## DANUBE POLLUTION REDUCTION PROGRAMME

# NATIONAL REVIEWS 1998 ROMANIA

# **TECHNICAL REPORTS**

Part C: Water Quality

Part D: Water Environmental Engineering



# MINISTRY OF WATERS, FOREST AND ENVIRONMENTAL PROTECTION

in cooperation with the

**Programme Coordination Unit UNDP/GEF Assistance** 

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#### **Preface**

The National Reviews were designed to produce basic data and information for the elaboration of the Pollution Reduction Programme (PRP), the Transboundary Analysis and the revision of the Strategic Action Plan of the International Commission for the Protection of the Danube River (ICPDR). Particular attention was also given to collect data and information for specific purposes concerning the development of the Danube Water Quality Model, the identification and evaluation of hot spots, the analysis of social and economic factors, the preparation of an investment portfolio and the development of financing mechanisms for the implementation of the ICPDR Action Plan.

For the elaboration of the National Reviews, a team of national experts was recruited in each of the participating countries for a period of one to four months covering the following positions:

- Socio-economist with knowledge in population studies,
- Financial expert (preferably from the Ministry of Finance),
- ➤ Water Quality Data expert/information specialist,
- Water Engineering expert with knowledge in project development.

Each of the experts had to organize his or her work under the supervision of the respective Country Programme Coordinator and with the guidance of a team of International Consultants. The tasks were laid out in specific Terms of Reference.

At a Regional Workshop in Budapest from 27 to 29 January 1998, the national teams and the group of international consultants discussed in detail the methodological approach and the content of the National Reviews to assure coherence of results. Practical work at the national level started in March/April 1998 and results were submitted between May and October 1998. After revision by the international expert team, the different reports have been finalized and are now presented in the following volumes:

Volume 1: Summary Report Volume 2: Project Files

Volume 3 and 4: Technical reports containing:

- Part A: Social and Economic Analysis

- Part B: Financing Mechanisms

- Part C : Water Quality

- Part D: Water Environmental Engineering

In the frame of national planning activities of the Pollution Reduction Programme, the results of the National Reviews provided adequate documentation for the conducting of National Planning Workshops and actually constitute a base of information for the national planning and decision making process.

Further, the basic data, as collected and analyzed in the frame of the National Reviews, will be compiled and integrated into the ICPDR Information System, which should be operational by the end of 1999. This will improve the ability to further update and access National Reviews data which are expected to be collected periodically by the participating countries, thereby constituting a consistently updated planning and decision making tool for the ICPDR.

UNDP/GEF provided technical and financial support to elaborate the National Reviews. Governments of participating Countries in the Danube River basin have actively participated with professional expertise, compiling and analyzing essential data and information, and by providing financial contributions to reach the achieved results.

The National Reviews Reports were prepared under the guidance of the UNDP/GEF team of experts and consultants of the Danube Programme Coordination Unit (DPCU) in Vienna, Austria. The conceptual preparation and organization of activities was carried out by **Mr. Joachim Bendow**, UNDP/GEF Project Manager, and special tasks were assigned to the following staff members:

- Social and Economic Analysis and

Financing Mechanisms: Reinhard Wanninger, Consultant
- Water Quality Data: Donald Graybill, Consultant,
- Water Engineering and Project Files: Rolf Niemeyer, Consultant

- Coordination and follow up: Andy Garner, UNDP/GEF Environmental

Specialist

The **Romanian National Reviews** were prepared under the supervision of the Country Programme Coordinator, **Mr. Octavian Ceachir**. The authors of the respective parts of the report are:

- Part A: Social and Economic Analysis: Ms. Mihaela Popovici

- Part B: Financing Mechanisms: Ms. C. Rosu and Ms. Manea

Part C: Water Quality: Mr. Liviu Popescu
 Part D: Water Environmental Engineering: Mr. Petru Serban

The findings, interpretation and conclusions expressed in this publication are entirely those of the authors and should not be attributed in any manner to the UNDP/GEF and its affiliated organizations.

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# **Part C**Water Quality

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#### List of Abbreviations

**AAFS** Academy of Agriculture and Forestry Sciences

**AEWS** Accident Emergency Warning System

**BAT** Best Available Technique

**BEP** Best Environmental Practice

BOD<sub>5</sub> Biochemical Oxygen Demand in five days

BOT Build - Operate - Transfer
CEE Central and Eastern Europe

**CEEC** Central and Eastern Europe Countries

**COD** Chemical Oxygen Demand

**CPC** Country Program Coordinator

**DRPC** Danube River Protection Convention

**EAP** Environmental Action Plan

**EBRD** European Bank for Reconstruction and Development

**EC** European Commission

**ECE** UN Economic Commission for Europe

**ECU** European Currency Unit

EEC European Economic Commission
EIA Environment Impact Assessment

**EIB** European Invest Bank

**EPA** Environmental Protection Agency

**EPDRB** Environmental Program for Danube River Basin

**EPS** Environment Protection Strategy

**EU** European Union

**G - 24** The Group of 24 industrialised nations (members of OECD)

GD (GO) Government Decision (Order)
GEF Global Environment Facility

**GIS** Geographical Information System

**IBRD** International Bank for Reconstruction and Development)

**IFI** International Financing Institution(s)

**ISIC** International Standard for Industrial Classification

**IUCN** The World Conservation Unit

**K** Potassium

l/s Liters per second

**LEP** Law of Environmental Protection

**LW** Law of Waters

**m** meter

m<sup>3</sup>/s cubic meters per second

**km** kilometre

MAF Ministry of Agriculture and Food

MAV Maximum Allowable Value

ME Mining Extraction

MECU Million European Currency Units

**MH** Ministry of Health

MIC Ministry of Industry and Commerce

MLIM / SG Monitoring Laboratory and Information Sub- Group under EPDRB will become

MLIM / EG under the DRPC

MO Ministerial Order

**MP** Ministry of Privatisation

**MPWTP** Ministry of Public Works and Territory Planning

MT Ministry of Transportation

MWEP Ministry of Water, Forests and Environmental Protection

MWG Monitoring Working Group

LMWG Laboratory Management (LM) Working Group

IMWG Information Management Working Group

N Nitrogen

**NA** Not Available

**NAP** National Action Programme

NCS National Commission for Statistics

**NEAP** National Environmental Action Programme

**NGO** Non - Governmental Organisation

NS Not Significant

**O&M** Operation and Maintenance

**OECD** Organisation for Economic Co-operation and Development

OMR Official Monitor of Romania

P Phosphorus

PAH Polyaromatic Hydrocarbons
PCB Polychlorinated Biphenyl's

**PCU** (Danube) Programme Co-ordination Unit

**p.e.** Population equivalent

**PHARE** EC Programme of assistance for economic restructuring in the countries of Central

and Eastern Europe

**REIE** Research and Engineering Institute for Environment

**RAAR** National Water Authorities in Romania co-ordinator of **WQNMS** - Water Quality

National Monitoring System) (SNMCA in Romania)

**RS** Romanian Standard

**SAP for DRB** Strategic Action Plan for the Danube River Basin

sq. km square kilometresSS Suspended Solids

**TACIS** EC Program of transfer of know-how to the New Independent States and Mongolia

**TDS** Total Dissolved Solids

**TNWP** Technical Norms of Water Protection

**UNDAF** United Nations Development Assistance Framework

UNDP United Nations Development ProgramUNEP United Nations Environment Program

**UNESCO** United Nations Educational, Scientific and Cultural Organisation

USAID United States Agency for International Development
USEPA United States Agency for Environmental Protection

**WQNMS** Water Quality National Monitoring System -SNMCA in Romania

**WWF** World Wide Fund for Nature

**WWT** Wastewater Treatment

**WWTP** Wastewater Treatment Plant

# Glossary on Water Quality

**Adsorption** The surface retention of solid, liquid or gas molecules, atoms or

ions by a solid.

**Agrochemical** All chemicals used in agriculture (pesticides, herbicides,

fertilisers, etc.).

**Alluvial** Made of soil and sands deposited by rivers or floods.

**Anaerobic** Breakdown of organic matter in the absence of free or dissolved

oxygen often facilitated by specific bacterial strains.

**Anoxic** Lacking oxygen.

**Aquifers** Permeable geological formation of water-bearing rock, sand,

soil or gravel which can supply water in usable quantities, for

example to wells or springs.

**Atmospheric deposition** The process whereby solid or dissolved inorganic or organic

substances are deposited via atmospheric conditions, e.g. rain,

at ground level.

Audit, environmental An industrial management tool: a systematic, documented,

periodic and objective evaluation of the performance of the organisation, management system and processes of a company

for protection of the environment.

**Autonomous utilities** Utilities, e.g. for providing water services, which have defined

legal responsibilities and are self-financing.

**Bank-filtered water** Aquifers in the alluvial zones of gravel and sand deposits along

rivers.

**Basel Convention** Convention on the control of transboundary movements of

hazardous wastes and their disposal (1998).

**Bed-Load** Material (slit, sand, gravel) moving on or immediately above

the streambed.

Best Available Techniques (BAT) Latest stage of development (state of the art) of processes

emphasising the use of non-waste technology, of facilities or of methods of operation which indicate the practical suitability of a particular measure for limiting discharges, emissions and waste. It is applied to industrial and other point sources of

pollution.

Best Environmental Practice (BEP) Application of the most appropriate combination of sectoral

environmental control strategies and measures. It is applied to

non-point sources of pollution such as agriculture.

**Biochemical Oxygen Demand (BOD)** A measure of the quantity of oxygen used in the biochemical

oxidation of carbonaceous and nitrogenous compounds in a specified time, at a specified temperature and under specified conditions. The standard measurement is made for five days at 20°C and is termed BOD<sub>5</sub>. BOD is an indicator of the presence

of organic material in the water.

**Biodiversity** The sum total of different species of flora and fauna in a given

region, area or habitat.

**Biota** Living organisms, including animals, plants and bacterial in a

given ecosystem.

Builder Means any substance intended to maintain alkalinity, and/or

> bind dissolved metal ions (soften the water), and/or keep the soil in suspension, increasing the effectiveness of the detergent, it includes substances such as phosphate, NTA, EDTA, zeolite

sodium citrate and sodium silicate.

Catchment The area of drainage basin of a river.

**Chemical Oxygen Demand** A measure of the quantity of oxygen used in the chemical

oxidation of compounds in a specified time, at a specified

temperature and under specified conditions.

**Collecting system** A system of conduits, which collects and conducts urban

wastewater.

Command and control Regulatory instruments in environmental policy. These are

> characterised by their imperative nature (e.g. emission standards), unlike economic instruments that are voluntary and

offer incentives.

Commercial bank Privately owned banks operating check or current accounts,

receiving deposits, taking in and paying out notes and coin, and

making loans.

**Commercial terms** See Market terms.

Concessional founds/assistance Monies lent out at less than the market rate of interest.

**Conference of the Parties** A meeting of the contracting parties (governments) to an

international convention.

Consumer Means a household, commercial establishment or institutional

facility.

Convention, international A form of treaty or international agreement concluded between

Contracting States in written from, establishing rules expressly

recognised by the Contracting States and governed by

international law.

Cost accounting Accounting is the system of organising, maintaining and

> auditing the financial records of a company (or an individual). Cost accounting refers to the initial data and procedures that are used to build up the accounts. In principle, these will refer to the actual prices paid (historic cost accounting). In order to take into account the effect of inflation (which requires that renewal of materials or machines that are written off need to be replaced

with more expensive materials/ machines) other methods exist (inflation accounting) that allow to reflect in the records the

depreciation in real terms of the assets.

Credit risk The probability that a borrower will not repay a lender

according to the agreed upon terms.

Danube Environmental Programme A programme of co-operation established by Danubian

countries, bilateral and multilateral donors, international

organisations and NGOs.

**Debt** A sum of money or other property owed by one person or

organisation to another.

Debt for nature/environmental swap A dept reduction technique in which there is the exchange by a

debtor country of parts of its external debts for environmental

or nature protection improvements.

**Debt services** A payment of interest on a debt that is an amount in addition to

the debt amount itself.

**Decentralisation** A process in the organisational development of an entity with

specific environmental responsibility whereby the responsibility

is delegated and performance and penalties defined.

**Declaration** A non-biding statement of policy by a government or group of

government (e.g. Odessa Declaration).

**Denitrification** The process whereby nitrate is successively reduced to nitrogen,

facilitated by bacteria in the presence of a carbon source and

other nutrients.

**Determinant** Description given to a substance subject to analysis in a

laboratory for chemical biological or physical analysis or measurement for which a quantitative presence in the

environment can be defined.

**Discharge** The flow rate of a fluid at a given instant expressed as volume

per unit of time (see stream discharge).

**Domestic sewage** Wastewater from residential settlements and service, which

originates predominantly from the human metabolism and from

household activities.

**Donors** Governments and organisation which contribute financially to

the Danube Programme.

**Dose** Is the quantity of detergent recommended by the manufacturer

for normal washing condition to obtain the desired performance

in standard washing machines.

**Ecological agriculture** See Organic farming.

**Ecology** The study of the relationships of organisms to their

environment.

**Economic instruments** Instruments of environmental policies in which a change in

technology incentives or products is encouraged through financial incentives (either subsidies, taxes, price differentiation

or market creation).

**Economically viable** An economic activity operating in a market of other buyers and

sellers that generates revenues sufficient to cover all the fixed and variable costs of production and a profit large enough to

induce the firm to remain in the market.

**Ecosystem** A natural unit consisting of living and non-living parts

interacting with each other, formed by the organisms of a

natural community and their environment.

**Ecu** European Currency Unit - the unit of account of the European

Union based on a weighted average of the currencies of the member countries of the European Union. The rate of 1 ECU=1.20 USD was used for preparation of this report.

**EDTA** Means ethylene diamminotetra-acetic (also known as ethylene

dinitrilotetraacetic acid) or any of its salts.

**Emission** Release of substances from a source.

**Emission limit** A numerical limit set on the emission of a substance from a

source.

**Entero-viruses** Viruses indicative of domestic sewage and a high risk of

disease if not controlled or eradicated.

**Environmental dynamic** Natural or man-made processes or forces which change the state

of the environment.

**Environmental quality standard** The requirements which must be fulfilled by a given

environment or part thereof (e.g. air, surface water,

groundwater).

**Epidemiology** The science of epidemics or the spread of disease or organisms

which cause disease.

**Equity** The residual value of a company's assets after all outside

liabilities, other than to shareholders, has been allowed for. Equity is the amount left for the borrower if the asset is sold and

the lender repaid.

**Erosion** A natural physical process where either wind or rain and

surface water run-off loosen and remove soil particles from land

surfaces which are often deposited in rivers and lakes.

**Eutrophication** The process of over-fertilisation of a body of water by nutrients

producing more organic matter than the self-purification

processes can overcome.

**Export credits** Preferential treatment, often in the form of short-term loan

financing at preferential rates to the purchaser, for firms that sell their products abroad, compared to firms that sell in the

home market.

Fecal coliforms Bacteria common to the digestive tract of human beings and

animals. Indicative of domestic sewage and a high risk of

disease if not controlled or eradicated.

**Fecal streptococci** Bacteria indicative of human and animal excreta and a high risk

of disease if not controlled or eradicated.

**Fees** A charge for professional service.

**Fertiliser** Any substance containing calcium, nitrogen, phosphorus,

potassium and microcompounds used on land to enhance the growth of vegetation; it may include livestock manure, the residues from fish farms and sewage sludge. A component

necessary for plant growth.

**Financial intermediary** Institutions which hold balances of, or which borrow from

individuals and other institutions, in order to make loans or other investments. They serve the purpose of channelling funds

from lenders to borrowers.

**Fiscal measures** Legal requirements involving finance, e.g. taxes.

**Fines** See economic instruments.

**Function** See Water use.

**GDP** Gross Domestic Product - a measure of the total flow of goods

and services produced by the residents within the country over a

specified period, normally a year.

**GNP** Gross National Product - GDP plus the income accruing to

domestic residents from investment abroad less income earned

in the domestic market accruing to foreigners abroad.

Goals Used as a synonym for objectives or aims; also a set of levels of

water pollutants or water pollutants or water quality parameters to be attained in water quality management programmes; sometimes referred to as objectives, or guide values.

Grant funds Monies given to an individual or institution with no expectation

or requirement of repayment at time in the future.

**Groundwater** All subsurface water.

**Guarantees** A commitment by a third party, possibly another financial

institution but often a national government, to repay a loan in

the event that the borrower is unable to do so.

**Gypsum** Calcium-sulphate-hydrate.

**Habitat** The natural environment of an animal plant.

**Harmonisation** The process by which governments brings their legislation and

policies into compatibility with each other.

**Hazardous substances** Substances that have adverse impact on living organisms, e.g.

toxic, carcinogenic, mutagenic, teratogenic, and harmful for the

environment.

**Heterotrophic growth** In a water pollution context, this will mean growth of organisms

- bacteria and fungus - based on the consumption of organic material and oxygen. Contrary to autotrophic (plant) growth

which process oxygen and organic matter.

'Hot spot' A local land area, stretch of surface water or specific aquifer,

which is subject to excessive pollution and which, requires specific action to prevent or reduce the degradation caused.

**Hydrocarbons** Petroleum products.

**Hypoxia** Condition where oxygen levels are reduced or lower than

desirable to support life.

**Immission** The concentration of pollutants is a surface water (see

environmental quality standards).

**Income-tax incentives** Fiscal measures related to the taxation of private incomes.

**Industrial wastewater** Wastewater that is discharged from promises used for carrying

on any trade or industry, other than domestic wastewater and

run-off rain water.

**Integrated water management** A participatory planning, decision making and implementation

process that takes into account the specific water quality and

quantity requirements of all users and uses.

Inter-calibration A means by which the accuracy and readability of results

produced by two or more measuring devices can be assessed.

Joint ventures Economic activities undertaken by partners with joint

involvement in the financial, managerial and production process aspects of the firm(s); partners may be from different sectors e.g. private firms, government ministries and financial

institutions.

**Karstic water** Groundwater found in the heavily fissured exposed limestone

rock formation very common in the Danube river basin.

**Landfill** Disposal of solid waste materials at land bases sites.

**Laundry detergent** Means any substance intended for use in automatic laundry

machines, based on surfactant and builders, formulated or manufactured to enhance the cleansing action of water. Includes laundry soaps as all as powder and liquid synthetic laundry

detergents.

**Leachate** Liquid which has percolated through a substrate (e.g. soil, ore,

waste dump, etc).

Load Quantity of a substance or material carried or transported by a

river (and its associated hydrological processes).

**Market-based instruments** See Economic instruments.

Market terms The interest rate, maturity structure and other relevant

characteristic of a loan that result from the interaction between potential lenders and potential borrowers in a market. The nature of competition and pricing is determined by the structure of the market, most importantly number and size of the buyers

and sellers involved in the market.

**Microbiological** Pollution with microorganisms - such as viruses, bacteria,

protozoa, etc. - that might cause diseases in humans or animals.

**Micro-pollutants** Organic or inorganic substances such as PCB, dioxins,

cadmium, mercury, etc. That will create negative health impacts

or adverse ecological change even when present in low

concentrations.

Mineral oil One of the products of fossil hydrocarbons.

Nitrate NO<sub>3</sub>

**Non-budgetary incentives** Financial encouragement's which do not affect the budget.

**Nutrient** A substance, element or compound necessary for the growth

and development of plants and animals.

Organic farming Agriculture production system where each farm is considered as

a whole where all components - soil minerals, organic matter, micro-organisms, insects, plants, animals and humans - interact

without the use of synthetic fertilisers.

Pathogens Disease- causing.

**Penalty** A punishment (e.g. a sum of money) for the violation of a law,

rule or contract.

**Pesticide** Substance that kills organisms injurious to man or to the plants

and animals upon which he depends for food, fibers and shelter.

**Phytoplankton** Collectively, all the microscopic plants, such as certain algae,

living unattached in aquatic habitats.

**Phytoplankton bloom** An excessive growth of Phytoplankton.

**Plankton** Minute plants (Phytoplankton) and animals (zooplankton)

which either have relatively small powers of locomotion or drift in the water subject to the action of waves and currents. The chief constituents of phytoplankton are unicellular algae. The zooplankton consists of various organisms including protozoa,

small crustaceans and various invertebrate larvae.

**Point source, non-point source** A localised discharge of pollutants (e.g. from an industrial

plant); diffuse pollution in a cachment area (e.g. agricultural

run-off).

**Polluter Pays Principle** Principle that the polluter should carry the costs of the measures

required diminishing or cleaning up pollution.

**Pollution** The discharge, directly or indirectly, of compounds from

sources into the environment in such quantity as to pose risks to

human health, living resources or to aquatic ecosystems, damage to amenities, or interface with other legitimate uses of

water.

**Population equivalent** No uniform definition exists. Used as a measure of water

pollution load based on figures of an average "pollution production" of one person in one day. Often-used figures are:  $(BOD_5)$  60g per day; total nitrogen 12g per day and total

phosphorous 2.5g per day.

**Primary treatment** A one-step treatment process of urban waste water by a

physical or chemical process involving settlement of suspended

solids.

**Programme Co-ordination Unit (PCU)** Unit with a specific co-ordinating role established under the

Environmental Programme for the Danube River Basin.

**Reach** A length of a river the exact distance of which may or may not

be specified.

**Recurrent costs**These are costs that vary directly and predictably with the rate

of output, e.g. labor costs, raw materials costs, energy costs

(also known as variable costs or operating costs).

**Regional** In this document, either a group of countries or a subnational

geographic area depending on the context in which the phrase is

used in the text.

**Rehabilitation** Improvement of a visual nature to a natural resource or, putting

back infrastructure into good condition or working order.

**Restoration** Return of an ecosystem to a close approximation of its

condition prior to disturbance.

**Restructuring** Any change in the organisation and method of financing an

entity with responsibility for environmental management or

with the to emit pollution into the environment.

**Revenues** Gross income accruing to a firm through the sale of its output.

**Secondary treatment** Treatment of waste water by a process generally involving

biological treatment with a secondary settlement or other

process.

**Secretariat International** A formal operating Unit established under the Danube River

Protection Convention (see Annex IV, Art.7 of the DRPC).

**Sediment** Solid fragmental material originating from weathering of rocks

or by other processes, deposited by air water or ice, or that accumulated by other processes such as chemical precipitation

from solution or secretion by organisms.

**Sediment load** The amount of sediment passing a cross section of a river or

stream, in a specified period of time (see also Betload).

**Silt-loess layers** Deposits of fine sediments, which collect at the interface

between the river bank/bed and the water column. These layers perform an important role in maintaining water quality in

shallow groundwater close to the river.

**Species** Group of related individuals with a common hereditary

morphology, chromosomic number and structure, physiological characteristics and way of life, separated from neighbouring groups by a barrier, which is generally sexual in nature, and

occupying a definable geographic area.

**Stakeholder** A person who holds a sum of money deposited by the buyer in a

transfer of ownership of land or a building; the deposit will be paid to the seller only if the buyer agrees, and vice versa. Or, a person, organisation or subgroup of an organisation that have a

common interest in a project or activity.

**Subcachment** Part of a catchment.

**Subsidies** Grants to suppliers of goods and services or individuals; a

subsidy has the object of keeping prices below the cost of

production.

**Sunk capital** The amount of an organisation's funds that has been spent and

is therefore no longer available to the organisation, frequently because it has been spent on either unrealisable or valueless

assets.

**Surfactant** Or "surface-active agent" means any substance, which is

intended to reduce surface tension thereby helping water to

penetrate fabrics, and to surround and remove soils.

**Sustainable development** The use of resources in such a way that the possible needs of

future generation is not seriously affected.

**Tariffs** A tax imposed on a good imported in a country. It may be

specific (x \$ per good) or ad valorem, which means a certain %

of the value of the imported goods.

**Tariffs policy** Policies that affect the tariffs for certain goods or the overall

pattern of tariff rates.

**Task Force (Danube Programme)** The supervisory body that oversees and provides overall

direction to the Environmental Programme for the Danube

River Basin.

**Tax** A tax is a sum of money that a local or national authority

imposes on incomes (income tax), properties (property tax), sales (sales tax), profits (profit tax) or the creation of waste and/or pollution waste (waste/pollution tax). Taxes can be specified as a rate (e.g. income, profit or sales taxes are generally x% of taxable income, profit or sales) or as a fixed amount for a certain unit (e.g.. pollution taxes can be expressed as x\$ per ton of waste or pollutants emitted in the air, water).

**Tax incentive** A tax incentive will lower the taxes to encourage certain

behaviour, products, production processes, location,...It will either lower the tax rate or fixed amount or it will lower the

taxable income or profit.

**Toxic substances** Substances which cause harm to living organisms.

**Tributary** A river which ultimately flows into the Danube River.

**Twinning agreement** An agreement of international co-operation and exchange

between similar organisation or institutions (e.g. towns, cities,

national parks).

**Urban wastewater** Domestic sewage or a mixture of domestic sewage with

industrial wastewater and/or run-rain water.

Water charges See Fees.

Water quality criteria A scientific requirement on which a decision or judgement may

be based concerning the suitable of water quality to support a

designated use.

Water quality standard See Environmental quality standard.

Water uses

Water used for a number of purposes: Water supply for drinking water, irrigation, and industry (including food production), as a recipient of waste water from the public sector, industry and agriculture, for transport, for energy productions, as flood protection, for recreation, riverine and other ecosystems, and biodiversity; often referred to as "functions".

Water users

Public and municipal sector, agriculture and fisheries, industry, transport and energy.

#### 1. Summary

As it was planned, even from the beginning of the Environmental Programme of the Danube River Basin and later by the Danube River Protection Convention, a Strategic Action Plan (SAP) and a Strategic Action Implementation Plan were produced and many of the projects proposed have already been finalised and implemented. In the countries the National Environmental Action Plans (NEAP) were also produced, including the one in Romania in 1995, based on the main findings from SAP and, after approval by the Government, has became work documents for specialised institutions in respective countries. The actual SAP's, as well as the SNAP's were completed with the option that it would be revised regularly, at least every three years.

Starting from this background, the GEF / UNDP - Danube Pollution Reduction Programme was set up in 1997 with the clear tasks of the revision of SAP, the re-elaboration of National SAP's, the revision of the Transboundary Analysis and the amendment of the Danube Water Quality Model (DWQM). In the elaboration process of the Romanian National Review, the Guidelines and the Table of Content, which were agreed within the last GEF - UNDP - DPRP - workshop in Budapest, January 1998, were utilised.

#### 1.1. Updating Evaluation and Ranking of Hot Spots

The general approach and methodology that was applied to update, evaluate and rank Hot Spots was based mainly on the methodology applied within the National Environmental Action Plan (NEAP = PNAPM) and in parallel on the recommended methodology. This methodology is described in detail in chapter 2.1. What should be mentioned from the beginning is that, the first lists of Hot Spots that were used for next steps of evaluation and ranking, were the lists of municipal and industrial main discharges (covering 75 % from total national discharged volume within the country in the Danube basin area), lists produced by the EMIS - EG in the frame of the Environmental Programme of the Danube River Basin (EPDRB). From the total number of 55 municipal discharges and 133 industrial (including agricultural) discharges based on the selection from other national or international assessments (previous SAP, NEAP - 95, NEAP - 97 and so on) these two groups of Hot Spots were classified in Municipal Hot Spots, Agricultural Hot Spots and Industrial Hot Spots and than based on the assessment of values for loads, impact on the receiver, problems created, affect on other users and / or ecosystems. Those Hot Spots were then categorised in High, Medium and Low Priority Hot Spots and in each of those categories (less for Low Priority) the ranked places were identified.

As a result of this complex process were identified and described 10 High Priority and 2 Medium Priority Hot Spots for Municipal category, 4 High Priority and 6 Medium Priority Hot Spots for Agricultural and 23 High Priority plus 26 Medium Priority Hot Spots for Industrial category.

For all of the above mentioned Hot Spots, the ranking procedures were applied and in a number of 3 Ranked position of Hot Spots tables, the respective Hot Spots were placed. All these Hot Spots together with upstream and downstream gauging / sampling stations were shown on a hydrological 1: 1,000,000 map. In order to have the possibility for impact evaluation, to create the conditions for sizing this impact and to make an appropriate comparison for ranking, all the necessary data and information were organised in tables consisting of 56 columns (for Municipal Hot Spots) and 32 columns (for Agricultural and Industrial Hot Spots), using EXCEL Software facilities. The typical data collected are: discharged pollutant loads, receiver and effluent flows, quality control gauging / sampling station, water quality category upstream and downstream (for 3 years), water quality indicators affected in receiver, characteristics of problem created in receiver, possible downstream users of the receiving waters, nature of implication of Hot Spots to the respective problem, transboundary or internally problems created and / or transferred, and so on.

#### 1.2. Updating, Analysis and Validation of Water Quality Data

In order to facilitate the Transboundary Analysis and to calibrate / validate the Danube Water Quality Model for the benefits of riverine countries, in parallel with the data gathering for Hot Spots impact assessment, a great number of data were collected.

In respect to this all the necessary data for identification, evaluation and location of diffuse sources pollution from agriculture were included in tables and graphs according to the requirements. The total land, the total available land, the irrigated surfaces, crop volumes, size and differentiation between the types of used chemicals were presented with values from 1994 -1996 years. The available data for fertilisers, animal grazing and intensive animal farming were also collected and included in the report together with data referring to erosion, climate and weather from the 3 mentioned years.

In the chapter 4, the most relevant data for the years 1994 - 1996 were collected and organised in a computer accessible format (EXCEL table). Those are referring to the Water Quality National Monitoring System (WQNMS) as a main resource for the necessary data in this report, the organisational and institutional frame in which this system is working was also presented.

Special attention was paid to the Quality Control and Quality Assurance System or procedures that are applied in Romania and, based on this, an impression and evaluation about the reliability and comparability properties of the data can be obtained. Also information about the data consistency, comparability and transparency were included and interpreted in the respective chapter.

The River Channel characteristics for the Danube and for tributaries from the catchment area where the Hot Spots are located were collected and organised again in the same EXCEL format table, constituting in fact a consistent data base with about 95,000 - 100,000 data included. These are cross-sectional hydrological data, gradients description graphs for the Danube and other 10 tributaries, flood plains, wetlands, erosion and degradation phenomena description with name, location and size numbers of these events or places.

The main dams and reservoirs larger than 20 million cm (about 85) were included with their main characteristics in the report. Major water transfer as well as other major structures and encroachments like the main channels between Danube and Black Sea were presented together with their main physical and hydrological characteristics.

A number of 142 sampling stations were established in the Danube and the tributaries based on the five conditions imposed by the guidelines and report content for all 79 identified Hot Spots. For all those 142 sampling stations located upstream and downstream by the Hot Spots, were selected and organised in the Annexes 3.11 - 1, like water discharge and quality data etc, on 10 - 13 columns tables. With regard to the water discharges, sediment discharges, suspend sediment concentration, the existing data for 1994, 1995 1996 years were collected and recorded in the dedicated tables or in the Annexes 3.11 - 1 nearby the water quality data.

In addition to this large volume of data gathering, organising, storing in a computer accessible format (EXCEL) a number of pages are dedicated to the Legal and Institutional Framework for Water Quality Control as well as to the glossary of terms, List of Abbreviations and References recording, that were used for covering, as good as possible the tasks and content of the National Review.

#### 2. Updating of Hot Spots

The "Strategic Action Plan for Danube River Basin" (SAP) has been developed as a framework for regional actions, to improve environmental management in the area.

The four strategic goals of the Action Plan were derived from the objectives of the "Convention on Co-operation for the Protection and Sustainable Use for the River Danube", this convention being signed between Danubian countries and the European Union as well; these goals are:

- Improvement of aquatic ecosystems and biodiversity in the Danube River Basin (DRB) and the reduction of pollution loads entering the Black Sea;
- Maintaining and improving the quality and quantity of water in the DRB;
- Control of damage from accidental spills;
- Development of regional co-operation in water management.

It was stated that those goals can only be achieved by means of integrated and sustainable management of the waters of the DRB.

To reach the above mentioned goals, a number of measures necessary to be taken were established and clearly specified in the Strategic Plan for the DRB:

- Reduce the negative impact of activities in the DRB and on the riverine ecosystems and the Black Sea;
- Maintain and improve the availability and quality of water in the DRB;
- Establish control of hazardous from accidental spills;
- Develop regional water management co-operation.

Based on those goals and measures, a number of strategic directions were identified, the main targets to which the actions should be addressed and the short and medium term actions were developed for each of the mentioned goals and measures.

Comprehensive lists of sites of "hot spots" have been drawn up within the Danube countries. Based on evaluation and description of hot spots, a Strategic Implementation Action Plan was then developed and the work has started with this.

In order to update the water-related hot spots, the following basic elements and information have been considered:

- 1. previous inventories for SAP of Danube River Basin;
- 2. monitoring activity integrated approach of the emissions / immissions / priority pollutants / target groups / environmental themes / environmental (water) problems;
- 3. National Environmental Action Programme with the main inputs from Environmental Protection Agencies and different Ministries;
- 4. Annual Synthesis concerning Water Quality Protection in Romania issued by Romanian Water Authority.

#### 2.1. General Approach and Methodology

Based on the Strategic Action Plan and on the annual outputs provided by National Environmental Action Program a general methodology for the Hot Spots assessment and updating has been elaborated.

#### 2.1.1. Evaluation of Existing Hot Spots

For the main target groups (industry, agriculture, population) the following phases have been applied:

- general screening at the level of each hydrographic basin preliminary inventories of the hot spots;
- selection of the hot spots;
- > evaluation of the hot spots;
- ranking (score system).

A preliminary matrix for the hot spot selection and evaluation is presented in Table 2.1.1.1.

**Table 2.1.1.1.** Preliminary matrix for hot spot selection and evaluation

MAIN CRITERIA	POINTS (SCORE)				
MAIN CRITERIA	high priority	medium priority	low priority		
A. Dilution	10	5	1		
B. Impact magnitude	10	5	1		
C. Pollution of the receiver	10	5	1		
D. Risk for accidental pollution	10	5	10		

 $\overline{TOTAL} = A + B + C + D$ 

For the accidental pollution a more detailed list with the criteria and weight factors is presented in Table .2.1.1.2.

Table 2.1.1.2. Criteria and weight factors for ranking the hot spots related to the accidental pollution

CDITEDIA		SC	SCORE	
	CRITERIA	high (i)	medium (ii)	
1°. INT	EGRATED RISK ASSESSMENT			
1.1.	Risk for environment and biodiversity			
1.1.1.	soil and surface water acidification	2	1	
1.1.2.	eutrophication	2	1	
1.1.3.	soil and water contamination	4	2	
1.1.4.	nuclear contamination of waters and soil	40	20	
1.2.	Risk for human health			
1.2.1.	human health	20	10	
1.2.2.	other (sonic pollution etc.)	2	1	
1.3.	Risk for agriculture			
1.3.1.	plant contamination	4	2	
1.4.	Risk for external safety			
1.4.1.	major disaster – high risk	10	5	
1.4.2.	accidents – medium risk	4	2	
1.4.3.	incidents – low risk	2	1	
2°. RIS	K DIMENSION			
2.1.	Geoghaphical scale			
2.1.1.	international (transboundary)	4	4	
2.1.2.	national	3	2	
2.1.3.	regional	2	1	
2.1.4.	local	1	0,5	
2.2.	Temporal effects			
2.2.1.	urgent – immediate actions	3	1,5	
2.2.2.	long term effects	2	1	
2.3.	Pollution sources have a contribution to risk in proportion of:			
2.3.1.	major – more than 50%	10	5	
2.3.2.	moderate 10-50%	3	1,5	
2.3.3.	minor less than 10%	1	0,5	
3°. EM	ISSION CONTINUITY REGIME			
3.1. hig	h	2	1	
3.2. me	dium	1	0,5	
3.3. lov	,	0,5	0	

<sup>(</sup>i) long term activity

It should be underlined that the ranking system presented in the tabs. 2.1.1.1 and 2.1.1.2 represents a preliminary phase for the evaluation of the existing hot spots which has to be related with the next steps.

<sup>(</sup>ii) medium or low term activity

#### 2.1.2. Deletion of Existing Hot Spots

For some activities – especially in the framework of the "industry target group" taking into consideration the privatization process constraints, a series of specific criteria have been considered in order to reevaluate the status of the hot spots such us:

- 1. uncertainty of financial support;
- 2. significant decrease of the activity (more than 50%) in comparison with the previous year;
- 3. specific programme for the activity change.

However for such situation the conformation programmes in accordance with the environmental permits should be very tightly followed.

#### 2.1.3. Addition of Hot Spots

For new activities, which have a consolidated position, the following specific pre-evaluation approach has been applied (tab. 2.1.1.3).

Table 2.1.1.3. Specific prioritisation criteria for the new activities - industry target group

Nr.	CRITERIA	points (max)
1.	Environmental impact (priority areas, regional ecological programmes)	15
2.	Financial/economical statue (1997) cost/benefit analysis	12
3.	Importance of the activity for the sustainable development strategy of Romanian economy	10
4.	Management and institutional capacity building	8
5.	Possibility of integrated project for the environment quality protection (water/air/soil)	3
6.	Privatisation process	2
7.	TOTAL max	50

It should be mentioned that these six main criteria are used for the hot spot project selection in addition to the environmental impact assessment.

#### 2.1.4. Ranking of Hot Spots

Overall a general matrices for the hot spots ranking has been selected (table 2.1.4.1). The prioritization is based also on a score, specific for each activity with a relevant impact to the environment (water quality related) taking into consideration the both main characteristics: (i) emission and (ii) immission.

 Table 2.1.4.1.
 Impact evaluation matrix

OR	Par ame ter	Characteristics CRITERIA	CLASSIFICATION SCORE (POINTS)							
			I	II	III	IV				
)	1 2		3	4	5	6				
	$A^0$	DILUTION (Q <sub>i</sub> / Q <sub>e</sub> )	Medium 1	Low 5	Non-acceptable 10	Increasing risk 30				
			$\Delta > 50:1$	$10:1 < \Delta < 50:1$	$5:1 < \Delta < 50:1$	$\Delta$ < 5 : 1				
$\uparrow$	$\mathbf{B}^0$	EFFLUENT QUALITY	Medium	Low	Non-acceptable	Increasing risk				
			1 5 10		10	30				
	$b_1$	●BOD <sub>5</sub> (mg/L)	< 60	> 60 < 120	> 160	> 300				
	$b_2$	•COD (mg/L)	< 100	> 100 < 750	> 750	> 1500				
	$b_3$	$\bullet NH_4 (mg/L)$	< 20	> 20 < 100	> 100	> 200				
E	$b_4$	•phenols	< 0.1	> 0.1 < 0.5	> 0.5	> 1.0				
	$b_5$	•oil (mg/L)	< 0.4	> 0.4 < 3.0	> 3.0	> 6.0				
Л	$b_6$	•toxic (mg/L)	< 0.1	> 0.1 < 0.5	> 0.5	> 1.0				
	$b_7$	•specials (mg/L)	1.25 AC	2 AC	5 AC	10 AC				
		(AC = admitted concentration at discharging point in GA Agreement) $B^{0} = \sum b_{i}$								
	C <sup>0</sup>	QUANTITY OF DISCHARGED POLLUTANTS	UNITS		SCORE					
; [	$c_1$	●BOD <sub>5</sub>	for each discharg	ged 100t / year	1.5					
	$c_2$	•suspended solids	for each discharg	ged 100t / year	1.0					
)	$c_3$	•nitrogen	for each discharg	ged 100t / year	1.0					
1	$c_4$	•phosphorus	for each discharg	ged 100t / year	5.0					
}	$c_5$	•others	major emissions		30					
			medium emission	ns	10					
-	<b>C</b> 0 <b>T</b>		low emissions		1					
	$C^0 = \Sigma$		•		T					
	$D^0$	CONTINUITY	- unknown	- probable	- confirmed	- confirme				
		AND LEVEL OF POLLUTION	- minor	- low - short-term	- medium - medium-term	d				
		SOURCE	1	5	10	- high				
		PRODUCTION	1	3	10	- long-				
		(IMPACT TERM)				term				
<u> </u>						30				
	$E^0$	RISK AT ACCIDENTAL POLLUTION	Low (control capacity exists)	Medium	Critical	Extreme				
				5	10	30				
				5	10	30				

0	1	2		3	4			5		6	
<b></b>	$F^0$		UATI	C Low	M	edium		Critical		Extre	me
		ENVIRONMENT	1 1				10				
		F.1. Natural and bid diversity	al 1	5	5		10		30		
		F.1.1. Eutrophication					- internation	na1	_		
		1.1.1. Europinean					risk		interr	natio	
										nal ri	sk
		F.1.2. Decreasing of	of DC	,				- less urgent		- u	rgent
I		concentration					less argent		(on	1 goint	
									transl		
										dary)	
M		F.1.3. Decreasir buffer capacity	ng c	of							
M		F.1.4. Ass	ed	- regional risk		1 risk	- regional risk				
1,1		pollution to sedime			1081011111111						
		suspended solids									
I		F.2. Harmful effects F.2.1. Toxicity F.2.2. Persistent			- less urgent		ent	- urgent			
S		F.2.3. Accumulation	on (bio	o) - local	- 1	ocal ris	sk				
				risk							
S		F.2.4. Carcinogen	ic an		- t	ırgent					
I	$F^0 = 2$	mutagenic effects		urgent							
1	$G^0$	RISKS ON		Medium		Critical	Critical		reme		
		G <sup>0</sup> RISKS ON Low USAGE									
О	$G_1$	Effects on human		10 -low			40	40 - medium / high			
		health	or				- medium / h			at a	
										larg scal	
N		G.1.1.Drinkink	- at	working place	- at working place - local		working	- regional		- hig	
_		water pollution	_					- urgent			
S		G.1.2. Other effects	- less	urgent			ıl			- into	rnati
		effects								onal	
					- over 100,000					- urgent	
		G.1.3. Nr. of	- ove	er 10,000				- over 500,00	- over 500,000		over
		affected								1,000,00	
	$G_2$	inhabitants Agriculture	m		- idem		- idem		0 - idem		
		(including			100111			100111		130	
		livestock)									
	$G_3$	Irrigation's	+ +			++		+++		+++	
$egin{array}{c} G_4 \ G_5 \end{array}$		Fishery Others					+++		++++		
	$G^0 =$	$\Sigma G_{i}$			++		1 1 1 1		<u> </u>		
	$H^0$			Low		Medi	um	Severe		Extreme	
		MAGNITUDE		1							
	$\mathbf{H}_{1}$			15	20		25	40	50	0 75	
		class	-	from III <sup>rd</sup>	fre	nm	from	from II <sup>nd</sup> to	fro	m	from
♥				class to	II	from from II <sup>nd</sup> to I <sup>st</sup> t		degraded		to	I <sup>st</sup> to
				degraded	III	rd	II <sup>nd</sup>	6	I <sup>st</sup> III <sup>r</sup>		degr
											aded

0	1	2	3	4	5	6
<b></b>	H <sub>2</sub>	Length of affected stretches / average flows	25	50	75	100
I		(L)	10 15 km	15 30 km	30 100 km	over 100 km
M		(Q m <sup>3</sup> / s)	< 100	100 - 500	500 - 1000	> 1000
M	$H_3$		$C^0 \times 1$	$C^0 \times 2$	$C^0 \times 3$	$C^0 \times 4$
I		Pollutant dispersion capacity	Villages	medium towns	big cities + industry	natural lakes
						Danube Delta
						Black Sea
S			Low	Medium	High	Extreme
S			5	25	50	80
I O N S	H <sub>4</sub>	Decreasing of attenuation capacity pollution in receiver (affectation of supportability degree) - selfpurification	- high attenuation capacity	- medium attenuation capacity	- low attenuation capacity	- very low attenuati on capacity
\ \		$H^0 = \Sigma H_i$				

### TOTAL SCORE: A + B + C + D + E + F + G + H

- (i) concerning the emission the following primary characteristics are considered:
  - A the dilution ratio (water receiver flow/effluent discharge) based on four ranges starting from 50:1 (moderate impact) to  $\Delta$ <5:1 (high impact); this ratio is one of the basic parameter for the point discharges ranking.
  - B the quality of the effluent characterized by significant pollutants such as  $BOD_5$ , COD (Cr), N-NH<sub>4</sub>, phenol index, oil, toxic/hazardous chemicals (heavy metals, pesticides etc.) and other special pollutants.
  - C the discharged loads expressed in t/y for  $BOD_5$ , suspended matter, total nitrogen, total phosphorous and others.
  - D the process continuity (short, medium, long term).
  - E the risk for the accidental pollution; this characteristics should be also related with the table 2.1.1.2.
- (ii) concerning the immissions there are three main considered characteristics as follow:
  - F the risk to the aquatic ecosystems mainly due to the eutrophication process, depletion of the dissolved oxygen concentration, decrease of the buffering capacity, associated pollution with the suspended matter and sediments, hazardous effects (toxicity, persistence, bio-accumulation, carcinogenic, mutagenic etc.).
  - G the risk to the water users drinking water supply, agriculture, irrigation, fisheries etc.

H – impact magnitude expresses by four parameters: quality class deterioration, lengths of the affected stretch, pollutant dispersion and selfpurification negative effects.

Relation obtains the overall score for the ranking of hot spots:

$$S(score) = A + \Sigma B + \Sigma C + D + E + \Sigma F + \Sigma G + \Sigma H.$$

As it was recommended in the Guidelines for this report, the selection of the Hot Spots has started from the list that was organised by the EMISS / EG for each country. For Romania, there were two lists, one for Municipal Hot Spots with a total of 54 Hot Spots and another one so called "Industrial Hot Spots" which has included also the agricultural point sources with a total number of 136. From these 2 lists , there were created 3 categories of Hot Spots - municipal, agricultural and industrial and for every one a first estimation was done .As a result of these, three groups of Hot Spots were created as High, Medium and Low Priority based on a number of criteria, like :

- inclusion on another Hot Spots list. In this report were analysed Strategic Action Plan from 1993, National Action Plan for Environmental Protection (PNAPM), first report produced in 1995, second revised report produced in 1997 and one table produced for internal purposes (table 2.2). The inclusion of one Hot Spot or more from those lists and the problem created as impact, was used for this judgement (columns 3, 4, 5, 6 in the Hot Spots tables);
- the characteristics of problems created in the area, as well as in the receiver was another criterion for the first grouping and selection;
- the levels of loads discharged as well as the dilution capabilities of the receiver were also used in parallel with the impact created in receiver showed by the changing of the water quality category in the downstream sampling station against the upstream sampling station for every Hot Spot.

A number of 3 selected tables were created for every category of Hot Spots with High, Medium and Low Priority Hot Spots included. These tables were organised using EXCEL Software. Detailed description of the tables and their content will be presented in the next chapter.

### 2.1.5. Map of Hot Spots

For presenting the Hot spots (HS) on the map, in the case of Romania, where more than 98% of the country is included in the Danube catchment area a hydrological map of the country with the scale 1: 1.000.000 was used

On the same map, there are also included all upstream and downstream sampling stations for each HS included.

For the 3 groups of HS, were used 3 geometrical figures coloured in different colours circle for municipal HS (with one diameter for High Priority and empty for Medium Priority), square for industrial HS (with one diagonals for High Priority and empty for Medium Priority) and hexagon for agricultural HS (with one diagonals for High Priority and empty for Medium Priority). For identification, the same number was used for one HS in the cumulative table (with all HS from each category: municipal, industrial, agricultural) in the ranked list of Hot Spots (High Priority, Medium Priority and Low Priority) and also on the map. So the geometrical figures representing different HS have attached the corresponding numbers from the tables.

The same procedure was applied for sampling stations presented on the map and the number attached to the sampling station line across the river were is located and is representing the code number from the Water Quality National Monitoring System Network list (WQNMS) which is attached to the chapter 4.1 (table 4.1.1). The same code number for each station is also in each of

the Annexes 3.11 - 1 that belong to the respective station. A legend with the significance of the figures and numbers is attached in the left down and right up corners of the map. Attached to this map, there are two drawings representing Romanian relief across-section from West to East and from North to South (figure 2.1.5.1.).

The table 2.1.5.1. was created to facilitate the connections between the hot spots included in the map and between the tables (annexes 3.11-1) with the name /codes of hot spots and also with the sampling stations(names and codes applied on the map for this stations) Also this table has information about the water quality in the respective sampling stations.

The Quality Categories I, II and III as well as D are referring to the Romanian Surface Water Quality Standard no. 4706/1998 (which is attached in Report at the end). The character D it means that for one or a number of analysed parameter the value obtained is higher than the allocated maximum limit (MAL) from the third category

D= overlimit or in a large acceptance degraded for one or more quality parameters.

The values of concentrations are simple means of measured concentrations.

The reported concentration is referring only to the mineral N with his forms. The organic N is used based on the estimation of the percentage from the total N (18-20%) values, which were found out in a number of researches and projects with internal or international co-operation work. The measurements (analysis) are made on non-filtered homogenous phase of water sample, not in sediments or suspended maters. Kjeldahl methods are applied only in the case of research analysis because of the lack of equipment. In the case of P there are two analysis done: orthophosphate and total P and methods are described in table 4.3.1.

Table 2.	4. MAIN POLLUTANT LC	Table 24. MAIN POLLUTANT LOADS ISSUED BY POPULATION OF ROMANIA IN THE DANUBE RIVER BASIN	<b>ATION OF ROMANIA IN</b>	THE DANUBE RIVER BA	NIS
RIVER BASINS	POPULATION CONNECTED TO SEWAGE SYSTEM (thous.)	WASTE WATER FLOW DISCHARGED / OF WHICH TREATED (1/s)	TOTAL N (tons/year)	TOTAL P (tons/year)	BOD, (tons/year)
	DISCH	DISCHARGED ON THE ROMANIAN TERRITORY	RITORY		
1. JIU	652.8	5.349 / 1.148	1 730 0	405.6	07100
2. OLT	1.043.6	7 340 / 5 142	0.001	400.0	12,314.0
3. VEDEA	0111	865/848	0.0/4,1	413.5	17,691.0
4. ARGEŞ	2 205 6	377 1 200 01	0.01	21.6	1,759.0
S IALOMITA	0:004	19,003 / 1,049	6,568.0	1,847.0	42,718.0
S. IALOMI A	848.5	8,412 / 5,221	1,367.0	384.5	14 648 0
6. SIRET	814.2	7,639 7,251	627.0	176.3	0.000.1
7. PRUT	997.3	9 471 / 1 165	0.000	6.071	13,001.0
TOTAL ON THE INLAND			2,677.0	809.2	19,173.0
waters discharging in the Danube River on the Romanian territory	6,673.0	58,088 / 22,424	14,715.6	4,138.7	121,304.0
		DISCHARGED DIRECTLY INTO THE DANIBE RIVER	O THE DANIBE RIVER		
8. DANUBE	950.4	6.849/1622	0 227 6		
TOTAL DISCHARGED IN TUE		77011 / / / / /	2,400.0	639.5	17,846.0
DANUBE on the Romanian territory	950.4	6,859 / 1,622	2,466.0	639.5	17,846.0

7,584.0 7,584.0

204.8

728.1 728.1

DISCHARGED INTO THE BLACK SEA

4,299 / 2,577

437.2 437.2

TOTAL DISCHARGED INTO

9. DOBROGEA

THE BLACK SEA

10. SOMEŞ 11. MURES

4,299 / 2,577

204.8

DISCHARGED OUTSIDE ROMANIAN TERRITORY

5,782 / 4,424 7,799 / 6.004 3,046 / 1,870 3,960/3,052

1,024.6

306.9 484.6

7.097

12,699.0 17,085.0

265.6 354.2 140.6 167.2

1,259,0

499.7 594.6

944.2

5,306.0 8,079.0 189,903.0

5,910.6

43,169.0

927.6

3,297.5

20,587 / 15,350

2,576.8

TOTAL DISCHARGED OUTSIDE ROMANIAN TERRITORY

13. BANAT 12. CRIŞ

89,833 / 41,973

10,637.4

ڃ

the rivers and Black Sea

TOTAL DISCHARGED

21,207.2

Table 2.1.5.1. Hot Spots - INDUSTRIAL HIGH PRIORITY

					1														1			,	-		$\overline{}$
y ive	96,	12	D	Π	Q	П	П	Ш	Q	D	Ш	Ш	Π	D	Π	Π				Π				П	
Quality Category In Respective Station	56,	11	D	Π	О	Π	II	III	D	D	D	D	II	D	Π	III	Π	Π	II	III	D		Ш	Π	II
l ii	,64	10	D	Π	D	П	П	П	D	П	D	D	II	D	Π	II				Π				П	
Code No. within WQNMS or TNMN		6	28	54	71	58	133	195	222	256	253	253	L 0380	303	L0430	19	91	163	51	19	DW 121			L0430	58
Name Of Downstream Sampling Station		8	Baia Mare	Parhida	Am. Blaj	Ungheni	Podari	Suseni	Tinosu	Av. lac Bacau	Frunzeni	Frunzeni	Reni	Holboca	Grindu - Reni	Salatiu	Nadlac	Dragasani	Cheresig	Salatiu	Av. st. ep.	Colorom	Av. Orastie	Grindu - Reni	Ungheni
ry in ttion	96,	7	I	Π	II	II	I	I	II	III	I	Ι	II	D	Π	I	II			I	I			Π	
Quality Category in Respective Station	56,	9	I	Ш	П	Ι	II	I	II	D	I	I	III	D	Π	I	II	I	I	I	I		I	Π	II
Quali Resp	,64	2	I	П	II	I	II	I	II	D	I	Ι	II	D	Π	I	II			I	I			П	
Code No. within WQNMS or TNMN		4	27	53	70	57	131		221	253	252	252	287	302	L0280	18	06	162	50	18	Up 121			L0280	57
Name Of Upstream Sampling Station		3	Am. Baia Sprie	Av. Suplacu	Am. Medias	Glodeni	Racari	Ref. Station	Cornu	Frunzeni	Straja	Straja	Sendreni	Podu Iloaiei	Chiciu - Silistra	Am. Cluj	Am. Arad	Am. Rm. Valcea	Am. Oradea	Am. Cluj	Ref. Station		Costesti	Chiciu - Silistra	Glodeni
Receiver River / Main Cachment Area		2	Sasar / Somes	Barcau / Cris	Tarnava Mare / Mures	Mures / Mures	Jiu / Jiu	Dambovnic / Arges	Prahova / Ialomita	Bistrita / Siret	Bistrita / Siret	Bistrita / Siret	Siret / Siret	Bahlui / Prut	Danube / Danube	Somes Mic / Somes	Mures / Mures	Olt / Olt	Cris Repede / Cris	Somes Mic / Somes	Vulcanita / Olt		Orastie / Mures	Danube / Danube	Mures / Mures
Discharger Name Of Economic Unit		1	Phoenix Baia Mare	Petrom Suplac de Barcau	Sometra Copsa Mica	Azomures Tg. Mures	Doljchim Craiova	Arpechim Pitesti	Petrobrazi Ploiesti	Letea Bacau	Fibrex Savinesti	Pergodur P. Neamt	Sidex Galati	Antibiotice Iasi	Siderca Calarasi	Somes Dej	Indagra Arad	Oltchim Rm. Valcea	Sinteza SA Oradea	Clujana Cluj	Colorom Codlea		Favior Orastie	Celohart Braila	Manpel Tg. Mures
Ser.No. of HS		0	7	13	16	17	46	55	56	65	70	71	92	77	62	87	93	100	119	120	121		122	125	129

Hot Spots - INDUSTRIAL MEDIUM PRIORITY

Station	96,	12						H		Q		Q		Q	Π	Π	Π	I	Π	Ι	Π	О	П		Q		П	
Quality Category In Respective Station	56,	11		Ш	D	D	Ш	D	Ш	D	Ι	D	D	D	Ш	Π	Ш	I	I	Π	Ш	О	П	D	D	D	Ι	
) In Resp	,64	10						Ш		D		D		D	Π	Π	П	I	П	Ι	Π	D	П		D		П	
Code No. within WQNMS or TNMN		6		87	Dw 23	Dw 24	59	151	145	146	189	225	Dw 60	225	260	256	260	L0480	L0240	T0090	19	92	61	231	232	274	L0240	317
Name Of Downstream Sampling Station		8		Santuhalm	Am. confl. Mures	Am. confl. Aries	Luncani - Gligoresti	Fagaras	Aval Bod	Am. confl. Olt	Ciumesti	Moara Domneasca	Goga	Moara Domneasca	Adjud	Aval lac Bacau	Adjud	Sulina	Am. Arges	Pristol Novo- Selo	Salatiu	Mihalt	Chetani	Av. Slobozia	Av. Tandarei	Am. Tecuci	Am Arges	Am. Braila
ry in tion	96,	7						III		III		Π		Ш		Ш	II	II	I	I	I						П	
Quality Category in Respective Station	56,	9		I			Ш	D	I	Π	I	П	Ι	Π	П	D	Π	П	Π	П	I	D	П	Π	D	П	I	
Quali	,64	5						Ш		I		П		Π		D	Π	П	I	Ι	I						П	
Code No. within WQNMS or TNMN		4		98	Up 23	Up 24	64	148	144	143	184	224	Up 60	224	259	253	259	L0430	0600T	L0020	18	75	58	230	231	267	L0240 + 313	L0280
Name Of Upstream Sampling Station		3		Teliucu Superior	Certej Abrud	Ref. Station	Buru	Hoghiz	Am. Rasnov	Am. Zarnesti	Darmanesti	Gura Vitioarei	Dambu	Gura Vitioarei	Am. Tg. Ocna	Frunzeni	Am. Tg. Ocna	Grindu - Reni	Pristol Novo- Selo	Bazias	Am. Cluj	Am. Blaj	Ungheni	Ciochina	Av. Slobozia	Am. Barlad	Av. Giurgiu	Chiciu - Silistra
Receiver River / Main Cachment Area		2	Borod / Cris	Cerna / Mures	Certej Mures	Abrud / Mures	Aries / Mures	Olt / Olt	Ghimbasel / Olt	Barsa / Olt	Doamnei / Arges	Teleajen / Ialomita	Dambu / Ialomita	Teleajen / Ialomita	Trotus / Siret	Bistrita / Siret	Trotus / Siret	Danube / Danube	Danube / Danube	Topolnita / Dunare	Somes Mic / Somes	Tarnava Mures	Mures / Mures	Ialomita / Ialomita	Ialomita / Ialomita	Barlad / Siret	Danube / Danube	Danube / Danube
Discharger Name Of Economic Unit		1	E.M. Borod	Siderurgica Timisoara	E.M. Coranda Certej	E.M. Rosia Montana	Ind. Sarmei Campia Turzii	Nitramonia Fagaras	Romacril Rasnov	Celohart Zarnesti	Dacia Pitesti	Romfosfochim Valea Calugareasca	Astra Romana Ploiesti	Petrotel Teleajen	Chimcomplex	Sofert Bacau	Carom Onesti	Alum Tulcea	CICH Tr. Magurele	Romag Tr. Severin	Terapia Cluj	Stratus Mob Blaj	Nutrimur Iernut	Ulcom Slobozia	Beta Tandareni	Spirt Ghidiceni	Verachim Giurgiu	Comcem SA Calarasi
Ser.No.of HS		0	12	22	23	24	26	47	48	50	54	57	09	61	99	72	73	80	81	83	68	91	95	102	103	110	126	130

# Hot Spots - AGRICULTURAL HIGH PRIORITY

tion	96,	12		П	D	I
Quality Category spective Stat	56.	11		Ш	D	I
Quality Category In Respective Stat	. 64	10		П	D	I
Code No. within WQNMS or TNMN		6	612	282	808	T0280
Name Of Downstream Sampling Station		8	DN 1 Saftica	Sendreni	Holboca	Sulina
ry in ttion	96,	7			D	Π
Quality Category in Respective Station	56,	9		D	D	I
Qual Resp	<del>76,</del>	5			D	Π
Code No. within WQNMS or TNMN		4	216	275	302	L0240
Name Of Upstream Sampling Station		3	Ref. Station	Umbraresti	Podu Iloaiei	Am. Arges
Receiver River / Main Cachment Area		2	Vlasia / Ialomita	Barlad Siret	Bahlui / Prut	Danube / Danube
Ser.No.of Discharger Name Of HS Economic Unit		1	Romsuintest Peris	Suinprod Independenta Barlad Siret	Comtom Tomesti	115 Comsuin Ulmeni
Ser.No.of HS		0	22	111	113	115

# Hot Spots - AGRICULTURAL MEDIUM PRIORITY

har	Ser.No.of Discharger Name Of Economic Unit	Receiver River / Main Cachment Area	Name Of Upstream Sampling Station	Code No. within WQNMS or TNMN	Qual Resp	Quality Category in Respective Station	rry in ution	Name Of Downstream Sampling Station	Code No. within WQNMS or TNMN	In Res	Quality Category In Respective Statior	ation
				111/1/11	,94	56,	96,			76,	56,	96,
1		2	3	4	5	9	7	8	6	10	11	12
Combil Gh. Doja		Ialomita / Ialomita	Ciochina	230		D		Av. Slobozia	231		D	
Avicola Satu - Mare		Sar / Somes	Ambud	Up 29		II		Oar	Dw 29		П	
Agrocomsuin Bontida	ida	Somes Mic / Somes	Am. Cluj	18	I	I	Ι	Salatiu	61	Π	Ш	Π
Comsuin Moftin		Crasna / Somes	Supuru de Jos	35		II		Berveni	36		П	
Comsuin Beregsau		Bega Veche / Bega - Timis	Pischia	86		I		Cenei	66		D	
Braigal Braila		Danube / Danube	Chiciu - Silistra	L0280 + 317				Grindu - Reni	L0430			

## Hot Spots - MUNICIPAL HIGH PRIORITY

, Station	96,	12	Π	D	Π	Π	I	Ι	Ш	Ш	Π			Ι	D
Quality Category In Respective Station	56,	11	Π	Q	Π	Π	Π	Π	Q	Q	Π	Ш	Ш	Ι	D
In Res	<del>7</del> 6,	10	П	Q	Π	Π	Π	Π	Q	Q	Π			I	D
Code No. within WQNMS or TNMN		6	L0430	303	L0430	133	110	110	26	26	88	Dw 43	Dw 43	186	212
Name Of Downstream Sampling Station		8	Grindu - Reni	Holboca	Grindu - Reni	Podari	Moniom	Moniom	Otelec	Otelec	Branisca	Borla	Borla	Piscani	Budesti
ry in ttion	96,	7	Π	D	Π	I	Ι	I	Ι	Ι	Π			I	Ι
Quality Category in Respective Station	56,	9	II	D	Π	Π	I	I	I	I	П	I	I	Ι	П
Qual Resj	<del>76,</del>	2	П	D	Π	Π	I	I	I	I	Π			I	II
Code No. within WQNMS or TNMN		4	L0280	302	L0280	131	109	109	96	96	83	Up 43	Up 43	185	209
Name Of Upstream Sampling Station		3	Chiciu - Silistra	Podu Iloaiei	Chiciu - Silistra	Racari	Crivaia	Crivaia	Am. Timisoara	Am. Timisoara	Ghelmar	Am. Zalau	Am. Zalau	Voina	Dragomiresti
Receiver River / Main Cachment Area		2	Danube / Danube	Bahlui / Prut	Danube / Siret	Jiu / Jiu	Barzava / Timis	Barzava / Timis	Bega / Bega	Bega / Bega	Mures / Mures	Zalau / Somes	Zalau / Somes	Targukui / Arges	Dambovita / Arges
Discharger Name Of Economic Unit		1	Braila	Iasi	Galati	Craiova	Resita	Resita	Timisoara	Timisoara	Deva	Zalan	Zalan	Campulung	Bucuresti
Ser.No.of HS		0	5	7	17	28	30	31	32	33	34	43	44	52	54

## Hot Spots - MUNICIPAL MEDIUM PRIORITY

/ Station	96,	12	I	Π
Quality Category spective S	56,	11	Ι	Π
Quality Category In Respective Station	,64	01	I	I
Code No. within WQNMS or TNMN		6	216	163
Name Of Downstream Sampling Station		8	Baleni	Dragasani
rry in ttion	96,	7	I	П
Quality Category i Respective Station	56,	9	I	I
Qual Resp	,64	2	I	I
Code No. within WQNMS or TNMN		4	215	162
Name Of Upstream Sampling Station		3	Am. Targoviste	Am. Rm. Valcea
Receiver River / Main Cachment Area		2	Ialomita / Ialomita	Olt / Olt
Discharger Name Of Economic Unit		1	Targoviste	23 Rm. Valcea
Ser.No.of HS		0	18	23

### 2.2. Municipal Hot Spots (MHS)

There are 545 localities provided with a centralised sewage system in Romania. Out of this number, 258 are cities and 287 villages. There are 9.1 million people connected to a sewage collection system out of which 8.7 millions live in cities. The total amount of wastewater flowing directly, or via wastewater treatment plants is 80 m³/s. Only 74 percent of this flow is treated. Out of 60 m³/s that is treated, 11 m³/s is treated only mechanically and 49 m³/s flows through the biological steps. There are 204 wastewater treatment plants in the country. There are 17 cities belonging to 11 counties placed along the left side of the Danube River, discharging directly about 537 thousand m³ waste water per day, that is 39.5 percent of the total flow of waste water discharged. About 470 thousand m³ per day of municipal wastewater are discharged untreated into the river. Out of the 17 cities along the river, 3 cities are harbours suitable for sea ships. In these cities (Braila, Galati, Tulcea) live about 670 thousand inhabitants.

No harbour along the river is provided with facilities to take over the wastewater from the ships.

In the following table, the load contribution of the main Romanian inland rivers issuing into the Danube River (1993).

		Cha	racteristics *	(t/d)	
Tributary rivers	SSM	$BOD_5$	$N_{\text{total}}$	$\mathbf{P}_{total}$	TDS
JIU	1750	77.8	17.88	5.0	3515
OLT	2433	69.1	5.62	1.2	9746
ARGES	944	163.9	36.5	10.7	2819
IALOMITA	2018	41.7	16.62	6.8	5706
SIRET	5498	108.9	15.81	6.5	12519

<sup>\*</sup> The loads were calculated on the bases of the average values of concentration from 1993 and of multiannual flows.

The values from the above small table are with the tributaries that has the major contribution in the discharging pollutants like BOD, mineral  $N_{total}$ , total P, Suspended maters and total dissolved salts, and which were included in the previous National Review.

Within the table 2.4 the values for the loads were calculated on theoretical bases using the average agreed values for N and P applied for such estimation. In this table there are considered the population settlement from the catchment areas of the main tributaries then the population settlement which are discharging directly in the Danube as well as the settlement which are discharging in the rivers that are crossing first Romanian territory in the rest part of the country and then there waters arrive in the Danube.

According to the calculations based on the discharge per capita per year of 900 g P and 3,200 g N and taking into consideration the population connected to the sewage system as well as the effects of the existing waste water treatment plants, the load of the population in the tributary areas of the Danube River are presented in the table 2.4 bis of this National Review.

The Municipal HS group was organised in a cumulative table with a total of 55 towns included. From this table based on the selection criteria mentioned in the previous chapters, a number of 3 groups and attached tables were considered and organised for the second heading of ranking as High Priority (HP), Medium Priority (MP) and Low Priority (LP). The respective tables (2.2.1) have about 55 columns included in 4 pages and the information content is referring to the:

- > number of HS (unique in all tables and maps for one HS);
- > location as name of the town and discharger;

- receiver river / catchment area;
- > previous list of HS and the place of HS on this;
- raw water load:
- > current treatment;
- current capacity;
- ➤ total load discharged into receiving waters (t/year of BOD<sub>5</sub>, COD, N, P and others if it is the case)
- final capacity proposed or estimated;
- information about possible construction of new or enlarging of existing wastewater treatment plant (WWTP);
- > estimation of remaining pollution after new development;
- > data about effluent and receiver flow;
- water quality category (I, II, III and D = degraded) and also the name of the sampling station upstream and downstream;
- water quality indicators affected in receiver by the respective HS;
- information about seasonal variation, root causes of emission (if exist);
- downstream users of water from the discharge point of respective HS;
- > characteristics of problems created in receiver.

Based on the information gathered and organised in the tables mentioned above the ranking procedures were applied.

### 2.2.1. High Priority (HP)

From the number of 55 towns / discharges selected as covering about 75 % from the total municipal discharges (condition determined by the EMISSION / EG when they have organised the inventory of emissions) in this category were selected 10 HS (table 2.2.1.1.) Out of these, 7 were included and still are included in near all previous lists of HS, as well as in the last revised version of National Environmental Action Plan (PNAPM) finalised in December 1997. Based on the ranking procedures applied, the High Priority HS ranking is presented in the table 2.2.1.2. In these tables information about transboundary effects of respective HS is also inculded.

In the table 2.2.1/1, 2.2.2., 2.2.3., columns 8,9,10,11 indicate No treatment (8), Mechanical Treatment (9), Biological Treatment (10), De-nitrification step (11) and Phosphorous reduction step (11). The concept of this column as well as column 0, 1, 2, 7, 13, 14, 15, 16, 17, 18, 22, 23, 24, 26, 27, 28, 30, 31, 35 belongs to the EMISS/EG and should to be utilised by all expect from the Danubian countries (except maybe the R.F.Y., which are not included yet in the EPDRB activity).

The remarks from column 35 refer to the works that are necessary to be done to improve the treatment facilities. These notifications are based on the agreement from the EMIS/EG meetings (third and fourth) and they have this meaning:

r – rehabilitation, upgrading

e - extension

n - new WWTP

FS – Feasibility Study (necessary, in elaboration, approved)

In column 36 there are the approved values of flow from the permit for the respective discharge waste or without WWTP as it is the situation.

In column 44 (seasonal variation) the two indicators included are referring to the "flow" and "load" of the municipal discharges of the respective towns. In the case of flow, 1 is the number of a footnote. The content of this note is referring to the discharged flow that is reasonably stable in all seasons. For the loads the figures from the table are referring to the seasonal variability around the average values of some parameters (BOD<sub>5</sub>, BOD, N, P) which are measured in the water discharged.

In column 46 the root causes of emissions, there is no further explanation because the reality is reflected by the figures presented in the previous columns which have been in fact a steady state situation for more than 10 years. In the last columns 52 the "Permanent" describes the duration of the effects and not the intensity. The intensity of the effect is difficult to be expressed as well as the sensitivity and critical features of the downstream users. This kind of more detailed analysis can be done specially in the phase of feasibility or pre-feasibility studies, for future actions with the selected hot spots. In this stage with the large number of hot spots and large area in which they are placed, this analysis was not done before, because of lack of resources: human, time and a clear methodology which at present were not applied in Romania except for specific particular projects.

The transboundary effects which were identified for those HS are the mixing of emissions from High Priority Hot Spots with clean water shortly before international waters of the Danube or tributaries. This is because near H.S. from High Priority List are located closed to the borders or near the points where the receivers are crossing the borders. It is the case of Braila, Galati, and Bucuresti, for the Danube and Zalau, Craiova, Resita, Timisoara for the receivers' tributaries going over the border short after receiving the wastewater from those towns.

### 2.2.2. Medium Priority (HP)

From the total number of 55 for the Medium Priority (MP) were selected 2 towns (table 2.2.2.1.) According to ranking procedures the table 2.2.2.2. presents the results from this category, in which there are none with transboundary effects of pollution.

### 2.2.3. Low Priority

In this category are included the rest of the 55 hot spots after extraction of HP and MP hot spots. For this category the data and information included in the table 2.2.3.1. are not so complete and thus there was no ranking procedures applied for this group.

Tabel 2.2.1./1	FINAL CAPACITY (TPE)		1	7						AEO	2 2	382	300	2 5	100	3 4	200	210	200		14	120	360	8	160	150	S	88	170	9	400	100
Tab		OTHERS	-	$\downarrow$			-																									
	TOTAL LOAD DISCHARGED INTO RECIVING WATERS T/year	PATHOGENS   OII														+									-							
	INTO RE	1						223	31.28	60.4	7.5	2 2	3		ľ					293	53		319			49.3					277	
	CHARGED IN T/year	z	-	27 93			91.5	952	229.74	368	133 15	89.1	33.7	200	172.18	195.4	229 6	459	646.1	1044	131	192.1	884		-	240		2	102		985	130.64
	AL LOAD DISC	000	16	2065	119.26		756.25		90 086	1930	459.5	5156		1292	395.8	2684	1312		3373.7	0999	191	607.7	2924	728.1		902	3716		962	629	6080	284
	101	BOD	15	-		445.5	506.7	4886	647.67	1750	391.07	423.8	71	455	248.6	1021	426	1776	2914.6	6428	158	568.4	2898	701.7	316	849	2934	2560	897	601	6071	218.5
	Waste water volume discharged Tm³/y	1	7	8.460	8,231	7,190	12,500	27,740	24.440	53,600	266'6	8.534	15,770	8,700	14,070	29,170	16,400	40,400	25,644	38,250	13,000	7,144	40,600	8,426	15,027	21,100	31,500	51,100	30,600	17,787	43,200	7,729
	Curent capacity of WWTP (TPE)		13	150	5				9	450	8	105	65	110	120	175	150	210	200		8	8	780	8	8	<u>8</u>	250	320	146	8		8
	Curent treatment *	MufBlo	8 9 10 11 12	×	×				××	×	x   x	×	×	×	××	×	××	×	×		-+	×	-+	×	×	×	×	×	×	×		×
	Raw water load (TPE) *	Z		78.8	74.0	× 9.76	118.4 ×	230.0 x	128.3	310.0	79.7	80.3	60.3	81.9	100.9	117.3	125.6	200.0	149.6	300.0 ×	70.0	7.00	265.0	0.830	87.0	9,0	185.0	302.0	142.0	80	283.0 ×	51.0
PREVIOUS LISTS OF HOT SPOTS	Tab PMA 2.2 97	-	9					5 41		19									_[	42	9	1		1				9			4	
VIOUS LIST	PNA PM Ta	-	2	-				-		-		-			-		1		1	17	8	+	+	+	-	45	"	6	ଞ	L	23	-
PREV	SAP 93		-					2		8										9	¥		1			R	32	ا و	77	- [	27	
	Receiver River/ Cachement area	ľ	2	Danube	Danube	Danube	Danube	Danube / Danube	Sitna- Prut	Bahlui / Prut	Siret	Siret	Siret	Siret	Siret	Siret	Siret	Siret	Buzau	Danube / Danube	latomita / latomita	alomita	Idionii d	, i	TO CE		200	5	nic .	JIU	שור / חור	IIIIIS
	Discharger/ Location						ta Ir. Severin		osanı								Neamt				Slobozia		odus	NA STIE	1000	анова					g g	Luga
	Ser. No	-	7	7	- 1	$\neg$	7	_	ام		Т	S	9	-	127				0 1	2 9	_		3 6	3 6	S Siating	3 6	7 2	38	8 6	776	3 <u>-</u> 9 8	

9         Resident         Bázcava / Bega-Timis         3         4         5         6         101   10         1         6         60   10   10   10         10         10         10         10         10         10   10   10   10   10   10         10         10   10   10   10   10   10         10         10   10   10   10   10   10   10   10         10         10   10   10   10   10   10   10   10         10         10   10   10   10   10   10   10   10         10   10   10   10   10   10   10   10	ឧ		150		340	150	100	100	500		70	300	320	250		8		8	170	200	380	135	26	8	280	3,500		002,
Resta         Heata         Bárzava f Baga-Timis         3         4         5         6         7         6         10         11         6         9         7         10         596         1475         17 <td>23</td> <td>-</td> <td>-</td> <td>-</td> <td></td> <td>_</td> <td>-</td> <td></td> <td> </td>	23	-	-	-		_	-																					
Resta         Bárzava / Bága-Timis         3 4 5 6 7 7 8 6 10 10 10 10 10 10 10 10 10 10 10 10 10		-	L	L	L	-	_	L	_		_	L			L		L	L	_	_		_	_	_		_	_	
Resita   Bărzava / Baga Timis   3 4 1 5 6 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	×	-	-	-	-	-	-	<u> </u>			_	-	_		-	H	-	_			H	-	ļ.,	_	-	-	_	l
Resita   Barzava / Bega-Timis   1	:2																											
Resida         Bázcava / Bega-Timis         1         5         6         7         6         10         11         15         17         18         18         17         10 <td>.2</td> <td></td> <td></td> <td>8</td> <td>75</td> <td>52.4</td> <td>0.55</td> <td></td> <td></td> <td>11.26</td> <td>15.88</td> <td>22</td> <td></td> <td></td> <td>45.6</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>9.6</td> <td>4</td> <td>23</td> <td>37</td> <td>2218</td> <td></td> <td></td>	.2			8	75	52.4	0.55			11.26	15.88	22			45.6							9.6	4	23	37	2218		
Resita         Bárzava / Bega-Timis         3         4         5         6         75         8         10 Initio         13         14         5         6         14         5         6         14         6         75         1         10         10,420         16,297           Restla         Bárzava / Bega-Timis         28         6         31         217.0         x         70         10,420         16,297           Timisoara         Bega / Bega-Timis         28         6         31         217.0         x         70         70         10,420         1149           Deva         Mures         Mures         Mures         61.9         x         70         75         22,238         10,63.3           Hundoara         Mures         Mures         Mures         60.0         x         70         12,907         177,23           Hundoara         Mures         Mures         Mures         60.0         x         70         12,907         177,23           Medias         Mures         Mures         Mures         37         46.1         x         70         8,350         182,60         114.6           Arad         Mures         Mures<	2.1	235	122.52	9/9	316	186.2	342.3	312.3	38.85	41.69	195.44	230	278.2	230	162.3	20.35	244.24	343.46	164.77		516	109.05	87	82	475	10872		
Resita         Bârzava / 2 Bega - Timis         3         4         5         6         11         15         5         14         5         6         11         15         16         17         10         10,420         162.97           Timisoara         Badzava / Bega - Timis         28         6         31         217.0 x         7         7.0 (10,420)         162.97           Timisoara         Bega / Bega - Timis         28         6         31         217.0 x         7         7.0 (10,420)         17.49           Deva         Mures         Mures         Mures         61.9 x         7         7.5 (22.23)         17.46           Hunedoara         Mures         Mures         60.0 x         7         7.0 (12.907)         17.2 (27.23)           Hunedoara         Mures         Mures         60.0 x         7         7         2.2 (2.36)         17.2 (27.23)           Mures         Mures         Mures         8.0 (10.0 x)         7         7         8.350         118.94           Arba Iulia         Mures         Mures         8.0 (10.0 x)         7         7         2.2 (2.23)         118.94           Medias         Mures         Mures         8.0 (10.0 x)		Ø	1	22	က္က	Q	92	2	2	2	9	S	2	Q	12	14	1	9	4	3	4	9	6	9	8	9	_	ı
Resida         Hacitada / Bega-Timis         3         4         5         6         7         6         11         13         14           Resida         Barzava / Bega-Timis         11         45         35.1         x         1000         10,420           Timisoara         Bega / Bega-Timis         28         6         31         21.70         x         100         10,420           Timisoara         Bega / Bega-Timis         28         6         31         88.0         x         194         28,650           Turda         Mures         Mures         Mures         47         70.2         x         70         12,907           Hunedosra         Mures         Mures         81.5         x         70         15,000           Aba lulia         Mures         Mures         37         39         155.0         70         15,000           Aba lulia         Mures         Mures         37         39         156.0         x         70         8,560           Arad         Mures         Mures         Mures         35         42         35.0         x         30         1,000           Arad         Chade         26 <t< td=""><td>5</td><td>1780.0</td><td>284</td><td>ě</td><td>4</td><td>178</td><td>408.0</td><td>525.</td><td>155.00</td><td>304.0</td><td>182.6</td><td>130</td><td>1454</td><td>210</td><td>563.4</td><td>222.6</td><td>301</td><td>412</td><td>417.2</td><td>328.7</td><td>೫</td><td>36</td><td>42</td><td>2</td><td>373</td><td>3902</td><td></td><td></td></t<>	5	1780.0	284	ě	4	178	408.0	525.	155.00	304.0	182.6	130	1454	210	563.4	222.6	301	412	417.2	328.7	೫	36	42	2	373	3902		
Resita         Bárzava / Bega-Timis         3         4         5         6         7         6         9         10         11         13           Resita         Bárzava / Bega-Timis         28         6         31         217.0         x         7         100           Timisoara         Bega / Bega-Timis         28         6         31         88.0         x         194           Timisoara         Bega / Bega-Timis         28         6         31         88.0         x         194           Deva         Mures         Mures         6         31         88.0         x         75           Turda         Mures         Mures         60.0         x         70         70           Hunedoara         Mures         Mures         81.5         x         70         70           Alba lulia         Mures         Mures         60.0         x         70         70         70           Hunedoara         Mures         Mures         33.0         x         x         70         70           Abba lulia         Mures         Mures         33.0         x         x         x         70           Arad	15	1475	162.97	3241	1149	1026.3	194.6	277.23	118.84	223.51	163.2	1121	1050	1941	499.6	66.14	151.82	202.5	366.74	267.06	414	276.8	248	388.6	1895	53330		
Resita         Bârzava / Bega-Timis         3         4         5         6         7         8         9         10 1112         13           Resita         Bârzava / Bega-Timis         28         6         31         217.0         x         100           Timisoara         Bega / Bega-Timis         28         6         31         217.0         x         194           Timisoara         Bega / Bega-Timis         28         6         31         217.0         x         194           Deva         Mures         Mures         Mures         61.9         x         70           Turda         Mures         Mures         60.0         x         70           Hunedoara         Mures         Mures         60.0         x         70           Medias         Mures         Mures         35         46.1         x         70           Alba lulia         Mures         Mures         35         39         153.0         x         70           Medias         Mures         Mures         35         46.1         x         70           Aba lulia         Mures         33         47         35         x         30	7	5,986	10,420	70,618	28,650	22,238	15,200	12,907	5,560	3,154	8,350	11,000	26,450	25,600	8,782	8,610	12,235	17,360	21,583	31,197	37,950	9,682	5,200	8,360	55,700	89,200		
Resita   Barzava / Bega-Timis   11   45   35.1 ×			8		94	75	8	70	60		70			40		50		54	70			06	26	80		1		į
Resita         Bárzava / Bega-Tímis         3         4         5         6         7         6         9         10           Resita         Beara / Bega-Tímis         11         45         35.1 x         8         9         10           Timisoara         Bara / Bega-Tímis         28         6         31         27.0 x         7 <th< td=""><td>13</td><td></td><td>-</td><td></td><td>-</td><td></td><td></td><td></td><td>-</td><td></td><td></td><td>3</td><td>7</td><td>2</td><td></td><td></td><td></td><td></td><td>1</td><td>2</td><td>3</td><td></td><td></td><td></td><td>2</td><td></td><td></td><td></td></th<>	13		-		-				-			3	7	2					1	2	3				2			
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Resita         Bárzava / Bega-Timis         3         4         5         6         7         8           Resita         Bárzava / Bega-Timis         28         6         31         217.0 x         70.2           Timisoara         Bega / Bega-Timis         28         6         31         217.0 x           Timisoara         Bega / Bega-Timis         28         6         31         217.0 x           Turda         Mures         Mures         47         70.2           Deva         Mures         Mures         60.0           Alba Iulia         Mures         Mures         60.0           Hunedoara         Mures         Mures         60.0           Alba Iulia         Mures         77.1 x         70.2           Alba Iulia         Mures         Mures         60.0         60.0           Alba Iulia         Mures         Mures         60.0         60.0           Alba Iulia         Mures         Mures         81.5         7         7           Alba Iulia         Mures         Mures         7         2         1         1         1         1         1         1         1         1         1         1 <t< td=""><td>9</td><td></td><td></td><td></td><td>×</td><td></td><td></td><td>_</td><td></td><td>Н</td><td>×</td><td>×</td><td>×</td><td>×</td><td>Н</td><td>×</td><td></td><td>×</td><td>×</td><td>×</td><td>×</td><td>×</td><td>×</td><td>×</td><td>×</td><td></td><td></td><td></td></t<>	9				×			_		Н	×	×	×	×	Н	×		×	×	×	×	×	×	×	×			
Resita         Bárzava / Bega-Timis         3         4         5         6         7           Resita         Bárzava / Bega-Timis         28         6         31         45         35.1           Timisoara         Bega / Bega-Timis         28         6         31         217.0           Timisoara         Bega / Bega-Timis         28         6         31         217.0           Deva         Mures         Mures         47         70.2           Turda         Mures         Mures         60.0           Hundoara         Mures         60.0         60.0           Hundoara         Mures         72         39         153.0           Arad Medias         Mures         Mures         72         39         153.0           Arad Mures         Mures         37         39         153.0           Arad Mures         Mures         32         32         36.3           Arad Mures         Mures         32         32         36.3           Arad Mures         Mures         32         32         32.0           Arad Mures         Mures         32         32.4         32.4         32.4           Arad Mures	ď		×		×	×	×	×	×		×	×	×	×		×		X	Х	×	×	×	×	×	×			
Resita         Bărzava / Bega-Timis         3         4         5         6           Resita         Bărzava / Bega-Timis         28         6         31         45           Timisoara         Bega / Bega-Timis         28         6         31         47           Timisoara         Bega / Bega-Timis         28         6         31         47           Deva         Mures         Mures         Mures         47           Turda         Mures         Mures         47           Alba Iulia         Mures         33         43           Medias         Mures         33         43           Medias         Mures         35         43           Medias         Mures         35         43           Arad         Mures         35         43           Calau         Criss         22         54         24           Zalau         Criss         2alau         Criss         36           Zalau         Somes         Somes         36         37           Bistrita         Somes         36         37         38           Alexandria         Vedea         13         12         13     <	<b>a</b> 0		_			_							_		×		_	1			)	1	][	)				
Resita         Bárzava / Bega-Tímis         3         4         5           Resita         Bárzava / Bega-Tímis         28         6         31           Timisoara         Bega / Bega-Tímis         28         6         31           Deva         Mures         Mures         8         31           Deva         Mures         Mures         8         31           Deva         Mures         Mures         8         31           Turda         Mures         Mures         33           Alba lulia         Mures         Mures         33           Medias         Mures         37         39           Medias         Mures         37         39           Arad         Mures         Mures         55         24           Arad         Mures         Mures         55         24           Arad         Cris         2aláu / Crasna         19         9           Bistrita         Somes         Somes         9         9           Bais Mare         Somes         30         9         9           Alexandria         Vedea         13         13         8           Curtea de Arges	7	35.1	61.1	217.0	88	70.2	61.9	0.09	81.5	17.4	46.1	153.0	196.0	220.0	35.2	35.1	36.3	51.4	131.4	149.9	300.0	59.4	33.0	45.0	197.0	2,500.0		
Resita         Bárzava / Bega-Timis         3         4           Resita         Bárzava / Bega-Timis         28         6           Timisoara         Bega / Bega-Timis         28         6           Turda         Mures / Mures         28         6           Deva         Mures / Mures         8         6           Turda         Mures         7         6           Alba lulia         Mures         8         7           Hunedoara         Mures         37         5           Medias         Mures         37         5           Arad         Mures         37         5           Arad         Cris         2aláu / Crasna         19           Bistrita         Somes         5         5           Bistrita         Somes         8         8           Baix Mare         Somes         9         12           Alexandria         Vedea         13         12           Curtea de Arges         Arges         13         12           Campulung Muscel         Târgului / Arges         8         13           Priesti         Dâmbovita / Arges         24         10	9	45				47									43									46				
Resita	2			31	31							39		24							6		13	8	25			
Resita Bárzava / Bega-Timis Resita Bárzava / Bega-Timis Timisoara Bega / Bega-Timis Timisoara Bega / Bega-Timis Timisoara Bega / Bega-Timis Timisoara Bega / Bega-Timis Turda Mures Mures Alba Iulia Mures Mures Mures Mures Mures Mures Mures Mures Mures Arad Mures Calau Zaláu / Crasna Zalau Zaláu / Crasna Bistrita Somes Bistrita Somes Baia Mare Somes Curtea de Arges Campulung Muscel Târgului / Arges Campulung Muscel Târgului / Arges Campulung Muscel Târgului / Arges Campuluresti Dâmbovita / Arges Bucuresti Dâmbovita / Arges	4	11		9	9								22	54		19							12	13	10	8		
Resita Resita Resita Timisoara Timisoara Turda Deva Turda Alba lulia Hunedoara Medias Medias Medias Tg. Mures Arad Oradea Zalau Bistrita Bistrita Bistrita Baia Mare Curtea de Arges Curtea de Arges Campulung Muscel Priesti	3			28	78	_			-			37		22							6		13	8	24			
Resita Resita Resita Resita Timisoara Timisoara Deva Turda Alba lulia Hunedoara Medias Medias Medias Tg. Mures Zalau Zalau Zalau Bistrita Bistrita Baia Mare Curtea de Arges Campulung Muscel Priesti	2	Barzava / Bega-Timis	Barzava / Bega-Timis	Bega / Bega-Timiş	Bega / Bega-Timis	Mures / Mures	Mures	Mures	Mures	Mures	Mures	Mures	Mures	Cris	Zaláu / Crasna	Zalău / Crasna	Somes	Somes	Somes	Somes	Somes	Vedea	Arges	r. Tårgului / Arges	Arges	Dâmboviţa / Arges		
	1	Resita	Resita	Timisoara	Timisoara	Deva																					55 Predeal	
그마마마마마마마마마마마마만의의의의의의의의의의의의	0	30	31	32	33	怒	35	98	37	88	39	9	41 //	42	43 2	4	45 E	46 E	47 8	48 E	49 C	20	51 C	52 C	33	54 B	ιχ Τ	

-	2	23	24	25	26	27	82	29	8	5	3,	3
Resita	BÔrzava / Bega-Timis							9	108	43	\ \ !	
Docito	ROzava / Bega-Timis							96	227	74	12	
	Dogs / Bons-Timis							650	1972	374	41	
Timisoara	Boos / Boos Timis	1996		1999				456	872	174	31	
Hirisoara	Dega / Dega	1007		1999				210	624	123	21	
Deva	Mures / Mures	3						168	352	224	_	
Turda	Mures		300		000,		+	19	415	23.4	-	
Alba Iulia	Mures	-	1996		220		+	3 6	2 2	5 6	+	
Hunedoara	Mures							2	ဂ	77	+	
Medias	Mures							1	- 6	1	-	
Medias	Mures							133	79	04	1	
To Mires	Mures							48 <u>4</u>	160	9	2	
	Miros							620	210	8	-	
	ris C		1997		1998		2	1405	009	105		
g								52	160	8	10	
Zalau	Zalau / Crasila			300				ac	180	-	,	
	Zalau / Crasna	1997		1999				2	3	-	+	
Bistrita	Somes										+	
Bistrita	Somes		1996		1998			<u>\$</u>	304	230	+	
Satu Mare	Somes							308	328	105	-	
Baja Mare	Somes							267	228			
	Comoo		1997		1998			214	394	153		
1	Vodes		1997					131	107	73	48	
Alexandria	pana A						3.6	104	200	52		
Curtea de Arges	Arges					1.5		152	424	45	5	
Campulung Muscel	r. Tirgului / Arges					5,	21.0	1000	1510	272	32	
	Arges						3, 16	200	2 3	2/3/2	7,	
Bucuresti	DÔmbovita / Arges	1991		1998				10600	14120	3363	444	
Predeal	0											
				i								_

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Notes on Hot Spots- MUNICIPAL:
 a- raw water load = in TPE, which is entering the waste water treatment plant (WWTP)
   TPE - one thousand population equivalents (1 population equivalent = 60 g/d BOD)
 b-Type of waste water treatment:
   NO - discharge via sewage system into the water, no treatment
   MU | mechanical treatment
   BIO completely biological treatment
   P - 中-elimination
  bP - biological P-elimination
  chP - chemical P-elimination
  N - N-elimination
c- final capacity = capacity of the final reconstructed, upgraded or newly built WWTP***
d- estimated level of remaining pollution in t/a = pollution load expected to be discharged
  after reconstruction / upgrading or construction of new WWTP
e- remarks
  r - rehabilitation, upgrading
  e - extension
  n - new WWTP
  FS - feasibility study (necessary, in elaboration, approved)
2
  for column 44 = 1 means discharger flow is relatively stable
  for column 45 = the included number are the variability of the loads around the values
                 from column 17
  for column 47 = the numbers are the type of water users according from the EMISS
                 tables and those are:
                   1=food industry
                   2=chemical industry
                   3=pulp and papers industry
                   4=fertiliser industry
                   5=mining
                  6=iron and steel industry
                  7=metal surface treatment activities
                  8=textile industry
                  9=lether industry
                  10=agriculture
                  11=other industries
                  12=drinking water supply
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### Hot Spots - MUNICIPAL

L					c		1 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4		I WATER QU	PALITY INDICAT	page 3 of 4 WATER QUALITY INDICATORS AFECTED 1
				,	receiver		WAIER GUALIIY CAIEGURY	Y CALEGORY		IN RECEIVER	R
Ser. No	Discharger/ Location	Receiver River/ Cachement area	REMARK S ⊭	Q efluent [m³/s]	multianu al average [m³/s]	Qrec	UPSTREAM	DOWNSTREAM D.O.REGIM NUTRIENTS	D.O.REGIM	NUTRIENTS	OTHERS
٥	1	2	35	36	37	88	39	40	÷	42	43
_	Calarasi	Danube	r+e, FS	0.268	2850	1/22201					
2	Giurgiu	Danube		0.261	2920	1/22682					
ო		Danube	n, FS	0.228	2200	1/96/19					
4		Danube	L	0.3964		1/13648					
2	Braila	Danube / Danube	n, FS	96/8/0	4700	15343	li (am.Braila)	II (Grindu-Reni)	BOD 2,8/4,3	BOD 2,8/4,3 NH40,25,0,36	
9	Botosani	Sitna- Prut	e/n, FS	977.0	0.39	1/1					
7	lasi	Bahlui / Prut	ľ	1.6996	3.77	1/2	D (Podu Iloaiei)	D (Holboca)	BOD 40,6/46	BOD 40,6/4(NH4 2,55/5,87	
8	Barlad	Siret	r + e	0.317	6.62	1/21					
6	Vaslui	Siret	r+e, FS	0.2706	3	1/11					
10	10 Onesti	Siret	L	0.5	34.4	1/69					
11	Roman	Siret	į.	0.2759	30.8	1/112					i
12	Focsani	Siret	9	0.4462	16.7	1/37					
13	Suceava	Siret	ا	0.9242	16.2	1/18					
14	Piatra Neamt	Siret	Э	0.504	49.3	1/98					
15	Bacau	Siret		1.281	110	1/86					
16	Buzau	Buzau	r, FS	0.813	24.8	1/31					477
17	Galati	Danube / Danube	n, FS	1.2129	4700	1/3875	II ( am Braila)	II (Grindu - Reni) BOD 2,8/4,3 NH4 0,25/0,	BOD 2,8/4,5	NH4 0,25/0,33	
18	Targoviste	lalomita / lalomita	r+e, FS	0.4122	999	1/16	ł (am. Tårgovişte)	i (Băleni)	COD 3,2/4,2	P 0,052/0,096	
19		laiomita	r+e, FS	0.2265	41	1/181					
8	Ploiesti	lalomita	r + e	1.2874	8.6	1/7					
21	Sf. Gheorghe	NO!	1	0.2672	6	1/34					
22	Slatina	OII	е	0.4765	147	1/308					
23	Rm. Valcea	Oit / Oit		0.669	133	1/184	I (am Rm Vâlcea)	II (Drăgășani)	COD 22,4/35,5 P 0,079/0,2	2,0/079/0,2	
24	Sibiu	Oit	e, FS	0.9988	366	1/396					
ĸ	Brasov	Off	r + e	1.6204	4.57	1/3					
26	Petrosani	Jiu	e, FS	0.9703	11.2	1/12					
27	Tg. Jiu	Jiu	e, FS	0.564	25.6	1/45					
88	28 Craiova	Jiu / Jiu	u	1.3698	93.2	1/88	l (Racari)	II (Podari)	BOD 4,1/4,7 NH40,13/2,8	VH40,13/2,8	
ଷ		Timis		0.2451	36.8	1/150					

-		2	35	98	37	88	39	9	¥	45	5
Resita		Barzava / Bega-Timis		0.1898	4.4	1723	l (Crivaia)	i (Moniom)	COD 3,8/6,	5NH40,3171	COD 3,8/6,5 NH40,31/1,5 P 0,039/0,26
Resita		Bârzava / Bega-Timis	6	0.3304	4.4	1/13	I (Crivaia)	I (Moniom)	COD 3,8/6,	SNH40,31/1,	COD 3,8/6,5/NH40,31/1,5/P 0,039/0,26
Timisoara		Bega / Bega-Timis	r + 6	2.2383		1/10	I (am. Timisoara)	(Otelec)	BOD 2,7/5	BOD 2,7/9,5[11H40]28/4,31	31
Timisoara		Bega / Bega-Timis	ت + e	0.9845	22.2	1/23	I (am. Timisoara)	III (Otelec)	BOD 2,7/9,	5N140,28/4	31
34 Deva		Mures / Mures	ø	0.7052	160	1227	II (Ghelmar)	II (Branisca)	COD 26,77.	COD 26,7/2 NH4 0,6/0,7	
Turda		Mures	9	0.482	23.8	1/49					
Alba lulia		Mures	0	0.4083	106	,					
Hunedoara		Mures	e, FS	0.1783	5.57	1/32					
38 Medias		Mures		0.1	12.1	1/121					
39 Medias		Mures	FS	0.2648	12.1	1/46					
To. Mures		Mures	r, FS	0.3488	33.5	1/96					
Arad		Mures	6 + <i>1</i>	0.8387		1/199					
Oradea		Cris	_	1,7831		1/13					
43 Zalau		Zaláu / Crasna		0.2785	99'0	1/2	I (up. Zalǎu)	III (Borta)	BOD /10,1	NH4 17.4	P A0,56
Zalau		Zalău / Crasna	e, FS	0.273	99.0		I (up. Zatău)	III (Borla)	BOD /10,1	NH4 17.4	P .0,56
45 Bistrita		Somes	e, FS	0.3886	7.62	1/20					
46 Bistrita		Somes	e, FS	0.5505		1/14					
47 Satu Mare		Somes	r, FS	0.6844	122	1/178					
Baia Mare		Somes	FS	0.9833	5.73	1/6					
49 Cluj		Somes	r + e	1.2034	14.3						
Alexandria		Vedea	r + e, F	FS 0.307	7.83	1/28					
51 Curtea de Arges		Arges		0.1649	9.32						
Campulung Muscel	-e	r. Tårgului / Arges		0.2651	4.3	1/16	I (Voina)	I (Piscani)	BOD 2,2/3,	BOD 2,2/3,7/P 0,01,0,02	
Pitesti		Arges	r, FS	1.7662		1/20					
54 Bucuresti		Dâmbovița / Arges	u	5.9995	13.3	1/2	I (Dragomiresti)	D (Budesti)	BOD 6,1/4€	BOD 6,1/45, NH4 1,6/11,5	5
55 Predeal			0								
uns											

### Hot spots - MUNICIPAL

		 	SFASONAL	ROOT	DOWNS	DOWNSTREAM	NATURE OF		CARACTERIST	OF PROBLEMS OF	CARACTERISTIC OF PROBLEMS CREATER IN PROGRESSION	page 4 of 4
Discharger/ Location Receiver Kiver/ Cachement VARIATION area	Receiver Kiver/ Cachement VARIATION area	IATION	CA EMIS EMIS	CAUSES OF EMISSION	RECE WAT	NSEKS OF THE RECEIVING WATERS	IMPLICATION OF H.S.		INTENSITY DURATION SENSITIVITY OF OF AFFECTION AFFECT DOWNSTREAM	SENSITIVITY OF DOWNSTREAM	SENSITIVITY OF TRANSBOUNDAR	CRITICAL FEATURES OF
1 2 44 LOAD	r-LOW LOAD	LOAD			TYPE	FLOW	PROBLEM CAUSE	AFFECTED		USERS	Y AREA	TRANSBOUNDARY
Calarasi Danube		2	9		1.5	84	49 50	51	52 53	2		EFFECTS
ı	Danube									5	8	98
	Danube			+	1							
	Danube			$\dagger$								
	Danube / Danube			$\dagger$	15							
	Sitna- Prut			$\dagger$	71	1,2		2 km	permanent	WS	000	
- 1	Bahlui / Prut			+	5						SE	
- 1	Siret			$\dagger$	2	0,002		1-2 km	permanent	WS impation	John	
9 Vaslui Siret	Siret			$\dagger$	+						8	
10 Onesti Siret	Siret			+								
11 Roman Siret	Siret			$\dagger$	+	1						
	Siret			+								
	Siret			+								i
14 Piatra Neamt Siret	Siret			+								
15 Bacau Siret	Siret			+								
16 Buzau Buzau	Buzau			+	+							
17 Galati Danube / Danube	Danube / Danube			+	,	000						
18 Targoviste Ialomita / Ialomita	lalomita / talomita			+	, incoming	87,0	+	1-2 km	permanent	WS, fisheries	301	4.4
19 Slobozia Ialomita	lalomita			+	"igaliOi!	0,6/		2 km	permanent	irngation		
	lalomita			+	+	+						
orghe	Oit			+	-			-				
	Oit			+		-						
/alcea	/Oit	$^{+}$		15	12 daint w	000						
Ott				1		67,0	2	2 km	permanent	WS. irrigation		
Brasov	tiC.			+								
ini	liu			+	+	+						
27 Tg. Jiu	nii			$\downarrow$	+	+						
6	-	1		+	+	+		-				
29 Lugoj Timis				+	<del> </del>	+	2 km	E	permanent	WS, irrigation		
			Tonas and the last of the last	_	_	_	_	_				_

page 4 of 4	85																											-
	32	WS. impation	WS irrination	and and	yes	, jes																						
	2			irrination	anigation.	W.S. smoothes	To, Illigarion								WS irrigation	W.S. irrication								W.S. irrinotion	ingain.	initiation	lough.	
-	53	permanent	permanent	Dermanent	Dermanent	Dermanent									permanent	Dermanent								permanent		permanent	Τ	
ž	+	I - Z WIII	1 - 2 km	2 km	2 km	2 km									1 - 2 km	1 - 2 km								2 km		4 km		
49 50																												
47 48		12	+		•	1 0,01								-	-	0,03								0,23				
97																												
4 45	-	1 0,54-1,63	1 06245	1 031 237	1 0.30.5	0,30-6,0			-						09-14 081-110	500							1 0 42 1 81	2.	1 0 36 6 7	1,20-3,7		1
BOrrava / Bong Timin	DO	DOIZAVA / Bega- l imis	Bega / Bega-Timis	Bega / Bega-Timis	Mures / Mures	Mures	Mures	Mures	Mures	Mures	Mures	Mures	Cris	Zalau / Crasna	Zalau / Crasna	Somes	Somes	Somes	Somes	Somes	Vedea	Arges	r. Tirgului / Arges	Arges	Dômbovita / Arges	C		T
30 Resita	31 Resita	22 Timis	32 Imisoara	33 Timisoara	34 Deva	35 Turda	36 Alba lufia	37 Hunedoara	38 Medias	39 Medias	40 Tg. Mures	41 Arad	42 Oradea	43 Zalau	44 Zalau	45 Bistrita	46 Bistrita	47 Satu Mare	48 Baia Mare				ulung Muscel		·#7	55 Predeal	Sum	

Hot spots - MUNICIPAL HIGH PRIORITY

			_	<del></del>	1		T=-	,			_		<b>,</b> .	<b>,</b>		·	,
	FINAL CAPACITY (TPE)		Z		55		\$		150		88	150		8	8	3,500	5,150
		OTHERS	21														
	W &	등	8														
	TOTAL LOAD DISCHARGED INTO RECIVING WATERS T/year	PATHOGENS	19														
	3ED INT T/year	_	82	223	60.4	293	277	71.7		97.7	75	52.4	45.6		23	2218	3437
	CHARGE T	z	4	952	368	1044	985	235	122.52	9/9	316	186.2	162.3	20.35	82	10872 2218	16021 3437
	LOAD DIS(	900	9		1930	0999	888	1780.09	284.47	3952	1453	1780	563.47	222.64	90/	70686	515,654 80473.6 96097.67
	TOTAL	BOD	15	4886	1750	6428	6071	1475	162.97	3241	1149	1026.3	499.6	66.14	388.6	53330	80473.6
	Waste water volume discharged Tm³/y		*	27,740	53,600	38,250	43,200	5,986	10,420	70,618	28,650	22,238	8,782	8,610	8,360	189,200	515,654
	Curent capacity of WWTP (TPE)		13		450				100		194	75		S	80		949
	*	a Z	10 11 12	_			H						F				
	Curent	No MulBio N	9 10		×						X			×	×		
		No	8	×		×	×	×	×	×	×	×	×	×	×	×	
,	Raw water load (TPE)		7	230.0	310.0	300.0	283.0 x	35.1	61.1	217.0	88.0	70.2	35.2	35.1	45.0	2,500.0	4,209.7
STS	PNA PM 97		9	41		42	44	45				47	43		46		
SUS LI OF	2, <del>1</del> a		2	5	19	17	82			31	31				8		
PREVIOUS LISTS OF	PNA PM 86		•		1		59	11		9	9			19	13	8	
PR	SAP 93		3	5	18	16	27			28	28				8		
	Receiver River/ Cachement area		2	Danube / Danube	Bahlui / Prut	Danube / Danube	Jiu / Jiu	Barzava / Bega-Timis	Barzava / Bega-Timis	Bega / Bega-Timis	Bega / Bega-Timis	Mures / Mures	Zalău / Crasna	Zalău / Crasna	r. Tårgului / Arges	Dâmbovița / Arges	
	Discharger/ Location			Braila	lasi	Galati	Craiova	Resita	Resita	Timisoara	Timisoara		Zalau	Zalau	Campulung Muscel	Bucuresti	Sum
	Ser. No			2	7	17	28	೫	31	33	೫	34	43	44	25	2	
			_						لب				لببا	لببنا	لبسا	لب	

Place of municipal hot spots from high priority list

_	f	
=	:	Tabel 2.2.1.2.
Place	DISCHARGER NAME OF	Transboundary
	ECONOMIC UNIT	transfer of polution
-	Braila	yes
2	Galati	sak
က	Zalau	yes
4	Craiova	sak
5	Resita	yes
9	Campulung Muscel	
7	Deva	
8	Timisoara	yes
6	Bucuresti	yes
10	lasi	yes

			•				;					·	Tabel	Tabel 2.2.1.1.	
Ser	Discharger/ Location	Receiver River/	DATE OR POSSIBLE DATE FOR STARTING OF	OR E DATE RTING	START OR POTENTIAL START OF		COST ESTIMATE FOR TREATMENT	T VTE ENT	ESTIN	ESTIMATED LEVEL OF REMAINING POLLUTION	LEVEL OF POLLUTION	OF R	EMA	NING.	
2		Cachement area	CONSTRUCTION (MONTH/YEAR)	JCTION YEAR)	OPERATION YEAR		PLANT (millon D-	⊢ d ⓒ	l	•	- T / yēar -	<u>.</u>			
			В	Q.	8	d Ž	8	₫	00 00 00 00	8	z	ď	OIL OIL	OTHERS	
		2	23	24	52	92	Z	82	83	8	5	g	8	75	
ß	Braila	Danube / Danube							98	826	<u>8</u>	13			
7	lasi	Bahlui / Prut	1997		1999		75.5		88	158	8	श्र	T		
17	Galati	Danube / Danube			933				8	128	232	18			
28	28 Craiova	Jiu / Jiu	1996		2000				74	218	888	8		j	
8	30 Resita	Bârzava / Bega-Timis							8	<u>8</u>	8	7	-		
31	Resita	Bârzava / Bega-Timis						-	8	227	74	12			
32	Timisoara	Bega / Bega-Timiş							88	1972	374	4			
8	Timisoara	Bega / Bega-Timiş	1996		1999				<del>2</del>	872	174	अ			
क्ष	34 Deva	Mures / Mures	1997		1999				210	624	133	77			
8	43 Zalau	Zalău / Crasna							25	<u>8</u>	8	5			
4	44 Zalau	Zalău / Crasna	1997		1999				8	8	F	7	-		
22	Campulung Muscel	r. Tårgului / Arges					1.3		152	424	£	2	-		
8	54 Bucuresti	Dâmboviţa / Arges	1991		1998				10600 14120	14120	3363 44	4	-		
	Sum								13488 22101	22101	5220 661	8			

Hot spots - MUNICIPAL HIGH PRIORITY

								WATER OUA	WATER OIJALITY INDICATORS AFFOTED	SAFFCTED
						WATER QUAL	WATER QUALITY CATEGORY		IN RECEIVER	
	Receiver River/	REMARK	وا اوم	receiver multianual	Qef					
Ulschargen Location	Cachement area	s s	[m <sub>3</sub> /s]	average [m³/s]	Qrec	UPSTREAM	DOWNSTREAM	D.O.REGIM	NUTRIENTS	OTHERS
	2	35	8	37	38	39	04	¥	42	43
Braila	Danube / Danube	n, FS	0.8796	4700	1	1/5343 II (am. Braila)	II (Grindu-Reni)	BOD 2,8/4,3	NH4 0,25/0,35	
lasi	Bahlui / Prut	_	1.6996	3.77	1/2	D (Podu Iloaiei)	D (Holboca)	BOD 40,6/46,6	NH4 2,55/5,87	
Galati	Danube / Danube	n, FS	1.2129	4700		1/3875 III (am.Braila)	II (Grindu - Reni)	BOD 2,8/4,3	NH4 0,25/0,35	
Craiova	Jiu / Jiu	u	1.3698	93.2	1/68	l (Racari)	II (Podari)	BOD 4,1/4,7	NH4 0,13/2,8	
Resita	Barzava / Bega-Timis		0.1898	4.4	1/23	I (Crivaia)	II (Moniom)	COD 3,8/6,5	NH4 0,31/1,53 P 0,039/0,26	P 0,039/0,26
Resita	Bârzava / Bega-Timis	6	0.3304	4.4	1/13	I (Crivaia)	I (Moniom)	COD 3,8/6,5	NH4 0,31/1,53	P 0,039/0,26
Timisoara	Bega / Bega-Timiş	r + e	2.2393	22.2	1/10	I (am. Timisoara)	III (Otelec)	BOD 2,7/9,5	NH4 0,28/4,31	
Timisoara	Bega / Bega-Timiş	L+0	0.9845	22.2	1/23	I (am. Timisoara)	III (Otelec)	BOD 2,7/9,5	NH4 0,28/4,31	
Deva	Mures / Mures	0	0.7052	160	1/227	II (Ghelmar)	II (Branisca)	COD 26,7/27,7	NH4 0,6/0,7	
Zalau	Zalău / Crasna		0.2785	99.0	1/2	I (up. Zalău)	III (Borla)	BOD /10,1	NH4 /7,4	P /0,56
Zalau	Zalău / Crasna	e, FS	0.273	99'0	1/2	I (up. Zalău)	III (Borla)	BOD /10,1	NH4 17,4	P /0,56
Campulung Muscel	r. Tårgului / Arges	ľ	0.2651	4.3	1/16	l (Voina)	l (Piscani)	BOD 2,2/3,7	P 0,01/0,02	
Bucuresti	Dâmboviţa / Arges	u	5.9995	13.3	1/2	I (Dragomiresti)	D (Budesti)	BOD 6,1/45,9	NH4 1,6/11,5	
Sum										

### Hot spots - MUNICIPAL HIGH PRIORITY

					ROOT	DOWNSTBEA	MADEL								Tabel 2 2 1 1
Discharger/	rder/	Pocional Prince	SEASONAL		CAUSES	USERS OF TH	OFTHE	NATURE OF	R OF		CARA	CTERISTIC OF	PROBLEMS CRE	CARACTERISTIC OF PROBLEMS CREATED IN RECEIVER	
Location		Cachement area	VARIATION		Q.	RECE	RECEIVING	IMPLICATION OF	FION OF	SIZE OF	SIZE OF INTENSITY		SENSITIVITY	SENCITIVITY	CRITICAL
					EMISSIO	WAT	WATERS	H.S. IN	z	AREA	Ą	DURATION OF			FEATURES OF
			FLOW	LOAD	z	TYPE	A)C II	PBOBI EN	Laile	AFFECTED	AFFECT	AFFECT	DOWNSTREAM	AAUNOOON A	TRANSBOUNDAR
-		2	44	45				COULLING	CAUSE				USERS	YAKEA	( FOLULI )
Braila		Danube / Danuba			9	14	48	48	20	51	52	53	35	25	בריוניים
lasi		Bahlui / Prut				7	1,2			2 km		permanent	S/M	30%	20
17 Galati		Danuba / Danuba	-   -			9	0,002			1-2 km		permanent	irrigation	700	
28 Craiova		Jin / Jin	- 1	0,00		_	0.29			1-2 km		permanent	Г	200	
30 Resita		BOrzava / Bega-Timic	-	0,8-1,22		-				2 km		permanent	Т	3	
31 Resita		Bôrzava / Bega-Timis	1	0 54 4 62						1 - 2 km			WS, irrigation		
32 Timisoara		Bega / Bega-Timis		0.5.245		7	0,02			1 - 2 km			WS, irrigation		
Timisoara		Bega / Bega-Timis	1	0.31-2.37						2 km		permanent	Γ	yes	
Deva		Mures / Mures	1	0.38-2.5			. 0			2 km		permanent	irrigation	yes	
Zalau		Zalau / Crasna				-	0,0			2 km		permanent	WS, irrigation		
44 Zalau		Zalau / Crasna	0.9-14 0 81-1 19	1-1 19			, 6			1 - 2 km		permanent	WS, irrigation		
gunindute	Mus	52 Campulung Mus r. Tirgului / Arges	1 0 4	0 43-1 81		2 4	50,0			1 - 2 km		permanent	WS, imigation		
54 Bucuresti		Dômbovita / Arges	-	0.26.5.7		,	67,0		7	2 km		permanent	WS, irrigation		
Sum					+	•			4	4 km		permanent	irrigation		
			_		_			_			-				

Tabel 2.2.2.1		ERS FINAL CAPACITY (TPE)	OTHERS	21 22	140	150	290
	i	TOTAL LOAD DISCHARGED INTO RECIVING WATERS T/year	PATHOGENS OIL 0	L			
		tharged in Tíyear	4	7 18	131 29	4	371 78.3
		LOAD DISC	000	16	191	902	1093
	·	·	gog	15	158	849	1007
		Curent Waste capacity water of volume WWVTP discharged (TPE)		*	13,000	21,100	34,100
		Curent capacity of WWTP (TPE)	۵	12 13	100	150	250
		Curent	No MulBio N P	8 8 10 11 12	××	×	
		Raw water load (TPE)		7	70.0	104.0	174.0
100	o S	PNA PM 79		9	36	45	
Coll Sello	HOT SPOTS	PNA Tab PM 2.2		2		,	
VIDO	Y I	SAP Pr		3	34	29	
		Receiver River/ Cachement area		2	lalomita / lalomita	Oit / Oit	
		Discharger/ Location		-	Targoviste	Rm. Valcea	Sum
Γ		Ser. No		1	Ή	23	

Place of municipal hot spots from medium priority list

		l abel 2.2.2.2.
Place	Place DISCHARGER NAME	Transboundary
	OF ECONOMIC UNIT transfer of polution	transfer of polution
1	Targoviste	
7	Rm. Valcea	

	dary	olution			
	Transboundary	transfer of po			
	e DISCHARGER NAME	OF ECONOMIC UNIT transfer of polution	Targoviste	Rm. Valcea	
Į	е		H	=	l

### Hot spots - MUNICIPAL MEDIUM PRIORITY

		_		_	_	
Tabel 2.2.2.1.	ESTIMATED LEVEL OF REMAINING POLLUTION - T/year -	OTHERS	34			
-	χ. Έ	P O	33			
	주 10 <b>. *</b>	۵	32	12	21	33
	LEVEL ÖF I POLLUTION - T / year -	z	34	73 12	133 21	206 33
	MATED P	<b>a</b> 00	30	114	540	654
	ESTI	GOS	53	64	300	364
	ATE ATE AENT AENT AT	Q.	28			
	COST ESTIMATE FOR TREATMENT PLANT (milion D-	63	12		4	
	START OR POTENTIAL START OF OPERATION YEAR	σ/N	98			
	STAF POTE STAF OPER YE	60	25			
	OR E DATE RATING: JCTION YEAR)	ďΛ	24			
	DATE OR POSSIBLE DATE FOR STARTING OF CONSTRUCTION (MONTH/YEAR)	60	23			
	Receiver River/ Cachement area		2	lalomita / lalomita	Olt / Olt	
	Discharger/ Location		•	Targoviste	23 Rm. Valcea	Sum
	Ser. No			18	23	

### Hot spots - MUNICIPAL MEDIUM PRIORITY

										-	abel 2.2.2.1.
					Q		WATER QUALITY CATEGORY	r category	WATER QUALI	WATER QUALITY INDICATORS AFECTED IN RECEIVER	SAFECTED
Ser	Discharger/	Receiver River/ Cachement REMARK area		Q efluent [m³/s]		Qrec	UPSTREAM	DOWNSTREAM D.O.REGIM		NUTRIENTS OTHERS	OTHERS
	-	2	35	જ્	37	38	36	40	41	42	43
18	18 Targoviste	lalomita / lalomita	r+e, FS	0.4122	6.65	1/16	I (am. Tårgovişte)	l (Băleni)	COD 3,2/4,2 P 0,052/0,098	P 0,052/0,096	
ន	23 Rm. Valcea	OH / OH	F	0.669	123	1/184	li (am. Rm. Vālcea) III (Drăgăşani)	II (Drăgășani)	COD 22,4/35,5 P 0,079/0,2	P 0,079/0,2	
	Sum										

I A COLOUR DEAL CHANGE AND I

Tabel 2.		INTENSITY DURATION OF CENTER SENSITIVITY OF FATURES (
	SREATED IN R	SENSITIVITY OF TRANSBOUNDARY
	CARACTERISTIC OF PROBLEMS CREATED IN RECEIVER	SENSITIVITY OF
	ACTERISTIC (	DURATION
	CAR	INTENSITY
		SIZE OF 1
:		IMPLICATION OF SIZE OF INTENSITY H.S. IN AREA OF
	DOWNSTREAM	
		CAUSES OF
		SEASONAL
		Receiver River/ Cachement area
		:harger/ cation

OF AFFECT DOWNSTREAM TRANSBOUNDARY

AREA

AREA

USERS

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WS. irrigation irrigation

permanent sermanent

CRITICAL FEATURES OF

RECEIVING WATERS

AREA OF AFFECTED AFFECT

CAUSE တ္တ

PROBLEM

F Vo

ΥPE ingation

FLOW LOAD

Jalomita / Jalomita \*O / HO

18 Targoviste 23 Rm. Valcea Eng

EMISSION

Discharger/ Location

Ser

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12 drink w

EFFECTS

L			Ĭ.	REVIOU	PREVIOUS LISTS OF	OF.											-	Tabel 2.2.3.1.
				된	HOT SPOTS													
Ser	Discharger/ Location	Receiver River/ Cachement					Raw	Curent	Curent	Waste water		TALLOAD	ETPOSIO.	אָרָרָהָ וּ	TOTAL LOAD DISCIEMACED INTO RECIVITIS WATERS	W STIL	AIERS	FINAL
2			SAP 83	₹ ₹ 8	Tab 2.2	7 ₹ 8 • <b>1</b> 7 6	load (TPE)	treatment*	of WWTP (TPE)	discharged Tm³/y				Туваг	<u></u>			CAPACITY (TPE)
							L <del></del>	Muldiplin	10		300	200	[					
	-	2	3	+	50	9	-	8 9 10 11 12	13	14	3 +	3	z	2	PATHOGENS	<u></u>	OTHERS	
-	Calarasi	Danube					78.8	×		8.460		2065	27.93	2	2	₹	2	72
7	Giurgiu	Danube					740	×	5	8.231		119.26				1		
m	Tulcea						97.6	×		7.190	4455	L				1		
4	Drobeta Tr. Severin	_					118.4	×		12 500		L				‡		
ω	Botosani	Sitna- Prut					128.3	×	8	24 440		80.08	2007	31.3		1		
00	Barlad	Siret					79.7		08	7000	1	L		ı		1		188
6	Vaslui	Siret					803	₩	105	8 534	1	215	1	2 4		#		8
읟	Onesti	Siret					603	+	88	15,770				0		1		8
Ξ	Roman	Siret					81.9	×	110	8 700		1202	٤	1		+		2 5
12	Focsani	Siret					1009	+	5	14070	248 E	ľ	47,50	1		1		120
13	Suceava	Siret					1173	+	175	20120	1		2 7 7 7	T				180
14	Piatra Neamt	Siret					1256	+	5 5	16.400	l	1312	300	$\dagger$		1		1/5
15	Bacau	Siret					2000	+-	210	40.400	-		7 CTV	1		1		3
16	Buzau	Buzau					1406	+	3 6	77.0	ŀ		3	1		1		210
19	Slobozia	lalomita					12 15	+	3 8	17.77	1	1	3	1		1		82
8	Ploiesti	lalomita	T			T	3 2	\ \ \ \ \ \ \	3 8	1 2	1		192.1			1		130
	Sf Gheordhe	#iO				$\dagger$	28	-+-	3 8	30,00	80		88	339				380
1	Slatina	i	+		1	1	3 6		3 8	8,470	1	/28.1		1				8
-,-	Sibin	500	3		100	1	0.70	+	8 2	15,027	316							69
_	Brasov		7 4	C	3 0	1	8 8	-	ह	31,500	2834	3716						300
	Petrosani		20	B	9 8	1	077	×	R R R	51,100	2580		8	1				380
<del></del>	To lin	11.	77	1	3		0.25	×	8	30,600	897	88	102					120
	Les out	Timir	1		1		38	-	<u>8</u>	17,787	8	83						160
_	Turda	Marzo	†	1	1	1	200	×	8	7,729	218.5	284	130.64 42					\$
	Alba tulia	Mires	†			1	5 6	×	8	15,200	- 1	90808	342.3	0.55				<del>1</del>
	Hunedoara	Mires			+	†	2 4	× ;	5 8	12,907	277.23	525.87	312.3	1				100
88	Medias	Mures	$\dagger$		$\mid$		17 4 5	\ \ \	3	9,380	- 1	8 8	8 8	1				8
8	Medias	Mures	T		$\mid$	$\parallel$		×	R	25.8		3 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	4 8 8 4	<u> </u>		+		
_	Tg. Mures	Mures	37		8		1530	╄-	8	11 000	1	130	F &	3 5		$\dagger$		5 8
	Arad	Mures		R	-		1960	₩	280	26.450	1050	14545	278.5	1		+	1	38
	Oradea	Cris	22	2	24		220.0	₩	240	55.600	8	218	Į g	$\dagger$		$\dagger$		350
_		Zalău / Crasna		19			35.1	×	ક્ક	8.610	66 14	222 64	20.35	-		$\dagger$		3 8
_		Somes					36.3 x			12.235	151.82	1	244 24	-		+		3
-		Somes					51.4	×	R	17,360	202.5	<del>-</del>	343	-		+		8
-		Somes		_			131.4	××	170	21,583	366 74		16477	-		+		3 5
_	Mare	Somes					149.9	×	82	31,197	267.06					$\dagger$		2 8
_		Somes	6		6		300.0	×	310	37,950	414	8	516	f		+		3
-		Vedea					59.4	×	8	9,682	276.8		10905	96		+		3 4
_	de Arges	Arges	13	12	13		33.0	××	999	5,200	248	ł	87	4	-	+		3 8
		Arges	77	5	R		197.0	××	82	55,700	1885	3738	475	37		+		38
8	Fredeal		1											-		+		3
7	Sum		1	1		•	4,458.4		5,481	777,157	23630	29999 35289.61	7637.8	\$		+	$\frac{1}{2}$	8.208
												-				4		בי בי

4

9

POLLUTION - T / year -

(milion D-MARKS)

YEAR

CONSTRUCTION

Discharger/ Location

Ser. Ro

(MONTH/YEAR)

PLANT

START OF OPERATION

OTHERS

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Sitna- Prut

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Danube

Calarasi Giurgiu 8888

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Sf. Gheorghe Rm. Valcea

Buzau

Slobozia Ploiesti

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Buzau

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136 136 352 415

273 273 270 168

234 23 45

198 133

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1997

Mures / Mures

Timis

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Petrosani

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Brasov

Sibiu

Tg. Jiu

Lugo Deva Mures Mures Mures Mures Mures Mures

Alba fulia

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Turda

Medias Medias

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1998

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1997

Zalău / Crasna

Cris

Oradea

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Arad

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Zalau

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Tg. Mures

Somes Somes Somes Somes Somes

> Satu Mare Baia Mare

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Bistrita Bistrita

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308 267

228

				LOW PRIORITY		page 2 o
			POSSIBLE DATE POTENTIAL	START OR POTENTIAL	START OR COST ESTIMATE POTENTIAL FOR	ESTIMATED LEVEL OF BEMAININ
<u>~</u>	Discharger/	er. Discharger/ Receiver River/ Cachement	FOR STARTING	STARTOF	TREATMENT	POLLUTION
,			5	: C i	!: ;	i

L					O		WATER QUALI	WATER QUALITY CATEGORY	ן שאדבול מו	JACITY INDICATO IN RECEIVER	WATER QUALITY INDICATORS AFECTED IN RECEIVER
ű,		Receiver River/ Cachement	REMARKS	efluent	multianu	get					
۷	No Location	area		[m <sub>3</sub> /s]	average	Orec	UPSTREAM	DOWNSTREAM D.O.REGIM NUTRIENTS	DO.REGIM	NUTRIENTS	OTHERS
					[m <sub>3</sub> /s]						
	-	2	35	36	37	88	39	0\$	41	42	43
	1 Calarasi	Danube	r+e, FS	0.268	2860	1/22201					
`	2 Giurgiu	Danube		0.261	0265	5920 1722682					
	3 Tulcea	Danube	n, FS	0.228	2200	2200 1/9649					
	4 Drobeta Tr. Sevi	Tr. Seve Danube	E	0.3964	5410	5410 1/13648					
٣	6 Botosani	Sitna- Prut	e/n, FS	0.775	0.39 1/1	1/1					
۳	8 Barlad	Siret	r + e	0.317	6.6	1/21					
٥,	9 Vastui	Siret	r + e, FS	0.2706		3 1/11					
	10 Onesti	Siret	<u>-</u>	0.5	34.4 1/69	1,689					
	11 Roman	Siret	L.	0.2759	30.8	30.8 17112					
		Siret	е	0.4462		1/37					
	13 Suceava	Siret	<u>-</u> -	0.9242		1/18					
-	14 Piatra Neamt	Siret	е	0.504	Ì	1/38					
=	15 Bacau	Siret	ľ	1.281	110 1/86	1/86					
Ē	16 Buzau	Buzau	r, FS	0.813	7	131					
	19 Slobozia	lalomita	r+e, FS	0.2265		41 1/181					
7		latomita	r + e	1.2874	8	177					
7	1 Sf Gheorghe	Ď#	Į.	0.2672	6	91/34					
71		Off	0	0.4765	147	147 1/308	I (am. Rm. Vâlcea II (Drăgăşani)	ili (Drăgășani)			
24	4 Sibiu	Off	e, FS	0.9988	366	396 1/396					
श्व	5 Brasov	O#	60 + L	1.620 40	4.57 1/3	1/3					
N		Jiu	e, FS	0.9703	11.2 1/12	1/12					
27	7 Tg. Jiu	Jlu	e, FS	0.564	25.6 1/45	1/45					
ଷ		Timis	<b>L</b> .	0.2451	36.8	1/150					
ਲ	35 Turda	Mures	e	0.482	23.8	1/40					
ਨ ਨ		Mures	е	0.4033	106	106 17259					
37		Mures	e, FS	0.1763	5.57 1/32	133					
ස		Mures		0.1	12.1 1/121	1/121					
8		Mures	FS	0.2648	12.1 1/46	1/46					
8	D Tg. Mures	Mures	r, FS	0.3488	33.5	1/36					
4	1 Arad	Mures	r+e	0.8387	167 1/199	1/199					
4		Cris	<b>L.</b>	1,7831	23.6	1/13					
4		Zalàu / Crasna	e, FS	0.273	0.66 1/2	12	(up. Zaláu)	III (Borta)	BOD /10,1	NH4 17,4 F	P A0,58
₽		Somes	e, FS	0.3886	7.62	8					
46	5 Bistrita	Somes	e, FS	0.5505	7.62	1/14					
47	7 Satu Mare	Somes	r, FS	0.6844	122 1/178	1/178					
8	3 Baia Mare	Somes	FS	0.9893	5.73 1/6	1,6					,
6	) Chi	Somes	r + e	1.2034	14.3 1/12	1/12					
જ	) Alexandria	Vedea	r + e, FS	0.307	7.83 1726	1/26					
2	Curtea de Arges	Arges		0.1649	9.32 1/57	157					
ន	3 Pitesti	Arges	r, FS	1.7662	8.	8					
ıХ	55 Predeal										
	Sum				_						

Hot spots - MUNICIPAL LOW PRIORITY

L			L	[	1002	DOWNSTRE	TREAM				CARA	CTERISTIC	F PROBLEMS CF	CARACTERISTIC OF PROBLEMS CREATED IN RECEIVER	
Ser. No	Discharger/ Location	Receiver River/ Cachement area	SEASONAL	ONAL	CAUSES	USERS OF T RECEIVING	OF THE VING	IMPLICATION OF H.S. IN	TION OF		INTENSITY	DURATION	SENSITIVITY OF	SENSITIVITY OF TRANSBOUNDARY	CRITICAL FEATURES OF
			FLOW	LOAD	EMISSION	TYPE	FLOW	PROBLEM	CAUSE	AFFECTED		AFFECT	USERS	AREA	EFFECTS
	-	2	\$	45	84	47	₽₽	67	50	55	25	53	54	ĝç	56
-	Calarasi	Danube													
~	Giurgiu	Danube													
က	Tulcea	Danube													
4	Drobeta Tr. Seve Danube	Danube													
9	Botosani	Sitna- Prut													
80	Barlad	Siret													
ര	Vaslui	Sirot													
5	Onesti	Siret													
7	Roman	Siret													
12	Focsani	Siret													
13	Suceava	Siret													
4		Siret													
15		Siret													
16	Buzan	Buzau													
13	Slobozia	lalomita													
20	Ploiesti	lalomita													
7		OH.													
22	Slatina	Off													
24	Sibiu	Q¥													
25		O.F.													
92	Petrosani	Jiu													
27		Jiu													
29	Lugoj	Timis													
35		Mures													
8	Alba lulia	Mures													
37	Hunedoara	Mures													
38	Medias	Mures													
႙ၟ		Mures													
6		Mures													
4		Mures													
42		Cris													
4	Zalau	Zalău / Crasna	0,9-1,4 0,81-1	0,81-1		2	0.03			1 - 2 km	permanent		WS, irrigation		
4		Somes													
46		Somes													
4		Somes	$\int$												
48	Baia Mare	Somes													
48		Somes													
င္တ	Alexandria	Vedea													
5	Curtea de Arges	Arges													
23	Pitesti	Arges													
55	Predeal														
L	Sum														

### 2.3. Agricultural Hot Spots (A-HS)

Taking in view that a new chapter (3) was included in the content of the Part B referring to the "Identification of Diffuse Sources of Agricultural Pollution", a large volume of information about this activity was included there. There are statistical information about land utilisation, crop production, fertilisers and chemicals used, as well as about animal production, and the surface of land used.

Near data, with reference to the point source of pollution from agriculture, some data and information were collected and entered in the tables corresponding to this category (table 2.3.1. - cumulative).

As was organised in the case of municipal HS, it was also done in this case of agricultural HS. The total number of agricultural HS selected is 28. The tables used for agricultural HS and industrial HS have a smaller number of columns (34) because of these 2 categories, there were no data available referring to the next extensions or new constructions of WWTP. Thus the columns 7 - 14 from municipal HS tables are out and also columns 22 - 34. The other columns with requested data are included.

Note: The code number for agricultural and industrial HS are obtained from a unique cumulative table, as it was produced by the EMIS/EG based on the agreed procedures

### 2.3.1. High Priority (HP)

From the total number of agricultural HS =28, 4 High Priority (HP) hot spots were selected (table 2.3.1.1.). Two of them are also included in the list of hot spots produced for National Environmental Action Plan (PNAPM), last version 1997. Those are HS Nr, 113 and 22, which are on the first and the second place in table 2.3.1.2. with ranking A - HS - HP. Also information about transboundary effects are included in the table 2.3.1.2.

The transboundary effects, like in the case of municipal H.S., are referring to the fact that emissions from the H.S. are discharging shortly before international borders.

### 2.3.2. Medium Priority (MP)

In this category -MP were selected 6 A-HS (table 2.3.2.1.). After ranking the places of this HS can be seen in the table 2.3.2.2.

### 2.3.3. Low Priority (LP)

All HS there were not included in the categories HP & MP are included in this last one (LP) group and table 2.3.3.1, and the information referred to those sources are less, because of the lack of reliable data to characterise better this agricultural units.

### Hot Spots - AGRICULTURAL

1 800 2.1.		OTHERS	8 19							1,1 t/a Phen	0,1 t/a Phen										720										1000
		n P	7 18																		7										_
		Pb Zn	16 17																												_
	OADS																														
	ANT LO	Cu	15																												
	POLLU, tíyear	Mn	14											2										9							
	GED F	Fe	13											0										1,6							
	DISCHARGED POLLUANT LOADS týear	z	12	620	91	196	41	51	29	1.033	229	818	766	174	111	75	68	13	693	323	2.560	18	472	892			96				
	ä	SSM	11						172	3.931	482	1.629	3.082	279	23	303	110	70	131	2.765	29	88	10.231	1.179	38		295				
		BOD	10	352,0	49,5	306,6	260,0	245,0	379,0	5.363,0	432,0	3.043,0	2.709,0	76,2	40,0	301,0	32,0	72,0	429,0	481,0	15.768,0	208,0	575,0	485,6	25,1		280,0				
		COD	6	637,6	298,8	143,7	110,0	114,0	399,0	3.979,0	360,0	2.247,0	1.428,0	118,2	300,0	213,0	172,0	58,3		412,0	49,7	214,6	260,0	733,3			157,0				
	Problems / ISSUES Type of problem	•	8																												
	ECONOMIC SECTOR / NR.		7	agr10	agr10	agr10	agr10	agr10	agr10	agr10	agr10	agr10	agr10	agr10	agr10	agr10	agr10	agr10	agr10	agr10	agr10	agr10	agr10	agr10	agr10	agr10	agr10	agr10	agr10	agr10	
S 0F	PNA PM 97		9																												
PREVIOUS LISTS OF HOT SPOTS	Tab. 2.2		2																												
VIOUS HOT 8	PNA PM 95		4																												
PRE	SAP 93		3																												
	RECEIVER RIVER/ MAIN CACHEMENT AREA		2	Somes Mic/Somes-Tisa	Crasna/Somes-Tisa	Mures	Niraj/Mures	Mures	Mures	Birzava/Bega-Timis	Timis/ Bega-Timis	Bega Veche/.Bega-Timis	lalomita/lalomita	BuzauBuzau	Siret	Putna/Siret	Argintu/Siret	Cotatcu/Siret	Siret	Birladel/Siret	Bahluiet/Prut	Prut	Danube/Dunube	Danube/Dunube	Vlasia / Ialomita	Danube/Dunube	Ialomita / Ialomita				(
	Ser. DISCHARGER NAME OF No ECONOMIC UNIT		0 1	8 Agrocomsuin Bontida		Suinprod Salcud	Avicola Ungheni	Nutrimur Iernut	Comsuin Periam		8 Comseltest Padureni		101 Combilcarim Cazanesti	Dedulesti		106 Mark-Pork Vanatori		108 Martincom Martinesti		endenta		114 Prodsuis Stanilesti	115 Comsuin Ulmeni	116 Braigal Braila	22 Romsuin Test Peri•	ר C•l•ra•i	25 Combil Gh. Doja	6 Avicola Zal∙u		28 ISCIP Zal•u	

### Hot Spots - AGRICULTURAL

											label 2.3.1.
Ser.	DISCHARGER NAME OF	RECEIVER RIVER/ MAIN	EFLUENT FLOW	RECEIVER MULTI- ANNUAL AVERAGE ELOW	Qef	RECEIVER WATER	RECEIVER WATER QUALITY CATEGORY		WATER QUALITY INDICATORS AFECTED IN RECEIVER	S AFECTED IN	RECEIVER
2			[Qef=m³/s]	[Qrec =m3/s]	Qrec	UPSTREAM	DOWNSTREAM	D.O.REGIM	NUTRIENTS	IC GENERAL T	TOXIC GENERAL TOXIC SPECIFIC
	-	2	19	20	21	22	23	24	25	26	27
88	Agrocomsuin Bontida	Somes Mic/Somes-Tisa	0,013	16.4 - 22.6	1/1218 - 1/1678	I (am. Cluj)	III (S•I••iu)	COD 5,4/14,2	P 0,07 / 0,21	Phen 0,002 / 0,004	
90	90 Comsuin Moftin	Crasna/Somes-Tisa	0,065	4.03 - 4.97	1/62 - 1/76	II (Supuru de Jos)	II (Berveni)	COD 12,1/18	NH4 1,98/2,05 Phen 0,009 / 0,025	0,009 / 0,025	
92	92 Suinprod Salcud	Mures									
94	94 Avicola Ungheni	Niraj/Mures									
92	95 Nutrimur Iernut	Mures									
96	96 Comsuin Periam	Mures									
6	Comsuim Birda	Birzava/Bega-Timis									
86	Comseltest Padureni	Timis/ Bega-Timis									
66	Comsuin Beregsau	Bega Veche/.Bega-Timis	0,053	2,78	1/52	I (Pischia)	D (Cenei)	COD 10,7/155	COD 10,7/155 NH4 0,88/32,5 Phen 0,001/0,075	0,001/0,075	
101	101 Combilcarim Cazanesti	lalomita/lalomita									
104	104 Suinded Dedulesti	BuzauBuzau									
105	105 Suinprod	Siret									
106	106 Mark-Pork Vanatori	Putna/Siret									
107	107 Suintest Focsani	Argintu/Siret									
108	108 Martincom Martinesti	Cotatcu/Siret									
109		Siret									
111	111 Suinprod Independenta	Birladel/Siret	0,040	8,9	1/223	D (Umbraresti)	III (Sendreni - Siret)	BOD 12,9/17,3 P 0,063/0,13		Phen 0,002/0,004	
113	113 Comtom Tomesti	Bahluiet/Prut	0,070	2,06	1/101	D (Podu Iloaiei)	D (Holboca)	BOD 17 / 46	P 0,25 / 0,3 Phen	Phen 0,017 / 0,021	
114	sti	Prut									
115	115 Comsuin Ulmeni	Danube/Dunube	0,101	5723 - 6384	1/56443 - 1/62963	II (Oltenita)	II (Chiciu-Silistra)	COD 10,9	P 0,13 Phen	Phen 0,019	
116	116 Braigal Braila	Danube/Dunube	0,098	4700 - 5920	1/47959 - 1/60408	II (am.Braila)	II ( Grindu-Reni)	COD 4,6/5,7	NH4 0,35/0,46 Phen 0,007/0,012	0,007/0,012	
22		Vlasia / Ialomita	0,040	1,02	1/26	I (B•leni)	D (Sili•tea Snagovului)COD	COD 16,5	NH4 48 Phen	Phen 0,017	
23	Integrate Comsuim Celeraei	Danube/Dunube									
25	Combil Gh. Doja	lalomita / lalomita	0,037	23.7 - 25.5	1/641 - 1/689	D (Ciochina)	D (Slobozia)	BOD 3,9/4,9	NH4 1,42/1,71		
26	Avicola Zal∙u										
27	Suin Prod Suceava										
28	ISCIP Zal∙u										
29	29 Avicola Satu Mare	Sar / Somes	0,024	131.4 - 133.3	1/5475 - 1/5554	II (Ambud)	II (Oar)	COD 13,9/15	COD 13,9/15 NH4 1,46/1,58 Phen 0,003 / 0,004	0,003 / 0,004	
L	Sum										

### Hot Spots - AGRICULTURAL

			CARACTERIST	CARACTERISTIC OF PROBLEMS CREATED IN RECEIVER	SREATED IN RECEI	Tabel 2.3.1. VER
DISCHARGER NAME OF ECONOMIC UNIT	RECEIVER RIVER/ MAIN CACHEMENT AREA	LEVEL OF TOXICITY OF THE LOADS	SIZE OF THE AREA AFECTED	INTENSITY AND REVERSIBILITY OF THE PROBLEM	SENSITIVITY OF DOWNSTREAM USERS	SENSITIVITY OF TRANSBOUNDARY AREA
	2	28	29	30	31	32
	Somes Mic/Somes-Tisa	COD, BOD	2 km	permanent	water supply	
	Crasna/Somes-Tisa	COD	1 - 2 km	permanent	water supply	yes
	Mures					
	Niraj/Mures					
	Mures					
	Mures					
	Birzava/Bega-Timis					
	Timis/ Bega-Timis					
	Bega Veche/.Bega-Timis	COD, BOD	5 - 10 km	permanent	WS, irrigation	yes
	lalomita/lalomita					
	BuzauBuzau					
	Siret					
	Putna/Siret					
	Argintu/Siret					
	Cotatcu/Siret					
	Siret					
	Birladel/Siret	BOD	2 km	Permanent	water supply	
	Bahluiet/Prut	BOD	2 km	Seasonal		
	Prut					
	Danube/Dunube	BOD, SSM	1 - 2 km	Permanent	water supply	yes
	Danube/Dunube	COD, BOD	1 - 2 km	permanent	MS	
	Vlasia / Ialomita	BOD, SSM	2 - 3 km	Permanent	fisheries, recreation	
	Danube/Dunube					
	Ialomita / Ialomita	COD, BOD	2 km	permanent	WS, irrigation	
	Sar / Somes	COD, BOD	1 km	permanent	water supply	yes

Hot Spots - AGRICULTURAL HIGH PRIORITY

																	Τέ	Tabel 2.3.1.1.
			PREVIOUS LISTS OF HOT SPOTS	VIOUS LISTS HOT SPOTS	ISTS ( )TS	ш												
Ser. No	DISCHARGER NAME OF ECONOMIC UNIT	RECEIVER RIVER/ MAIN CACHEMENT AREA	SAP PNA Tab. PNA 93 95 2.2 97	N ≥ N ≥ N ≥ N ≥ N ≥ N ≥ N ≥ N ≥ N ≥ N ≥	2. P. P. 9.	ECONOMIC SECTOR	ECONOMIC TIOURINS SECTOR / Type of NR. problem				DISCHARGED POLLUANT LOADS t/year	GED P	7 POLLUAN <sup>-</sup> t/year	LOAD	Ø			
								COD	ВОБ	SSM	z	Fe	Mn	Cu	Pb	Zu	۵	OTHERS
	1	2	3	4	5 6	7	8	6	10	11	12	13	14	15	16	17	18	19
111	111 Suinprod Independenta	Birladel/Siret				agr10		412,0	481,0	2.765	323							
113	113 Comtom Tomesti	Bahluiet/Prut				agr10		49,7	49,7 15.768,0	29	2.560						720	
115	115 Comsuin Ulmeni	Danube/Dunube				agr10		260,0	575,0	10.231	472							
22	22 Romsuin Test Peri•	Vlasia / Ialomita				agr10			25,1	38								
	Sum							721,7	721,7 16.849,1	13.062,4 3.355,0	3.355,0						720,0	

# Place of agricultural hot spots from high priority list

رعر	Suinbrod Independents	٥ 4
36/1	Comertin I Ilmani	۲
	Romsuin Test Peri•	2
yes	Comtom Tomesti	1
transfer of polution	ECONOMIC UNIT	
Transboundary	DISCHARGER NAME OF	Place
l abel 2.3.1.2.		

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### Hot Spots - AGRICULTURAL HIGH PRIORITY

										Tabel 2.3.1.1.
DISCHARGER NAME OF F	RECEIVER RIVER/ MAIN	EFLUENT	RECEIVER MULTI- ANNUAL	Qef	ECEIVER WATE	ECEIVER WATER QUALITY CATEGOF WATER QUALITY INDICATORS AFECTED IN RECEIVER	F WATER QU	ALITY INDICA	ATORS AFECTED II	I RECEIVER
	CACHEMEN I AKEA	[Qef=m³/s]	Average rLOw [Qrec =m3/s]	Qrec	UPSTREAM	UPSTREAM DOWNSTREAM D.O.REGIM NUTRIENTS TOXIC GENERAL TOXIC SPECIFIC	D.O.REGIM	NUTRIENTS	TOXIC GENERAL	OXIC SPECIFIC
	2	19	20	21	22	23	24	25	26	27
В	Birladel/Siret	0,04	6,8	1/223	D (Umbraresti)	D (Umbraresti) III (Sendreni - Siret)   BOD 12,9/17,3 P 0,063/0,13 Phen 0,002/0,004	BOD 12,9/17,3	P 0,063/0,13	Phen 0,002/0,004	
	Bahluiet/Prut	20'0	7,06	1/101	D (Podu Iloaiei) D (Holboca)	D (Holboca)	BOD 17 / 46	P 0,25 / 0,3	BOD 17 / 46 P 0,25 / 0,3 Phen 0,017 / 0,021	
	Danube/Dunube	0,1014	5723 - 6384	1/56443 - 1/62963 II (Oltenita)	II (Oltenita)	II (Chiciu-Silistra)	COD 10,9 P 0,13	P 0,13	Phen 0,019	
	Vlasia / Ialomita	0,0398	1,02	1/26	I (B•leni)	(Beleni) D (Silietea Snagovului COD 16,5 NH4 48 Phen 0,017	i COD 16,5	NH4 48	Phen 0,017	

### Hot Spots - AGRICULTURAL HIGH PRIORITY

							Tabel 2.3.1.1.	
				CARACTERIST	CARACTERISTIC OF PROBLEMS CREATED IN RECEIVER	REATED IN RECEIN	/ER	
Ser. No	r. DISCHARGER NAME OF ECONOMIC OUNIT	RECEIVER RIVER/ MAIN CACHEMENT AREA	LEVEL OF S TOXICITY OF THE LOADS	SIZE OF THE AREA AFECTED	LEVEL OF SIZE OF THE INTENSITY AND SENSITIVITY OF AREA REVERSIBILITY OF DOWNSTREAM TRANSBOUNDARY THE LOADS AFECTED THE PROBLEM USERS AREA	SENSITIVITY OF DOWNSTREAM USERS	SENSITIVITY OF TRANSBOUNDARY AREA	
	-	2	28	29	30	31	32	
11	111 Suinprod Independenta	Birladel/Siret	BOD	2 km	Permanent	water supply		
7	113 Comtom Tomesti	Bahluiet/Prut	BOD	2 km	Seasonal			
7	15 Comsuin Ulmeni	Danube/Dunube	BOD, SSM	1 - 2 km	Permanent	water supply	yes	
22	22 Romsuin Test Peri•	Vlasia / Ialomita	BOD, SSM	2 - 3 km	Permanent	fisheries, recreation		
	Sum							

# Hot Spots - AGRICULTURAL MEDIUM PRIORITY

																	Tabel 2.3.2.1	3.2.1.
			Ä.	REVIOUS LISTS HOT SPOTS	PREVIOUS LISTS OF HOT SPOTS	L												
Ser. No	DISCHARGER NAME OF ECONOMIC UNIT	RECEIVER RIVER/ MAIN CACHEMENT AREA	SAP 93	PNA PM 95	Tab. 2.2	PNA PM 97	Problems SECONOMIC ISSUES SECTOR / NR. Type of problem	Problems / ISSUES Type of problem			OIS	DISCHARGED POLLUANT LOADS t/year	D POLLU ťyear	JANT LC	ADS			
								1	COD	BOD	SSM	z	Fe	Mn	Cu	Pb	Zn OTHERS	RS
	1	2	3	4	2	9	7	8	6	10	11	12	13	14	15	16 1	17 18	
88	Agrocomsuin Bontida	Somes Mic/Somes-Tisa					agr10		637,6	352,0		620						
	90 Comsuin Moftin	Crasna/Somes-Tisa					agr10		298,8	49,5		91						
	99 Comsuin Beregsau	Bega Veche/.Bega-Timis					agr10		2.247,0 3.043,0	3.043,0	1.629	818						
	116 Braigal Braila	Danube/Dunube					agr10		733,3	485,6	1.179	892	1,6					
_	25 Combil Gh. Doja	lalomita / Ialomita					agr10		157,0	280,0	295	96						
	29 Avicola Satu Mare	Sar / Somes					agr10		4,2	2,4	3,3	-					31,12,1997	266
	Sum								4086,9	4222,5		3384,6 2529,3	14,6	14	15	16	17	

Place	Place DISCHARGER NAME OF	Transhoundary
2		( mm mood m m
	ECONOMIC UNIT	transfer of polution
1	Comsuin Beregsau	yes
7	Combil Gh. Doja	
3	Comsuin Moftin	yes
4	Agrocomsuin Bontida	yes
2	Avicola Satu Mare	yes
9	Braigal Braila	yes

ural hot spots	priority list	Tabel 2.3.2.2.
Place of agricultural hot spots	from high p	

# Hot Spots - AGRICULTURAL MEDIUM PRIORITY

											Tabel 2.3.2.1.
ŏ ²	SIO	RECEIVER RIVER/ MAIN	EFLUENT	RECEIVER MULTI- ANNUAL	Qef	EIVER WATER (	EIVER WATER QUALITY CATEG		UALITY INDICA	WATER QUALITY INDICATORS AFECTED IN RECEIVER	N RECEIVER
		CACHEIVIEN AKEA	[Qef=m³/s]	Average FLOW [Qrec =m3/s]	Qrec	UPSTREAM	DOWNSTREAM	D.O.REGIM	NUTRIENTS	UPSTREAM DOWNSTREAM D.O.REGIM NUTRIENTS TOXIC GENERAL TOXIC SPECIFIC	TOXIC SPECIFIC
	1	2	19	20	21	22	23	24	25	26	27
8	88 Agrocomsuin Bontida	Somes Mic/Somes-Tisa	0,013	16.4 - 22.6	1/1218 - 1/1678	I (am. Cluj)	III (Seleeiu)	COD 5,4/14,2	P 0,07 / 0,21	COD 5,4/14,2 P 0,07 / 0,21 Phen 0,002 / 0,004	
တ	00 Comsuin Moftin	Crasna/Somes-Tisa	0,065	4.03 - 4.97	1/62 - 1/76	II (Supuru de Joill (Berveni)	II (Berveni)	COD 12,1/18	NH4 1,98/2,05	COD 12,1/18 NH4 1,98/2,05 Phen 0,009 / 0,025	
တ	99 Comsuin Beregsau	Bega Veche/.Bega-Timis	0,053	2,78	1/52	I (Pischia)	D (Cenei)	COD 10,7/155	NH4 0,88/32,5	COD 10,7/155 NH4 0,88/32,5 Phen 0,001/0,075	
÷	116 Braigal Braila	Danube/Dunube	0,098	4700 - 5920	1/47959 - 1/60408 II (am.Braila)	II (am.Braila)	II (Grindu-Reni)	COD 4,6/5,7	NH4 0,35/0,46	(Grindu-Reni) COD 4,6/5,7 NH4 0,35/0,46 Phen 0,007/0,012	
7	25 Combil Gh. Doja	lalomita / lalomita	0,037	23.7 - 25.5	1/641 - 1/689 D (Ciochina)	D (Ciochina)	D (Slobozia)	BOD 3,9/4,9 NH4 1,42/1,71	NH4 1,42/1,71		
7	29 Avicola Satu Mare	Sar / Somes	0,024	131.4 - 133.3	1/5475 - 1/5554 II (Ambud)	II (Ambud)	II (Oar)	COD 13,9/15	NH4 1,46/1,58	COD 13,9/15 NH4 1,46/1,58 Phen 0,003 / 0,004	
	3										

### Hot Spots - AGRICULTURAL MEDIUM PRIORITY

							Tabel 2.3.2.1.
				CARACTERIST	CARACTERISTIC OF PROBLEMS CREATED IN RECEIVER	REATED IN RECEI	VER
3,	Ser. DISCHARGER NAME OF ECONOMIC	RECEIVER RIVER/ MAIN CACHEMENT	LEVEL OF	SIZE OF THE	SIZE OF THE INTENSITY AND SENSITIVITY OF SENSITIVITY OF	SENSITIVITY OF	SENSITIVITY OF
		ANEA	THE LOADS	AFECTED	THE PROBLEM USERS AREA	USERS USERS	AREA
	-	2	28	29	30	31	32
	88 Agrocomsuin Bontida	Somes Mic/Somes-Tisa	COD, BOD	2 km	permanent	water supply	
	90 Comsuin Moffin	Crasna/Somes-Tisa	COD	1 - 2 km	oermanent .	water supply	yes
	99 Comsuin Beregsau	Bega Veche/.Bega-Timis	COD, BOD	5 - 10 km	oermanent '	WS, irrigation	yes
	116 Braigal Braila	Danube/Dunube	COD, BOD	1 - 2 km	permanent	SM	
	25 Combil Gh. Doja	lalomita / Ialomita	COD, BOD	2 km	permanent	WS, irrigation	
	29 Avicola Satu Mare	Sar / Somes	COD, BOD	1 km	permanent	water supply	yes
	Sum						

### Hot Spots - AGRICULTURAL LOW PRIORITY

				PREVIOUS LISTS OF	VIOUS LISTS O	L												Tabel 2.3.3.1
Ser. No	. DISCHARGER NAME OF ECONOMIC UNIT	RECEIVER RIVER/ MAIN CACHEMENT AREA	SAP 93	PNA PM 95	Tab.	PNA PM 97	Problems / ECONOMIC ISSUES SECTOR / NR. Type of problem	Problems / ISSUES Type of problem				DISC	DISCHARGED POLLUANT LOADS t/year	ED POLL t/year	UANT	LOADS		
									COD	BOD	SSM	z	Fe	Mn	no	92 92	Zn	OTHERS
	-	2	က	4	5	9	7	8	6	10	11	12	13	14	15	. 91	17	18
92	92 Suinprod Salcud	Mures					agr10		143,7	306,6		196					_	
94	Avicola Ungheni	Niraj/Mures					agr10		110,0	260,0		41						
92	95 Nutrimur lemut	Mures					agr10		114,0	245,0		51						
96	ш	Mures					agr10		399,0	379,0	172	26						
6	97 Comsuim Birda	Birzava/Bega-Timis					agr10		3.979,0	5.363,0	3.931	1.033					1,1	,1 t/a Phen
86	ureni	Timis/ Bega-Timis					agr10		360,0	432,0	482	229					0,1	0,1 t/a Phen
101	101 Combilcarim Cazanesti	lalomita/lalomita					agr10		1.428,0	2.709,0	3.082	99/						
104	104 Suinded Dedulesti	BuzauBuzau					agr10		118,2	76,2	279	174	0,5					
105		Siret					agr10		300,0	40,0	53	111						
106	k Vanatori	Putna/Siret					agr10		213,0	301,0	303	75						
107	107 Suintest Focsani	Argintu/Siret					agr10		172,0	32,0	110	89						
108	108 Martincom Martinesti	Cotatcu/Siret					agr10		58,3	72,0	20	13						
109		Siret					agr10			429,0	131	693						
114	114 Prodsuis Stanilesti	Prut					agr10		214,6	208,0	88	18					_	
25	23 Integrate Comsuim Celeraei	Danube/Dunube					agr10											
26	26 Avicola Zal•u						agr10											
27	27 Suin Prod Suceava						agr10											
35	28 ISCIP Zal•u						agr10											
	mis.								7 609 R	7 609 8 10 852 8	8 700 9 3 527 2	3 527 2	0.5					

### Hot Spots - AGRICULTURAL LOW PRIORITY

											page 2 of 3
Ser.	DISCHARGER NAME OF	RECEIVER RIVER/ MAIN CACHEMENT	EFLUENT	RECEIVER MULTI- ANNUAL	Qef	RECEIVER WATER	RECEIVER WATER QUALITY CATEGORY		UALITY INDIC	WATER QUALITY INDICATORS AFECTED IN RECEIVER	IN RECEIVER
ž		AKEA	[Qef=m³/day]	Average rcov [Qrec=m3/s]	Qrec	UPSTREAM	DOWNSTREAM	D.O.REGIM	NUTRIENTS	D.O.REGIM NUTRIENTS TOXIC GENERAL TOXIC SPECIFIC	TOXIC SPECIFIC
	1	2	19	20	21	22	23	24	25	26	27
92	2 Suinprod Salcud	Mures									
94	4 Avicola Ungheni	Niraj/Mures									
98		Mures									
96		Mures									
6		Birzava/Bega-Timis									
86	3 Comseltest Padureni	Timis/ Bega-Timis									
101	1 Combilcarim Cazanesti	lalomita/lalomita									
104	4 Suinded Dedulesti	BuzauBuzau									
105	5 Suinprod	Siret									
106	6 Mark-Pork Vanatori	Putna/Siret									
107		Argintu/Siret									
108	8 Martincom Martinesti	Cotatcu/Siret									
109	9 Agricola Bacau	Siret									
114	4 Prodsuis Stanilesti	Prut									
23		Danube/Dunube									
26	3 Avicola Zal∙u										
27	7 Suin Prod Suceava										
28	3 ISCIP Zal∙u										
	E107										

# Hot Spots - AGRICULTURAL LOW PRIORITY

							bage 3 of 3	
			•	CARACTERIST	CARACTERISTIC OF PROBLEMS CREATED IN RECEIVER	REATED IN RECE	VER	
σz	Ser. DISCHARGER NAME OF ECONOMIC No	RECEIVER RIVER/ MAIN CACHEMENT AREA	LEVEL OF TOXICITY OF	SIZE OF THE AREA	INTENSITY AND REVERSIBILITY OF	SENSITIVITY OF DOWNSTREAM	SENSITIVITY OF TRANSBOUNDARY	
			THE LOADS	AFECTED	THE PROBLEM USERS	USERS	AREA	
	-	2	28	29	30	31	32	
တ	92 Suinprod Salcud	Mures						
တ	94 Avicola Ungheni	Niraj/Mures						
တ	95 Nutrimur Iernut	Mures						
တ	96 Comsuin Periam	Mures						
တ	97 Comsuim Birda	Birzava/Bega-Timis						
တ	98 Comseltest Padureni	Timis/ Bega-Timis						
ĭ	101 Combilcarim Cazanesti	lalomita/lalomita						
7	104 Suinded Dedulesti	BuzauBuzau						
ĭ	105 Suinprod	Siret						
7	106 Mark-Pork Vanatori	Putna/Siret						
7	107 Suintest Focsani	Argintu/Siret						
7	108 Martincom Martinesti	Cotatcu/Siret						
1	109 Agricola Bacau	Siret						
<del>-</del>	114 Prodsuis Stanilesti	Prut						
2	23 Integrat• Comsuim C•I•ra•i	Danube/Dunube						
2	26 Avicola Zal•u							
2	27 Suin Prod Suceava							
7	28 ISCIP Zal•u							
	Sum							

### 2.4. Industrial Hot Spots (I-HS)

The cumulative table with those HS contain also the agricultural HS, as it was produced by EMISSION - EG. The total number of HS contained in this cumulative table 2.4.1. is equal with 131 HS. From this table, more than 100 HS were used for analysis and ranking as industrial HS.

The available data and information requested and found were included in the 1 - 34 columns of the tables from HP & MP hot spots categories and less for the LP hot spots, because of the reasons mentioned before.

### 2.4.1. High Priority (HP)

All industrial HS selected based on criteria mentioned in the chapter 2.1.5. are included in the table 2.4.1.1. and then based on the ranking procedures they have got the places from the table 2.4.1.2.. From the total number of 23 HP hot spots, 12 are included in the National Environmental Action Plan (PNAPM) last version 1997. From the total 23 HS, 11 have been identified with transboundary effects.

As it was explained already in the chapter 2.2. and 2.3. with reference to the transboundary effects of the Industrial HS groups. The transboundary effects mean in fact the transboundary transfer of pollution in the international waters, which may affect different users from the downstream neighbour countries. It is the case of hot spots 2, 4, 17, in the east part of the country, the case of HS 7, 10, 11, 15, 19 and 20, in the west part of the country and the case of HS 6,16, in the south.

### 2.4.2. Medium Priority (MP)

All data and information referring to the 26 HS selected in this category are presented in the table 2.4.2.1. Based on the ranking procedures, table 2.4.2.2. was produced with the places of HS within this category. Out of this 26 HS, 6 have been identified with transboundary effects.

### 2.4.3. Low Priority (LP)

In the table 2.4.3.1. are included the remainder HS from this category (IHS) which have not been ranked because of the lack of minimum data for a good assessment.

Ser

						•										
															i	7 1 1 C ladeT
		PREV	PREVIOUS LISTS OF HOT SPOTS	ISTS (	JF.											1 (1 th 7 th 18)
DISCHARGER NAME OF ECONOMIC UNIT	RECEIVER RIVER/ MAIN CACHEMENT AREA	SAP 93	PNA PM 95	Таb. РР	PNA SECTOR / PM NR.	Problems / ISSUES Type of problem				۵	SCHAR	DISCHARGED POLLUANT LOADS tyear	LLUAN	IT LOA	SQ	
							000	ВОБ	SSM	z	ē.	ωW	ច	a a	Zu	OTHERS
1	2	3	4	5	7 8	80	6	5	F	12	13	4	15	18	12	18
M. Turt	Somes-Tisa			H	Ē		6.6		18	!	4.3	1.5	0.3	1_		
M Baia Borsa	Somes-Tisa		_	_	mine-5		43.8	10.4	787		4.1	5.8	2.5		<u> </u>	
M. Rodna	Somes-Tisa				mine-5		6.7		33		0.4	0.3	0.1		<u> </u>	
cotub Zalau	Somes-Tisa		_	_	Iron-6		15.9				9.0			L	L	6.2 3.2 t/a hydrocarbons
M. Baia Mare Est	Somes-Tisa				mine-5		66.3		294		4.8	37.6	0.5	9.0		3.2 0.2 va hydrocarbons
M Baia Mare Vest	Somes-Tisa			H	mine-5		140.0		526		41.1	26.7	1.5	l	L	8.1 1.2 t/a hydrocarbons
loenix Baia Mare	Săsar / Somes-Tisa			_	mine-5		98.0		944		27.4		8.4			
mplumb Baia Mare	Somes-Tisa				mine-5		16.5		55			14				
M. Brad-Barza	Cris	3		ဗ	mine-5				138		7.9		0.9		7.1	1086.4 t/a TDS
M. Deva-Brusturi	Cris	20	2	21	mine-5				7		0.1	0	0.0	00	0.0	0.0 28.1 t/a TDS
M. Borod	Borod / Cris			_	mine-5				44		0.2		0.4	L		
M. Borod	Borod / Crişul Repede			_	mine-5			2.4	16		0.1					
trom Suplac de Barcau	Barcáu / Cris				oil-11			138.7	153	İ						oil extraon
M.Voivozi	Cris				mine-5			1.8	43		0.2	•				
trom Marghita	Cris				oil-11			10.1	31							oil extraction
metra Copsa Mica	Târnava Mare / Mures	12	1	12	nonfer.met2			2.6	367	4,467	7.1	9.0		33.0	12.2	2.9 Va Cd. CN
omures Tg.Mures	Mureş / Mures	40	4	40	chim-2				920	1,641	4.8	0.5	1.3	0.0	L	0.5 UREA = 884 t/a, TDS = 11678 t/a
pellum Zlatna	Mures	43	2	L	nonfer.met7				83							
A Baia de Aries	Mures			Н	mine-5				267		7.4	-	0.5	0.1	12	
A.Abrud	Mures			-	mine-5				1,037		152.0	22.9	69.7		20.7	20.7 21,7 t/a Mg
A. Zlatna	Mures		4	44	mine-5				907		4.9	0.1	0.0	0.0	0.1	
lerurgica Hunedoara	Cerna / Mures				irron-6				1,877	74	36.5					
A. Coranda Certej	Certej / Mures			_	mine-5		1.3		269		2.8	7.5	0.1	0.1	2.8	2.8 13,8 t/a Mg
A. Rosia Montana	Abrud / Mures				mine-5				273		26.0	16.7	0.1		0.8	0.8 14,2 t/a Mg
A. Baia de Aries	Mures				mine-5				295		7.4		0.5	0.1	1.2	1.2 73,8 t/a Ca
. Sarmei Campia Turzii	Aries / Mures	_	Н	_	irron-6				408		35.4		8.4	0.0	3.8	3.8 0.2 t/a Cr
talurgica Aiud	Mures			-	irron-6				367		1.6					
canica Cujmir	Mures			-	irron-6				172		6.2	0.3	0.5	0.0	0.3	1 t/a Cr
ermet Calan	Mures				irron-6				272	9	6.8					
<ol> <li>Poiana Rusca-Teliuc</li> </ol>	Mures				mine-5			0.2	809		8.0			0	0.3	
A.Deva	Mures			-	mine-5		3.7	8.5	366		0.5	0.3	0.0	0.0	0.1	
omecanica Medias	Mures			4	irron-6		1.9	3.2	4	1	0.0	0.0	0.0	0.0	0.0	
sial Alba Iulia	Mures		$\dashv$	$\dashv$	irron-6		13.3	5.9	92	2						
(		_	-	-	_			_		l						

13 Petrom Suplac de Barcau

16 Sometra Copsa Mica

15 Petrom Marghita

14 E.M.Voivozi

17 Azomures Tg.Mures

19 E.M.Baia de Aries

18 Ampellum Zlatna

Romplumb Baia Mare

10 E.M. Deva-Brusturi

E.M. Borod E.M. Borod

12

9 E.M. Brad-Barza

E.M. Baia Mare Vest Phoenix Baia Mare

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E.M. Baia Mare Est

Silcotub Zalau E.M. Rodna

E.M.Baia Borsa

E.M. Turt

0.0 0.5

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0.1

92 4

irron-6 irron-6 irron-6

32 Automecanica Medias 33 Resial Alba Iulia

34 Mina Deva

E.M. Poiana Rusca-Teliuc

30

31 E.M.Deva

29 Sidermet Calan

Ind. Sarmei Campia Turzii

56

27 Metalurgica Aiud 28 Mecanica Cujmir

22 Siderurgica Hunedoara

21 E.M. Zlatna

20 E.M.Abrud

23 E.M. Coranda Certej

24 E.M. Rosia Montana

25 E.M. Baia de Aries

Mures

### TA SP

												ĺ			1	ļ		
						}												Tabel 2.4.1.0
0	-	2	3	4	5	9	7	80	6	10	11	12	5	4	15	18	17	18
35	Socomet Otelul Rosu	Bega-Timis				-	irron-6		45.0	25.0	221		000					2
36	E.M.Ruschita	Bega-Timis			-	-	mine-5				146		17		6		0.1	
37	37 Ciocanul Nadrag	Bega-Timis			-	$\vdash$	irron-6		0.8	0.8	4	-						
38	UCMR Resita	Bega-Timis			-	-	irron-6	-	54.0	30.00	158		59.5		0		0.3	
9	39 C.S. Resita	Bega-Timis		-	-	-	irron-6		168.9	91.5	750	9	21.8		12			
4		Bega-Timis			-	-	mine-5				=		0.3		0		0.0	
41	na	Bega-Timis		-	_	-	mine-5		0.8	4.0	136		9.0		0.0		0.0	
42	42 Semag Toplet	Dunare					irron-6		2.0		9		0.0		00		0.0	
43	43 E.M. Petrila	Jiu					mine-5				3,776				ļ			
44	44 E M.Lupeni	Jiu			-	-	mine-5				1,150		-				-	

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	19					
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	14					
	13	0.09	1.7		59.5	3
İ	12			-		,
	=	221	146	4	158	710
l	10	25.0		9.0	30.0	2.70
	6	45.0		0.8	54.0	4000

0.2 3,5 va P; 1va CN; 0.9 va Phen 3,2 t/a P; 6261 t/a TDS Hg, HCH, Cr, NH, 10.4 Va Phenols

31/12/1997 31/12/1997 31/12/1997

0.5 5.6

1,253

225.0 26.0

591.6

chim-2 fertil-4 chim-2

mine-5

3,809

4

325.0 22.2

171.0 842.0 42.8 11.6 427.6

mine-5

chim-2

5

4

Bistra / Olt Olt

Ghimbăşel / Olt

ot/ot

47 Nitramonia Fagaras 46 |Dolichim Craiova Romacril Rasnov Celohart Zarnesti Mecanica Mirsa

E.M. Capeni

84 49 2 2

45 E.M.Coroesti

irron-6

0,11 Va Cr

0.0 0.8 t/a P 0.2 8,9 Va P

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0.0

33

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24.8

2,651

4,297.0

298.0

607.0

petrochim-2 petrochim-2

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**B**57

Dâmbovnic / Arges

Doamnei / Arges

53 Aro Campulung

Alro Statina 54 Dacia Pitesti

25

 55
 Arpechim Pitesti
 Dâmbovnic / Arges

 56
 Petrobrazi Ploiesti
 Prahova / Ialomita

 57
 Romfosfochim Valea Calugareasca Teleajen / Ialomita

9.69

66.2

irron-6

chim-2

8 2 27

8 8 8

738.0 835.0

petrochim-2 mec.nef.-11

32

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33

Teleajen / Ialomita

Dâmbu / lalomita

Astra Romana Ploiesti

59 I.M. Mija

Petrotel Teleajen

6

lalomita lalomita

COS Targoviste

28 8

petrochim-2 mec.nef.-11 mec.nef.-11

irron-6

45 2 410 996, 1,543 155 1,679 <u>8</u>

nonfer.met.-7

irron-6

irron-6

3,7 t/a Phen 9,4 Va Phen

2

0,17 t/a Phen 2.2 Oil extraction

517 t/a P

1,838

56 94

1325 448 455

11,324.0

pulp+paper-3

8

4

Bistriţa / Siret Trotus / Siret

66 Chimcomplex Borzesti 67 S.P. Tarnita

64 Gerom Buzau 62 Cord Buzau 63 Ductil Buzau

65 Letea Bacau

Buzau Buzau Buzau petrochim-2

mec.nef.-11

7. 506.0 10.0

234.0

0.0 5,4 Va Mg

1	0 1	2	3	4	9	7	8	40	-	12	13	2	15	=	12	27.1.7
EMERICANNER   Siret   Control   Co				+	╀	L	L		0	63	-	L	:	L	4.5	
Programment	1	Siret			-	mine-5	14		20	80	0		L		0	
Sierre Baselus         Bastilly Siert         23 45 25         Patricular December         1572 0         351 10         5.2           Sierre Baselus         Sierre Baselus         Sierre Baselus         132 0         351 10         35 11         1.1           Caron Onesa         Sierre Baselus         Sierre Clause         132 0         351 10         35 11         1.1           Adminentia         Sierre Clause         Sierre Clause         132 0         351 10         35 11         1.1           Adminentia         Sierre Clause         Sierre Clause         132 0         251 10         35 10         1.1           Sierre Clause         Daniel Durate         13 0         2 0	1	Bistrița / Siret				chim-2	3,054	1.8	L	L			L			
Color Design         Exploration         47         Chim-2         1390         241         300         113           Color Beaut         Finety Sinet         12         22         Chim-2         1330         241         300         137         131         137         131	$\overline{}$	Bistrița / Siret	⊢	⊢	25	pulp+paper-						2			F	1,3 Va P
Calcinity Singlet         Singlet		Bistrița / Siret		47	Н	chim-2					L	3				
Refine Committee Basinest Sinet State		Trotus / Siret	-	-	23	chim-2		_	5.0	516			1.1			2,8 t/a Phen.
Sides Calabati         Silest Silest         15         16		Siret		-	22	petrochim		<u>5</u>	3.0	137					J	0,7 t/a Phen.
Side Calabal   Sinet Sinet   15   15   15   15   15   15   15   1		Siret				iron-6	57					8			0.1	0,6 Va P. 0,2 Va Cr
Autholitee lasis         Bahuli Plut         19         85         20         64         344         34         10         3           Siderez olasesi         DanubelDurare         3         7         7         88         fron-6         212         337         6.4         7         8           Siderez olasesi         DanubelDurare         36         38         fronitate-4         315         6.4         7         8           Marke Tilose         DanubelDurare         36         38         41         fronitate-4         316         36         42         25         25           Cichael Consis         DanubelDurare         chine         27         316         36         42         36         25         36         42         35         25         36         42         36         25         36         42         36         25         36         42         36         42         36         42         36         42         36         42         36         42         36         42         36         42         36         42         36         42         36         42         36         42         36         43         43         43		Siret / Siret	_	-	15	iron-6	2,983	3.0	2			1			12.7	114 Va Phen;4,5 Va P
Fortis stass   Porticolar		Bahlui / Prut	$\vdash$	Н	Н				7.4		12				(4)	3.6 Va P
Selecte Calatesis         Devalue Durane         3 6 41         Iriores         212         3379         6 4           Allm Tuckes         Color Tr. Meguree         Davabe Durane         36         41         Iriors         4,277         6         42         5         25           COCH Tr. Meguree         Davabe Durane         39         41         Iriorine         27         15         930         42         3         6         25         25         15         15         35         25	$\overline{}$	Prut				iron-6			9.6	64		3				
Cich IT. Magnerie         Danube Dunate         36         38         nonfermet         4227         422 <th< td=""><td>-</td><td>Danube/Dunare</td><td>7</td><td><math>\vdash</math></td><td>-</td><td>L</td><td>21</td><td>2</td><td></td><td>337</td><td>ø</td><td>4</td><td></td><td></td><td>80</td><td>8.1 t/a Phen. 0.4 t/a CN</td></th<>	-	Danube/Dunare	7	$\vdash$	-	L	21	2		337	ø	4			80	8.1 t/a Phen. 0.4 t/a CN
Machican   Danuba Dunate   D		Danube/Dunare	36	-	88	nonfer.met			4	,227					2	215 t/a Mg:48,2 t/a Al
Romage Landson Dennies Dennies Control		Danube/Dunare	39	Ė	=	fertilizer-4		O.	6			2				39 Va P. 83 Va Mg
Romage Transler         Centure Consider         Centure Consider </td <td></td> <td>Danube/Dunare</td> <td></td> <td></td> <td></td> <td>mine-5</td> <td>2</td> <td></td> <td>.5</td> <td>938</td> <td>2</td> <td>1</td> <td>3.5</td> <td></td> <td></td> <td></td>		Danube/Dunare				mine-5	2		.5	938	2	1	3.5			
Corage Conside         Danabe/Durane         leokile-8         361         456           Duracor Raila         Danabe/Durane         leokile-8         920         579         6405           Duracor Raila         Danabe/Durane         leokile-8         920         579         6405           Some Lambe/Durane         Some Lambe/Durane         Lemin Particle         4421         1687         450         1680           Some Lamber Duracor Rail         Some Lamber Duracor Rail         Some Lamber Duracor Rail         4421         1680         450         460         471           Status Mobile         Some Lines         Marcal Marca Mures         Marca Mures         Marca Mures         447         366         470         471         471           Status Mobile         Tamare Mures         Marca Mures         Marca Mures         Marca Mures         471         366         471         471         471           Ancial Date of Mures         Marca Mures         Marca Mures         Marca Mures         471         471         471         471         471         471         471         471         471         471         471         471         471         471         471         471         471         471         471		Topolnita / Dunare				chim-2	432			,820	1				-	19 Va P
Tamico Consula   Danube Dunate   Lexitier-9   1959   5790   6405   5790   6405   5790   6405   5790   6405   5790   6405   5790   6405   5790   6405   5790   6405   5790   6405   5790   6405   5790   6405   640	_	Danube/Dunare				textile-8	361	0		456						
Dunacor Baila         Danueb Dunace         Fished         9290         6790         6700           Agricomatini Bonida         Sameb Dunace Tisa         chirt.2         4141         1687         670           Agricomatini Bonida         Somest Tisa         chirt.2         4141         1687         670           Agricomatini Bonida         Somest Tisa         chirt.2         4163         3159         41         67           Creatini Bonida         Somest Tisa         Chirt.         4143         1680         60         0.1           Status Mob Bisi         Tarace Villace         Mures         Americal Lugheri         Mures         M		Danube/Dunare		_		leather-9	105	3.3		293					-	
Somes Dej         Somes Tisa         clim-2         41442         11687         130           Terapat Old         Somes Lika         Connest Tisa         chim pham.         41442         11687         325         356         670         0.1           Terapat Old         Somes Tisa         Chim pham.         1885         475         10         91         1           Consuli Mofflin         Somes Tisa         Transe Mark         Mures         Mures Mures         110         91         0.0         0.1		Danube/Dunare	-	-	-	textile-8	928			405						•
Agrocomavin Bontda         Some+Tisa         agr-10         637.6         35.0         35.0         6.0           Templa Cluj         Some+Tisa         chim pham-2         1,856.3         475.0         264.0         0.1           Straub Conseul Molts         Somes-Tisa         chim pham-2         286.8         495.5         10.0         0.1           Straub Molts         Jones-Tisa         Inches Molts         Inches Molts         475.0         0.6         0.1           Straub Molts         Mulces Alexad         Mulces Molts         Inches Molts         475.0         0.6         0.1           Anciola Unghent         Mulces Mulces         Mulces Molts         Inches Molts         475.0         1.0         2.6         4.0           Anciola Unghent         Mulces Alexanca         agr-10         110.0         2.69.0         4.0 <td></td> <td>Somesul Mic / Somes-Tisa</td> <td>-</td> <td>-</td> <td>-</td> <td>chim-2</td> <td>4,144</td> <td>L</td> <td></td> <td></td> <td>8</td> <td></td> <td></td> <td></td> <td></td> <td></td>		Somesul Mic / Somes-Tisa	-	-	-	chim-2	4,144	L			8					
Farabia Cluj   Somes-Tisa   Chim pharm. 2   1865   415   110   254   0.6   0.1		Somes-Tisa			-	agr10	637	L	0.0	L	20				9	0.3 Va Phen
Comsulin Mofflin         Somes-Tises         agr-10         298.8         495         110         91           Stratus Mofflin         Somes-Tises         agr-10         130.8         349         441         55           Stratus Mob Bilaj         Tannave Mures         agr-10         1430         1,880.0         2,859         400           Mures And         Mures Mures         Mures Mures         60d-1         1,308         1,880.0         2,859         400           Aktroia Unghent         Mures Manca         agr-10         110.0         2,850         400         71           Consul Patient         Mures Anaca         agr-10         1,400         2,450         172         59           Consul Decision         Bega-Timis         agr-10         3,900         4,320         4,82         239           Consul Decision         Bega-Timis         agr-10         2,240         3,630         1,629         6,64           Consul Decision         Bega-Timis         agr-10         2,240         3,630         1,629         6,64           Consul Registar         Consul Lamber         agr-10         2,240         3,630         1,620         6,64           Consul Registar         Landamin		Somesul Mic / Somes-Tisa		┝	H	chim.pharm.			0			L			-	Pharmaceutical Plant
Stratus Mob Biaj         Tárnace / Mures         furritare-11         6476         343         441         55           Sulpidod Salcud         Mures         Mures         furritare-11         6476         343         441         55           Sulpidod Salcud         Mures         Mures         Mures         Mures         Mures         Mures           Aviola Ungheni         Mures And         Mures Anteres         food         1308 O         28-9         400           Aviola Ungheni         Mures Anteres		Somes-Tisa	-	-	-	aar -10		L	3.5							
Mures   Mure	+	Tarnave / Mures	-	-	+	furniture-11	647		6 8	L	35	_			>	wood industry
Numerical Hollageria Acad   Mures	_	Mures			╁	agr -10	143		9:	Ĺ	92					
Avicola Ungheri         Mures Mures         agr10         1100         260.0         41           Octomatin Frida         Mures / Mures         agr10         390.0         172         51           Comsuli Periam         Mures / Mares         agr10         390.0         172         59           Comsuli Periam         Mures Aranca         agr10         390.0         172         59           Comsuli Periam         Bega-Timis         agr10         360.0         432.0         162.9           Comsuli Periam         Bega-Timis         agr10         260.0         432.0         162.0           Committies and Decision         Bega-Timis         agr10         1,870.0         1,870.0         1,870.0         1,870.0           Combilicarin         Combilicarin         Combilicarin         1,870.0	-	Mures / Mures		$\dagger$		food-1	1 308	-		1	2					
Nutrimur lenut   Mureş / Mures   Aggr-10   399   379   175   59   172   59   172   59   172   59   172   59   172   59   172   59   172   59   172   59   172		Mures		-	-	aar -10	110	1		l	=					
Comesule Mures-Aranca         agr10         399 0         379 0         472 59           Comsule Birda         Bega-Timis         agr10         3,970 (483 0)         3,931 (1033)           Comsulest Padurenia         Bega-Timis         agr10         2,247 0         3,930 (483 0)         3,931 (1033)           Comsulest Padurenia         Bega-Timis         agr10         2,247 0         3,930 (483 0)         4,863 0         3,931 (1033)           Combilezim Rm. Valcea         Olt / Ott         Chilling         Chilling         1,800 (100)         737 0         1,627 (480)         3,630 (480)           Combilezim Rm. Valcea         Ialomita Ialomita         Chilling         Chilling         1,700 (100)         3,030 (100)		Mures / Mures		$\vdash$		agr -10	114		0		2					
Comsulin Birda         Bega-Timis         agr-10         3,979.0         4,363.0         3,931         1,033           Comsulin Birda         Bega-Timis         agr-10         367.0         432.0         482         229           Communication         Bega-Timis         agr-10         2,247.0         1,679         548         PR           Combilearium Rm. Valoea         Olt / Olt         Agr-10         1,728.0         1,739.0         1,679         548           Combilearium Rm. Valoea         Olt / Olt         Agr-10         1,428.0         737.0         1,679         548           Combilearium Cazanesti         Ialomita fialomita         food-1         22.10         1,709.0         3,082         766           Buttan         Ialomita fialomita         food-1         22.10         1,709.0         3,082         766           Suinterd         Burau         Burau         agr-10         1,728.0         1,709.0         3,082         766           Suinterd         Siret         agr-10         1,709.0         3,082         766         1,709.0           Suinterd         Siret         agr-10         1,709.0         3,101         1,709.0         1,179         1,179           Martincom Martinesti </td <td></td> <td>Mures-Aranca</td> <td>-</td> <td>-</td> <td></td> <td>agr10</td> <td>399</td> <td></td> <td>0.</td> <td>L</td> <td>65</td> <td></td> <td></td> <td></td> <td></td> <td></td>		Mures-Aranca	-	-		agr10	399		0.	L	65					
Comsellest Padureni         Bega-Timis         agr10         360.0         432.0         482.2         229           Consul Begaau         Bega-Timis         agr10         2,447.0         3,043.0         1,629.8         818           Consul Begaau         Bega-Timis         agr10         1,470.0         370.0         1,629.8         818           Consul Begaau         Bega-Timis         chill         agr10         1,470.0         370.0         1,629.8         418           Continional Mainer         Latonia Mariner         Latonia Mariner </td <td></td> <td>Bega-Timis</td> <td>-</td> <td>-</td> <td> -</td> <td>agr10</td> <td>3,979</td> <td>4</td> <td></td> <td>-</td> <td>33</td> <td></td> <td></td> <td></td> <td>-</td> <td>1,1 Va Phen</td>		Bega-Timis	-	-	-	agr10	3,979	4		-	33				-	1,1 Va Phen
Comsulu Beregsau         Bega-Timis         agr10         2.247.0         3,043.0         1,629         818           Oth Chit         Oth Control         Chim-2         chim-2         chim-2         1,870.0         737.0         1,697         548           Combilizarian Cazanesti         Jalomita         Jalomita </td <td></td> <td>Bega-Timis</td> <td>-</td> <td>-</td> <td></td> <td>agr10</td> <td>360</td> <td>L</td> <td></td> <td>L</td> <td>6</td> <td></td> <td></td> <td></td> <td></td> <td>0.1 t/a Phen</td>		Bega-Timis	-	-		agr10	360	L		L	6					0.1 t/a Phen
Oth Chim Rm. Valcea         Oth Oth         Chim-2         1,870.0         737.0         11,607         548           Combilicarim Cazanesti         Ialomita         agr10         1,870.0         177.0         11,607         548         Combilication           Ulcom Slobazia         Ialomita         Ialomita <th< td=""><td></td><td>Bega-Timis</td><td></td><td></td><td></td><td>agr10</td><td>2,247</td><td>m</td><td></td><td></td><td>80</td><td></td><td></td><td></td><td></td><td>),6 t/a Phen</td></th<>		Bega-Timis				agr10	2,247	m			80					),6 t/a Phen
Combilicarim Cazanesti         Ialomita         Ialomit	100 Ottchim Rm. Valcea	Oit / Oit		_		chim-2	1,870		L		85					31,12,1997
Ulcom Slobozia         Ialomija /lalomita         food-1         221.0         350.0         640         16           Beta Tandareni         Ialomija /lalomita         food-1         539.0         655.0         473         70           Sunded Dedulesti         Buzau         agr10         116.2         76.2         279         174           Sunprod         Barau         agr10         300.0         40.0         53         171           Sunprod         Barau         agr10         300.0         40.0         53         171           Sunprod         Barancom         Siret         agr10         172.0         30.0         13         68           Martincom Martinest         Siret         agr10         58.3         72.0         70         13         693           Agricola Bacau         Siret         agr10         58.3         72.0         70         13         693         202         203         202         203         203	101 Combilcarim Cazanesti	lalomita		-	-	agr10	1,428	٢	L	L	92					
Suinded Dedulesti         lalomita //alomita         food-1         589.0         655.0         473         70           Suinded Dedulesti         Buzau         agr10         118.2         76.2         279         174           Suinded Dedulesti         Buzau         agr10         300.0         40.0         53         171           Suingrod         Siret         agr10         172.0         301.0         303         75           Martinoom Martinosti         Siret         agr10         58.3         72.0         70         13           Agricola Bacau         Siret         agr10         58.3         72.0         70         13           Agricola Bacau         Siret         food-1         941.2         805.0         885         202           Spirt Ghidiceni         Bârad / Siret         food-1         941.2         805.0         885         202           Suinprod Independenta         Siret         agr10         48.7         85.5         29         72           Prut         Prut         Prut         48.7         85.5         29         38           Prodeuis Stanilesti         Prut         agr10         21.6         28.0         36         28 <td>102 Ulcom Slobozia</td> <td>lalomita /lalomita</td> <td></td> <td></td> <td>L</td> <td>food-1</td> <td>221</td> <td></td> <td></td> <td></td> <td>9</td> <td></td> <td></td> <td></td> <td></td> <td></td>	102 Ulcom Slobozia	lalomita /lalomita			L	food-1	221				9					
Suinded Dedulest         Buzau         agr10         118.2         76.2         279         174           Suinprod         Siret         agr10         300.0         40.0         53         111           Suintest Postant         Siret         agr10         172.0         30.0         40.0         53         111           Suintest Postant         Siret         agr10         172.0         30.0         10         68           Agricola Bacau         Siret         agr10         58.3         72.0         70         13           Agricola Bacau         Siret         food-1         94.12         805.0         685         202           Suinprod Independenta         Siret         food-1         94.12         805.0         685         202           Control Independenta         Siret         food-1         36.0         48.0         35.0         44         9           Pyretus Falciu         Prut         prut         48.7         206.0         35.0         276.5         32.3           Contouriom Tionesti         Prut         agr10         214.6         208.0         55.0         10,231         472           Comeaulio Ulmeni         Danube/Dunare         ag	103 Beta Tandareni	lalomita /lalomita			H	food-1	589				0					
Suinprod         Siret         Agr10         300,0         40.0         53         111           Mark-Pork Vanatori         Siret         agr10         213,0         301,0         303         75           Suintest Focsani         Siret         agr10         172,0         32,0         110         68           Martinosm Martinosm Martinosm Bacau         Siret         agr10         58,3         72,0         70         13           Agricola Bacau         Siret         food-1         941,2         805,0         885         20           Spiret Ghidiceni         Barlad / Siret         food-1         412,0         44,0         2,765         323           Spiretus Falciu         Prut         agr10         481,0         2,765         323           Comfom Tomesti         Prut         agr10         49,7         85,5         29         38           Prodeuis Stanilesti         Prut         agr10         214,6         208,0         86         18           Commonin Ulmeni         Danube/Dunare         agr10         260,0         575,0         10,231         472           Brajagal Braila         Danube/Dunare         agr10         773,3         485,6         1,179 <td>104 Suinded Dedulesti</td> <td>Buzau</td> <td></td> <td></td> <td>_</td> <td>agr10</td> <td>118</td> <td></td> <td></td> <td></td> <td></td> <td>10</td> <td></td> <td></td> <td></td> <td></td>	104 Suinded Dedulesti	Buzau			_	agr10	118					10				
Mark-Pork Vanatori         Siret         agr10         213.0         301.0         303         75           Suintest Focsani         Siret         agr10         172.0         32.0         110         68           Martinosm Martinosth         Siret         agr10         58.3         72.0         70         13           Agricola Bacau         Siret         agr10         941.2         865         20           Spiret         Ghidiceni         agr10         412.0         2,765         323           Spiret         Frut         agr10         441.0         2,765         323           Comform         Furt         agr10         481.0         2,765         323           Comform         Towarin         49.7         85.5         29         38           Protetus         Faciliar         agr10         49.7         85.5         29         38           Protetus         Protetus         agr10         260.0         575.0         10,231         472           Brajagal Braila         Danube/Dunare         agr10         260.0         575.0         10,231         472	105 Suinprod	Siret		H	$\vdash$	agr10	300		0.0	ľ	-1					
Suintest Focsani         Siret         agr10         172.0         32.0         110         68           Martincom Martinesti         Siret         agr10         56.3         72.0         70         13         693           Agricola Bacau         Siret         agr10         429.0         131         693         202           Spir Ghidiceni         Bafvlad / Siret         food-1         941.2         865.0         885         202           Pyretus Fallorius         Prut         Agr10         48.7         85.5         29         38           Comtom Tomesti         Prut         Agr10         214.6         208.0         88         18           Proteurie Stanilesti         Prut         agr10         214.6         208.0         88         18           Communin Ulmeni         Danube/Dunare         agr10         260.0         575.0         1179         892           Brajgal Braila         Braila         Braila         Brail         1779         892	106 Mark-Pork Vanatori	Siret				agr10	213		0		75					
Agricola Bacau         Siret         Agr10         56.3         72.0         70         13           Agricola Bacau         Siret         Agricola Bacau         Siret         Agr10         429.0         131         693           Spirt Ghidiceni         Bărlad / Siret         food-1         941.2         865.0         885         202           Pyruprod Independenta         Siret         441.0         2,765         323           Comtom         Pyrut         Fout         48.7         85.5         29         38           Protectule Stanilesti         Prut         49.7         85.5         29         38         18           Combauli Ulmeni         Danube/Dunare         agr10         260.0         575.0         10,231         472           Brajgal Braila         Danube/Dunare         agr10         733.3         485.6         1,179         892	107 Suintest Focsani	Siret		Н	Н	agr10	172		0		38					
Agricola Bacau         Siret         429.0         131         693           Spirt Ghidiceni         Bârlad / Siret         food-1         941.2         805.0         885         202           Suinprod Independenta         Siret         472.0         481.0         2,765         323           Comprom         Prut         60d-1         36.0         35.0         44         9           Comprom         Prut         48.7         85.5         29         38           Prodeus         Prut         48.7         85.5         29         38           Prodeus         Stanilesti         Prut         86.2         10,231         472           Communii Ulmeni         Danube/Dunare         agr10         280.0         575.0         10,231         472           Brajgal Braila         Danube/Dunare         agr10         733.3         485.6         1,179         892	108 Martincom Martinesti	Siret				agr10	58	3	0		13					
Spirt Ghidiceni         Bârlad / Siret         food-1         941.2         805.0         885         202           Suinprod Independenta         Siret         41.0         2,765         323           Prut         Fut         36.0         35.0         44         9           Commonimation         Prut         48.7         85.5         29         38           Production         Prut         48.7         85.5         29         38           Production         Prut         48.7         85.5         29         38           Communication         Danube/Dunare         agr10         214.6         208.0         575.0         10,231         472           Braigal Braila         Danube/Dunare         agr10         733.3         485.6         1,179         892	109 Agricola Bacau	Siret				agr10		429			ဥ					
Suinprod Independenta         Siret         412.0         461.0         2,765         323           Pyretus Falciu         Prut         36.0         35.0         44         9           Comtom Tomesti         Prut         85.5         29         38           Prodeuie Stanilesti         Prut         85.6         29         38           Prodeuie Stanilesti         Prut         85.6         208.0         85         18           Comeulin Ulmeni         Danube/Dunare         agr10         733.3         485.6         1,179         892	110 Spirt Ghidiceni	Barlad / Siret		_		food-1	941				21					
Pyretus Falciu         Prut         36.0         35.0         44         9           Comtom Tomesti         Prut         agr10         49.7         85.5         29         38           Prodeuie Stanilesti         Prut         agr10         214.6         208.0         85         15           Comeulin Ulmeni         Danube/Dunare         agr10         260.0         575.0         10,231         472           Braigal Braila         Danube/Dunare         agr10         733.3         485.6         1,179         892	111 Suinprod Independenta	Siret				agr10	412				13					
Comtom Tomesti         Prut         Agr10         49.7         85.5         29         38           Prodeuie Stanilesti         Prut         agr10         214.6         208.0         86         18           Comeulin Ulmeni         Danube/Dunare         agr10         260.0         575.0         10,231         472           Braigal Braila         Danube/Dunare         agr10         733.3         485.6         1,179         892	112 Pyretus Falciu	Prut				food-1	36		0		0					
Prodeuie Stanilesti         Prut         agr10         214.6         208.0         85         18           Communin Ulmeni         Danube/Dunare         agr10         260.0         575.0         10,231         472           Braigal Braila         Danube/Dunare         agr10         733.3         485.6         1,179         892	113 Comtom Tomesti	Prut		$\dashv$	$\dashv$	agr10	49		5.5		20				-	
bni Danube/Dunare agr10 260.0 575.0 10,231 472 Danube/Dunare agr10 733.3 485.6 1,179 892	114 Prodeuis Stanilesti	Prut	+	+	-	agr10	214				<b>90</b>					
Danube/Dunare agr10 733.3 485.6 1,179 892	115 Comsuin Ulmeni	Danube/Dunare	1		+	agr10	260	I							1	
	116 Braigal Braila	Danube/Dunare		-	$\dashv$	agr10	733.			-						

					;	:												Tabel 2.4.1.	
o	•	2	9	4	5	9	7	8	6	10	11 12 13 14 15 16 17	12	13	14	15	16	17	18	
117	7 Cement Plant Aleşd	Criş	1			-	cement-11			23	23 14.965						7	87.5 TDS	
118	118 Carbosim Copsa Mică	Mureş	11		11	-													
119	119 Sinteza SA Oradea	Crişul Repede / Criş				92	chim-2						0.2			310	845 (	310 845 0.012 Va CN ; 11 Va Phen	

Tabel 2.4.1./4	18	87.5 TDS		310 845 0.012 Va CN; 11 Va Phen		31,12,1997 0.28 Phen
	17	Ť		845		
	16			310	_	
	11 12 13 14 15 16 17					0.3
	14					
	13			0.2		11.7
	12					6
	1	14.965				74
	10	23				141
	6					544
	8					
	7	cement-11		chim-2	lether-9	chim-2
	8			92	8	10 25 10 84
	2	L	1			5
	4					25
	3	-	=			5
	2	Cris	Mureş	Crişul Repede / Criş	Someşul Mic / Someş-Tisa	Vulcánita / Olt
	1	Cement Plant Aleşd	118 Carbosim Copsa Mică		oca	121 Colorom Codlea
	٥	117	118	119	120	121

4.1CN; 4.3 t/a Cr3+; 41.8 toil

31/12/1997 323 Va CI

175

2642

157.7

189.2

chim-2 leather-9

chim-2

147

108

69

pulp+paper-3 petrochim-2

8

Danube/Dunare

Danube/Dunare

126 Verachim Giurgiu

127 Crescătoria Periş 128 UPS Govora

lalomita

Sewage / Mures Danube/Dunare

Siret

130 Comcem SA Calarasi 131 SC Stimas Suceava

Sum

129 Manpel Tg. Mures

chim-2

87 8

deterg 14.6

40.279.0 42.923.0 103.196.2 22.396 656.4 152.8 146.1

30

dfish, in WWTP Orăstie 31,12,1997 0.28 Phen

lether-9 chim-2

8

122 SC Favior Blánuri Orâştie 123 Rafo Dărmâneşti 124 Goscom Roman 125 Celohart Donaris Brăila

18 6

9

2

Sec.

Bega-Timis Bega-Timis Bega-Timis Bega-Timis

Mures

Socomet Otelul Rosu

34 Mina Deva

28

8

24 22 82

28

Ciocanul Nadrag

38 UCMR Resita

E M. Ruschita

1	3	٥	۶	3						page 2 of 4
19 C.S. Resita	Baca-Timic		23	17	22	23	24	22	8	27
0 E.M. Ciudanovita	Bega-Timis									
11 E.M. Sasca Montana	Bega-Timis									
2 Semag Toplet	Dunare									
3 E.M. Petrila	Jin									
4 E M Lupeni	nif									
5 E.M.Coroesti	Jiu									
6 Doljchim Craiova	Jiu / Jiu	0.4499	70.032	4/450 4/0						
7 Nitramonia Fagaras	Oit / Oit	1 2007	200 - 20 2	0/1 - 00/1/1	II (Kacari)	II (Podari)	COD 8/9,2 NH4 0,13/2,8	NH4 0,13/2,8	l	
8 Romacril Rasnov	Chimbses! / Olt	1000	4.7.	1/40 - 1/00	III (Hogniz)	III (Fagaras)	COD 19,7/19,9	NH4 1,05/1,65		Fe /31
	D Total	- 70	7.45/		Con Donney	4 -0 1 - 7 0	0000			

Fe 0,19/2,23

NH4 0,09/5,73

COD 6,5/32 BOD /32,9

Fe /6,15

7,023

Phen

NH4 /3.23

D (am conf Olt) D (aval Bod)

(am. Zărnești)

- 1/9

(am Rasnov)

1/10 - 1/3

21-457

0.21 0.58

Bistra / Olt

Celohart Zarnesti Mecanica Mirsa 53 Aro Campulung

52 Airo Slatina

E.M. Capeni

48 S

44 E M Lupeni

ŏ ő

0-095

Fe 0,17/0,28

Fe 0,51/0,63 Fe /0,25

NH4 0,25/15,4 Fen 0,006/0,033

oil 0,16/5,23

NH4 0,52/1,2 VH4 0 12/0 45

BOD 6,1/19,5

BOD 6,1/25

D (Moara Domnească)

II (Gura Vitioarei)

1/45 - 1/118

1/17 - 1/21

COD 8,5/8,7

(Ciumești)

(Dārmāneşti)

1/43 - 1/86

10.21 - 20.3

6.98 - 8.56 2.85 - 7.48

0 - 1.12

0.394 0.411 0.0633

Dâmbovnic / Arges Prahova / lafomita Teleajen / lalomita

Doamnei / Arges

(Izvoare) (Cornu)

II (Suseni) O (Tinosu)

COD /17

NH4 /5,3

Fen 70,06

Fe 0,26/1,83

NH4 0,25/15,4 | oil 0,14/3,85

BOD 5,7/41,5 NH4 4,84/43,8 COD 17,5/18,3 NH4 0,29/2,52 oil 1,08/3,35

D (am. Lac Bacau)

III (Adjud)

I (am. Tg. Ocna)

D (Frunzeni)

1/25 - 1/120

13.4 - 64.5 17.1 - 21.8

0.1948

0.5397

Bistrița / Siret

Trotus / Siret

Chimcomplex Borzesti

8

S.P. Tarnita

Letea Bacau

E.M. Mestecanis 70 Fibrex Savinesti

8

E.M. Tolovanu

Siret Siret

Fe /1.07

oil /9,54

NH4 /8,76

D (Moara Domnească) BOD 6,1/25

(Gura Vitioarei)

1/8 - 1/20

2.85 - 7.48

0.2862 0.3713

Teleajen / Ialomita

Buzau Buzau Buzau

Dâmbu / lalomita

Astra Romana Ploiesti

Petrotel Teleajen

Ductil Buzau Gerom Buzau

63 8

Cord Buzau

alomita (alomita

Romfosfochim Valea Calugareasca

COS Targoviste

M M

Petrobrazi Ploiesti

55 Arpechim Pitesti

Dacia Pitesti

2 B 58 59 (Ref. Station)

Fe 0,21/1,51

NH4 0,29/2,52 Fen 0,003/0,034

BOD 4,4/4,8

NH4 0,04/4,94

BOD 3,8/5,7

D (Frunzeni) II (am. lac Bacau)

(Adjud)

II (am. Tg. Ocna)

II (Frunzeni)

1/83 - 1/305

1/39 - 1/62

1/5-1/7

1/94 - 1/120

17.1 - 21.8

0.1811

8.36 - 13.4 13.4 - 64.5 8.36 - 13.4

> 0.2156 0.2117

Bistrita / Siret Bistrita / Siret Bistrita / Siret

Pergodur P.Neamt

Trotus / Siret

D (Frunzeni)

(Straja) (Straja)

COD 7,5/10,1 NH4 0,04/4,94 COD 10,1/78,1 NH4 4,8/43,8 Fe 0,33/0,8

COD 17/19,5 P 0,094/0,14 BOD 40,6/48,6 NH4 2,55/5,87 Fen 0,017/0,02

D (Holboca)

D (Podu Iloaiei)

III (Şendreni)

1/122 - 1/299

242 - 592 0.58 - 9.97

1.9775

0.025

Bahlui / Prut

Siret / Siret

Rulmentul Barlad

Carom Onesti

74 Rafo Onesti

Sofert Bacau

77 Antibiotice lasi

76 Sidex Galati

1/23 - 1/399

II (Reni)

	page 2 of 4	27					
•		8					
*		25					
		24					
		23					
. 14		22					
Hot Spots - INDUSTRIAL	7	7,1					
<b>9</b>	۶						
	at at						
						1	

page 3 of 4	27			Mg 15/20.7					
	83		oil 0.05/1.67						
	52		COD 4,4/8,7 NO2 2,4/11,5 oil 0,05/1,67	NH4 0,25/0,65	NH4 0,37/0,5				
	24		COD 4,4/8,7	COD 5,5/8,9	COD 5,3/6,5 NH4 0,37/0,5				
	23		II (am. Brăila)	I (Sulina)	I (am.Giurgiu)		1 (Pristol-Novo Selo)		
	22		II (Chiciu-Silistra)	1/20121 - 1/4482   II (Grindu-Reni)	1/30445 - 1/31695   (Pristol - Novo Selo)		l (Baziaş)		
	21		1/47754 - 1/39211   II (Chiciu-Silistra)	1/20121 - 1/4482	1/30445 - 1/31695		1/10667		
	20		5724 - 4700	5921 - 1319	5358 - 5578		5410		
	19		0.1199	0.2943	9/1/0		0.5072		
	2	Prut	Danube/Dunare	Danube/Dunare	Danube/Dunare	Danube/Dunare	Topolnita / Dunare	Danube/Dunare	
	_	78 Fortus lasi	79 Siderca Calarasi	80 Alum Tulcea	CICH Tr. Magurele	I.M Moldova Noua	83 Romag Tr. Severin	84 Corapet Corabia	
	٥	78	79	8	81	82	83	84	

Fe 0.42/0.54

P 0,072/0,215 | Fe 0,05/0,1

BOD 3 2/5 7 COD 7,5/7,7

II (Sălățiu) D (Mihalt)

(am. Cluj) (am. Cluj)

> 1/149 - 1/218 1270 - 1/465

1/32 - 1/47

14.3 - 20.9 14.3 - 20.9 144-248

0.4455

Somesul Mic / Somes-Tisa Somesul Mic / Somes-Tisa

Somes-Tisa

88 Agrocomsuin Bontida

Danube/Dunare Danube/Dunare

85 Tamico Ccrabia

Dunacor Braila

86 87 0.0533 0.1095 9060.0

ârnave / Mures

Somes-Tisa

Mures / Mures Mures / Mures Mures-Aranca

Mures Mures

Suinprod Salcud 94 Avicola Ungheni

92 93

Indagrara Arad

Stratus Mob Bla

90 Comsuin Moffin

89 Terapia Cluj Somes De

Bega-Timis Bega-Timis Bega-Timis 01/01 alomita

0.0958

D (am. Blaj)

COD 5,4/14,2 NH4 1,72/6,37

(Salatiu)

NH4 0,43/0,47

BOD 4,1/4,3

II (Nădlac)

(am. Arad)

1/1525

P 0,07/0,11

BOD 3,6/11,4 NO2 12,2/19,1

III (Chetani)

II (Ungheni)

1/397 - 1/441

36 - 40 167

NH4 0,78/4,36 Phen 0,001/0,002

BOD 7,3/29,1

D (am. Tecuci)

II (am Barlad)

1/179 - 1/11

6.6 - 10.4

0.0369

Bàrlad / Siret

Siret

[11] Suinprod Independenta

114 Prodsuis Stanilesti 113 Comtom Tomesti

115 Comsuin Ulmeni

116 Braigal Braila

Pret Pret

0.068

Danube/Dunare Danube/Dunare

NH4 1,42/8,46 | oil 52,9/101,9

NO2 4,2/4,5

BOD 3,9/4,9

BOD 4,9/6,7

D (av. Tändärei) D (av. Slobozia)

D (av. Slobozia)

D (Ciochina)

1/445 - 1/479

25.5 - 27.4

0.0583

lalomita /lalomita alomita /laiomita

101 Combilcarim Cazanesti

102 Ulcom Slobozia

103 Beta Tandareni

Comsettest Padureni Oltchim Rm Valcea

Comsuin Periam

96 98 8

95 Nutrimur lernut

Comsuim Birda

Comsuin Beregsau

Buzau

Siret Siret Siret

Siret

108 Martincom Martinest

109 Agricola Bacau

110 Spirt Ghidiceni 112 Pyretus Falciu

Suintest Focsani

107

105 Suinprod 106 Mark-Pork Vanatori 104 Suinded Dedulesti

COD 22,4735,5 NH4 0,8470,85

II (Drăgășani)

(am. Rm. Vålcea)

1/24 - 1/28

123 - 141

5.087

		<b></b>	Hot Spots - INDUSTRIAL	ועד					
2	61	20	21	22	23	34	25	38	27
Prut									
Danube/Dunare	0.1199	5724 - 4700	1/47754 - 1/39211	1/47754 - 1/39211   II (Chiciu-Silistra)	II (am. Brăila)	COD 4,4/8,7	COD 4,4/8,7 NO2 2,4/11,5 oil 0,05/1,67	oil 0,05/1,67	
Danube/Dunare	0.2943	5921 - 1319	1/20121 - 1/4482	II (Grindu-Reni)	I (Sulina)	COD 5,5/8,9	COD 5,5/8,9 NH4 0,25/0,65		Mg 15/20.7
Danube/Dunare	0.176	5358 - 5578	1/30445 - 1/31695	I (Pristol - Novo Selo)	I (am. Giurgiu)	COD 5.3/6.5 NH4 0.37/0.5	NH4 0,37/0,5		
Danube/Dunare									

			<b>±</b>	Hot Spots - INDUSTRIAL	IAL					
										page 4 of
	2	25	20	21	zz	23	72	25	28	27
	Cris									
	Mures									
	Crişul Repede / Criş	6600 0	23.6 - 24.8	1/2387 - 1/2509	I (am. Oradea)	II (Cheresig)	BOD 3,2/3,7		Fen 0,004/0,006 Fe 0,09/0	Fe 0.09/0
æ	Someşul Mic / Someş-Tisa	0.0829	14.3 - 20.9	1/172 - 1/252	I (am. Cluj)	III (Sălățiu)	BOD 3.2/5.7	P 0.072/0.215 Fe 0.05/0.1	Fe 0.05/0.1	
	Vulcanita / Olt	0.1667	96.0 - 0	- 1/30	I (Ref. Station)	D (av.st.epur. Colorom) BOD /54,8		NH4 /12,6	Fen /0,025	Fe /1.44
tie	Mureş	0.003	3.5 - 8.5	1/1163 - 1/2825	I (Costești)	III (av. Orāstie)	COD 3 9/35 7	COD 3.9/35.7 NH4 0.12/0.50		Fe 0 15/0
	Siret									
	Siret									
	Danube/Dunare	0.2642	4700 - 5920	1/17789 - 1/22407	II (am. Brăila)	II (Grindu-Reni)	COD 4.6/5.7	NH4 0.35/0.48	COD 4.6/5.7 NH4 0.35/0.48 Phen 0.007/0.012	
	Danube/Dunare	0.1849	5578 - 6384	1/30175 - 1/34535	I (am.Giurgiu)	i (am.Oltenita)	BOD 2,4 / 6,2 NO2 1,4/4,5	NO2 1 4/4 5		
	lalomita									
	Olt / Olt	0.386	123 - 141	1/319 - 1/365	I (am. Rm. Vålcea)	II (Drăgășani)	COD 22,4/35,5	COD 22,4/35,5 NH4 0,84/0,85		
	Sewage / Mures	0.02	35.1 - 36.0	1/1755 - 1/1800	II (Glodeni)	If (Ungheni)	COD 12.7/26 NH4 0.61/2.5	NH4 0.61/2.5		Fe 0.13/0
	Danube/Dunare	0.0262	5724 - 4700	1/218153 - 1/179127   II (Silistra)	II (Silistra)	II (am. Braila)	COD 4,4/8,7	COD 4,4/8,7 NO2 2,4/11,5 oil 0,05/1,67	oil 0,05/1,67	
										-

120 Clujana SA Cluj Napoca 122 SC Favior Blānuri Orāstir 123 Rafo Dārmāneşti 124 Goscom Roman 125 Celohart Donaris Brāila

121 Colorom Codlea

119 Sinteza SA Oradea

117 Cement Plant Aleşd 118 Carbosim Copşa Mică

0.14

Siret

130 Comcern SA Calarasi

129 Manpel Tg. Mures 128 UPS Govora

127 Crescatoria Peris 126 Verachim Giurgiu

131 SC Stimas Suceava

Sum

# Hot Spots - INDUSTRIAL

TRANSBOUNDARY SENSITIVITY OF 33 CARACTERISTIC OF PROBLEMS CREATED IN RECEIVER 98 DOWNSTREAM SENSITIVITY WS, irrigation USERS ક WS, irrig WS, irrig Š WS ΝS REVERSIBILITY OF INTENSITY AND THE PROBLEM 용 permanent permanent permanent permanent permanent permanent permanent permanent permanent permanent SIZE OF THE **AFECTED** 8 2-3 km 1 - 2 km 0,5 km 2 ka 2 km 2km 2 km **4** 2 km 2 km **TOXICITY OF** THE LOADS LEVEL OF 8 SSM, Fe N, SSM SSM. Pb BOD, oil Fe, Pb Fe, Cu Fe, Mn F. Е RECEIVER RIVER/ MAIN **CACHEMENT AREA** Borod / Crişul Repede Tarnava Mare / Mures Săsar / Somes-Tisa Mures / Mures Cerna / Mures Certej / Mures Abrud / Mures Barcău / Cris Aries / Mures Somes-Tisa Somes-Tisa Somes-Tisa Somes-Tisa Somes-Tisa Somes-Tisa Borod / Cris Somes-Tisa Bega-Timis Bega-Timis Bega-Timis Bega-Timis Mures Cris Cris Cris Cris Cris DISCHARGER NAME OF ECONOMIC UNIT E.M. Poiana Rusca-Teliuc Ind. Sarmei Campia Turzii Petrom Suplac de Barcau Siderurgica Hunedoara Romplumb Baia Mare Automecanica Medias Socomet Otelul Rosu Sometra Copsa Mica Azomures Tg.Mures E.M.Baia Mare Vest E.M. Coranda Certej E.M. Rosia Montana E.M. Baia Mare Est Phoenix Baia Mare E.M. Deva-Brusturi E.M. Baia de Aries E.M.Baia de Aries E.M. Brad-Barza 15 Petrom Marghita Ampellum Zlatna Ciocanul Nadrag Metalurgica Aiud Mecanica Cujmir E.M.Baia Borsa Resial Alba Iulia Silcotub Zalau Sidermet Calan E.M.Ruschita 38 UCMR Resita E.M. Rodna E.M. Borod E.M. Borod 14 E.M. Voivozi E.M. Zlatna E.M.Abrud Mina Deva E.M.Deva Ser. No 5 12 5 16 18 19 8 28 ജ 35 ന Ŋ ဖ ଷ 8 ಜ 24 32 33 0 4 ထ O 5 8 ଷ 27 37

# Hot Spots - INDUSTRIAL

																								l					9											
page 2 of 4	32																																						yes	NAS
	31								WS, irrigation	WS	ws		WS				WS	irrigation	WS	MS			WS, irrig	WS				WS, irrigation	MS				WS	WS	WS	WS			WS	14/6
	30								permanent	permanent	permanent		permanent				permanent	permanent	permanent	permanent			permanent	permanent				permanent	permanent				permanent	permanent	permanent	permanent			permanent	
	29								2 km	2-3 km	1 - 2 km		1 km				2 km	1 km	2 km	2 km			2 km	1 - 2 km				2 km	1 - 2 km				1 km	1 km	1 km	1 km			2 km	4 1
	28								BOD, COD	BOD, N	COD, N		COD				COD, N, Fe	COD, BOD	COD, BOD	SSM			COD, Phen	COD, Phen				BOD, SSM	COD, Phen				BOD, COD, N	cop	COD, N	BOD, Phen			COD, N, Fe	
		Bega-Timis	Bega-Timis	Bega-Timis	Dunare	Jiu	Jiu	Jil	Jiu / Jiu	OH / OK	Ghimbăşel / Olt	Olt	Bistra / Olt	O <del>I</del> t	Olt	Arges	Doamnei / Arges	Dâmbovnic / Arges	Prahova / Ialomita	Calugareaso Teleajen / lalomita	ialomita	lalomita	Dâmbu / Ialomita	Teleajen / lalomita	Buzau	Buzau	Buzau	Bistrita / Siret	Trotuş / Siret	Siret	Siret	Siret	Bistrita / Siret	Bistrita / Siret	Bistrița / Siret	Trotus / Siret	Siret	Siret	Siret / Siret	Dobtin / Dest
				E.M. Sasca Montana	Semag Toplet	43 E.M. Petrila	44 E.M.Lupeni	E.M.Coroesti	ova	Nitramonia Fagaras	snov	E.M. Capeni	Celohart Zarnesti		Alro Slatina	Aro Campulung		Arpechim Pitesti	٠,	/alea	COS Targoviste		Astra Romana Ploiesti	Petrotel Teleajen	Buzau	Ductil Buzau B	Gerom Buzau	Letea Bacau Bacau	Chimcomplex Borzesti		E.M. Mestecanis	E.M. Tolovanu	Fibrex Savinesti	Pergodur P.Neamt B		73 Carom Onesti	74 Rafo Onesti	75 Rulmentul Barlad S	Sidex Galati	
,	7		9	41	42	43	44	45	46	47	48		S.	_	52 /	53	54	25		22	28	29	/ 09		62 (	] 89	<u>2</u>	1 59	99		88	88	70	71 F	72 8	73 (	74	75 F		

# Hot Spots - INDUSTRIAL

COD, N         1 - 2 km         permanent permanent permanent WS         WS           COD, N         1 - 2 km         permanent WS           COD         2 - 5 km         permanent WS           COD         2 km         permanent WS           COD, N         1 km         permanent WS           COD, N         1 km         permanent WS           COD, N, SSM         1 km         permanent WS, irrig           COD, N, SSM         1 km         permanent WS, irrig           COD, N, SSM         1 km         permanent WS, irrig           COD, N SSM         1 km         permanent WS, irrig           COD, N SSM         1 km         permanent WS, irrig           COD, N SSM         1 km         permanent WS, irrig           COD, N 1 - 2 km         permanent WS, irrig
1 - 2 km permanent WS 2 - 5 km permanent WS 1 - 2 km permanent WS 1 - 2 km permanent WS 1 - 2 km permanent WS 1 - 2 km permanent WS 1 - 2 km permanent WS 1 - 2 km permanent WS 1 - 2 km permanent WS 1 - 2 km permanent WS 1 - 2 km permanent WS 1 - 2 km permanent WS 1 - 2 km permanent WS 1 - 2 km permanent WS 1 - 2 km permanent WS 1 - 2 km permanent WS
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		Ĥ	Hot Spots - INDUSTRIAL	USTRIAL			
							page 4 of 4
Ľ	-	2	28	29	30	31	32
7	117 Cement Plant Aleşd	Criş					
7	118 Carbosim Copsa Mică	Mures					
=	119 Sinteza SA Oradea	Crişul Repede / Criş	COD, N, P, HM 1 km	1 km	permanent	SM	yes
12	120 Clujana SA Cluj Napoca	Someşul Mic / Someş-Tisa	COD, SSM, Cr sewerage		permanent	WS	
12	121 Colorom Codlea	Vulcănița / Olt	cop	1 km	permanent		

Ves

permanent

permanent permanent

COD, SSM, Cr |sewerage

Sewage / Mures

Danube/Dunare

130 Comcem SA Calarasi 131 SC Stimas Suceava

Sum

129 Manpel Tg. Mureş

128 UPS Govora

Siret

SSM, N

permanent

1 - 2 km

COD, Phen

permanent

sewerage 1 - 2 km

COD, SSM

Danube/Dunare Danube/Dunare

125 Celohart Donaris Brăila

126 Verachim Giurgiu 127 Crescătoria Periș

lalomita 9t/0t

COD, N

permanent

sewerage

Mures Siret Siret

122 SC Favior Blănuri Orăștie

123 Rafo Dărmăneşti 124 Goscom Roman

:			SSM	=	944	153	367	920	3,809	1,410	2,851	1,325	2,290	381	2,903	34	337		2,859	11,607		
¥			gog	5		138.7	2.6		484.0	298.0	4,297.0	11,3240	1,811.0	1560		40.4		1,168.7	1,880.0	737.0		
OUSTRI ORITY			900	G,	0.86				591.6	607.0	1,523.0		3,054.0	1,572.0	2,983.0	64.3	21.2	4,144.2	1,308.0	1,870.0		
Hot Spots - INDUSTRIAL HIGH PRIORITY		Problems / ISSUES Type of problem		8																		
T O T		ECONOMIC SECTOR / NR.		7	mine-5	oil-11	nonfer met -2	chim-2	chim-2	petrochim-2	petrochim-2	pulp+paper-3	chim-2	pulp+paper-3	iron-6	chim.pharm2	iron-6	chim-2	food-1	chim-2	chim-2	
	S OF	PN PN P		9					-	8	88	82				92	88				82	5
	PREVIOUS LISTS OF HOT SPOTS	Tab. 2.2		s			12	40		27	28	2		25	15	20	7					
	VIOUS HOT	PNA PM 85		•			ļ			857		40		45		28						Ī
	PRE	SAP 83		3			12	40		22	8	- 7		23	15	18	7					
		RECEIVER RIVER MAIN CACHEMENT AREA		2	Sāsar / Somes-Tisa	Barcău / Cris	Târnava Mare / Mures	Mures / Mures	Jiu / Jiu	Dambovnic / Arges	Prahova / lalomita	Bistrita / Siret	Bistriţa / Siret	Bistrita / Siret	Siret / Siret	Bahlui / Prut	Danube/Dunare	Someşul Mic / Somes-Tisa	Mures / Mures	Off / Off	Crişul Repede / Criş	
		DISCHARGER NAME OF ECONOMIC UNIT		1	Phoenix Baia Mare	Petrom Suplac de Barcau	Sometra Copsa Mica	Azomures Tg Mures	Doljchim Craiova	Arpechim Pitesti	Petrobrazi Ploiesti	Letea Bacau	Fibrex Savinesti	Pergodur P Neamt	Sidex Galati	Antibiotice lasi	Siderca Calarasi	Somes Dej	Indagrara Arad	Oltchim Rm Valcea	Sinteza SA Oradea	
		Ser.			7	13	16	12	48	55	56	92	Γ_	7.1	92	/ 22	6/	87	83	100	119	

12.2 2.9 va. Cd. CN-0.5 UREA = 884 va, TDS = 11678 va

စ္တ ၀

60

7.1 0.8

4,467 1,641 992 92

0

14.8

1,838

831

oil extraction

OTHERS

2

€ 5 15 8.4

Ş F.

DISCHARGED POLLUANT LOADS

0.2 3.5 Va P. 1Va CN. 0.9 Va Phen 10.4 Va Phenois 517 Va P

4.1CN; 4.3 t/a Cr3+; 41.8 t oil detera 14.6

18,569.5 23,149.4 34,863.0 12,230.6 92.5 1.3 10.1 343.3 870.5

175

157.7

189.2

pulp+paper-3 chim-2 lether-9

chim-2

leather-9

Olt / Olt Sewage / Mureş

Danube/Dunare

120 Clujana SA Cluj Napoca 121 Colorom Codlea 122 SC Favior Blanun Oriste 126 Celohart Donaris Brälla 128 UPS Govora 129 Manpel Tg Mures

31/12/1997

31,12,1997 845,0.012 ta CN, 11 t/a Phen

310

0.2 11.7

31,12,1997 0.28 Phen dfish in WWTP Oraştie

0.3

4 691

544

lether-9

Somesul Mic / Somes-Tisa

Vuicânița / Oit Mures

8.1 Va Phen 0.4 Va CN 1,3 tu Phen,4,5 Va P 3 6 Va P

6.4

130 400 548

12.7

15.1

1,078

Transbo	DISCHARGER NAME OF
	from high priority list

vs.	Tabel 2 4.1.2.	Transboundary	transfer of polution	
Place of industrial hot spots from high priority list		DISCHARGER NAME OF	ECONOMIC UNIT	

		Tabel 2
ace of industrial hot spots	from high priority list	

Sum

from high priority list  Ta  DISCHARGER NAME OF  Transboun	
--	--

	Transk	•
rom high priority list	DISCHARGER NAME OF	

DISCHARGER NAME OF	Tran
ECONOMIC UNIT	transfe
etea Bacau	

	etea Bacau
transfer of	ECONOMIC UNIT
Transbo	DISCHARGER NAME OF

	_
DISCHARGER NAME OF	ECONOMIC UNIT

L			L
	DISCHARGER NAME OF	ECONOMIC UNIT	

L		ļ
DISCHARGER NAME OF	ECONOMIC UNIT	

- - Letea Bacau Celohart Donaris Brăila Colorom Codlea

yes

yes yes yes

- - Antibiotice lasi
    - UPS Govora
      - Phoenix Baia Mare Siderca Calarasi Petrobrazi Ploiesti
        - Arpechim Pitesti
- Manpel Tg Mures Sinteza SA Oradea Clujana SA Cluj Napoca

yes yes

- Petrom Suplac de Barcau SC Favior Blănuri Orăștie Sometra Copsa Mica 15

yes yes Yes yes Yes

- Doljchim Craiova Sidex Galati 15 16 17

Pergodur P Neamt Azomures Tg Mures

Oltchim Rm Valcea Somes Dej Fibrex Savinesti Indagrara Arad 8 2

## INDIANCES INDIANCED AND

	Tabel 2.4.1.1.	N RECEIVER	D.O.REGIM NUTRIENTS TOXIC GENERAL TOXIC SPECIFIC	27
		WATER QUALITY INDICATORS AFECTED IN RECEIVER	TOXIC GENERAL	92
		SUALITY INDICA	NUTRIENTS	25
		WATER	DOREGIM	24
		UALITY CATEGORY	DOWNSTREAM	23
HIGH PRIORITY		RECEIVER WATER QUALITY CATEGORY	UPSTREAM	22
		Oef	Qrec	21
		EFLUENT RECEIVER MULTI- FLOW AVERAGE FLOW	[Qef=m³/day] [Qrec =m3/s]	82
		EFLUENT FLOW	[Qef≒…m³/day]	19
		RECEIVER RIVER/ MAIN		2
		DISCHARGER NAME OF FCONOMIC UNIT		-

	Tabel 2.4.1.1.	RECEIVER	TOXIC SPECIFIC	
		WATER QUALITY INDICATORS AFECTED IN RECEIVER	TOXIC GENERAL	
		SUALITY INDICA	NUTRIENTS	
		WATER	D.O.REGIM	
		IUALITY CATEGORY	DOWNSTREAM D.O.REGIM NUTRIENTS TOXIC GENERAL TOXIC SPECIFIC	
HIGH PRIORITY		RECEIVER WATER QUALITY CATEGORY	UPSTREAM	
		Oef	Qrec	
		-	[Grec =m3/s]	
			EFLUENT FLOW	[Gef=…m³/day]
			RECEIVER RIVER/ MAIN CACHEMENT ABEA	
		SCHARGER NAME OF		

•	HIGH PRIORITY	Į.					
L							Tabel 2.4.1.1.
	Oef	RECEIVER WATER QUALITY CATEGORY	UALITY CATEGORY	WATER	SUALITY INDICA	WATER QUALITY INDICATORS AFECTED IN RECEIVER	N RECEIVER
	Orec	TOTOU	MATOTO		O E I I I I I	THE CONCE	

	(CATEGORY WATER QUALITY INDICATORS AFECTED IN RECEIVER
<del>,</del>	ECEIVER WATER QUALITY CATEGORY

Fe 0 38/0 82 Fe 0,62/0,93 Fe 0,21/0,42

BOD 11,8/14,2 NO3 10,6/11,8 Joil 2,06/3,21

NH4 0.5/1.7

D (Baia Mare)

NH4 0 61/2 5

COD 12,7726

COD 8/9,2 COD /17

BOD 1,7/2,6

O (am. Blaj) (Ungheni)

(Parhida)

(av. Suplacu de Barcău) (am. Baia Sprie)

(am. Medias)

/91 - 1/108

169 - 1/177

2.96 - 7.6

Tarnava Mare / Mures Săsar / Somes-Tisa

Barcău / Cris

Petrom Suplac de Barcau

Phoenix Baia Mare

Š

Sometra Copsa Mica Azomures Tg. Mures

Mures / Mures

Jin / Jin

0.67 - 5.73

145 - 11-48

35.1-36

1/156 - 1/0

(Glodeni) (Izvoare)

(Răcari)

Fe 0 51/0 63

Fe 0 33/0 6

BOD 40,6/46,6 NH4 2 55/5,87 Fen 0 017/0 02

NH4 0,04/4,94

P 0.094/0 14

COD 17/19.5

(Reni)

(Sendreni)

1/122 - 1/299

242 - 592

1/39 - 1/62

1/5 - 1/7

8.36 - 13.4 8.36 - 13.4 0.58 - 9.97

> 0.2156 1.9775 0.025

13.4 - 64.5

1/23 - 1/399

NH4 0 04/4 94

COD 7,5/10,1

BOD 3,8/5,7

NO2 2,4/11,5 | oil 0.05/1.67

Fe /0.25

Fen 70,06 oil 0,16/5,23

NH4 4,94/43,8

NH4 0,52/1.2 NH4 0,13/2,8

> BOD 6,1/19,5 BOD 5,7/41,5

> > O (am. Lac Bacáu)

D (Frunzeni)

1/25 - 1/120

1/17 - 1/21

6.98 - 8.56

0.411 1.802

0394 0.5397

Dâmbovnic / Arges Prahova / lalomita

Bistrita / Siret Bistrita / Siret Bistrita / Siret Bahlui / Prut Siret / Siret

Pergodur P Neamt

Fibrex Savinesti

Letea Bacau

65

Petrobrazi Ploiesti

Dotjohim Craiova 55 Arpechim Pitesti

0-1.12

(Straia) (Cornu

(Straja)

(Suseni) D (Tinosu) (Podari)

D (Frunzeni) ) (Frunzeni) O (Holboca)

NH4 15.3

Fe 0, 13/0, 14

Fe /1,44 Fe 0 15/0 31

Fen 70,025

NH4 112,6

BOD /54.8

(av st.epur. Colorom)

III (Sălățiu)

BOD 3 2/5.7

BOD 3,2/3,7

P 0.072/0.215 | Fe 0.05/0.1

NH4 0.35/0.46 | Phen 0.007/0.012

COD 3 9/35 7 NH4 0 12/0 50

COD 4.6/5.7

(Grindu-Reni)

(Ungheni)

(am. Rm. Vålcea)

II (Glodeni)

11755 - 1/1800

1/319 - 1/365

0.2642

3.5 - 8.5

0-0.85

Somesul Mic / Somes-Tisa

/ulcănita / Olt

122 SC Favior Blanuri Oraștie 20 Clujana SA Cluj Napoca

21 Colorom Codles

125 Celohart Donaris Brăila

129 Manpel Tg Mures

Sun

128 UPS Govora

Crişul Repede / Criş

35.1 - 36.0

Sewage / Mures

Danube/Dunare

OR/OR Mures

ll (am. Bráila)

/17789 - 1/22407

1/1163 - 1/2825

II (av. Orastie) (Drágásani)

COD 22,4/35,5 NH4 0,84/0,85 COD 12 7/26 NH4 0 61/2 5

Fe 0.13/0.14

Fe 0.09/0 13

Fen 0,004/0,006

COD 22 4/35,5 NH4 0,84/0,85

(Drăgășani (Cheresig)

(am. Rm. Valcea)

(am. Arad)

(am Clui)

(am. Oradea) (Ref. Station)

17387 - 172509

236-248 14.3 - 20.9

123 - 141

1/24 - 1/28

1/172 - 1/252

(am. Cluj) (Costești)

NH4 0 43/0,47

00004142 BOD 4,1/4,3

COD 4 4/8,7

(am Brăila)

(Chiciu-Silistra) D (Podu Iloaiei)

1/47754 - 1/39211

5724 - 4700

0 1199

0.4455 0 1095 5.087 0.0099 0.0829

Somesuf Mic / Somes-Tisa

Mures / Mures

100 Ottchim Rm. Valcea

Indagrara Arad

83

Somes De

19 Sinteza SA Oradea

Danube/Dunare

79 Siderca Calarasi

Antibiotice lasi

Sidex Galati

14.3 - 20.9

167

132 - 1147

1/1525

(Sălățiu)

### HA BOOM - INDIGETOIAL

		Hot Spots - High P	HOL SPOIS - INDUSTRIAL HIGH PRIORITY				
							Tabél 2.4.1.1.
				ARACTERISTIC	CARACTERISTIC OF PROBLEMS CREATED IN RECEIVER	TED IN RECEIV	ı
Ser	II. DISCHARGER NAME OF ECONOMIC	RECEIVER RIVER/ MAIN CACHEMENT	LEVEL OF TOXI-	SIZE OF THE	INTENSITY AND REVER.	SENSITI-	SENSITI-
ź		AREA	CITY OF THE	AREA AFEC-	SIBILITY OF THE PRO-	-NWOO	BOUN-
			LOADS		BLEM	STREAM	DARY AREA
L	1	2	28	29	30	31	32
7	Phoenix Baia Mare	Sásar / Somes-Tisa		0,5 km	permanent	WS, irrigation	
13	3 Petrom Suplac de Barcau	Barcău / Cris	BOD, oil	2 km	permanent	WS	yes
۳	16 Sometra Copsa Mica	Tårnava Mare / Mures		2 km	permanent	WS	
1	17 Azomures Tg.Mures	Mures / Mures		1 km	permanent	ws	
4	46 Doljchim Craiova	Jul/Jiu		2 km	permanent	WS, irrigation	
R	5 Arpechim Pitesti	Dâmbovnic / Arges		1 km	permanent	imgation	
ß		Prahova / lalomita	cop, Bop	2 km		ws	
88	5 Letea Bacau	Bistrița / Siret			permanent	WS, irrigation	
7	70 Fibrex Savinesti	Bistrița / Siret	z		permanent	WS	
71	Pergodur P.Neamt	Bistrița / Siret		1 km	permanent	WS	
9/	5 Sidex Galati	Siret / Siret			permanent	ws	yes
77	7 Antibiotice lasi	Bahlui / Prut		1 km	permanent	WS	yes
Ø		Danube/Dunare	COD, Fe		permanent	WS	yes
87	7 Somes Dej	Someșul Mic / Somes-Tisa			permanent	WS	
8	93 Indagrara Arad	Mures / Mures	BOD, COD, N		permanent	WS	yes
ξ	<b>Q</b>	Oit / Oit		1 km	permanent	ws	
<u> </u>		Crişul Repede / Criş		1 km	permanent	WS	yes
12	poca	Someșul Mic / Someș-Tisa	COD, SSM, Cr	sewerage	permanent	WS	
12		Vulcănița / Olt	COD	1 km	permanent		
12	122 SC Favior Blånuri Oråştie	Mureş		sewerage	permanent	WS	
12	125 Celohart Donaris Brăila	Danube/Dunare	N.	sewerage	permanent	WS	
12	128 UPS Govora	OH/OH		1 km	permanent	WS	
12	129 Manpel Tg. Mureş	Sewage / Mureş	COD, SSM, Cr	sewerage	permanent	WS	
	Sum						

	Hot Spots - INDUSTRIAL MEDIUM PRIORITY	
		Tabel 2.4.2.1.
-	PREVIOUS LISTS OF	

				ğ Z		HOT SpOTS - INDUSTRIAL MEDIUM PRIORITY	<b>7</b> ≻	Tabel 2.4.2.	2.4.2
		PRE	PREVIOUS LISTS OF HOT SPOTS	S LIST POTS	SOF				
OMIC	RECEIVER RIVER/ MAIN CACHEMENT AREA	SAP	PNA	Tab.	PNA	SAP PNA Tab. PNA SECTOR / NR. Type of	Problems / ISSUES Type of	DISCHARGED POLLUANT LOADS tyear	

Tabel 2 4 2 1		
_		

Tabel 2.4.2.1.	
D POLLUANT LOADS	

OTHERS

16 3 15

2 z

SSM

00 00 2

8

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ဖ

S

Borod / Crişul Repede

Cerna / Mures Certej / Mures Abrud / Mures Aries / Mures

Siderurgica Hunedoara

23 23

E.M. Borod

mine-5

irron-6 mine-5 iron-6 fertil-4

problem Type of

PM 97

₹ 8 8

SAP 83

DISCHARGER NAME OF ECONO

Ser. No

877

260 167 0.1 0.8 14 2 35.4

31/12/1997 31/12/1997 31/12/1997

0.5

424 1,253

225.0 26.0

8

3,2 t/a P; 6261 t/a TDS

0.2 0.0 0.2 8,9 t/a P

33

94

370 996, 1,155 629' 448

216.0

738.0

835.0

506.0 139.0

petrochim-2 petrochim-2 petrochim-2

chim-2 chim-2

112

842.0 325.0

73.0 427.6

chim-2

4 <del>5</del>

4 42 **4** 33

chim-2

4

Teleajen / lalomita Teleajen / Ialomita

Romfosfochim Valea Calugareasca

Dacia Pitesti

2 2

Astra Romana Ploiesti Chimcomplex Borzesti

8

Petrotel Teleajen

61

Doamnei / Arges Dâmbu / falomita

Ghimbăşel / Olt

OH/OH

Ind. Sarmei Campia Turzii

Nitramonia Fagaras

47

26

Romacril Rasnov Celohart Zarnesti

84 င္ထ

E.M. Rosia Montana E.M. Coranda Certe

Bistra / Olt

32

33 47

irron-6

3,7 t/a Phen.

9,4 t/a Phen.

0,17 t/a Phen.

11.3

380

241

516

132.0

5.1

22

215 t/a Mg;48,2 t/a Al 39 t/a P; 83 t/a Mg

2,8 t/a Phen.

Pharmaceutical Plant

0

90

8

3,180

81.0 432.0 647.6 114.0

nonfer.met.-7

8 3

fertilizer-4

4

ဗ္တုဓ္တ

chim-2

1,820 4.227

> 291.0 475.0 245.0 350.0 805.0

> > 858.3

chim.pharm.-2

Someşul Mic / Somes-Tisa

Târnave / Mures

lalomita /lalomita lafornita /lalornita

Mures / Mures

Topolnita / Dunare

Danube/Dunare

CICH Tr. Magurele Romag Tr. Severin

Carom Onesti Sofert Bacau Alum Tulcea

> 73 81

စ္ထ 8 စ္ဆ 8

72

99

Stratus Mob Blaj Ulcom Slobozia Beta Tandareni Nutrimur lernut

Terapia Cluj

Danube/Dunare

Frotus / Siret

Bistrița / Siret Frotus / Siret

furniture-11

agr.-10

food-1 food-1 chim-2

25 28

441

343.9

9 16 202

655.0

589.0

food-1 chim-2

8

Danube/Dunare

Bârlad / Siret

Danube/Dunare

130 Comcem SA Calarasi

126 Verachim Giurgiu

Spirt Ghidiceni

102 103

8

941.2

882

147

108 45

19 t/a P

wood industry

323 Va CI-

7,552.1 5,664.3 20,862.1 3,553 120.6 24.3 9.9

## Place of industrial hot spots from medium priority list

Tabel 2.4.2	Transboundary	transfer of polution	yes	yes	yes	yes	yes	yes																				
	Place DISCHARGER NAME OF ECONOMIC UNIT		Terapia Cluj	Alum Tulcea	Romag Tr. Severin	Verachim Giurgiu	Comcem SA Calarasi	CICH Tr. Magurele	Celohart Zamesti	Astra Romana Ploiesti	E.M. Rosia Montana	E.M. Coranda Certej	Romacril Rasnov	Petrotel Teleajen	Romfosfochim Valea Calugareasca	Siderurgica Hunedoara	Spirt Ghidiceni	Ind. Sarmei Campia Turzii	Stratus Mob Blaj	Sofert Bacau	Ulcom Slobozia	Nutrimur lernut	Chimcomplex Borzesti	Beta Tandareni	Dacia Pitesti	Nitramonia Fagaras	Carom Onesti	E.M. Borod
	Place		1	2	3	4	2	9	2	8	6	10	11	12	13	14	15	16	11	18	19	20	21	22	23	24	25	56

				_
	Tabel 2 4.2.1.	ECEIVER	TOXIC SPECIFIC	27
	Ţ	WATER QUALITY INDICATORS AFECTED IN RECEIVER	D.O.REGIM NUTRIENTS TOXIC GENERAL TOXIC SPECIFIC	. 96
		QUALITY INDIC.	NUTRIENTS	3.5
		WATER	D.O.REGIM	₽.
		RECEIVER WATER QUALITY CATEGORY	DOWNSTREAM	23
Hot Spots - INDUSTRIAL MEDIUM PRIORITY		RECEIVER WATER	UPSTREAM	22
Hot Spots		oet O	œ. O	21
		RECEIVER MULTI- ANNUAL AVERAGE FI OW	[Qrec = m3/s]	20
		EFLUENT FLOW	[Qef=m*/s]	19
		RECEIVER RIVER/ MAIN FLOW AVERAGE FLOW		2
		R NAME OF		

Fe 0.26 / 0.27

dn /14.8 An 73.58

Mn /14.8 Mn 3.58

Phen / 0,025

NH4 0 16/0 16 NH4 0 26/1 58

Fe /3.1 Fe 0,19/2,23 Fe 0.63/1.45

Cvanide 0.007/0.009

NH4 1 05/1 65

COD 19 7/19 9

COD 6,5/32 BOD /32,9 COD 8,5/8,7

D (am. conf.Oft)

(am. Zárnesti)

(am. Rasnov)

II (Hoghiz)

(Bur)

1199 - 1/210

22.6 - 23.8

0.0636 0.0253 1134 2097

55.5 - 72.4 21-457

1/46 - 1/60 1/10 - 1/3 (Ciumești)

D (avai Bod)

III (Fagaras)

D (Luncani)

COD 17,7/18

NH4 /1.5

D (am. confl. Mures)

III (Santuhalm)

(Teliucu Superior)

(Cincea)

1/3130 - 1/12572

Borod / Crisul Repede

Cerna / Mures Certej / Mures Abrud / Mures

Siderurgica Hunedoara

E.M. Borod

ECONOMIC DISCHARGER

2 Sec

7.18

(Ref. Station)

(Ref. Station)

D (am. confl. Aries)

JH4 0 46/0.7

NH4 0,09/5,73

Fe 0,1770,26

Fen 0 006/0 033

NH4 0,25/15,4

O (Moara Domnească) BOD 6,1/25

(Gura Vitioarei)

/45 - 1/118

Ľ

1/43 - 1/86

10 21 - 20 3 2.85 - 7.48

0 2348 0 2662

0.0633 0.3713 0 1948 0.2117

Feleajen / lalomita Feleaien / Jalomita

Romfosfochim Valea Calugareasca

Dacia Pitesti

Astra Romana Ploiesti Chimcomplex Borzesfi

8

Petrotel Teleaien

Sofert Bacau Carom Onesti

8

Doamnei / Arges Cambu / latomita

Ghimbase / Ott

Bistra / Oft

Aries / Mures

Ind. Sarmei Campia Turzii

28

Nitramonia Fagaras

Romacril Rasnov Celohart Zarnesti

\$

E.M. Rosia Montana E M Coranda Certe

960-0

(Darmanesti)

NH4 0, 12/0, 45

NH4 /3,23

Fe /6,15

023

Phen /

Fe 0,26/1,83

OI 0 14/3 85 oil 1,08/3,35

Fe / 107

Fe 0,21/1,51

Fen 0,003/0,034

NH4 0,29/2,52

NH4 0,25/0,65

COD 5,5/8,9 BOD 4,4/4,8 COD 5,3/6,5

NH4 0,37/0,5

NH4 0, 29/2, 52

NH4 4 9/43 8

COD 10, 1/78, 1

(am. lac Bacau)

II (Adjud)

(Sulina)

III (Adjud)

(am. Tg. Ocna) I (am. To. Ocna)

/88 - 1/112 1/63 - 1/305

17.1 - 21.8

13.4 - 64.5 17.1 - 21.8

1/8 - 1/20

II (Frunzeni)

(Gura Vitioarei)

(Ref. Station)

COD 17,5/18,3

NH4 0 25/15 4

NH4 /8.76

BOD 729,5

(Goga)

O (Moara Domneasca) BOD 6,1/25

Mg 15/20,7

Fe 0.42/0.54

Fe 0.05/0

P 0,072/0,215

P 0.07/0.11

Phen 0 001/0 002

oil 0,05/1,67

NO2 2,4/11,5

oil 52,9/101 9

NH4 1,42/8,46

NO2 12,2/19,

BOD 3,6/11,4

COD 7,5/7,7

BOD 3,2/5,7

(Pristol-Novo Selo)

II (Sălățiu) (Minait)

(am. Cluj) (Ungheni)

1/149 - 1/218

143 - 209 14.4 - 24.8 23.7 - 25.5 25.5 - 27.4 6.6 - 10.4

0.0958 0.0533

Somesul Mic / Somes-Tisa

Arnave / Mures

Stratus Mob Blaj 102 Ulcom Slobozia 103 Beta Tandareni 110 Spirt Ghidloeni

Terapia Cluj

Nutrimur lemut

opoinita / Dunare

Danube/Dunare Janube/Dunare

> CICH Tr. Magurele Romag Tr Severin

8 8 89 ક્ષ

Alum Tulcea

rotus / Siret Bistrita / Siret rotus / Siret 0.5072

5410

1/270 - 1/465 1/445 - 1/479 1/453 - 1/487

1/397 - 1/441

36 - 40

0.0532 0.0369

alomita /laiomita alomita /lalomita

Mures / Mures

9060

(Bazias)

O (am Blaj)

(am. Giurgiu)

(Pristol - Novo Selo)

/30445 - 1/31695

1/10667

/20121 - 1/4482

0 2943

0.1811

1/94 - 1/120

(Grindu-Reni)

BOD 3,9/4,9 BOD 7,3/29, COD 4.4/8.7

D (av. Slobozia) D (av. Tändårei)

D (av. Slobozia

III (Chetani)

BOD 4,9/6,7

NO2 4 2/4 5

NH4 0,78/4,36

NO2 1 4/4 5

BOD 2,4 / 6,2

(am. Oltenita)

(am Glurgiu

1/218153 - 1/179127

5724 - 4700

5578 - 6384

0 1849 0.0563

Janube/Dunare

Barlad / Siret

Danube/Dunare

130 Comcem SA Calarasi

Sum

126 Verachim Giurgiu

0.0262

1/30175 - 1/34535

1/179 - 1/11

(am.Barlad) D (Ciochina)

(am. Braila)

D (am. Tecuci)

### Hot Spots - INDUSTRI MEDIUM PRIORITY

Tabel 2.4.2.1.	SENSITIVITY OF TRANSBOUNDARY AREA	32
REATED IN RECE	SENSITIVITY OF DOWNSTREAM USERS	31
CARACTERISTIC OF PROBLEMS CREATED IN RECEIVER	INTENSITY AND SENSITIVITY REVER- SIBILITY OF THE DOWNSTREAM PROBLEM USERS	30
CARACTERISTIC	LEVEL OF SIZE OF THE OXICITY OF AREA HECTED	29
	LEVEL OF TOXICITY OF THE LOADS	28
	RECEIVER RIVER/MAIN CACHEMENT AREA	2
	DISCHARGER NAME OF ECONOMIC UNIT	+
	Ser. No	

1		
₽		

7.4.7 IMPL

WS, irrig

permanent permanent permanent permanent permanent permanent permanent permanent permanent permanent permanent permanent permanent permanent

Borod / Crişul Repede

Cerna / Mures Certej / Mures Abrud / Mures Aries / Mures

Siderurgica Hunedoara

E.M. Borod

E.M. Coranda Certej 24 E.M. Rosia Montana WS, irrig

2-3 km 1 - 2 km

BOD, N COD, N 호 2 E 2 83 2 Km

> COD, N, Fe COD, Phen COD, Phen COD, Phen

SSM

Teleajen / lalomita Feleajen / Ialomita

Romfosfochim Valea Calugareasca

Dacia Pitesti

Astra Romana Ploiest

8 8

21

Petrotel Teleajen

6

Chimcomplex Borzesti

Sofert Bacau 73 Carom Onesti 80 Alum Tulcea

Ghimbăşel / Olt

olt / olt

Ind. Sarmel Campia Turzi

28

Nitramonia Fagaras

Romacril Rasnov Celohart Zarnesti

₩

Bistra / Olt

Dâmbu / Ialomita Doamnei / Arges

goo

CS yes.

WS, Fisheries

? SN ۸s SΜ SS.

permanent permanent permanent permanent permanent permanent permanent permanent permanent permanent

permanent

I - 2 km - 2 km 2-5 km - 2 km - 2 km - 2 km - 2 km - 2 km 1 - 2 km 1 - 2 km

Ē

COD, N

Someşul Mic / Somes-Tisa

Tårnave / Mures lalomita /lalomita

Mures / Mures

Topolnita / Dunare

Danube/Dunare Danube/Dunare

> CICH Tr. Magurele 83 Romag Tr. Severin

8 8 91

Stratus Mob Bla

Terapia Cluj

Nutrimur lernut

જ

102 Ulcom Slobozia 103 Beta Tandareni 110 Spirt Ghidiceni

Bistrița / Siret Trotus / Siret

Trotus / Siret

COD goo COD

¥ £ 춁

BOD, Phen

COD, N

COD, N

WS, irrig

۸S Š WS

1-2 km 1-2 km ses. yes yes

WS, irrig WS irrig

Š

COD, BOD

alomita /lalomita

Bårlad / Siret

Danube/Dunare Danube/Dunare

130 Comcem SA Calarasi

Sum

126 Verachim Giurgiu

COD, N COD, N

COD, N

COD, Phen

								Tabel 2.4.3.1./1
			PREVIOUS LISTS OF HOT SPOTS	EVIOUS LISTS HOT SPOTS	P.			
Ser.	DISCHARGER NAME OF ECONOMIC UNIT	RECEIVER RIVER/ MAIN CACHEMENT AREA	SAP PN	Tab.	N M M	PINA Tab. PINA SECTOR / IN Type of Problems / PONA Tab. PINA SECTOR / IN Type of Problems / PONA SECTOR / IN TYPE /	Problems / ISSUES Type of	DISCHARGED POLLUANT LOADS  tyear

18DB1 2.4.3.1./1			OTHERS
		8	N Fe Mn Cu Pb Zn
		IT LOA	3
		OLLUAN sar	ų.
		DISCHARGED POLLUANT LOADS Dyear	Fe
		SCHAR	z
		٥	
			SSM
			008
			8
		Problems / ISSUES Type of problem	
		PNA Tab. PNA SECTOR / NR. Type of 95 2.2 97 pt. pnd problems	
	S OF	AM 79	
	EVIOUS LISTS OF HOT SPOTS	Tab. 2.2	
	PREVIOU: HOT (		
	Æ	SAP 93	
		RECEIVER RIVER/ MAIN CACHEMENT AREA	
		DISCHARGER NAME OF ECONOMIC UNIT	
		Ser. No	•••

Tabel 2.4.3.1./1		DISCHARGED POLLUANT LOADS tyear
		Problems / ISSUES Type of problem
		Problems / ECONOMIC ISSUES SECTOR / NR. Type of problem
	PREVIOUS LISTS OF HOT SPOTS	SAP PINA Tab. PINA SECTOR / NR. Type of 93 Pin 2.2 PM
		RECEIVER RIVER/ MAIN CACHEMENT AREA
		NAME OF CUNIT

						Tabel 2.4.3.1./1
		PREVIOUS HOT S	US LISTS OF SPOTS	li.		
E OF	RECEIVER RIVER/ MAIN CACHEMENT AREA	SAP PMA	Tab. PN/	A Tab. PNA SECTOR / NR. Type of problem	Problems / ISSUES Type of problem	DISCHARGED POLLUANT LOADS tyear

6.2 3,2 t/a hydrocarbons 3.2 0,2 t/a hydrocarbons 8.1 1,2 t/a hydrocarbons 7.1 1086.4 Va TDS

0.6

0.5

37.6

4.8

1.5 0.5 0.7

26.7

294 526 55 138

0.0

0.3

0.4

0.3 0.0

2

0

33

10.4

43.8 15.9 66.3 140.0 16.5

> mine-5 mine-5

Somes-Tisa Somes-Tisa Somes-Tisa

E.M. Baia Borsa

E.M. Rodna

Sicotub Zalau

Somes-Tisa Somes-Tisa Somes-Tisa Somes-Tka

mine-5

Iron-6

2.5 0.4

0.0 28.1 t/a TDS

0.9 0.2

0.7

9

0.4 0.0

0.2

26 8 3 4 A A

0.1

nonfer.met.-7

43

Mures Mures Mures Mures Mures Mures Mures Mures Mures Mures Mures Mures Mures

E.M. Bala de Arles

Ampellum Zlatna Petrom Marghita

<del>2</del> 60 20 7 25

E.M. Voivozi

E.M. Borod

E.M. Bala de Avies

E.M. Zlatna

E.M. Abrud

Metalurgica Alud

28 Mecanica Culmir 29 Sidermet Calan

년 11

mine-5 mine-5

mine-5

mhe-5 kron-6

4

mine-5

mine-5 mine-5 mine-5

2 0

ន

Borod / Crls

Romplumb Bata Mare

E.M. Deva-Brusturi

E.M. Brad-Barza

o

E.M.Baia Mare Vest E.M. Bata Mare Est

Cils 2

mine-5 mine-5 1.8

oll extraction

20.7 21,7 Va Mg 1.2 73,8 Va Ca 0.3 1 Va Cr

0.1

0.5 0.0

69.7

22.9

152.0

0.1

0.3 0.0

0.1

0.0 0.0 0.0

0.0 0.0 0.0

0.0

3 2 2 2

3.7 13.3 45.0

mme-5 mhe-5 kron-6 frron-6

E.M. Polana Rusca-Telluc

ဓ္က

Automecanica Medias

E.M. Deva

Restal Alba lulta

Mina Deva

ron-6

hron-8

0.0

0.5 0.5

0.3

6.2 6.8 8.0 0.0

907 907 367 172 272 272 608 366

0

0.5 2 0.3

0.1

0.1

2.1

228 221 221 146

25.0 0.8 30.0 91.5

hron-6 mine 5

kron-6 From-8 Irron-6 mine-5 Irron-6

Bega-Timis Bega-Timis Bega-Timbs Bega-Timis Bega-Timis Bega-Timbs

Socomet Otelul Rosu

35 36 38 ဓ္ဌ 37

Clocanul Nadrag

E.M.Ruschita

**UCMR Restta** 

C.S. Resita

0.8 68.8

54.0

Pron-8 mme-5 31/12/1997

5.6

1,150 156 649

89.0

171.0

ming-5

mine-5

Bega-Timls Dunare

E.M. Sasca Montana

Sernag Toplet

E.M. Petrika E.M.Lupent

E.M. Chudanovita

各 7 42 5

릭릭팅

E.M.Coroesti

E.M. Capeni

3,776 136

0.0

0.0

0.4

2.0

1.2 0.0

59.5 21.8

158 750

_		
シアだりだころ		
ī Š		

DISCHARGED POLLUANT LOADS  \$\$\text{typest}\$	Problems / ISSUES Type of	PNA Tab. PNA SECTOR / NR. Type of	Tab. PNA	SAP PNA	RECEIVER RIVER/ MAIN CACHEMENT	DISCHARGER NAME OF ECONOMIC UNIT
			JS LISTS OF SPOTS	PREVIOUS LISTS OF HOT SPOTS		
Tabel 2.4.3.1.71			:			

																	Tabel 2.4.3.1./2	7.7
	-	2	6	4	တ	ပ	7	80	6	10	11	12	12 13 14 15 16 17	14	15	16		Γ
51	Mecanica Mirsa	Off		_			lron-6		42.8	22.2	41					H	0,11 Va Cr	
25	Airo Slatina	Oit					nonfer.met7		11.6		45							
53	Aro Campulung	Arges					9-uoui		52.4	24.8	54	4	0.0		0.0	0.0	0.0 0,8 t/a P	
55	Arpechim Pitesti	Dâmbovnic / Arges	25	B57	27	90	petrochim-2		0.709	298.0	1,410	92	14.6		0.1	_	0.1 0.2 3,5 t/a P; 1t/a CN; 0.9 t/a l	Va I
28	58 COS Targoviste	lalomita					lrron-6		66.2	9.69	1,543		4.2				Hg, HCH, CI-, NH4+	
59	i M. Mija	lalomita					lron-6		1.0	1.1	23		0.1					
62	62 Cord Buzau	Buzau			_		mec.nef11				146		6.0			_	l	

0.1 0.614 P. 0.217a Cr 0,7 1/a Phen

0,3 t/a Phen

4 1/a Cr

2.5

3.5

0.8 2.1

80

petrochtm-2

22

56 2

Siret Siret

> Rulmentul Barlad I.M. Moldova Noua

E.M. Mestecanis

64 Gerom Buzau

S.P. Tarnita

63 Ductil Buzau

E.M. Tolovanu

69 75

74 Rafo Onesti Fortus lasi

lron-6

mine-5

mine-5

938 456 293 6,405

361.0

eather-9

textile-8 textile-8 agr.-10 agr.-10 agr.-10 agr.-10 agr.-10 адг.-10 agr.-10 agr.-10 agr.-10 agr.-10 agr.-10 agr.-10 agr.-10 agr.-10 agr.-10

Danube/Dunare Danube/Dunare Danube/Dunare

Corapet Corabia

85 | Tamico Corabla 86 Dunacor Braile Comsuin Moffin Suinprod Salcud Avicola Ungheni Comsuim Birda

Danube/Dunare

Somes-Tisa Somes-Tisa

Agrocomsuln Bontida

88 90

92

Mures-Aranca

Mures Mures Bega-Timis Bega-Timis Bega-Timis alomita

Buzau

101 Combilcarim Cazanesti

104 Suinded Dedulesti

105 Suinprod

Comsuin Beregsau

Comsettest Paduren

Comsuln Perlam

96 97 98 Siret Siret Siret Siret Siret Prut Prut

Iron-6 mine-5 356

49.5 306.6 260.0 379.0 4,363.0

929.0 637.6 298.8 143.7

agr.-10

.1 Va Phen 0.1 Va Phen 0.6 t/a Phen

196 59

0.5

229 818 766 174 111 75 68

3,082 279

303

709.0 76.2 40.0 301.0 32.0

3,931 482 1,629

432.0

3,979.0 360.0 2,247.0

,428.0 118.2 300.0 213.0 172.0

agr.-10

110.0 399.0

693 323

131 4

72.0 429.0

58.3

agr.-10 food-1

2,765

481.0 35.0 85.5

412.0 36.0 49.7

87.5 TDS

892

1,179

10,231 14.965

575.0 485.6

214.6 260.0 733.3

petrochim-2

87

lalomita

SC Stimas Suceava Sum

127 Crescătoria Periş

cement-11

Ξ

=

Mures

118 Carbosim Copsa Mica

123 Rafo Dărmănești 124 Goscom Roman

117 Cement Plant Aleşd

Danube/Dunare Danube/Dunare

11 Suinprod Independenta

113 Comtom Tomesti 114 Prodsuls Stanllest

112 Pyretus Falclu

115 Comsuin Ulmeni

116 Bralgat Braila

108 Martincom Martinest

109 Agricola Bacau

106 Mark-Pork Vanatori

107 Suintest Focsani

15,488.6 15,229.3 51,743.8 6,876 456.8 113.2 111.5

extraction

11.3

2.2

0.0

94 63 63 8 137

10.0 6.0 2.0 133.0 50.2 29.6

234.0 16.0

mec.nef.-11 mec.nef.-11 mec.nef.-11

9.0

0.0 5,4 t/a Mg

							_
Tabel 2.4.3.1./1	D IN RECEIVER	TOXIC SPECIFIC	12				
	CATORS AFECTE	TOXIC GENERAL	56				_
	UALITY INDIC	NUTRIENTS	92			1	_
	WATER O	D.O.REGI	24			1	_
	Qef RECEIVER WATER QUALITY CATEGORY WATER QUALITY INDICATORS AFECTED IN RECEIVER	DOWNSTREAM D.O.REGI NUTRIENTSTOXIC GENERAL TOXIC SPECIFIC	23				
	RECEIVER WATER	UPSTREAM	22				
	J <del>e</del> O	Orec	24				
	RECEIVER MULTI- ANNUAL	AVERAGE FLOW [Qrec #m3/s]	20				
	EFLUENT FLOW	[Oef=…m'/day ]	19				
	RECEIVER RIVER MAIN	CACHEMENI AKEA	2	Somes-Tisa	Somes-Tisa	Somes-Tisa	
	Dis	ECONOMIC UNIT		E.M. Turt	Borsa		
	Ser	2		-	2	က	

	D.O.REGI NUTRIENTSTOXIC GENERAL TOXIC SPECIFIC	27					
	TOXIC GENERAL	58					
	NUTRIENTS	ĸ			1		
	D.O.REGI	24					
	DOWNSTREAM	23					
	UPSTREAM	22					
-	Orec	24					
ANNUAL	Qrec *m3/s]	20					
L LCW	[Oer≒m″day ]	19					
DISCHARGER NAME OF RECEIVER RIVER MAIN FLOW	CACHEMENI AREA	2	Somes-Tisa	Somes-Tka	Somes-Tisa	Somes-Tisa	Somes-Tisa
DISCHARGER NAME OF	ECONOMIC UNIT				M. Rodna		Fst

0.00

Borod / Crks

Romplumb Baia Mare

10 E.M. Deva-Brusturi

11 E.M. Borod

14 E.M.Volvozi

E.M. Brad-Barza

E.M.Bala Mare Vest

Crks Crks

0.0321

Mures Mures Mures Mures Mures Mures

19 E.M.Bala de Arles 15 Petrom Marghilla

E.M.Abrud

82

18 Ampellum Zlatna

Bega-Timis

Dunare Jiu Jiu Ok

E.M. Sasca Montana

Semag Toplet

E.M. Petrila E.M.Lupeni

**₽** 

45 E.M.Coroesti 49 E.M. Capeni

40 E.M. Cludanovita

C.S. Resita

Bega-Timis Bega-Timis Bega-Timle Bega-Timis Bega-Timis Bega-Timis

Socomet Ofelul Rosu

34 Mina Deva 35 Socomet Ote 36 E.M.Ruschita

Clocanul Nadrag

38 UCMR Resita

E M Ruschita

Mures

E.M. Polana Rusca-Telluc

30

25 E.M. Bala de Arles

E.M. Zlatna

Metaturgica Ajud

Mecanica Cujmir Sidermet Calan Mures Mures Mures

Automecanica Medias

E.M.Deva

Resial Alba lulla

						:					Tabel 2.4.3.1./2
		2	19	20	21.	22	23	24	25	26	27
2	Mecanica Mirsa	Oit									
52	Alro Slatina	Off									
23	Aro Campulung	Arges									
58	58 COS Targoviste	lalomita									
200	I M Mila	latomita									

0.1738

Rulmentul Barlad

E.M. Mestecanis

64 Gerom Buzau 63 Ductil Buzau

S.P. Tarnita

29

Cord Buzau

E.M. Tolovanu

89 69

Rafo Onesti Fortus last

74 75 82

I.M. Moldova Noua

84 Corapet Corabia

Tamico Corabia Dunacor Braile Comsuln Moffin Suinprod Salcud Avicola Ungheni

88 88

Buzau Siret Siret Siret Siret

Danube/Dunare Danube/Dunare Danube/Dunare Danube/Dunare

Somes-Tisa Somes-Tisa

Agrocomsuin Bontida

Mures Mures Mures-Arance

Bega-Timis Bega-Timis Bega-Timis alomita

Comsuln Beregsau Combilcarim Cazanesti

5 86

66

104 Suinded Dedulesti

Comsettest Paduren

Comsuin Perlam

94 96

90

Comsulm Birda

Buzau Siret Siret Siret Siret

Siret

111 Suinprod Independenta

109 Agricola Bacau

108 |Martincom Martinestl

107 Suintest Focsani

106 Mark Pork Vanatori

105 Suinprod

Prut Pre

113 Comtom Tomesti 114 Prodsuis Stanilesti

112 Pyretus Falciu

0.068

Danube/Dunare Danube/Dunare

Mures

118 Carbosim Copsa Mică

123 Rafo Dărmăneşti 124 Goscom Roman SC Stimas Suceava Sum

Crescătoria Periş

117 Cement Plant Aleşd

115 Comsuln Ulment

116 Braigal Braila

Cris

Siret

	Hot spots	HOT SPOIS - INDUSTRIAL LOW PRIORITY				
			CARACTERIST	CARACTERISTIC OF PROBLEMS CREATED IN RECEIVER	REATED IN RECE	Tabel 2.4.3.1./1 IVER
DISCHARGER NAME OF ECONOMIC	RECEIVER RIVER MAIN CACHEMENT	LEVEL OF	SIZE OF THE	LEVEL OF SIZE OF THE INTENSITY AND	SENSITIVITY	SENSITIVITY OF
HNO	AREA	TOXICITY OF	AREA	REVERSIBILITY OF COMMETBEAM	NO NAME OF THE PARTY OF	TRANSBOUNDARY
		THE LOADS	AFECTED	THE PROBLEM	USERS	AREA
	2	28	29	30	31	32
E.M. Turt	Somes-Tisa					
F M Baia Rorea	Somes-Ties					

permanent

2 km

8

Borod / Cris

Cris Cris

Romplumb Baia Mare

E.M. Deva-Brusturi

9

E.M. Brad-Barza

O

E.M. Baia Mare Vest

Θ

E.M. Baia Mare Est

Silcotub Zalau

E.M. Rodna

ŝ

Ser

Cris

S.

Mures

E M. Abrud E M. Zlatna E M. Baia de Aries

2 2 2 2

Metalurgica Alud Mecanica Cujmir

27

28 29 30

E M Baia do Aries

13

Potrom Marghita Ampellum Zlatna

E.M. Voivozi

E.M. Borod

Mures Mures Mures Mures Mures Mures Mures Mures Mures Mures Mures Bega-Timis Bega-Timis

륵 글

E.M. Sasca Montana

4

Semag Toplet

E.M. Petrila

E.M.Lupeni

E.M.Coroesti

E.M. Capeni

E.M. Ciudanovita

C.S. Resita

Bega-Timis Bega-Timis Bega-Timls Bega-Timis Bega-Timis Dunare

Socomet Otelul Rosu

Ciocanul Nadrag

E.M.Ruschita **UCMR** Resita

8 37 38 ඉ 40 42 43

Mures

E.M. Poiana Rusca-Teliuc

Sidermet Calan

Automecanica Medias

E.M.Deva

ह

Restal Alba Iulia

33

Mina Deva

8 8

Somes-Tisa Somes-Tisa Somes-Tisa Somes-Tisa Somes-Tisa

		6	ç	8			Tabel 2.4.3.1./2
51	Mecanica Mirsa	O# O#	07	83	30	31	32
52		O#					
53		Arges					
28	$\neg$	lalomita					
29		lalomita					
62		Buzau					
ည		Buzau					
9	Gerom Buzau	Buzau					
29	_	Siret					
89	$\neg$	Siret					
89	$\neg$	Siret					
72	_	Bistriţa / Siret	COD, N	1 km	permanent	WS	
74	Rafo Onesti	Siret					
75		Siret					
78	_	Prut					
82	I.M. Moldova Noua	Danube/Dunare					
8	Corapet Corabia	Danube/Dunare					
82	Tamico Corabia	Danube/Dunare					
98	Dunacor Braila	Danube/Dunare					
88	Agrocomsuin Bontida	Somes-Tisa					
8	Comsuin Moffin	Somes-Tisa					
92	Suinprod Salcud	Mures					
94	Avicola Ungheni	Mures					ı
8	Comsuin Periam	Mures-Aranca					
97	Comsuim Birda	Bega-Timis					
86	Comsettest Padureni	Bega-Timis					
8	$\neg$	Bega-Timis					
101	Combilcarim Cazanesti	lalomita					
104		Buzau			-		10.0
105	Suinprod	Siret					
106	Mark-Pork Vanatori	Siret					
107	Suintest Focsani	Siret					
8	108 Martincom Martinesti	Siret					
5 8	Agricola Bacau	Siret					
=	Suinprod Independenta	Siret					
112	Pyretus Falciu	Prut					
113	113 Comtom Tomesti	Prut					
114	sti	Prut					
115	Comsuin Ulmeni	Danube/Dunare					
116	Braigal Braila	Danube/Dunare					
117	Cement Plant Aleşd	Criş					
118	Carbosim Copsa Mică	Mureş					
123	123 Rafo Dărmănești	Siret					
124	124 Goscom Roman	Siret					
	127 Crescătoria Periș	lalomița					
131	SC Stimas Suceava	Siret					
	Sum						

### 3. Identification of Diffuse Sources of Agricultural Pollution

First of all, it should be mentioned that 99 % of Romanian inland waters are discharged in the Danube River and 1% directly into the Black Sea. The average multiannual flow of the Danube is  $5,500 \text{ m}^3$  / s at the gauging station Orsova, and this can be considered as entrance in the country, and  $6,300 \text{ m}^3$  / s at the entrance in the Danube Delta.

Having in mind that the actual Romanian economical reform has affected also the agriculture (by land privatisation), the available data at the moment can't reflect the requests of presenting those at the level of river basins or countries.

Due to the motives above mentioned, presented data cover the entire territory of the country as a whole.

### 3.1. Land under Cultivation

3.1.1. Area of the total land from Romania being in agricultural exploitation at the end of 1994 was 14797.5 thousand ha and in 1995 was 14797.2 thousand ha. The utilisation of this area is mentioned in table 3.1.1.

**Table 3.1.1.** 

No.	Destination of agricultural area	Agricultural area thousand ha		Structure %	
		Total	of which private sector	Total	of which private sector
	1994	14797.5	10693.9	100	
1.	Arable	9338.0		63.1	
2.	Pastures	3378.4		22.8	
3.	Meadows	1493.7		10.1	
4.	Vineyards and nurseries	298.4		2.0	
5.	Orchards and nurseries	289.0		2.0	
	1995	14797.2		100	
1.	Arable	9337.1	7807.6	63.1	73.0
2.	Pastures	3392.4	1074.9	22.9	10.0
3.	Meadows	1497.7	1402.5	10.1	13.1
4.	Vineyards and nurseries	292.4	220.1	2.0	2.1
5.	Orchards and nurseries	277.6	188.8	1.9	1.8

3.1.2. The specific areas of intensive agricultural activities from the total agricultural land of Romania are mentioned in the table 3.1.2. Most of these areas are surfaces, which are provided with irrigation facilities. Regarding the location and the organisation of those irrigation systems, they are presented in a number of maps attached to this report. (Annexes of Chapter 3)

Ta	hl	Δ	3	1	2
1 4			. 7.		-4-

No.	Total area provided with irrigation facilities	Agricultural area thousand ha		Structure %	
		Total	of which private sector	Total	of which private sector
	1994	3502.2		100	
1.	Agricultural	3104.3		96.85	
2.	Arable	2929.1		91.38	
	1995	3211.1	2175.4	100	
1.	Agricultural	3110.1	2130.6	96.9	97.9
2.	Arable	2934.6	2062.0	91.4	94.8

The Great Romanian Plain which is bordered at the west by Carpathian Mountains in the Tr. Severin point, in North by the same mountains, in South by Danube and in West by Danube at Galati town point, has a number of 37 large irrigation systems which are covering 1973.41 thousand ha. Between Danube and Black Sea there are other 500 thousand ha in the region called central and South Dobrogea which is located between Danube and Black Sea.

The maps included in the Report (Map 4.4.4.1.) and which were organised for presenting the irrigation systems are referring to the main systems from the country which are located around Danube as main resource for water, and those systems are described and presented in this chapter.

3.1.3. The total production and use of fertilisers in the country are presented in the table 3.1.3. and the quantities presented are expressed in **active substance**.(s.a.)

**Table 3.1.3.** 

No.	Chemical fertilisers [thousand tons]	1993	1994	1995
1.	Nitrogen based	346	313	306
2.	Phosphorus based	165	149	149
3.	Potash based	27	17	15
4	Total	538	479	470
5.	Natural fertilisers Quantities (as s.a.) [thousand tons]	17,125	16,945	17,423

The ratio in which were applied the chemical fertilisers are:

- Nitrogen based in average quantity (arable ha land: 38 kg s.a.)
- Phosphorus based in average quantity (arable ha land: 18 kg s.a.)

The **pesticides** that were applied in 1994 are in the total of **14366.68 tones** / **year s.a.** (active substance) out of which:

- Insecticides: 2626.73 tons s.a.
- fungicides and bactericides: 7585.33 tons s.a.
- ➤ Herbicides: 4154.62 tons. s.a.