WATER SUPPLY AND SANITATION COLLABORATIVE COUNCIL

Water Supply and Sanitation in Central and East European Countries, New Independent States and Mongolia

Final Report

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PROJECT SUMMARY

1. Project description

1.1. Project history, Counterparts

PROJECT HISTORY

At the Rabat meeting, WSSCC suggested as important follow-up initiative to take measures in order to involve sector professionals of Central East European Countries (CEEC), New Independent States (NIS), and Mongolia in the WSSCC network and to integrate those countries' needs into its programme of action. The development and cooperation association Mountain Unlimited, an Austrian NGO, carried out the project as executive agency from July to October 1995.

DONOR

The Austrian Government, precisely the Federal Chancellery, served as project donor.

PROJECT DEVELOPMENT

A regional meeting in Austria for CEEC, NIS and Mongolia, originally foreseen for 1995 and already initiated, could not convene because the financial assistance earmarked by the Austrian Government did not cover the entire budgetary frame and cofinancing attempts proved unsuccessful. At this point, the Council decided that it was reasonable to start the initiative with a survey of the sector situation.

1.2. The project's objectives

TARGET COUNTRIES

The target countries of the implemented project comprise the Central and East European countries, the New Independent States (former Soviet Union), and Mongolia.

MAIN OBJECTIVES

The main objectives were

- to give an overview on the status of the WATSAN sector in the respective area
- to identify the counterparts in the responsible State agencies and sector institutions of the target countries in view of future cooperation
- to learn about the ongoing national sector activities, defined priorities, and the major sectorial problems
- to investigate current or planned sector-relevant activities set up in the resp. areas by external supporting agencies and multinational, interministerial programmes
- to provide for decision-making on the follow-up activities to be performed by WSSCC

1.3. Methods

Establishing contacts

CONTACTS ESTABLISHED

The initial step was to identify and inquire about counterparts in the target countries and officials of external support agencies involved in the WATSAN sector in the countries

SOURCES OF CONTACTS

The following agencies were able to supply us with contacts respectively information on the sector: international NGOs and international organisations (WHO, IRC, UNICEF, UNDP, World Bank, EBRD, Danube Environmental Programme), Austrian trade commissions, target-country embassies in Austria, programme coordination units, and the EC delegation

Information inquiry

In this initial phase of cooperation between WSSCC and sector professionals in the target countries, gathering the following information was deemed effective:

STATUS REPORTS

Available national status reports

MEETINGS

Meetings held in the past or planned for the near future, involving sector professionals of CEEC, NIS and Mongolia

Communication

About 250 Letters of Inquiry were dispatched.

Country Issue Papers (CIPs) were prepared by extracting the most important figures and information from the supplied material. The sources of information included:

- Assessment studies and workshops reports, e.g those held by IRC or by WHO-ECEH within the Danube Environmental Programme
- Various reports, e.g those of target-country Ministries and State agencies, annual reports of cooperation programmes, such as the Black Sea Environmental Programme, HELCOM-Baltic Sea Environmental Programme, UNDP-World Bank Joint Programme
- Personal communications by national officials of State agencies of the target countries and of external support-agency representatives
- Lectures of previous symposia or meetings; summaries, extracts from publications

1.4. Problems encountered

MEANS OF COMMUNICATION

This issue proved to be the most severely restraining factor in the development and outcome of the project. Unfortunately, appropriate communication seemed least possible with the Caucasian and Central Asian countries.

This entailed, for instance, that we were largely forced to send our faxes to the mentioned countries via the Federal Trade Commission in Moscow which attempted, without any guarantee of success, however, to pass them on from there.

The highly arduous conditions of telephone or facsimile communication together with habitual delays in the mailing service certainly have to be taken into account when drafting a project schedule.

WHO IS WHO

For some countries, the state administrative bodies playing the key roles in the sector were not easily identified due to recent reorganisation of the sector. Tracing the most up-to-date telecommunication connections or coordinates caused a considerable loss of time in some instances

LANGUAGE

English or French are not commonly spoken, i.e. in the Caucasus and Central Asian countries. This affected

1. the rate of responsive information from these countries

2. the opportunity for some interested professionals to attend the Forum

COMPREHENSIVE-NESS OF THE TASK

As the project aimed at investigating the WATSAN status in an extensive area, the results can in no way claim to constitute a complete and actual survey of the sector. From the individual feedback and the number of responses, we may conclude that the performance capacity of the contacted agency could not cope with such a comprehensive inquiry. Information on the sector was in some cases only available in the national language, and the schedule did not allow for the preparation of translations or extracts.

COMMENT ON THE RESULTS COMPILED IN THE COUNTRY ISSUE PAPERS

As far as the depth in focus of the work carried out is concerned, the elaborated country reports have to be seen as

- Introductory papers giving a short, concise view on a country and its WATSAN
- Discussion papers summarising the essential information on sectorial performance, and it is in the authors' own interest to incorporate additional and reviewing information as well as up-dated figures on a regular basis.

COMPARABILITY OF DATA

The data and information obtained cannot be fully compared due to the following reasons:

- Topicality: part of them are not up to date, although some only date back to recent years
- Differences in perspective, especially with regard to the formulation of priorities and major problems, varying between State agencies, research institutions and external agencies.

2. Results

2.1. General

The information obtained has enabled us to elaborate Country Issue Papers for 14 out of 26 countries:

COUNTRIES COVERED

Bulgaria, Croatia, Czech Republic, Hungary, Poland, Romania, Slovakia, Estonia, Kyrghystan, Latvia, Moldova, Russian Federation, Ukraine, Mongolia

STANDARDISED FORMAT

A standardised format was adopted for the CIPs along the following lines:

General information on the country
Water Resources
Situation in the Water Supply and Sanitation Sector
    Institutional and legal framework
    Present status of drinking water supply
    Present status of sewerage
Main Problems in the Sector
    Institutional and Technical Issues
    Management and Financial Issues
International Cooperation

2.2 Information on existing status reports

REPORTS EXISTING

The information gathered from the responses of contacted agencies indicated that there are numerous reports which were prepared either by an external agency (e.g. WHO, World Bank, UNDP, UNDP/World Bank Water and Sanitation Programme UNICEF, IRC) or by an individual State agency associated with the national WATSAN sector. Due to restricted timeframe of the project only a few of the papers could be made available.

EXAMPLES

The reports listed below touch upon sector-relevant issues to various extents:

Concern for Europe's Tomorrow: a recently published review of environmental issues across "WHO's" Europe, was presented at the last Conference of the Ministers of Environment and Health in Helsinki, June 1994; with its strong emphasis on water supply, water quality and sanitation, this document is one of the most comprehensive surveys on environmental health ever carried out in Europe. Country responses were brought before WHO by the target countries.

Environmental Country Reports elaborated within the **Danube River Environmental Programme**, provide extensive statements on the situation and difficulties in the riparian countries.

National Reports, were presented to the WHO Regional Office for Europe within the framework of the project Environmental Health Aspects in the River Basin of the River Danube, 1994

National Action Plans: national action plans are currently being drafted for the Danube Environmental Programme and for the Environment for Europe conference in Sofia, October 1995

UNICEF Rapid Assessment Studies, 1992.

Sector papers Evaluation of the Possible Topics for Training per Country, within the UNDP/GEF project Management Training for Municipal Authorities, Final Report 1995, include the principal figures, priorities and problems of the WATSAN sector; the key institutions of the national WATSAN sector were involved in their preparation.

Ukraine: the State Committee for Water Resources Management has informed the executive agency about three major, annual sector reports: the Annual Report on Water Usage and Waste Water Discharges in Ukraine, Annual Report on the Major Indices of Water Usage in Ukraine (both issued by the State Committee of Water Resources), and the Annual Report on the Environment of Ukraine (Ministry of Environmental Protection and Nuclear Safety of Ukraine);

as to the **Russian Federation**, the Federal Programme for Domestic Water Supply, containing several thousand pages, includes action plans and investment estimations

2.3. Present situation

2.3.1. Sector administration

CEEC and NIS are going through considerable political, economic and social changes which exert a strong impact on the institutional and administrative organisation of the WATSAN sector. Some of the key elements of this process are linked to the following issues:

CENTRALIZED PLANNING

Centralised strategic and financial planning by the State has been almost completely abandoned; a firm shift towards decentralisation and privatisation is noticeable

INSTITUTIONAL STRUCTURE

With regard to institutional structure, the system is subjected to significant modifications leading to

- a more decisive role for local governments
- the creation of new river basin authorities
- separation of responsibilities of water quantity and quality
- transfer of management functions into separate ministries and district authorities (Hungary, Russia)

RESPONSIBILITY

The responsibility for water supply and treatment and infrastructure ownership is being conveyed to the municipal level, while more often than not, the State still retains the major share of the companies

DECENTRALIZATION

Decentralization has affected decision-making processes to a high degree and may result in inadequate schemes, particularly if financing is also involved, due to the lack of experience and institutional structure

LEGISLATION

New environmental legislation has been gradually introduced

2.3.2. Water supply and sanitation

Water Resources Quality

POLLUTION OF WATER RESOURCES

Most waters in populated areas and areas exposed to industrial and agricultural activities in CEEC and NIS are to a serious degree affected by contamination. The largest polluters are industry (chemical, metallurgy, cellulose), agriculture and waste water treatment plants effluents.

CURRENT ACTIVITIES

A number of regional programmes, in cooperation and with assistance of the international community, are adressing the issue of river basin and transboundary waters management (Environmental Programme for the River Danube Basin, Black Sea Environmetal Programme, Baltic Sea Environmental Programme, Volga Environmental Programme, UNECE)

Water Supply

COVERAGE

In urban areas the overall state of water supply is quite satisfactory, at least in quantitative terms, but supply deficiencies occur in many rural areas

CONSUMPTION

In comparison to western figures, water consumption is relatively high because of:

Large water losses from networks
Low water prices or water being not metered at all (e.g. Kyrgyz Republic)

WATER LOSSES

Owing to the poor condition of the distribution network, water losses are generally high, with 50% maxima estimated for Moldova and Ukraine

RURAL AREAS

Water supply from private shallow wells is common in many of CEEC and NIS, while the utilised groundwater recourse is likely to be affected by pollution

Waste Water Sewerage and Treatment

COVERAGE

In urban areas of CEEC, the rate of sewer system coverage is adequately developed for the most part, shortcomings again being obvious in rural areas

TREATMENT

The level of waste water treatment, however, is generally lacking, with roughly 50% and 77% for CEEC and Russia, resp., undergoing secondary treatment

OVERLOADING

Treatment plants in many cases are overloaded -

	hydraulically and from nutrient loads caused by untreated industrial waste water
SLUDGE	Due to non-pretreated industrial waste water, sludge is heavily contaminated with metals
SEWAGE NETWORK	The sewage network is frequently aged and poorly maintained, causing secondary contamination of water supply facilities

2.3.3. Drinking water quality

QUALITY STANDARDS	Drinking water standards in CEEC and NIS are generally still based on those of the former USSR. However, compliance with EC directives and WHO guidlines concerning drinking water quality has been taken into focus.
MONITORING	The standards for the monitoring of drinking water quality vary substantially throughout the region, in terms of sampling methods and frequency, statistical procedures and reporting as well as the national quality standards as such. Comparability of data for drinking water is difficult. While data on water-related diseases or effects of chemical contamination are to some extent available, they are not suitable to allow for valid comparison.
LABORATORIES	The local-level laboratories are not always equipped to monitor for many chemicals and viruses.
EXPOSURE TO MICROBIOL CONTAMINATION	Incidents of diseases linked to poor water quality (cholera, hepatitis A, typhoid fever, gastrointestinal diseases) are reported for considerable regions of CEEC and NIS. Cholera: usually restricted to isolated areas, indigenous cases have been recorded for Tajikistan and the Russian Federation (WHO, 1993) Virus diseases, in general, are on the increase, and estimated to be responsible for 70 % of morbidity in the Russian Federation. In 1993, 16 % of the samples did not comply to the quality standards in the former USSR (7 % in Russian Federation, 48 % in Georgia)

EXPOSURE TO CHEMICAL CONTAMINATION

To a certain extent, chemical contamination of drinking water is seriously affecting water quality in CEEC and NIS.
Nitrate: a large part of the rural population is affected by high nitrate concentration from shallow wells, caused by excessive fertiliser application and rural septic tank effluents. In six countries within WHO's Europe (Belarus, Bulgaria, Hungary, Lithuania, Romania, Slovakia), locations are known where nitrate concentrations in drinking water are high enough to cause methaemoglobinaemia.
In many Danube countries, bank-filtered river water is an important source of drinking water, the quality of which is highly correlated to riverine nutrient loads and pollutants.

2.3.4. Common priorities and problems in the sector

On the basis of information obtained through the study, the following major common issues and priorities in the WATSAN sector could be identified (with focus on Danube basin countries):

Organisation

TRANSFORMATION OF THE SECTOR

Transfer of know-how in terms of organisation, management, planning and financing.

Owing to the process of sectorial reorganisation, phenomena of imprecisely defined, dispersed or overlapping responsibilities have at times been reported to interfere with smooth sector performance

FINANCEMENT

Lack of capital in the countries in transition is hampering transformation of the sector and the implementation of even most urgent tasks.

PRICING POLICY

The introduction of cost recovery and accountability as management tools has become necessary in order to ensure sustainability of operations and maintenance of the facilitites.

Underpricing causes a number of problems, such as serious misuse of water, inefficient operation, inadequate maintenance and unreliable water supply and sanitation service delivery.
There is evidence for how the water price has determined consumption. In the course of 1994, the price for drinking water increased from 0,6 to 15 kroner per m^3, presently causing a dramatic drop in per capita water consumption from 400 to 150 litres per diem in

the Czech Republic.

Technical Issues

NEW TECHNOLOGY AND PROCESSES	Exchange of expertise at technical and scientific level, introduction of new technologies
WATER SUPPLY	Network reconstruction and rehabilitation with leak detection and metering as important tools Improvement of coverage in rural areas
WASTE WATER	Upgrading of waste water treatment plants Sludge disposal

☞ references:

Environmental Health Aspects in the Catchment Area of the River Danube, Water Supply and Sanitation, WHO - Regional Office for Europe, Techware 1994
Concern for Europe's Tomorrow, WHO - Regional Office for Europe, 1994, 1995
Management Training for Municipal Water Authorities, UNDP / GEF, 1995
Quo vadis water quality management in Central and Eastern Europe, L. Somlody, in: Water Quality International '94, 1994

3. Tables and Figures

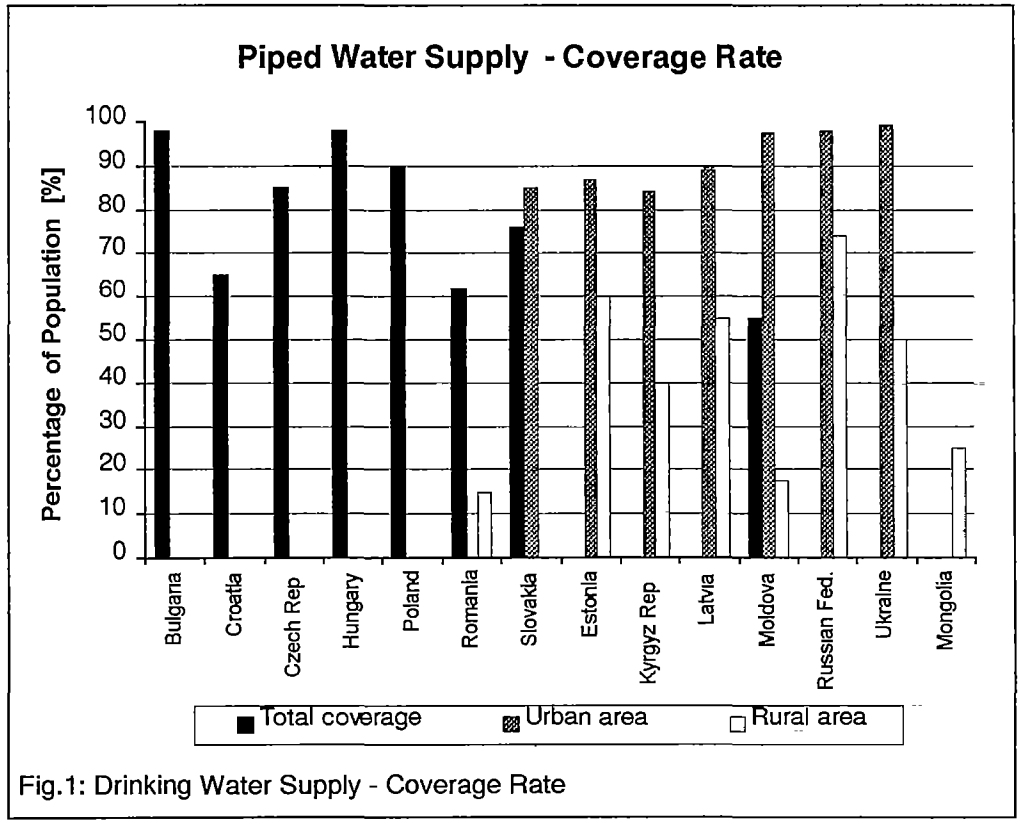


Fig.1: Drinking Water Supply - Coverage Rate

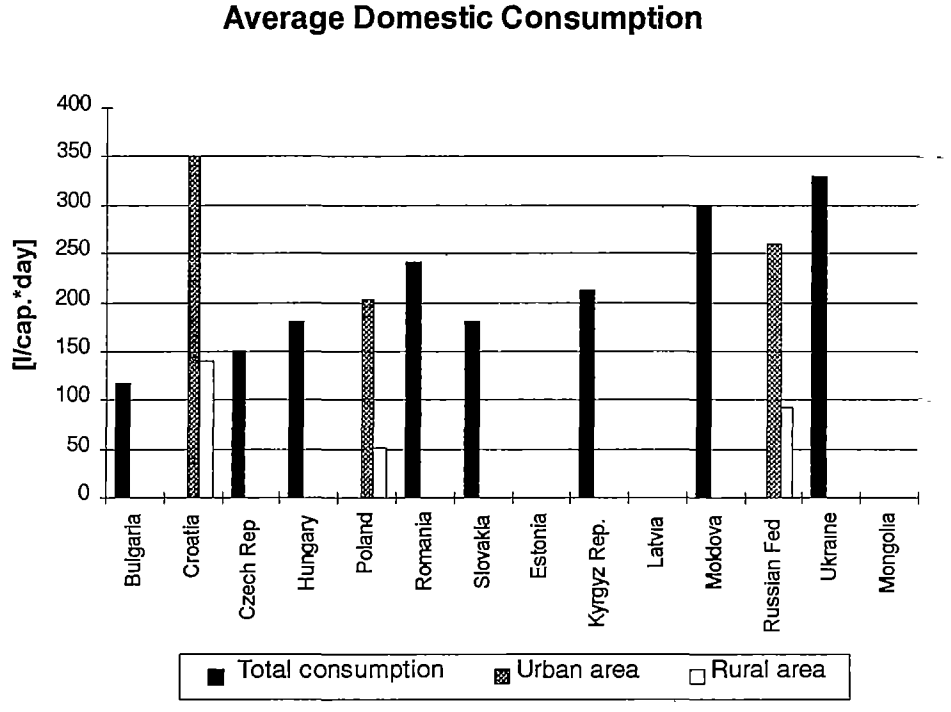


Fig. 2: Drinking Water Supply - Average Consumption

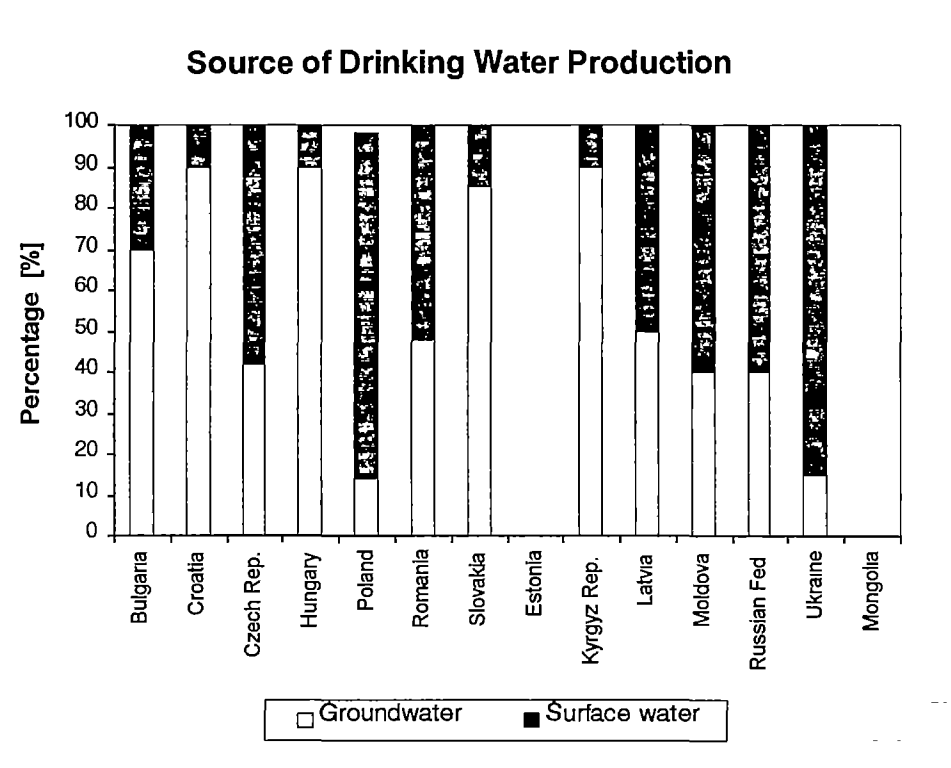


Fig. 3: Source of Drinking water production

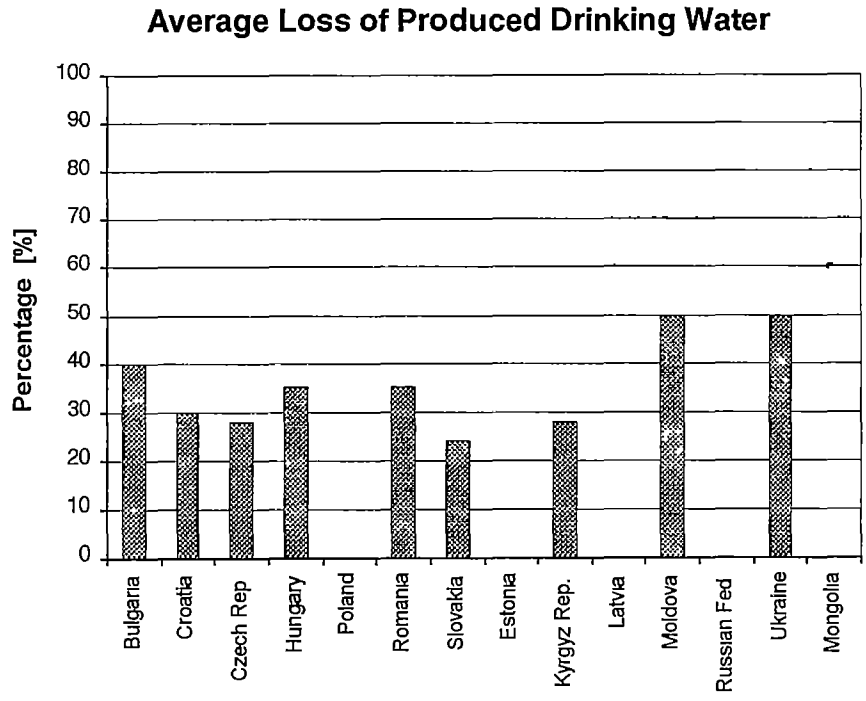


Fig. 4: Drinking Water Supply - Leakages

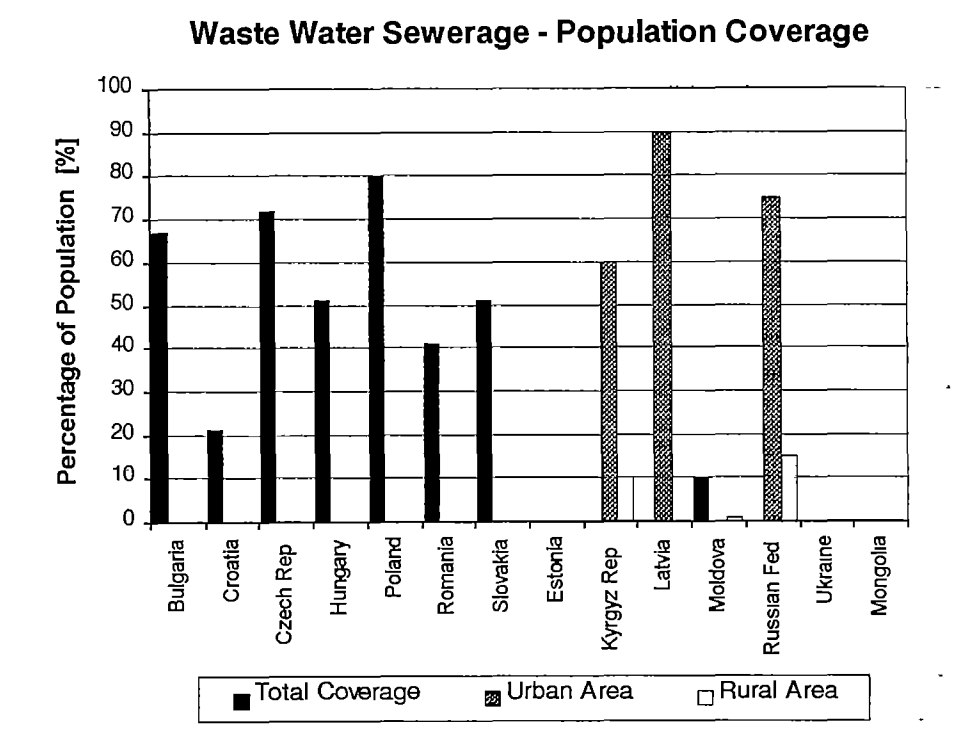


Fig. 5: Waste Water - Coverage

Drinking Water Supply

		Bulgaria	Croatia	Czech Rep	Hungary	Poland	Romania	Slovakia	Estonia	Kyrghyz Rep	Latvia	Moldova	Russian Federation	Ukraine	Mongolia
Piped water supply															
Total population coverage	%	98	65	85	98	90	62	76	-	-	-	55	-	-	-
Urban area	%	-	-	-	-	-	-	85	87 [1]	84	89	97,5	98	99	-
Rural area	%	-	-	-	-	-	15	-	60	40 [2]	55	17,5	74	50	25
erage domestic consumption															
Total consumption	l/cap*d	116	-	150	180	-	240	179	-	210	-	300	-	330	-
Urban area	l/cap*d	-	350	-	-	203	-	-	-	-	-	-	260	-	-
Rural area	l/cap*d	-	140	-	-	51	-	-	-	-	-	-	93	-	-
Source of Production															
Groundwater	%	70	90	42	90 [3]	14	48	85	-	90 [4]	50 [4]	40	40	15	-
Surface water	%	30	10	58	10	84	52	15	-	10 [4]	50 [4]	60	60	85	-
Average Loss of water	%	40	30 [5]	28	35 [6]	-	35 [7]	24	-	28 [8]	-	50 [9]	-	50	-

[1] 80 - 95 [2] 30 - 50

[3] incl bank filtered water [4] rough figures [5] Some distribution networks seem to have 60 %, Zagreb about 25%

[6] 30-40% [7] 35-40% estimated [8] 20-35% (unreliable, since water usage is not metered) [9] 40-60%

Waste Water

Population connected to sewerage systems

		Bulgaria	Croatia	Czech Rep	Hungary	Poland	Romania	Slovakia	Estonia	Kyrghyz Rep	Latvia	Moldova	Russian Federation	Ukraine	Mongolia
Total coverage	%	67	21 [1]	72	51	80	41	51	-	-	-	10	-	-	-
Urban area	%	-	-	-	-	-	-	-	-	60	90	-	75	-	-
Rural area	%	-	-	-	-	-	-	-	-	10	-	1	15	-	-

[1] in the river Danube basin

Settlements connected to sewerage systems

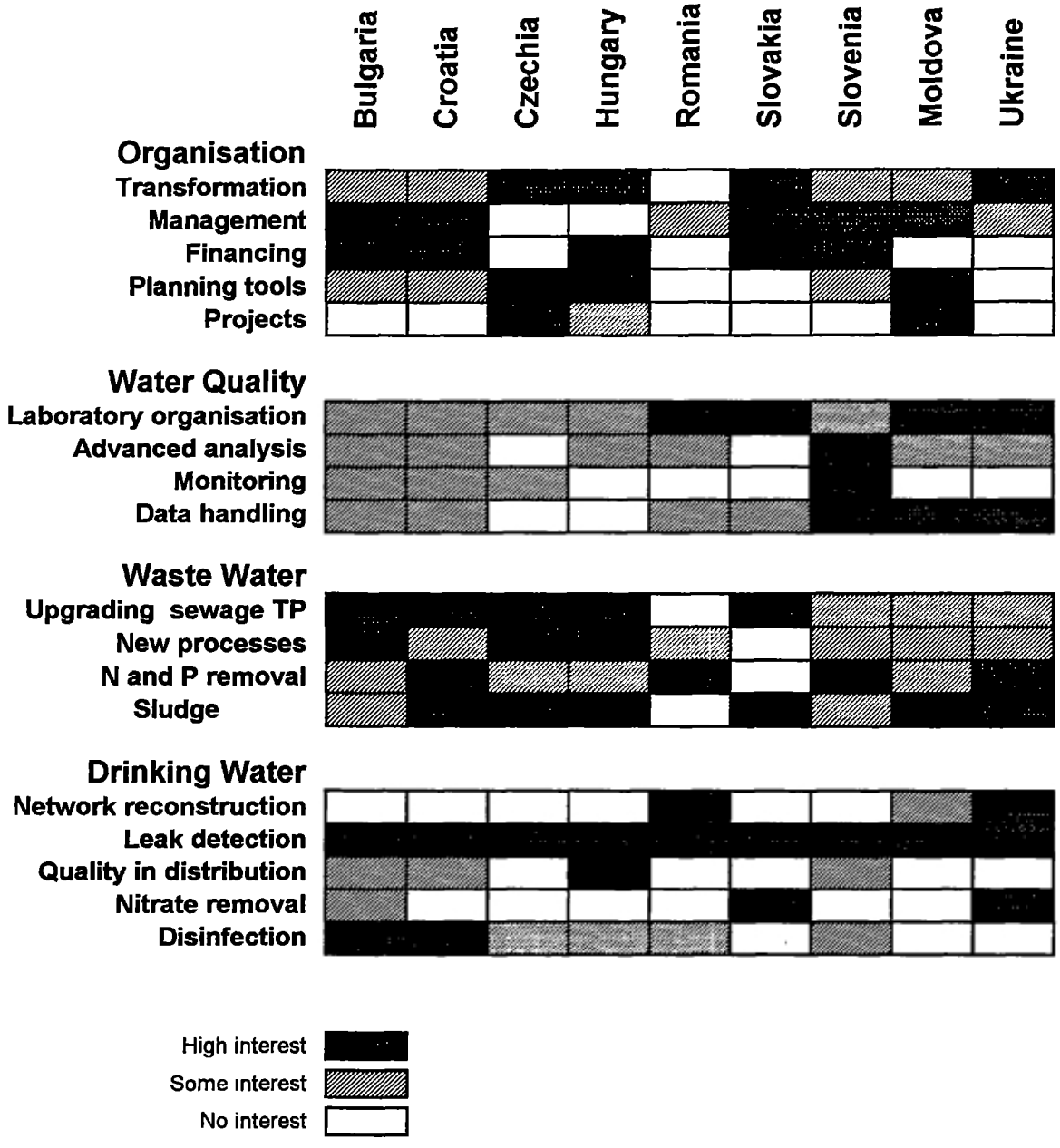
		Bulgaria	Croatia	Czech Rep	Hungary	Poland	Romania	Slovakia	Estonia	Kyrghyz Rep	Latvia	Moldova	Russian Federation	Ukraine	Mongolia
Total coverage	%	5,3	-	-	57	81	*)	-	-	-	-	-	-	-	-
Urban area	%	79	-	-	-	-	-	-	-	20	-	-	-	-	-
Rural area	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*) about 50% of sewage water treated

References: Please refer to the References added to the Country Issue Papers.

National Priorities

in some CEE Countries



Source of Data Management Training for Municipal Water Authorities
UNDP, Global Environmental Facility, 1995

part II

INTERNATIONAL PROGRAMMES

ENVIRONMENTAL ACTION PROGRAMME FOR CENTRAL AND EASTERN EUROPE (EAP)

GENERAL INFORMATION

NAME	Environmental Action Programme for Central and Eastern Europe (EAP)
STATUS	UN/ECE OECD NGO's
INVOLVED COUNTRIES	Albania, Armenia, Belarus, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Latvia, Lithuania, Poland, Moldova, Romania, The Russian Federation, Slovakia, Slovenia, Ukraine
DONORS	The World Bank The Commission of the European Communities: PHARE and TACIS Programmes European Bank for Reconstruction and Development Financial support was provided by a number of Task Force members Contributions of Denmark, Germany, the Netherlands, United States, France, Norway, Switzerland
BACKGROUND	„Environment for Europe" was initiated at the Ministerial Conference in Dobris (Czechoslovakia) in 1991 The philosophy of the EAP stresses that CEECs have the primary responsibility to solve their own environmental problems.

AGENDA

MINISTERIAL CONFERENCE IN LUCERNE, 1993	Ministers requested the UN/Economic Commission for Europe (ECE) to establish a working group. This working group works on the further development of the EAP, which is intended to promote convergence in environmental policies and conditions throughout the European region
SECOND EUROPEAN CONFERENCE ON ENVIRONMENT AND HEALTH IN HELSINKI (1994)	Ministerial decision adopted at the Conference: all countries of the WHO European Region will develop by 1997 National Environmental Health Action Plans (NEHAPS). Close cooperation was established between the OECD/Task Force Secretariat and the European Environmental Health Commitee. This resulted in recommendations about cooperation between the environmental and health sectors in CEEC/NIS.
MEETING OF ENVIRONMENT MINISTERS FROM CEEC'S, MAY 1995	"Accelerating Implementation of the EAP by identifying key areas for further action in CEECs." Six areas were found (e.g. environmental impact assessment; project preparation capacity) CEECs should prepare reports on one or more of the topics A synthesis paper presented under the agenda items „Implementing the EAP" should be prepared
CONFERENCE IN SOFIA, OCTOBER 1995	Objectives: 1. Provide actual information on the activities of the PPC since its inception 2. To assess whether the PPC has achieved its goal 3. To provide a solid basis for a Conference recommendation on the future of the PPC 4. To share the most important lessons concerning obstacles to, as well as factors promoting, environmental investments 5. To provide a useful reference work of case studies

COORDINATING STRUCTURE

TASK FORCE

GUIDING PRINCIPLES

It should provide a forum for CEECs to articulate their environmental priorities and needs. Partnership between CEECs and donors, with international institutions and with the independent sector.

TASK FORCE MEMBERS / COOPERATIONS

The Task Force is open to all the countries which endorsed the EAP at the Lucerne Meeting. 19 countries from central and eastern Europe participate. Five Central Asian countries joined the UN Economic Commission for Europe (UN/ECE) and might be invited to participate in the Task Force. It is open to all International financial institutions (IFIs) and international organisations active in the region.
The Task Force invited industry, trade union and environmental groups to participate in its work as partnersThe European Parliament, the Parliament Commission of the Council of Europe, GLOBE Europe and the interParliamentary Assembly of the Commonwealth of Independant States have played active roles in engaging parliamentarians
Close cooperation with the Interstate Ecological Council of the NIS and regional environmental programmes (HELCOM, Danube and Black Sea Programmes) has been established

The Task Force is chaired by the European Commission, together with a central and eastern European country on a rotating basis

TASK FORCE ACTIVITIES

The Task Force provides regular reports on its work to the ECE Working Group.

Dissemination of the EAP
Supporting the elaboration of National Environmental Action Programmes (NEAPs)
Assessing how implementation of the EAP could be accelerated
Strengthening financial mechanisms for environmental projects (establishing and strengthening Environmental Funds; Cooperation with the Project Preparation Commitee (PPC); analysing environmental expenditures)
Promoting the better integration of environmental considerations into the industrial restructuring process
Reinforcing environmental training initiatives
Monitoring and reporting

PROJECT PREPARATION COMMITEE (PPC)

OBJECTIVES

The objective of the PPC is to faciliate the process of implementing environmental investments in CEES by providing coordination between donors, IFI and CEECs.

PARTICIPATING PARTIES

PPC is comprised of IFIs and donors working together to match donor grant funds for investment support or technical assistance to IFI loan finance.

PROJECT PREPARATION

Project proposals can be prepared by an IFI, donor or CEEC for consideration by the PPC.
Three categories of projects:
1. Project under implementation
2. Matched projects (have been selected by IFIs or other PPC lenders/grantors and the partner CEEC and on which a „match" of donor funds has been agreed)
3. Unmatched projects (new projects which donors and IFIs bring to the attention of the PPC for potential financing)

NATIONAL ENVIRONMENTAL ACTION PROGRAMMES (NEAPS)

AIM OF NEAPs

To ensure that scarce resources are used cost-effectively

To encourage the prioritisation of environmental problems according to clearly defined criteria

To develop „win-win" solutions based on market and regulatory instruments, especially for low point source emission and industrial pollution

CHARACTERISTICS

Criteria for choosing key sectors and problems

Ranking of problems in order of importance
Analysis supported by relevant environmental, economic and other information
Budgetary envelope
Implementation plan, including an investment plan geared to available resources
Timetable
Method for communicating/negotiating with those affected by the plan („stakeholders")

AGENDA

Workshop Bratislava, Slovakia, April 1994: Examination of the development of NEAPs
A network of NEAP Network Coordinators was established in Ljubljana, Slovenia, July 1994
Follow-up: Workshop in Minsk, Belarus, for NIS NEAP Coordinators, November 1994
Meeting of NEAP Coordinators from CEEC´s in Tallinn, Estonia, April 1995

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UNDP - WORLD BANK WATER AND SANITATION PROGRAM

GENERAL INFORMATION

NAME	UNDP - World Bank Water and Sanitation Program
STATUS	UNDP World bank
INVOLVED COUNTRIES	Over 40 developing countries on three continents
DONORS	Bilateral donor agencies World Bank
BACKGROUND	Partnership began in the late 70s with pilot initiatives Development of a worldwide network to improve access to safe water and sanitation Programme contributed to consensus among governments, donor agencies, NGOs on effective policies in the water and sanitation sector.
KEY PRINCIPLES OF FRAMEWORK	Managing water as an economic good Proper prizing Greater efficiency Extension of services to the poor Sector institutions must become responsive to consumer demands Participation of people, opportunity to make choices, contribute to the ownership of new facilities Government is promoter rather than provider of services

ACTIVITIES

SUPPORTING SUSTAINABLE INVESTMENTS	Preinvestment support Willingness-to-pay studies Pilot Projects Implementation Assistance Monitoring and Evaluation
BUILDING CAPACITIES AT THE NATIONAL AND LOCAL LEVELS	Sector Reform Initiatives Training and Education Participatory Development Methods
DISSIMINATING LESSONS AND KNOWLEDGE	National Networks, workshops and seminars Regional staff exchange Conferences and Technical Cooperation arrangements Publications: Reports, Studies, Newsletters Forging development of partnerships
COUNTRY-LEVEL ACTIVITIES	Building a National Water and Sanitation Programme Promoting affordable sanitation for the urban poos Fostering experience and learning capabilities
SPECIAL INITIATIVES	Human respurses development Systematic learning Participation

REFERENCES

UNDP - World Bank, Water and Sanitation Program Anual Report July 1993 - June 1994, 1994

THE BALTIC SEA COMPREHENSIVE ENVIRONMENTAL ACTION PROGRAMME (JCP)

GENERAL INFORMATION

NAME	The Baltic Sea Joint comprehensive Environmental Action Programme
STATUS	The HELCOM Programme Implementation Task Force (HELCOM PITF) initiates, coordinates and faciliates the implementation of the Programme. HELCOM PITF consists of 1. Representatives of the Contracting Parties to the Helsinki convention 2. Representatives of international financial institutions (European Bank for Reconstruction and Development, European Investment Bank, Nordic Environment Finance Corporation, Nordic Investment Bank, World Bank) and the International Baltic Sea Fishery Commission 3. Representatives of observer organizations (Coalition Clean Baltic, Standing Conference of Rectors, Presidents and Vice-Chancellors of the European Universities, European Union for Coastal Conservation, International Council for Local Environmental Initiatives, Union of the Baltic Sea, World Wide Fund for Nature, Greenpeace International)
INVOLVED COUNTRIES	Catchment of the Baltic Sea: Belarus, Czech Republic, Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Norway, Poland, the Russian Federation, Slovak Republic, Sweden, Ukraine

DONORS

European Bank for Reconstruction and Development (EBRD)
European Investment Bank (EIB)
Nordic Environment Finance Corporation (NEFCO)
Nordic Investment Bank (NIB)
World Bank
Grants from governments in the Baltic region
EU (TACIS, PHARE and LIFE Programme)
International Finance Corporation

KEY PRINCIPLES

1. Recognize the importance of a long-term perspective for ecological restoration
2. Harmonize economic and environmental objectives
3. Control pollution at the source
4. Establish conditions for private sector participation

BACKGROUND

Nearly 20 years of work coordinated by HELCOM commitees have followed ecological developments in the Baltic Sea catchments area and demonstrated the need to reduce pollution loads reaching the Sea to restore its ecological balance

The international Baltic Sea Conference at Prime Ministerial Level - the Ronneby Conference 1992 - adopted the 1990 Baltic Sea Declaration with Principles and priority actions necessary to improve the Baltic Sea environment
It called for the elaboration of a joint action programme to "assure the ecological restoration of the Baltic Sea".
The Programme shall be implemented over 20 years (1993 - 2012)
Phase 1: 1993 - 1997
Phase 2 1998 - 2012

THE PROGRAMME COMPONENTS

1. Policy, legal and regulatory reforms: Establish long-term environmental management framework in each country (financial facilities, policies, controls, environmental standards, monitoring systems...)
2. Institutional strengthening and human resources development: Training people to use new concepts of managements and new technology, developing the organizational and administrative framework
3. Infrastructure investments: Measures to control point and non-point sources of pollution, modernization and rehabilitation of existing infrastructure
4. Management of coastal lagoons and wetlands: Land use controls, limited infrastructure, eco-tourism, recreation developments
5. Applied research: Knowledge base needed to develop solutions, transfer technology and broaden understanding of critical problems
6. Public awareness of environmental education: Partizipation of NGOs, development of effective environmental education programmes
7. Point Source Pollution: Immediate Support and Warning Systems; Wastewater treatment; Solid and hazardous waste management; Industrial pollution control
8. Non-point Source Pollution: Agricultural runoff, livestock operations, rural settlements

COOPERATIONS WITH OTHER PROGRAMMES

Interaction between the JCP implementation process and the Environmental Action Programme for Central and Eastern Europe is discussed. Objectives of both largely overlap and partly coincide.
Attempts must be made to avoid duplication and to make optimal use of existing resources

AGENDA

THE BALTIC SEA DECLARATION 1992	Adopted by the Ministers of Environment at the Diplomatic Conference on the Protection of the Marine Environment of the Baltic Sea in Helsinki Endorsed the strategic approach and principles of the JCP
MEETING IN GDANSK, 1993	Conference on Resource Mobilization to support the long-term implementation of the Baltic Sea Joint Comprehensive Environmental Action Programme

COORDINATING STRUCTURE

HELCOM PROGRAMME IMPLEMENTING TASK FORCE (PITF)

GUIDING PRINCIPLES	Underlying strategy consists of actions by each concerned government to carry out needed policy and regulatory reforms, capacity building, investments to control pollution from point and non-point resources, safely dispose or reduce the generation of waste, conserve ecologically sensitive and economically valuable areas
TASK FORCE MEMBERS	All contracting parties to the Helsinki Convention (Denmark, Estonia, Finland, Germany, Lithuania, Poland, Russia, Sweden, Czech Republic, Slovak Republic, Latvia, Norway, Commission of European Communities, multilateral financial institutions (EBRD; EIB, NIB, World Bank)

TASK FORCE ACTIVITIES

Shall take a proactive role in the development, implementation and monitoring of the Programme including improved co-ordination at all levels and assure an interactive role with multilateral banks, bilateral financial institutions and / or national, regional, municipal governments, non - governmental organizations and the private sector.

HELCOM PITF appointed Lead Parties for individual JCP elements with the responsibility to co-ordinate activities for JCP implementation

The Task Force used a variety of studies and sources of information to develop the Programme (National plans prepared by the States who were Contracting Parties to the Helsinki Convention, as well as by the Czech and Slovak Republic, Latvia, Lithuania, Norway; Pre-feasibility studies of environmental issues, the sources and magnitude of pollution loads; Special studies)

HELCOM PITF

The co-ordination for implementing the programme as well as pertinent secretarial tasks are undertaken by full-time staff of the Helsinki Commission

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GEF BLACK SEA ENVIRONMENTAL PROGRAMME (BSEP)

GENERAL INFORMATION

NAME	Global Environmental Facility (GEF) Black Sea Environmental Programme
STATUS	Global Environmental Facility
INVOLVED COUNTRIES	Bulgaria, Georgia, Russia, Romania, Turkey, Ukraine
DONORS	GEF European Community: TACIS and PHARE programmes (largest single collateral donor); TACIS: Georgia, Russia, Ukraine; PHARE: Bulgaria, Romania; GEF: Turkey Government of the Netherlands, France, Norway, Canada, Denmark
BACKGROUND	April 1992: Convention on the Black Sea Against Pollution (Bucharest Convention) Project for Environmental Management and Protection of the Black Sea supported by the GEF Odessa Declaration (1993) The programme seeks to establish a sustainable process for the enhancement and conservation of the seriously deteriorated marine environment of the Black Sea. Aims are institutional networking and optimal use of technical resources
OBJECTIVES OF THE PROGRAMME	1. Strengthen and create regional capacities for managing the Black Sea ecosystem 2. To develop and implement an appropriate policy and legal framework for the assessment, control and prevention of pollution and the maintenance and enhancement of biodiversity 3. To faciliate the preparation of sound environmental investments

AGENDA

MINISTERIAL CONFERENCE IN ODESSA, APRIL 1993	Ministerial Declaration on the Protection of the Black Sea (Odessa Declaration) Sea adopted by the Ministers responsible for the protection and preservation of the Black Sea coastal states The Odessa Declaration was adopted under the auspices of the United Nations Environment Programme (UNEP)
BLACK SEA ENVIRONMENTAL PROGRAMME, SEPTEMBER 1993	The Black Sea Environmental Programme was formally established
PCU, ISTANBUL, 1994	Programme Coordination Unit (PCU) had been established Workplan had been agreed by its National Coordinators (mostly Ministers of the Environment of their deputies)

COORDINATING STRUCTURE

RESPONSIBILITES	The GEF project will procure the technical and financial inputs essential for fostering sustainable development in the region The Bucharest Convention together with a new fisheries convention (currently negotiated by Black Sea States) establish the institutional, legal and technical framework required to sustain cooperation The Odessa Declaration and future ministerial meetings provide commitment at the political level and determine policy priorities; it constitutes an instrument towards realizing the implementation of *Agenda 21*, chapter 17, (World Conference on Environment and Development, Rio de Janeiro, Brazil, 1992) and represents a new modality of action for UNEP's Regional Seas Programme
STEERING COMMITEE	Determines the strategy to be taken by BSEP, ensures to meet the needs of the six Black Sea Governments in an equitable and cost effective manner
LONG-TERM UTILITY	Tool for catalyzing the control and abatement of marin pollution and the rehabilitation of the environmental economy of the Black Sea and its coastal margins

ACTIVITY CENTRES AND THEIR WORKING PARTIES

EMERGENCY RESPONSE (VARNA, BULGARIA)	Bucharest Convention, 1992	National legislation, international conventions and policy declarations to the question of marine pollution emergency response and preparedness
	Odessa	All coastal countries agreed to develop national and regional contingency plans identified by the Convention on the

	Declaration, 1993	Protection of the Black Sea against Pollution for combinating pollution in emergency situations by 1996
	BSEP	Support to the enhancement of national and regional capacities to plan for and respond to pollution emergencies (accidents involving oil and other harmful substances)
POLLUTION MONITORING (ISTANBUL, TURKEY)	BSEP	Monitoring in order to gain reliable data on the nature and quantity of contaminants discharged into Black Sea. Development of a proper pollution assessment based upon the monitoring data Monitoring is a basis for making and enforcing regulations and for checking the long term effectiveness of all kinds of pollution control
BIODIVERSITY (BATUMI, GEORGIA)	Measures in connection with the Odessa Declaration, 1993	Encouraging the development of comprehensive, coordinated action plans for the restoration and conservation of biodiversity in the Black Sea Taking appropriate measures for the restoration and conservation of biodiversity in the Black Sea. Establishing and improving conservation areas in the zone of each littoral state before 1996
INTEGRATED COASTAL ZONE MANAGEMENT (NOVOROSSISK, RUSSIA)	Measures subsequent to the *Agenda 21* and the Odessa Declaration, 1993	Commitment to integrated management and sustainable development of coastal areas and marine environment under the national jurisdiction of the littoral countries of the Black Sea

FISHERIES (CONSTANCIA, ROMANIA)		Improvement of regional fisheries management Support for a new Black Sea fisheries Commission and for living resource protection Establishment of databases (historical fish stock assessments, present resource information, installed capacities of fishing fleets and processing factories Feasibility study for aquaculture and sea ranching
DATA MANAGEMENT / GIS	PCU	Computerised information storage, processing and retrieval systems for the use of environmental managers, decision makers and the general public Compatibility of the database, promotion of exchange
ENVIRONMENTAL ECONOMICS AND INVESTMENT	PCU	Integrated program of activities to help understand and address the major environmental problems Support of targeted research and case studies Development of policy options and capacity building to assist decision makers
NGOs		Participation and involvement of NGOs presupposes successful implementation of the BSEP´s objectives Raising the public awareness on environmental issues Help with the identification and definition of environmental problems Implementation and monitoring of activities
INFORMATION AND COMMUNICATION		Well-developped communication network and adequate means of communication Availability of general information on Black Sea issues Availability of scientific data on the Black Sea region

MONITORING

BSEP conducts an inventory of land-based sources of pollution and initiates a region wide monitoring system for bathing waters and beaches

ROUTINE MONITORING CENTRE	Responsible for the coordination of inventories of land based sources of pollution and for the establishment of a beach, bathing water and drinking water monitoring network
SPECIAL MONITORING CENTRE	Methodological training, intercomparison, introduction of biological effects measurement to the region.

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ENVIRONMENTAL PROGRAMME FOR THE DANUBE RIVER BASIN

GENERAL INFORMATION

NAME	Environmental Programme for the Danube river basin
STATUS	Danubian countries European Community GEF
INVOLVED COUNTRIES	Riparian countries: Austria, Bulgaria, Croatia, Germany, Hungary, Moldova, Romania, Slovakia, Ukraine
DONORS	Action Plan States World Bank European Investment Bank European Bank for Reconstruction and Development WWF
BACKGROUND	June 1991: Ministerial conference "Environment for Europe" called for an environmental action programme for central and eastern Europe September 1991: Representatives of the Danube countries, other countries, financial partners and other interested parties met to draw up an initiative for restoring and protecting the River Danube

AGENDA

STRATEGIC ACTION PLAN	Development of the Strategic Action Plan in 1992
PRE-INVESTMENT STUDIES (1992 - 1994)	For identification of industrial and municipal hot-spots of point source pollution
PRE-FEASIBILITY STUDIES	To evaluate technical, financial and institutional possibilities for environment investment
ENVIRONMENTAL HEALTH ASPECTS IN THE CATCHMENT AREA OF THE RIVER DANUBE, WATER SUPPLY AND SANITATION (WORKSHOP REPORT UNDER AUTHORITY OF WHO, WRITTEN BY TECHWARE, JUNE 1994)	Element in the Environmental Programme for the Danube River Basin to be used in the development of a Strategic Action Plan for the basin The report focusses on health related aspects of direct usage of water for human consumption
MANAGEMENT TRAINING FOR MUNICIPAL AUTHORITIES	Programme of training activities implemented during 1995 The aim is to build capacity to train managers and operators of waste water treatment lants and water supply companies Priority areas for action in most countries are: 1. Problems of financing and management during transformation processes 2. Municipal laboratory organisation and waste water and water supply quality controls 3. Development of realistic operating standards and targets 4. Problems of up-grading existing waste water treatment plants and sludge management 5. Leakage detection in water distribution systems

COORDINATING STRUCTURE

TASK FORCE

MEMBERS	Senior governmental officials from Danubian countries Representatives of G-24 governments International and NGOs Chaired by Commission of the European Community
TASK	Decision-making body for the Programme
TECHNICAL SUB-GROUPS OF THE TASK FORCE	Responsible for particular technical tasks Current Sub-Groups include Monitoring, Laboratory and Information Management and the Accident Emergency Warning System

OTHER COORDINATING INSTITUTIONS

COUNTRY PROGRAMME COORDINATORS (CPCs)	Nominated senior officials from Danube countries responsible for management of the Programme within their country
NATIONAL FOCAL POINTS	Nominated Danube Institutes which provide technical and scientific back-up to the CPC in implementing Programme action
PROGRAMME COORDINATING UNIT (PCU)	Dedicated group of four experts responsible for daily management of the Programme on behalf of the Task Force PCU staff are provided by the Commission of the European Communities´PHARE Programme and the Global Environment Facility through the UN Office of Project Services

STRATEGIC ACTION PLAN

FRAMEWORK

The Strategic Action Plan was approved by Ministers of Danubian countries and the European Commissioner responsible for Environment in December 1994

Adresses governmental officials at regional, national and local levels, who share responsibilities for implementing the convention

OBJECTIVES

Provides a comprehesive, forward-looking strategy for regional and transboundary action to address the main environmental problems
Presents strategies for solving water-environmental-related problems
Sets targets to be met within 10 years
Defines the strategic approaches, principles and targets for future environmental management of the Danube River Basin (short-term targets: 1997; medium-term targets: 2005)

COMMON PRINCIPLES

Precautionary principle
Polluter pays principle
Control of pollution at source
Regional cooperation
Share of information

COMMON GOALS

1. Improvement of aquatic ecosystems and biodiversity
2. Reduction of negative impacts on riverine ecosystem Danube
3. Maintaining and improving the availability and quality of water in the River basin
4. Evaluation of critical nutrient load
5. Monitoring, warning and laboratory systems
6. Development of regional cooperation in water management

SHORT-TERM TARGETS	Completion of wetland restoration and management programme Adoption of consistent water quality criteria for the Danube River and all its tributaries Building-up of effective and comprehensive monitoring, early-warning and laboratory systems including information - exchange systems
MEDIUM-TERM TARGETS	Adoption and implementation of legislation concerning the control of hazardous substances Modernisation of municipal waste water treatment plants Preparation of waste water and sewerage investment priorities for cities, rural towns and villages Investments in highest priority sewerage and municipal waste water treatment capacity extensions Introduction of environmentally-friendly agricultural policies (regulations for fertiliser storage, handling, application, pesticides, other agrochemicals; policy reforms) Completion of projects on conservation and restoration of priority wetlands Completion of rehabilitation and modernisation of existing municipal waste water treatment plants
LONG-TERM TARGETS	Completion of construction of municipal and industrial waste water treatment plants Change to sustainable agriculture practices Restoration of the natural purification capacity of the Danube and its tributaries
NATIONAL ACTION PLANS	Developed to implement the Danube Strategic Action Plan Contain detailed programme timed to meet the targets, indicate the role and responsibility of the different sectors and describe the programme implementation, financing, coordination
FURTHER PLANNING ACTIVITIES	The National Environmental Action Plan Environmental Health Action Plan

MAIN PROGRAMME ACTIVITIES

ACCIDENT EMERGENCY WARNING SYSTEM (AEWS)	To enable rapid, international warning to be given of severe, accidental pollution and other transboundarys emergency situations Each country nominates a Principal international Alert Centre (PIAC) responsible for coordinating all emergency warnings relating to the Danube and its tributaries The PIAC will coordinate detection, reporting, judgement / expert opinion, international warnings and combatting actions
APPLIED RESEARCH	To support the implementation of legal, policy and management frameworks (Environment in the River Danube, its delta and the Black Sea)
DATA MANAGEMENT	To provide relevant information on networks, institutions, organisations and persons to governments, industries, decision makers and the general public To provide knowledge about databases and libraries holding information about the Danube River Basin and related topics
DIAGNOSTIC PRE-INVESTMENT MISSIONS / STUDIES	To review all environmental problems in the basins To identify "hot-spot" projects for urgent investment action to reduce major impacts on the environment
INSTITUTIONAL DEVELOPMENT	To strengthen networks, institutions, human resources and NGOs To assist environmental ministries, regulatory bodies, local authorities and NGOs to improve management practices To focus on environmental awareness and policy changes within sectoral ministries To promote active participation of these bodies in the national and internat. context

INTEGRATED REGIONAL ENVIRONMENT STUDIES AND INVENTORIES	To provide an overview of the environment in the basin focusing on biological resources in the river corridor, groundwater protection, agricultural practices, hazardous wastes disposal, contaminated sediments, soil quality and atmospheric deposition
MONITORING, LABORATORY AND INFORMATION MANAGEMENT	To strengthen national and regional capacity to deliver information for decision-making purposes
NATIONAL REVIEWS	To summarise the water environment status from the riparian countries

MANAGEMENT TRAINING FOR MUNICIPAL WATER AUTHORITIES

PRIORITY NEEDS OF MUNICIPAL WATER AUTHORITIES	Management courses Implications of EC environment law Waste water treatment and sludge management
FACT-FINDING MISSION	- Consultants identifying priorities, recommend a strategy for management training for municipial water authorities - Propose actions for each country or group of countries - Identify activities which can be implemented at the international level - Indicate priorities for the actions

INITIAL PRIORITIES

- Problems with transformation (organisation, management, planning, financing)
- Laboratory organisation, water quality control
- Development of a legal framework, water quality standards (in line with EC regulations and WHO guidelines)
- Upgrading existing sewage treatment plants
-Sewage sludge management
- Network reconstruction, leak detection of drinking water distribution and sewage collection

STRATEGY FOR MUNICIPAL TRAINING (CONSENS OF REPRESENTATIVES OF RIPARIAN COUNTRIES AT A WORKSHOP IN VIENNA, NOVEMBER 1994)

Part 1: Management training Courses for top/middle managers of water utilities & local government representatives (e.g. mayors):
Strengthening the know-how and skills of the participants (general and financial management, roles of public and private sector, accounting and control, cost calculation, tariff structures)

Part 2: Courses on Implications of European Union environmental law, policy and standards for Municipial Authorities held for top/middle managers of water utilities & local government representatives:
Series of short courses, ideally as a follow-up to the management training (EC environmental policy trends; urban waste water Directive, requirements and economic consequences; drinking water requirements, WHO guidelines, EC Directive 80/778)

Part 3: Waste Water Treatment and sludge management training for managers and operators at the plant level (waste water treatment & water production plants):
Strengthening operator and management skills at the plant level (maintenance management of Waste water treatment plants; optimizing existing plants; waste water treatment for waste water of specific industries; separating industrial and municipial waste waters)

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TACIS

PHARE

The Programmes PHARE and TACIS are an EC initiative to support the CEEC and NIS in their transition to market economy and in their effort to develop democratic and economically stable societies.

EC -PHARE

TARGET COUNTRIES	Central and East European countries
TYPES OF PROGRAMMES	National Programmes, which comprise the majority of Phare-Programmes Cross-border Programmes: Priorities are the investment in infrastructure, pollution control, tourism, cooperation in health Multi-Country Programmes, with emphasis on the environment, transport, telecommunication...

EC - TACIS

TARGET COUNTRIES	New Independent States and Mongolia
MAIN PRIORITIES	TACIS funding are adressing public administration reform, restructuring of state enterprises and private sector development, transport, energy, nuclear safety and environment

Several multi-country, interministerial programmes have been established within CEEC and NIS, involving environment and water related ministries, external support agencies and NGO's:

NATIONAL REVIEWS	Summarise water environment status of the riparian countries

World Bank Aral Sea Programme

ARAL SEA BASIN COUNTRIES	Kyrgyz Republic, Kazakhstan, Tajikistan, Turkmenistan, Usbekistan
PROGRAMME DEVELOPMENT	The five countries, in cooperation with the UNDP, UNEP and The World Bank, set up

	an action plan to address the Aral Sea crisis Identification of seven priority programs, consisting of 19 projects, as a first phase
DONORS	The World Bank, UNDP, Danida, Finnida, the Netherlands, Sweden, Japan, Canada
PROJECTS EXAMPLES	Medium term water supply Operational water resources management Environmental information system UNICEF

Environmental Caspian Sea Programme

CASPIAN SEA BASIN COUNTRIES	Azerbaidjan, Kazakhstan, Russian Federation, Turkmenistan
FINANCE	TACIS

LIST OF MEETINGS

Organizer/ Programme	Involved Countries	Conference Venue	Date	Topic/Title of the meeting	Type of meeting	Reference
not known	international	Nancy/F	12. July 1994	Water in the City - Water and sanitation problems in the towns	Meeting	37
UN Administrative committee on coordination; Inter-secretaria group for water resources (ACC/ISGWR)	international	Dublin/Ireland	26 - 31 January 1992	International Conference on Water and the Environment	Conference	38
UN Economic and Social Council	international	not known	7 - 10 February 1994	Working Party on Water Problems	Working Party	48
Ministerial Conference of Drinking Water and Environmental Sanitation	international	Noordwijk/The Netherlands	22 - 23 March 1994	Implementing UNCED Agenda 21	Ministerial Conference	47
not known	international	Moscow/RUS	6 - 9 September 1994	Water: Ecology and Technology	Congress; Technical Exhibition	45
IAWQ	international	Budapest/H	24 - 29 July 1994	Water Quality International '94. 17th Biennial International Conference	Conference	46
UN Economic and Social Council	international	not known	3. March 1995	Second and Eighth Session of the Ministerial Conference	Working Party	49
EBRD	Europe	London/GB	24/25 April 1995	EBRD's support to private provision and financing of municipal and environmental services in central and eastern Europe	Conference	32
WHO/EURO	A, SK,HR, H, BG, MD, SLO, CZ, D, UA	Bratislava/SK	16 - 19 Dec. 1993	Drinking water related environmental health aspects in the catchment area of the river Danube	wokshop	31

WHO/EURO	Baltic states	Riga/LV	9 - 11 March 1994	Implementation of the WHO Guidelines for drinking water quality in Latvia, Estonia, Lithuania	Regional Seminar	31
WHO	LV	Riga/LV	14 - 18 March 1994	Implementation of the WHO guidelines for drinking water quality	National Workshop	31
WHO/EURO	A, CR, CZ, D, H, PL, P, RO, RUS, SLO, SK, UA	Bad Elster/D	10 - 14 Oct. 1994	Joint WHO/German government Regional Seminar on Drinking water Quality	Seminar	31
WHO/Black Sea Environmental Programme	GE, RUS; UA, TR, RO, BG	Istanbul/TR	22 - 25 Nov. 1994	Harmonisation of methodologies and standards for evaluation on bthing water and beach quality	Regional Seminar	31
WHO/Black Sea Environmental Programme	GE, RUS, UA, TR, RO, BG	Istanbul/TR	24 - 27 May 1995	Drinking water quality	Regional Seminar	31
WHO/Black Sea Environmental Programme	RUS	Sochi/RUS	26 - 30 June 1995	Recreational water and beach quality monitoring	National Workshop	31
GEF Black Sea Environmental Programme	BG, GE, RO, RUS, TR, UA	cf. Reference	cf Reference	Statistical Overview of Meetings, Training and Working Parties 1994	Meetings, Trainings, Working Parties	Ref. 39, ANNEX
GEF Black Sea Environmental Programme	BG, GE, RO, RUS, TR, UA	cf. Reference	cf Reference	Black Sea Environmental Meetings, 1995 Calendar	Meetings, Trainings, Working Parties	Ref. 44
Environmental Progamme for the Danube River Basin	RO, BG, SK, CZ, H, UA, MD, HR, SLO	not known	23 - 25 September 1991	Evaluation of the International Water Quality Monitoring Programme	Technical Experts meeting	8
Environmental Progamme for the Danube River Basin	RO, BG, SK, CZ, H, UA, MD, HR, SLO	---	November 1992 - April 1994	Accident, Emergency Warning Alarm System Sub-Group Meetings	Meetings	8
Environmental Progamme for the Danube River Basin	RO, BG, SK, CZ, H, UA, MD, HR, SLO	---	December 1992 - July 1994	Monitoring, Laboratory and Information Sub-Group meetins	Meetings	8
WHO	RO, BG, SK, CZ, H, UA, MD, HR, SLO	Bratislava/SK	16 - 19 December 1993	Environmental Health Aspects in the Catchment Area of the River Danube	Meeting	8

TECHWARE	RO, BG, SK, CZ, H, UA, MD, HR, SLO	Bratislava/SK	December 1993	Water supply and sanitation from the managerial, operational, technical and qualitative points	Workshop	16
Environmental Progamme for the Danube River Basin	RO, BG, SK, CZ, H, UA, MD, HR, SLO	Sinaia/RO	17 - 20 February 1994	Public Participation and Information Strategies in Danue Basin Countries	Workshop	8
Environmental Progamme for the Danube River Basin	RO, BG, SK, CZ, H, UA, MD, HR, SLO	Vienna/A	23 - 24 November 1994	Management Training for municipal water authorities	Workshop	3
Environmental Progamme for the Danube River Basin	RO, BG, SK, CZ, H, UA, MD, HR, SLO	Bucharest/RO	6 December 1994	Danube River Basin Environmental Declaration	International Meeting	3
Environmental Progamme for the Danube River Basin	RO, BG, SK, CZ, H, UA, MD, HR, SLO	Budapest/H	11 - 12 April 1995	Accident Emergency System (AEWS) Sub-Group	Meeting	8
Environmental Progamme for the Danube River Basin	RO, BG, SK, CZ, H, UA, MD, HR, SLO	Krems/A	20 - 30 May 1995	Review Programme progress, transition arrangements, approach to Danube Programme activities after 1995	Task Force Meeting	8
Environmental Progamme for the Danube River Basin	RO, BG, SK, CZ, H, UA, MD, HR, SLO	---	---	Danube Programme Activities Workplan April - Dec. 1995 Forthcoming Dates for Programme Activities	---	Ref. 8 ANNEX
HELCOM The Baltic Sea Joint Compre-hensive Environmental Action Programme	RUS, LV, LT, EW, BY, CZ, SK, PL, UA, FIN, S, N, D, DK,	---	---	Baltic Sea Environment Proceedings	Activities, Seminars, Meetings, Workshops	Ref. 41, p. XXV - XXIX
HELCOM - EC EGAP	RUS, LV, LT, EW, BY, CZ, SK, PL, UA, FIN, S, N, D, DK,	Gdansk/PL	26 - 28 April 1995	Airborne Pollution of the Baltic Sea area	Meeting	42

HELCOM - EC NATURE	RUS, LV, LT, EW, BY, CZ, SK, PL, UA, FIN, S, N, D, DK,	Roosta, EW	2 - 5 May 1995	marine biotops, threatened species, Biodiversity	Meeting	42
HELCOM - EC MORS	RUS, LV, LT, EW, BY, CZ, SK, PL, UA, FIN, S, N, D, DK,	Saint Petersburg/RUS	15 - 19 May 1995	Monitoring, modelling and assessment of Radioactive Substances in the Baltic Sea	Meeting	42
HELCOM PITF	RUS, LV, LT, EW, BY, CZ, SK, PL, UA, FIN, S, N, D, DK,	RUS	31 May / 1 June 1995	Hot spots in St. Petersburg	Meeting	42
not known	international	Stockholm/S	13 - 18 August 1995	5th Stockholm Water Symposium - Water quality management. Heading for a new epoch.	Symposium	42
HELCOM PITF PA & EE	RUS, LV, LT, EW, BY, CZ, SK, PL, UA, FIN, S, N, D, DK,	Stockholm/S	13 - 14 September 1995	Public awareness and environmental education	Meeting	42
Environmental Action Programme (EAP) for CEEC	CEEC, NIS	cf. Reference	cf. Reference	cf. Reference	Meetings	Ref. 29a) ANNEX II; III
Environmental Action Programme (EAP) for CEEC	CEEC	BG	18 - 19 May 1995	Consulation of Envi-ronmental Ministers; Acceleration of Implementation of the EAP	Meeting	29
Polish National Fund for Environmental Protection and Water Management; Ministry of Environmental Protection	CEEC, NIS	Jablonna/PL	May 1995	Strengthening Environmental Funds in Economies in Transition	Conference	29
IRC/WHO	BG, CZ, RO, SK	NL	3 - 14 October 1994	Water, Sanitation and Environment	Exposure Visit and Seminar	1

TACIS	RUS	Saint Petersburg/RUS	Sept. 1995	Water Saving and Reduction of water pollution	Seminar	33
Moscow Municipal Enterprise for Water and Wastewater Management	RUS	Moscow/RUS	May 1995	Privatization of Water and Wastewater Drainage Utilities	Conference	34
USAID and MEPNS of Ukraine	UA	UA	November 1994	Ukrainian-American Forum on Environmental Issues	Forum	35
not known	LV	Waedenswil/CH	September 1995	Ecological engineering for wastewater treatment	International Conferenc	26
not known	PL	not known	1993	Utilization of water ecosystems in the conditions of market economy	Conference	36
not known	PL	not known	1994	Current production and implementation of new techniques in the water supply branch	Conference and Course	36
PL/Sweden	PL / Sweden	not known	1994	Sewage and water management	Seminar	36
PICABIOL '95	PL	not known	1995	Natural methods of water treatment	Seminar	36
municipal water supply and sanitation services	PL	Warsaw/PL	November 1994 and April 1995	Water Supply and sanitation services in rural areas-organization and tariffs	Science and technical conference	36
Apele Romane	RO	Bucharest/RO	22 June 1995	Building water sector training capacity in Romania - First coordination meeting with financing agencies	Meeting	15

List of Country-Abbreviations

A	Austria	RUS	Russian Federation
BG	Bulgaria	S	Sweden
BY	Belarus	SK	Slovak Republic
CZ	Czech Republic	SLO	Slovenia
D	Germany	TD	Tajikistan
DK	Denmark	TMN	Turkmenistan
EW	Estonia	TR	Turkey
FIN	Finland	UA	Ukraine
GE	Georgia	Uzb.	Uzbekistan
H	Hungary		
HR	Croatia		
Kaz.	Kazakhstan		
Kyrg.	Kyrgyzstan		
LT	Lithuania		
LV	Latvia		
MD	Moldova		
N	Norway		
P	Portugal		
PL	Poland		
RO	Romania		

BLACK SEA ENVIRONMENTAL MEETINGS: 1995 CALENDAR

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
JAN												*EERO Plymouth, UK*				*NATO-TUBS Meeting, Erdemli*															
FEB		*EROS Ship Sched Hamburg*																													
MAR																				*GESAMP-UNEP Geneva*								**CZM WP Novorrossysk**			
APR										Workshop on Harmonization of legislt. and standards and Advisory Panell. Istanbul, Turkey									*Second Mtg Fish. Convention EROS St. Com Granada*				RPM /LBS Pllt n wksp		RPM-Recreational Waters Seminar Toxicity WS Bosisci Uni., TUR				
MAY																															
JUN																											**Fisheries WP Constanta**				
JUL			**Biodiversity Varna, Bulgaria**																												
AUG														*EIA EMG workshops Istanbul*																	
SEP											**Man. Training for ACs, Split**		IOC Workshop 13-29 Sept. Gelengzhik					**Aral Sea/Red Sea PCU staff Training, Istanbul**						NCCG (GEF Prep. Mtg) Istanbu GIS WP, Ist			**BSEP Exhibit**			
OCT		**Marine Mammals Task Force meeting**						**NGO Forum Crimea, Ukr.** **Rempec/BSEC ER , Ist.**								Emergency Response **ERWP Varna** Istanbul							ICZM Novoros.		RAMS (Fisheries), Varna Sus. Tourism Inten. Seminar, Crimea Environment for Europe, Sofia					
NOV					**BSEP Donor Conference Istanbul**																										
DEC				**RPM-Review on Recreational Waters**	**RPM & SPM joint WP (7-9 Dec)**						**Black Sea Assessment Mtg, Ist**		**Odessa Declaration review Mtg, Odessa**					Steer. Com Kiev (?)	"											

Key: **Bold face** indicates GEF project meetings, including Working Party (WP) meetings and Coordination Meetings. *Italics* indicates related activities of other research sponsors and other donors Dark gray shading indicates weekend days, light gray denotes holidays Unless otherwise noted, Working Party (WP) meetings are held at the relevant Activity Centre.

ANNEX II

Events organised under the Auspices of the Task Force

Task Force and the Task Force Bureau Meetings

First Task Force meeting, 27th-28th September 1993, Paris
Second Task Force meeting, 17th-18th May 1994, Paris
First PPC/Task Force Joint Session, 18 May 1994, Paris
Task Force Bureau meeting, 14th October 1994, Paris
Second PPC/Task Force Joint Session, 15 December 1994, Paris
Third Task Force meeting, 15th-16th December 1994
Task Force Bureau meeting, 27th January 1995, Paris
Task Force Bureau meeting, 17th May 1995, Paris, France
Third PPC/Task Force Joint Session, 14th June 1995, Paris
Fourth Task Force meeting, 15th-16th June 1995, Paris
Open Task Force Bureau meeting, 31st July 1995, Geneva, Switzerland

Expert Meetings

Informal Planning Meeting on National Environmental Action Programmes, 29th-30th January 1994, Paris, France

Workshop on Environmental Auditing Programmes in Central and Eastern European Countries, 22nd March 1994, Paris, France

Workshop on Preparation of National Environmental Action Programmes in Central and Eastern Europe, 7th-9th April 1994, Bratislava, Slovakia

European Commission Workshop on Environmental Training in CEECs, 27th-30th April 1994, Spindleruv Mlyn, Czech Republic

Informal Discussion on Industry and Environment, 24th-25th May 1994, Paris, France

First Meeting of National Environmental Action Programmes' Co-ordinators, 12th July 1994, Ljubljana, Slovenia

"It Costs Less Than You Think: How to Prepare a Short-term Action Programme for the Environment" - First Meeting of National Environmental Action Programmes' Co-ordinators from the Newly Independent States, 16th-18th November, 1994, Minsk, Belarus

OECD Ad Hoc Advisory Group on Industry and Environment, 13-14 December 1994, Paris, France

Informal Consultation with the Private Sector on Industry and Environment, February 28th-1st March 1995, Paris, France

Second Meeting of National Environmental Action Programmes' Co-ordinators, 27-28 April 1995, Tallinn, Estonia

Informal Consultation of CEE/NIS Environment Ministers, 18th-19th May 1995, Sofia, Bulgaria

IUCN Workshop "Conservation of Biological and Landscape Diversity in CEEC's: Best Practices in Rural Areas", 24-27 June, Danube Delta, Romania

ANNEX III

Main Reports Resulting From Task Force Work

EAP Task Force Report to the Sofia Ministerial Conference

Guidance Documents

"St. Petersburg Guidelines" on Environmental Funds in the Transition to a Market Economy

Best Practices Guide for Cleaner Production Programmes in Central and Eastern Europe

Best Practices Guide on Management and Conservation of Biological and Landscape Diversity in Central and Eastern European Countries

Framework for Developing National Environmental Action Programmes, 12th May 1995, CCET/ENV/EAP(94)10/REV1

Other Reports

Accelerating Implementation of the Environmental Action Programme for CEE (in preparation)

Progress Report on National Environmental Action Programmes, 12th May 1995, CCET/ENV/EAP(94)9/REV1

Proceedings of the St. Petersburg Conference on Environmental Funds, 27th-28th October 1994, St. Petersburg, the Russian Federation (in preparation)

Case Study of Environmental Expenditure and Investment in Six Selected CEE Countries

Western Environmental Assistance to CEECs

Industry and Environment: Industrial Waste Minimisation in CEECs an Evaluation of Industrial Waste Minimisation Initiatives in Central and Eastern Europe, 3rd March, 1994, CCET/ENV/EAP(94)5

Privatisation and Environmental Liability in CEEC's and NIS, 16th May 1995, CCET/ENV/EAP(95)7

Conclusions on Environmental Training in CEECs, European Commission Workshop, 27th-30th April 1994, Spindleruv Mlyn, Czech Republic, 11th May, 1994, CCET/ENV/EAP(94)8

Reports from Joint Task Force/PPC Meetings

International Financial Institutions' Project Cycle

Case studies:(i) Estonia: Small Municipalities Environment Project
(ii) Poland: Georthermal Energy Project, Zakopane

☞ reference [29]

Black Sea Environmental Programme
Statistical Overview of Meetings, Training and Working Parties
1994

THEME	EVENT	DATE	Type of Activity	Total ≠ of Black Sea Participants	≠ GEF financed Participants	Associated Donors/Agencies	Coordination
I. Emergency Response	First WP, Varna	16/5 - 18/5	Working Party	9	9	MAP/IMO (REMPEC)	BSEP
	Second WP, Varna	24/10 - 26/10	Working Party	7	7	IMO	BSEP
	Maritime Safety and Protection, Istanbul	1/11 - 3/11	Meeting	20	3	IMO/ITU	Associate Activity
II. Pollution Monitoring	BS Scientific Research Sponsors, Istanbul	6/1 - 7/1	Meeting	10	2	CEC, NATO, IOC, Danube	BSEP
	Oil Pollution Monitoring Workshop, Budapest	11/4 - 15/4	Training	8	5	DANUBE	Collateral Contribution
	First Joint Working Party, Odessa	3/5 - 6/5	Working Party	15	15	-	BSEP
	Workshop Contaminents in Sediments, Lesbos	20/9 - 25/9	Expert Group	3	3	IAEA/MAP	Associate Activity
	EROS, Istanbul	22/11 - 24/11	Training	19	17	CEC	BSEP
	Harmonization of Methodologies, Istanbul	22/11 - 25/11	Training	22	22	WHO	BSEP
	IAEA Course on the Measurement of Radionuclides, Istanbul	14/11 - 25/11	Training	17	-	IAEA	Associate Activity
	Coordinated Research Programme, Istanbul	21/11 - 25/11	Training	13	-	IAEA	Associate Activity
	Second Routine Pollution Monitoring, Istanbul	15/12 - 16/12	Working Party	8	8	-	BSEP
	Second Special Pollution Monitoring, Odessa	6/12 - 8/12	Working Party	11	11	IOC	BSEP
III. Biodiversity	First Working Pary, Istanbul	3/2 - 4/2	Working Party	19	19	-	BSEP
	Second Working Party, Batumi	16/10 - 18/10	Working Party	11	11	-	BSEP

Black Sea Environmental Programme
Statistical Overview of Meetings, Training and Working Parties
1994

THEME	EVENT	DATE	Type of Activity	Total ≠ of Black Sea Participants	≠ GEF financed Participants	Associated Donors/Agencies	Coordination
VII. Economics & Investments	Environmental Economics Expert Group Meeting, Istanbul	13/6 - 15/6	Working Party	6	6	-	BSEP
	Priority Investment Programme Meeting, Istanbul	9/2	Meeting	11	11	-	BSEP
	Economics Instrument Workshop, Vienna	13/12 - 15/12	Training	21	14	Danube	BSEP
VIII. NGOs	PHARE NGO Meeting Varna	26/6 - 28/6	Meeting	22	1	CEC, NGOs	Collateral Contribution
	Preparatory NGO Meeting, Istanbul	2/10 - 7/10	Meeting	3	3	NGOs	BSEP
	Turkish NGO Forum Meeting, Ankara	5/10	Meeting	12	12	NGOs	BSEP
	International NGO Forum, Constanta	7/11 - 9/11	Meeting	18	18	NGOs	BSEP
IX. Coordination	Donor Coordination Meeting, Istanbul	21/4 - 22/4	Meeting	4	4	CEC, US, Austria Canada, Holland	BSEP
	Steering Committee Meeting, Moscow	28/11 - 30/11	Meeting	26	26	-	BSEP
X. Policy	National Coordination Contact Group, Istanbul	7/2 - 8/2	Meeting	11	11	-	BSEP
	BS Commission Prep. Meeting, Istanbul	6/4 - 10/4	Meeting	12	-	BSCOM	Collateral Contribution
	Europea Legislation & Policy, Kiev	17/4 - 19/4	Training	15	2	CEC	Collateral Contribution
	BSEC Conference on Sustainable Development and Environment, Tbilisi	28/9 - 29/9	Meeting	24	3	CEC, BSEC	Associate Activity
	National Coordinators Contact Group Meeting, Istanbul	17/10 - 18/10	Meeting	6	6	BSCOM	BSEP
TOTALS	43 Activities			594	338		

☞ reference [31]

Black Sea Environmental Programme
Statistical Overview of Meetings, Training and Working Parties
1994

THEME	EVENT	DATE	Type of Activity	Total ≠ of Black Sea Participants	≠ GEF financed Participants	Associated Donors/Agencies	Coordination
IV. ICZM	First Working Party, Gelenzhik	15/6 - 17/6	Working Party	15	12	-	BSEP
	Lab Analysis and Info Management, Sofia	6/9 - 10/9	Training	18	3	CEC	Collateral Contribution
	Mangalia Training Workshop	7/8 - 20/8	Training	40	7	Canada	Collateral Contribution
	Sustainable Tourism In Coastal Zones, Odessa	23/9 - 27/9	Training	21	3	- WB, CEC,	Associate Activity
	ICZM Coordinating Meeting, Istanbul	20/10 - 21/10	Meeting	10	5	Holland	BSEP
V. Fisheries	First Working Party	27/4 - 29/4	Working Party	10	10	FAO	BSEP
	Aquaculture Study Mission	24/10 - 16/11	Meeting	10	10	Norway	BSEP
	Consultation for the Preparation of a Fisheries Convention, Constanta	13/10 - 15/10	Meeting/ Mission	22	1	World Bank, Turkey	Associate Activity
	Second Working Party, Constanta	26/10 - 28/10	Working Party	9	9	FAO	BSEP
VI. GIS/DBM	Sea of Azov Workshop, Amsterdam	1/3 - 5/3	Meeting	12	1	Holland, CEC Comsblack	Collateral Contribution
	First Working Party, Istanbul	5/4 - 7/4	Working Party	9	9	-	BSEP
	Oceanographic Data Management, Obninsk	1/8 - 11/8	Training	17	1	-	Associate Activity
	Second Working Party, Moscow	5/9 - 7/9	Working Party	6	6	IOC of Unesco	BSEP
	Database Management Workshop, Istanbul	December	Training	12	12	Holland	Collateral Contribution

☞ reference [31]

part III

COUNTRY ISSUE PAPERS

BULGARIA

GENERAL INFORMATION

POPULATION	8,5 millions Capital Sofia: 1,2 million
POPULATION DENSITY	76,5 persons/km² 68 % urban population
SURFACE	110.994 km²
ADMINISTRATION	Bulgaria is divided into nine regions, including Sofia, which has the status of a separate region. The regions are divided into 278 municipalities.
TOPOGRAPHY	Three drainage basins, which flow into the Danube, the Aegean Sea and the Black Sea
CLIMATE	av. Temperature: Jan. -2°C; July 21°C; av. Precipitation: Jan. 42 mm, July 60 mm
MEMBERSHIPS	Member of the Council of Europe OSZE, UNO
POLITICAL BACKGROUND	Form of government: Republic since 1990

☞ references [19], [66]

WATER RESOURCES

RIVERS

15 main rivers
Total Length: 19.761 km
largest rivers Danube
Tundscha
Maritza

WATER RESOURCES

Annual run-off from internal rivers: 10,5 - 20,7 billion m^3

LAKES

18 major lakes

GROUNDWATER RESOURCES

Estimated groundwater resources: 3 billions m^3
Annual amount of used groundwater: 1,7 billions m^3

Bulgaria has a large potential for mineral water: 600 springs with a total flow of 2.600 l/s. Only 30% are in use (green house heating, drinking)

WATER RESOURCES UTILISATION

Type of use (million m^3/year)	Groundwater (million m^3/year)	Surface water (million m^3/year)r	Total (million m^3/year)
Drinking water	1,219	0,510	1,779
Households	0,666	0,348	1,050
Industries	0,414	0,065	0,529
Agriculture	0,139	0,061	0,200
Irrigations (Conventional clean water)	0,188	3,012	3,300
Industry	0,126	2,789	2,915
Other types of use	0,165	2,915	3,080
Total	1,698	9,226	11,074

(REGULAR YEAR, MOST RECENT ESTIMATES)

☞ reference [62], [64]

INSTITUTIONAL AND LEGAL FRAMEWORK

CENTRAL STATE LEVEL

MINISTRY OF ENVIRONMENT (ORGANISED IN SIX DEPARTMENTS)	Formar Commitee for the Protection of the Environment (created 1976), renamed in 1990. Preparation of national environmental policy and strategy, regulation, legislation Setting up water quality standards Monitoring Development of emission licensing The Ministry is organised as follows: 1. a Central Office in Sofia 2. a Laboratory and an Information Centre in Sofia 3. 16 Regional Environmental Inspectorates in the Regions.
MINISTRY OF REGIONAL DEVELOPMENT	Controls the drinking water supply and sewerage services in Bulgaria Implements the state policy in the Regions including regional development, regional and local government, municipal services Controls and owns 28 state Water Companies
MINISTRY OF HEALTH	Responsible for the standards (based on the E.C. directives and WHO guide lines) and the control of the quality of drinking water

COMMUNAL LEVEL

DISTRICT COUNCILS	Responsible for the water supply and sewerage in the other parts

Up until now, water supply investments have been centrally planned, financed and executed by the Min. of Regional Development while sewerage investments are planned by the Ministry of Environment and financed by budget transfers to municipalities. Investment costs were not recovered from consumers.

The National Council of Waters (NCW) and National Institute of Meterology and Hydrology (NIMH) are involved in the management of water resources. NCW is responsible for the quantitative management. NIMH measures the country's water resources and makes datat available in monthly bulletins.

☞ reference [5], [19]

STATUS OF DRINKING WATER SUPPLY

POPULATION SUPPLIED WITH PIPED WATER

Coverage	98%		
	l / Pers *day	billion m³/year	
Average consumption	116	1729	

SOURCE OF DRINKING WATER PRODUCTION

Surface water	30 %	Groundwater	70 %
Domestic consumption	61 %		
Industry	28 %		
Agriculture	11 %		

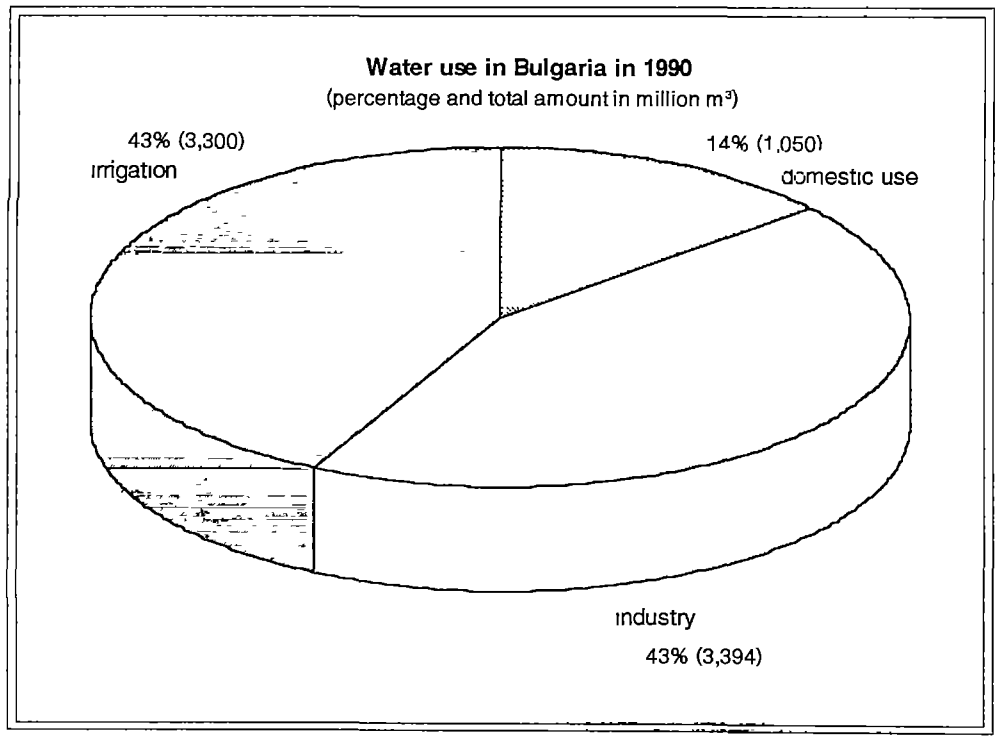
LENGTH OF THE NETWORK, ACCOUNTED FOR WATER

Percentage of accounted for water	60-70	in Sofia
	up to 40	other regions
Total length of networks	42.810	km

10 water purification plants operate in Bulgaria

Most production is unmetered

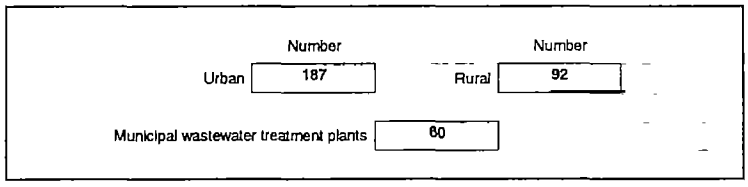
☞ reference [5], [19]



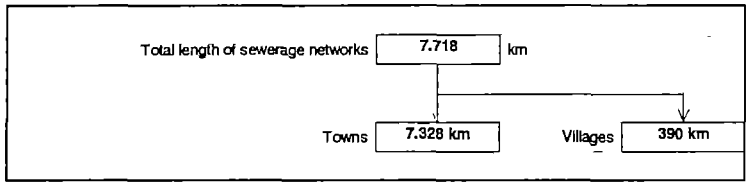
☞ reference [19]

STATUS OF SEWERAGE / WASTE WATER TREATMENT

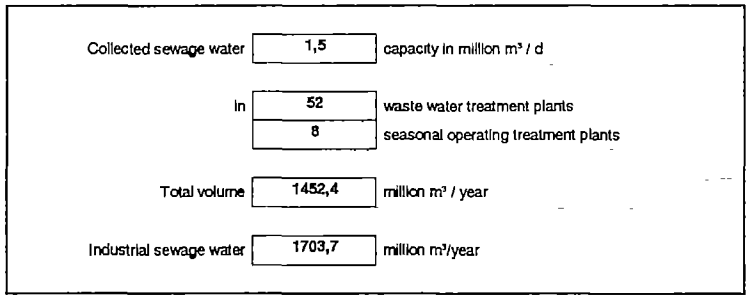
POPULATION CONNECTED TO THE SEWERAGE SYSTEM



LENGTH OF THE NETWORK



COLLECTED SEWAGEWATER



79 % of the 237 towns and only 92 villages (5 % of the total number of settlements) are provided with a sewer network.

28 waste water treatment plants are not fully completed because of lack of money.

About 75 % of the plants meet the standards.

☞ reference [19]

MAIN PROBLEMS

INSTITUTIONAL AND TECHNICAL ISSUES

LEAKAGE	High water losses attributable to the water networks Unsatisfactoring carrying out of civil works Halting network renewal in 1989 because of diclining budgetary resources

MANAGERIAL AND FINANCIAL ISSUES

MANAGEMENT	Management of treatment plants (operation, maintenance, control processes, automation) Management of drinking water companies (cost recovering, financing, planning)
WATER SUPPLY	One third of the country faces water shortages
MONITORING	Improvement of integrated monitoring systems (Emergency warning)

☞ references [19]

PRIORITIES

SUBJECTS OF LEGAL CONCERN	EC Directives Source Protection
ORGANISATION	Management Financing
WASTE WATER	Upgrading sewage treatment plants New Processes
DRINKING WATER	Leak detection Desinfection

☞ references [5]

INTERNATIONAL COOPERATION

Environmental Programme for the Danube River Basin

EC PHARE (River Iskar)

GEF The World Bank pre-investment studies (River Vit/Osam)

GEF/UNDP Studies

USAID Studies

Convention on the protection of the Black Sea

RAMSAR convention

The Basel Convention

REFERENCES

[5] Van Hoof F., Peeters P., Kaerts J., Report on Management Training for Municipal Water Authorities, 1995

[19] IRC, Water Supply and Sanitation in Bulgaria, the Czech Republic, Romania and the Slovak Republic, 1994

[66] Harenberg B., Harenberg Länderlexikon '95/96, 1995

CROATIA

GENERAL INFORMATION

POPULATION	4,8 millions Capital Zagreb: 931.000
POPULATION DENSITY	85,3 persons/km²
SURFACE	56.538 km²
ADMINISTRATION	The territory of Croatia is divided into 20 Districts (*Zupanijas*) and two Departments. The *Zupanijas* are further divided into 69 towns and 432 municipalities.
TOPOGRAPHY	The terrirory is divided into four water basins representing natural hydrographic units: 1. Sava river basin 2. Drava 3. Danube river basin 4. The Istrian and Croatian Litoral basin 50 % of Croatia is karst area
CLIMATE	av. Temperature: Jan. 0°C; July 22°C; av. Precipitation: 3.000 mm/year
MEMBERSHIPS	OSZE, UNO
POLITICAL BACKGROUND	Republic since 1991

☞ references [49], [66]

INSTITUTIONAL AND LEGAL FRAMEWORK

CENTRAL STATE LEVEL

MINISTRY OF AGRICULTURE AND FORESTRY DEPARTMENT OF WATER MANAGEMENT	Responsible for long-term development of water resources for improvement of the water regime and management of resources. Supervision of implementation of the provisions of the Water Act and related regulations
PUBLIC WATER MANAGEMENT ENTERPRISES (P.W.E.) "*HRVATSKA VODOPRIVREDA*"	Responsible for the water administration and management on national level Regulation of a uniform water regime in the Republic, responsible for water supply to the population and the water pollution protection systems Constructs the water management facilities with their own personnel and construction machines Maintain the flood protection- and drainage systems and some of the municipal waste water treatment plants
MINISTRY OF HEALTH	Controls the drinking water quality

COMMUNAL LEVEL

MUNICIPAL AUTHORITIES	Responsible for maintenance of the distribution networks and the sewerage

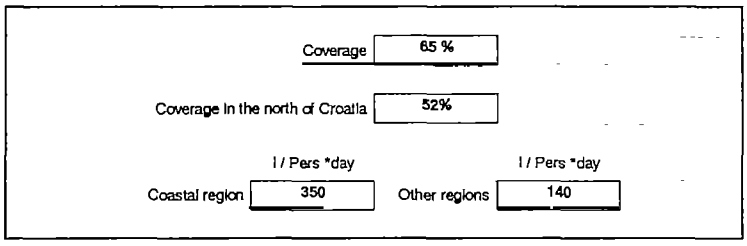
The Republic is divided into 32 catchment areas and each catchment has its Public Water Management Enterprise.

The Water Act was issued by the Parliament in 1991. It defines issues like water management, protection from harmful effects of water, protection of water from pollution, water use and utilisation, sources and methods of financing of water management activities.

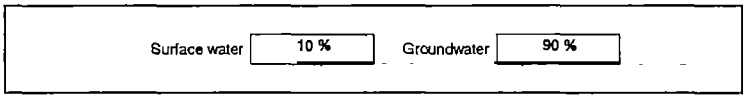
☞ reference [5], [49]

STATUS OF DRINKING WATER SUPPLY

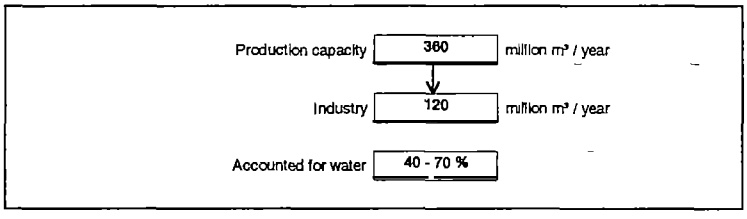
POPULATION SUPPLIED WITH PIPED WATER, AVERAGE CONSUMPTION



SOURCE OF DRINKING WATER PRODUCTION



TOTAL INSTALLED PRODUCTION CAPACITY



In the karst area people not connected to a public water distribution network have their own wells. Those wells are often polluted by Nitrates and Phosphates. Outside the karst area rain water is collected when no connection to a public water distribution network is available.

In three towns a part of the drinking water production is based on surface water. All the other use groundwater with a chlorination before the water is distributed.

Sanitary protection zones around the water catchments are not always possible because they are often situated in another municipality.

Compensations to farmers in case of restrictions for the use of their land gives serious administrative and practical problems.

The groundwater quality: decreases gradually high concentrations of Nitrate, Phosphate and pesticides.

The losses in the private installations are high but as the price of the water is very low it´s not considered important by the consumers.

The amount of accounted for water is based on estimations, because catchments are not always metered.

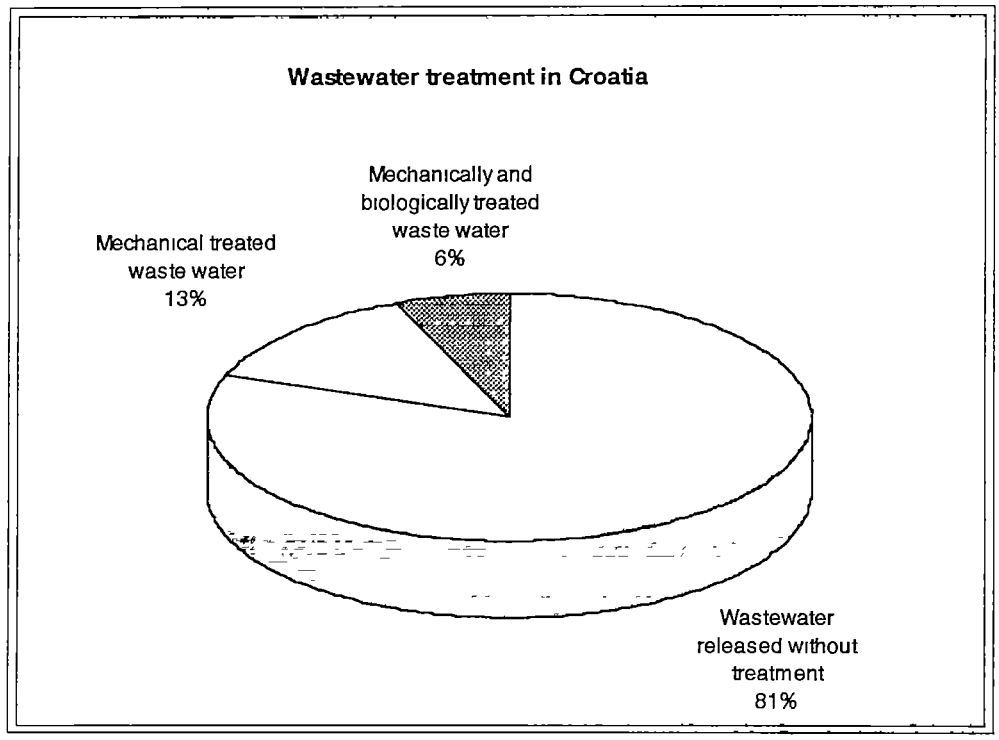
☞ reference [5], [49]

STATUS OF SEWERAGE / WASTE WATER TREATMENT

POPULATION CONNECTED TO THE SEWERAGE SYSTEM IN THE DANUBE RIVER BASIN

Number of people (million)	1	of total	4,8

The needs of water treatment plants´ capacity is estimated at 12 million p.e.. For every connection on the sewage network a licence is needed, which specifies the conditions under which waste water may discharged, the frequency of sampling and the analysis of specific parameters. The licences are delivered by licence laboratories



☞ reference [5], [49]

MAIN PROBLEMS

INSTITUTIONAL AND TECHNICAL ISSUES

NETWORK LEAKAGE	Pilot projects should make it possible to link up leak detection and cost recovery

MANAGERIAL AND FINANCIAL ISSUES

LACK OF MANAGEMENT TRAINING	Cost recovery, Financing Training concerning small, low maintenance, treatment plants for drinking water and waste water in rural areas

☞ references [5]

PRIORITIES

DRINKING WATER SOURCES	Conservation and proper protection of sources of drinking water
WATER QUALITY	Harmonisation of quality criteria
WASTE WATER	Establish waste water treatment systems in the regions Solid waste management
MONITORING	Monitoring and sanitation of war damages and long follow up their health impact
INFORMATION SYSTEM	Establish unique public health and environmental health information system

☞ reference [5], [15]

INTERNATIONAL COOPERATION

Environmental Programme for the Danube River Basin

EC - PHARE

REFERENCES

[5] Van Hoof F., Peeters P., Kaerts J., Report on Management Training for Municipal Water Authorities, 1995

[15] TECHWARE, Environmental Health Aspects in the Catchment Area of the River Danube. Water Supply and Sanitation., 1994

[49] N.N., Who's who in European Water CROATIA,

[66] Harenberg B., Harenberg Länderlexikon '95/96, 1995

CZECH REPUBLIC

GENERAL INFORMATION

POPULATION	10,3 millions Capital Prag: 1,2 millions
POPULATION DENSITY	131 persons/km²
SURFACE	78.864 km²
TOPOGRAPHY	Three major regions: 1. Bohemia 2. Moravia 3. Silesia
CLIMATE	av. Temperature: Jan. -1,5°C; July 19,4°C; Precipitation: 668 mm/year 54.700 million m³ water: Evapotranspiration, soil water 68,5 % Surface runoff 28,8 % Groundwater forming 2,7 %
MEMBERSHIPS	Member of the Council of Europe OSZE, UNO
POLITICAL BACKGROUND	Became an independant state in 1993 Form of Government: Republic

☞ references [19], [66],

WATER RESOURCES

RIVERS

Total Length: 75.000 km
largest rivers Odra
Morava
Elbe

LAKES

Total number: 24.000 ponds
Area: 520 km²

GROUNDWATER RESOURCES

Some groundwater sources do not have sufficient capacity for dry periods.

Increasing contamination of groundwater by nitrates, pestizides, fertilizers

WATER RESOURCE UTILISATION

Type of use	Total [million m³]	%	Groundwater [million m³]	Surface water [million m³]
Households	506	43 %		
Agriculture	27	2 %		
Industry	194	17 %		
Other types of use	118	10 %		
Non-invoiced water	330	28 %		
Total	1.175	-	497	676
%	-	100 %	42 %	58 %

☞ reference [19]

Industrial and agricultural water pollution is of major importance in the Czech Republic.

330 million m³ water (28%) is non-invoiced water including losses in pipes, overall payment and non-legal consumption.

Increases in water tariffs caused a dramatic drop in water consumption from 400 litres to 150 litres per capita per day now.

33,9 % of the total produced water does not fulfill the criteria of the Czech State Norm for Drinking Water".

Only 5% of the citizens not served from public water supply use hygienically satisfactory water.

Irrigation with waste water causes high concentrations of Nitrogen, Phosphate, Sodium, Kalium, Magnesia etc.

☞ reference [19], [40]

INSTITUTIONAL AND LEGAL FRAMEWORK

CENTRAL STATE LEVEL

MINISTRY OF ENVIRONMENT	Management of the quantity and quality of surface and ground waters at the national level Main field of interest is the protection and care of surface and groundwater -both quality and quantity- in the nature, especially in aquifers, river beds, lakes and reservoirs
WATER RESEARCH INSTITUTE, HYDROMETEOR-LOGICAL INSTITUTE, ENVIRONMENTAL INSPECTION	Subordinated to the Ministry of Environment
RIVER BASIN AUTHORITIES	5 authorities, subordinated to the Ministry of Environment Responsible for the management of watercourses and for surface water supply Collect charges for discharge permit Collection of water withdrawal and discharge fees and penalties for violations
MINISTRY OF AGRICULTURE	Responsible for drinking water supply and sewage treatment
MINISTRY OF HEALTH	Responsible for health aspects of water supply, meaning the quality of drinking water in particular

COMMUNAL LEVEL

WATERWORKS AND SEWERAGE COMPANIES	Responsible to the Ministry of Agriculture Some of the companies have been privatized (Share companies), some are now owned by the municipality Responsible for: 1. Sewage treatment 2. Drinking water supply

A transfer of all responsibilites to one ministry is considered appropriate.

☞ reference [19], [40]

STATUS OF DRINKING WATER SUPPLY

POPULATION SUPPLIED WITH PIPED WATER

Number of people supplied	8,71	million
Coverage	84,50%	

SOURCE OF DRINKING WATER PRODUCTION

Surface water	58 %	Groundwater	42 %
	l / Pers *day		
Average consumption	150		

PRODUCTION CAPACITY, LENGTH OF THE NETWORK

Installed production capacity	64,1	m³ / sec
Accounted for water	72%	
Total length of networks	45.779	km

DRINKING WATER SUPPLY

Size of municipalities	Number of inhabitants (thousands)	Number of inhabitants supplied from drinking water network (thousands)	Share of inhabitants supplied from drinking water supply network (%)
> 100.000	2.401	2.357	98
50.000 - 99.999	1.127	1.093	97
20.000 - 49.999	1.128	1.070	95
10.000 - 19.999	1.104	1.070	91
5.000 - 9.999	933	802	86
2.000 - 4.999	1.049	671	64

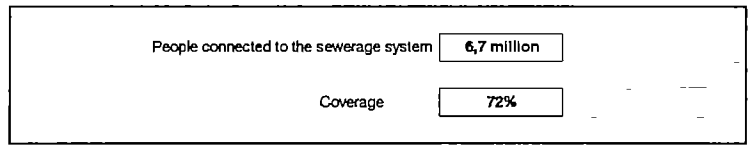
15,5 % of the population - mostly living in rural areas - are supplied by their own wells.

Since 1992 the average consumption decreased from 266 l/person*day to 150 l because of higher tariffs.

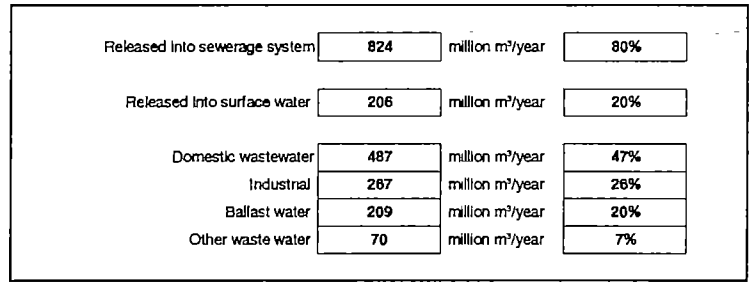
☞ reference [19]

STATUS OF SEWERAGE / WASTE WATER TREATMENT

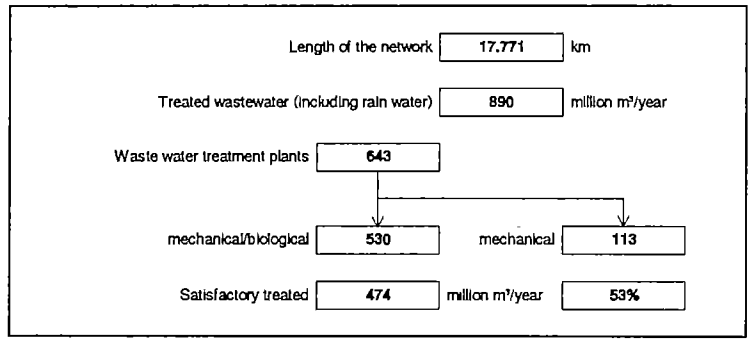
POPULATION CONNECTED TO THE SEWERAGE SYSTEM



TYPES OF WASTE WATER



COLLECTED SEWAGEWATER



TREATED WASTE WATER

Type of wastewater	Amount [million m³]	%
Domestic wastewater	374	36
Industrial and other wastewater	267	26
Ballast and rain water	249	24
Untreated wastewater	199	14

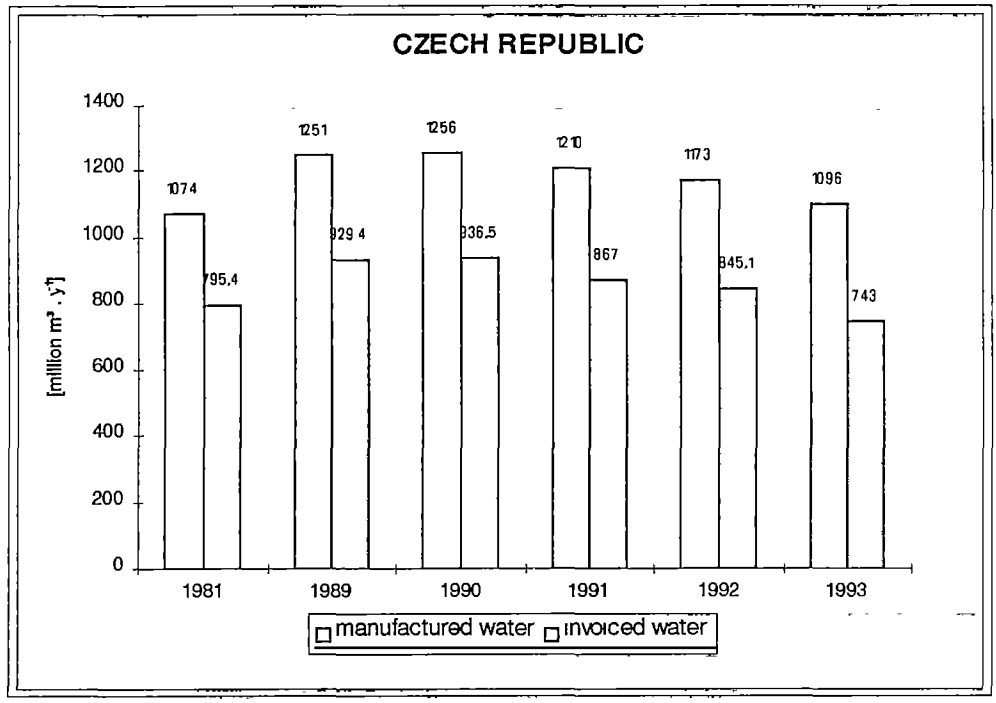
☞ reference [19]

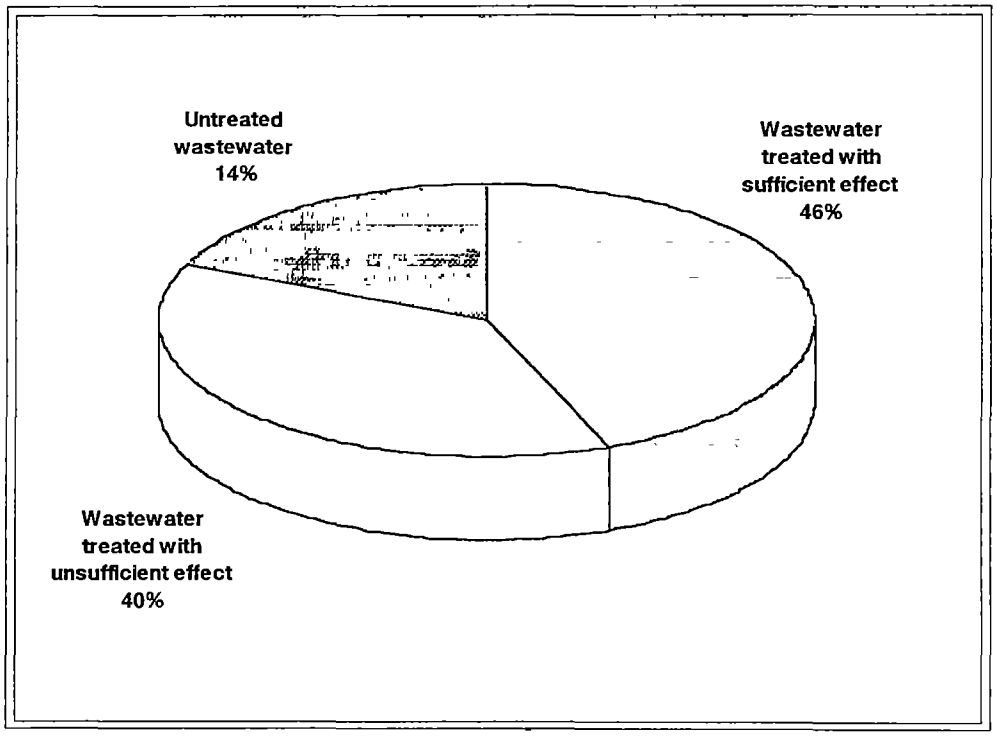
The share of inhabitants using public sewerage systems in different regions is unequal and insuffiecient.

Treatment plants usually do not satisfy present demands.

Industrial pretreatment plants operate ineffectively.

☞ reference [19]





☞ reference [19]

MAIN PROBLEMS

INSTITUTIONAL AND TECHNICAL ISSUES

OUTDATED INFRASTRUCUTRE	Lowers the quality of treatment process and needs often more inputs (energy, chemicals) with negative environmental effects
LACK OF RESOURCES	Analytical instruments, chemicals, computers, software etc. are limited
DRINKING WATER SUPPLY	Share of inhabitants supplied from drinking water network in different regions is unequal and in some regions insufficient.
GROUNDWATER	Groundwater sources are often overloaded and do not have sufficient capacity for dry periods
WATER SUPPLY NETWORKS	High leakages because of not properly maintaning and reconstructing the network. Standard of the new water supply infrastructure used to be low

MANAGERIAL AND FINANCIAL ISSUES

SHORTAGE OF FINANCIAL RESOURCES	Sharp budget-limitations Long-term neglecting of maintenance and development in infrastructure demand higher resources than would have been necessary in case of proper evolution in the past.
LACK OF COORDINATION OF EXTERNAL ASSISTANCE	Results of the help of western institutions do not correspond fully to the effort and money spent up till now. Some of the activities address similar issues without knowing of each other.
INEFFECTIVE COORDINATION	Responsible bodies have a lack of information about the work and the results of others

KIND OF SUPPORT WHICH WESTER COUNTRIES COULD PROVIDE

PROVIDING TRAINING FOR MANAGEMENT AND STAFF EMPLOYED IN THE SECTOR	Topics for the training: water savings, reduction of energy consumption, sludge disposal, priority of investments, privatisation and optimal irganisational structure, new technologies, charges and fines concerning water supply, sanitation and water pollution, optimal division of tasks among governmental, public, private and non-governmental organisations
EXPERTS	Sending experts from Western countries to Eastern countries: This approach should be used only exceptionally, because it is possible to find local specialists. Local experts have lower costs for their wages.
MONEY FOR INVESTMENTS (DONORS, LENDERS)	The costs of cleaning up the environment in CEE are enormous -The Czeck Republic has the most deteriorated environment in Europe. Loans are taken primarily for animating economy and industrial modernisation, not for water and sanitation sector

☞ references [5], [19]

INTERNATIONAL COOPERATION

PHARE Multy-Country Programmes

HELCOM

Environmental Programme for the Danube river basin

☞ references [71]

REFERENCES

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[15] TECHWARE, Environmental Health Aspects in the Catchment Area of the River Danube. Water Supply and Sanitation., 1994

[19] IRC, Water Supply and Sanitation in Bulgaria, the Czech Republic, Romania and the Slovak Republic, 1994

[40] N.N., Water Management in the Czech Republic, 1995

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[66] Harenberg B., Harenberg Länderlexikon '95/96, 1955

[71] Coordination Office, PHARE Multi-Country Programmes, 1995

HUNGARY

GENERAL INFORMATION

POPULATION	10,3 millions Capital Budapest: 1,992 million
POPULATION DENSITY	110,7 persons/km²
SURFACE	93.033 km²
TOPOGRAPHY	56,9 % of the territory is agricultural used, 18,2 % is forest.
CLIMATE	av. Temperature: Jan. -1°C; July 22°C; av. Precipitation: Jan. 42mm, July: 54 mm
MEMBERSHIPS	Member of the Council of Europe OSZE, UNO
POLITICAL BACKGROUND	Since 1989 Parliamentary Republic

☞ references [66]

INSTITUTIONAL AND LEGAL FRAMEWORK

CENTRAL STATE LEVEL

MINISTRY OF ENVIRONMENTAL PROTECTION AND REGIONAL POLICY

MINISTRY OF TRANSPORT, TELE-COMMUNICATIONS & WATER MANAGEMENT

NATIONAL WATER AUTHORITY

REGIONAL/COMMUNAL LEVEL

COUNTY COMPANIES	Former sub regional managing offices, engineering offices became independent in a corporate form
MUNICIPAL WATER SERVICES	200 municipal water services

Until 1992 the assets of the water industry were in the hands of the state, then they were transferred to the municipalities. The municipal water services are stock holdings or limited companies.

Municipalities owning public water utilities shall care about their professional and safe operation and maintenance.

The government and the municipalities have the public water utilities operated by bodies specially founded for the purpose.

☞ reference [5], [90]

STATUS OF DRINKING WATER SUPPLY

POPULATION SUPPLIED WITH PIPED WATER, AVERAGE CONSUMPTION

Percentage of people supplied	98%	
Average consumption	180	l / Pers *day

SOURCE OF DRINKING WATER PRODUCTION

Surface water	10 %	Groundwater	90 %

TOTAL INSTALLED PRODUCTION CAPACITY

Total installed production capacity	4.000	thousand m³ / day
Accounted for water	60 - 70 %	
Total length of networks	56.429	km

☞ reference [5] [92]

STATUS OF SEWERAGE / WASTE WATER TREATMENT

SETTLEMENTS CONNECTED WITH A SEWAGE TREATMENT PLANT

Coverage	57	
Total length of sewerage networks	14.902	km
Collected sewage water - total	1,6	million m³ / day
in	423	waste water treatment plants

☞ reference [92]

MAIN PROBLEMS

INSTITUTIONAL AND TECHNICAL ISSUES

ANALYSIS TECHNIQUES	Advanced analysis techniques are needed, but expensive
WATER QUALITY	Secondary contamination, incomplete removal of ammonia
	Disinfection alternatives
SEWAGE TREATMENT PLANTS	Upgrading of existing sewage treatment plants
WATER LOSSES	Leak detection

MANAGERIAL AND FINANCIAL ISSUES

FINANCING

MANAGEMENT

FINANCING

☞ reference [5]

INTERNATIONAL COOPERATION

WHO:

- Concern for Europe´s tomorrow
- WASAMs database

Environmental programme for the Danube river basin

PHARE:

- Ground water Pollution Study
- Feasibility Studies for Municipal Sewage Treatment Programme in Hungary
- Active Protection of Drinking Water Resources in Hungary
- Catchment Management Planning Pilot Study for the Hortobágy-Berettyó watershed
- Environmentally Beneficial Cultivation Technologies to Protect Subsurface Water Resources of Drinking Water protective areas
- Development of Surface Water Monitoring

European Bank for Reconstruction and Development - EC PHARE. Cooperation Fund pre-investment studies on the Drava, Upper Tisza/Bodrog

GEF/The World Bank pre-investment studies on the river Zagyva.

REFERENCES

[5] Van Hoof F., Peeters P., Kaerts J., Report on Management Training for Municipal Water Authorities, 1995

[6] N.N., Strategic Action Plan for the Danube River Basin 1995 - 2005,

[15] TECHWARE, Environmental Health Aspects in the Catchment Area of the River Danube. Water Supply and Sanitation., 1994

[66] Harenberg B., Harenberg Länderlexikon '95/96, 1995

[90] Who´s who in European Water. Hungary,

[92] Perecsi F., Vízügyi Közlemények, Special Issue 1994

POLAND

GENERAL INFORMATION

POPULATION	38,5 millions Capital Warsaw: 1,655 million
POPULATION DENSITY	123,2 persons/km²
SURFACE	312.683 km²
ADMINISTRATION	Polish legislative administration is represented by the Parliament. Poland is divided into 49 provinces and 2.459 commons. The total number of commons includes 833 towns. The common is the principal unit of the local self-government.
TOPOGRAPHY	Poland lies at the Baltic Sea The country is mainly flat. Only the south and southeastern part of the territory is mountained.
CLIMATE	av. Temperature: Jan. -4°C; July 19°C; Precipitation: 617mm/year
MEMBERSHIPS	Member of the Council of Europe OSZE, UNO
POLITICAL BACKGROUND	Republic since 1989

☞ references [66], [88]

WATER RESOURCES

RIVERS	Annual volume of river water inflow into the sea: 30 km³ (dry year) - 54,8 km³. (average year) largest rivers Odra Wisla Warta
WATER RESOURCES	783 m³ (dry year) - 1.430 m³ (average year) per head The indices of water resources per head put Poland approximately on the 7th place from the end among the european countries.
FURTHER INFORMATIONS	Drinking water is mainly produced from surface water, only 14.3 % by groundwater. The present situation in quality of water resources in Poland is very unsatisfactory. Exploitation of the water resources is made difficult because of their pollution coming from various sources especially from wastewater.

☞ reference [88]

INSTITUTIONAL AND LEGAL FRAMEWORK

CENTRAL STATE LEVEL

MINISTRY OF ENVIRONMENTAL PROTECTION, NATURAL RESOURCES AND FORESTRY	Responsible for shaping the water management at the country level. Deals with natural management, prepating legislation concerning water management and environmental protection Sets up economical mechanism stimulating those disciplines
STATE INSPECTORATE OF THE MINISTRY	Checks wether the laws are being obeyed Conducts the State Environmental Monitoring
7 REGIONAL WATER MANAGEMENT BOARDS	Carry out the water management policies at the regional level Operate on the areas of water basins of major rivers

MINISTRY OF PLANNING AND BUILDING	Deals with the municipal policies of the state
MINISTRY OF AGRICULTURE AND FOOD ECONOMY	Concerned with water management in agriculture and with water supply in rural areas
MINISTRY OF HEALTH AND SOCIAL WELFARE	Deals with the problems of sanitary and epidemiological control and of legislation concerning the quality of water for drinking and industrial purposes. The State Sanitary Inspectorate operates within the Ministry and supervises the operation of regional Sanitary and Epidemiological Stations
THE STATE SANITARY INSPECTORATE	Operates within the Ministry and supervises the operation of regional Sanitary and Epidemiological Stations. Controls among others the quality of water resources and of drinking water and quality of sewage discharged into the environment

The Water Law passed in 1974 by the Polish Parliament is the legal basis for water management.

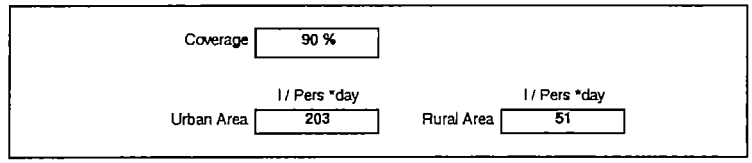
Law on Environmental Protection and Management passed by the Parliament in 1980 is the second principal act.

1991: Bill concerning ecological policy. It basis future growth of Poland on base of ecological and social market economy.

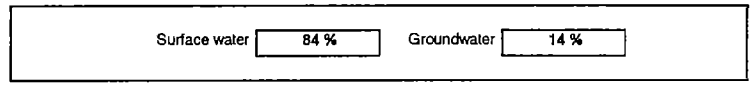
☞ reference [88]

STATUS OF DRINKING WATER SUPPLY

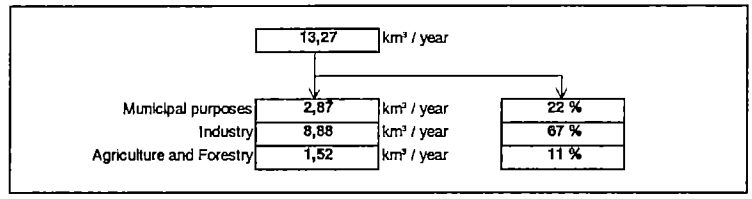
POPULATION SUPPLIED WITH PIPED WATER, AVERAGE CONSUMPTION



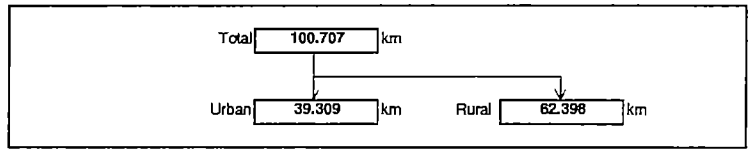
SOURCE OF DRINKING WATER PRODUCTION



TOTAL INSTALLED PRODUCTION CAPACITY



LENGTH OF THE NETWORK



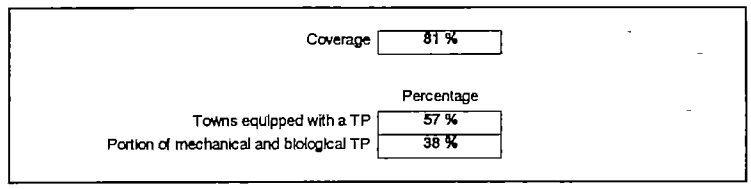
PEOPLE SERVED BY THE WATER SUPPLY NETWORK

TOWNS - NUMBER OF INHABITANTS	%
under 5.000	61.7
5.000 - 9.999	78.4
10 000 - 19.999	81.8
20.000 - 49.999	86.2
50.000 - 99.999	89.8
100.000 - 199.000	96.1
200.000 and more	97.0

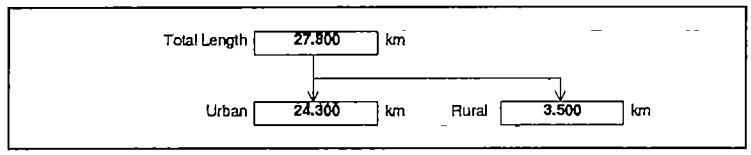
☞ reference [88]

STATUS OF SEWERAGE / WASTE WATER TREATMENT

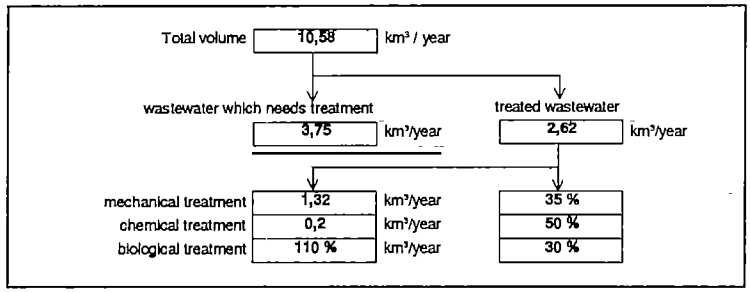
SETTLEMENTS CONNECTED WITH A SEWAGE TREATMENT PLANT



LENGTH OF THE NETWORK



COLLECTED SEWAGEWATER



PEOPLE SERVED BY THE SEWERAGE SYSTEM

TOWNS - NUMBER OF INHABITANTS	%
under 5.000	29.9
5.000 - 9.999	57.8
10 000 - 19.999	70.1
20.000 - 49.999	77.0
50.000 - 99.999	81.9
100.000 - 199.000	88.7
200.000 and more	91.9

☞ reference [88]

MAIN PROBLEMS

INSTITUTIONAL AND TECHNICAL ISSUES

WASTEWATER TREATMENT	Insufficient and inadequate wastewater treatment
POLLUTION	Saltification of water of Wisla and Odra caused by salty water discharge from the mining industry
WATER LOSSES	Network leakage and losses in the supplied houses

MANAGERIAL AND FINANCIAL ISSUES

FINANCING	Limited economic capabilities of the state
WATER PROTECTION	Degradation of the coastal Baltic Sea waters
COVERAGE	Network Water supply and sewage disposal systems

MAIN FUTURE TASKS / ACTIVITIES

SURFACE WATER	Obtaining a condition in agreement with the lax requirements
POLLUTANT LOAD	Reduction of the pollutant load
NETWORK	Equipping all towns and the majority of villages with network water supply and sewage disposal systems and the rest of the villages with local appliances
WATER MANAGEMENT	Improvement of water management and elimination of water losses in the in-house water appliances and external networks
WATER QUALITY	Improvement of water quality in existing water supply systems

☞ reference [88]

REFERENCES

[66] Harenberg B., Harenberg Länderlexikon '95/96, 1995

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[88] Roman M., Water Supply and Sewerage in Poland. In: 'Das Gas- und Wasserfach.', 1993

ROMANIA

GENERAL INFORMATION

POPULATION	22,8 millions Capital Bucharesti: 2.064 million
POPULATION DENSITY	95,6 persons/km²
SURFACE	237.500 km²
ADMINISTRATION	Romania is organized in 41 administrative territorial units (*judets*) including 262 towns and 1.688 communes with about 13.000 villages. 54% urban populations
TOPOGRAPHY	Three major regions: 1. highest summits: Carpathians 2. hills, plateaus 3. plains, meadows, Danube Delta 63,6% of the territory agriculturally used;
CLIMATE	Temperate - continental climate ocean influences from the west mediterranean influences from south av. Temperature: Jan. -3°C; July 23°C; Precipitation: Jan. 43mm, July 55 mm
MEMBERSHIPS	Member of the Council of Europe OSZE, UNO
POLITICAL BACKGROUND	National state, sovereign and independant government: Republic since 1991

☞ references [19], [66], [64]

WATER RESOURCES

RIVERS	Total Length: 200.000 km largest rivers Danube Buzau Somes
WATER RESOURCES	40 billion m^3/year from interior rivers 85 billion m^3/year from the Danube specific resource: 1.700 m^3/inhabitant/year most of the rivers have a torrential character rivers are inequally distributed over the territory
LAKES	Total number: 3.450 Volume: 2 billion m^3
GROUNDWATER RESOURCES	available annual amount: 9 billions m^3 annual amount of used groundwater: 3 billions m^3 generally with a better quality than that of the surface waters
FURTHER INFORMATIONS	Drinking water is mainly produced from surface water. The new Land Law provides for groundwater protection, but is often neglected by landowners. Due to the geographical position and the relief, Romania has a different hydrographic network.

☞ reference [62], [64]

INSTITUTIONAL AND LEGAL FRAMEWORK

CENTRAL STATE LEVEL

MINISTRY OF WATER, FOREST AND ENVIRONMENTAL PROTECTION (MWFEP)	Overall responsibility for environmental management in Romania Developping standards for waste water discharges from all sources Responsible for a series of subordinated organisations (e.g. APELE ROMANE) with research, advisory, operational and training functions
APELE ROMANE	Subordinated to the MWFEP Responsible for the management of quantity and quality of the water
THE RESEARCH AND ENGINEERING INSTITUTE FOR ENVIRONMENT (ICIM)	Subordinated to the MWFEP Main tool for the Ministry in scientific research for management of water, air, fauna, flora, waste, soil
MINISTRY OF PUBLIC WORKS	Sets the operating standards without controlling the the actual operation of the municipal water enterprises
MINISTRY OF HEALTH	Controls the quality of the drinking water regarding health
MINISTRY OF INDUSTRY	Responsible for control of industrial water supply and industrial pollution

COMMUNAL LEVEL

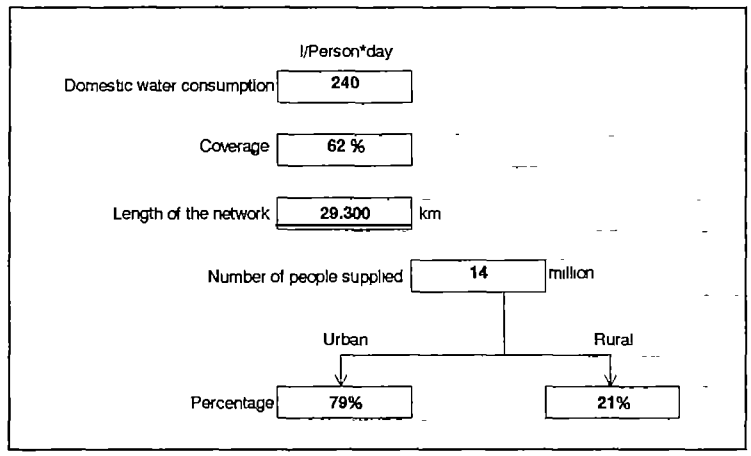
LOCAL COUNCILS / MAYORS	Main responsibility for organisation and delivery of the local public services report monthly on drinking water quality and quantity
MANAGEMENT AND ADMINISTATION OF THE LOCAL PUBLIC SERVICES	Is performed by three types of companies: 1. autonomus regias 2. commercial societies 3. special public services oganised by local councils

New Water Law is currently being passed. The reorganisation of the water management is planned - Information of other countries about regulations and implementation is wanted.

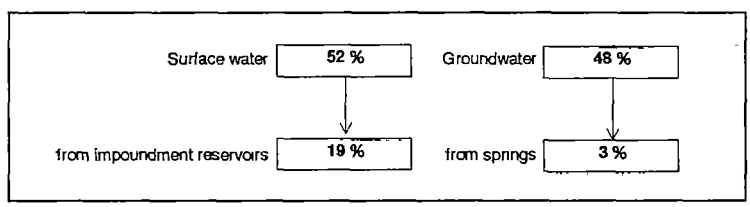
☞ reference [5], [64]

STATUS OF DRINKING WATER SUPPLY

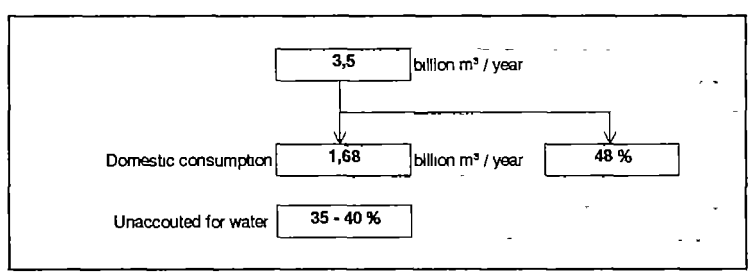
POPULATION SUPPLIED WITH PIPED WATER



SOURCE OF DRINKING WATER PRODUCTION

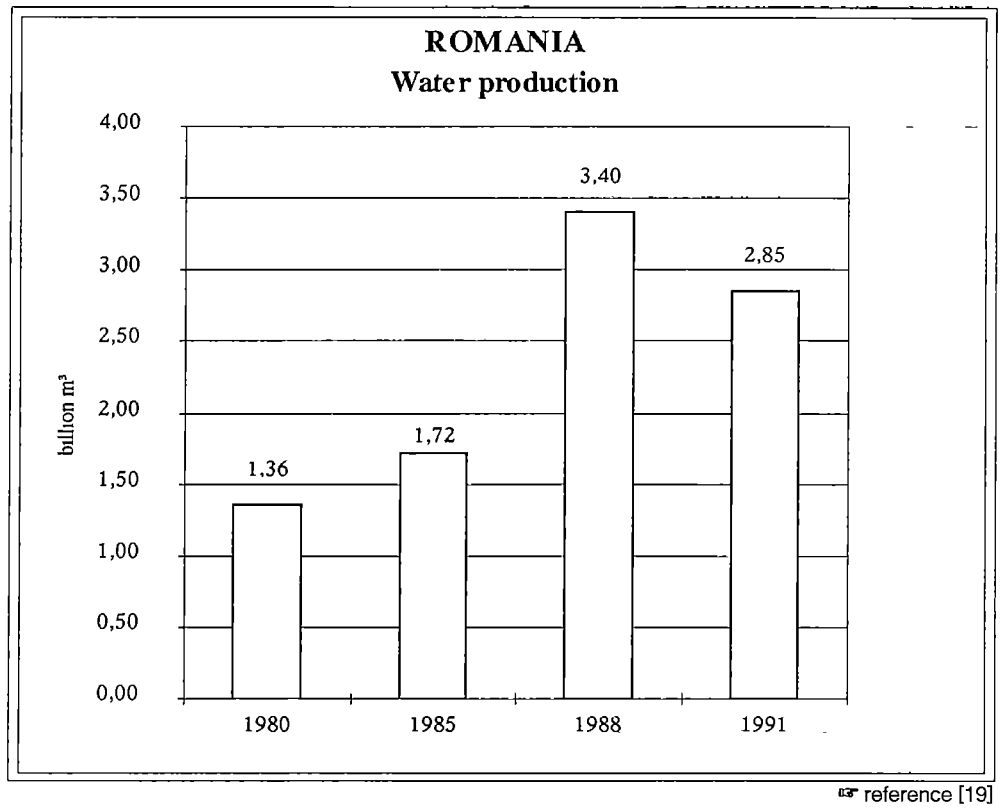


TOTAL INSTALLED PRODUCTION CAPACITY

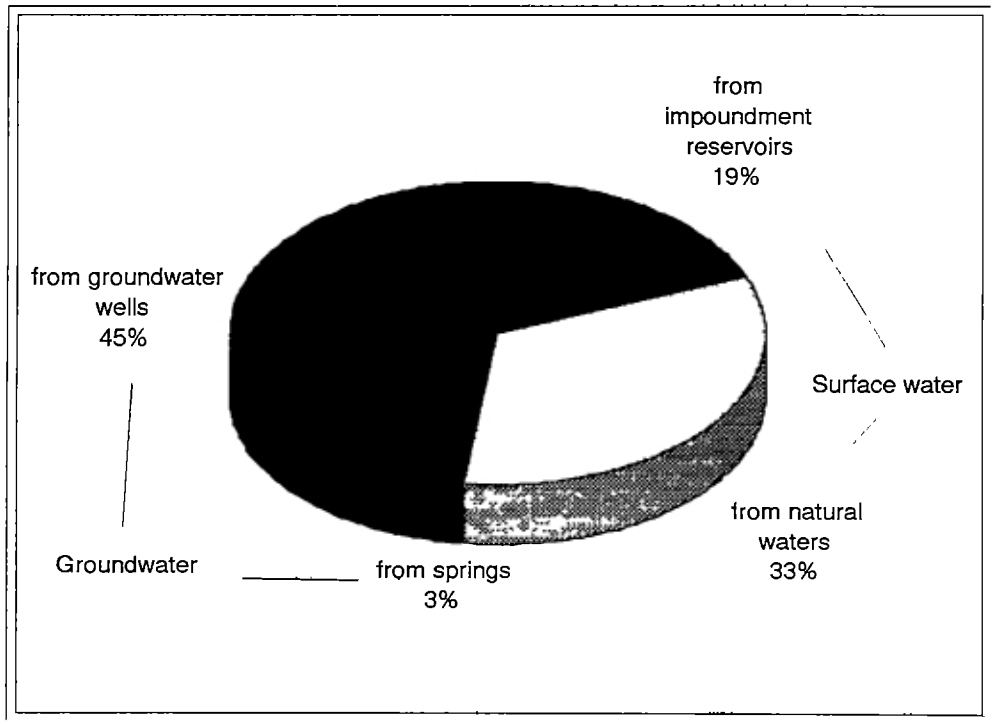


10.940 rural communities (85 % of the total number) are supplied by individual wells.

☞ reference [19], [62],[64],



☞ reference [19]



☞ reference [19]

STATUS OF SEWERAGE / WASTE WATER TREATMENT

POPULATION CONNECTED TO THE SEWERAGE SYSTEM

Number of people (million)	9,1	of total	22,8
rate of coverage	41 %		
Total length of the network	9500	km	

WASTE WATER TREATMENT SUFFICIENCY

Total discharged waste water	10	billion m³
Waste water requireing treatment	5	billion m³
Adequately treated	25 %	
Insufficient treated	50 %	
Discharged without treatment	28%	

COLLECTED SEWAGEWATER

Total volume	2500	milion m³ / year	
treated in			
domestic treatment plants	1900		76 %
central treatment plants	600		24 %

☞ reference [19], [62], [64],

MAIN PROBLEMS

INSTITUTIONAL AND TECHNICAL ISSUES

IMPROVE THE SUPPLY AND WATER QUALITY
Support effective decentralisation and induce necessary administrative and fiscal reforms

WATER QUALITY
Laboratory issues

WASTE WATER
1. Reconstruction of the Network
2. Leak detection
3. N and P removal

MEASURING
1. Lack of means for measurement and automatic control equipment performances and reliability

WATER SUPPLY
1. Safe and adequate drinking water supplies for all population
2. Rehabilitation of water resources

MANAGERIAL AND FINANCIAL ISSUES

LACK OF CAPITAL	Introduce credit for municipal infrastructure finance
LEGISLATION	Appropriate legislation and management (e.g. EC Standards)
LOCAL AUTHORITIES	1. Formulate priorities investment needs 2. Prepare, appraise and programme municipal infrastructure investments
TRAINING	Training of professional staff in management of drinking water supply and quality (water authority, professional, medical, administrative authority...)
OPERATORS TRAINING	1. Establishment of an Operational Strategy for the building of integrated water sector training in Romania. 2. Initiation of permanent and sustainable training activities in the water sector
MONITORING	Improvement of integrated monitoring systems (Emergency warning)

☞ references [5], [6], [15], [19]

INTERNATIONAL COOPERATION

European Bank for Reconstruction and Development and The World BankMunicipal Utilities Development Programme

The World Bank

Programme on rehabilitation of the water supply and sanitation system.

Environmental Programme for the Danube River Basin

Black Sea Environmental Programme

EC-PHARE: Cooperation Fund pre-investment studies on the river Siret

GEF/The World Bank: Pre-investment study on the river Cris/Koros

USAID Studies

The World Bank - JICA

Feasibility study for rehabilitation of the entire water supply system

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SLOVAK REPUBLIC

GENERAL INFORMATION

POPULATION	5,3 millions (55% urban population) Capital Bratislava 440.000
POPULATION DENSITY	108,7 persons/km²
SURFACE	49.000 km²
TOPOGRAPHY	Carpathian mountains (up to 2.500m high), Lowlands in the southern parts of the country (Danube Island near the Danube, East-Slovakian Lowland in the River Bodrog basin)
CLIMATE	Continental climate av. Temperature: Jan. -0,7°C; July 19,1°C; Precipitation: 753 mm/year 561 mm (Hurbanovo) - 1300 mm (High Tatra) Av. yearly runoff 2,6 billion m³, about 261 mm of the precipitation
MEMBERSHIPS	Member of the Council of Europe OSZE, UNO
POLITICAL BACKGROUND	Independent country since 1993 Form of government: Republic

☞ references [66], [41]

WATER RESOURCES

RIVERS	Number	10 important rivers (9 of them belong to the Danube River basin)
	Total Length	44.666 km (8.437 km more important water courses)
	Largest rivers	Váh (150 m^3/s) Danube Poprad
	Av. discharge	3.300 m^3/s
GROUNDWATER	Groundwater is the main source of drinking water Systematic monitoring of groundwater quality started in 1982.	
WATER RESOURCE UTILISATION	Groundwater	85%
	Surface water	15 %
	Households	60 %
	Industries	17 %
	Agriculture	3 %

☞ reference [19], [41]

INSTITUTIONAL AND LEGAL FRAMEWORK

CENTRAL STATE LEVEL

MINISTRY OF ENVIRONMENTAL	Operates through 38 districts and 125 sub-district offices Responsible for all legislative aspects 1. Monitoring the quality of ground and surface water 2. Licensing of wastewater discharges, approval of construction of water supply and wastewater treatment works 3. Resources planning
MINISTRY OF LAND ECONOMY	Four authorities under the ministry Responsible for operational matters regarding water management Authorities organized along river basins are responsible for monitoring of water quality, water abstractions and wastewater discharges
MINISTRY OF HEALTH	Supervision of the quality of drinking water Elaboration of drinking water standards Monitoring of water related infectiour diseases
MINISTRY OF AGRICULTURE	Responsible for sewage treatment and drinking water supply

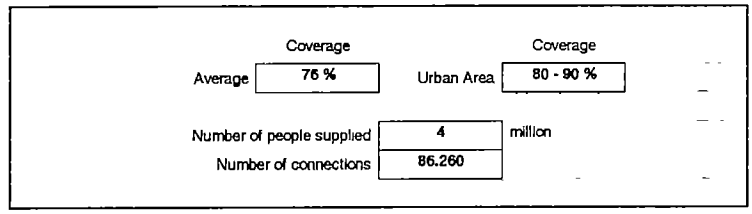
REGIONAL/COMMUNAL LEVEL

REGIONAL WATER COMPANY VAK	Responsible for public water supply, sewage collection and wastewater treatment Monitoring of groundwater quality
FIVE WATERWORKS AND SEWERAGE COMPANIES (BELONG TO THE MINISTRY OF LAND ECONOMY)	Responsible for water supply, sewerage and wastewater treatment throughout the country

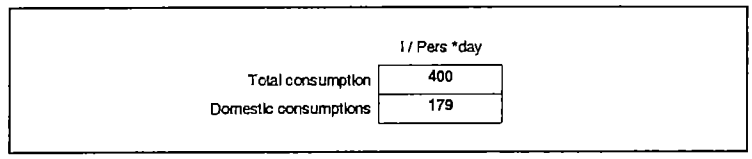
☞ reference [19], [41]

STATUS OF DRINKING WATER SUPPLY

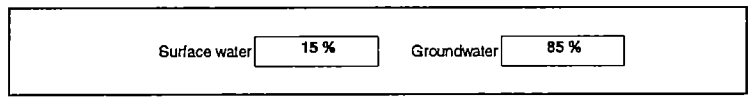
COVERAGE, POPULATION SUPPLIED WITH PIPED WATER



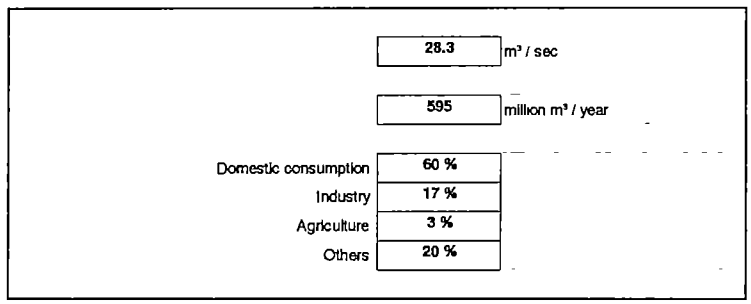
AVERAGE CONSUMPTION



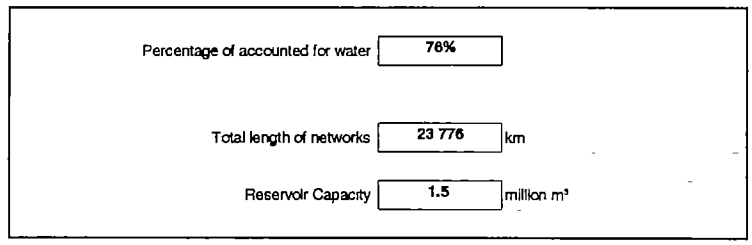
SOURCE OF DRINKING WATER PRODUCTION



TOTAL INSTALLED PRODUCTION CAPACITY, WATER CONSUMPTION



ACCOUNTED FOR WATER, LENGTH OF THE NETWORK, CAPACITY



Total installed production capacity amounts 28,3 m³/sec.

In 1992 595 million m³ drinking water was produced, 450 million m³ was sold (24 % unaccounted for)

80% of the well fields are surrounded with protection zones.

20 -25 per cent of the supplied water does not comply with all the prescribed national water quality standards.

☞ reference [19]

STATUS OF SEWERAGE / WASTE WATER TREATMENT

POPULATION CONNECTED TO THE SEWERAGE SYSTEMS

Number of people (million)	2,7	of total	5,3
Rate of coverage	51 %		
Length of sewerage networks	6.767	km	

COLLECTED RESPECTIVELY TREATED SEWAGEWATER

Collected sewage water	560	million m^3 $year^{-1}$
in	181	waste water treatment plants
Treated wastewater	500	million m^3 / year
Treatment efficiency	65-70	%
Domestic wastewater	215	million m^3/year
Industrial wastewater	245	million m^3/year
Rainwater	100	million m^3/year

Of the 181 wastewater treatment plants 157 are mechanical/biological and 24 are mechanical installations.

Most of the sludge is used in the agriculture

Upgrading of existing sewage treatment plants is a topic of great importance.

53 % of the communities (2.834 towns and villages) in Slovakia are sewered, only 10 % of the municipalities have a sewage treatment facility.

☞ reference [19]

MAIN PROBLEMS

INSTITUTIONAL AND TECHNICAL ISSUES

STRUCTURAL DIFFICULTIES	Difficulties in transforming / privatization process
WATER QUALITY	Inadequate protection of water sources
	Lack of automation in water protection and distribution

MANAGERIAL AND FINANCIAL ISSUES

FINANCIAL ASPECTS	Unexperienced financial planning
	Lack of finances in capital market
	Lack of public relations experience
	Missing logistic of management process
	Unbalanced cash flow

☞ reference [5], [19]

PRIORITY ACTIONS

TRAINING	Practial level support to improve management and legislation
	Training/support in financing arrangement and loan acquisition
	On-the job training and internships to managerial and technical staff by external sector organizations
	Training of trainers of sector management skills, emphasis on practices in market economy
	Waterworks/utilities and sewerage/waste management association cooperation between Dutch and Bulgarian/Czech/Slovakian associations
	Formulation of pilot scale projects to introduce new technology, modern management and resource protection

TREATMENT PLANTS	Completion and modernisation of existing water treatment plants
WATER SUPPLY	To connect maximum of population to public water supply
NETWORK	Reconstruction and repairing existing water distribution networks
INSTITUTIONS	Define responsibilities

☞ reference [15], [19]

INTERNATIONAL COOPERATION

DANUBE RIVER BASIN ENVIRONMENTAL PROGRAMME

European Commission PHARE Studies (within framework of Danube River Basin)

Monitoring Laboratory and Information Management for the Danube River Basin.

Integrated Regional Environment Study

Accident Emergency Warning System

Austria Pre-investment Study. Morava/Dye River Czech and Slovak Republic (Austria; The World bank)

European Bank for Reconstruction and Development - Taiwan Cooperation Fund

Energy in the Danubian Countries.

Report on a Joint Assessment of Pollution in the Danube River.

European Bank for Reconstruction and Development - EC PHARE Cooperation Fund pre-investment studies on the Vah and Upper Tisza/Bodrog.

GEF/The World Bank pre-investment studies on the Morava/Dye and Nitra.

Management Training for Municipal Water Authorities

GEF/UNDP studies.

CONCERN FOR EUROPE´S TOMORROW

HELCOM/Baltic Sea Environmental Programme

WHO - European Centre for Environment and Health

Project carried out by TECHWARE 1993-94, performing a workshop Dec. 1993 in Bratislava "Environmental Health Aspects in the Catchment Area of the River Danube"

REFERENCES

[5] Van Hoof F., Peeters P., Kaerts J., Report on Management Training for Municipal Water Authorities, 1995

[14] Danube PCU, Danube Programme. Abstract from Strategic Action Plan.,

[15] TECHWARE, Environmental Health Aspects in the Catchment Area of the River Danube. Water Supply and Sanitation., 1994

[19] IRC, Water Supply and Sanitation in Bulgaria, the Czech Republic, Romania and the Slovak Republic, 1994

[41] Kollár M., Water Management in the Slovak Republic,

[66] Harenberg B , Harenberg Länderlexikon '95/96, 1995

ESTONIA

GENERAL INFORMATION

POPULATION	1,536 millions Capital Tallinn: 471.600
POPULATION DENSITY	34 persons/km² 71 % urban population
SURFACE	45.226 km²
ADMINISTRATION	Estonia is divided into 15 counties and six towns (the other 27 towns are subordinated to the counties). The counties are divided into municipalities (193).
CLIMATE	av. Temperature: Jan. -5°C; July 17°C; Precipitation: 700 mm/year
MEMBERSHIPS	Member of the Council of Europe OSZE, UNO
POLITICAL BACKGROUND	In August 1991 the supreme council of the Republic of Estonia adopted a resolution which restored Estonian national independence on the basis of legal continuity. Since 1991: Parliamentary Democracy June 1992: new constitution was approved.

☞ references [66]

WATER RESOURCES

RIVERS

largest rivers Narva (372 m³/s)
Emajogi (57,4 m³/s)
Pärnu (48,9 m³/s)

LAKES

Biggest Lakes Vortsjärv
Lake Peipsi

FURTHER INFORMATIONS

Main problem is the anthropogenic eutrophication; general fall of economy and efficiency of sewage treatment plants had a positive influence on the water quality.

The content of nutritive substances and chloride and sulphate ions is high.

For protection of the surface water the Regulation of the Ministry of the Environment on Protection of Beaches (1992) is applied.

GROUNDWATER

State Programme of groundwater monitoring: in 1994 hydrogeological observations were carried out.
The regular observations of groundwater regime were started in 1946, the planned development of hydrogeological observation network began in 1960.

Problems: Pollution of groundwater by fuel tanks

WATER RESOURCES UTILISATION

Type of use	Groundwater	Surface water	Total [m³/year]
Households			92
Industries			69
Agriculture			10
Fish rearing			149
Cooling water			1.372
Other types of use (energy, fish-farming)			33
Total	343	1.568	1.989

☞ reference [72], [73]

INSTITUTIONAL AND LEGAL FRAMEWORK

CENTRAL STATE LEVEL

MINISTRY OF ENVIRONMENT	Overall responsibility for water protection and for the management of water resources. Decentralised model of water management is followed - each county, municipality and town is responsible for maintaining environmental qualities within its own area.

COMMUNAL LEVEL

LOCAL ENVIRONMENTAL PROTECTION OFFICES (19)	Management of water resources and water protection work The Chief Inspector of Environmental Protection and his office reinforce this control.
HEALTH PROTECTION AGENCY	Controls on drinking water and on the quality of coastal waters

In connection with the Water Protection Program and the working-out of the development programme of Estonian water management in 1994, the financing of water protective structures from the State investment plan (SIP) and Environmental Fund has become more exact.

The Estonian state standard for drinking water is almost completed.

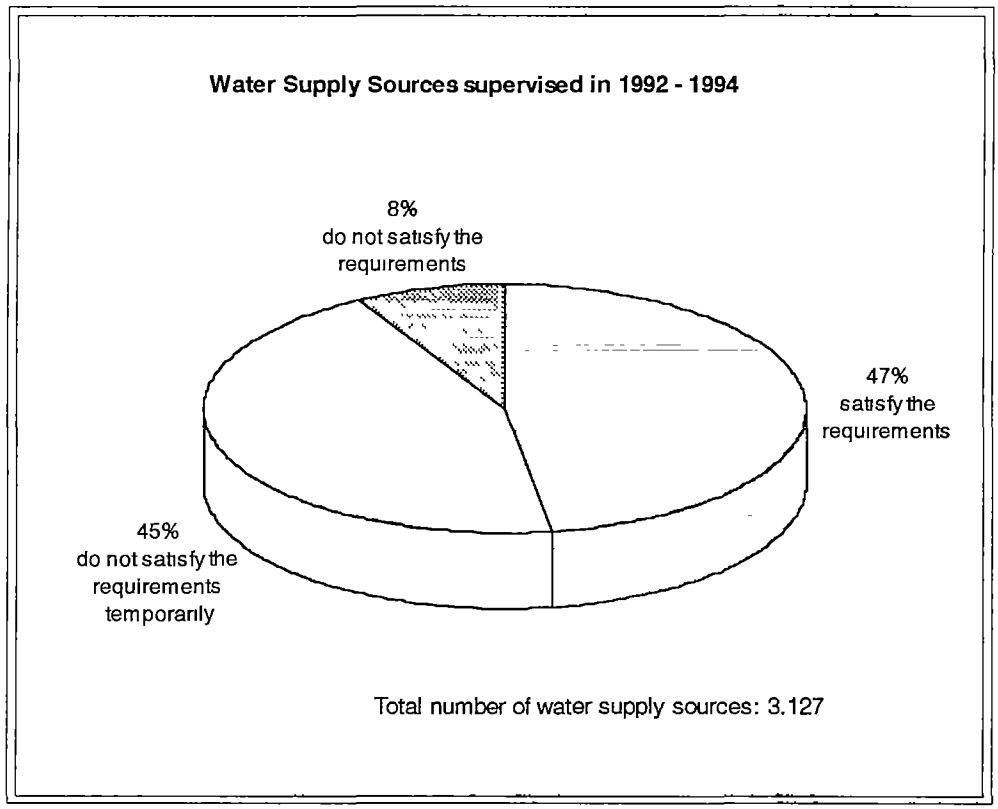
Several local governments, previous large enterprises, now fallen to small joint stock companies, do not want to be proprietors of water sources. Water and sewerage constructions need permanent care and means, not giving direct and great profit.

☞ reference [73]

STATUS OF DRINKING WATER SUPPLY

WATER CONSUMPTION IN 1994

Total water consumption	919.388	m³/day
drinking water and industrial supply	312 973	m³/day
mine and opencast colliery drainage	606 415	m³/day



☞ reference [73]

STATUS OF SEWERAGE / WASTE WATER TREATMENT

DISCHARGED WASTE WATER

Total discharge of waste water	1962	million m³/year
water requiring treatment	378	million m³/year
amount of not treated water	19	million m³/year

COLLECTED SEWAGEWATER, NUMBER AND TYPE OF TREATMENT PLANTS

Collected sewage water in towns	179954	m³ / year
biologically treated	149827	m³ / year
mechanically treated	12226	m³ / year
Number of treatment plants	1050	
activated sludge plants	697	
oxidation ponds	244	
other solutions	139	

In recent years special attention has been paid to the treatment of the sewage of settlements. Settlements with 5.000 and more inhabitants (26 settlements; about 67% of the population live there) is the main attention paid to.

In Estonia domestic and industrial sewage are treated at the same sewage treatment plant.

Portion of non-working small sewage plants has increased (in 1994 about 65%).

Poor rural population cannot pay for the expenses of care, exploitation and repair of sewage treatment plants.

The network of technical services institutions of sewerage systems and sewage treatment plants has disintegrated.

☞ reference [73]

MAIN FUTURE TASKS / ACTIVITIES

MONITORING PROGRAMS	Guaranteed collaboration with different organizations Calibration of methods
SEWAGE TREATMENTS PLANTS	Projection and construction of sewage treatment plants and sewerages
LEGALLY AND FINANCIALLY REGULATION	Supervision needs more thorough regulation as well as providing for other facilities and training personal
RESEARCH WORK IN SMALL SEWAGE PLANTS	Getting an overview of the situation and estimating the necessary expenses economically

☞ reference [73]

INTERNATIONAL COOPERATION

Joint Projects with Finland, Sweden, Switzerland, Denmark and Germany.

HELCOM. The Baltic Sea joint comprehensive environmental action programme.

EC-PHARE

REFERENCES

[51] N.N., Who is who in European water - Estonia,

[66] Harenberg B., Harenberg Länderlexikon '95/96, 1995

[72] N.N., Summary of groundwater monitoring, 1994

[73] EEIC, Estonian Environment, 1995

LATVIA

GENERAL INFORMATION

POPULATION	2,6 millions Capital Riga:897.000
POPULATION DENSITY	41 persons/km²
SURFACE	64.610 km²
TOPOGRAPHY	Latvia lies at the Baltic Sea 40 % of the territory is forest, 26 % agriculture
CLIMATE	av. Temperature: Jan. -4°C; July 17°C; Precipitation: 600 - 800 mm/year
MEMBERSHIPS	Member of the Council of Europe OSZE, UNO
POLITICAL BACKGROUND	Since 1990 independent state. Republic since 1991

☞ references [66],

INSTITUTIONAL AND LEGAL FRAMEWORK

CENTRAL STATE LEVEL

MINISTRY OF ENVIRONMENTAL PROTECTION AND REGIONAL DEVELOPMENT (VARAM)	Responsible for co-ordination of all activities in water sector Development of state policy, legislation, norms, standards
MINISTRY OF WELFARE	Responsible for anaysis of the drinking water quality
PROJECTS DEPARTMENT OF THE VARAM	Co-ordinating all Ministry´s international activities, managing domestic and international municipal services development projects and organizing training for the local specialists
SOCIETY OF WATER SUPPLY ENTERPRISES	Non-governmental-Organisation representing water works in Latvia

COMMUNAL LEVEL

MUNICIPALITIES	Each municipality owns enterprises which is dealing with water Responsible for municipal services, including water management Services and the system is quite decentralized

Five private companies in water sector dealing with inventories and design of water supply and sewerage systems and implementation of investment projects.

The "Law on Natural Resources Tax and Polluter charges" is prepared for negotiations in the Parliament (aims: more strict limitation of pollution and stop uneconomic use of natural resources)

☞ reference [83]

STATUS OF DRINKING WATER SUPPLY

COMPANIES

Number of companies	Number of consumers provided
small companies	500 - 5.000
30	5.000 - 20.000
2	> 100.000
1	> 800.000

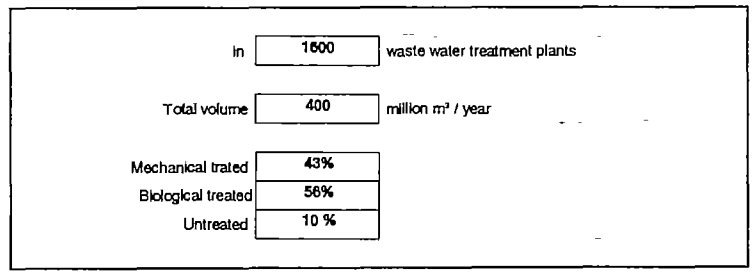
Half of the water supplies are taken from groundwater sources.

Many of them are polluted by agricultural activities.

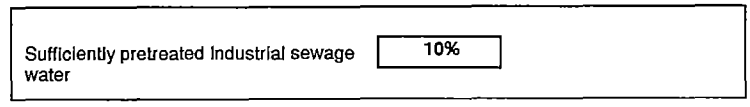
☞ reference [50]

STATUS OF SEWERAGE / WASTE WATER TREATMENT

POPULATION CONNECTED TO THE SEWERAGE SYSTEM



COLLECTED SEWAGE WATER



EFFICIENCY OF TREATMENT PLANTS

Name of Town	Mechanical WWTP		Biological WWTP		Chemical WWTP	
	Number	Loads %	Number	Loads %	Number	Loads %
Riga city	19	102	9	72	3	16
Daugavpils City	5	65	3	18	1	6
Liepaja City	19	58	1	125	2	5
Jelgava City	2	7	4	70	-	-
Jurmala City	6	39	6	19	-	-
Rezekne City	12	22	1	52	-	-
Small cities	38	57	52	35	7	150
Total	581	38	964	60	14	9

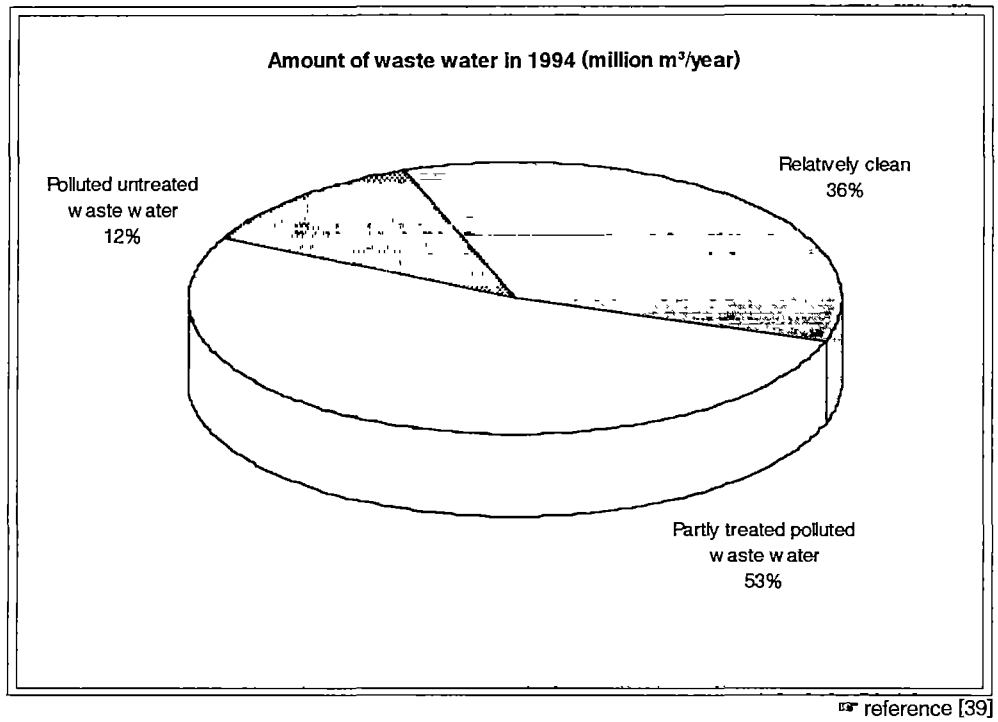
Almost every community has one or some water supply and waste water treatment enterprise mainly owned and operated by the municipalities.

Process of combining efforts is going on (e.g. Latvian Water & Waste-Water Works Association knits together 16 greatest companies)

During the last five years the loads for waste-water treament plants of industry and agriculture have been decreased, but loads from municipal services have been increased.

The capital Riga discharges considerable volumes of untreated wastewater into the River Daugava which is already grossly polluted by a major industrial discharge which occured in neighbouring Belarus.

☞ reference [39], [50]



☞ reference [39]

MAIN PROBLEMS

INSTITUTIONAL AND TECHNICAL ISSUES

INDUSTRIAL WASTEWATER	Treatment of industrial waste water before emission
MIDDLE SIZE WASTE WATER TREATMENT PLANTS	WWTP became a part of the municipal property after 1990 A lack of technical and financial means and great changes in quantity and quality of waste water cause problems.
TECHNICAL REQUIREMENTS	Latvia is on the way to meet EC - requirements; they will be implemented in the large scale technologies through testing in pilot projects and later development of new strategies and technologies
NEW TECHNOLOGIES	Environmentally friendly and rational utilization of industrial and municipal wastes

MANAGERIAL AND FINANCIAL ISSUES

LACK OF FINANCIAL MEANS	System of regulations, taxes and fees is not sufficient to support recycling challenges and to accumulate funds for researches and for implementation stage.
TARIFF SYSTEM	Water authorities are required to be self-financing New tariff system permitting cost recovery should be designed

☞ reference [39], [83]

INTERNATIONAL COOPERATION

EC - PHARE

The World Bank

HELCOM - Baltic Sea Commission

UN/ECE

REFERENCES

[39] Bebris R., Social and political side of waste water treatment in Latvia, 1995

[50] N.N., Who's who in European water - Latvia,

[83] Zimitis J., WATSAN sector, Latvia, 1995

[66] Harenberg B., Harenberg Länderlexikon, 1995

MOLDOVA

GENERAL INFORMATION

POPULATION	4;4 million Capital Chisinau: 735.500
POPULATION DENSITY	129,4 persons/km² 50% urban population
SURFACE	33.700 km²
ADMINISTRATION	Moldova is divided in 40 rayons
TOPOGRAPHY	40% of the territory in the Danube basin Mainly agricultural country
CLIMATE	Av. Temperature: Jan.: -4°C, July 20°C Precipitation: 400 - 500 mm/year
MEMBERSHIPS	GUS, OSZE, UNO
POLITICAL BACKGROUND	Republic since 1991

☞ references [66]

WATER RESOURCES

RIVERS	largest rivers Dnjestr Pruth
FURTHER INFORMATIONS	Surface waters are of relatively good quality except for highly varying contents of suspended solids and pollution due to controlled and uncontrolled discharges of sewage water.
GROUNDWATER	The soil in Moldova has a high clay content so ground water is little or not affected at all by pesticides Many wells show extremely high nitrate concentrations A very specific problem is the high content of fluorides in the groundwater

☞ reference [5]

INSTITUTIONAL AND LEGAL FRAMEWORK

CENTRAL STATE LEVEL

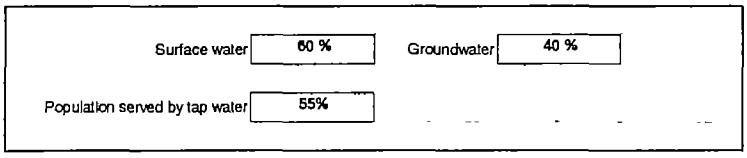
MINISTRY OF COMMUNITY SERVICES	172 independent enterprises, 50 are engaged with drinking water and waste water
WATER CONSORTIUM AQUA	Responsible for the quantitative and qualitative management of water resources (flood control, water balances) Performs the necessary studies prior to issuing the permits for water use by the Department of Environmental Protection
MINISTRY OF HEALTH	Controls the quality of the drinking water in the reservoirs of the towns, in the distribution systems and in the wells in the rural areas Control at the tap is done only in base of disease
DEPARTMENT OF ENVIRONMENTAL PROTECTION	National organisation and 40 rayon-inspecorates, functioning under 10 agencies, each equipped with a laboratory Decisions about fines and sanctions takes the Inspector-general

For the moment a new "Water Law" is being passed through the legislative process and effected by June 1995.

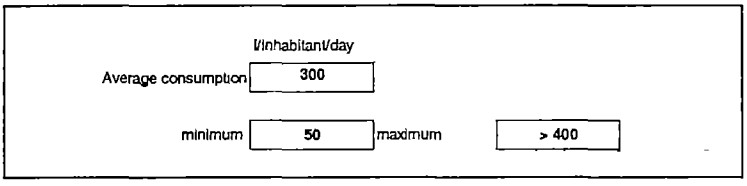
☞ reference [5]

STATUS OF DRINKING WATER SUPPLY

SOURCE OF DRINKING WATER PRODUCTION, COVERAGE



AVERAGE CONSUMPTION



Loss of drinking water due to losses in the distribution system and in the private facilities (taps etc.) varies between 40 and 60 %.

Private water consumption is not metered.

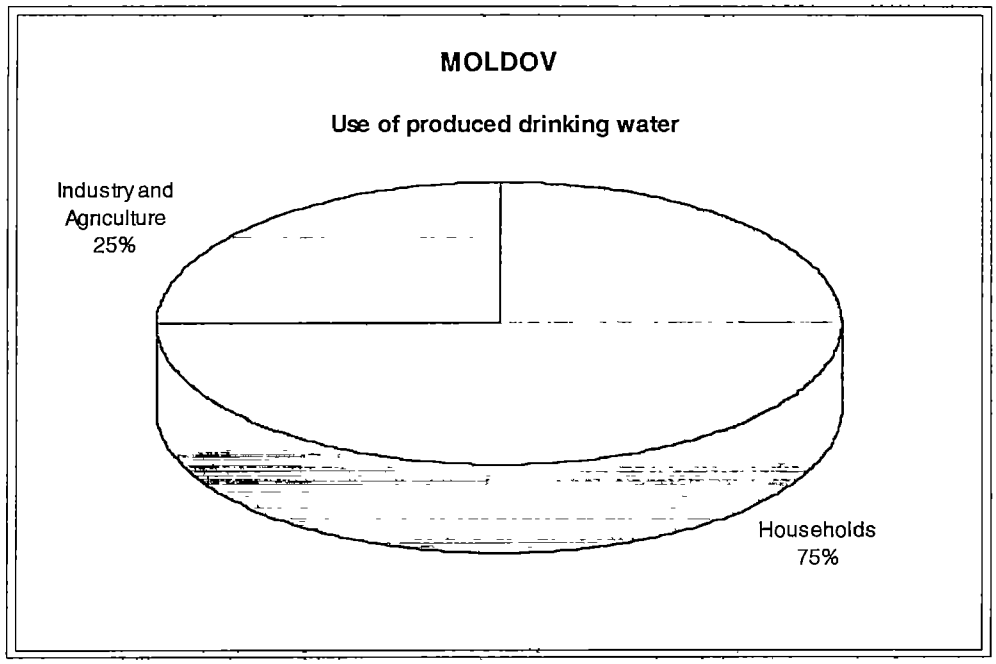
WATER QUALITY

The distribution system is old, bacteriological contamination of the drinking water and related health problems increase.

About 70 % of the drinking water confirms to the standards.

In around 50 towns groundwater is used for drinking water without treatment. 14 of these towns do not comply with standards.

Threat of pesticides lies in former use, storing and dumping practices.



☞ reference [5]

STATUS OF SEWERAGE / WASTE WATER TREATMENT

POPULATION CONNECTED TO THE SEWERAGE

Percentage of population	10%	of total	4,4 million
Rural areas	< 1%		

Sludge management has received little attention until now, but it is in fact a major problem. River Dniestr is lined by sludge lagoons for 50 km.

☞ reference [5]

MAIN PROBLEMS

INSTITUTIONAL AND TECHNICAL ISSUES

SECONDARY POLLUTION	Secondary pollution due to leaking sewerage systems or defective sewerage system is a frequent source of health - related problems

MANAGERIAL AND FINANCIAL ISSUES

LACK OF FINANCIAL MEANS	Financing of the drinking water and waste water utilities. Cost calculation and cost recovery are subjects, where a lack of experience and knowledge is felt
EXCHANGE WITH OTHER COUNTRIES	Exchange of views and knowledge with other countries in view of optimisation of the present plants and equipment
QUALITY CONTROL	Control of surface water, drinking and ground waters using modern data management techniques ranks also in the top priorities

MAIN FUTURE TASKS / ACTIVITIES

MONITORING SYSTEM	Improve the monitoring
WATER QUALITY	1. Appropriate water quality standards and improvement of water preparing 2. Fluoride removal of drinking water 3. Bacteriological control of the drinking water
MANAGEMENT, LEGISLATION	Training professional staff in Organisation, Management and science Improvement of water management and legislation
NETWORK	Leakage control

☞ reference [5], [15]

INTERNATIONAL COOPERATION

Environmental Programme for the Danube River Basin

Black Sea Environmental Programme

EC - PHARE

GEF/UNDP Studies

☞ reference [5], [14]

REFERENCES

[5] Van Hoof F., Peeters P., Kaerts J., Report on Management Training for Municipal Water Authorities, 1995

[6] N.N., Strategic Action Plan for the Danube River Basin 1995 - 2005,

[15] TECHWARE, Environmental Health Aspects in the Catchment Area of the River Danube. Water Supply and Sanitation., 1994

[57] Leblanc M., Information on the WATSAN sector in Moldova, 1995

[66] Harenberg B., Harenberg Länderlexikon '95/96, 1995

RUSSIAN FEDERATION

GENERAL INFORMATION

POPULATION	149,5 millions Capital Moscow:	 8,8 millions
POPULATION DENSITY	8,75 persons/km²	
SURFACE	17,075 million km²	
ADMINISTRATION	The Russian Federation consists of 21 autonomous Republics	
CLIMATE	av. Temperature: av. Precipitation	Jan. -10°C, July 18°C Jan. 31 mm, July 74 mm
MEMBERSHIPS	GUS, OSZE, UNO	
POLITICAL BACKGROUND	Form of Government: Federal Republic (since 1991)	

☞ references [66], [92]

WATER RESOURCES

GROUNDWATER

Number of groundwater sources	3.259
Exploited water sources	1.530
Estimated water resources:	300 km³
Groundwater use: (34 % of the resources)	6,3 km³/year

URBAN POPULATION SUPPLIED BY GROUNDWATER

Inhabitants	%
> 50.000	74
100.000 - 250.000	46
250.000 - 500.000	37
500 000 - 1.000.000	33

☞ reference [34], [81]

INSTITUTIONAL AND LEGAL FRAMEWORK

CENTRAL STATE LEVEL

STATE COMMITEE OF RSFSR ON HOUSING AND MUNICIPAL ECONOMY — Coordination of development and scientific and technical progress in municipal water supply and sewerage systems of Russian Federation

ROSVODOCANAL PROJECT — Engineering design in water supply and sewerage in Russian Federation

RUSSIAN ASSOCIATION OF WATER SUPPLY AND SEWERAGE

COMMUNAL LEVEL

MUNICIPAL WATER SUPPLY AND TREATMENT RESEARCH INSTITUTE — Research and development in the area of water supply and sewerage in Russian Federation and other republics

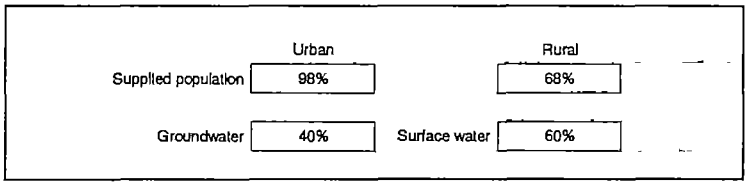
MOSVODOCANAL NLLPROJECT — Research, development, engineering design in water supply and sewerage in Moscow

Russian Federation Law on "Consumer Rights protection": Drinking water is a trade product produced by specialized enterprises

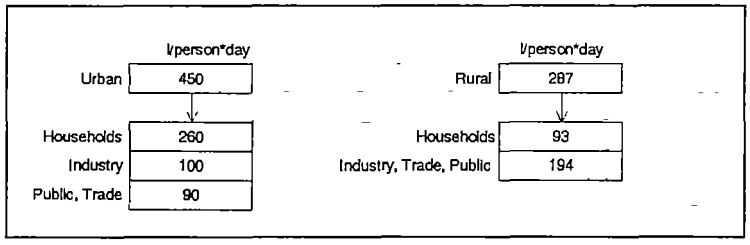
☞ reference [33]

STATUS OF DRINKING WATER SUPPLY

POPULATION SUPPLIED WITH PIPED WATER



AVERAGE CONSUMPTION



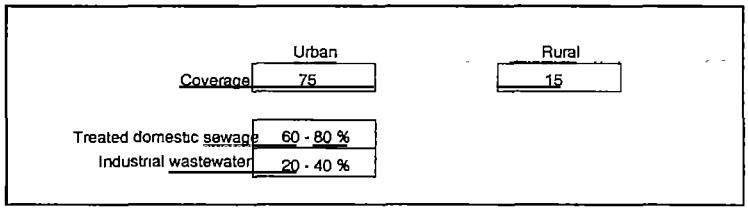
Low-yield water sources (< 50% coverage of water consumption) are not taken into account in case of extending drinking water supply

In Moscow 10 million people are yearly served with more than 7 million m^3 drinking water. Length of the distribution network: 90.000 km
In Moscow mainly surface water is used for drinking water production (Volga, Moskva-River).
The drinking water supply meets the standards of WHO and the local state standard.

☞ reference [34], [81]

STATUS OF SEWERAGE / WASTE WATER TREATMENT

POPULATION CONNECTED TO THE SEWERAGE SYSTEM



77 % of the collected sewage undergoes treatment, including 72 % secondary treatment, out of which about 10 % undergoes tertiary treatment.
Mosvodocanal (Municipal Enterprise in Moscow) provides for complete biological treatment of 7 million m^3 wastewater per year.
Length of the wastewater collecting network: 60.000 km
Mosvodocanal runs three waste water treatment plants

☞ reference [34], [80], [81]

MAIN PROBLEMS

INSTITUTIONAL AND TECHNICAL ISSUES

PROTECTION OF WATER SOURCES	Insufficient protection of municipal drinking water supply systems from toxic industrial and other wastes
POLLUTION	Pollution of surface water mainly caused by industry and agriculture
WATER QUALITY, MONITORING	Considerable improvement of the water quality (with inclusion of it in the Unified State Environment Monitoring System) is needed

MANAGERIAL AND FINANCIAL ISSUES

LACK OF CAPITAL	Improve coverage Maintenance
RESPONSIBILITIES	Multi-departemental system of control

☞ references [81]

PRIORITIES

GROUNDWATER	Need to intensify development of groundwater resources (costs are 3 - 4 times lower than supply from surface water)
EQUIPPING WATER INTAKE FACILITIES	Establish protection zones and providing them with an appropriate nature management system Solving problems of surface sources protection from depletion and pollution (protection forest plantations, natural forest along river banks)
CENTRALIZED WATER SUPPLY	Technical and technological improvement of centralized water supply systems. Reconstruction of water transportation systems
CONSUMPTION	Reduce water consumption, rational use Charge for water
DRINKING WATER CERTIFICATION	International experience in declaring certification in water supply is of practical interest
OPERATION OF COMMUNITY WATER SUPPLY AND SEWERAGE SYSTEMS	Improvement in operation and separate units in order to raise their effectiveness and hygienic reliability
TECHNICAL ISSUES	Application of new techniques and innovations in drinking water preparation, sewage and sludge treatment and utilization
TREATMENT PLANTS	Working out basic requirements for design of treatment plants
FEDERAL TASK FORCE PROGRAMME	Implementation of complex measures concerning water protection and water supply: "A provision of Russian Population with Drinking Water"

☞ references [34], [81]

FEDERAL PROGRAMMES AND INTERNATIONAL COOPERATION

Federal Programme for Domestic Water Supply

The Volga River Environmental Federal Programme

The Caspian Sea Federal Programme

TACIS Environmental Caspian Sea Project (Azerbaijan, Kazakhstan, Russia, Turkmenistan)

TACIS/PHARE Environmental Black Sea Project (Georgia, Russia and Ukraine - TACIS; Romania and Bulgaria - PHARE, Turkey - GEF)

☞ references [33]

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UKRAINE

GENERAL INFORMATION

POPULATION	52,3 millions Capital Kiew: 2,651 million	
POPULATION DENSITY	86,6 persons/km²	
SURFACE	603.700 km²	
ADMINISTRATION	Ukraine is divided in 24 *oblasts*, each has a number of *rayons* comprising a number of municipalities. The Ukraine Danube regions count four *oblasts*.	
TOPOGRAPHY	Ukrain lies at the Black Sea. Danube regions: Upper Tisza, the Prut, the Siret, part of the Danube delta.	
CLIMATE	av. Temperature: Precipitation:	Jan. -6,1°C; July 20,4°C; 650 mm/year (northern part) Jan. 58 mm; July 91 mm
MEMBERSHIPS	Member of GUS OSZE, UNO	
POLITICAL BACKGROUND	December 1990: Since 1991:	Law on self-governance Republic

☞ references [5], [66]

WATER RESOURCES

RIVERS	largest rivers	Dnepr Siversky Donets Dnister

Total water resources (surface and groundwater, excluding the sea): 85,1 km³ per year, 50% reliability.

Rural areas use mainly groundwater as a drinking water source.In the South of Ukraine a sharp shortage of water is recorded.

Practically all urban population is covered by centralized drinking water supply and sewerage.

☞ reference [82]

INSTITUTIONAL AND LEGAL FRAMEWORK

CENTRAL STATE LEVEL

STATE COMMITEE FOR HOUSING AND COMMUNITY SERVICES	Sets the standards and the tariff levels for the public utilities
MINISTRY OF ENVIRONMENTAL PROTECTION & NUCLEAR SAFETY (MEP)	Responsible for the development and enforcing legislation and policies in the field of environmental protection. Oblast branches monitor the surface waters for drinking water use and the waste waters.
STATE COMMITEE FOR WATER RESOURCES OF UKRAINE	Responsible for quantitative management of the surface waters Monitors the surface waters used for drinking water
MINISTRY OF HEALTH	Monitors raw and drinking water quality, reporting the results to the MEP.
MINISTRY OF AGRICULTURE	Responsible for the drinking water supply in rural areas
MINISTRY OF INDUSTRY	Drinking water supply in some industrial areas
STATE COMMITEE FOR HYDRO-METEROLOGY	Monitors surface water; 244 observation posts existing

COMMUNAL LEVEL

MUNICIPAL AUTHORITIES	Responsible for the public utilities through their Department of Community Services under jurisdiction of the Municipal Executive Commitee.
INDEPENDENT COMPANIES - "VODOKANAL"	Daily operation of waste water collection and treatment and drinking water production and distribution

The legal basis for the sector is the Water Code of Ukraine adopted by the Ukrainian Parliament in 1995, but there are also other regulations / instructions already issued or being prepared now.

☞ reference [5]

STATUS OF DRINKING WATER SUPPLY

SOURCE OF DRINKING WATER PRODUCTION

Surface water	85 %	Groundwater	15 %
Supply for drinking-water	4,5	km³/year	

WATER CONSUMPTION, ACCOUNTED FOR WATER

	l/inhabitant/day		
Average consumption	330		
Minimum	100	Maximum	650
Accounted for water	about 50%		

In 1994 about 22,6 km³ of water has been used for industrial, agricultural and domestic water supply in Ukraine.

1,15 km³ of drinking water for communal supply is groundwater. The shallow ground water is of very poor quality.

Reported water consumption varies from 100 l per day and 650 l per day. Water losses at the distribution system itself and the consumer's own installation are responsible for the high figures.

☞ reference [5], [82]

STATUS OF SEWERAGE / WASTE WATER TREATMENT

DISCHARGED WASTE WATER

Discharged waste water	18	km³
Domestic waste water	3,8	km³

90 % of the collected waste water is treated.

Industrial and municipal waste water are mixed. This leads to with metals heavily contaminated waste water.

In the Danube regions of Ukraine, 50% of the population live in rural areas - this leads to heavy pollution of the shallow aquifer due to poor sanitation.

Most of the sewage treatment plants are hydraulically over-sized - upgrading would theoretically not be be necessary.

Part of the treatment plants is often out of use because of maintenance problems and lack of spare parts.

Waste water treatment plants have only the biological treatment stage, nutrient removal is not applied.

In the Ukraine 150.000 ha are covered with sludge lagoons. Majority of the sludges produced are too heavily contaminated with metals to be spread on agricultural land.

☞ reference [5], [82]

MAIN PROBLEMS

INSTITUTIONAL AND TECHNICAL ISSUES

SEWERAGE	Lack of spare parts in sewage treatment plants Sludge management
WATER SUPPLY	1. Health related quality problems due to high nitrate and nitrite contents and the bacteriological quality. 2. Contamination of surface water by raw sewerage due to overflow and leaking of sewerage systems. 3. Insufficient disinfection of the drinking water 4. Secondary contamination of the drinking water during distribution due to leaking distribution system mixing of untreated well-water (potentially contaminated) with the treated surface water in the distribution system

MANAGERIAL AND FINANCIAL ISSUES

LACK OF FINANCIAL MEANS	Poor distribution system maintenance and lack of metering.
SPLIT COMPETENCE	Scattered responsibilites, lack of an adequate quality control system.
TARIFFS	Tariff structures

☞ reference [5], [82]

MAIN FUTURE TASKS / ACTIVITIES

LEGISLATION	Water code and law on drinking water
REGULATION AND ENFORCEMENT	1. Compliance of national standards with EC standards and WHO guide-lines for drinking water quality 2. Introduction of standards for different branches of the industry 3. Introduction of fees for water consumption 4. Monitoring
INSTITUTIONAL DEVELOPMENT	Diminish the number of institutions
TECHNICAL PRIORITES	Pre-treatment Advanced treatment Non-point sources of pollution of water resources Model system of water treatment

☞ reference [15]

INTERNATIONAL COOPERATION

Environmental Programme for the Danube River Basin

Black Sea Environmental Programme

EC - PHARE

GEF/UNDP Studies

European Bank for Reconstruction and Development

Bilateral cooperations with Denmark and Italy.

World Bank USAID

☞ reference [35]

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KYRGYZ REPUBLIC

GENERAL INFORMATION

POPULATION	4,5 millions Capital Bishkek: 631.000 64% of the population (2,874 mio) live in rural areas, 36% urban population (1,588 mio)
POPULATION DENSITY	22 persons/km²
SURFACE	198.500 km²
TOPOGRAPHY	Territory is divided in North and South 93% of Kyrgyzstan more than 1.500 m above sea-level; Maximal altitude: 7.439 m Minimum altitude: 401 m above sea-level located at the same latitude as Italy
CLIMATE	Continental climate av. Temperature: Jan. -13°C; July 21°C; Precipitation: 100 - 1000 mm/year (depends on the altitude)
MEMBERSHIPS	Economic Cooperation Organization (ECO) OSZE, UNO
POLITICAL BACKGROUND	December 1990: Declaration of sovereignity August 1992: Declaration of independency Form of Government: Republic

☞ references [18], [66]

WATER RESOURCES

RIVERS	Total number: 40.000 Total length: 150.000 km Av. yearly drainage 47 km³ (Min. 30 km³, Max. 60 km³) largest rivers Naryn Kara-Darya Syr-Darya
LAKES	Total number: 2.000 Volume: 6 km³ fresh water biggest lakes: Lake Isyk-Kul (brackish water) 1,738 km³ Son-Kul (brackish water) 2,6 km³ Chatyr-Kul (brackish water) 0,6 km³
GROUNDWATER	Estimated natural reserves 654 km³ Quartenary deposits: 246 m³/s Country is rich in deep artesian groundwater
FRESH SURFACE WATER RESOURCES UTILISATION	Drinking water Households 0,27 km³/year Drinking water Agriculture 0,2 km³/year Irrigation 8,90 km³/year Industry 0,64 km³/year Other types of use 0,45 km³/year Water losses 2,00 km³/year . Total amount of fresh surface water 10 - 12 km³/year

☞ reference [18]

KYRGYZ REPUBLIC

INSTITUTIONAL AND LEGAL FRAMEWORK

CENTRAL STATE LEVEL

STATE UNION OF THE ENTERPRISES OF HOUSING AND COMMUNAL SERVICES	Responsible for 50% of the production capacity (622.000 m³/day) Drinking water supply mostly in urban areas (13 towns) and 32 villages.
MINISTRY OF AGRICULTURE	Part of the sectorial water supply system Responsible for drinking water supply in rural areas Water supply of cooperative farms
MINISTRY OF ECONOMY AND OF ENERGY	Responsible for drinking water supply and industrial water supply

Organisation is complicated and a lot of actors are involved. The process of privatisation is on-going, responsibilities and ownerships are often not clear.

New investments in the sector are very small or non existing.

In Sanitation the same organisations are involved as in water supply.

☞ reference [18]

KYRGYZ REPUBLIC

STATUS OF DRINKING WATER SUPPLY

POPULATION SUPPLIED WITH PIPED WATER, AVERAGE CONSUMPTION

	Coverage		Coverage
Urban Area	84 %	Rural Area	30-50 %

AVERAGE CONSUMPTION

	l / Pers *day	
estimated amount	210	
Leakages (estimated)	20 - 35 %	
Domestic consumption	248-265	km³/year
Industry	650	km³/year

SOURCE OF DRINKING WATER CONSUMPTION

Surface water	10 %	Groundwater	90 %

SITUATION IN WATER SUPPLY

Name of town or ad-ministrative district	Number of water supply systems	Division of water supply systems		Length of water supply network (km)		People supplied
		Communal	Sectorial	Communal	Sectorial	%
Talas district	72	4	68	182	4,293	74
Issyk-Kul	237	10	227	444	1,546	95
Naryn district	83	9	74	235	961	84
Town Bishkek	11	1	10	1 063	-	100
Osh district	161	10	151	1 164	2,428	71
Dzhala Abad district	150	11	139	490	1,913	77
Chuj district	283	9	274	558	18,640	95
Together	997	53	943	4.137	30,916	84

☞ reference [18]

STATUS OF SEWERAGE / WASTE WATER TREATMENT

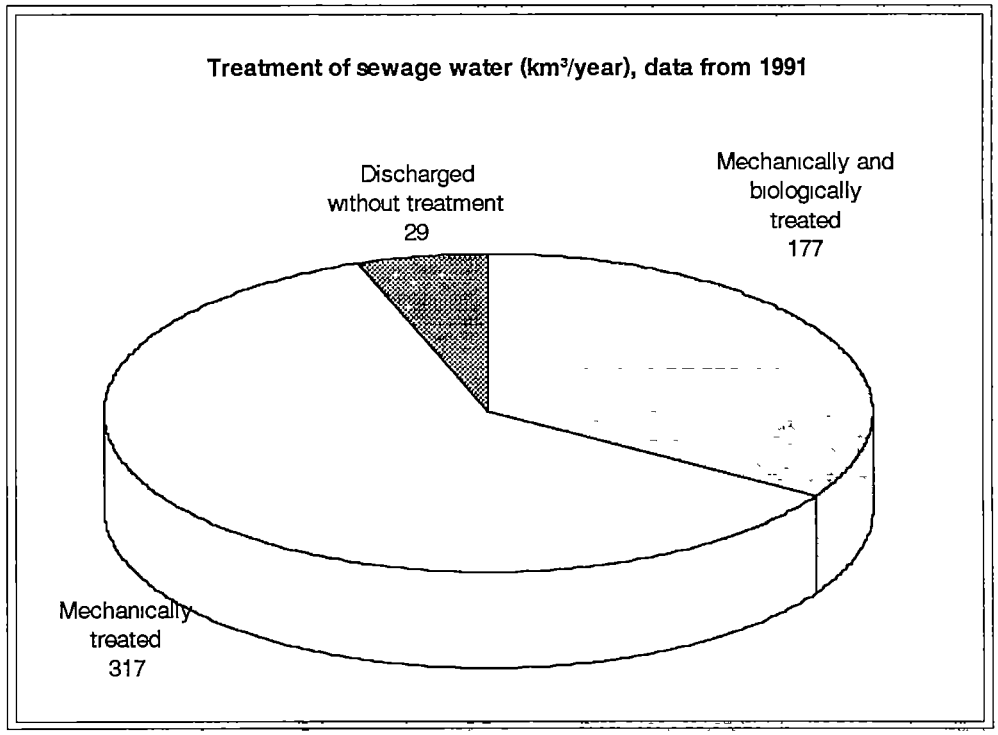
SETTLEMENTS CONNECTED WITH A SEWAGE TREATMENT PLANT

Urban	60%	Rural	10%

LENGTH OF THE NETWORK, CAPACITY

Total length of sewerage networks	1.500	km
Collected sewage water - total	523	km³ / year
Capacity of water treatment plants	1.100.000	m³/day

20 % of the major towns and cities anre connected to sewerage systems.



☞ reference [18]

KYRGYZ REPUBLIC

MAIN PROBLEMS

INSTITUTIONAL AND TECHNICAL ISSUES

COVERAGE	Absence of water supply and sanitation, especially in rural areas insufficient maintenance has to be improved
MAINTENANCE, INFRASTRUCTURE	Outdated technology Long-term neglect of maintenance and development of water supply and sanitation infrastructure
POLLUTION OF WATER SOURCES	Surface water is used for drinking water purposes in neighbouring countries

MANAGERIAL AND FINANCIAL ISSUES

FINANCIAL RESOURCES	Small treatment plants (capacity up to 400 m^3/day) are currently not working because of lack of money. Investments and maintenance of existing infrastructure
LACK OF COORDINATION OF EXTERNAL ASSISTANCE	Some activities (help from western institutions) adress similar issues without coordination and sometimes even without knowing about each other
LEAKAGES, WATER QUALITY	Establish a programme on water savings and the sanitation sector
SCATTERED RESPONSIBILITIES	Many institutions responsible for water supply and sanitation

☞ reference [18]

MAIN FUTURE TASKS / ACTIVITIES

WATER SUPPLY, SANITATION SERVICES	Preserving of existing water supply and sanitation services Improvement of rural (or non existing urban) water supply and sanitation
TRAINING	Organizing seminars about the organisations of water supply and sanitation sector
MONITORING	
RESEARCH	Cooperation in research activities with the Technical University. Immediate material help is more important than any kind of training

☞ reference [18]

INTERNATIONAL COOPERATIONS

The World Bank

UNICEF

UNEP

the Netherlands: Ministry of Housing, Physical Planning and Environment

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MONGOLIA

GENERAL INFORMATION

POPULATION	2,2 millions Capital Ulaanbataar: 537.000 (26 % of the population)
POPULATION DENSITY	1,4 persons/km² Population growth: 2,6 % 55 % urban population
SURFACE	1,5 million km²
TOPOGRAPHY	Northern Mongolia: High mountain and forest areas Southern Mongolia: desert areas (Gobi)
CLIMATE	Continental climate Minimum Temperature: -40°C Maximum Temperature: +30°C (desert) Permafrost in the northern part of the country av. precipitation: 220 mm/year (northern Mongolia: 300 mm, desert areas 50 - 155 mm) 85-95 % of the precipitation falls in summer period about 90% of the rainwater returns to the atmosphere through evapotranspiration.
POLITICAL BACKGROUND,	Since 1986 Reforms and structural changes 1992: New Constitution. Article 6 of the Constitution: "The land, its suboil, waters, forests, fauna and flora and other natural resources belong exclusively to the people of Mongolia and shall be under the State protection." Increasing industrialization, urbanization, rapid population growth. Rising unemployment, rising prizes but lower rising wages
ADMINISTRATION	Mongolia is divided in administrative units. The lowest administrative unit is the *bag* (comprising 50 - 350 families). Five *bags* make a *sum* (310 in the country), which is governed by a mayor. Severals *sums* make an *aimag* (18 in the country). Each *aimag* has an *aimag centre* (administrative town).
MEMBERSHIPS	UNO

☞ references [66], [36], [37]

WATER RESOURCES

LAKES	> 3.000 lakes in Mongolia
GROUNDWATER	> 40.000 wells in Mongolia Groundwater is highly mineralized and salted in the southern part of Mongolia Quality of groundwater is deteriorated in many places Hydrogeological maps, digital groundwater database exist
WATER RESOURCE UTILISATION	World watershed line goes through Mongolia 6% of the precipitation is available as surface runoff, 3% infiltrates into the soil Southern Mongolia has a fresh water shortage (only very small rivers or temporary streams, salted lakes, oasis) Rapid rise in demand for water combined with increased economic activity caused a reduction in lake, river flow and water table levels. Groundwater is the primary source of water supply for most settlements in Mongolia. Southern Part of Mongolia: Water supply completely by wells.

☞ reference [37]

INSTITUTIONAL AND LEGAL FRAMEWORK

CENTRAL STATE LEVEL

MINISTRY OF NATURE AND ENVIRONMENT	Since end of 1987 in charge of water resources management policy development; monitoring water levels and water quality
MINISTRY OF ENERGY, GEOLOGY AND MINING	Resource assessment and planning, particular focus on groundwater and hydrogeology
MINISTRY OF HEALTH	Some responsibility in water quality surveillance
MINISTRY OF INFRASTRUCTURE DEVELOPMENT	Providing consultancy services, material supplies, training in urban infrastructure provision Self financing agency MONNAA assigned to the Ministry

COMMUNAL LEVEL

ULAANBATAAR. WATER SUPPLY AND EXPLOITATION BOARD	Provides piped water and sewerage services
SUM CENTRES	Providing services to sedentary and nomadic rural population of about 800.000 people.

SPECIAL INFORMATION ABOUT ADMINISTRATIVE ISSUES

WATER MANAGEMENT HISTORY	Modern water management history in Mongolia goes back to more than 50 years. Two directions of the water management policy were pastureland water supply and cropland irrigation and rational use and protection of water resources. In 60s and 70s water management plans were elaborated (fitting in a centrally planned economy), guidlines are nowadays of no use because of the changed situation. Ministry of Water Management and Ministry of Communal Services have been abolished in 1986. Most of the functions were transformed to the Ministry of Nature and Environment and local authorities, respectively

NEW WATER LAW

Administrative Authorities of all levels must take their own responsibilities or obligations and exercise the rights on water management.

Strategical approaches and concepts determined in the Law:

1. Sustainable water resource development
2. Recognition that water has an economic value and is an economic good
3. New financial viability and accountability
4. Introduction of an inter-basin regulation system for water resources use
5. Development of water monitoring network
6. Power sharing between Parliament, Central Government and local governments over water management.

FUTURE POLICY

1. Assessment of the real cost of water services
2. Revision of tariff structures
3. Improve knowledge on hydrology and aquifer status in order to improve water utilization planning
4. Improvements to distribution and metering infrastructure

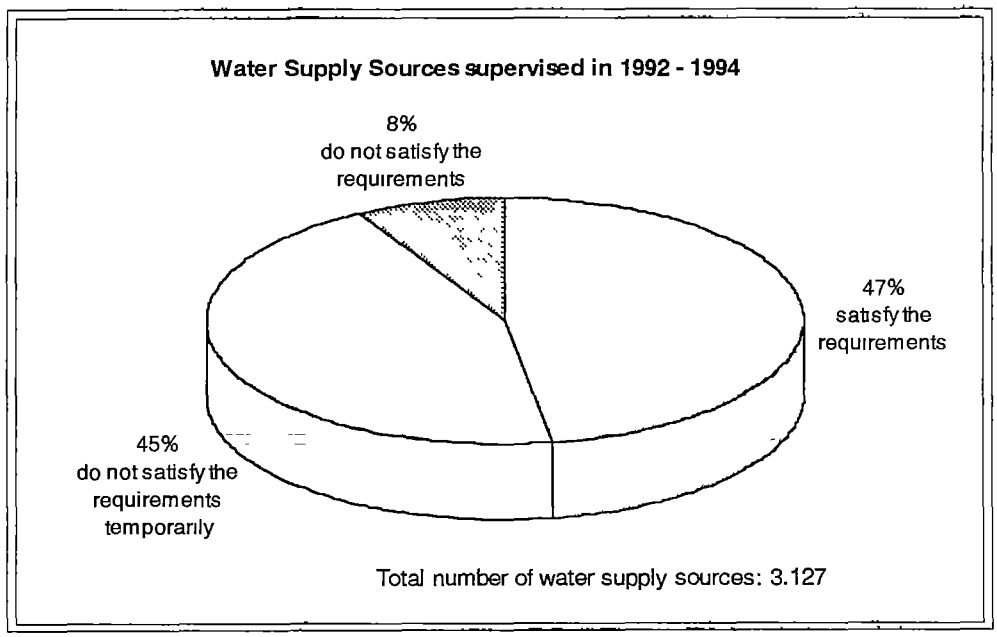
☞ reference [37], [38]

STATUS OF DRINKING WATER SUPPLY

AVERAGE CONSUMPTION

	l/person*day
Estimated water consume	10 - 15

18 % of the population in urban areas consume drinking water below international sanitary norms.



☞ reference [37]

STATUS OF SEWERAGE / WASTE WATER TREATMENT

Waste water management has been neglected with poorly maintained treatment facilites unable to cope with growth in industrial activities and in the number of households. Not all industrial effluents are effectively treated before their emission into environment. The incidence and severity of ground water contamination is not known

☞ reference [36]

MAIN PROBLEMS

INSTITUTIONAL AND TECHNICAL ISSUES

WATER SUPPLY	1. Poor service levels 2. Low coverage 3. Unreliability of water supplies impacts mainly the poor
LOW STATE OF WATER SUPPLY AND SANITATION	Indicators: High rate of infectious diseases like viral hepatitis; cholera, typhus, infant mortality, salmonellas.
INSTALLATION OF HANDPUMPS	Replacing water tanks by handpumps on boreholes in the municipal *ger* areas is difficult: Pipes must be buried in 4 m because of the permafrost. House connection would increase the sanitation problem. Handpumps would be relevant in aimag centres.

MAIN FUTURE TASKS / ACTIVITIES

WATER SUPPLY	1. Use of water resources only in case, if there is no depletion of or damage to water resources that maintain natural ecosystems 2. New approach to water resources development in the context of sustainability 3. Promotion of desalinization of hard and salted water in Southern part of Mongolia
WASTE WATER	Development of effective waste water and sewage treatment plants
INSTITUTIONAL RESPONSIBILITIES	Power sharing between Parliament, Central Government and local governments over water management
MANAGEMENT	1. Formulate long term strategy and policy for sustainable water resources development and management 2. Improve water distribution infrastructure, more accurate metering of and charging for water use

MONITORING	Development of water monitoring network and information system development of information systems (Water quality and quantity, surface and ground water)
LEGISLATION	1. Development of guidelines and programmes in market economic conditions 2. Application of new liabilities for violation of water legislation

☞ reference [36], [37]

INTERNATIONAL COOPERATION

World Bank

Urban project focussing on providing improved water and sanitation services

UNDP/UNDESD

development of a digital groundwater database

UNDP/The World Bank Water Supply and Sanitation Programme, in cooperation with BITS (Swedish Co-operation Agency) and AusAID.

Japanese International Co-operation Agency (JICA)

☞ reference [38]

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