

## Glossary of Terms

Terms	Meaning
<i>Acquis Communautaire</i>	or The 'Body of Law' of the European Union covering all legislation prepared and adopted by EU institutions.
<i>Acquis</i>	
ADR	European Agreement for international transport of hazardous substances (Accord Européen Relatif au Transport International des Marchandises Dangereuses par Route)
BAT	Best Available Techniques
BG	Bulgaria
CAP	Common Agricultural Policy
CAS	Country Assistance Strategy
CBC	Cross-border Co-operation
CEE	Central and Eastern European countries
CPC	Clean Production Centre
DDBRA	Danube Delta Biodiversity Reserve Authority or
DfID	Department for International Development
DISAE	Development of Implementation Strategies for Approximation in Environment
EBRD	European Bank for Reconstruction and Development
EDC	Ethylene Dichloride
EEC	European Economic Communities
EIA	Environmental impact assessment
EIB	European Investment Bank
EIS	Environmental impact statement
EIU	Economist Intelligence Unit
EMAS	Eco-management and Audit Scheme
EPI	Environmental Protection Inspectorate
EPR	Environmental Performance Report Ref: 28.
EQS	Environment Quality Standard
ERM	Environmental Resources Management
EWC	European Waste Catalogue
EU	The European Union
GD	Government Decision
GEF	Global Environment Fund
GEO	Government Emergency Ordinance
GMP	Genetically modified products
GO	Government Ordinance
HCl	Hydrogen Chloride
HU	Hungary
HWL	Hazardous Waste List
ICIM	National Institute for Environment Protection
IFI	International Financing Institution
IHW	Industrial Hazardous Waste
IMF	International Monetary Fund
IPH	Institute of Public Health
IPPC	Integrated Pollution Prevention Control
ISPA	EU Instrument for Structural Policies for Pre-Accession (See Section 11.2.4)
IWL	Integrated Waste List
JICA	Japan International Cooperation Agency
LCP	Large Combustion Plants
LEAP	Local Environmental Action Plans
Meuro	Million euro
MoAFF	Ministry of Agriculture, Food and Forests
MHF or MoHF	Ministry of Health and Family
MIR	Ministry of Industry and Resources
MO	Ministerial Order

<b>Terms</b>	<b>Meaning</b>
MP	Member of Parliament
MSW	Municipal Solid Waste
MWEP or MoWEP	Ministry of Water and Environmental Protection
MWFEP	Ministry of Water, Forestry and Environmental Protection (former name of MWEP)
NCPC	National Cleaner Production Centre
NEAP	National Environmental Action Plan
NEHAP	National Environmental Health Action Plan
NES	National Environmental Strategy
NIS	National Institute of Statistics
NPAA	National Programme for the Adoption of the Acquis
PCB	Polychlorinated biphenyls
PCT	Polychlorinated triphenyls
PCV	Polyvinyl Chloride
PHARE	EU programme for Polish-Hungarian Assistance for Restructuring, now extended to other Central and Eastern European countries (Section 11.2.1).
PPC	Project Preparation Committee or Pollution Prevention Centre
REC	Regional Environment Centre
REReP	Regional Environmental Reconstruction Programme for SEE countries.
RO or ROM	Romania
ROL	Romanian Lei (for exchange rate, see USD).
SA	Society by Actions (a type of legal entity in Romania)
SAPARD	EU Special Accession Programme for Agriculture and Rural Development (See Section 11.2.5)
SOF	The State Ownership Fund now called APAPS.
SoS	Secretary of State
SR	Romanian Standards
SRL	A Romanian registered company
ToR	Terms of Reference
UNDP	United Nations Development Programme
UNIDO	United Nations Industrial Development Organization
USAID	US International Aid Agency
USD	US Dollar. 1 USD = 30930.0 Romanian Lei (source: Financial Times, 24/10/2001).
VCM	Vinyl Chloride Monomer
WB	The World Bank
WEC	World Environment Centre
WMIS	Wast Management Information System
WWTP	Waste Water Treatment Plant

## **Final Reports**

Volume 1	Main Report: Strategy and Action Plan for Hazardous Waste Management in Romania
Volume 2	Supporting Report 1: Supporting Information for the Strategy and Action Plan
Volume 3	Supporting Report 2: Results of Surveys Conducted
Volume 4	Supporting Report 3: Results of Pilot Projects Implemented
Volume 5	Summary
Volume 6	Pilot Project 1 Promotion of Heavy Metal Recycling Using Existing Smelting Facility
Volume 7	Pilot Project 2 Waste Minimization and Treatment in Metal Surface Treatment Process
Volume 8A	Pilot Project 3A Organic Solvent Reduction
Volume 8B	Pilot Project 3B Responsible Care
Volume 9	Pilot Project 4 Strengthening EPI and Company Capacity in Hazardous Waste Management

**Volume 2**  
**Supporting Report 1: Supporting Information for the Strategy and Action Plan**

**Table of Contents**

<b>1. Introduction.....</b>	<b>1-1</b>
<b>2. Current Romanian Context .....</b>	<b>2-1</b>
2.1 Introduction to Romania .....	2-1
2.2 General Economic Conditions .....	2-3
2.3 Environmental Conditions .....	2-8
2.4 Industrial Conditions.....	2-15
<b>3. Current Situation Concerning Administrative, Legislative     and Institutional Aspects .....</b>	<b>3-1</b>
3.1 Institutional Structure.....	3-1
3.2 Current Policies.....	3-6
3.3 Legislation.....	3-11
3.4 Regulation and Enforcement.....	3-22
3.5 Waste Management Planning.....	3-26
<b>4. Current Conditions of Hazardous Waste Management in Romania.....</b>	<b>4-1</b>
4.1 Hazardous Waste Treatment and Disposal.....	4-1
4.2 Soil-Contaminated Sites.....	4-10
<b>5. Hazardous Waste Quantities .....</b>	<b>5-1</b>
5.1 Estimated Hazardous Waste Generation Quantity .....	5-1
5.2 Method of Estimation of Hazardous Waste Generation Quantity.....	5-8
5.3 Needs for Improvement of Waste Quantity Data Quantity .....	5-13
5.4 Latest Available Data .....	5-14
<b>6. Supportive and Relevant Information for Strategy and Plan .....</b>	<b>6-1</b>
6.1 Introduction.....	6-1
6.2 Collection and Transportation of Hazardous Waste.....	6-1
6.3 Treatment and Disposal of Hazardous Waste .....	6-13
6.4 Management of Soil-Contaminated Sites .....	6-33
6.5 Economic Aspects.....	6-66
6.6 Information and Data Management .....	6-72
<b>7. Measures for Certain Waste Types.....</b>	<b>7-1</b>
7.1 Introduction.....	7-1
7.2 Polychlorinated Biphenyls (PCBs) .....	7-1
7.3 Obsolete Pesticides .....	7-8
7.4 Organic Chlorinated Solvent.....	7-9
7.5 Waste Oil.....	7-21
7.6 Medical Wastes .....	7-30

<b>Annex 1-Annex 7.....</b>	<b>Annex 1</b>
Annex 1 Harzardous Waste Guidance Note.....	Annex 1-1
Annex 2 Guide for Elaboration of Company Waste Management Plan.....	Annex 2-1
Annex 3 Proposed Waste Inspection Report Form .....	Annex 3-1
Annex 4 Checklist of questions for inspecting hazardous waste management inside companies.....	Annex 4-1
Annex 5 –Review of tasks and responsibilities of waste unit as described in the organizational and functioning regulation- draft ROF – of EPI Pitesti.....	Annex 5-1
Annex 6 Soil- Contaminated Sites.....	Annex 6-1
Annex 7 Analysis of inspection department activity related to the companies included in PP4 .....	Annex 7-1

### List of Tables

Table 2.2.1	Population Trends (1970-1999 Selected Years July 1 <sup>st</sup> ).....	2-3
Table 2.2.2	Macroeconomic Indicators .....	2-4
Table 2.2.3	Indices of GDP, by Sector (1990=100) .....	2-5
Table 2.2.4	Value Added by Sector, 1999 (in billion lei/ 1999 prices).....	2-5
Table 2.2.5	Structure of Industry 1996-1999: Production Indices .....	2-6
Table 2.2.6	Employment Trends by Sector 1994-1999 (thousands, Annual Average) .....	2-6
Table 2.2.7	Public Sector Share in GDP 1991, 1999.....	2-7
Table 2.2.8	Immediate Macroeconomic Prospects.....	2-7
Table 2.4.1	GDP and Industry Contribution to GDP .....	2-15
Table 2.4.2	Equity Capital in Hard Currency .....	2-17
Table 2.4.3	Main Generated Waste Amounts .....	2-25
Table 2.4.4	Installed Capacity and Production of Electric Energy .....	2-28
Table 2.4.5	Generated Waste Amounts.....	2-28
Table 2.4.6	Number of Mines in Romania in 2000.....	2-29
Table 2.4.7	Mining Production in the 90s (1,000 tones).....	2-29
Table 2.4.8	Quantities and Types of Waste .....	2-31
Table 2.4.9	Estimates of Crude Oil Production.....	2-33
Table 2.4.10	Waste Amounts Generated Between 1995-2000 .....	2-33
Table 2.4.11	Waste Amounts Generated Between 1995-2000 .....	2-34
Table 2.4.12	The Balance Between the Food Industry and Agriculture Between 1998-2000.....	2-34
Table 2.4.13	Milling and Bread Industry .....	2-36
Table 2.4.14	Meat Industry .....	2-37
Table 2.4.15	Milk Industry .....	2-37
Table 2.4.16	Edible Oil Industry .....	2-37
Table 2.4.17	Sugar Industry .....	2-37
Table 2.4.18	Estimate for Cellulose and Paper Industry .....	2-39
Table 2.4.19	Generated Waste Amounts.....	2-40
Table 2.4.20	Main Refineries .....	2-41
Table 2.4.21	Crude Oil Processing Evolution for the Period 1989-2000.....	2-42
Table 2.4.22	Evolution of the Production of Oil Products for the Period 1995-2000.....	2-42
Table 2.4.23	Evolution of the Production of Petrochemical Products for the Period 1995-2000 .....	2-43

Table 2.4.24	Evolution of Tire Production.....	2-44
Table 2.4.25	Evolution of Internal Consumption of Chemical Fertilizers – Estimate.....	2-53
Table 2.4.26	Main Groups of Products and Main Producers.....	2-55
Table 3.2a	Transposition Status of EU Waste Directives.....	3-9
Table 3.2b	Integrated Pollution Prevention and Control (IPPC) and Waste Related Directives.....	3-10
Table 3.3a	Environmental and Waste Management Related Legislation.....	3-12
Table 3.5a	Directives That Provide A Planning Obligation.....	3-28
Table 3.5b	Other EU Legislation That May Be Taken on Board in the Waste Management Planning Process.....	3-29
Table 4.1.1a	Industrial Landfills By Categories.....	4-2
Table 4.1.1b	Industrial Landfills By Hazard Categories.....	4-2
Table 4.1.2a	Types of Industrial and Agricultural Waste Treatment and Disposal Methods in 2002 for Purposes of Sale or For final Disposal.....	4-4
Table 4.1.2b	Types of Industrial and Agricultural Waste Treatment Methods in 1999 for Purposes of Sale or For final Disposal.....	4-4
Table 4.1.3	Incinerators on Industrial Enterprises Own Sites in Romania.....	4-7
Table 4.1.4	Merchant Incinerators Currently Existing in Romania.....	4-8
Table 4.2.1	Summary of Contamination Sources in Existing Inventories.....	4-13
Table 5.1.1	Estimated Hazardous Waste Generation Quantity in Romania by Waste Category in 2002.....	5-1
Table 5.1.2	Estimated Hazardous Waste Generation Quantity in Romania by Region in 2002.....	5-2
Table 5.1.3	Estimated Hazardous Waste Generation Quantity in Romania by Waste Category and Region in 2002.....	5-4
Table 5.1.4	Estimated Hazardous Waste Generation Quantity in Romania by County in 2002.....	5-4
Table 5.1.5	Estimated Hazardous Waste Generation Quantity in Romania by Waste Category and by County in 2002.....	5-5
Table 5.1.6	Industries Generation Hazardous Waste.....	5-6
Table 5.2.1	Result of 600 Factories Questionnaire Survey for Hazardous Waste Generation.....	5-10
Table 5.2.2	Result of 80 Factories Visiting Survey for Hazardous Waste Generation.....	5-12
Table 5.4.1	Principal Types of Hazardous Wastes Generated in 2002.....	5-15
Table 6.3.1	Principally Organic Waste by Region (2002).....	6-16
Table 6.3.2	Principally Inorganic Wastes by Region.....	6-22
Table 6.4.1	Method of Overview of Management Condition.....	6-33
Table 6.4.2	Trigger Concentration Values of the Ministerial Order n°756/1997.....	6-35
Table 6.4.3	Management Alternatives in Case of Soil Contamination, According to Ministerial Order n°756/1997.....	6-35
Table 6.4.4	Main objectives of the Strategy for Management of Soil- Contaminated sites.....	6-45
Table 6.4.5	Main Targets.....	6-45
Table 6.4.6	List of Strategic Recommendations.....	6-46
Table 6.4.7	Checklist of Recommendation and Effects on the Management Fields Defined in Section 6.4.1.....	6-48
Table 6.4.8	Approach for Inventory of Contaminated Sites.....	6-54
Table 6.4.9	Overview of Reporting System to Be Set Up.....	6-56

Table 6.4.10	Proposed Reporting Data Items From EPI to ICIM .....	6-57
Table 6.4.11	Surface and Groundwater Factors in Management of Contaminated Sites .....	6-60
Table 6.4.12	Gaps of Order 756 and Needs to Fulfill These Gaps.....	6-63
Table 6.4.13	Types of Temporary Remediation Measures .....	6-65
Table 6.5.1	Examples of Environmental Funds .....	6-70
Table 6.5.2	Economic Instruments for Pollution Control in Romania.....	6-70
Table 7.4.1	Production Data of Chlorinated Solvents .....	7-11
Table 7.5.1	Specification of Reformed Fuel Oil in Japan .....	7-25
Table 7.5.2	Amount of Petroleum Industry Wastes in Romania.....	7-27
Table 7.5.3	Examples of Waste Oils and Acid Tar in Waste Oil Lagoons.....	7-29
Table 7.6.1	Hospital Waste Generation Factors .....	7-30
Table 7.6.2	Estimated Hazardous Medical Waste Generation .....	7-31
Table 7.6.3	Hospital Waste Generation Factors .....	7-31
Table 7.6.4	Technologies for Management of Hazardous Medical Wastes .....	7-32
Table 7.6.5	Technologies for Management of Hazardous Medical Wastes .....	7-35

## List of Figures

Figure 2.4.1	Annual Inflation rate .....	2-16
Figure 2.4.2	GDP and Industry Index .....	2-16
Figure 2.4.3	Percentage of Industry in GDP .....	2-17
Figure 2.4.4	Percentage of Pprivate Sector in GDP .....	2-18
Figure 2.4.5	Annual Unemployment Rate .....	2-18
Figure 2.4.6	Machine Building Industry Evolution .....	2-21
Figure 2.4.7	Primary Energy Resources .....	2-27
Figure 2.4.8	Medium Monthly Meat Consumption per Person (kg) .....	2-35
Figure 2.4.9	Trends of the Production Facilities of Fibrous Cellulose Materials.....	2-38
Figure 2.4.10	The Evolution of The Production Facilities for Paper and Cardboard .....	2-39
Figure 3.1a	Organisation of the MoWEP Environmental Protection Grouping.....	3-2
Figure 3.1b	Organisation of the Local EPIs Subordinated to MoWEP .....	3-2
Figure 3.2	Waste Hierarchy .....	3-7
Figure 3.3	Regulatory Framework for Waste Management in Romania (2002) .....	3-34
Figure 4.1.1	Sotem Organic Waste Blending Facility.....	4-6
Figure 4.1.2	Blended Waste Feed System at Cement Kiln .....	4-9
Figure 4.1.3	Locations of Major Cement Kilns .....	4-9
Figure 6.3.1	Proximity Hierarchy .....	6-13
Figure 6.3.2	Schematic of Industrial Waste Management .....	6-15
Figure 6.3.3	Oily Waste Generation.....	6-17
Figure 6.3.4	Non-Halogenated Waste Generation .....	6-17
Figure 6.3.5	Halogenated Waste Generation .....	6-18
Figure 6.3.6	The Three “Ts” .....	6-19
Figure 6.3.7	Rotary Kiln Incinerator (HK) .....	6-20
Figure 6.3.8	Rotary Kiln Combustion Chamber (UK) .....	6-20
Figure 6.3.9	Three-Phase Scroll Conveyor Centrifuge.....	6-21
Figure 6.3.10	Organic Waste Blending Facility.....	6-22
Figure 6.3.11	Example Process Flow for Electroplating Waste Treatment .....	6-24
Figure 6.3.12	Schematic Diagram for Regional Waste Treatment Facility .....	6-25
Figure 6.3.13	Example Layout for Waste Treatment .....	6-26
Figure 6.3.14	Example of Oxidation / Reduction Reactor .....	6-27
Figure 6.3.15	Example of Continuous Neutralisation / Precipitation Reactor .....	6-27
Figure 6.3.16	Multi-plate Filter Press .....	6-28
Figure 6.3.17	Stabilisation Plant.....	6-28
Figure 6.3.18	PCB Wastes .....	6-29
Figure 6.3.19	Aerial View of a National Hazardous Waste Treatment Plant.....	6-32
Figure 7.2	Illustrates a Typical Flow Diagram for A Transformer With Various Criteria.....	7-7
Figure 7.4.1	Study Flow Chart.....	7-10
Figure 7.4.2	Perchloroethylene Consumption By Dry Cleaning Shops in Bucharest .....	7-13
Figure 7.4.3	Sludge Generation From Dry Cleaning Facilities in Bucharest .....	7-14
Figure 7.4.4	Design Improvement of in-Line Solvent Bath System .....	7-15
Figure 7.4.5	Design Improvement of Three Bath Cleaning System.....	7-16
Figure 7.4.6	Distribution of Latest Dry Cleaning Machines in Bucharest .....	7-17
Figure 7.5.1	Flow of Waste Oil Reclamation in OILREG.....	7-22



Figure 7.5.2	Conventional H <sub>2</sub> SO <sub>4</sub> + Clay Treatment Flow of Lubricant Oil Reclamation.....	7-24
Figure 7.5.3	General Flow of Reformed Oil Production .....	7-25
Figure 7.5.4	Outline of the General Wastewater Treatment of An Oil Refinery .....	7-29
Figure 7.6.1	Basic Clinical Waste Rotary Kiln.....	7-35