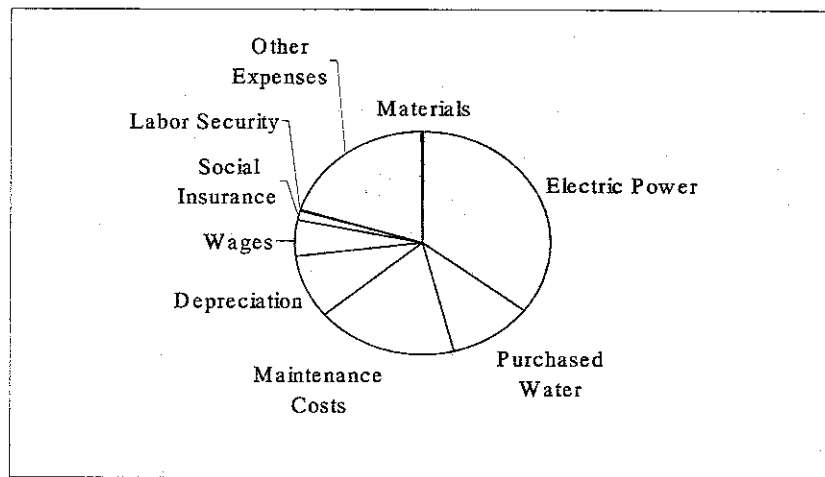
**Water Sales (2000)**



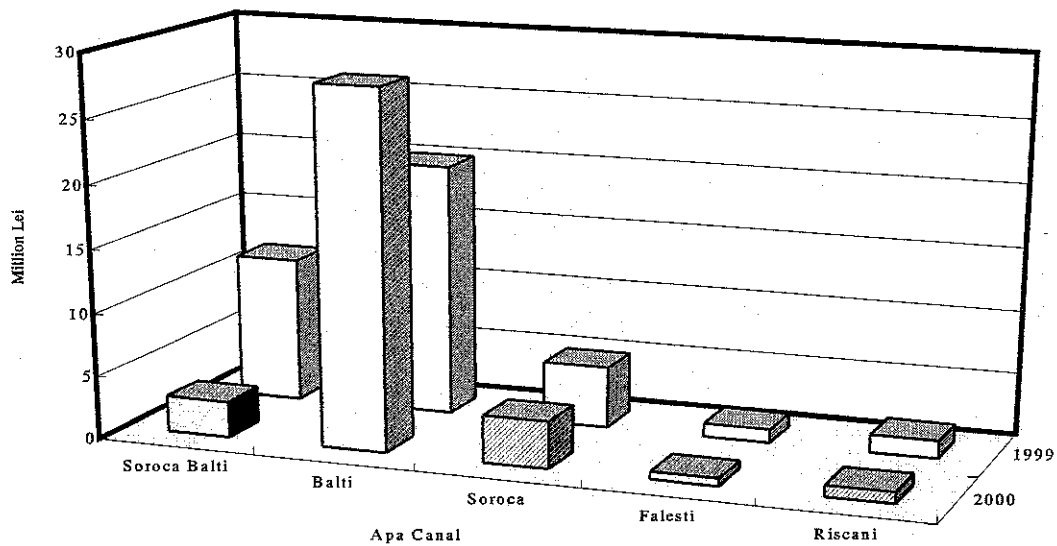


**Table 2.6.2 The Water Supply Cost Structure of Apa Canal Balti (2000)**

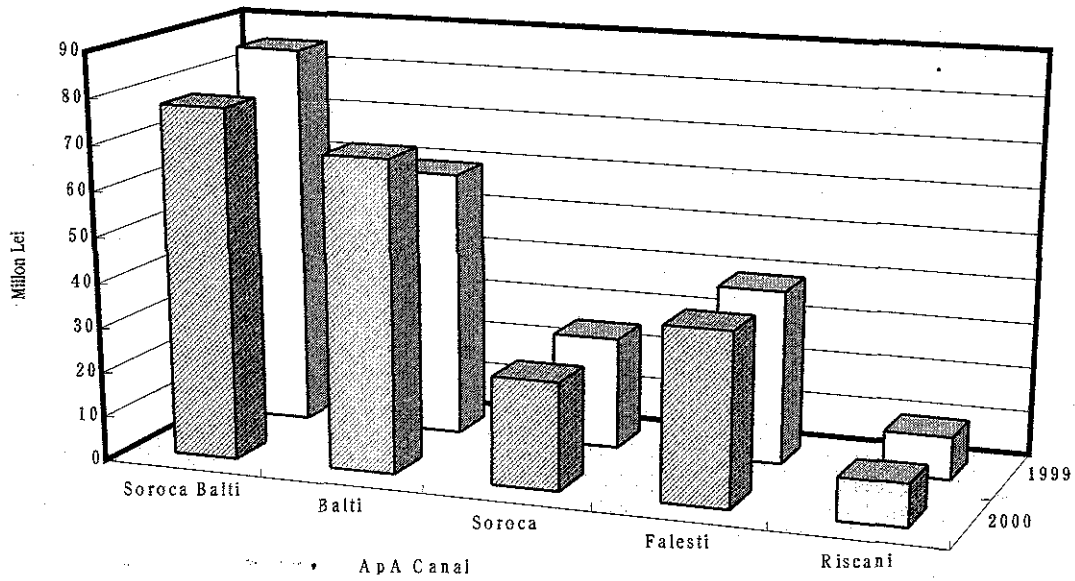
Cost Items	Amount	Percentage
Materials	38 866	0,2%
Electric Power	7 205 935	35,0%
Purchased Water	2 210 610	10,7%
Maintenance Costs	3 660 230	17,8%
Depreciation	1 899 692	9,2%
Wages	1 044 038	5,1%
Social Insurance	323 846	1,6%
Labor Security	45 502	0,2%
Other Expenses	4 168 154	20,2%
<b>Total</b>	<b>20 596 873</b>	<b>100,0%</b>



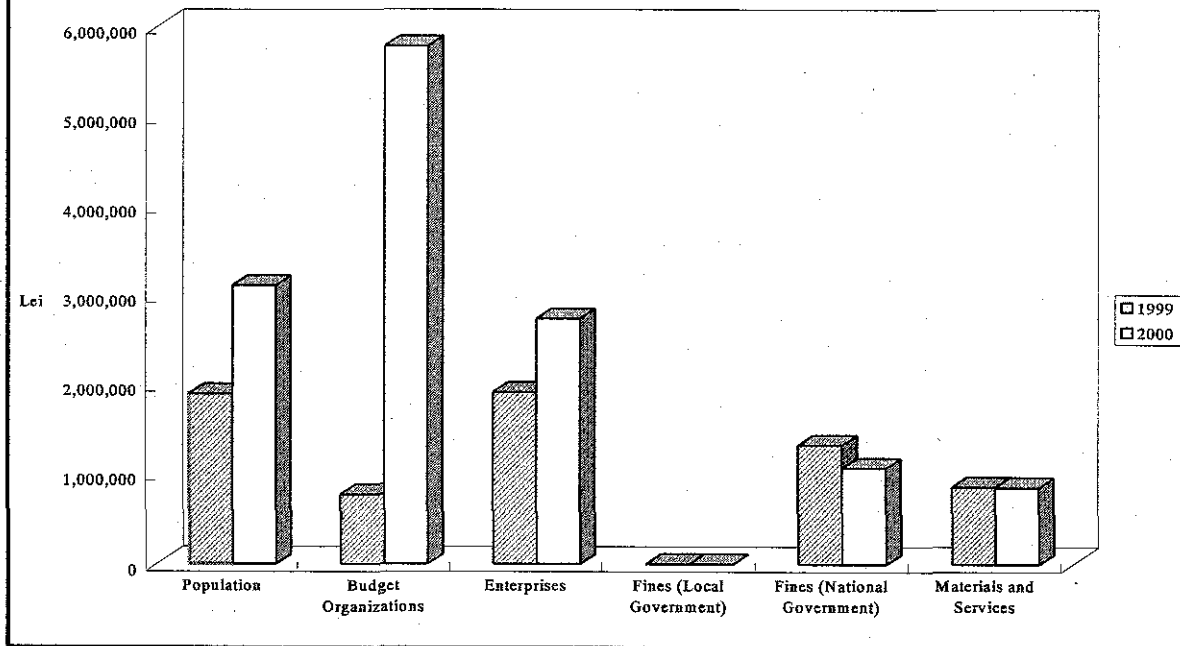
**Figure 2.6.5 Revenue from Sales**



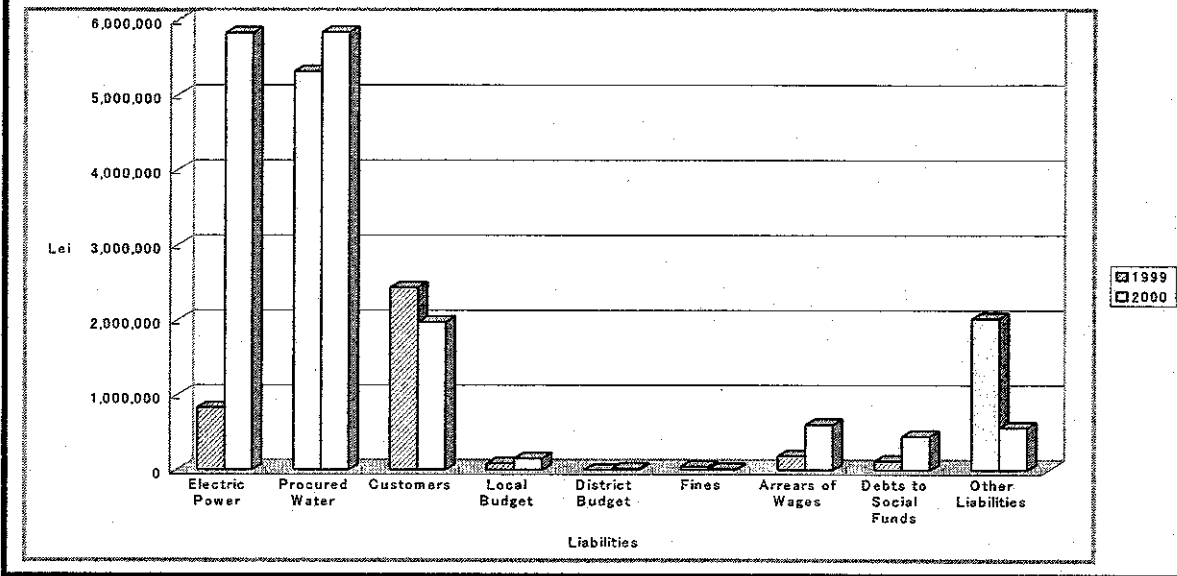
**Figure 2.6.6 Total Assets**



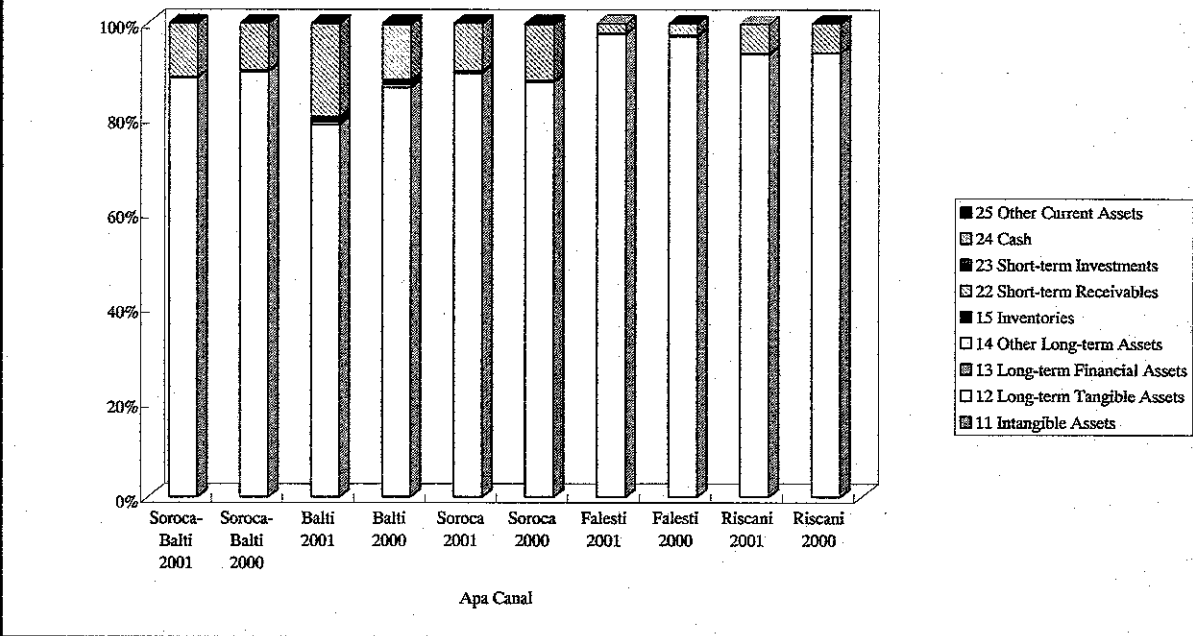
**Figure 2.6.7 Account Receivables of Apa Canal Balti**



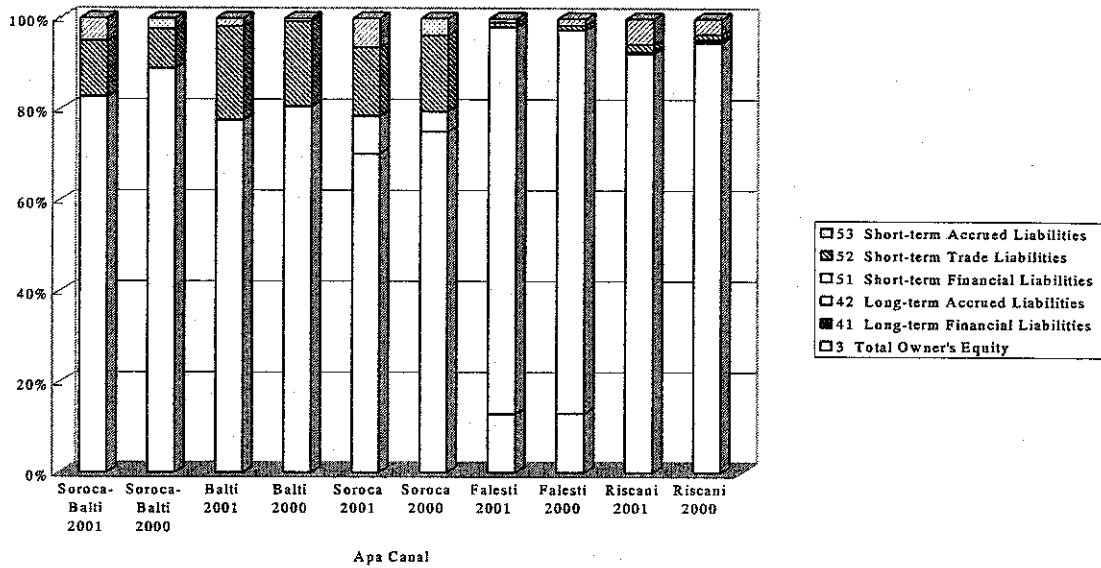
**Figure 2.6.8 Short-term Liabilities of Apa Canal Balti**



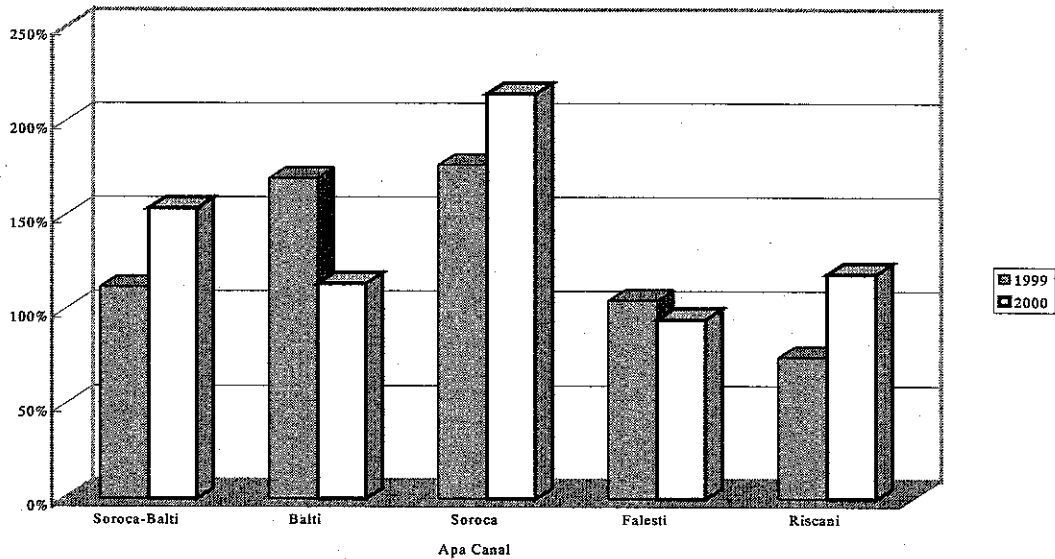
**Figure 2.6.9 The Composition of Assets**



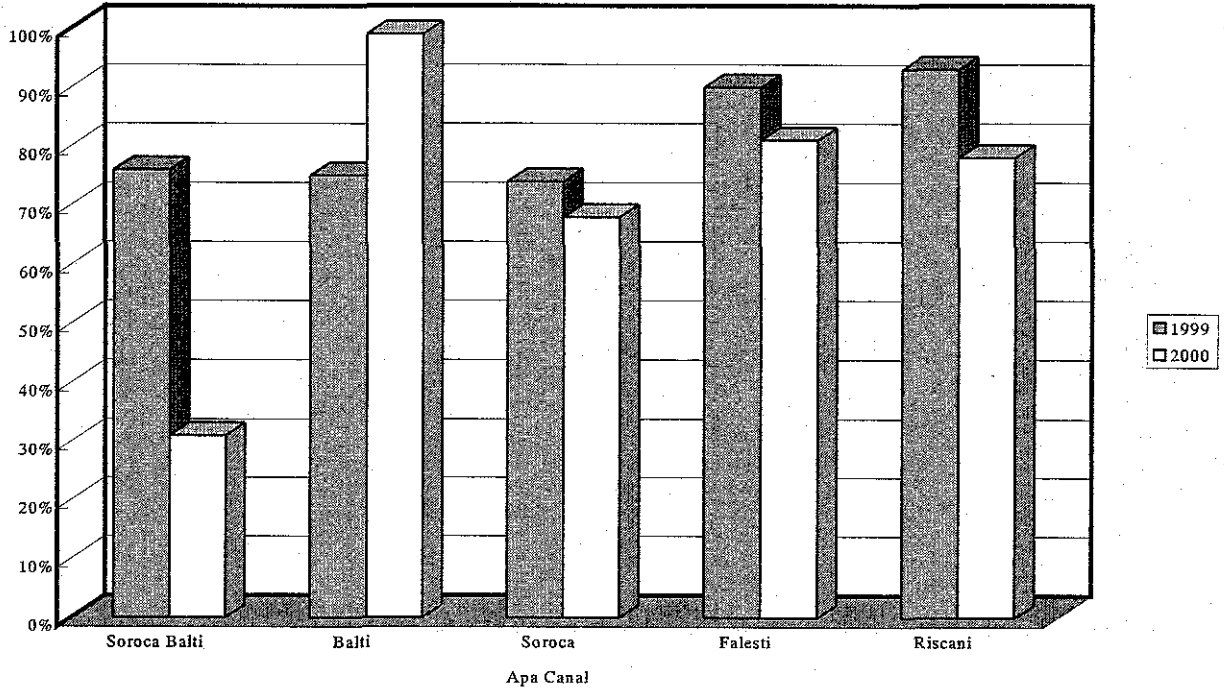
**Figure 2.6.10 The Composition of Liabilities and Owner's Equity**



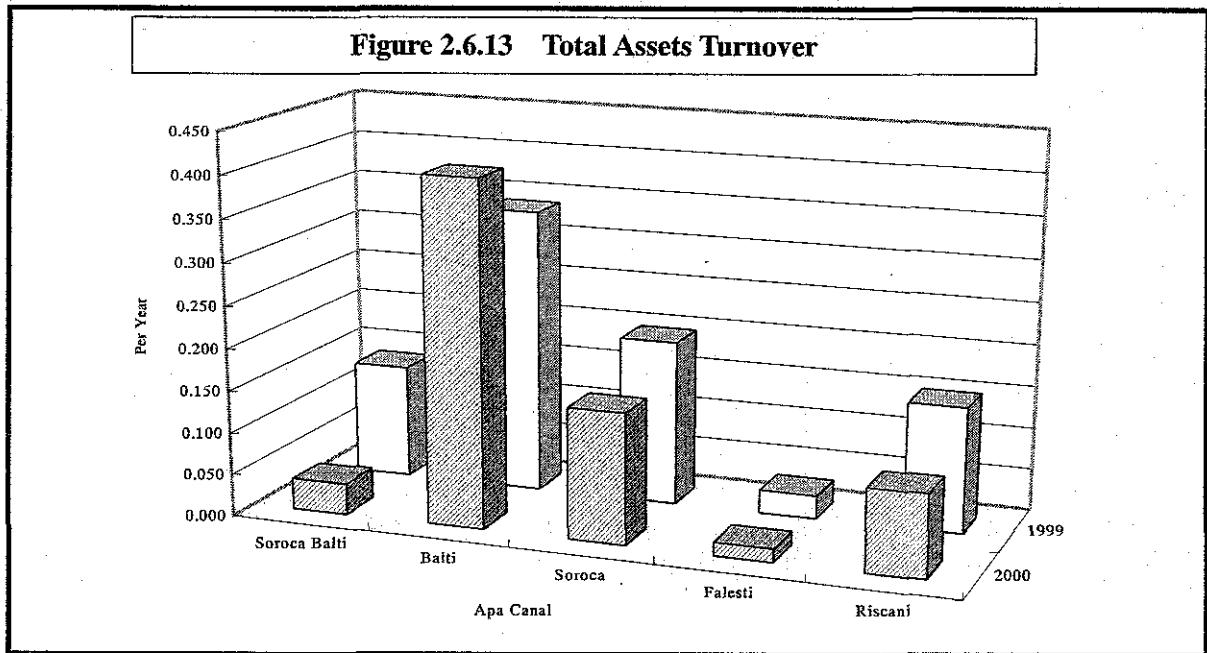
**Figure 2.6.11 Short-term Liabilities/Receivables**



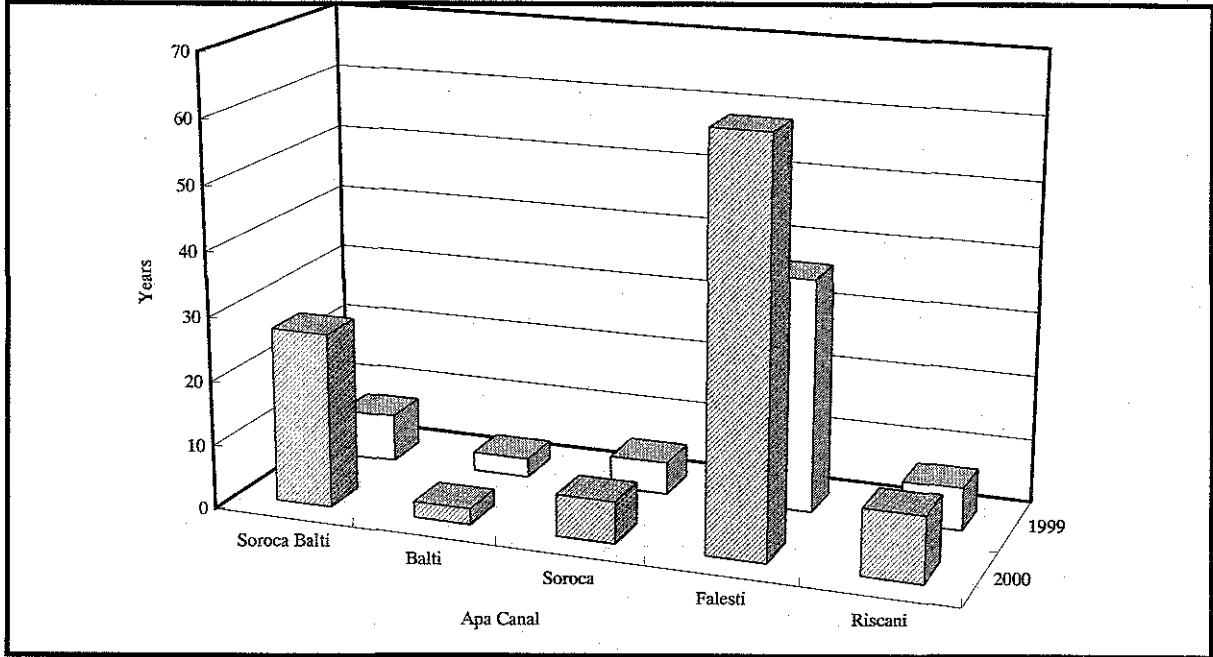
**Figure 2.6.12 Revenue as Percent of Total Costs**



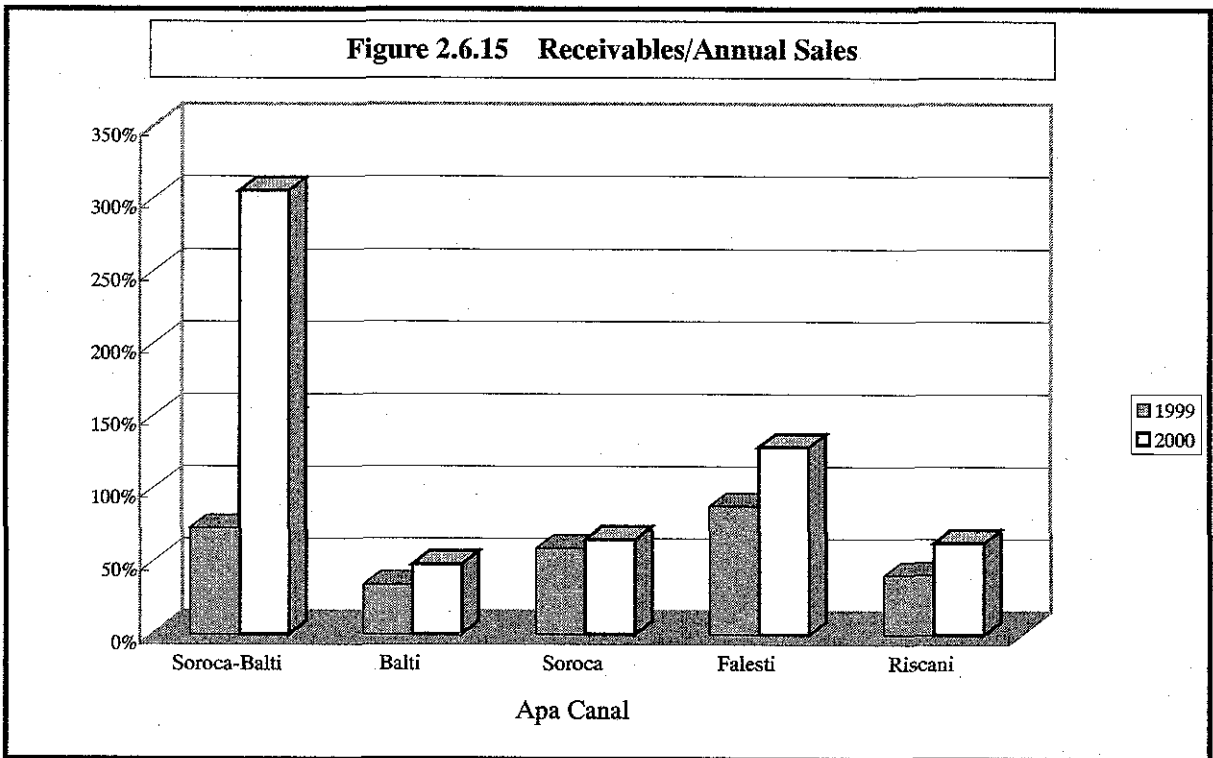
**Figure 2.6.13 Total Assets Turnover**



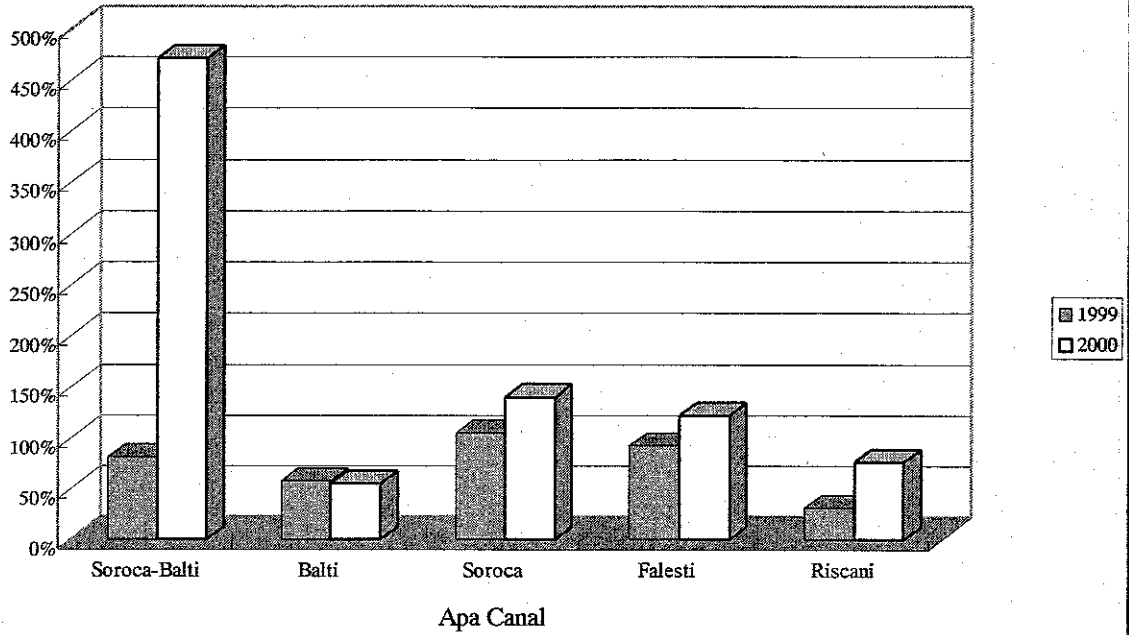
**Figure 2.6.14 Total Assets Turnover (# of Years)**



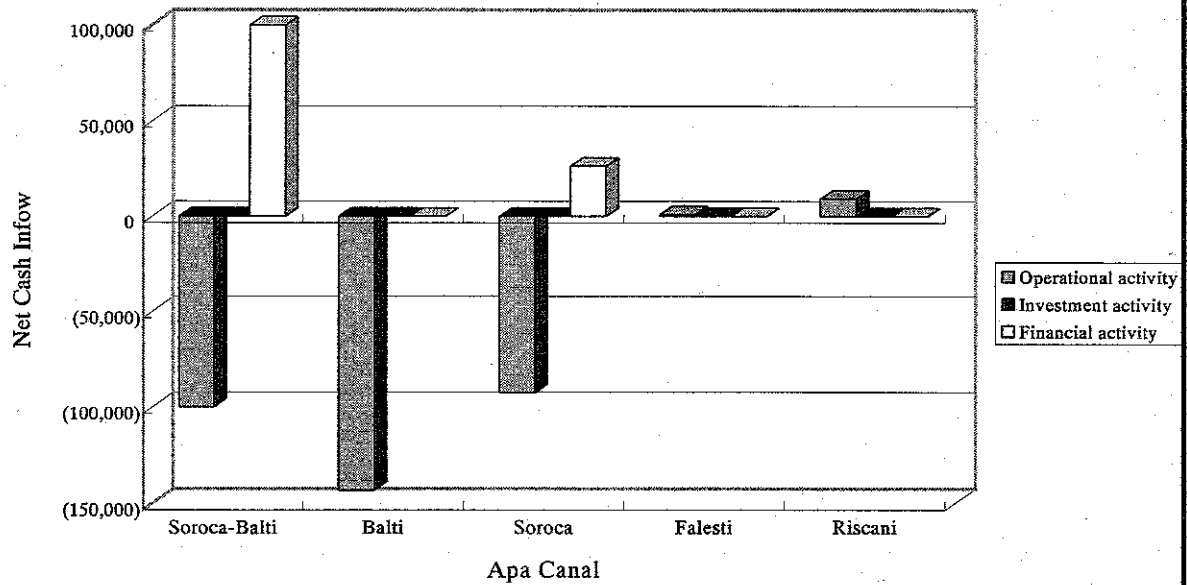
**Figure 2.6.15 Receivables/Annual Sales**



**Figure 2.6.16 Liabilities / Annual Sales**



**Figure 2.6.17 Net Cash Flow for the Year of 2000**



**Table 2.6.3 Balance Sheet (Assets) as of 1-1-2001 and 1-1-2000**

Code	Apa Canal	Soroca-Balti		Balti		Soroca		Fa	Fafesti		Riscani	
		1-1-2001	1-1-2000	1-1-2001	1-1-2000	1-1-2001	1-1-2000	1-1-2001	1-1-2001	1-1-2000	1-1-2001	1-1-2000
1	<b>Long-term Assets</b>											
11	<b>Intangible Assets</b>											
111,112	Intangible Assets	0		77,471	75,431							
113	Amortization of Intangible Assets	0		(38,778)	(30,215)							
11	11 Total (net)	0	0	38,693	45,216	0	0	0	0	0	0	0
12	<b>Long-term Tangible Assets</b>											
121	Tangible Assets in Process	802,391	802,391	205,720	203,578	1,302,526	1,146,488	32,962,398	32,962,398	32,867,122	3,928,737	3,928,737
122	Land					0					0	
123	Fixed Assets	117,486,795	134,348,061	146,938,314	142,572,628	42,419,174	42,358,350	16,694,668	16,694,668	17,017,410	10,194,777	10,532,664
125	Natural Resources					0					0	
124,126	Depreciation of Fixed Assets	(49,363,909)	(58,619,472)	(92,791,970)	(91,510,085)	(22,094,382)	(21,564,591)	(11,875,714)	(11,875,714)	(11,951,835)	(5,243,417)	(5,462,342)
12	12 Total (net)	68,925,277	76,530,980	54,352,064	51,266,121	21,627,318	21,940,247	37,781,352	37,781,352	37,932,697	8,880,097	8,999,059
13	<b>Long-term Financial Assets</b>											
131	Long-term Investments in Unrelated Parties											
132	Long-term Investments in Related Parties											
133	Changes in Value of Long-term Investments											
134	Long-term Receivables											
135	Deferred Tax Assets			426,670	377,398							
136	Long-term Prepayments Made											
13	13 Total	0	0	426,670	377,398			0	0	0		
14	<b>Other Long-term Assets</b>											
1	Total Long-term Assets	68,925,277	76,530,980	54,817,427	51,688,735	21,627,318	21,940,247	37,781,352	37,781,352	37,932,697	8,880,097	8,999,059
2	<b>Current Assets</b>											
21	<b>Inventories</b>											
211	Materials	181,519	260,354	732,017	632,275	97,680	84,743	67,109	67,109	86,823	16,314	14,139
212	Livestock	0				0	0					
213-214	Low-value and Short-life Items (LVSLI, net)	24,584	24,562	32,306	27,447	7,522	33,730	13,281	13,281	19,648	6,417	2,685
215	Work-in-Process	0										
216	Products	0								562		
217	Goods	1,285	16,532	4,082	4,078	4,675	2,470					
21	21 Total	207,389	301,448	768,405	663,800	109,877	120,943	80,390	80,390	107,033	22,731	16,824
22	<b>Short-term Receivables</b>											
221	Short-term Trade Receivables	8,661,874	8,394,489	11,634,794	4,577,893	2,263,833	2,746,351	581,929	581,929	474,037	363,856	257,457
222	Allowance for Doubtful Debts	0				0					0	
223	Short-term Receivables from Related Parties	0				20,267	16,592				113,903	135,352
224	Short-term Prepayments Made	0		3,560	3,560	0					0	
225	Short-term Receivables on Settlements with the Budget	90,226	15,012	1,068,590	1,325,116	122,479	111,777	80,658	80,658	178,418	96,239	173,601
226	VAT Receivables	0										
227	Short-term Receivables from Employees	8,312	4,712	5,790	4,026	14,833	13,174	1,164	1,164	2,155	5,127	15,134
228	Short-term Receivables on Income Accrued	0				2,942	3,722					
229	Other Short-term Receivables	10,505	28,927	842,636	848,744	0	7,080	125,792	125,792	291,468	5,287	44
22	22 Total	8,770,917	8,443,140	13,555,370	6,759,339	2,424,354	2,898,696	789,543	789,543	946,078	584,432	581,588
23	<b>Short-term Investments</b>											
231	Short-term Investments in Unrelated Parties	0										
232	Short-term Investments in Related Parties	0										
233	Decrease in Value of Short-term Investments	0										
23	23 Total	0	0					0	0	0		
24	<b>Cash</b>											
241	Cash in Hand	75	32	3,365	1,121	2	4	257	257	68	750	722
242	Settlements Account	169	0	62,945	197,838	947	74,122	764	764	92	11,195	1,979
243	Foreign Exchange Account	5	5		19,395	1						
244	Special Bank Account	0		8,967								
24	24 Total	249	37	75,277	218,354	950	74,126	1,021	1,021	160	11,945	2,701
25	<b>Other Current Assets</b>	194	254	3,743	5,425	308	1,288			22,276		1,152
2	Total Current Assets	8,978,749	8,744,879	14,402,795	7,646,918	2,535,489	3,095,053	870,954	870,954	1,075,547	619,108	602,265
1+2	Total Assets	77,904,026	85,275,859	69,220,222	59,335,653	24,162,807	25,035,300	38,652,306	38,652,306	39,008,244	9,499,205	9,601,324



**Table 2.6.4 Balance Sheet (Liabilities and Owner's Equity) as of 1-1-2001 and 1-1-2000**

Code	Apa Canal	Soroca-Balti		Balti		Soroca		Falesti		Riscani	
		1-1-2001	1-1-2000	1-1-2001	1-1-2000	1-1-2001	1-1-2000	1-1-2001	1-1-2000	1-1-2001	1-1-2000
<b>3</b>	<b>Owner's Equity</b>										
<b>31</b>	<b>Statutory and Additional Capital</b>										
311	Statutory Capital	152,117	152,117	3,966	3,966	22,189,485	22,189,485	170,994	170,994	11,067,660	11,067,660
312	Additional Capital	643,138	643,138	6,048,263							
313	Unpaid Capital	0	0	0	0						
314	Withdrawn Capital	(5,000,722)	0	0	0						
	<b>31 Total</b>	<b>(4,205,467)</b>	<b>795,255</b>	<b>6,052,229</b>	<b>3,966</b>	<b>22,189,485</b>	<b>22,189,485</b>	<b>170,994</b>	<b>170,994</b>	<b>11,067,660</b>	<b>11,067,660</b>
<b>3</b>	<b>Reserves</b>										
321	Legal Reserves										
322	Statutory Reserves	82,457,548	82,457,548	2,854,839	2,854,839	178,676	178,676	18,550	21,966	3,570	5,310
323	Other Reserves			53,186,866	53,186,866			4,953,435	4,953,435		
	<b>32 Total</b>	<b>82,457,548</b>	<b>82,457,548</b>	<b>56,041,705</b>	<b>56,041,705</b>	<b>178,676</b>	<b>178,676</b>	<b>4,971,985</b>	<b>4,975,401</b>	<b>3,570</b>	<b>5,310</b>
<b>33</b>	<b>Retained Earnings</b>										
331	Adjustment on Results of Prior Periods			(22,016)		(86,371)					
332	Retained Earnings (deficit) of Prior Years	(7,401,794)	(7,401,794)	(8,271,727)	(8,271,727)	(3,580,787)	(3,580,787)	(103,070)	17,050	(154,122)	(192,519)
333	Net Profit (loss) of the Reporting Period	(6,453,697)		(153,128)		(1,738,782)		(105,927)	(120,120)	(326,925)	129,143
334	Dividends Premeid	0	0	0	0	0	0	0	0	0	0
	<b>33 Total</b>	<b>(13,855,491)</b>	<b>(7,401,794)</b>	<b>(8,446,871)</b>	<b>(8,271,727)</b>	<b>(5,405,940)</b>	<b>(3,580,787)</b>	<b>(208,997)</b>	<b>(103,070)</b>	<b>(481,047)</b>	<b>(63,376)</b>
<b>34</b>	<b>Non-owner's Equity</b>										
341	Differences on Reevaluation of Long-term Assets									(1,865,454)	(1,865,454)
342	Subsidies to State-owned Enterprises			65,312	32,436			21,493	21,493	48,080	28,897
	<b>34 Total</b>	<b>0</b>	<b>0</b>	<b>65,312</b>	<b>32,436</b>	<b>0</b>	<b>0</b>	<b>21,493</b>	<b>21,493</b>	<b>(1,817,374)</b>	<b>(1,836,557)</b>
<b>3</b>	<b>Total Owner's Equity</b>	<b>64,396,590</b>	<b>75,851,009</b>	<b>53,712,375</b>	<b>47,806,380</b>	<b>16,962,221</b>	<b>18,787,374</b>	<b>4,955,475</b>	<b>5,064,818</b>	<b>8,772,809</b>	<b>9,173,037</b>
<b>4</b>	<b>Long-term Financial Liabilities</b>										
<b>41</b>	<b>Long-term Financial Liabilities</b>										
411, 412	Long-term Bank Credits	0	0	0	0	0	0	0	0	0	0
413	Long-term Loans	0	0	0	0	0	0	0	0	0	0
414	Other Long-term Financial Liabilities	0	0	0	0	0	0	0	0	30,000	30,000
	<b>41 Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>30,000</b>	<b>30,000</b>
<b>42</b>	<b>Long-term Accrued Liabilities</b>										
421	Long-term Lease Liabilities	0	0	0	0	0	0	0	0	0	0
422	Long-term Deferred Income	0	0	0	0	0	0	0	0	0	0
423	Target Financing and Receipts	0	0	50,000	50,000	1,507,844	1,107,844	32,949,376	32,949,376	0	0
424	Long-term Prepayment Received	0	0	0	0	0	0	0	0	0	0
425	Deferred Tax Liabilities	0	0	0	0	682,334	0	0	0	0	38,397
426	Other Long-term Accrued Liabilities	0	0	0	0	0	0	0	0	0	0
	<b>42 Total</b>	<b>0</b>	<b>0</b>	<b>50,000</b>	<b>50,000</b>	<b>1,990,178</b>	<b>1,107,844</b>	<b>32,949,376</b>	<b>32,949,376</b>	<b>0</b>	<b>38,397</b>
<b>4</b>	<b>Total Long-term Financial Liabilities</b>	<b>0</b>	<b>0</b>	<b>50,000</b>	<b>50,000</b>	<b>1,990,178</b>	<b>1,107,844</b>	<b>32,949,376</b>	<b>32,949,376</b>	<b>30,000</b>	<b>68,397</b>
<b>5</b>	<b>Short-term Liabilities</b>										
<b>51</b>	<b>Short-term Financial Liabilities</b>										
511, 512	Short-term Bank Credits	100,000	0	0	0	26,398	0	0	0	0	0
513	Short-term Loans	0	0	0	0	0	0	0	0	0	0
514	Current Portion of Long-term Liabilities	0	0	0	0	0	0	0	0	0	0
515, 516	Other Short-term Financial Liabilities	0	0	0	0	0	0	0	0	0	0
	<b>51 Total</b>	<b>100,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>26,398</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>52</b>	<b>Short-term Trade Liabilities</b>										
521	Short-term Trade Liabilities	9,507,113	7,447,083	12,565,549	8,601,377	3,636,832	4,206,109	411,084	411,894	14,284	12,440
522	Short-term Liabilities to Related Parties	0	0	0	0	0	0	0	0	128,425	67,626
523	Short-term Prepayment Received	0	0	1,642,570	2,433,340	0	0	0	0	18,380	24,114
	<b>52 Total</b>	<b>9,507,113</b>	<b>7,447,083</b>	<b>14,208,119</b>	<b>11,034,717</b>	<b>3,636,832</b>	<b>4,206,109</b>	<b>411,084</b>	<b>411,894</b>	<b>161,089</b>	<b>104,180</b>
<b>53</b>	<b>Short-term Accrued Liabilities</b>										
531	Liabilities to Employees on Remuneration of Labor	319,091	258,595	605,272	184,519	573,437	237,025	66,697	34,145	150,650	111,277
532	Liabilities to Employees for other Transaction	838	1,109	200	769	12,678	5,404	0	36	844	411
533	Liabilities on Insurance	574,812	338,635	451,703	119,826	912,568	484,196	29,337	7,832	230,045	128,501
534	Liabilities on Settlements with the Budget	1,556,432	981,756	182,313	130,235	48,495	18,675	174,365	305,524	147,254	84,991
535	VAT and Excise Tax Accrued	0	0	0	0	0	0	0	0	0	0
536	Non-budgetary Liabilities	174,174	139,052	10,240	9,207	0	33,896	666	666	6,514	9,683
537	Liabilities to Founders and Other Co-founders	0	0	0	0	0	0	42,119	210,805	0	0
538	Provisions for Future Expenses and Payments	0	0	0	0	0	154,777	0	0	0	0
539	Other Short-term Liabilities	1,274,976	258,600	0	0	0	0	23,187	23,147	0	0
	<b>53 Total</b>	<b>3,900,323</b>	<b>1,977,767</b>	<b>1,249,728</b>	<b>444,556</b>	<b>1,547,178</b>	<b>933,973</b>	<b>336,371</b>	<b>582,156</b>	<b>535,207</b>	<b>334,863</b>
<b>5</b>	<b>Total Short-term Liabilities</b>	<b>13,507,436</b>	<b>9,424,850</b>	<b>15,457,847</b>	<b>11,479,273</b>	<b>5,210,408</b>	<b>5,140,082</b>	<b>747,455</b>	<b>994,050</b>	<b>696,396</b>	<b>439,043</b>
<b>3+4+5</b>	<b>Total Owner's Equity and Liabilities</b>	<b>77,904,026</b>	<b>85,275,859</b>	<b>69,220,222</b>	<b>59,335,653</b>	<b>24,162,807</b>	<b>25,035,300</b>	<b>38,652,300</b>	<b>39,008,244</b>	<b>9,499,205</b>	<b>9,680,477</b>

**Table 2.6.5 Income Statement for the Year of 2000 and 1999**

Code		Soroca-Balti		Balti		Soroca		Falesti		Riscani	
		2000	1999	2000	1999	2000	1999	2000	1999	2000	1999
611	Revenue from Sales	2,868,632	11,567,357	28,132,306	20,028,770	3,731,237	4,910,545	612,647	1,075,161	922,114	1,433,587
711	Cost of Sales	6,232,248	13,605,847	26,634,693	26,886,490	4,673,495	5,260,745	651,898	970,887	1,056,179	1,387,035
	<b>Gross Profit (Gross Loss)</b>	<b>(3,363,616)</b>	<b>(2,038,490)</b>	<b>1,497,613</b>	<b>(6,857,720)</b>	<b>(942,258)</b>	<b>(350,200)</b>	<b>(39,251)</b>	<b>104,274</b>	<b>(134,065)</b>	<b>46,552</b>
612	Other Operating Income	3,420	8,038	1,153,068	2,004,133	7,689	17,467	8,075		150,329	36,908
712	Marketing and Selling Expenses					0	0			121,013	0
713	General and Administrative Expenses	270,917	350,180	2,101,679	1,751,079	513,775	324,429	116,105	207,024	135,507	140,348
714	Other Operating Expenses	2,787,221	1,189,227	848,336	894,287	291,515	1,102,190		17,370	61,803	55,359
	<b>Result of Operation</b>	<b>(6,418,334)</b>	<b>(3,569,859)</b>	<b>(299,334)</b>	<b>(7,498,953)</b>	<b>(1,739,859)</b>	<b>(1,759,352)</b>	<b>(147,281)</b>	<b>(120,120)</b>	<b>(302,059)</b>	<b>(112,247)</b>
621-721	Result of Investing Activity	(5,974)	6,775	750	3,449	11,869	204	1,230		(24,866)	
622-722	Result of Financing Activity	(29,389)	49,892	96,184	85,334	520,993	(1,254)	22,957			
	<b>Income before Extraordinary Loss</b>	<b>(6,453,697)</b>	<b>(3,513,192)</b>	<b>(202,400)</b>	<b>(7,410,170)</b>	<b>(1,206,997)</b>	<b>(1,760,402)</b>	<b>(123,094)</b>	<b>(120,120)</b>	<b>(326,925)</b>	<b>(112,247)</b>
623-723	Extraordinary Loss	0						17,167			
	<b>Income before Tax</b>	<b>(6,453,697)</b>	<b>(3,513,192)</b>	<b>(202,400)</b>	<b>(7,410,170)</b>	<b>(1,206,997)</b>	<b>(1,760,402)</b>	<b>(105,927)</b>	<b>(120,120)</b>	<b>(326,925)</b>	<b>(112,247)</b>
731	Tax Expenses	0		(49,272)	(297,752)	(531,785)	0				(17,176)
	<b>Net Income</b>	<b>(6,453,697)</b>	<b>(3,513,192)</b>	<b>(153,128)</b>	<b>(7,112,418)</b>	<b>(1,738,782)</b>	<b>(1,760,402)</b>	<b>(105,927)</b>	<b>(120,120)</b>	<b>(326,925)</b>	<b>(129,423)</b>

**Table 2.6.6 Cash Flow Statement for the Year of 2000**

	Apa Canal	Soroca-Balti	Balti	Soroca	Falesti	Riscani
<b>Operational activity</b>		(99,788)	(143,077)	(92,400)	861	9,244
<b>Investment activity</b>		0	0	0	0	0
<b>Financial activity</b>		100,000	0	26,398	0	0
The net inflow from the economic-financial activity without exceptional articles		212	(143,077)	(66,002)	861	9,244
Exceptional collections (payments) of monetary assets		0	0			
<b>Total net inflow</b>		<b>212</b>	<b>(143,077)</b>	<b>(66,002)</b>	<b>861</b>	<b>9,244</b>
Favorable (unfavorable) differences of exchange rate				(7,174)		
The balance of monetary assets at the beginning of the year		37	218,354	74,126	160	2,701
The balance of monetary assets at the end of the financial period		249	75,277	950	1,021	11,945

(lei)

### 2.6.3 Water Charges Collection System

An efficient water charge collection system must be the very base for the sound financial operation of a water supply utility. The first thing to be considered is the metering. Functional metering is important for not only financial operation of a water utility but also water flow control in the water distribution network. The distribution of water demand across the service area can only be measured by complete metering. Physical loss of water, namely, leakage can only be accurately measured with adequate metering. Such data are essential for water rate planning as well as rehabilitation, expansion or enforcement of a water distribution network. As described in Sections 2.6.1 and 2.6.2, the metering systems of the water supply utilities under the present Study, i.e., ACS, ACB, ACF and ACR, are inadequate. The number of customers with a meter or meters as percent of the total is only 50 to 70.

No water meters are originally installed at each house in apartment houses, the majority of which was built in the Soviet era. Not all independent houses are metered either. Some of houses have meters which are bought and installed by the owner of the house. Most water utilities install block meters, each of which covers an area containing independent houses, apartment houses or both. In Moldova water utilities do not in general collect domestic water charges directly from the houses. In each block there is a union of residents responsible for, among other things, collection of charges for public services including water service. In the case of water service, the block meters are read by the water utility; the water charges are billed to the union; the union collects money from each house as the share of water charges on the block meter; and then the money is paid to respective water utilities.

Such residents' unions formerly (at the time of the Soviet regime) used to be (part of) state-owned housing bureaus or corporations, which owned apartment houses and collected charges for such utility services as water, hot water, gas, sewer and garbage collection. As the ownership of the apartment houses has been transferred to respective residents, the unions (or corporations) have been privatized. The system of meter reading, billing and collection run by the residents' unions brings about significant problem. When the union issues the water bills, the water charge stated in the bill is based on the meter reading if the house has a meter or meters, whereas the water charge for unmetered houses is based on the shared portion of the water quantity measured by the block meter less the meter readings at metered houses. Such sharing is made on the number of houses or in certain cases the number of residents in the house. This system has resulted in disparity among households with or without meters since metered households only pay for their pure consumption, even though some meters are under-registering, whereas unmetered households are forced to pay for the quantity of water including the wasted portion of water as leakage between the block meter and the households, and the consumption made by wasteful households. People of unmetered houses tend to waste water and ignore water leakage.

Under such circumstances, Apa Canals have neither section responsible for customer services nor customer cadres, which must be the very important foundation for functional water service operation including charge collection. It is difficult for the water utility to timely grasp the status of households in respect to the payment of water bills, and rather impossible to cut service to specific houses in an apartment house even if they have failed to pay water bills for an extended period of time mainly because of the metering system and the lack of customer administration on the part of the water utility.

For the perfection of metering, there are two negative factors: (1) Meters, in the prevailing practices, are to be physically installed by each customer at his cost; and (2) Complete metering of most apartment houses is almost impossible due to the nature of the design of the apartment houses. The households, who intend to install a meter or meters, select and buy meters by their choice without authoritative standards for their selection and the method of their installation. In Moldova, like other CIS countries, more than two pipelines are laid up to each house of most apartment buildings, which serve respective water utility areas, e.g., toilet, bath, kitchen etc. separately. Therefore, more than two meters are needed in a household. Moreover, meters are to be installed inside the apartment, not outside. Such a design of the plumbing system makes house metering extremely difficult mainly due to the narrow space for meter installation, meter reading and maintenance as well as the privacy of the residents of the houses.

In addition there is no effective system of meter maintenance. The water users can install any meter by his choice. Although the owners of water meters are in general requested by the water utility to have their meters tested at a regular interval and produce such evidence to the water utility, such a system is not actually working. As a result many meters are under-registering or not functioning at all. There is no legislative provision in Moldova on the duty of meter manufacturers and users to secure the accuracy of meters.

All large water users such as hotels and factories are basically metered. Such meters are monthly read by a meter reader of the water utility; water charges are billed to the users; and the charges are paid to the Apa Canal's bank account. However, the penalty system for non-payment is not adequately functioning, and as a result, water service to factories, schools or government offices is seldom stopped even if they have large amounts of unpaid water bills. To pay for public utility services it is rather common for public utility companies and organizations to cancel each other's accounts, in other words, in barter transactions. However, such operations cannot of course clear all accounts receivables.

Given the above background, water utilities in Moldova historically have no customer cadres. The cadre, or customer database, shall contain such items of customer information for each customer as follows:

- 1) Customer No.
- 2) Code of the customer category
- 3) Name, address and Telephone No. of the customer
- 4) Size or sizes (diameter) of connection and existence of meter
- 5) Latest meter reading (or estimate of consumption)
- 6) Penultimate meter reading
- 7) Quantity consumed in the current period
- 8) Current billed charge, and record of bills in arrear
- 9) Date of service commencement
- 10) Date of service termination
- 11) Code of tariff-exemption, if any (of the customer)
- 12) Bank account holder name, account No., bank name, and branch name payable of tariff for the above customer
- 13) Name of the tariff collector (intermediary) who collect charges on behalf of the water utility.
- 14) Address and telephone No. of tariff collector

At present the water utilities only keep a list of resident unions, which collect water charges on behalf of the utilities.

## **2.7 People's Awareness of and Demand for Water Supply**

A sociological survey was conducted in the current Study to obtain the following information from general inhabitants in the 4 cities/towns concerning the present water provisions:

- Actual state of water provision at households
- Degree of satisfaction or dissatisfaction
- Actual water consumption
- Actual payment and willingness to pay for water charge
- Expectation and demand for water supply service

The survey was conducted in June 2001. At that time, cities of Balti and Soroca were still entirely dependent on the groundwater sources for central water supply systems.

The survey was made through on-site interview using a questionnaire form. Sample households were selected randomly from each of characteristic zones within the cities/towns in terms of mainly water supply provisions and topography.

Total number of sample households in each city/town and its breakdown are as follows:

	Balti	Soroqa	Falesti	Riscani
Total number of household samples	255	114	60	76
Connected to water supply and sewerage	181	65	23	22
Connected to water supply only	62	28	12	17
Connected to water supply but no water available	2	14	4	13
Not connected to water supply	10	7	21	24
Number of zones	14	12	7	8

Main results of the survey are summarized in Table 2.7.1. The following are major features of the results that are of particular interest.

- 1) Shares of households connected to central water supply service (WSS) which additionally use private or community wells are: 100 % in Falesti and Riscani, 73 % in Balti, and 66 % in Riscani. This is due to the situation that water is not sufficiently available from WSS. The situation is worst in Falesti where water is available only one or two days per week, and even in these days water is supplied for only some 2 hours. Balti and Soroqa are in much better situation, but availability of water is still for 7 - 9 hours per day in 5 - 6 days of a week.
- 2) Naturally, overwhelming majority of households not having WSS want to have it. This demand is highest in Riscani (95 %) and lowest in Soroqa (71 %).
- 3) Generally, the share of households satisfied with the quality of water is high among those using shallow wells, and low among those having WSS. Majority (75 % - 86 %) of households using shallow well water think that the water is safe to drink.
- 4) The ratio of households satisfied with the quantity of available water is higher among those having WSS than those not having it.
- 5) Majority of households think that present water may harm the health (63 % - 82 %), water source must be changed (61 % - 76 %), and improvement of WSS is vital (97 % - 100 %).

- 6) Average amount of water consumption per household or per person is very small: smallest at 27 liter/day/person in Falesti and Riscani, and largest in Balti at 39 liter/day/person. Even for households having water supply and sewerage services in Balti, the specific water consumption is around 42 liter/day/person. Since the specific water consumption increases as provisions of water supply and sewerage improve, these figures cannot be referred in planning water supply facilities for the future.
- 7) The share of the expense for water and sewerage services in the total family income is between 2.8 % (Riscani) and 4.4 % (Falesti). Actual average monthly expense for water and sewerage is higher than the amount the respondents think acceptable, except in Riscani.
- 8) Among households having WSS, the share of those having water meter is still low: about 50 % in Balti, 46 % in Sorooca, 36 % in Riscani, and 26 % in Falesti. Majority of households (91 % - 100 %) prefer to pay water charges according to consumed amount measured by water meter.
- 9) Most people think that priorities for water supply improvement are: 1) stable water supply schedule (80 % - 98 %), 2) reduction of water borne diseases morbidity (69 % - 87 %), and 3) removal of unfair conditions in water provision (59 % - 75 %). The order of the priorities is the same in all the 4 cities/towns.

**Table 2.7.1 Summary of the Result of the Sociological Survey in 4 Cities/Towns (Survey Period: 5 to 16 June 2001)**

No	Characteristic	Relative Frequency (% unless indicated otherwise)			
		Balti	Soroca	Falesti	Riscani
1	Total number of respondents	255	114	60	76
2	Sex of respondents: male and female	34.1 and 65.9	43 and 57	34.0 and 66.0	34.2 and 65.8
3	Type of ownership: owner and tenant	93.7 and 3.9	100 and 0	98.3 and 1.7	98.7 and 1.3
4	Type of household: house and apartment	34.9 and 65.1	49.1 and 50.9	73.3 and 26.7	73.7 and 26.3
5	Average number of persons in family (household)	3.1 persons	3.33 persons	3.17 persons	3.4 persons
6	The respondents are working in the following fields				
7	Agriculture	2.7	0.9	15.8	16.4
8	Industry	14.1	9.6	14.0	11.0
9	Construction	4.3	1.8	7.0	4.1
10	Transport and communications	9.0	6.1	3.5	4.1
11	Trade and public alimentation	15.7	19.3	26.3	13.7
12	Education, culture, research	9.4	11.4	10.5	2.7
13	Health	3.5	11.4	5.3	8.2
14	Other	31.4	30.7	17.5	39.7
15	Share of land owner (%) and their average area of land (ares)	32%, 4.98 ares	54%, 4.29 ares	75%, 8.51 ares	76%, 10.55 ares
16	The average income per family	602 lei	616 lei	414 lei	411 lei
17	The main water source: well and WSS	6.7 and 93.3	18.4 and 81.6	41.7 and 58.3	48.7 and 51.3
18	Connected to WSS and sewerage	71	57.0	38.3	28.9
19	Connected to WSS but no sewerage	24.3	24.6	20.0	22.4
20	Connected to WSS but no water	0.8	12.3	6.7	17.1
21	Not connected to WSS	3.9	6.1	35.0	31.6
22	Connected to sewerage	71.4	57.0	40.0	32.9
23	Septic tank	14.5	21.9	20.0	25.0
24	Share of the households connected to WSS having water meters	50.2	46.2	25.7	35.9
25	Share of the households (who must pay) regularly paying for the water service	75.3	71.0	71.4	87.2
26	Share of the households (who must pay) not paying at all for the water service	0.4	2.2	2.9	5.1
27	Average water consumption in a household: l/day per family and per person	113.3 and 39.4	107 and 33	75 and 27	83.6 and 26.8
28	The average cost of 1 m <sup>3</sup> of water from WSS	1.56 lei	2.22 lei	2.27 lei	2.03 lei
29	The average distance to the well	232 m	134 m	204 m	66 m
30	There is no water in the WSS in a day	8.43 hours/day	7.14 hours/day	22.1 hours/day	13.72 hours/day
31	There is no water in the WSS in a week	0.95 days/week	1.67 days/week	5.44 days/week	4 days/week
32	Share of population satisfied with water quality	25.1	44.7	46.7	56.5
33	Share of population satisfied with water amount	63.9	53.3	26.7	30.3
34	Share of population satisfied with the existent intermittent water supply	52.9	53.1	6.9	3.1



No	Characteristic	Relative Frequency (% unless indicated otherwise)			
		Balti	Soroca	Falesti	Riscani
35	Share of population with WC and central sewerage	70.9	53.5	38.3	30.3
36	Share of population having washing machine	64.6	75.4	70	68.4
37	Times of use of washing machine per month	3.39 /month	2.94 /month	3.17 /month	3.54 /month
38	Share of population with water heating devices	10.6	13.2	10	19.7
39	Average number of families, which use water from the same well	185.6	76.7	52.72	39.2
40	Share of population with WSS, who additionally use well water	73.3	65.6	100	100
41	If connected to WSS, times of bringing well water	2.46 /day	3.56 /day	3.64 /day	3.9 /day
42	If not connected to WSS, times of bringing well water	4.2 /day	7.26 /day	4.83 /day	6.4 /day
43	Share of population using well only who think that well water is safe to drink	80.0	85.7	76.2	75.0
44	Share of population who think that water may harm health	80.8	65.8	81.7	63.2
45	Share of population who think the water source must be changed	75.3	60.5	71.7	76.3
46	Share of respondents who have only wells and want to connect to central WSS	80.0	71.4	88.9	94.7
47	Total expenses for communal services (electricity, water, sewerage, waste)	91.88 lei	87.88 lei	61.05 lei	79.76 lei
48	Share of water/sewerage charge in the total payment for communal services	18.99	25.31	29.38	18.58
49	Average water/sewerage payment	18.51 lei	23.05 lei	18.39 lei	11.63 lei
50	Share of expenses for water and sewerage in the total family income	2.95	3.6	3.86	2.66
51	Average monthly charge acceptable for respondents	12.37 lei	15.52 lei	17.3 lei	17.71 lei
52	Share of population who prefer to pay by water meter for the consumed amount	92.5	96.2	100.0	91.1
53	Share of population who think that improving WSS is vital for the city	98.0	96.5	100.0	97.4
54	From the stated measures to be taken:				
	- Firstly: IMPROVING THE WSS	47.2	60.5	71.1	72.4
	- Secondly: INSTALLATION OF WATER METER	14.3	13.2	18.3	11.8
55	From the stated variants, the priority ones are:				
	- 1 <sup>st</sup> place: Stable WS schedule	79.6	79.8	98.3	97.4
	- 2 <sup>nd</sup> place: Decrease water borne morbidity	79.6	69.3	86.7	72.4
	- 3 <sup>rd</sup> place: Stop unfair difference in water supply	61.2	58.8	75.0	65.8
56	Main cause of existent problems in the process of WS:				
	- Obsolete technologies	15.5		36.8	
	- Insufficient fund	16.7	29.8		28.8
	- Incompetent management		20.2	15.0	20.5
	- Expensive electricity		14.9	15.0	17.8
	- Large water losses	25.5			
57	Best institution for administering the centralized WSS is:				
	- A private company	16.5	28.1	33.3	36.0
	- The state	36.9	32.5	23.3	29.3
	- The Mayoralty (or Apa Canal)	27.1	21.9	21.7	18.7

## **2.8 Conditions of Environment and Health**

### **2.8.1 Legal and Policy Frameworks for Protection of Environment**

#### **(1) Legal Framework**

The Republic of Moldova has a comprehensive set of environmental laws and regulations. The structure of national environmental legal framework consists of laws and codes, governmental decrees, ministerial decrees, rules and standards. There is a general consensus that this existing body of laws, decrees, official rules and standards is a sufficient base for addressing the country's environmental issues.

Under the constitution, the structure of national environmental legal framework consists of four (4) Codes, five (5) major Laws and eighteen (18) Laws as shown in Figure 2.8.1.

#### **(2) Environmental Standards**

This section describes the environmental standards in the Moldova. The major environmental standards are listed as below.

##### **1) Water**

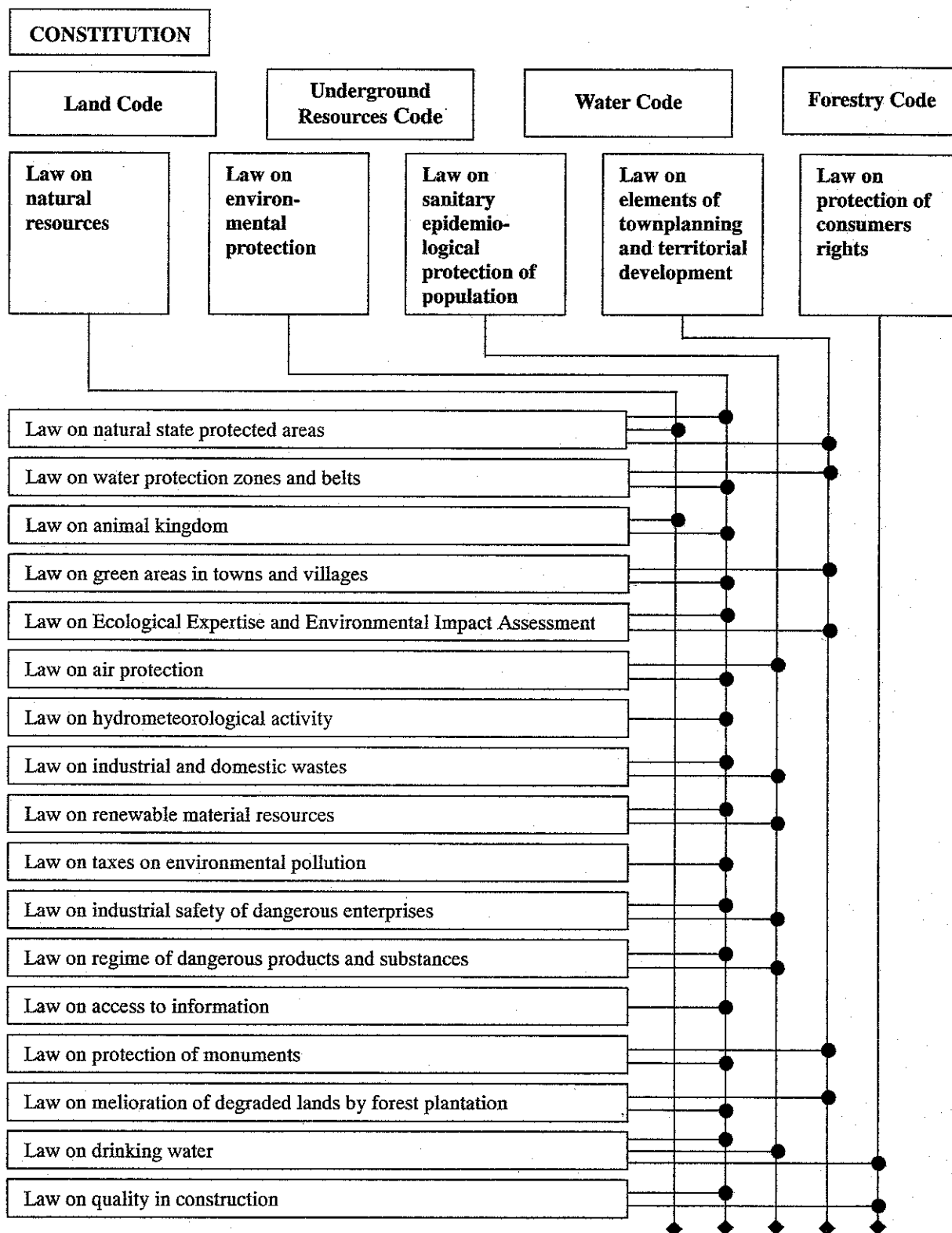
There are the following standards on the quality of water:

- Drinking water quality standard (GOST 2874-82)
- Water quality requirements applicable to the non-centralized water supply (Hygienic regulation Nr. 06.6.3.18-96.)
- The raw water quality standard for water supply (GOST 2781-84)
- Protection of water bodies against pollution (Hygienic regulation Nr. 06.6.3.23. 03 July 1997)

These are summarized below.

##### Drinking water quality standard (GOST 2874-82)

Drinking Water Quality Standard (DWQS) was put into the force in 1982 as one of the former USSR standards, and applicable to waters supplied through centralized water supply systems.



**Figure 2.8.1 Legal Framework for the Protection of Environment**

The DWQS stipulates following provisions for centralized water supply systems in terms of drinking water quality:

- i) Hygienic requirements, including values for parameters and references to the testing methods.
- ii) Requirements for water quality control, including description of institutional responsibilities, methods and frequency for sampling, sampling points at water bodies and within the pipe network.

According to the DWQS, twenty-six (26) parameters are provided to monitor water quality at the source and in the pipe network by water supply authorities. The parameters are divided to three categories: basic items for maintenance (14), chemicals of health significance (10), and items of bacteriological quality (2). Specific values in the DWQS are shown in the Supporting Report.

Water quality requirements applicable to the non-centralized water supply (Hygienic regulation Nr. 06.6.3.18-96.)

In 1996 the Ministry of Health has provided hygienic regulation, which is applicable to the non-centralized water sources (shallow wells and springs). The Regulation contain: (i) hygienic requirements for allocation of wells; (ii) requirements for construction of springs; (iii) water quality parameters; (iv) requirements for management of non-centralized water sources; (v) rules for control of non-centralized water sources; (vi) sanitary passport and instruction for disinfecting of water source (refer to the Supporting Report).

The raw water quality standard for water supply (GOST 2781-84)

The Raw Water Quality Standard (RWQS) has been applied in the year 1984 as all-union normative. The standard is linked with the water sources for new construction and reconstruction of centralized water supply of drinking and industrial purposes. The standard provides hygienic and technical requirements for water sources and rules for their selection in order to ensure health protection of population.

The RWQS contain following items: (i) rules for selection of water source and assessment of water bodies; (ii) hygienic and technical requirements for water bodies and water infrastructures; (iii) classification and methods of water treatment; (iv) requirements for water quality investigations of ground and surface waters (refer to the Supporting Report).

Protection of water bodies against pollution (Hygienic regulation Nr. 06.6.3.23. 03 July 1997)

This Regulation prescribes general principles of protection of natural water against pollution and contain following issues:

- (i) water quality standard for water bodies used for drinking and social-cultural purposes; (ii) requirements for protection of water bodies in case of various economic activities; (iii) requirements for wastewater discharges; (iv) hygienic requirements for allocation, design, construction, re-construction, re-equipment of facilities which can pollute surface waters; (v) hygienic rules for operation of facilities; (vi) list of 238 chemical components for which Sanitary Maximum Admissible Concentrations are established; (vii) classification scheme for assessment of water bodies in accordance with hygienic requirements (refer to the Supporting Report).

The standard prescribes hygienic requirements to the surface raw water for centralized water supply systems, and can be used for bathing, recreation, irrigation, tourism etc. The values of parameters closely follow the RWQS (GOST 2781-84), sources of centralized economic-drinking water supply.

2) Air

GOST 12.1.005-88 prescribes air quality standards: occupational standard and standard for human settlements. Specific values are shown in the Supporting Report.

3) Noise

GOST 12.1.003-83 prescribes occupational safety requirements for noise. Specific values are given in the Supporting Report.

**(3) National Environmental Policy, Plans and Action Programs**

There are various policies and strategic documents prepared both in the pre-independence and transition periods. There is considerable overlap between these documents, particularly at the broad scale of national policy objectives and in terms of priorities.

In 2001, the Ministry of Environment, Construction and Territorial Development has prepared a draft of New National Environmental Policy which is currently under consideration by the Government and Parliament.

The priority areas of the proposed environmental policy are:

- i) Strengthening of environmental capacity and collaboration with other sectors of national economy
- ii) Regulation of the impact, pollution prevention and environmental assessment
- iii) Financing of environmental activities
- iv) International cooperation
- v) Facilitate access to information, justice and public participation in the decision making
- vi) Sectoral issues
- vii) Protection and utilization of natural resources
- viii) Mechanisms for implementation of new environmental policy

Following mechanisms has been proposed in order to support implementation of New National Environmental Policy:

- Polluter pays principle.
- Natural resource user pays principle.
- Damages compensation mechanism.
- Taxes and other privileges.
- Ecological insurance.
- Public informing.
- NGOs involvement.
- International bilateral agreements.
- Collaboration with international bodies.
- Attraction of Technical Assistance for capacity building and reforming of environmental and natural resources sectors.

## **2.8.2 Environmental Characteristics of the Study Area**

### **(1) Fauna and Flora**

Natural areas, namely, forests, water bodies, and nature protection area, cover only 8 percent of the Study Area. Natural areas are narrowly left along the riverside/lakeside and in the areas that are unsuitable for agriculture. General state of fauna and flora are shown in Figure 2.8.2.

Species of wild animals and birds in the Study area are as follows:

Animals: Wild boar, European gopher, Roe deer, Brown hare and Fox.

Birds: Ducks (wild duck, gray ducks, teal-whistlers, etc), Bald-coot, White stork and Partridge

There are no rare species of plants in the Study area, except Wild grape along the Prut River.

## **(2) Conservation Areas/Points**

Conservation area/points for natural objects under protection in the Study area are as follows (refer to Figure 2.8.3):

- Herbs and other type of plant: on the south of Balti
- Valuable forest: along the Prut River
- The Goloshnitsa forest along the Nistru River
- Fossiliferous stratum (fauna): on the south of Soroca
- Natural landscape: on the west of Soroca
- Suta-de movile: on the south-east of Riscani
- Izvoare: on the south of Falesti
- Geological points: along the Prut River and Nistru River

## **(3) Water Quality**

There are three representative rivers in the Study Area: Nistru River, Prut River and Raut River as a tributary of Nistru River. The states of the water quality of Nistru River and Prut River have been already discussed in Section 2.4.

Raut River flows through the central part of the city of Balti and merges to Nistru River. The river has small flow rate and the water quality is very poor as it is polluted by various point and diffuse sources, among which the sources in the city of Balti particularly influence the quality of the Raut River water.

The state of the groundwater quality is also as discussed in Section 2.4.

## **(4) Air Pollution / Noise**

### **Balti**

Air quality in the city of Balti is a serious environmental problem as a number of pollution sources are located in the limits of the city.

The principal stationary pollution sources are heating facilities and factories. In 1999 Environmental Inspectorate implemented regular control of stationary pollution sources and identified that food production factory and several heating facilities were discharging pollutants at the levels exceeding admissible levels.

All the stationary air pollution sources within the city together discharged 386 tones of dust, 419 tones of NO<sub>2</sub>, 812 tones of SO<sub>2</sub>, and 367 tones CO. Electro-heating station in Balti and factory of construction materials production are recognized as principal stationary air pollution sources in the country. Electro-heating station in 1999 emitted 6 tones of dusts, 382 tones of SO<sub>2</sub>, 46 tones of CO, 152 tones of NO<sub>2</sub>, 2,4 tones of CH<sub>x</sub>, 0,8 tones of V<sub>2</sub>O<sub>5</sub>, and construction materials factory in 1998 emitted 32 tones of dusts, 11 tones of CO, 1,2 tones of NO<sub>2</sub>.

The transport vehicles are mobile pollution sources, the traffic is very intensive and car's pollution is important environmental concern in the town. According to the assessment of the Environmental Inspectorate in 1999 mobile pollution sources in Balti contributed more than 88 % of pollution from the total air pollution in the city. The regional Environmental Inspectorate is controlling the automobile exhaust gas emissions periodically at the entrance to the city and makes periodic inspections at the major enterprises.

Noise level in the city is typical for a middle-scale city and the noise is mainly originated from the traffic at the principal routes within the city.

#### Soroca

Air quality in the city of Soroca is typical for small urban settlement and relatively good. There are no important stationary air pollution sources reported. It is because factories are working at very limited capacities now. The town heating system is not in operation for last 2-3 years. It is expected that after construction of natural gas pipe system, the heating utilities will use natural gas that is environment friendly fuel. Because the traffic in the city is not very intensive, the automobile emissions are not considered as significant pollution sources. The regional Environmental Inspectorate is controlling the automobile exhaust gas emissions periodically at the entrance to the city.

Noise within the city is not considered as important problem for the same reason as described above.

#### Falesti

Air quality in Falesti town is typical for small settlement and good. There is no important stationary air pollution sources reported. It is because factories are working at very limited capacities now. The town heating system is not in operation for last 2-3 years. The traffic in the town is not intensive, and automobiles are not considered as important sources of air pollutants. The regional Environmental Inspectorate is controlling the automobile exhaust gas emissions periodically at the



entrance to the town. Noise within the town is not considered as important problem for the same reason.

#### Riscani

Air quality in Riscani town is typical for small settlement and good. There are no important stationary air pollution sources reported. The town's heating system is not in operation for last 2-3 years. The traffic in the town is not intensive, and automobiles are not considered as a important source of air pollutants. The regional Environmental Inspectorate is controlling the automobile exhaust gas emissions periodically at the entrance to the town. Noise within the town is not considered as important problem for the same reason.

#### **(5) Archeological Sites**

Soroca City is well known for important archeological and historical sites in Moldova. The town was created as fortification at the bank of the Nistru River. The ancient fortress in the center of the town has been renovated. The archeological, ethnographical and natural museum is situated not far away. A few spectaculars and historical bridges and caves are located at the surrounding areas of Soroca City.