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RAW WATER PRICING IN ROMANIA

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1 Background

In 1992 national water demand equalled around 85% of capacity. Since then demand has fallen to some 40% of capacity as a result of the economic decline precipitated by the collapse of the Russian economy. This, together with other factors, such as severe inflation, has created serious problems for the economics of water supply in Romania, and for the company responsible, Apele Romane.

(i) Inflation

Inflation causes tariff increases to lag behind cost increases.

This leads to a continuous deficit between expenditure and revenues.

(ii) Unpaid bills

Fifty percent of bills are not paid. Nevertheless the income is recorded as if they have been paid so that the apparent deficit is only 2% of turnover although the cashflow deficit is 50%.

This results in a chronic shortage of cash with the consequence that:

- Revenues are insufficient to pay for proper maintenance and care of the physical structures. The assets then deteriorate and a maintenance deficit accumulates. Eventually assets have to be replaced early leading to a requirement for new investment capital.
- Funds for capital investment are limited. Tariffs include a national 10% "profit" that is intended for capital investment but bad debts reduce or eliminate the profit margin and it is in any case not related to the actual need for capital investment. The result is a deficit in the capital available for investment.

(iii) Depreciation charges are too low

Law No 15, 1994 states that depreciation cannot be charged for public assets where no investment has been involved (eg lakes, forests etc.) but it is said that this has been (mis)-interpreted by the Finance Ministry as implying that depreciation cannot be charged on any public assets.

(iv) Water prices are too low

For proper maintenance and operation of the system and to provide adequate funds for investment existing raw water tariffs are probably too low.

Raw water prices constitute only a small percentage of municipal water prices (domestic and local industrial users) and are a small cost component for many industries. There is therefore insufficient incentive for water users to use water efficiently and reduce their consumption. This affects

- municipal suppliers, who allow excessive leakage from the distribution system;

- agriculture, where inefficient irrigation technology may persist and crops may be grown whose value is less than the real cost of the water used to irrigate them;
- industry where even simple methods of reducing water use may be neglected.

Economic difficulties have depressed farm prices and thus demand for irrigation water (which has also benefited from the absence of recent droughts) and loss of eastern markets has depressed industrial production and thus industrial demand for water. Nevertheless these problems will not persist in the long term and eventually demand for water will revive, although not to previous levels.

(v) Measurement of water use is not reliable

Lack of reliable means of measuring water consumption leads to uncertainty in the actual volumes abstracted. This in turn makes it difficult to detect when use exceeds the permitted volume. It also makes it difficult to determine losses and waste with any confidence and means that the calculation of charges for water is unreliable. The unreliability of historical data on water use means that demand forecasts are uncertain. Accurate measurement of water consumption is an essential requirement if price reform is to be effective. This problem is being addressed with the purchase of new meters.

(vi) Declining demand

A very high proportion of the costs of maintaining the supply of raw water are fixed (as are flood protection costs) and independent of the volume of water actually supplied. These costs must be recovered and if demand falls the fixed cost element of the tariff must increase in proportion. Declining industrial use results in large increases in tariffs for the municipalities, who must, in effect, now carry a larger share of the burden of fixed costs. Over the whole country total water supply capacity is around 20 billion m^3. In 1992 demand reached around 17 bm^3 and water shortages were threatened. In 1999 water demand has fallen to about 8 bm^3 but fixed costs are unchanged so that tariffs should need to increase in real terms by around 100%. Experience in other countries suggests that water demand is unlikely ever to recover to its former levels because the old water-intensive technologies will not revive but will be replaced in future by much more water-efficient plants.

2 Possible future pricing policies

2.1 Objectives of pricing

There are two possible objectives in pricing raw water. The first is to recover the costs of water management and the second is to encourage users to use the water efficiently. In general these objectives are compatible but circumstances can arise (at least in theory) where a higher price is needed in order to reduce demand than is required for cost recovery.

2.1.1 Cost recovery

Costs can be considered under different categories.

Operating costs

Operating costs include salaries, materials, energy and all the day-to-day costs of providing water, including routine maintenance of the physical assets.

Fixed and variable costs

Since a high proportion of costs are independent of the volume of water supplied there is merit in separating operating costs into fixed (independent of the volume of water supplied) and variable (proportional to the volume of water supplied). Tariffs must be set to ensure that fixed costs are covered. Indeed there is an argument for charging a fee for the water supply contract, proportional to the volume specified in the contract, that is sufficient to cover fixed costs (capital and operating) and charging for water actually supplied at a tariff sufficient to cover the residual variable costs.

Capital investment and capital charges

For assets with a finite life that will need to be replaced eventually depreciation is calculated by dividing the replacement cost of the asset by its expected life.

For assets with an indefinite life (eg dams, dykes etc.) this method cannot be used. In some countries depreciation is replaced by an asset management plan in which the cost of repair, rehabilitation and renewal of the asset is calculated. In this case an annual charge for maintenance, rehabilitation and renewal replaces the depreciation charge. The renewals component may not be spent every year but can be accumulated until required. The introduction of this charge in Apele Romane would overcome the legal problem of making depreciation charges on public assets.

In calculating the annual cost of new investment the calculation depends on how the asset is financed.

For assets financed by debt the annual cost is the interest plus the capital repayments. Depreciation is usually assumed to be equal to the capital repayments and if the asset has to be replaced it is assumed that the debt can be renewed. Inflation, however, erodes the value of the capital repayments and, in order to compensate for inflation, depreciation payments are needed in addition if the asset is to be replaced by a comparable structure of comparable cost. Annual payments on loans at different interest rates and over different periods are shown in Table 1.

Table 1 Annual repayments on loans at different interest rates and for varying periods

INTEREST RATE	ANNUAL PAYMENTS FOR LOAN OF 100 UNITS OVER PERIODS (YEARS)					
(excluding inflation)	15	20	25	30	35	40
0%	6.67	5.00	4.00	3.33	2.86	2.50
1%	7.21	5.54	4.54	3.87	3.40	3.05
2%	7.78	6.12	5.12	4.46	4.00	3.66
3%	8.38	6.72	5.74	5.10	4.65	4.33
4%	8.99	7.36	6.40	5.78	5.36	5.05
5%	9.63	8.02	7.10	6.51	6.11	5.83
6%	10.30	8.72	7.82	7.26	6.90	6.65
7%	10.98	9.44	8.58	8.06	7.72	7.50
8%	11.68	10.19	9.37	8.88	8.58	8.39

9%	12.41	10.95	10.18	9.73	9.46	9.30
10%	13.15	11.75	11.02	10.61	10.37	10.23

If the investment is financed out of profits then the asset must be depreciated and depreciation payments must be increased in line with inflation. An additional question is whether the asset should earn a return (profit) and, if so, what rate of return is appropriate. For an investment I, with a lifetime Y years and a rate of return of r%, the annual payments would be [I*(1+r/100)^Y]/Y. These payments must be increased in line with inflation. The impact of rate of return on annual capital repayments is shown in Table 2.

Table 2 Annual payments on an investment of 100 currency units at different rates of return over different periods

RATE OF RETURN	ANNUAL PAYMENT OVER PERIOD (YEARS)					
(excluding inflation)	15	20	25	30	35	40
0%	6.67	5.00	4.00	3.33	2.86	2.50
1%	7.74	6.10	5.13	4.49	4.05	3.72
2%	8.97	7.43	6.56	6.04	5.71	5.52
3%	10.39	9.03	8.38	8.09	8.04	8.16
4%	12.01	10.96	10.66	10.81	11.27	12.00
5%	13.86	13.27	13.55	14.41	15.76	17.60
6%	15.98	16.04	17.17	19.14	21.96	25.71
7%	18.39	19.35	21.71	25.37	30.50	37.44
8%	21.15	23.30	27.39	33.54	42.24	54.31
9%	24.28	28.02	34.49	44.23	58.33	78.52
10%	27.85	33.64	43.34	58.16	80.29	113.15

Since there are no shareholders to receive dividends the return element in the capital payments would replace the 10% notional profit currently included in the tariff that is intended to provide for capital investment. A rate of return needs to be chosen that will provide an approximately similar sum, or alternatively a lower rate of return can be used and a lower notional profit charged so that the two together are sufficient.

It might be argued that, while water supply assets generate revenue and can justify a rate of return, flood protection assets do not. On the other hand there is just as great a need to generate capital for flood protection as there is for water supply and a standard rate of return should be charged on all capital, irrespective of its function.

It should be noted that the payments for generating a rate of return are higher than those for loan repayment. The difference represents additional capital for new investment.

Bad debts

Unpaid bills have a crippling effect on Apele Romane's cashflow. It needs support from the ministry in applying effective sanctions to those who fail to pay water bills. Those who cannot pay should receive subsidies direct from the State through the appropriate ministry and not from Apele Romane in the form of tariff concessions or through bad debts.

Tariff discounts (for example by setting irrigation tariffs at a low level or by exempting some users from water charges) and unpaid bills to Apele Romane mean that other water users must pay higher tariffs to subsidise those who do not or cannot pay. This distorts the market and places Apele Romane in an impossible financial position. The task of Apele Romane should be to manage water resources and supply water. It should not be responsible for making judgements on ability to pay nor for administering a subsidy system. Its tariffs should be based on true costs and not distorted for political reasons

2.1.2 Tariff structure and demand management

Uniform tariff

At present uniform national tariffs are set for each category of user. These tariffs apply for any volume of water although there are penalties for over-abstraction beyond the contract quantities.

Uniform national tariffs conceal considerable differences in water costs between basins and mask large cross subsidies. Uniform tariffs regardless of the volume of water consumed provide only a limited incentive for users to economise on consumption unless the tariffs are relatively high.

Marginal cost pricing

Where resources or production capacity are fully utilised and additional demand requires new investment there is a case for using marginal cost pricing. In this case the tariff is based on the additional cost (capital and operating) that must be incurred to provide water when the capacity of the existing system is exhausted. The new tariff is typically appreciably higher than the original tariff and in principle ensures that new users are deterred unless the value of the water supply to them exceeds its cost. The situation in Romania in 1992, when consumption equalled 85% of capacity, might well have justified this approach.

At present, however, consumption is only 40% of capacity and seems unlikely to rise significantly in the medium and perhaps even the long term. This has led to higher unit costs because assets are under-utilised. The marginal cost of supplying additional water is therefore much lower than the existing tariff. Additional demand would benefit everyone because it would allow tariffs to be reduced.

Rising block tariffs

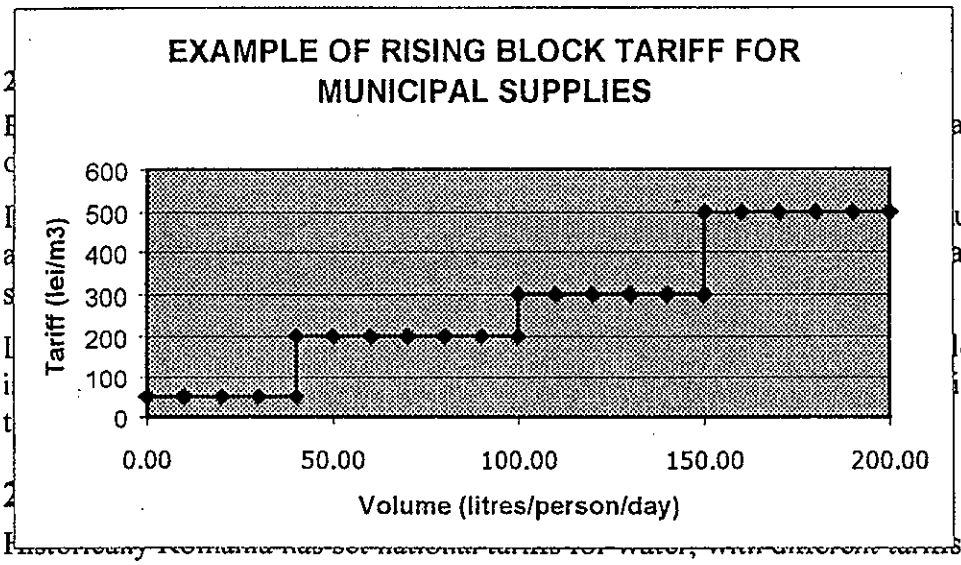
It is very unlikely that a single tariff will satisfy all objectives – recover costs, encourage economy in the use of water and protect poor people.

The possibility of a variable tariff should therefore be considered, of which the simplest is the so-called rising block tariff. It requires, however, accurate metering of water consumption.

For urban supplies domestic customers typically receive, say, 40 litres per person per day at a very low tariff. This ensures that everyone has access to sufficient clean water for drinking and cooking and to guarantee health and hygiene. The next, say, 70 litres are charged at a rate sufficient to recover the costs of the water supplier. After this the tariff rises to maybe 50% above the cost-recovery tariff and consumption equivalent to more than 80% of the sustainable yield of the catchment is charged at the marginal cost of new supplies.

A different but comparable system would be used for industrial and agricultural users.

Apele Romane could estimate demand and make allowance for, say, 25 - 30% leakage and supply water to the municipal water company according to this tariff schedule. This would penalise companies whose losses from leakage exceeded this value. In practice the changes would have to be phased in over a period of perhaps 5 years to allow the municipal water companies time to adjust to the new system. For industry and agriculture Apele Romane could either make its own estimates of reasonable demands or could negotiate a phase introduction of the new tariff structure.



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for different categories of user. In future tariffs will be set at the river basin level. Tariffs in a basin with limited resources will thus be higher than in a basin with ample resources. This in principle will encourage heavy water users to locate in basins with low tariffs where water is abundant.

2.2.1 Tariff differentials

Apele Romane has calculated tariffs for each of the eleven river basins in Romania and revealed two problems with this approach.

- There are large variations in tariffs between basins. This is partly due to the fact that most of the costs of flood protection occur in the mountainous western basins, whose tariffs are therefore higher than others. This difference has nothing to do with the scarcity of water. Nevertheless if the higher tariffs reduced demand the tariffs would have to increase in proportion in order to provide sufficient funds to maintain the defences. It may therefore be necessary to separate out flood protection costs for the whole country and spread these costs over all the water supplied at the national level. This would mean that there would be a uniform national tariff for flood protection. There may be other elements of cost, such as

the collection of hydrometric data, whose costs should be recovered nationally. Local river basin costs would be added to this national tariff to give the basin tariff. Alternatively the State could fund flood protection directly. This would have the effect of reducing water tariffs.

- The basin with the highest tariff is the Iasi (Prut) and this tariff is forty times the lowest tariff (Stanca). The reason is only partly flood protection costs. It is mainly due to the fact that the population in this catchment is remote from the water source and the cost of operating a large distribution system is spread over a rather small volume of water supply (only the Stanca has a smaller volume). If the high costs of water were to drive development elsewhere and the population was to decline then tariffs would have to rise even higher. In this case the high tariff is giving the wrong signal. One solution would be to merge small basins to create fewer larger basins so those anomolously high tariffs are less likely.

2.2.2 Sustainable yield

Each basin needs to calculate its maximum sustainable yield of water. This needs to be done not for an average year but for a dry period with, say a 10 or 25 year return period (probability of 10% or 4% respectively. When demand exceeds, say, 80% of the sustainable yield then the excess demand should be charged at the marginal cost.

2.2.3 Role of Apele Romane

The role of Apele Romane will change when river basin pricing is adopted. There will, however, still be a need for central functions that Apele Romane could satisfy. These include:

- Calculating and administering the national component of the water tariff.
- Allocating funds for national tasks such as flood protection.
- Ensuring that the river basins use the same consistent methodology for calculating basin tariffs.
- Ensuring that tariffs are neither too high (profiteering) or too low (failing to cover costs).
- Providing arbitration in disputes over inter-basin water transfers.
- Setting targets for efficiency in the river basins.
- Auditing the results of the basins.
- Providing methodology for river basin plans and quality control for the plans themselves.

3 Models

After extensive discussions with Apele Romane we concluded that the company faces important policy decisions where modelling offers little help.

These decisions include:

- The adoption of a two-part tariff – national and local basin
- The choice of mechanism for providing funds for capital investment
- Assets with indefinite life: depreciation or asset renewals charge?

- Dealing with large variations between tariffs in different basins
- Methodology for determining sustainable yield
- Price elasticity curves for different users
- Relation between level of bad debt and tariff for different users

4 Water Quality Management

This was outside the terms of reference of the present contract but the principles have been discussed in an earlier paper.

Essentially the cost of activities associated with the improvement, maintenance and protection of water quality should be recovered in the charges made for licensing polluting discharges. This will ensure compliance with the polluter pays principle enshrined in the proposed EU Framework Directive on Water Policy. It will also avoid burdening the water tariff with the additional costs of water quality monitoring and protection.

It will be important that discharge standards are set nationally although charges will vary between basins.

5 Conclusions

- A standard methodology for setting tariffs should be developed. Tariffs for each user should reflect the cost of supplying water to that user. Treated water supplied to municipal water companies would have a higher tariff than that supplied to industry directly, which would be higher than the tariff to farmers and companies that abstract water directly themselves.
- Reliable water meters need to be installed.
- A two-part tariff is suggested comprising a national and a local component.
- A rising block tariff system is proposed.
- The impact of the new tariffs on demand and bad debts needs to be determined.
- Sustainable yields for each catchment need to be determined, together with the marginal cost for increasing the yield.
- Administrative costs will be redistributed between the centre and the basins but Apele Romane needs to make a determined effort to improve its efficiency and productivity and reduce its costs. Peripheral activities should be examined and, if possible, either transferred to another agency or ceased.
- Changes should be phased in over a period of several years to allow users time to adjust.
- Changes should be introduced flexibly so that modifications can be made to eliminate unwanted consequences. This is particularly true where new legislation is adopted. New laws should be enabling and facilitating and not prescriptive.
- The role of the basin agencies and of Apele Romane should be clearly defined.
- The role of the basin agencies should be defined consistently with the proposed EU Framework Directive on Water Policy

WATER USER SPECIFIC PROBLEMS OF THE IN APPLYING THE PRICE AND TARIFF SYSTEM

Government Decision 1001/1990, on establishing a Uniform payment system for water management products and services was approved in 1990, aiming to "increase the role of economic instruments in the rational management and protection of water quality and to base the water management price and tariff system on economic principles.

> *"With a view to stimulate the users to reduce water demand and improve water quality, this decision shall provide prices and tariffs to be applied for water management products and services and penalties for violations of the legal provisions regarding water quantity and quality uses."*

Prices and tariffs were designed to cover the full costs of operation, maintenance and repairs in the National Water Management System and part of the depreciation of the hydrotechnical works in its administration, as flood control works are exempted from depreciation by law.

The implementation of the new price system was laborious, as the users had difficulty in accepting that water is a good **with a value.**

In the old system, only users that received water from reservoirs had to pay for it, a different price for each reservoir.

Impacts appeared in three areas:
- prices for abstracted water;
- tariffs for discharge of contaminants in the water streams;
- penalties for failure to comply with regulations and contracts.

GOALS

The **goals** in introducing a price system were largely attained, namely:

- to integrate organically water management activities with the other national social and economic activities;
- to recover operation and maintenance costs in this sector, without financing infrastructure, by transferring the financial effort to the beneficiary;
- to change user behavior about water (saving and protection);
- to provide economic and environmental conditions for all the activities involving waters.

After the uniform pricing system was introduced, the users reduced their water demand.

As economic changes occurred at the same time, it is not clear how much of the demand reduction was due to the effect of water pricing and how much to the fact that users reduced production.

EFFECT

The impact on the users was felt in the following aspects:

POSITIVE

- better proportioning of water demand, although demand is typically greater than actual abstraction;
- reduced loss within the water systems in production processes and internal re-circulation of water;
- increased interest in installing flow-meters, to avoid paying for more water than was actually abstracted;
- improved water quality in some of the very polluted areas.

Effect of reduced abstraction:

- Reduced costs for abstraction and for waste water treatment - reduced product price.
- Reduced discharge, therefore reduced impact on the receiving water. But unless treatment plants are retrofitted, this effect is small.
- Reduced circulated water volumes - reduced cost of retrofitting systems - reduced product price.
- By the internal re-circulation of water, total water costs are reduced:
  - reduced total product price; or
  - increased production for the same water price.

NEGATIVE

- since the goal was to achieve larger production and competitive products, investment went primarily into production technologies, while waste water plant and the internal water circulation systems would be upgraded when more profit was obtained;
- company expenses on water, although a small percentage of total costs (1-2%) are paid to the water management companies with great delays.

Bills are paid with priority to suppliers of electricity, gas, raw materials, etc., and only later for water.

PROBLEMS WITH THE USERS WHEN PRICES ARE RAISED OR WHEN PAYMENTS ARE INTRODUCED

- Delayed payment for water management products and services impacts the volume of maintenance and repair work conducted compared to the needs, while the value of delayed payments decreases due to inflation and river beds and river bed construction deteriorate over time.
- Resorting to loans means additional costs due to high interest rates and hence an increase in the real price of water.
- Reduced volumes of abstracted water due to the reduction of production capacities or the shut down of industrial facilities leads to an increase of water prices, as expenses in this sector are relatively constant.

- Insolvent users are sued and made to bear financial penalties, which leads to increase of product prices or reduction of profits, but even so, debt repayment is very laborious.
- In case price is established by river basin, in a river basin with a lot of users, one or two of the large beneficiaries shut down or reduce their production very much, accounts receivable decrease in proportion, revenue goes down, and so the possibility to maintain the river basin system up to its nominal operation parameters disappears.
- Local administrations are one of the customers that pose problems by delayed payments. They distribute water to an important number of small and medium enterprises, that produce for export.

The price of water needs to be brought up to its real value. This will have a negative effect on the users, especially now, in a difficult economic environment.

We appreciate that a uniform price, differing by source and users, would induce a lower impact than price differentials.

Agriculture was privileged by having low prices (the value of water is lower than in industry), that were not adjusted to inflation at the same rate as in industry.

This is a difficult issue, because if a correct price of water for irrigation is introduced, its impact would be greater than in industry.

Currently, very little water is used in agriculture, although the price of water per hectare per year equals that of one egg.

Price update to account for inflation and reduced water abstraction for the users determined revenues that do not fully cover the expenses needed in the system.

Penalties to be disbursed into the Water Fund have not been updated since **1993**, so that their value is no longer a pollution control instrument. Even so, penalized users fail to pay penalties, in disregard of the law.

In case water prices are brought up to needs, so that they may cover increased operation and capital expenses, the users' ability or willingness to pay will also be lower.

In this case, bills will go up, but so will debts.

If prices are to be differentiated by river basin, in some basins the price for the user may grow 7 fold compared to the present. Under such conditions, for the same product, water costs will be greater in some river basins and much lower in others, compared to the current situation of uniform prices, which would greatly impact the respective product price.

We can not further any guess regarding the users' ability to pay, or acceptance of increased prices.

IDENTIFICATION OF EXPENSES TO PROVIDE WATER IN THE SOURCES AND FOR THE USERS

Under exclusive ARRA administration		Administered by ARRA or units of other ministries and central authorities			Administered by the users			Administered by the users or third parties	
	Hydrological and water management works								
National Hydrological and Water Management System	Surface and ground water sources	Water abstractions	Transport Piping	Treatment	Storage Distribution	Water use	Sewer	Treatment	Discharge
						Restitution			
Area of water price source formation (expenses for information systems, maintenance of water sources, operation and maintenance of hydrotechnical and water management works)		Expenses that are added to the source price of water, or, as applicable, to the price of abstracted, transported, treated or distributed water.			Internal expenses of the users.		Expenses to be added case by case, to the users' internal expenses or to be expressed as third party tariffs.		

Average costs of bulk water nationwide and as broken down by river basin

1998

Specification/ Subsidiary	U.M.	Cluj	Oradea	Mures	Timisoara	Craiova	Valcea	Pitesti	Buzau	Bacau	Iasi	Constanta	Stanca	Total Regie
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Total expenses	mill. lei	27.5	14	35.6	18.2	21.15	38.78	47	39.4	32.8	28.5	16.9	3.9	32 3.73
BVC expenses (year 1+2)	mill lei	22.90	13	28.1	17.6	18.6	27.3	40.5	22.3	22	23.5	16.9	3.1	255.80
Supplied volume 1998	mill. m^3	407	221	1045	245	1582	500	1102	583	601	124	1999	114	8523
Average BVC cost (year 1+2)	lei/ m^3	56.27	58.82	26.89	71.84	11.76	54.6	36.75	38.25	36.6	189.52	8.45	27.19	30.02
Total expenses cf. Norms	mill. lei	51.15	33	84.09	33.7	31.5	55.06	76	82.3	72.58	53.01	25.35	7.08	604.82
Normal expenses (year 1+2)	mill. lei	42.9	28.88	70.07	32.5	25.38	37.89	68.29	61.23	50.06	47.45	25.35	5.98	495.98
Nominal average cost (year 1+2)	lei/ m^3	105.4	130.68	67.05	132.65	16.04	75.78	61.97	105.03	83.29	382.66	12.68	52.46	58.18

Evolution of contracted and actually supplied water volumes
during 1991-1994

Evolution of contracted and actually supplied water volumes
during 1995-1998

Situation of supplied water volumes

by category of use - 1998

Evolution of the price and tariff increase index for water management products and services
1991-1998

17

Reference base 1990

Comparison between the price increase index of consumption goods and of water management products and services

Year	Cost index Consumption price	Index Water management price
1991	2.702	2.370
1992	3.104	2.010
1993	3.561	2.606
1994	2.367	2.632
1995	1.323	1.280
1996	1.388	1.460
1997	2.548	2.350
1.09.1998	1.686	1.393

Reference base 1990

Year	Cost index Consumption price	Index Water management price
1991	2.702	2.370
1992	8.388	4.757
1993	29.87	12.398
1994	70.719	32.633
1995	93.534	41.770
1996	129.825	60.984
1997	330.794	143.313
1.09.1998	557.855	199.635

OFFICE OF COMPETITION

TARIFFS

for water management services provided by water management units

	Water Management service	U.M.	Tariff (lei/ U.M.)
1.	**Receiving into the surface waters substances discharged within regulated limits**		
	For suspensions and substances in solution (all the indicators in the permit)	tons	27.487
	For oxygen demanding substances	tons	111.163
2.	**Concentration of electricity potential in the Regie dams**		
	For average head provided by the dams		
	power stations under 4 MW installed power	m head/year	498.056
	power stations between 4 MW and 8 MW	m head/year	669.478
	power stations over 8 MW	m head/year	825.249
1.1.	For volume of water used		
	power stations under 4 MW installed power	10.000 m^3	1.014
	power stations between 4 MW and 8 MW	10.000 m^3	1.386
	power stations over 8 MW	10.000 m^3	2.240

Tariffs do not include VAT and may be applied starting on January 1, 1999.

Penalties for violation of norms regarding water abstraction from the source and discharge of waste waters

Type of violation	Magnitude of violation	UM	Level of penalties lei/ U.M.
1. Exceeding abstracted flow or volumes as legally or contract regulated			
	over 10%, up to 20%		twice the supply price
	over 20%, up to 50 %		three times the supply price
	over 50%		four times the supply price
2. Exceeding during restriction periods of abstracted flows or volumes provided by the legally approved plans, by the water management units			
	over 10%, up to 20%		twice the supply price
	over 20%, up to 50 %		three times the supply price
	over 50%, up to 75%		four times the supply price
	over 75 %		six times the supply price
3. Abstracting volumes of ground water larger than those provided by regulations			
	volume		five times the supply price
4. a) Abstracting water from surface or ground water sources without a permit			
	volume		10 times the supply price or tariff
b) Using products or services without a contract	volume		10 times the supply price or tariff
5. Using the water for a different purpose than the regulation provides	volume		three times the supply price
6. Exceeding the average daily value of permitted quality indicators			
	The difference between permitted amounts and amounts actually achieved.		

Type of violation	Magnitude of violation	UM	Level of penalties lei/ U.M.
- total suspensions		kg	47.84
- chlorides, sulfates, magnesium, sodium, calcium		kg	72.20
- nitrates, organics (CCOCr)		kg	96.40
- organics (CBO_5)		kg	214.80
- ammonium, nitrites, cobalt		kg	479.25
- trivalent chromium, detergents, active anions, fluorine, total iron		kg	958.55
- ammonia, total phosphorus, manganese, nickel, oil products extractable in petrol ether		kg	2875.65
- hexavalent chromium, molybdenum, lead, copper, zinc, sulfide or hydrogen sulfide		kg	9588.50
- silver, arsenic, selenium		kg	19180.00
- cyanides		kg	28768.65
- free residual chlorine (Cl_2)		kg	38360.00
- cadmium, phenols, nitrotylbenzene		kg	47948.00
7. Very toxic substances banned from discharge into the water sources			
- mercury		kg	575377.00
- persistent organo-halogenic, persistent organo-silicic, organo-phosphoric pesticides		kg	958970.00
- carcinogenic substances (benziprene and its compounds, nitroderivative dinitro-ortocresole, dinitro-btylphenole, etc.)		kg	2397425.00

Determination of contaminant substances discharged and analyzed to identify average daily values shall be conducted for all the quality indicators provided in the contract, according to the technical norms of implementation of Government Decision 1001/1990.