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**The United Nations Industrial
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UNIDO**

**The National Research and Development
Institute for Environment Protection
ICIM Bucharest**

**Polytechnical University Bucharest - UPB
Research Centre for Energy and
Environment Protection**

**Enabling Activities to Facilitate Early Action
in the Implementation of the Stockholm Convention
on Persistent Organic Pollutants (POPs) in Romania**

NATIONAL IMPLEMENTATION PLAN AND SPECIFIC ACTION PLAN

UNIDO Project Nr. GF/ROM/02/020

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Abbreviations

POPs- Persistent Organic Pollutants

DDT- Benzene, 1, 1' - (2, 2, 2 - Trichloroethylidene) bis (4 - chloro)

HCB- Hexachlorobenzene

PCDD- Poly Chlorinated Dibenzo - p - Dioxins

PCDF- Poly Chlorinated Dibenzo Furans

PCBs- Poly Chlorinated Biphenyls

PAH - Poli Aromatic Hydrocarbons

SC - Stockholm Convention on POPs

LEP - Law of Environmental Protection (Law 137 /1995 & Law 294 / 2003)

LAP - Law of Atmospheric Protection (Law 655 / 2001)

NIP- National Implementation Plan

ICIM- National Institute of Research - Development for Environmental Protection

PPC- Public Power and Cogeneration

EIA- Environmental Impact Assessment

SEA- Strategic Environmental Assessment

GDP-Gross Domestic Product

BAT - Best Available Technique

BEP - Best Environmental Practices

CLRTAP - Convention of Long Range Transport of Air Pollutants

HM - Heavy Metals

MEWM - Ministry of Environment and Water Management

MH - Ministry of Health

MEC - Ministry of Economy and Commerce

MTCT - Ministry of Transports, Constructions and Tourism

**MAI-CPC - Ministry of Administration and Interior / Civile Protection
Commandment**

PUB - Polytechnic University of Bucharest

ECOIND

EPA - Environmental Protection Agency

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EXECUTIVE SUMMARY

As a Party of Stockholm Convention signed in May 2001, Romanian Government is aware of the health concerns resulting from local exposure to persistent organic pollutants (POPs), in particular impacts upon women and through them, upon future generation. For the time being 12 substances are listed as POPs: aldrin, chlordane, DDT, dieldrin, dioxins, endrin, furans, hexachlorbenzene, heptachlor, mirex, PCBs and toxaphene. These substances possess toxic properties, resist degradation, bioaccumulate and are transported, through air, water and migratory species, across international boundaries and deposited far from their place of release, where they accumulate in terrestrial and aquatic ecosystems.

At present, Stockholm Convention is ratified by Law no. 261 of 29 June 2004.

The purpose of the NIP: to establish and prioritize objective, measures and actions to reach the obligations under the Stockholm Convention. All these elements of NIP have been addressed taking into consideration the opinion of the stakeholders involved in POPs management.

Level 1 activities (Measures) specify steps necessary for the achievement of the key objectives (less concrete). There are technical, economical, institutional, procedural and informative measures.

Instruments are specific tools to be used for the implementation of measures, such as “command and control” environmental legislation, fiscal instruments, monitoring arrangements and enforcement regulations.

Level 2 activities (Actions) in the implementation of an individual measure or of a package of measures in order to achieve the objectives. An action is undertaken within a certain frame by an appointed and responsible party.

The national priorities associated with POPs issue are:

- to eliminate the pesticides stockpiles and wastes;
- to eliminate the existing stocks of PCBs;
- to eliminate not identified POPs (presumed to be POPs);
- to prohibit production of POPs and other substances that might be included in POPs list in the future;

- to strive for sustainable development of ecological agriculture;
- to enhance the production and use of “cleaner” and more economical substances to be used for fighting against disease vectors control;
- to improve the environmental performance in the energy sector;
- to improve the environmental performance in the transport sector;
- to improve transport management in the urban sector;
- to improve the environmental performance in the industry sector;
- to reduce POPs emission nuisance from waste incinerators.

The measures that are to be taken in order to achieve the objectives have been discussed and prioritized according to the conclusions resulted from the discussion in workshops organized for this purpose.

The timetable of NIP implementation is laid down on 25 years period of time divided in three sub-periods:

- I: short term: 1 – 3 yrs (2004 – 2007);
- II: medium term: 4 – 10 yrs (2008 – 2014);
- III: long term: 11 – 25 yrs (2015 – 2029).

Most actions and projects have already started in the year of 2004 and will take up years, and will be continuing with the actions related to reduction of unintentional release of POPs.

The total cost of NIP implementation on short term is 52.6 million Euro, of which:

- investments: 28.4 million Euro;
- domestic manpower: 17 million Euro;
- foreign manpower: 7.15 million Euro.

To achieve the objectives defined by the Strategy of Stockholm Convention implementation by NIP not only the necessary funds should be available, but also the required organizational capacity. More changes of ministries and other central or local authorities in short periods of time hinder the organizational capacity.

1. INTRODUCTION

The overall objective of Stockholm Convention is to protect the human health and the environment from persistent organic pollutants.

According to this Convention, the Parties shall:

- 1. Take measures to reduce or eliminate releases from intentional production and use;**
- 2. Take measures to reduce or eliminate releases from unintentional production;**
- 3. Take measures to reduce or eliminate releases from stockpiles and wastes;**
- 4. Develop plans for the implementation of their obligations under the Convention;**
- 5. Promote and facilitate actions for public information, awareness, and education regarding POPs issues, as well as development of research activities and monitoring systems; the Parties must provide financial support and incentives in order to achieve the objectives of the Convention.**

The Annexes A, B and C nominate 12 chemical substances identified as POPs taken into consideration by different articles of the Convention.

The United Nation Industrial Development Organization (UNIDO) and Global Environment Facility (GEF) have awarded the project “Enabling Activities to Facilitate Early Action on the Implementation of the Stockholm Convention on Persistent Organic Pollutants (POPs) in Romania” to the National Research – Development Institute for Environment Protection (ICIM). The contract was signed in July 2002.

The objective of the project was to assist Romania to fulfill its obligations under the Stockholm Convention and prepare and endorse its National Implementation Plan (NIP) on Persistent Organic Pollutants (POPs).

It should be mentioned that for Romania only the obligations regarding the unintentional production and the releases from stockpiles and wastes (used pesticides, PCB) are applicable, since the intentional production, import and use of POPs have been prohibited by law.

In the Project Document a number of steps are prescribed at the country level than can assist with NIP development. These include:

- 1) determination of the coordinating mechanisms and organization of the process of NIP development.
- 2) establishment of a POPs inventory and assessment of national infrastructure and capacity.
- 3) priority-setting and determination of objectives.
- 4) formulation of a prioritized and monetary estimated NIP and specific Action Plans on POPs.
- 5) endorsement of the NIP by stakeholders.

The project is divided into three main parts:

1. Review of the Current Situation; the results are laid down in the First Reports (Inception and Inventory Reports);
2. Strategy Formulation; the results are laid down in the Second Interim Report;
3. Action Plans; the results are laid down in this Report;

The present report integrates the results of all three of the above parts of the projects.

The process of Strategy Formulation and Action Planning has been interactive. A draft Strategy, including key-objectives, measures and instruments were intensely discussed and reviewed in the last part of the year 2003.

A seminar entitled “Priority Settings and Determining Objectives” took place at Poiana Braşov, on 26 – 28 September 2003 and the key-objectives were defined and prioritized. All ministries, stakeholders’ representatives and other representatives (NGOs, local authorities, a.s.o.) have been asked to indicate their priorities in a detailed questionnaire. The responses made clear which key-objectives, measures and instruments were to be considered as having the highest priority in Romania.

The Action Plans contain a large number of possible activities related to priority key-objectives with respect to the issue of POPs.

A part of the activities (like those related to transport or to energy) are formulated in other specific Action Plans being mentioned here, but not fully evaluated. Only the manpower regarding POP consideration in those plans is estimated.

The National Implementation Plan and Specific Action Plans were finalized after the debates within the Steering Committee and the Workshop on 26-27 March 2004, held in accordance with the Terms of Reference (Contract budget, phase 4).

2. COUNTRY BASELINE

2.1. Country profile

2.1.1. Geography and population

a) Geography

Romania is situated in the South - East of Central Europe, inside and outside the Carpathians bow, on the lower course of the Danube, with access to the Black Sea, at a distance from the continent's extremities ranging between 1,050 km and 2,800 km. The access to the sea eases Romania's links with the Black Sea basin's countries, the Mediterranean Sea basin and through the latter with all the countries worldwide. Romania's area is 238,391 square km as it ranks 13th in Europe.

	Border length (km)			
	Total	Land	River	Black Sea
Total borders	3149.9	1085.6	1816.9	247.4
Bulgaria	631.3	139.1	470.0	22.2
Yugoslavia	546.4	256.8	289.6	-
Republic of Moldova	681.3	-	681.3	-
Ukraine	649.4	273.8	343.9	31.7
Hungary	448.0	415.9	32.1	-
Black Sea	193.5	-	-	193.5

Romania's *relief* consists of three major levels namely: the high one of the Carpathians (the highest peak is Moldoveanu, 2544m), the average one of the Under-Carpathians, hills and plateaus, and the lower one, of the plains, meadows and the Danube Delta's (the youngest, continually shaping relief unit, at some 0.52 m average height).

Next to the Danube and the Black Sea, *the Carpathians* are the fundamental geographical element to define territorial Romania. The Carpathians are a natural asset of global importance, which combine the huge ecological value with the cultural richness and the various ways of life.

The Carpathians are righteously called “the backbone” of the Romanian area and cover some 66,303 square km, namely about 27.9% of the country’s territory. From the wreath of the Carpathians, the relief descends in steps, disposed almost concentrically. The largest part of the country’s relief develops on the big structural unit of the Carpathian land formation and all the relief units from the outside are made of Carpathian origin sediments, their coming into being depending on the Carpathian chain’s evolution itself.

Romania’s *hydrographical network* has almost its entire surface (97.8%) included in the Danube Basin except for a part of Dobrogea’s rivers that flows into the Black Sea. The inland rivers amount to 4,864 (inventoried and coded) with 78,905 km in length.

There are 15 major hydrographic basins in Romania containing the rivers which are radial-disposed, most of them springing from the Carpathians, the main collector of them being the Danube River that crosses the country at its South side on some 1,075 km and flows into the Black Sea. The length of the main water courses is displayed in the table below.

River name	Length of the river (km)	Basin area (km ²)
The Danube	1075	33250
Mureş	761	27890
Prut	742	10990
Olt	615	24050
Siret	559	42890
Ialomiţa	417	10350
Someş	376	15740
Argeş	350	12550
Jiu	339	10080
Buzău	302	5264
Dâmboviţa	286	2824
Bistriţa	283	7039
Jijia	275	5757
Târnava Mare	246	6253
Timiş	244	5673
Crişul Alb	234	4240

River name	Length of the river (km)	Basin area (km²)
Vedea	224	5430
Moldova	213	4299
Bârlad	207	7220
Târnavă Mică	196	2071
Prahova	193	3738
Neajlov	186	3720
Olt	185	2663
Someșul Mic	178	3773
Suceava	173	2298
Bega	170	2362
Arieș	166	3005
Trotuș	162	4456

The lakes are represented by natural lakes (of various genetic types), spread in all the major relief units, from the glacial ones in the mountain area (e.g. the lake of the Sheep - Făgăraș at 2,282 m) to the river-maritime banks (e.g. lake Techirghiol at 1.5 m) and anthropic lakes, formed for the capitalization of the hydro-electric potential, for the water supply, for irrigations, fisheries and entertainment.

The vegetation is multi-storied, conditioned by the relief and the pedoclimatic elements. The mountain areas are covered with coniferous (spruce, fir especially) and beech forests. On the high hills are spread alpine lawns and juniper, bilberry and other bushes. The hills and the plateaus are covered with broad-leaves trees.

The steppe and sylvosteppe vegetation occupying the less-humid areas in the Dobrogea Plateau, the Romanian Plains, the Moldavian Plateau and the Western Plains has been most of it replaced with crops.

The forests, with a prior role in the environment recovery occupy only 26.7% of the country's area, as against 40-50% they did in the past and became the *victim of the anthropic aggression* both directly through cutting over the regenerating capacity and especially indirectly through pollution.

Romania's climate is temperate-continental of transition, with oceanic influences from the West, Mediterranean once from South-West and continental-excessive once from the North-East. Annual precipitations decrease in intensity from West to East, amounting from 600 mm to 500 mm in the Romanian Plains to below 400 mm in Dobrogea, while in the mountain areas they reach 1,000-1,400 mm.

In the next table are presented the air temperature and the atmospheric precipitations at the main meteorological stations during 1999–2001.

Areas endangered by floods: 2.12 mill. ha (representing 8.9% from total country area) including endangered areas protected by hydro technical works (dikes and dams).

Meteorological station	Yearly absolute minimum (Celsius degrees)			Yearly absolute maximum (Celsius degrees)			Yearly average quantity by precipitations (mm)		
	1999	2000	2001	1999	2000	2001	1999	2000	2001
Satu Mare	-20.4	-25.1	-21.9	34.3	38.8	33.8	678.8	527.6	755.1
Suceava	-16.6	-18.3	-19.6	33.4	36.5	34.6	514.7	418.3	688.6
Oradea	-16.6	-16.5	-21.2	34.5	40.0	36.0	869.7	364.2	821.8
Iași	-13.0	-15.6	-20.4	34.7	39.0	37.1	536.4	355.0	660.1
Cluj-Napoca	-20.7	-18.5	-21.0	32.5	36.6	34.3	707.0	398.2	819.4
Târgu Mureș	-19.3	-23.5	-24.5	34.0	36.8	35.0	661.9	408.7	739.9
Bacău	-16.2	-19.0	-21.0	34.2	37.5	35.9	532.4	502.8	663.0
Timișoara	-14.5	-20.1	-15.9	35.5	39.5	37.4	771.1	296.3	685.6
Deva	-18.8	-20.4	-18.3	35.1	38.3	35.0	609.8	413.8	746.5
Sibiu	-23.7	-21.0	-26.7	33.3	36.6	34.8	690.4	394.6	728.7
Vârful Omu	-22.0	-27.2	-24.2	17.7	18.9	16.6	845.5	439.7	937.1
Galați	-13.2	-18.0	-14.4	36.2	40.2	36.2	503.2	377.9	533.1
Târgu Jiu	-14.6	-18.4	-15.2	34.7	40.6	35.8	972.9	333.4	695.5
Buzău	-16.0	-26.0	-14.6	36.4	39.8	37.5	668.3	333.3	443.0
Calafat	-12.2	-13.0	-16.4	39.0	43.2	38.2	611.2	263.2	476.9
Turnu Măgurele	-17.4	-19.4	-17.5	36.9	42.7	38.4	529.7	277.5	515.3
București-Filaret	-13.5	-19.0	-12.6	36.5	42.4	38.1	747.0	377.5	522.5
Constanța	-9.8	-11.5	-11.0	32.6	36.2	33.6	531.1	292.5	400.4

b) Population

The number of inhabitants was 21.8 million at 01 July 2002, out of which 10.6 males and 11.2 females. The distribution is presented in the table below:

Age (years)	TOTAL		URBAN		RURAL	
	both sexes	female	both sexes	female	Both sexes	female
0-4	1094213	532170	487110	236674	607103	295496
5-9	1138448	555452	519080	253154	619368	302298
10-14	1546637	757032	820913	403082	725724	353950
15-19	1646667	803016	943191	464631	703476	338385
20-24	1752646	856679	1019609	507988	733037	348691
25-29	1733618	846325	950006	478905	783612	367420
30-34	1953607	964106	1110055	579822	843552	384284
35-39	1219037	604443	723336	385008	495701	219435
40-44	1427621	716071	900782	479306	526839	236765
45-49	1603366	815450	1033035	534722	570331	280728
50-54	1433857	739137	835315	424912	598542	314225
55-59	1061665	558424	530835	276396	530830	282028
60-64	1122390	610803	508819	275275	613571	335528
65-69	1085893	605877	450185	252684	635708	353193
70-74	900956	517380	358978	209327	541978	308053
75-79	630292	380019	241732	149476	388560	230543
80-84	279105	180764	108354	72730	170751	108034
85 and over	164775	109107	67400	45601	97375	63506
Total	21794793	11152255	11608735	6029693	10186058	5122562

The average life expectancy is 72 years for males and 75.5 for females in urban areas and 70 years for males and 74.2 for females in rural areas.

The total employment reaches 9234 thousand persons in year 2002, out of which 5031 thousands are males and 4203 thousands females. 2810 thousands persons are employed in agriculture, 1558 thousands persons in industry, 330 thousands persons in trade, 273 thousands persons in transport and communication and 238 thousands persons in construction.

The unemployment rate in 2002 was 8.4% (around 760 thousands persons out of which 340 thousands women).

2.1.2. Political and economical profile

The non-renewable natural resources of Romania were and still are exploited and processed with technologies that have led to an intensive pollution of some country areas. Extraction and use of the fossil fuels (coal, petrol), the mining exploitations, the iron-and-steel industry and the metallurgic industry, the power industry, the chemical and petro-chemical industry, the cellulose and paper industry, the construction materials industry and others substantially contribute to the pollution of the environmental factors with ordinary pollutants (sulphur dioxide, carbon dioxide, nitrogen oxides, ammonia), heavy metals, sedimentary powders and particulate powders and other specific pollutants (formaldehydes, sulfurous hydrogen, carbon sulfur, chlorine, chlorides) a.s.o.

The non-renewable main raw materials' resources and the amounts extracted are below the national economy's necessities, the import of completion being a permanent concern of our country.

The use of the non-renewable resources such as metals, minerals and hydrocarbons, associated with the generation of waste lead to several impacts on the environment and the human health.

The exploitation of the main non- renewable reached the next quantities in year 2002 (thousand tones):

Net coal, of which:	30412
Hard coal	3976
Lignite	26842
Brown coal	245
Crude oil	5810
Natural gas (mill. m ³)	13647
Iron ores	248
Salt	2258

Romania's renewable *natural resources* are various although limited. The most important among them are: water, soil, fauna, flora and forests resources.

Romanian's water resource is the hydrological potential and is given by the surface waters (rivers, natural and artificial lakes, the River Danube) and in a small measure, meaning circa 10%, by the underground waters in natural and developed regime.

Reported to the country's current population, *the specific usable resource* is 2,660 m³/inhabitant/year against the European average of 4,000 m³/inhabitant/year which situates our country 20th in Europe.

The lakes are represented by natural lakes, spread in all the major relief units, transformed for the capitalization of their hydro-electric potential and water supply, for irrigation, fisheries and entertainment.

The soil resource in Romania is as important as the water resource. Of the country's total area of 238,391 km², 62% is agricultural area, 26.7% is covered with forests, 3.7% with waters and 7.3% - other surfaces.

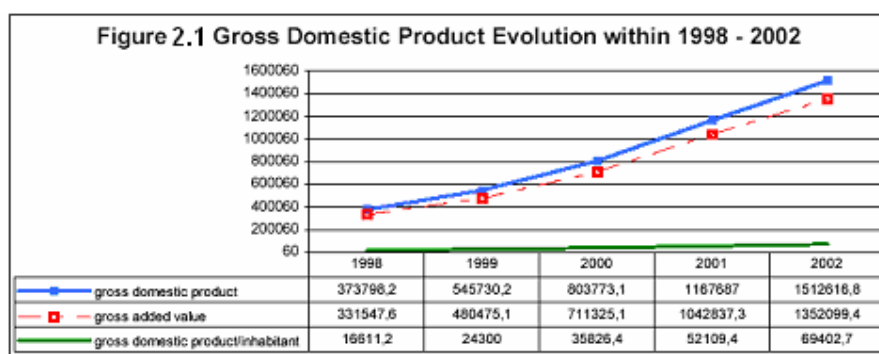
The forests, with a prior role in environmental recovery occupy only 26.7% of the country's area, as against 40-50% they did in the past and became the *victim of the anthropic aggression* both directly through cutting over the regenerating capacity and especially indirectly through pollution.

Fauna and flora on the Romanian territory are distributed in a harmony and are a priceless asset, if controlled, rationally capitalized. Romania is a country with a great biological diversity and a high percentage of natural ecosystems.

The main economic indicator is the *Gross Domestic Product (GDP)*, which is the annual value of goods and services resulted from production processes within the national economy in order to be consumed, invested, stored or exported.

The evolution of the Gross Domestic Product was estimated under comparable conditions from the methodological point of view.

In this respect, for 1998-2002, the volume indices took 1998 as reference year, this being the first year when the Gross Domestic Product was calculated on the basis of the SEC 1995¹⁾ methodology (figure 2.1).



Source: National Statistical Institute – Statistical Yearbook of Romania, 2003

1990=100% ESA 1979 methodology ; 1998=100% ESA 1995 methodology

The main indicators of the industrial output in 1996-2001 are displayed in table 2.1.2.1.

Table 2.1.2.1. Industrial production indices, by activity

Industrial output indices by activities					
1998=100					
Economic activity	1998	1999	2000	2001	2002
Total	85.0	97.6	104.5	113.3	120.1
Extractive industry out of which:	80.7	92.6	97.2	102.1	98.1
• Coal extraction and preparation	65.0	84.6	104.0	115.4	108.1
• Oil and rock gas extraction	91.2	96.0	96.1	98.1	93.5
• Metal ore extraction and preparation	77.3	92.0	91.0	105.6	101.6
• Other external activities	87.0	87.0	91.1	87.4	103.6
Processing industry	86.6	98.6	106.6	117.2	126.5
Electric and thermal power, gas and water out of which:	78.3	94.7	94.3	93.1	91.5
• generation, transport and distribution of electric and thermal power, gas and hot water	78.3	95.9	98.4	102.1	103.9

*Provisional data
Source: National Statistical Institute – Romanian Statistical Yearbook, 2003

¹⁾ Since 1989 the national accounts for Romania have been drawn up according to the European System of Integrated Economic Accounts 1979 (ESA 1979). Starting with 1998 the new European System of Accounts 1995 (ESA 1995) have been implemented. The data for this year have been compiled according to the two systems (ESA 1979 and ESA 1995) by setting a benchmark year between the two version. Starting with 1999 the national accounts have been elaborated according to ESA 1995 methodological principles, only.

Table 2.1.2.2 gives an overview of the consumption of primary energy over 1997-2002.

Electric power generation based on fossil fuels and minerals is an important factor contributing to the depletion of non-renewable resources. The combustion of coal, natural gas and oil release pollutant substances into the atmosphere (powders, sulfur oxides, nitrogenous oxides, carbon dioxide etc).

For the period between 2001-2004, the total primary energy resources necessary to cover the energy demand is estimated to range between 64.7 and 71.5 million etc.

Table 2.1.2.2. Energy consumption

Energy consumption						
	1997	1998	1999	2000	2001	2002
	Gross domestic energy consumption (thousand tons of oil equivalent ²)					
Total ¹	45505	40983	36567	36374	37971	36480
Electric energy	1526	1655	1503	1212	1172	1136
Coal	9741	7954	6853	7475	8159	6813
Crude oil and petroleum products	13143	11845	10246	9505	10805	9369
Rock gas	15938	14969	13730	13679	13315	13326
	Final energy consumption (thousand tons of oil equivalent ²)					
Industry (including construction)	12577	9904	8208	9017	9351	10521
Agriculture, forestry, fishery	912	766	464	395	206	279
Transport and communications	4284	3885 ³	3139 ⁴	3508 ⁴	3975 ⁴	4305 ⁴
Other activities	992	1055	794	812	1629	867
Population	9673	8412	8757	8433	7197	7264
	Energy consumption, per inhabitant (tons of oil equivalent ² /inhabitant)					
Gross domestic energy consumption	2.018	1.821	1.628	1.621	1.594	1.574
Final energy consumption:						
• industry (including construction)	0.558	0.440	0.365	0.402	0.417	0.487
• agriculture, forestry, fishery	0.040	0.034	0.021	0.018	0.013	0.013
• transport and communications	0.190	0.177 ⁴	0.140 ⁴	0.156 ⁴	0.177 ⁴	0.198 ⁴
• residential and of other activities	0.473	0.466	0.425	0.376	0.394	0.375

¹Including energy products obtained and consumed in households
²Oil equivalent (10,000Kcal/Kg)
³Excluding gasoline and ethane from extraction oil - wells which are included in crude oil
⁴According to international methodology communications are included in "other activities"
 Source: National Institute of Statistical – Romanian Statistical Yearbook, 2003

Romania highly depends on energy resources imports of which 30% is natural gas and 54% is oil, a situation aiming to increase due to the exhaustion of native hydrocarbon reserves.

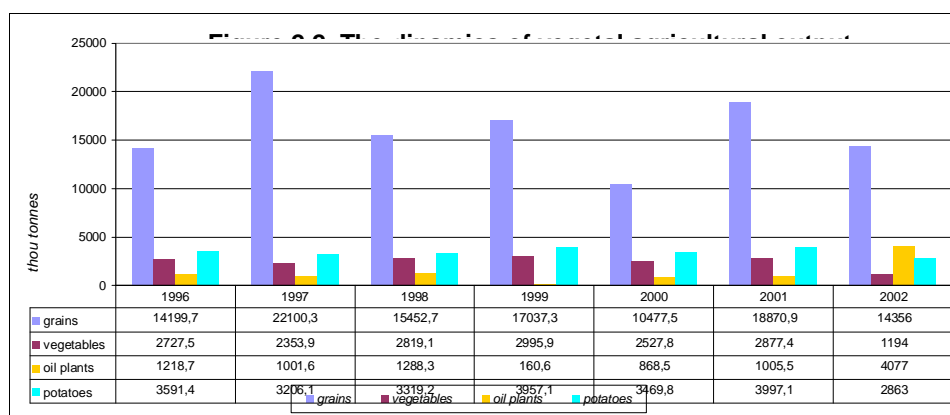
In general, the evolution of the energy consumption followed the evolution of the national economy, of industrial activity, respectively, with visible decrease followed by increase.

The agriculture, through its specific characteristics (soil utilization, natural biological processes’ maintenance) is one of the most important economic activities.

The country’s agricultural area increased in 2001 by 0.43% against 1996 in exchange, in the same period of time, the forests area decreased by 1.22%, roads and railways by 1.77% and the waters area by 1.08%. Other areas (unproductive lands, in general) increased by 8.89%.

Analyzing the evolution of the agricultural lands’ distribution on types of use between 1996-2001 one can see that the arable lands’ area maintains at about 63% of the total agricultural lands, while the rest is distributed among pastures (about 23%), hay-lands (about 10%), vineyards (1.8%) and orchards (1.7%).

The dynamics of vegetal agricultural output is presented in *figure 2.2*



Source: National Institute of Statistics – Romanian Statistical Yearbook, 2002

The evolution of the use of chemical fertilizers in Romania is shown in *table 2.1.2.3 and figure 2.3*

A special problem is put by the fertilization with phosphorous that has diminished, being used in 2000 on about 3.7 million ha against 4.4 million ha in 1996 and with cut doses (24 kg/ha, as against 35 kg/ha in the same period) with an average 9 kg/ha, and per total agricultural with 6 kg/ha. In the 2001-2002 period an increase was registered as against 2000 by 12-50 thousands tons phosphorous active substance.

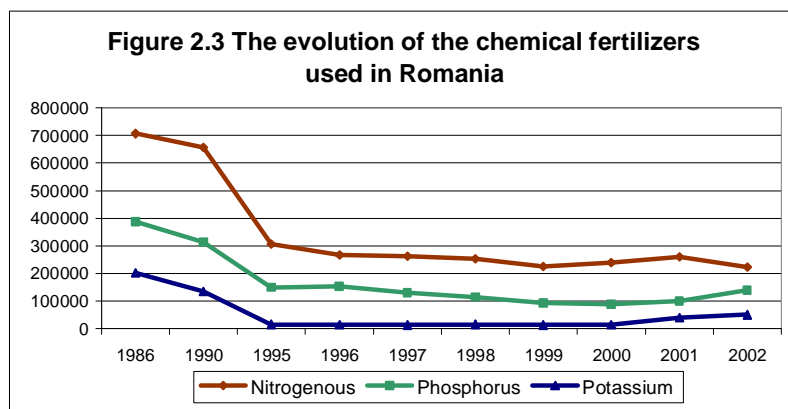
Likewise, the amount of organic fertilizers used decreased from 2.3 t/ha in 1985 to 1.07 t/ha in 2000 on total agricultural and on arable lands from 3.65 t/ha in 1985 to 1.69 t/ha in 2000.

Practically, during 1996-2000 the organically fertilized area decreased from about 700 thousands ha (7.09% of the arable area) to 674 thousands ha (6.8% of the arable area) with 25.5-23.5 t/ha for the surface effectively fertilized and from 1,212 kg/ha to 1,068 kg/ha for the total agricultural area.

Table 2.1.2.3 The use of chemical fertilisers in the agriculture of Romania¹⁾

Year	Used chemical fertilisers (tonnes of active substances)				$N+P_2O_5+K_2O$ (kg/ha)	
	Nitrogenous	Phosphorus	Potassium	Total	Arable	Agricultural
1986	706934	387375	200990	1295299	129.9	86.4
1990	656094	313108	133873	1103075	117.0	74.8
1995	305800	149600	14700	470100	49.7	31.8
1996	268000	153000	14000	435000	46.6	29.4
1997	262000	129000	13000	404000	43.3	27.3
1998	254000	114000	15000	383000	41.0	25.9
1999	225000	93000	13000	331000	35.4	22.5
2000	239300	88300	14600	342200	36.5	23.0
2001	260000	100000	40000	400000	42.5	26.9
2002	222000	138000	50000	410000	43.6	27.6

1) According to the data of the Ministry of Agriculture, Alimentation and Forests



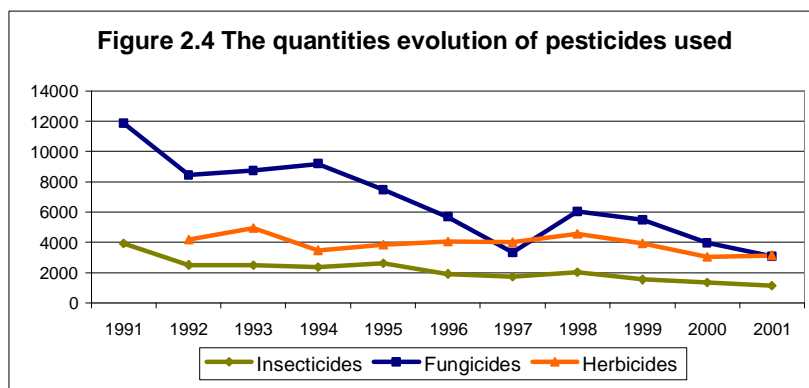
The use of *pesticides* in agriculture, beside the advantage of getting some increased outputs, presents the disadvantage of polluting the environment. The soil acts as a receptor and reservoir for the pesticides, where they degrade themselves.

As compared with the member-countries of the European Union, Romania is not that at all in the situation to be “saturated” with plant protection products use. In our country, the consumption per ha of arable land, vineyards and orchards, in the last 12 years, ranges between 2.11 and 0.89 kg etc/ha, according to *table 2.1.2.4 and figure 2.4*.

Table 2.1.2.4 The quantity of pesticides applied during the 1996-2001¹⁾ period

Year	Total pesticides consumption (tons of active substances) out of which:	Insecticides	Fungicides	Herbicides	For 1 ha of total arable land (kg of active substance) out of which:	Insecticides	Fungicides	Herbicides
1989 ²⁾	71456,26	29188,54	22917,08	19350,63	5,89	2,41	1,89	1,59
1990 ²⁾	51503,66	18597,87	16454,70	16451,09	5,66	2,05	1,81	1,80
1991	19897,03	3920,89	11857,06	4119,88	2,11	0,41	1,26	0,44
1992	15134,05	2514,27	8446,75	4173,03	1,62	0,27	0,90	0,45
1993	16141,44	2486,76	8726,19	4928,49	1,73	0,26	0,93	0,54
1994	15043,70	2369,30	9197,53	3476,87	1,61	0,25	0,99	0,37
1995	13981,77	2633,06	7491,27	3857,09	1,50	0,25	0,80	0,45
1996	11678,55	1926,15	5691,27	4061,13	1,25	0,21	0,61	0,43
1997	9070,80	1747,84	3325,32	3997,64	0,97	0,19	0,36	0,42
1998	12652,68	2040,49	6045,23	4566,96	1,36	0,22	0,65	0,49
1999	10963,51	1548,86	5475,59	3939,06	1,18	0,17	0,59	0,42
2000	8341,64	1343,05	3959,16	3039,43	0,89	0,14	0,42	0,33
2001	7395,71	1145,26	3097,65	3152,80	0,79	0,12	0,33	0,34

¹⁾ According to the data of the Ministry of Agriculture, Alimentation and Forests



The *transportation* sector was and remained further an important energy consumer (hydrocarbons and electric power).

Important efforts are made currently to build new highways and to endow the urban transportation with new vehicles. Under the given conditions, they will contribute to intensifying the emission of pollutants into the atmosphere. We are far from having ecological transportation.

The goods transport (irrespective of the ways of transport) recorded an obvious curtail between 1996-2001 (*table 2.1.2.5*).

Table 2.1.2.5 Distance covered by goods

	1996	1997	1998	1999	2000	2001
	<i>(million tonne - km)</i>					
Railway transport	26877	24789	19708	15927	17982	16102
Road transport	19807	21750	15785	13456	14288	18544
Inland waterway transport	3774	4326	4203	2802	2634	2746
Sea transport	53589	34408	20388	12147	5817	1473
Air transport	49	21	22	20	19	12
Transport through petroleum pipe - lines	2662	2296	2258	1636	1392	1770

Source: National Institute of Statistics – Romanian Statistical Yearbook, 2002

2.1.3. Profiles of economic sectors

The POPs emission sources are situated in four main economic sectors: agriculture, industry, transportation and energy. The fifth sector is nominated “Other sources” where “residential areas” with their waste landfills, incineration plants for hospital wastes, are included.

The previous chapter details all the necessary information on the profiles of the economic sectors such as:

1. agriculture
2. industry
3. transportation
4. energy
5. other

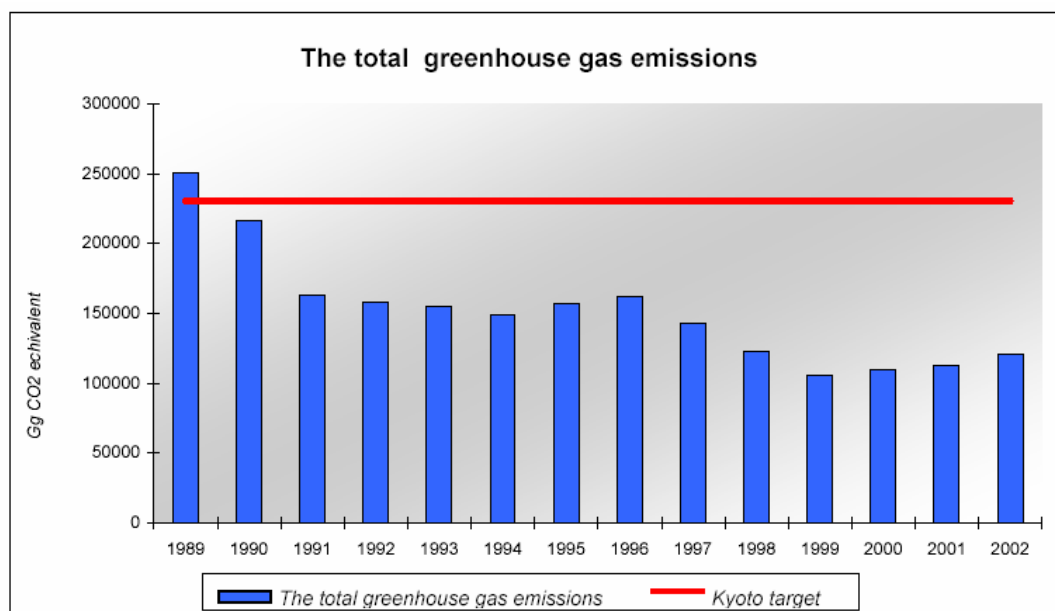
2.1.4. Environmental overview

a) Environmental issues

Similar as other countries, the main environment issues are results of economical activities.

The *air quality* has recorded an improvement in 1997–2001 period. Thus knowledge of the greenhouse gas emissions’ values at national level is an important element in defining the impact of the economic and social development on the environment and creates the necessary basis for the environment protection policies’ formulation as regards the observance of the obligations resulting from the Kyoto Protocol.

The total net greenhouse gas emissions in Romania during 2001 were about 48% smaller than the emissions in 1989 year. Emissions of the energy sector are 79% from the total greenhouse gas emissions. In 2001 year the total annual carbon dioxide emissions had registered a decrease with 54% and the methane emissions with 49.5% compared with 1989.



The greenhouse gas emissions were calculated following the indications of the IPCC (Intergovernmental Panel on Climate Change) handbooks. The significant reduction of the greenhouse gas emissions in the energy sector is due mainly by the curtailment of consumption in this sector.

The *water quality* registered an improvement in 2002 year compared with 2001 year regarding the increasing of weight on Ist category (56,9%) by the comparison with IIIrd category (7,7%) and degraded waters (7,7%). If a comparison is made with the previous period, starting with 1989, one can see a significant improvement of the waters quality shown through the increase of the weight of the water corridors' length of the 1st and 2nd category, the decrease of the 3rd and degraded category of water corridors' length, respectively. The rivers water quality improvement is due in particular to the reduction or cancellation of the activity of some economic, big pollutant units, and also to the firm enforcement of the provisions of the legislation in force referring to the water quality's protection by the authorized organisms.

The *soil's quality* is affected in a smaller or bigger measure by restrictions set either by natural factors (climate, forms of relief, edaphically characteristics etc) or by agricultural and industrial actions. The draught, the soil's degrading and the desertification are national interest preoccupations.

The main problem in the draught affected areas consists in the adoption of a managerial policy adapted to the forecast on draught, so that measures in the

short-term to be enforced (the compensation of the deficit of humidity through irrigation, the crops' structure, the soil's working and fertilizing technologies' compatibility etc) and in the medium and long term (the insurance of the water reserves in the reservoirs, the creation of the forest protection curtains etc). On the other hand, the decreasing dynamic of fertilization shows that, from this point of view, there is no “pressure” onto the soil, but a factor of cutting the crops, apart from draught and the other restrictive factors.

Romania has signed the Convention on Desertification Control ratified by the Parliament through the Law no 111/1998. The National Strategy and the Action Program on Desertification Control, the Land Degrading and Draught were elaborated.

In the *waste field* the legislation harmonization, the adoption of the national strategy and the implementation of a National Action Plan for industrial and urban administration were followed. The waste amounts generated varied significantly from one year to another, thus in 2002 year the total amount of wastes at the national level was 37.37 millions tons, with 12.4% smaller than in 1999 year. The municipal waste amount registered in 2002 year was 7.9 millions tons, the evolution being insignificant from one year to another. The separate collection of municipal wastes from population is performed only at experimentally scale in a few cities. This is the reason why in 2002 about 36% (over 2.5 mil tons annually) from the components of domestic wastes, represented by recyclable materials (paper, cardboard, glass, plastics, metals), are not recovered, but are finally stored with the other municipal wastes. Since 2004 Romania has a National Strategy and a National Plan for waste management (GD 1470/2004).

As far as the EU Directive regarding waste is concerned, the issue of packing and waste packing is very seriously taken into consideration (GD no 899/2004 for modify and complete GD no 349/2002; GD no 621/2005). Wastes incineration should respect the conditions of Government Decision no 268/2005 which modify and complete GD no 128/2002.

Statistics regarding the industrial wastes shows that during 2002 year the total quantity produced by mining, industry, agriculture, and construction was 372.4 millions tons, out of which 344.5 millions tons are waste resulted from extraction activities (mining).

It could be notice an improvement of the global quality of the environment in the last year as one follows of the economic activity reorientation and as an effect of the specific environmental protection measures taken by the central and local authorities for the environment protection.

Up to now, the environmental problems facing Romania have not been sufficiently addressed. The amount of environmental investments is not enough to cover the necessities, mainly due to the present low capacity of the economy to support these costs. The foreseen growth of economy efficiency will generate higher profits and consequently increased national and local budgets. However, especially in the near future, Romania will need EU and other multilateral; and bilateral funds for the development of main environmental infrastructure projects.

b) Priorities and objectives of Romanian Strategy of environment protection

Considering that the management of the natural resources is an indicator of the economic and social development of the country and of the state of environment and living conditions of the population as well, this subject has been carefully tackled in different official documents. According to the governing program, the policy regarding natural capital will be "stable and predictable" and will address "both past and new responsibilities for the environment."

The following priorities of Romanian environmental strategy have been highlighted:

- § implementation of environmental *acquis communautaire*
- § development of an extensive monitoring system;
- § studies to identify the real environmental costs;
- § elaboration of management plans for highly polluted areas;
- § introduction of waste management systems;
- § development of personnel skills;
- § enforcement of environmental regulations;
- § definition of environmental priority areas for public investments;
- § use of economic instruments such as environmental taxes, through the Environmental Fund, etc. for stimulating a better use of natural capital;
- § involvement of NGOs and encouragement of partnerships;
- § public participation in policy development.

The new obligations that Romania has to fulfill, especially in the accession process, lead to a new approach of environmental issues, both by environmental authorities and companies (involved in industry, agriculture, transport, tourism, etc.). In this respect, high quality of EIA/SEA and Environmental Audits, good monitoring and laboratory practices, effective licensing and enforcement, good project management etc. are becoming mandatory.

Concerning the environmental sector, Romania opened the negotiation of Chapter 22 on 21st of March 2002 and closed it on 26th of November 2004.

Romania accepts the whole *acquis communautaire* regarding the Chapter 22 - Environmental Protection - entered into force on the 30 of October 2004 and will implement its provisions by the date of the accession.

European Integration: aim and means

- The aim of the European integration process is to support Romania in achieving the actual standards of the European Union and to participate at the elaboration of the new standards.
- Integration is a process through which the strategies for achieving the aimed goal and its means of implementation corroborate.

Integration strategies: 6 components

1. Transposition of the actual European *Acquis*;
2. Implementation of the commitments resulted from the negotiation with the EU and the legislative transposition;
3. Interministerial coordination of the activities resulted from the negotiations;
4. Strengthening the institutional capacity;
5. Monitoring and involvement in the implementation of the new European *Acquis*;
6. The efficient granting for the implementation of EU financial resources dedicated to the environment protection.

1st component – Transposition of the Environmental *Acquis*

- 95% of the environmental *acquis* is transposed. The domains in which the European *Acquis* was fully transposed: nature protection, nuclear safety and radioprotection, noise. 82 Directives and 12 Regulations were fully transposed.

- The end of 2006 will transpose 5%. Two major legislative objectives: Environmental Protection Law and EGO on integrated prevention and pollution control

2nd component – Implementation

- Implementation means practical applying of the legislation (concrete technical, institutional and financial measures).
- Regarding the implementation measures, the MEWM and its subordinated structures have fully accomplished all the measures stated at the beginning of 2005.
- 1660 the end of 2006 will recruit new environmental specialists. By now, 1267 job positions were filled in and the competitions for filling in all remaining vacant posts are continuing
- According to the financial estimations, around 5.4 billions Euro are necessary between 2005 – 2007, out of which 1.95 billions Euro for water quality, 1.70 billions Euro for industrial pollution control, 0.8 billion Euro for waste management and 0.77 billion Euro for air quality

3rd component: interministerial coordination

- Interministerial Committee for coordination of environmental protection field integration into the other policies and strategies at national level was set – up on the basis of GD 1166/2004
- The committee members are 11 ministries with relevant activities for environmental protection, represented at the Secretary of State level

4th enforcement of institutional capacity

- 1660 new environmental specialists will work in Romania (at the national, regional and local levels) until the end of 2006.
- So far almost 1267 job positions have been filled in and at the moment there are ongoing contests for the job positions left vacant for 2005 and for those approved for 2006 at the level of the MEWM, the National Agency for Environment, the Regional Agencies for Environment, the Local Agencies for Environment (around 230 jobs).

5th component: the new “acquis communautaire”

- A new working group was formed that has as main goal the elaboration of points of view on the projects of European normative documents.
- As for the improvement of the initial points of view, the Ministry of Environment and Water Management initiated the organization of meetings with all the interested factors (ministries, research institutes, patronage, syndicates, directly involved economic agents, NGO's, etc.)

Within the negotiations of Chapter 22 – Environment the following commitment were assumed:

1. Strengthening the environmental institutional structures and administrative capacity to implement environmental legislation at national, regional and local level
2. Transposing the present environmental Community acquis
3. Implementation of environmental legislation

MEWM priorities on short and long time are:

- Strengthening of the institutional capacity;
- Filling in the additional positions, approved until the end of 2006, at MEWM level, as well as at the sub-coordinated structures, from national, regional and local level;
- Training the existent and the additional employed personnel;
- Finalizing the transposition of the EU legislation;
- Undertaking implementation actions and application of legislation control.

Priority implementation measures

- The endowment of specific laboratories, at the national and regional level, to monitor the quality of the environment factors: water (especially for biological and hazardous substances monitoring), soil, radioactivity, noise, vibrations;
- Up-dating the databases until the end 2005 in the air quality, waste management and water quality field in accordance with the European requirements.

Waste management:

- Elaborating environmental audits and, where necessary, risk assessment for all existent landfills, by the end of 2005;
- Increasing the quantity of recycled packaging waste resulted from industry and trade by 15% in 2005 and continue the increase by 10% per year until 2007;
- Phased ceasing of existent installations for thermal treatment of hazardous waste from medical activities. At the end of 2006 must be closed 236 non-complying incinerators for medical waste.

The end of 2006 must close 236 installations.

- Closing 17 non-compliant urban waste landfills by 31st of December 2006. 2 of these were ceased and another 4 are prepared to be closed.
- 47 hazardous industrial waste landfills and 36 non-hazardous and inert industrial waste landfills must cease their activity until 31.12.2006.
- Phased increased in re-using and recycling of the end of life vehicles components to reach 80% by the end of 2006.
- Setting up a national network of the collecting units for the end of life vehicles.
- Establishing a national network of the collecting points for Waste Electrical and Electronic Equipment (WEEE).

Nature Protection:

- Increasing the surface occupied by NATURA 2000 sites at least 13%

Co-ordination between ministries on environmental issues improved in Romania. For integrating the environment protection requirements into the definition and implementation of all other sectorial policies for promoting a sustainable development was set-up on the basis of GD 1166/2004 an Interministerial Committee for coordination of environmental protection field integration into the other policies and strategies at national level. The Committee members are 11 ministries with relevant activities for environmental protection represented at Secretary of State level.

A new working group was formed that has as main goal the elaboration of points of view on the projects of European normative documents. As for the improvement of the initial points of view, the Ministry of Environment and Waters Management initiated the organization of meetings with all the interested factors (ministries, research institutes, patronage, syndicates, directly involved economic agents, NGO's, etc.

The Romanian objectives for 2004 – 2010 regarding the environmental sector as follows:

1. Finalize the full transposition of the EU environmental acquis;
2. Strengthen the capacity and capability of the government environmental institutions in order to effectively implement and enforce the new environmental legislation and standards;
3. Develop and implement a full environmental monitoring system supporting the elaboration of effective environmental policy plans and complying with EU monitoring and reporting requirements.
4. Realize integration of environmental policy in other sectorial policies;
5. Public-awareness raising and public involvement in the decision-making process;
6. Environmental protection, conservation and sustainable use of natural resources.

2.2. Institutional policy and regulatory framework

2.2.1. Environmental policy, sustainable development policy and general legislative framework

2.2.1.1. Profile of National Government

The Constitution of Romania of 1991 was amended and completed by the Law No. 429/2003 on the revision of the Constitution of Romania, published in the Romanian Official Journal, Part I, No. 758 of 29 October 2003, republished by the Legislative Council on the grounds of article 152 of the Constitution with the updated denominations and the renumbered texts (Article 152 became in the republished form Article 156).

The Law No. 429/2003 on the revision of the Constitution of Romania was approved by the national referendum of 18-19 October 2003, and came into force on 29 October 2003, the date of the publication in the Romanian Official Journal, Part I, No. 758 of 29 October 2003 of the Decision of the Constitutional Court No. 3 of 22 October 2003 for the confirmation of the result of the national referendum of 18-19 October 2003 concerning the Law on the revision of the Constitution of Romania.

The Constitution stipulates that the Parliament (the Chamber of Deputies and the Senate) is the supreme representative body of the Romanian people and the sole legislative authority of the country and it passes constitutional, organic and ordinary laws.

A legislative initiative shall lie, as the case may be, with the Government, Deputies, Senators or a number of at least 100,000 citizens entitled to vote. The citizens who exercise their right to a legislative initiative must belong to at least one quarter of the country's counties, while, in each of those counties or the Municipality of Bucharest at least 5,000 signatures should be registered in support of such initiative. The Government exercises its legislative initiative by introducing bills to the Chamber having competence for its adoption as a first notified Chamber.

A law shall be submitted for promulgation to the President of Romania. Promulgation shall be given within twenty days after receipt of the law.

The law shall be published in the Romanian Official Journal and come into force 3 days after its publication date, or on a subsequent date stipulated in its text.

The Government in accordance with its government programme accepted by Parliament ensures the implementation of the domestic and foreign policy of the country and exercises the general management of public administration. The Government consists of the Prime Minister, Ministers and other members as established by an organic law. The Chamber of Deputies and the Senate shall debate upon the programme and list of the Government in joint sitting. Parliament shall grant confidence to the Government by a majority vote of the Deputies and Senators.

The Government shall adopt decisions and ordinances. The Prime Minister, countersigned by the Ministers who are bound to carry them into execution and shall be published in the Romanian Official Journal, shall sign decisions and ordinances adopted by the Government. The Government is politically responsible for its entire activity only before Parliament.

Ministries shall be organized only in subordination to the Government. The Government and Ministries may, on the authorization of the Court of Audit, set up specialized agencies in their subordination, but only if the law acknowledges the competence thereof.

At present, the next ministries are in function:

*Ministry of Foreign Affairs
Ministry of European Integration
Ministry of Public Finance
Ministry of Justice
Ministry of National Defense
Ministry of Administration and Internal Affairs
Ministry of Labor, Social Solidarity and Family
Ministry of Economy and Trade*

*Ministry of Agriculture, Forests and Rural Development
Ministry of Transport, Constructions and Tourism
Ministry of Education, Research and Youth
Ministry of Culture and Religious Affairs
Ministry of Health
Ministry of Communications and Information Technology
Ministry of Environment and Waters Management*

The public administration authorities, by which local autonomy in communes and towns is implemented, are the Local Councils and Mayors elected, in accordance with the law.

The Government shall appoint a Prefect in each county and in the Bucharest Municipality. The Prefect is the representative of the Government at a local level and directs the decentralized public services of ministries and other bodies of the central public administration in the territorial-administrative units. Among the Prefects, on the one hand, the Local Councils and the Mayors, as well as the county councils and their presidents, on the other hand, there are no subordination relationships.

2.2.1.2. Guiding philosophies and principles

Environmental policy should be an integral part of all national economy and territories' planning strategies. Aiming at sustainable and consistent development environmental protection measures must become an integral part of the whole process, they cannot be separated. A Strategy for sustainable development was elaborated in 1999. A new Strategy for SD until 2025 is under preparation.

From the most relevant horizontal policies, a significant impact on the progress in the environmental sector has the Regional policy.

Despite to the increasing economic evolution the level of economic development of Romania's regional is still significantly lower than that of the regions of the EU member states. In order to ensure a sustainable development of the Romanian society, a global approach of the political, economic, social and environmental objectives at central, regional and local level should be developed. To ensure the integration of the environmental protection requirements in the sectorial policies and strategies at national level, an Inter-Ministerial Committee is currently operational. This structure is responsible for analyzing and approving all policies, strategies and environmental legislation. The Inter-ministerial Committee has an important role in promoting and updating the National Environmental Action Plan and assessing the accomplishment status of the National Plan for the Adoption of the *Acquis communautaire* on environmental protection.

The privatisation policy plays also an important role in the development of the environmental sector. After several years of economic contraction, real GDP grew by 5.3% in 2001, 8,1% in 2002 and 4.9% in 2003.

Romania endeavours to change the way in which environmental policy is made and aims to devolve much of the enforcement of pollution control to regional and local environmental protection agencies. As for air quality management and assessment, this devolution process will put local and regional agencies at the centre of the stage.

A central feature of environmental strategies is to take advantage of this ongoing devolution process to give the opportunity to local and regional authorities to decide for themselves what their goals and priorities are based on local needs and local pollution issues.

The success of environmental strategies and policies implementation depends upon principles underlying the formation of action programmes and the achievement of environmental protection goals. Here are the basic environmental protection policies principles.

Sustainable development. This principle requires directing the country's economic and social development so that meeting current demands does not reduce possibilities for future generations to meet their demands. The Declaration that consolidates this principle at world level was signed 1992 in Rio de Janeiro by Romania together with other countries of the world.

Consistent development. This principle maintains that goals can be achieved only by consistent development without omitting any of its stages. Romania’s economy sectors are of unequal development stages; therefore, these differences have to be taken into account with a view to achieving sustainable development.

Environmental policy integration. This principle is closely linked with the implementation of the sustainable development principle. Environmental policy should be an integral part of all national economy and territories’ development strategies.

Precautionary principle. Often it is impossible to forecast human activities’ impact upon the environment.

To protect the environment a state must to the extent possible follow the precautionary principle. In case of a threat of irrecoverable damage, all even most costly measures for the prevention of environmental damage are justifiable. Precautionary principle application must be based on forecasting, consistency and caution in prospecting consequences.

Polluter/User pays principle. This principle means that every responsibility including the material one for pollution or for environmental damage whilst using natural resources falls on polluters/users, e.g. all social and economic losses due to pollution or use of resources must be covered by polluters/users. This principle must in nearest future be fully implemented and applied.

Prevention. In almost all cases environmental damage recovery costs are higher than those for damage prevention. Sometimes damage cannot be recovered at all. Therefore, prevention is a more rational action technique than attempts to solve a problem after it has occurred.

Use of best available technology not entailing excessive costs. This principle maintains that whenever possible even if the set limits are not exceeded environmentally advanced and most effective technologies that at the same time do not entail excessive costs are used.

Subsidiary principle. The main point is democracy and partnership contacts’ strengthening in the process of decision-making.

Only the problems that cannot be locally resolved should be addressed at a higher level. This principle is targeted at:

- assistance to local communities in their environmental matters;

- enhancing the value of programs and action plans;
- promoting opportunities for the selection of actions and measures.

The principle recognizes the diversity of environmental problems and opportunities in various regions and the necessity to take this into account in delineating environmental policies.

Partnership and sharing of responsibilities. Balanced society goal can be achieved only by joint activities and co-operation of all interested parties: governmental, international organizations, local authorities, non-governmental organizations, economy branches through their associations, private companies, consumers, members of society, etc.

Each one of the partners recognizes own responsibility for the implementation of environmental goals and acts by means available. Partnership development through common but differentiate responsibility is an essential task.

Information availability. The principle is aimed at developing a mechanism for public participation in the decision-making process, at involving people in establishing of environmental protection policies. Environmental information availability would encourage public interest and promote its activity for the implementation of environmental protection goals.

Assessment of sustainable development. Before sustainability criteria are adopted and applied it will not possible to precisely delineate any long-term objectives and goals, adapt actions to ever-changing conditions. Criteria and indications should be set to show environmental protection progress and the level of development sustainability.

2.2.1.3. Environmental policy and legislative overview

Romania transposed 95 % of the environmental acquis. The domains in which the European Acquis was fully transposed are: nature protection, nuclear safety and radio protection, noise.

82 Directives and 12 Regulations were fully transposed. The end of 2006 will transpose 5 %: two major legislative objectives - Environmental Protection Law and EGO on integrated prevention and pollution control.

“The right for a healthy environment” became a fundamental right stipulated in the Romanian Constitution as well, after its reviewing in 2003, according to the other European Constitutions. Admitting this right, the article 35 sets up strong correlative obligations reverting to the state such as: to ensure a legal frame to exert this right in order to set up exactly the environmental obligations and the obligation of all natural and legal individuals to protect the environment.

The objective set up by the Emergency Ordinance no 195/2005 concerning is to regulate the environmental protection. This objective of a major public interest relies on strategic principles leading to a sustainable development of the society. The following principles are stipulated:

- caution in decision making;
- prevention, reducing and integrated control of pollution by using the best available techniques for those activities that might generate significant pollution events;
- prevention of ecological risks and damage generation;
- preservation of the biodiversity and ecosystems specific to the natural biogeographical frame;
- “polluter pays”;
- removing mainly those pollutants that jeopardize severely and irreversibly the human health.

The Emergency Ordinance no 195/2005 sets up the fundamental rules of horizontal regulations, regime of dangerous chemical substances and compounds, regime of waste and dangerous waste, regime of chemical fertilizers and phytosanitary products, protection of water and aquatic eco-system, protection of the atmosphere, protection of soil, subsoil and terrestrial eco-systems.

According to the Law (art.8) the methods of setting into practice these strategic principles and elements are the following:

- to adopt environmental policies harmonized with the development programs;
- to compel the environmental impact assessment for all the environmental activities, programs and projects;

- to correlate the environmental planning with the territory and town planning;
- to introduce stimulatory or compulsory economic levers;
- to propose regulatory rules harmonized with the related – European and international regulations;
- to introduce and follow up the compliance program developments;
- to ensure the fundamental and applied research in the environmental protection field;
- to train, aware and educate the population.

The Frame – Emergency Ordinance no 195/2005 admitted deliberately that “all individuals should have a healthy environment” (art.5).

The following are provided as guarantee rights:

- access to the environmental information;
- right to associate in organizations for environmental quality defense;
- right to discuss in order to make decisions concerning the development of environmental policies, legislation and regulation, to issue environmental agreements and authorizations including for the activities of territory and town planning;
- right to complain directly or by means of associations to administrative or legal authorities in order to prevent or indirect damage;
- right to ask for a compensation for the damage.

According to the Governmental Decision no 136/2006, the Ministry of Environment and Water Management (MEWM) is responsible together with the economic ministries and public local administration authorities for the environmental condition in Romania. MEWM represents the expert body of the central public administration applying the Governmental strategy and program in order to promote the policies related to the environment and water management fields.

Moreover, the MEWM develops the policy of environment and water management at national level, draws up specific strategy and regulation to develop and harmonize such activities within the general policy of the Government, provides and co-ordinates the applying of the Governmental strategy in the concerned

fields, having the role of state authority, synthesis, co-ordination and control in these fields.

In order to develop an integrated environmental policy within the national economy, the Governmental Decision no 1166/2004 approved the setting up of an inter-ministerial Committee for coordinating the environmental protection activity within the sectorial policies and strategies at national level. This Committee includes representatives from all the ministries and has a significant role in updating the National Action Plan for Environmental Protection and assessing the stage of developing the provision of the National Adhering Plan of Romania to EU. The Environmental Protection Strategy of Romania, where the criteria and objectives for identifying those actions leading to a sustainable development of the country in the transitional conditions to the market economy and preparation to adhere to the EU are defined, includes the general principles which the elaboration of this strategy relies upon such as:

- improvement and preservation of the human health state – supreme principle – by assessing the environmental impact and proposing new activities;
- pollution source interventions;
- adopting the pollution prevention measures;
- introducing new technologies.

Sustainable development – keeping the possibilities and conditions of life for the next generations at least similar to those for the present generation and remaking the environmental factors damaged by pollution:

- pollution avoiding – by recovery measures;
- bio-diversity preservation – keeping the eco-systems, their working ability, their stability and strength to disturbances, their yield and adaptability;
- ecological reconstruction of the damaged systems;
- conservation of cultural and historical inheritance;
- “polluter pays” principle;
- stimulation of the environmental rehabilitation activities.

2.2.1.4. Environmental regulatory framework

According to the legislation in force, the following authorities have responsibilities in the environmental protection field:

The central authority for environmental protection (Ministry of Environment and Water Management), with the following attributions:

- to ensure the implementation of governmental policies related to its activity fields according to the existing regulation;
- to draw up strategies and policies in the environmental and water management fields;
- to co-ordinate the activity of integrating the environmental policy in other sectorial policies;
- to draw up and agree projects of legal documents;
- to substantiate and draw up programs related to the environmental protection and water management;
- to represent the Government in its relationships with domestic and international bodies in the fields of environment and water management;
- to manage the monitoring activities of the environmental condition and natural resources; to draw up and issue information and reports on the environmental condition;
- to up-date and, if necessary, set into practice the strategy and National Action Plan for environmental protection and other policies and strategies in the environmental protection field.

The central authority for public administration (Ministry of Administration and Interior), with the following attributions:

- provides support and methodological guidance to the local government authorities and their staff for consistent implementation of the legal provisions;
- pursues compliance with the provisions of the national action plan and ensures enforcement thereof;

- guides the development and implementation of sectorial strategies and programs for environment protection, by the local government authorities.

The National Agency for Environmental Protection, with the following attributions:

- to coordinate the National integrated monitoring system for the environmental factors;
- to substantiate technically the policies, strategies and action plans in the environmental protection field;
- to substantiate technically the projects of specific regulating documents;
- to coordinate the activity of national reference laboratories for: air, water, waste, noise, radioactivity;
- to coordinate the activities related to the implementation of action plans at national, regional and local levels.

The regional authorities for environmental protection (8 regional environmental protection agencies), with the following attributions:

- lead and support the development of regional environmental policy;
- elaborate the regional plans and programs of air quality management;
- manage projects and programmes for atmosphere protection in the region, financed by national or international sources.

Mayoralties and local councils having the following attributions:

- elaborate in collaboration with the territorial public authorities for environmental protection guidelines for the activity holders, institutions and for the public, regarding the manner of management of the air quality and make them available through adequate means;
- follow up and ensure that the provisions foreseen in the plans and programs of air quality management are achieved;
- integrate the environmental policies in the local sustainable development strategy.

The local authorities for environmental protection (41 county environmental protection agencies), having the following attributions:

- elaborate the local environmental action plans, in cooperation with the decentralised services of the other specialized central public authorities, with the local administrative authorities and in partnership with other local public institutions and activity holders;
- control the enforcement of the plans and programs at territorial level;
- develop pollutant emission inventories at local level;
- follow up and analyse the enforcement plans and programs at territorial level and elaborate annual reports.

Recently months the Romanian government has created a National Environmental Agency. The roles and responsibilities of the national, Regional and Local Environmental Protection Agencies are currently being formalised and the implementation of a new era of environmental regulatory enforcement is in the process of being achieved. The National EPA has a broad range of operational activities, it will act as a national reference laboratory and a scientific research institute. Among its operational activities are envisaged, notably: co-ordination of the National System for Integrated Monitoring; elaboration of projects for policies, strategies and action plans for environmental protection; guidance and co-ordination of the future Regional Authorities for Environmental Protection; secretariat of the National Environmental Action Plan.

Environmental regulatory framework is based on two types of permits:

- environmental license which is given for future activities by the local Environmental Protection Agencies (EPA) or central environmental competent authority, that is Ministry of Environment and Waters Management (MEWM).

The Environmental Impact Assessment (EIA) is the technical and scientific base to get the environmental consent.

- environmental permit which is given for existing activities by EPA or by MEWM. The Environmental Audit (EA) is based on the measurement of environment quality (air, water, soil, biodiversity). EA comprises a check of the existing environment quality, versus quality standards.

Major environmental issues are related to the impact on environment factors of activities in agriculture, extraction, energetic, metal industry, construction materials, chemical and petrochemical industry, wood and paper industries, infrastructure projects, other types or projects.

Environmental assessment and approvals process is presented in Government Decision (MD) no 1076/2004. The framework procedure to assess the impact of private and public projects on the environment is presented in the Government Decision no (GD) 918/2002 modified and completed with GD no 1705/2004. This GD is the translated Directive no 85/335/EEC (as amended by Directive no 97/11/EC) on the assessment of the effects of certain public and private projects – adopted by Council on 3 March 1997.

Environmental audit (or environmental balance) is made according to the MO no 184/1997 indications.

Emergency Ordinance (EO) no 152/2005 regards prevention and integrated pollution control. This Emergency Ordinance (EO) no 152/2005 correspond entirely to the Council Directive 96/61/EC of 24 September 1996.

MO no 1158/2005 approves the procedure of granting the integrated environment authorization for industrial activities presented in EO no 152/2005 and MO no 1144/2002. The Ministerial Order no 1144/2002 sets up the Register of pollutants emitted by the activities mentioned in EO no 152/2005 and the threshold values of pollutant of which reporting is mandatory; POPs are included in the list of pollutants which are to be reported if the thresholds values are exceeded in air and water, as it is mentioned in the Annex 1 of MO no 1144/2002.

2.2.1.5. Related policy, legislative and regulatory measures

By adopting in 2000 the Law no.199/2000 concerning the efficient energy use, the legal necessary frame has been set up to draw up and apply a national policy for using efficiently the energy according to the provisions of the Energy Chart Treaty of the Energy Chart Protocol on the energy efficiency and aspects related to the environment and to the principles that the sustainable development relies upon.

The subsequent modifications of the law and entering into force of the Methodological applying standards (approved by the Governmental Decision no 393/2002) strengthened the compulsoriness to develop the objectives of energy efficiency policy.

A National Strategy for environmental protection has been set-up taking into account the European laws and strategies adapted to the National conditions. It establishes general objectives, principles and criteria regarding environmental policies and measures for the following time horizon.

The entering into force of the existing legislation needed to develop an institutional frame materialized in setting up the Romanian Agency for Energy Conservation as an expert body at a national level in the field of energy efficiency and public legal institution as well. According to the provisions of the Law no 199/2000 the Governmental Decision no 941/2002 (modified by GD no 1347/2005) concerning the development and running of the Romanian Agency for Energy Conservation – has been adopted.

The Ministry of Economy and Trade, Ministry of Transport, Constructions and Tourism, Ministry of Administration and Internal Affairs, Ministry of Environment and Waters Management as well as the local public administration authorities are responsible for ensuring the efficient energy use.

The Governmental Decision no 443/2002 (modified by GD no 958/2005) concerning the provisions of electric energy generation by recoverable energy sources set up the necessary legal frame for developing the program of increasing the recoverable energy sources contributions to the generation of electric energy, taking into account the existing potential of these energy sources uses.

According to this legal document, the promotion of the generation and consumption of electric energy produced by energy recoverable sources, including the big hydro-electric energy plants represents a national interest objective.

The National Strategy in the field of energy efficiency approved by the Governmental Decision no 163/2004 provides the energy efficient integration in the non-energetic policies. For this reason it has been suggested to develop a joint action of Ministry of Economy and Trade and Ministry of Environment and Water Management to support the projects related to the energy efficiency field and ensure their financing sources.

The Governmental Decision no 657/2002 approved the industrial policy of Romania and Action Plan for its implementation. The industrial policy of Romania took into consideration the provisions of the sustainable development concept adopted and applied in the last years by most countries as a basis of their economic development during the next years. Thus, the necessity to meet the requirements of this generation was taken into consideration without jeopardizing the next generations, having in view to set up equilibrium between the economic prosperity and environmental protection and preservation.

According to this document the compliance with the regulations in the field of environmental protection and wide promotion of “clean” technologies and products under efficient costs/benefits conditions as well as the design of new models of production and consumption simultaneously with the increase of performance in the environmental protection field and implementation of environmental management system (ISO 14000) represent an important concern of the Government.

The phase-out implementation of the industrial policy is coordinated by the Inter-ministerial Group set up for this purpose by the Governmental Decision no. 660/2001 (modified and completed by GD 1987/2005) and developed according to the action plan existing the possibility to develop simultaneously actions from different stages.

Ordinance no 136/2000 concerning the protection of crops and forests, and the regime of pesticides provides that this protection should be developed in such conditions and by means that might ensure the environmental preservation, keep the physical, chemical and biological qualities of the soil, maintain the biological balance and protect the human health. Consequently, only authorized pesticides may be produced, delivered marketed and used.

According to the Governmental Ordinance no. 4/1995 concerning the manufacturing, marketing and using the phytosanitary products for controlling the diseases, pests and weeds farming and forestry processes, approved by the Law no. 85/1995 for controlling the diseases pests and weeds during the forming and forestry processes, only those phytosanitary products homologated by the International Commission Homologating the Phytosanitary Products may be manufactures marketed and used on the Romanian territory.

The Emergency Ordinance no 34/2000 set up the ecological production rules and system of inspection and certification of the workers producing ecological food products.

The detailed rules concerning the ecological production principles for plants, animals and their products, beekeeping and bee products are stipulated in the Governmental Decision no 917/2001 approving the Methodological Rules for applying the provision of the Governmental Emergency Ordinance no 34/2000 concerning the ecological food products.

In Romania, the manufacture, marketing and selling of the chemical fertilizers are made according to their authorizing and homologating by the Inter-ministerial Commission authorizing and homologating the fertilizers used in our country. The regulation concerning the development and running of this commission has been approved by Order no. 6/2004 of MAFWEP.

The Joint Order no. 396 (modified by Order 240/2003) of MAAP, no.707 of MSF and no.1944 adopted in 2002 forbidden to introduce and use, on the Romanian territory, phytosanitary products containing one or more of the activated substances listed on the annex of this order. Among these activated substances, the persistent organo-chlorinated compounds are mentioned as follows: aldrine, chlordane, dieldrine, DDT, endrine, HCH containing less than 99% of gamma isomer, heptachlor, hexachlorbenzene and camphechlor.

The Ministry of Agriculture, Food and Forests has adopted in 2001 the Order no 373 for approving the Veterinary Sanitary Rule (Standard) concerning the management of toxic and risk wastes from the veterinary sanitary laboratories. According to this order, the veterinary sanitary laboratories are obliged to manage their own toxic and risk wastes. Such a management should be developed through a special system for their collecting, stocking, transport, neutralizing and removing, as well as an adequate control system.

The Veterinary Sanitary and for Food Safety Authority set up by the Law no 215/2004 for approving the Governmental Ordinance no. 984/2005 concerning the veterinary activity management, represents the central veterinary sanitary and for food safety authority coordinating technically and from managerial point of view the whole activity of the veterinary sanitary services, organizing and controlling the public veterinary sanitary activities.

The veterinary sanitary and for food safety departments from Bucharest and countries, as well as the State veterinary laboratories are subordinated to Veterinary Sanitary and for Food Safety Authority.

In order to ensure the environmental and population health protection, the Governmental Decision no 646/2005 concerning the limitation of marketing and use of some dangerous substances and chemicals sets up the limitations for marketing and use of dangerous substances, groups of substances and chemicals provided in annex no.1 of the decision.

According to the Law no 451/2001 approving the Emergency Ordinance no 200/2000 (modified and completed by Law no 324/2005), the National Agency for Dangerous Substances and Chemicals has been developed. This is a legal persons of public interest subordinated to the Ministry of Industry and Resources. National Agency for Dangerous Substances and Chemicals sets up the conditions for the transport of dangerous substances and chemicals so that these do not damage the environmental and population life and health.

The notification procedure for chemical substances is made according to GD no 1300/2002 modified and completed by GD no 693/2004.

Procedure for import/export of some dangerous chemicals (PIC procedure) is made according to the GD no 697/2004 (modified and completed by Order no 610/2005).

Order no 95/2005 and Order no 349/2005 set up the acceptance criteria and preliminary procedure for wastes, their dumping and classification.

The Ministry of Labor, Social Solidarity and Family by its special bodies is responsible for the measures concerning the health protection and safety of the workers exposed to dangerous substances and chemicals at their places of work and control in this field of activity.

2.2.2. Roles and responsibilities of ministries, agencies and other governmental institutions involved in POPs life cycles (from source to disposal, environmental fate and health monitoring)

A synthesized information about the roles and responsibilities of ministries, agencies and other governmental institutions involved in POPs life cycles is given in the below table.

Institutions	Main responsibilities
<p>Ministry of Environment and Water Management (MEWM)</p>	<ul style="list-style-type: none"> • Implements the strategy and the Government programme in order to promote the policies in the fields of the environment and water management; • Ensures the implementation of the governmental policies in the field of the environment and water management, according to the existing legislation; • Draws up and submits to the Government for approval the strategies and policies in the field of the environment and water management; • Coordinates the integration activity of the environmental policy into the other sectorial policies in accordance with the international and European requirements and standards in order to ensure the sustainable development; • Draws up the draft normative acts regarding its field of activity, endorses the draft normative acts drawn up by other ministries and central and local public administrative authorities regarding its field of activity; • Coordinates the issuing process of the integrated environmental agreement/permit; • Coordinates the specific activities regarding the public information and the public participation activities in the decision-making according to the Directive’s provisions;

Institutions	Main responsibilities
	<ul style="list-style-type: none"> • Transmits the reports to the European Union according to the requirements; • Cooperates with other authorities at central level.
National Environmental Protection Agency	<ul style="list-style-type: none"> • Draws up/ updates the installations/ activities inventories at national level and coordinates this process at regional and local level; • Draws up the pollutants emissions inventory at national level; • Organizes and accomplishes the annual training of the specialized personnel from the territorial structures on the basis of the programme approved by the MEWM; • Draws up the reports for the European Commission regarding the adopted measures for the implementation of Directive and transmits them to the MEWM.
Regional Environmental Protection Agencies	<ul style="list-style-type: none"> • Draw up the inventory of the installations falling under the Directive’s provisions at regional level; • Issue the integrated environmental permits and environmental permits; • Cooperate with other authorities at local level.
Local Environmental Protection Agencies	<ul style="list-style-type: none"> • Draw up/update the inventories of installations/activities at local level; • Draw up the inventory of pollutants emissions into the atmosphere at local level; • Issue the environmental permits; • Monitor and analyze the implementation of the environmental quality management plans and programmes at local level and draw up annual reports; • Carry out the control of compliance activity of the installations/activities for which environmental integrated permits have been issued together with county units of the NEG;

Institutions	Main responsibilities
	<ul style="list-style-type: none"> • Cooperate with other authorities at local level.
National Environmental Guard	<ul style="list-style-type: none"> • Carries out the control of the compliance with the environmental legislation
Ministry of Economy and Trade	<ul style="list-style-type: none"> • Draws up sectorial strategies for the industrial activities, taking into account the impact on the atmosphere and environment quality; • Promotes and coordinates the implementation of the specific regulations relating to the pollutants emissions into the atmosphere for industrial activities with major impact on air quality.
Ministry of Transport, Constructions and Tourism	<ul style="list-style-type: none"> • Is responsible for drawing up the policies and legislation relating to the pollutant emissions into the atmosphere resulting from transport activities; • Ensures the territorial and human settlements planning
Ministry of Health	<ul style="list-style-type: none"> • Is responsible for drawing up the public health policies and legislation; • Co-operates with the central environmental authority for setting the regulating norms regarding the toxic chemicals management, air protection, water protection, nuclear safety and protection against radiation.
Ministry of Public Finance	<ul style="list-style-type: none"> • Ensures the introduction into the budget of the funds for environmental protection
National Agency of Small and Medium Enterprises and Cooperatives	<ul style="list-style-type: none"> • Cooperates for strengthening the social and economic cohesion

Each territorial agency (organized on 42 counties) has capacity of analyzing environmental quality general parameters.

Besides, Water Directorates (organized on hydrographical basins) and Water Management Systems (organized on counties) are equipped with laboratory means for water quality parameters measurements.

The structure described in the above table is compliant with the requirements of the Stockholm Convention implementation in our country.

Time evolution of number of specialists involved in environmental protection field of activity is detailed in the next table:

	December 2004 (existing personnel after recruiting of additional staff)	2005	2006	2004- 2006
MEWM - ENVIRONMENTAL DEPARTMENT	65	120	143	+78
MEWM - WATER DEPARTMENT	65	70	75	+10
MEWM - EUROPEAN INTEGRATION DEPARTMENT + AUTHORITY FOR ENVIRONMENT FUNDS COORDINATION	84	120	120	+86
NATIONAL AGENCY FOR ENVIRONMENT PROTECTION	100	195	339	+339
REGIONAL AGENCIES FOR ENVIRONMENT PROTECTION	88	158	192	+192
COUNTY AGENCIES FOR ENVIRONMENT PROTECTION	1868	2090	2216	+872
NATIONAL AUTHORITY “APELE ROMANE”	9466	9529	9549	+83
TOTAL				1660

2.2.3. Relevant international commitments and obligations

In the last years important laws have been promoted in Romania, contributing thus to the acceleration of the legal approximation process in the environmental sector:

- Law no 86/2000 for the ratification of the Convention on access to information, public participation in the decision making process and access to justice on problems relating to environment (Aarhus Convention);

- Law no 22/2001 for the ratification of the Convention on the environmental transboundary impact assessment (Espoo Convention);
- Law no 92/2003 for ratification of Industrial Accidents Convention, Helsinki, 1992;
- Law no 8/1991 referring to Protocols to the Convention on Long-Range Transboundary Air Pollution;
- Aarhus Protocol on Persistent Organic Pollutants (1998) – the protocol bans the production of some products outright and includes provisions dealing with the wastes of products that will be banned;
- Law no 6/1991 for the adhesion of Romania to the Basel Convention on the control of Transboundary Movements of Hazardous Wastes and their Disposal (Of. J. no. 18/1991);
- Law no 265/2002 for the acceptance of the amendments to the Basel Convention on the control of Transboundary Movements of Hazardous Wastes and their Disposal (Of. J. no. 352/ 2002);
- Law no 652/2002 for the adhesion of Romania to the Protocol on Long-term Financing of the Cooperative Program for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP), adopted at Geneva in September 28, 1984 (Of. J. no. 911/2002);
- Convention on Black Sea protection against pollution - Law no 98/1992 for the ratification of the Convention on Black Sea protection against pollution (Of. J. no. 242/1992);
- Convention on the cooperation for protection and sustainable use of the Danube River - Law no 14/1995 for the ratification of the Convention on the cooperation for protection and sustainable use of the Danube River.

According to the Romanian legislative system, once they have been ratified and the laws for ratifying have been published in the Official Journal, the conventions become part of the national law in the area of environmental protection and they are applicable and enforceable.

The main existing Focal Points for the ratified international environmental conventions are belonging to Ministry of Environment and Water Management.

2.2.4. Description of existing legislation and regulations addressing POPs (manufactured chemicals and unintentionally produced POPs)

At present, no product of phytosanitary use that contains POPs is approved. Other detailed information about existing legislation and regulations addressing POPs (manufactured chemicals and unintentionally produced) are given in chapter 2.2.1.3, 2.2.1.4 and 2.2.1.5.

2.2.5. Key approaches and procedures for POPs chemical and pesticide management including enforcement and monitoring requirements

Information regarding POPs chemical and pesticide management are given in chapter 2.2.1.3 – 2.2.1.5 and 2.3.13. Existing monitoring requirements and capabilities are specified in chapter 2.3.7 and 2.3.10.

2.2.6. Legal problems connected with preparation of NIP

The most important legal acts connected with preparation of NIP are:

- * Law no 261/2004 regarding the ratification of Stockholm Convention.
- * Romanian Constitution: Art. 20 says that the provision of International Convention where Romania is A Party has the power of Law. When provisions of the existing domestic regulations are in contradiction with the provisions of an International Convention where Romania is a Party, the International Convention will prevail.
- * Emergency Ordinance no 195/2005 regarding environmental protection.

In consequence, the preparation of NIP is compulsory by Law.

2.3. Assessment of the POPs issue in the country

2.3.1. Assessment with respect to Annex A, part I chemicals (POPs pesticides): historical, current and projected future production, use, import and export; summary of available monitoring data (environment, food, humans) and health impacts

POPs used in the agricultural sector are released into the atmosphere either from stationary sources, which are mostly associated with pesticides application or mobile sources, which are mostly related to off-road vehicles (tractors and other means).

Each county EPA totalizing the following land areas, per year, has reported open burning of agricultural waste:

- ◆ 1989: 41411 ha
- ◆ 1990: 200836 ha
- ◆ 1991: 200246 ha
- ◆ 1995: 259353 ha
- ◆ 2000: 233019 ha
- ◆ 2001: 196414 ha

Emission resulting from the agricultural use of pesticides are possibly influenced by the way in which pesticide are applied (whether or not in closed spaces), the vapor pressure of the pesticides involved, the additions to the pesticides that are used to obtain better spray results, the meteorological conditions during application and the height of the crop.

Tables below show the POPs used in Romania with their commercial names, specific quantity applied on land, period of time when POPs have been applied in Romania. The source of these data is the Institute of Public Health – Bucharest.

Table 2.3.1.1 Specific Quantities (doze) and Commercial Names of POPs Applied in the Agricultural Sector in Romania (doze of application)

Source: Institute of Public Health

Substance	Commerical name	Scope of use	Specific dose (kg/ha)
Aldrin	Aldrin 20	Soil protection	2 – 4
Chlordan	Chlordane 40	All kinds of parasites	0.5 – 5
DDT	Rpthane 50	Vegetables protection	0.125
Dieldrine	Dieldrine 20	Soil protection	2 – 4
Endrine	Endrine 20	Corn protection	0.4
Heptachlor	Heptachlore 4 Heptachlore 40	Soil protection	0.75 – 1
Hexachlorobenzen	Different names	Corn protection	2 kg/t
Toxaphene	Melipax 60 Pinetox 10 Stroban	Against rodents	4 – 6 50 - 60

Table 2.3.1.2 POPs Applied in Romania (periods of time)

Source: Institute of Public Health

Period of time	Aldrin	Chlordane	Dieldrin	Endrin	Heptachlor	Hexachlor benzene	Mirex	Toxaphene
1975-1980	+	+	+	+	+	+	-	+
1981-1990	-	-	-	-	+	+	-	+
1991-1995	-	-	-	-	*	*	-	*
1995-2000	-	-	-	-	-	-	-	-

Legend: “ + ” Applied
 “ - ” Not Applied
 “*” There were some products consented but they were no more produced or used.

In Romania chlorinated pesticides were used starting with 1948. Products based on chlordane, dieldrin, endrin, aldrin, heptachlor and toxafene were used. All these products were imported, except those based on DDT and heptachlor which were produced at the integrated petrochemical plant in Borzesti.

The respective substances were used as powders, in granular or liquid forms, on large agricultural areas, on meadows and alpha-alpha cultures.

Dieldrin based pesticides were used in Romania between 1965 and 1970, especially for seeds treatment. Beside the persistent chlorinated pesticides, ones of the most used products were the ones based on heptachlor. After 1988 these types of products have not been consented in Romania.

All data regarding the existing stocks of POPs (including PCBs) have been conveyed by EPAs and provided by the project-working group.

The existing stocks (including wastes) are related to the quantities of POPs which are not used anymore and which are to be possibly eliminated. The data on existing POPs stocks reported by EPAs have been updated, so the last figures correspond to the year 2003. There are counties (EPAs) which are still asked to check whether they have correctly reported POPs stocks or not (e.g. Arges, Bacau, Ialomita, etc.).

The working group members have checked most of the data provided by paying visits to the locations of POPs deposits and making further investigations.

Pesticide producers have also been taken into consideration with the POPs inventory sources. From all investigations made, the conclusion is that since 1985 all POPs pesticide production has been stopped.

The total amount of stocked pesticides which are not on the POPs list was about 3317 tones in 2000 and 3626 tones in 2001.

EPAs reported on the POP (Heptachlor and Toxaphene) stocks at the end of 2001.

Total existing POPs stocks in Romania at the end of 2001, were:

- Toxaphene: 2942 kg
- Heptachlor: 3544 kg

Observation:

More data are needed to complete the list of pesticides inventoried up to now (some EPAs are still looking for additional stocks).

Pesticides emissions from the agricultural sector decreased with the production decrement between 1989 and 2001. Between 1989 and 2001 the emissions into the atmosphere of Pentachlorophenol applied as a fungicide and herbicide decreased with about 88 percent (see Table 2.3.4.5).

2.3.2. Assessment with respect to Annex A, part II chemicals (PCBs)

PCBs are considered industrial POPs coming mainly from capacitors, transformers, batteries and other electrical equipment.

The lists of equipment in operation, containing PCBs must be updated, completed and double-checked because some of the data are not clear (e.g. concentrations of PCBs in solutions in capacitors in operation in the counties of Arad, Dambovita or Dolj, etc.), some of the counties are missing (e.g. the counties of Alba and Brasov, the municipality of Bucharest etc.) and some of the data are wrong (e.g. the information in the case the county of Brasov).

In order to make no further confusion the existing data at MEWM have been presented as they are indicated in the existing data.

PCBs are coming mainly from capacitors, transformers, batteries and other electrical equipments.

The distribution of the electrical equipment containing PCB over the territory of Romania is shown in Table 2.3.2.1. and Figure 2.3.2.1. About 64.4 percents of these equipments are under operation and 35.6 percents are kept in warehouses.

Table 2.3.2.1. – Centralized PCB data distributed on environmental regions in Romania (2004)

Nr. crt.	Region	Transformers and capacitors out of use		Transformers and capacitors under operation	
		Pieces	Liters	Pieces	Liters
1.	North-East BACĂU	9 755	106 259	20 065	145 962
2.	South-East GALAȚI	11 853	63 094	9 465	230 314
3.	South PITEȘTI	6 999	86 309	21 759	898 823
4.	South-West CRAIOVA	5 705	66 474	14 402	169 175
5.	West TIMIȘOARA	6 524	111 246	7 663	293 239
6.	North-West CLUJ	2 445	12 068	5 225	43 029
7.	Central SIBIU	4 458	31 968	9 439	89 097
8.	BUCHAREST	4 291	32 940	6 219	42 181
TOTAL		52 030	510 358	94 237	1 911 820

The detailed inventory of PCBs both stockpiles (waste) and in use is given in the “POPs Inventory Report” submitted to UNIDO in June 2003.

Observation:

More data are needed to complete the list of PCBs inventoried up to now (some additional checking of stocks).

According to Governmental Decision no 291/2005 on the management and control of PCBs the deadline for equipment out of use containing PCBs in concentrations between 50 – 500 ppm and volumes higher than 5 dm³ is 31 December 2010. The deadline for using equipment containing PCBs in concentrations higher than 50 ppm and volumes higher than 5 dm³ is until their useful life.

2.3.3. Assessment with respect to Annex B chemicals (DDT)

In Romania chlorinated pesticides were used starting with 1948.

Beside the first persistent chlorinated pesticides, the most used products were the ones based on DDT, which was produced at the integrated petrochemical plant in Borzesti. The chemical was used as powder, granular and liquid forms on large agriculture areas for plant protection (potato beetle) and also for destroying the guests insects (lice, flees, a.s.o.). Malaria was not a popular illness in Romania and it was eradicated around 60’s. Beginning with 1965 the pesticides on DDT base have not been applied on meadows and alpha-alpha cultures. After 1988 chlorinated pesticides have not been consented in Romania.

Table 2.3.3.1 DDT Applied in Romania (periods of time)

Source: Institute of Public Health

Period of time	DDT
1975-1985	Used
1986-present	Not used any more

EPAs reported on DDT stocks at the end of 2001:

- DDT: 6621 kg

No relevant detailed inventories are available.

2.3.4. Assessment of releases from unintentional production of Annex C chemicals (PCDD/PCDF, HCB and PCBs)

At present, legal regulations for restriction of activities that have the potential for unintentionally high formation and release of POPs (PCDD/PCDF, HCB and PCB) are being elaborated. Unintentional production of chemicals listed in Annex C emission sources in Romania are mainly due to industry from:

- releases to air:
 - industrial combustion processes;
 - metal processing operations, e.g. sintering plants, smelters, etc.
- releases into water:
 - wastewater discharge from pulp and paper production using elemental chlorine;
 - chemical production processes;
 - wastewater discharge from the use of contaminated preservatives or dyestuffs for textiles, leather, wood, etc.
 - wastewater discharge from normal household operations (washing machines, dishwashers, etc.).

Releases of wastewater in the form of leaches into surface waters and/or ground water may be deliberate or unintentional. Leaching occurs when rainwater is allowed to migrate through inadequately stored repositories of POPs containing products, residues and/or wastes.

- releases into the soil:

Sources releasing POPs into the soil can be divided into two classes: POPs contaminating products “applied” directly to the soil, or POPs deposited via environmental processes. In all cases, the soil serves as a sink for POPs from which they can be released into the food chain through uptake by plants and/or animals.

Deposition of POPs into the soil via atmosphere is not addressed in the existing toolkits.

- releases into wastes
- releases into products

These last two types of releases cannot yet be quantified.

Industrial waste incinerators – sources of POPs emissions into the atmosphere are distributed over the country as it is shown in Table 2.3.4.1.

Table 2.3.4.1 Distribution of industrial waste incinerators over the country, in the year 2000

Source: MIR

County	Number of installations	Incinerated waste (tones/year)
Arad	12	2.566
Arges	7	53.934
Bacau	12	48.744
Bihor	3	5.293
Bistrita Nasaud	5	13.615
Brasov	11	14.393
Braila	1	5
Buzau	2	17.161

The main technical characteristics of existing industrial hazardous waste incinerators are presented in Table 2.3.4.2.

Table 2.3.4.2 The main characteristics of industrial hazardous waste incinerators

No	Titleholder (Operator)	Designed capacity	Installation Type (with or without energy recovery)	Investment Value	Type of waste incinerated	Year when authorization was obtained
						Quantity of waste incinerated
1	SC OLTCHIM SA Ramnicu Valcea Krebs Section	18,000 t/yr	With energy recovery	4.2 million USD	Chlorinated organic products	1999
						8,000 t/yr
2	SC PETROBRAZI SA	21,600 t/yr	Without energy recovery	6.67 million USD	Sludges from wastewater treatment	2000
						14,200 t/yr
3	SC ARPECHIM SA Pitesti Acrilonitril II	18000 m ³ /yr	Without energy recovery	NA	Wastewater containing cyanides	2000
						131,120 m ³ /yr
4	SC KOBER SA Piatra Neamt	1,000 t/yr	Without energy recovery	NA	Residual liquids from resins and other solid wastes	2001
						NA

No	Titleholder (Operator)	Designed capacity	Installation Type (with or without energy recovery)	Investment Value	Type of waste incinerated	Year when authorization was obtained
						Quantity of waste incinerated
5	SC PRO AIR CLEAN SA Timisoara	3235 t/yr	With energy recovery	6 million USD	Hospital waste and industrial hazardous wastes	2001
						35.6 t/yr
6	SC MONDECO SRL Suceava	360 t/yr	With energy recovery	6 million USD	Hospital wastes and industrial hazardous wastes	2001
						4.3 t/yr

NA - not available

Transportation relies heavily on the combustion of gasoline (leaded and unleaded), kerosene, 2 stroke mix (typically a 1:25 - 1:50 mixture of motor oil and gasoline), Diesel fuel (also known as light fuel oil), and heavy oil. Higher emissions from leaded gasoline are linked to the presence of halogenated scavengers as additives to the fuel. Poor maintenance, low fuel quality and poor combustion efficiency are likely to result in increased PCDD / PCDF releases. In most cases emissions from internal combustion engines lead only to releases into air.

The annual average mileage, type and level of maintenance of vehicles are different in comparison to EU countries. The use of leaded fuels shows no important decrement like in EU countries. The phase-out of leaded gasoline and the adoption of catalytic converters as required in the EU - Guidelines 94/12/EG or similar US or Japanese legislation will mean that 4 stroke gasoline engines will become an almost negligible source of PCDD / PCDF emissions into air.

Table 2.3.4.3 shows the evolution of the main transport indicators for the period of 1989 - 2001.

PCBs emission sources in the industrial sector are mainly “Point Sources”. There are also some diffusion sources generated by the deposits of solid and liquid wastes coming from the production of pesticides.

The main PCB emission values are from the energy sector (about 50 to 75 percent of total PCBs emissions in the country). After the energy sector, transport sector in the following sector has important emission value of PCB.

Table 2.3.4.3 The Evolution of the Main Transport Indicators in the Period of 1989 - 2001

Source: NIS

Indicator	Year					
	1989	1990	1991	1995	2000	2001
• Motor vehicles						
- Buses (number)		24,297	25,199	30,365	32,283	
- Microbuses (number)		3,975	5,956	11,682	15,859	
- Cars (number)		1,292,283	1,431,566	2,197,477	3,128,782	
- Merchandise motor vehicles (number)		258,701	266,974	343,064	448,601	
• Railway engines (number)						
- Diesel engines (number)			2,345	2,357	2,197	
- Electric (number)			1,061	1,060	1,060	
• Sea transport						
- Freight ships (number)			269	255	192	
• Inland water transport						
- Tugboats and pushers (number)			226	246	929	
- Ships for passengers transport (number)			36	46	111	
• Commodities transport						
- Road (thousand tones)	2,416,065	1,934,362	993,992	616,044	262,943	
- Road (million tones - km)	30,028	28,993	20,692	19,748	14,288	
- Railway (thousand tones)	306,302	218,828	146,273	105,131	71,461	
- Railway (million tones - km)	81,131	57,253	37,853	27,179	17,982	
- Sea transport (thousand tones)	35,933	27,596	22,316	13,047	1,357	
- Sea transport (million tones - km)	149,372	110,766	108,089	73,636	5,817	
- Inland water (thousand tones)	37,370	12,044	8,429	14,392	13,102	
- Inland water (million tones - km)	3,666	2,090	2,030	3,107	2,634	
• Fuel consumption						
- Gasoline* (tones/year)				51,595		76,126
- road vehicles	36,942	40,344	42,642		64,146	
- road vehicles	497286	1048325	853493	1009329	1231971	1564063
- Diesel oil (tones/year)						
- off road vehicles	804,316	770,614	708,637	610,015	558,400	566,341
- road vehicles	212446	426186	344925	1201177	1279162	1448022
- water transport	588,797	528,282	484,199	416,980	351,771	352,578

* - since 1st January 2005 leaded gasoline hasn't been commercialized.

In the energy sector, 80 – 95 percent of total PCBs emissions come from public power and cogeneration plants. These are followed by commercial, institutional and residential combustion plants responsible for 1 to 10 percent of total PCBs emissions).

PCBs emissions from road transport increased about three-fold by 2001, comparing with the reference year (1989). Besides, the hospital wastes incinerated slightly increased. Municipal waste incineration is not popular in Romania. There were 7 incineration plants built in Romania, but only one is now in operation. The capacity is small (5 tones of waste per hour). The other 6 incineration plants are abandoned.

In Romania primary energy production has decreased from 34,243 thousand tones of oil equivalent (t.o.e) in 1995 to 28,106 thousand t.o.e. Out of the total gross domestic energy consumption in the year 2000 (36,374 thousand t.o.e), 3.3% was electric energy, 20.5% – coal (including coke), 26.9% – crude oil, and 49.3% – natural gas.

Electric energy production decreased from 59,267 million kWh in 1995 to 51,935 million kWh in 2000.

Thermoelectric energy is about 70% while hydro electrical energy is about 30% of the total electric energy produced.

Fossil fuel fired power plants generate the majority of the electricity consumed in today's Romania. Out of the total thermoelectric energy produced in Romania, 50.9% are generated by coal (mostly lignite), 24.2% by natural gas and 8.9% by liquid petroleum products.

The category of power generation and heating includes power station, industrial firing installations (furnaces) and installations for providing space heating, which are fired with fossil fuels.

There is a scarcity of measured data for POP concentration in residue (fly ash) and that is why only emissions into air are reported. Releases of POPs to matter, land and products are normally negligible. Thus, the only important release routes are air and residue, especially fly ash.

Other sources of unintentional releases are, mainly, the sources in residential areas. These sources are the incinerators of healthcare wastes. There are no domestic medical waste incinerators in Romania, except only an old one in Bucharest.

This incinerator has a small capacity (5 tones per hour) and the emission estimate is negligible.

The quantities of hospital / clinical waste incinerated since 1989 are indicated in Table 2.3.4.9.

An almost infinite number of processes can transfer POPs to wastes or residues. However, the most likely types of wastes can be classified according to their origin, since POPs are by-product. Examples include industrial waste, product waste from combustion and thermal processes (fly ash, bottom ash, soot, etc.), production residues and residual products (sludge and residues from chemical production, waste pesticides, waste transformer oil, etc.)

POPs Emissions in Air

Releases of POPs into the atmosphere occur either from stationary sources, which are mostly associated with industrial activities such as production and manufacturing, or from diffuse or dispersed sources, which are mostly related to the use and application of POPs containing products. POPs emitted from either of these two source categories can undergo long-range transport and thus POPs can be detected in air at locations far from the origin of their release.

A summary table of POPs emissions into air by economic sectors in the period 1989 – 2001 is presented in Table 2.3.4.4. From this table two types of conclusions are to be considered: 1) Emission trend in the last decade; 2) The dominant sector where POPs emission is coming from.

POPs unintentional emissions have been decreased in the industrial sector in the last decade due to the decrement of production.

The only sector where POPs emitted unintentionally have been increased is the “Transport sector” (except HCB).

The contribution of each economic sector to the total national unintentionally POPs emissions are put into evidence in the diagrams presented in Figures 2.3.4.1. – 2.3.4.2.

Figure 2.3.4.1. Evolution of POPs unintentionally emitted in the period of time 1989 -2001

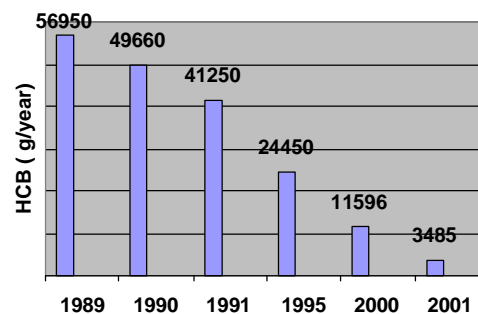
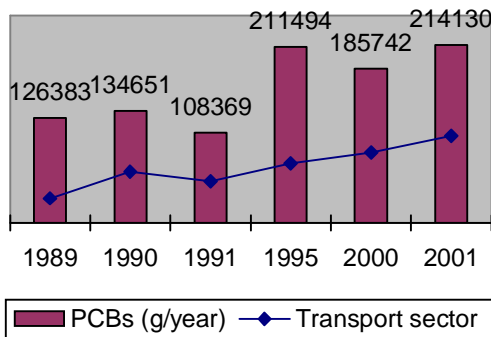
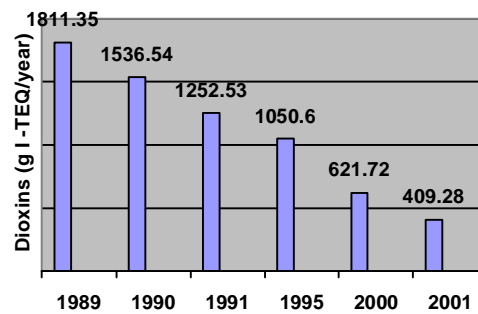
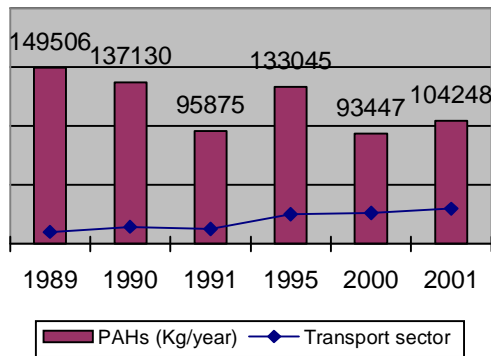
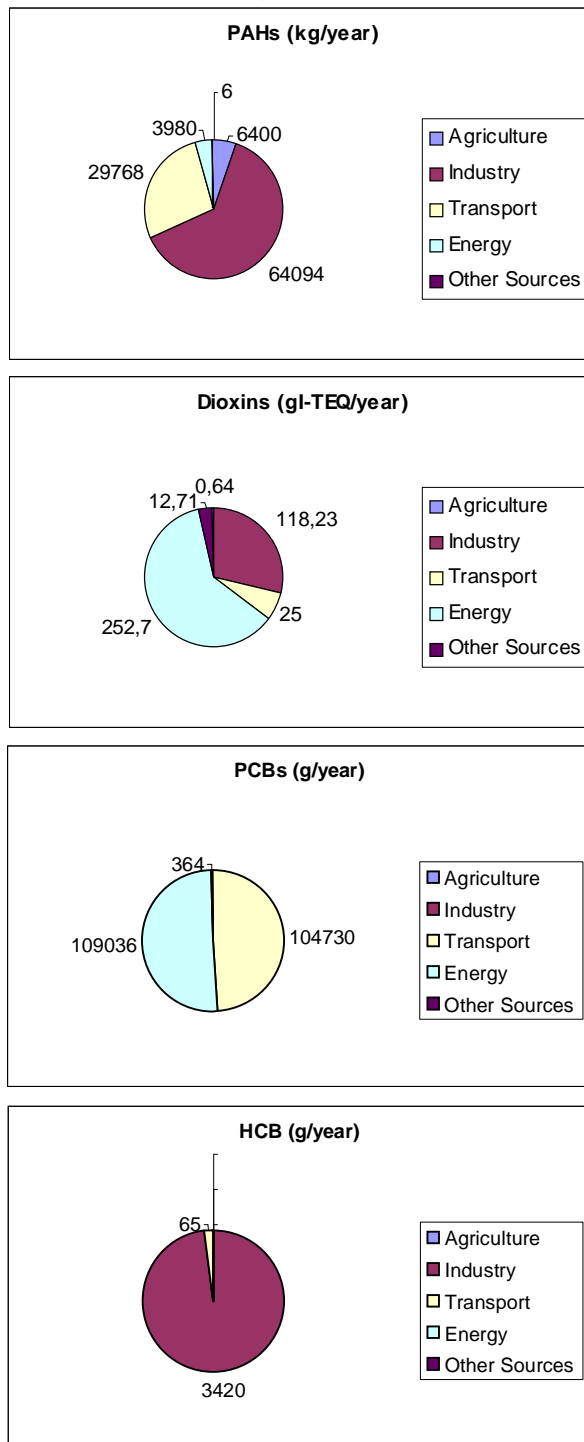


Figure 2.3.4.2. Participation of economic sector to the total POPs unintentionally emitted in 2001



Tables from Figure 2.3.4.2 show the emission of POPs in each economic sector by activity where the specific POP substance comes from calculated according CORINAIR methodology. There are calculated also emissions for PAHs even if this type of pollutants are not considered in Stockholm Convention list.

PAHs emissions decreased between 1989 and 2001 by 30 percent. The industrial sector is the main source of PAHs emissions (responsible for about 60 – 80 percent of total PAHs emissions). The main PAHs releasing activities in the industrial sector are coke production (75-85 percent of total PAHs emissions) and pig iron tapping (20 – 12 percent of total PAHs emissions).

Although the production of the industrial and energy sectors has diminished the transport sector has increased (vehicle fleet, etc.)

Dioxins emissions also diminished in the period of 1989 – 2001 due to the decrement of the industrial sector. The emissions data for secondary aluminum production for the period 1991 – 1998 are to be double-checked as these values seem to be abnormal. The emissions estimates between 1995 and 2001 are verified. Dioxins emissions in the industrial sector decreased from 1995 to 2001 by 77 percent (dioxins emissions from industrial sources represent 28 – 57 percent of the total dioxins emissions). Governmental Decision 268/2005 concerning the waste incineration specifies the emission limits for dioxins and furans.

The main sector emitting dioxins into the air is the energy sector: its share increased from 38.9 percent (1989) to 61.7 percent (2001) of total dioxins emissions. Although the commercial, institutional and residential combustion plants and energy production in the industry decreased in the period 1989 – 2001 dioxins emissions from the power plant and cogeneration plants increased by 30.5 percent in the same period.

Emissions of dioxins and mixtures of various PCDD and PCDF congeners are expressed in International Toxic Equivalence (I – TEQ).

There are 6 incineration plants for industrial wastes POPs emission distributed over the territory of Romania in 1989 (the reference year) and in 2001. These emissions are related to pesticide application in agriculture. Although there are data for counties regarding pesticide application on land, some of the emission estimates are uncertain and must be double-checked. For instance, Bihor, Teleorman, Galati, Giurgiu, Bacau data are unreliable.

Table 2.3.4.4. POPs Emissions into Air by Economic Sectors in the Period 1989 - 2001

Pollutant	Economic Sector	Year					
		1989	1990	1991	1995	2000	2001
PAHs (kg/year)	Agriculture	5,897	5,744	5,542	6,253	4,890	6,400
	Industry	127,194	110,045	72,933	96,007	58,613	64,094
	Transport	10,234	14,572	12,372	24,935	26,288	29,768
	Energy	6,175	6,763	5,022	5,844	3,650	3,980
	Other Sources	6	6	6	6	6	6
TOTAL PAHs (kg/year)		149,506	137,130	95,875	133,045	93,447	104,248
Dioxins (gI-TEQ/year)	Agriculture	0.58	0.57	0.55	0.62	0.49	0.64
	Industry	1,552.88	1,337.63	1,105.81	670.02	329.52	118.23
	Transport	5.90	9.90	8.40	20.8	22.1	25.00
	Energy	243.10	179.50	128.70	349.70	251.8	252.70
	Other Sources	8.89	8.94	9.07	9.46	17.81	12.71
TOTAL DIOXINS (g/year)		1,811.35	1,536.54	1,252.53	1050.6	621.72	409.28
PCBs (g/year)	Agriculture	0	0	0	0	0	0
	Industry	0	0	0	0	0	0
	Transport	29,643	61,886	50,353	71,689	84,623	104,730
	Energy	96,427	72,451	57,701	139,485	100,667	109,036
	Other Sources	313	314	315	320	452	364
TOTAL PCBs (g/year)		126,383	134,651	108,369	211,494	185,742	214,130
Pesticides (tones/year)	Agriculture	62,094	44,757	23,183	17,478	8,395	6,978
TOTAL PESTICIDES (tones/year)		62,094	44,757	23,183	17,478	8,395	6,978
HCB (g/year)	Agriculture	0	0	0	0	0	0
	Industry	56,830	49,560	41,160	24,380	11,530	3,420
	Transport	120.00	100.00	90.00	70.00	66.00	65.00
	Energy	0	0	0	0	0	0
	Other Sources	0	0	0	0	0	0
TOTAL HCB (g/year)		56,950	49,660	41,250	24,450	11,596	3,485

Table 2.3.4.5 Emission of POPs from Agricultural Sector

Pollutant	Activity	Year					
		1989	1990	1991	1995	2000	2001
Pentachlorophenol (tones/year)	Application as Fungicide and Herbicide	55,663	40,122	20,782	15,668	7,776	6,423
Hexachloro-cyclohexan HCH - Lindane (tones/year)	Application as Insecticide	6,431	4,635	2,401	1,810	619	555
TOTAL PESTICIDES (tones/year)		62,094	44,757	23,183	17,478	8,395	6,978
PAHs (kg/year)	Open Burning of Agricultural Wastes	5,897	5,744	5,542	6,253	4,890	6,400
TOTAL PAHs (kg/year)		5,897	5,744	5,542	6,253	4,890	6,400
Dioxins (g I - TEQ/year)	Open Burning of Agricultural Wastes	0.58	0.57	0.55	0.62	0.49	0.64
TOTAL DIOXINS (g I - TEQ /year)		0.58	0.57	0.55	0.62	0.49	0.64

Table 2.3.4.6 Emission of POPs from the Industrial Sector

Pollutant	Activity	Year					
		1989	1990	1991	1995	2000	2001
PAHs (kg/year)	Pig Iron Tapping	25,530	16,540	11,800	10,750	7,810	8,230
	Electric Furnace Steel Plants	103	68	48	38	20	20
	Aluminum Production	1,230	806	714	653	805	834
	Wood Preservation	1	1	1	6	8	10
	Coke Production	100,330	92,630	60,370	84,560	49,970	55,000
TOTAL PAHs (kg/year)		127,194	110,045	72,933	96,007	58,613	64,094
Dioxins (gI-TEQ/year)	Electric Furnace Steel Plants	16,20	10.30	8.20	6.60	3.70	3.45
	Sintering Annex Plants	54.65	35.84	26.57	32.36	25.23	25.20
	Primary Production of Copper	0.53	0.40	0.23	0.24	0.17	0.07
	Secondary Lead Production	0.24	0.14	0.13	0.10	0.07	0.12
	Secondary Zinc Production	0.01	0.01	0.01	0.01	0.01	0.01
	Secondary Aluminum Production	1,480.00	1,290.00	1,070.00	630.00	299.65	88.80
	Cement Factories	1.25	0.94	0.67	0.71	0.69	0.58
TOTAL DIOXINS (g I - TEQ/year)		1552.88	1337.63	1,105.81	670.02	329.52	118.23
HCB (g/year)	Secondary Aluminum Production	56,830	49,560	41,160	24,380	11,530	3,420
TOTAL HCB (g/year)		56,830	49,560	41,160	24,380	11,530	3,420

Table 2.3.4.7 Emissions of POPs from Transportation Sector

Pollutant	Activity	Year					
		1989	1990	1991	1995	2000	2001
PAHs (kg/year)	Road Transport	4,473	9,089	7,368	20,540	22,266	25,630
	Off Road Transport	1,703	1,686	1,536	1,371	1,309	1,364
	Other Mobile Sources	2,880	2,740	2,500	2,210	2,010	2,069
	Water Transport	1,178	1,057	968	834	703	705
TOTAL PAHs (kg/year)		10,234	14,572	12,372	24,955	26,288	29,768
Dioxins (gI-TEQ/year)	Road Transport	3.9	7.9	6.4	19.4	20.8	23.7
	Off Road Transport	NA	NA	NA	NA	NA	NA
	Other Mobile Sources	NA	NA	NA	NA	NA	NA
	Water Transport	2.0	2.0	2.0	1.4	1.3	1.3
TOTAL DIOXINS (g I - TEQ/year)		5.9	9.9	8.4	20.8	22.1	25.0
HCB (g/year)	Water Transport	120	100	90	70	66	65
TOTAL HCB (g/year)		120	100	90	70	66	65

NA = Not available

Table 2.3.4.8 Emissions of POPs from the Energy Sector

Pollutant	Activity	Year					
		1989	1990	1991	1995	2000	2001
PAHs (kg/year)	Public Power and Cogeneration Plants (PPC)	4,456	4,977	3,440	5,025	3,020	3,500
	Commercial, Institutional and Residential Combustion Plants (CIRC)	1,403	1,460	1,314	21	50	40
	Combustion in Boilers in Industry (CBI)	316	326	268	798	580	440
TOTAL PAHs (kg/year)		6,175	6,763	5,022	5,844	3,650	3,980
Dioxins (g/year)	PPC	198.0	137.8	117.0	338.0	239.0	258.5
	CIRC	30.0	30.1	21.2	2.4	4.2	4.7
	CBI	15.1	11.6	9.7	9.3	8.6	9.5
TOTAL DIOXINS (g/year)		243.1	179.5	128.7	349.7	251.8	252.7

Table 2.3.4.9 Emissions of POPs from Other Sources

Pollutant	Activity	Year					
		1989	1990	1991	1995	2000	2001
PAHs (g/year)	Hospital Waste Incineration	67	77	77	127	125	183
	Municipal Waste Incineration Plants	6,351	6,351	6,351	6,351	6,351	6,351
TOTAL PAHs (g/year)		6,418	6,428	6,428	6,478	6,476	6,534
Dioxins (g I-TEQ/year)	Hospital Waste Incineration	6.70	6.75	6.88	7.27	15.62	10.52
	Municipal Waste Incineration Plants	2.19	2.19	2.19	2.19	2.19	2.19
TOTAL DIOXINS (g I - TEQ/year)		8.89	8.94	9.07	9.46	17.81	12.71

Table 2.3.4.10 Emissions of POP's (unintentional)

Cod	Activity	HCB (kg)			Dioxines (g)			PAH (mg)			PCB (g)		
		1998	2000	2001	1998	2000	2001	1998	2000	2001	1998	2000	2001
3	Combustions in processing industry	5.62	11.59	3.42	8.25	3.39	3.48	0.02	0.02	0	6.58	6.06	0
30301	Concentration installations (sintering)	0	0	0	6.43	1.62	3.09	0	0	0	0	0	0
30306	Elementary copper manufacture	0	0	0	0.19	0.16	0.09	0	0	0	0	0	0
30307	Secondary lead manufacture	0	0	0	0.17	0.09	0.2	0	0	0	0	0	0
30310	Secondary aluminum manufacture	5.55	11.53	3.42	0.14	0.3	0.09	0	0	0	0	0	0
30311	Cement production	0.07	0.07		1.32	1.21		0.02	0.02		6.58	6.06	
4	Production processes	0	0	0	2.63	3.14	2.91	144.38	88.93	83.89	0	0	0
40201	Coke furnaces [escapes(losses) at doors and extinction]	0	0	0	0	0	0	84.94	44.49	38.95	0	0	0
40203	Exhaustion of rough cast iron	0	0	0	0	0	0	4.38	2.96	8.16	0	0	0
40206	Furnaces with blowing of oxygen for steel production (steel converters)	0	0	0	0	0	0	46.9	34.48	36.78	0	0	0
40207	Electric furnaces for steel production (steel converters)	0	0	0	2.63	3.14	2.91	0	0	0	0	0	0
40208	Rolling mills	0	0		0	0		8.16	7		0	0	
40301	Aluminum manufacture (electrolysis)	0	0	0	0	0	0	0	0	0	0	0	0

“Enabling Activities to Facilitate Early Action in the Implementation of the Stockholm Convention on Persistent Organic Pollutants (POPs) in Romania”

6	Use of solvents and other products		0	0		0	0		0	0		0	0
60406			0	0		0	0		0	0		0	0
8	Other mobile sources and equipment	0.05	0.07	0.07	0.95	1.41	1.41	1.09	2.18	3.42	0	0	0
80203	Railway engines	0	0	0	0	0	0	0.61	0	1.21	0	0	0
804	Maritime activities	0.05	0.07	0.07	0.95	1.41	1.41	0.48	0.7	0.71	0	0	0
806	Agriculture		0	0		0	0		1.47	1.51		0	0
9	Treatment and storage of wastages	0	0	0	29.38	35.63	39.33	16.18	15.46	17.04	3774	762.98	311.02
902	Incineration of wastes	0			0			0			0		
90201	Incineration of household or urban wastes	0	0	0	0.32	0.04	0.2	0	0	0	3654	472.7	23.72
90202	Incineration of industrial wastes (except torches)	0	0	0	17.47	9.9	24.07	0.01	0.01	0	0	0	127.7
90207	Incineration of hospital wastages	0	0	0	9.98	24.14	13.36	0	0	0	120	290.28	159.6
907	Open combustion of agricultural wastes (except 10.03)	0	0	0	1.62	1.55	1.7	16.16	15.46	17.04	0	0	0
10	Agriculture and forestry, change of wooded surfaces	0	0	0	0	0	0	6989.95	4713.4	5891	0	0	0
1006	Use of pesticides	0	0	0	0	0	0	6989.95	4713.4	5891	0	0	0

2.3.5. Information on the state of knowledge on stockpiles, contaminated sites and wastes, identification, likely numbers, relevant regulations, guidance, remediation measures and data on releases from sites

At present.. there are no cadastral maps with old contaminated sites.

Agriculture is the main economical sector where chlorinated pesticides had been used and the effects of their use are felt nowadays. These effects are not "proven" because there is no special important research oriented in the direction of verifying the effect of past pesticide use in agriculture. The impact of pesticides used in agriculture on water is in the form of diffuse pollution and is actually measured in the underground and surface waters nowadays.

The annual loads of chlorinated pesticides on the tributary areas of inland rivers in the period 1985 – 2001 were monitored as a routine analysis. The concentration values of pesticides have decreased after the significant peak in 1990 – 1991 as influence/effects of the plant protection substances applied in the former time. This interpretation should be carefully considered because the monitoring system is not perfect. The number of samples distributed in time and on the tributary inland river basins needs to be increased in order to improve the certainty degree of the veridical conclusions drawn.

Pesticide waste deposits have been inventoried in 2002 and 2003. There were about 261 tones of POP-pesticides stored in Romania (including waste). These are also main potential point sources of pesticide emission in the agricultural sector. The pesticides stored in the deposits inventoried are in solid and liquid forms and a part of them are substances that are not identified. These deposits are potential sources for accidental pollution, as well (especially, those deposits which are under improper safety conditions).

The existing POP-pesticides stocks (including wastes) have been inventoried for the years 1989 – the reference year, 1990, 1995, 2000 and 2001. All locations within each county have been identified.

The total number of existing deposits in Romania is 709, of which 237 are not secured (e.g. no proper conditions for storage, not monitored deposits, etc.) so, they might be considered not assured and consequently, with a high risk of being uncontrolled. Moreover, out of the 1350 tones of deposited substances containing pesticides – about 34 percent are not identified (that is, about 464 tones).

The deposited substances containing pesticides in liquid form total a volume of about 600 m³, of which 166 m³ are unidentified substances.

Institutional and regulatory framework is described in legislation mentioned in chapter 2.2.

Regarding the assignment of responsibility Romanian legislation foresees the principle of "polluter pays".

2.3.6. Summary of future production, use and releases of POPs – requirements for exemptions

After the year of 2000 POP – pesticides and PCBs – production or consumption have been banned. The POPs listed in the Stockholm Convention will not be produced or used.

The main problems are related to the unintentional POPs emission reduction, namely:

- § reduction of emission from vehicles using leaded gasoline*;
- § from non-ferrous metal industry;
- § from waste incineration (hospital wastes);
- § from open burning of waste in agricultural sector.
- § reduction of dioxine emission from vehicles is planned to be achieved in spite of the increasing number of vehicles by means of phasing out of leaded gasoline, beginning with the year of 2005 (1st January) according to GD 15 of 5th January 2006, emission from vehicles is expected to be reduced by 20 percent in 2007 and other 20 percent until 2014 and finally other 30 percent until 2029.
- § elimination of POPs emission from non ferrous metal industry and from waste incineration is planned to be done by providing all incineration plants with exhausted gas treatment based on POPs adsorption on activated carbon. These actions are provided by the NIP.
- § open burning in agricultural sector are not allowed according to the provisions of Emergency Ordinance no 195/2005 regarding environment protection. The only thing is the enforcement of the respective provision.

* - since 1st January 2005 leaded gasoline hasn't been commercialized.

Table below presents an estimation of the future projected POPs production, use and unintentional releases.

Table 2.3.6.1 Projected POPs Production, Use and Unintentional Releases

Year	2002/03 (Baseline Inventory)	2005	2010	2020	2030
POPS PESTICIDES					
Production	(Tones)	(Tones)	(Tones)	(Tones)	(Tones)
Aldrin	-	-	-	-	-
Chlordane	-	-	-	-	-
Dieldrin	-	-	-	-	-
Endrin	-	-	-	-	-
Heptachlor	-	-	-	-	-
Hexachlorobenzene	-	-	-	-	-
Mirex	-	-	-	-	-
Toxaphene	-	-	-	-	-
Use	(Tones)	(Tones)	(Tones)	(Tones)	(Tones)
Aldrin	-	-	-	-	-
Chlordane	-	-	-	-	-
Dieldrin	-	-	-	-	-
Endrin	-	-	-	-	-
Heptachlor	-	-	-	-	-
Hexachlorobenzene	-	-	-	-	-
Mirex	-	-	-	-	-
Toxaphene	-	-	-	-	-
DDT	(Tones)	(Tones)	(Tones)	(Tones)	(Tones)
Production	-	-	-	-	-
Use	-	-	-	-	-
PCB *)	(Tones)	(Tones)	(Tones)	(Tones)	(Tones)
Production	-	-	-	-	-
Use(in use and wastes)	749	700	534	220	0
Closed and semi-closed applications	576	500	334	220	0

Year	2002/03 (Baseline Inventory)	2005	2010	2020	2030
Open applications	-	-	-	-	-
Releases from Unintentional Production	(g I-TEQ)	(g I-TEQ)	(g I-TEQ)	(g I-TEQ)	(g I-TEQ)
Dioxins and furans (PCDDs/PCDFs)	574.05	506.1	472.1	351	273
Waste incineration	12.7	10	8	6	4
Ferrous and non-ferrous metal production	118	80	70	50	20
Power generation and heating	258.5	246	224	203	185
Production of mineral products	117.7	117	90	60	45
Transport	25	25	20	15	8
Uncontrolled combustion processes	42.150	28.1	21.6	17	11
Production of chemicals and consumer goods					
Disposal					
Hot-spots					
Miscellaneous					
Hexachlorobenzene (HCB)	3485	3168	2112	1408	0
Polychlorinated biphenyls (PCBs)	214130	186200	124133	55170	0

*) - The average density of PCB solution has been assumed to be 1 kg / dm³

“-“ Not applicable

Note: No data available for releases from Production of Chemical and Consumer goods, Disposal, Hot-spots and Miscellaneous. They will be evaluated later.

2.3.7. Existing programmes for monitoring releases and environmental and human health impacts, including findings

Declaration and Reporting of Priority Pollutants Releases

Declaration and reporting of priority pollutants releases is done regularly in standardized forms through specific studies and elaboration at the national level of the emissions inventory. This activity is performed yearly.

For POPs chemicals, Focal Point from Ministry of Environment and Water Management reports every year to UNEP in a standardized forms the "POPs Master list of activities", which contain information referring to assessment and monitoring Projects of POPs chemicals as follows:

- title of the main assessment or monitoring project;
- objective of the project and geographical coverage;
- responsible organization(s);
- partner(s);
- project funder(s);
- timeframe of the assessment/monitoring project;
- comments;
- data source.

Current Monitoring Standards and Capacity for POPs

Monitoring of releases in environment is done through specialized institution as: laboratories of Environmental protection Agencies, laboratories of National Authority "Romanian Waters", research institutes. ICIM has a large experience in POPs and heavy metals management being involved thorough its water and air specialized laboratory in monitoring issues:

- transnational monitoring network in the Danube River Basin;
- air quality integrated monitoring systems in background and impact areas;
- air born pollutant emission and sources inventory.

For existing programmes for environmental monitoring releases it can be mentioned:

- programme for Trans National Monitoring Network (TNMN) of the Danube and its major tributaries;

- programme for Accidental Emergency and Prevention Warning System;
- programme for inventory of emission sources of pollutants into water for Danube catchment area, grouped in municipal, industrial and agricultural point sources as a benefit of the Danube River Protection Convention and International Commission of the respective Convention (ICPDR).

Current monitoring standards uses in analytical laboratory responsible to POPs pollutants (and not only POPs) releases surveillance in the environmental matrix are according EU ISO standards.

At present, through Air, Water and Public Health Monitoring Network, which has at least one territorial agency in each county, monitoring laboratory analyses is done as a routine work.

Background on Potential POPs Impact

The activity of assessing and monitoring water quality is performed as routine analyses since 1977 when National Water Quality Monitoring Network came into force. Moreover, Romania being one of the riparian countries for Danube River, data referring to Danube water quality monitoring is also reported to ICPDR according to Convention for Protection of Danube River.

The activity of assessing and monitoring the state of human health in relation to the environmental factors is carried on in conformity with the order of the ministry of Health and is based on health programmes financed through state budget; it is yearly updated.

The activity in 2004 is stipulated in Ministerial Order no 172/2004 "for the approval of carrying on health programmes and sub-programmes financed from the state budget and from the budget of the Unique National Fund for health social insurance in 2004". For 2004 the cost provided in the budget of Ministry of Health are divided to 4 programmes.

Programme no.1 is "the Community Programme for Public Health". The coordinating institution is the Ministry of Health – Several Management of Public Health and State Sanitary Inspection. Within this programme the sub-programme 1.4 – Evaluation of health estate and risk factors (environment/health component) is technically coordinate by the Institute of Public Health – Bucharest (through the Secretariat of the National Action Plan for Health in relation to Environment). The Objective no.1 is "protection of health and prevention against being taken ill related to environmental risk factors".

Evidence of Presence of POPs in the Environment, Food, Feed and Humans

There are specific databases containing POPs monitored quantities and levels in different compartments of the environment (in air, water and soil). These databases belong to the Ministry of Environment and Water Management (for air and water releases), Ministry of Agriculture, Forests and Rural Development (for soil and crops) and to Ministry of Health (for public health). National Reference Laboratories are responsible to carry out the activities of administrate and up-date specific databases.

At present there are in Romania responsible laboratories to analyze the level and presence of dangerous substances in Food and Feed. For feed this type of analyses is done mainly as crops analyses. In last years this activity was done only in special ordered studies, but today is based on monthly routine analyses for samples from all over the country and is performed by Central Laboratory for Pesticide Residues Control in Crops and Plants.

As an observation it might be underlined that data from these existing databases are not correlated and integrated in between yet.

For the evidence of presence of POPs in different ring of the environmental-human chain it might be mentioned some of the performed activities and projects in Romania:

- elaboration at the national level of the emissions inventory for 1998, 1999 concerning the atmospheric pollutants (including heavy metals and persistent organic pollutants) using the EEA/EMEP/CORINAIR 2000 methodology (National Institute of Research and Development for Environmental Protection Bucharest) timeframe: 2000 - 2003;
- the impact characterization and forecast of long-term and average-term environmental consequences of the persistent organic pollutants in the Danube River (National Institute of Research and Development for Environmental Protection Bucharest) - timeframe: 2000 - 2005;
- dioxins monitoring in the environment (Chemical Research Institute Bucharest) - timeframe: 2000 - 2001;
- research concerning transboundary pollution with persistent organic pollutants produced by industrial activities from the West Area of Romania (Ministry of Industry and Trade - Directorate for Environmental Protection and Industrial Products Quality together with National Research-

Development Institute for Industrial Ecology ECOIND Bucharest) – timeframe 1999 – 2001;

- monitoring of chemical contaminants in food products (Institute of Public Health – Iasi) – timeframe: 2001 – 2005;
- assessment of body burden with organ chlorine pesticides residues (Institute of Public Health – Iasi) – timeframe: 2000 – 2004;
- assessment of organ chlorine pesticides and PCBs levels in sources of water and in drinking water of the main towns in Moldavia region (Institute of Public Health – Iasi) – timeframe: 2002 – 2005;
- assessment of organ chlorine pesticides' levels in the soil of water catchment areas of the main towns in Moldavia region (Institute of Public Health – Iasi) – timeframe: 2001 – 2005;
- surveillance and assessment of pesticides residues in food in Timis County (Institute of Public Health "Prof. dr. Leonida Georgescu" Timisoara) - timeframe: 2000 – 2010.

Potential Risk Groups

The activities within the County Public Health Administration also refer among other things to the participation in the:

- legislative harmonization, vocation training in the hygiene field;
- implementation of the quality system and lab accreditation / authorization;
- monitoring of drinking water quality in urban and rural areas;
- monitoring of risks related to bathing water quality;
- monitoring of air quality and health parameters related to air quality;
- identification and quantification of health risks generated by specific air pollutants;
- monitoring of mineral waters quality;
- monitoring of food chemical contamination by using GEMS FOOD indicators;
- monitoring of non-professional by poisoning pesticides.

For assessing the impacted population Ministry of Health – Institute of Public Health from Bucharest is membership of a “Design of Environment and Health Information System for use with NEHAPs” (WHO Consultation Bilthoven, Netherlands, 22-24 May 2000) which is a project launched by the WHO European Centre for Environment and Health, Bilthoven starting with January 2000. The main objectives of this project are to develop a set of core environmental health indicators and an appropriate framework to facilitate data access and exchange within as well as between the member states. Following the process of experts’ consultation it was selected a core set of indicators allowing for comparisons both within the country and also at international scale, and an extended set for national/local application. According to the decisions of the 3rd Ministerial Conference on Environment and Health, London, June 1999, assumed by the signature of the ministers of environment and health, Romania have to start implementing the National Environment and Health Action Plans (NEHAPs). This requires the development of a health and environment information system, serving for assessing the effectiveness of the action, public communication and at the same time, enabling international comparisons. For this reasons the Ministry of Health in collaboration with the Institute of Public Health Bucharest join the project launched by the WHO European Centre for Environment and Health, Bilthoven that is now in the stage of pilot implementation.

Core set of environmental health indicators is:

- air quality;
- housing and settlements;
- traffic and accidents;
- noise;
- waste and contaminated lands (hazardous waste generation;
- contaminated land area;
- hazardous waste policies; municipal waste collection);
- radiation; water; sanitation;
- food safety;
- chemical emergencies;
- workplace.

2.3.8 Current level of information, awareness and education among target groups; existing systems to communicate such information to the various groups; mechanism for information exchange with other Parties to the Convention

The analysis of the current level of information, awareness and education among target group was based on the following key features:

- development of an integrated information approach on POPs in Romania;
- existing and future possibilities of raising public awareness at the local and central decision making authorities;
- methods used for public information;
- methods used to collect information from the target group representatives;
- possibilities of strengthening research on POPs related issues and to integrate those ones into the European research;
- future elaboration of the environmental regulations on issues related to POPs;
- elaboration of guidelines, methodologies and manuals;
- organization of focused events;
- existing systems of communication for such information to the various target groups and the means used.

Methodology used for analysis of the current situation was based on:

- Literature review on specific reports and studies elaborated by the different representatives of the target groups;
- Discussion with experts / stakeholders representatives such as: researchers, staff from local/national competent authorities, producers, civil society etc);
- specific attention was given to the differences in national and international legislation

The main needs identified by the analysis were:

- Improvement of the information chain on POPs;
- fill the knowledge of information gap;
- review of the policies and improve communication;
- enhance the information exchange and the access to information.

Public awareness and information on POPs issues were developed several activities such as:

- seminars for public information;
- leaflets with information about POPs and about Enabling Activities for Implementing Stockholm Convention;
- a web page: www.popsromania.ro

Mechanism for information exchange with other Parties:

Romania has recently ratified the Stockholm Convention and in compliance with the article 9, the focal point will exchange information directly with other Parties or through the Secretariat.

Institutional background concerning the environmental information

The Governmental Decision no. 136/ 2006 concerning the organization and functioning of the Ministry of Environment and Water Management stipulates it the central authority responsible for the elaboration and enforcement of environmental legislation, including also aspects related to POPs. It's activity is supported by:

- National Environmental Protection Agency;
- 8 Regional Environmental Protection Agencies (REPAs)
- 42 Local Environmental Protection Agencies (LEPAs)

The National Environmental Protection Agency the Local and Regional EPA have specialized departments for public relations.

The Environmental Department has the General Directorate for Environmental Protection, Waste Management and Hazardous Chemicals coordinating the following directorates:

- Directorate for Waste Management and Hazardous Chemicals
- Directorate for Impact Assessment, Pollution Control and Risk Management

The Directorate for Impact Assessment, Pollution Control and Risk Management is also responsible with environmental monitoring; one of the representatives from this directorate is also the Focal Point for Stockholm Convention.

The REPAs and LEPAs have similar organization with the central authority but are acting at regional or local level.

The Water Management Department has the Directorate for Coordination, Regulation, Management, Ecological Protection of Waters and International Districts.

The control of the environmental protection legislation implementation and related activities is the responsibility of the Environmental Guard with his central and local representatives.

Other ministries which are also involved in POPs related aspects are: Ministry of Health, Ministry of Industry, Ministry of Agriculture, Forests and Rural Development, Ministry of Transport, Construction and Tourism.

The public information flow exchange mechanism at the national level is specified in the Figure 2.3.8.1. The information exchange could be done using different communication means.

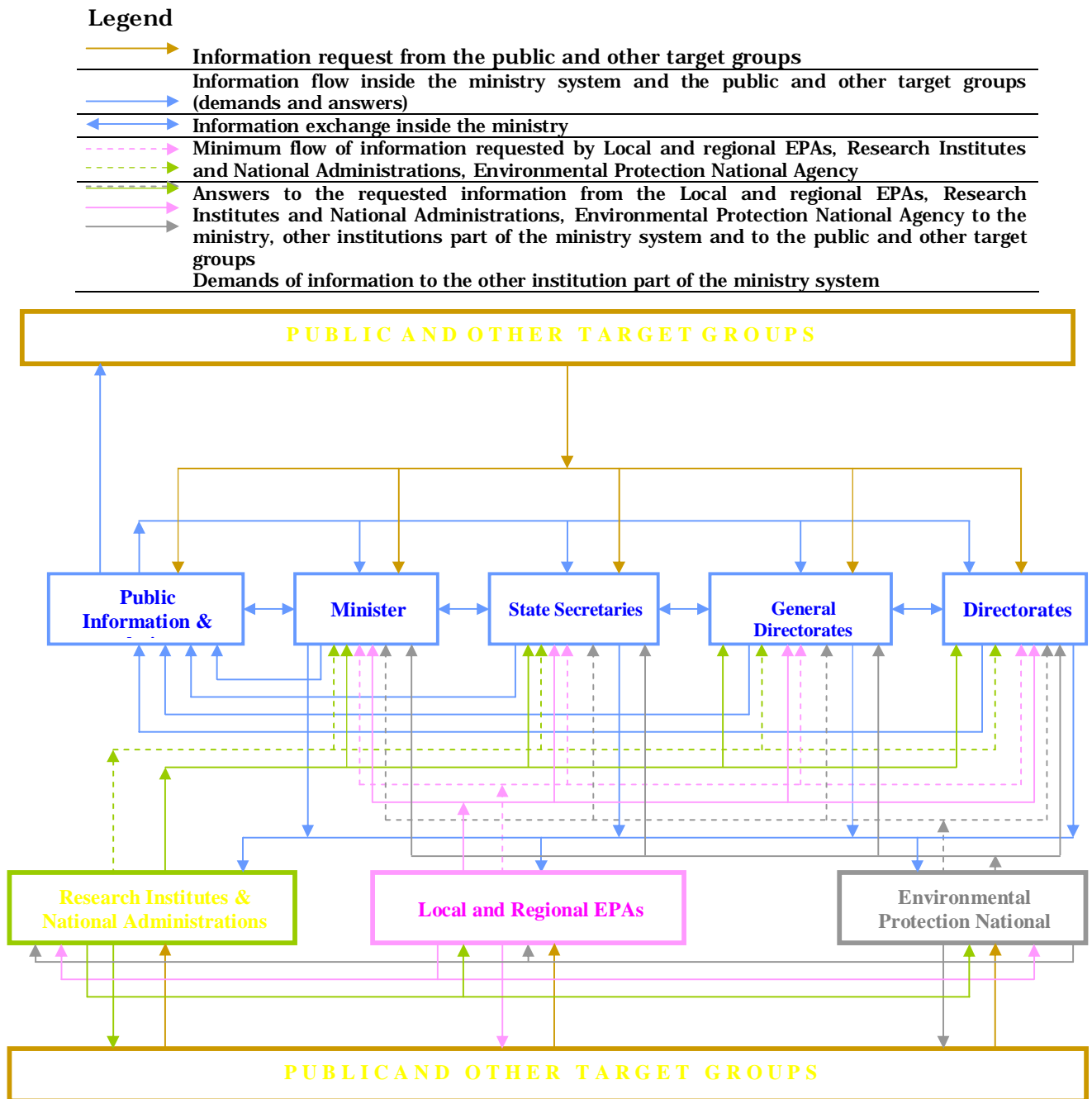
In addition the ministry is coordinating few national research institutes and administrations.

Legislative background

The public participation, access to information, awareness and education is specified in the following regulations:

- Emergency Ordinance no 195/2005 regarding environmental protection;
- Law no. 86/2000 for the ratification of the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, signed at Aarhus in June 25, 1998 (Of. J. no. 224/2000)
- Governmental Decision no 878/2005 on free access to environmental information
- MWEP Order no 1182/2002 for the approval of the methodology concerning environmental information management and flow being in detained by the environmental protection authorities (Of. J. no. 331/ 2003)

Figure 2.3.8.1. Public Environmental Information Flow at the National Level



At present, an Agency for Dangerous Chemicals (belonging to the Ministry of Industry) and a National Register for Potential Toxic Chemicals (belonging to Ministry of Environment and Water Management) exist in Romania. National Correspondent and Focal Point in connection with the International Register for Potentially Toxic Chemicals (IRPTC Geneva) is located in ICIM.

Focal point for POPs and Stockholm Convention is located in the Ministry of Environment and Water Management.

2.3.9 Relevant activities of non-governmental stakeholders

In 2002 -2003 have been implemented by Environmental Experts Association the project "Persistent Organic Pollutants in the environment - characterization, identification, information and public awareness funded by European Union under RO 0008 - Phare ACCESS Micro - Projects Facility. It was the first step of approaching a subject like this by the non-governmental sector.

Between the project results was the achievement of an information system concerning POPs using efficient awareness tools such as brochures, workshop and seminar, and dedicated web site (HYPERLINK "<http://chim.ngo.ro>" <http://chim.ngo.ro>). One of the major outcomes of the project was the establishment of a non-governmental information network (including 7 environmental Romanian NGOs) on POPs at the national level led by Environmental Experts Association.

At present, due to the lack of funds the network has difficulties in maintaining all the proposed activities related to POPs information and communication issues.

Table 2.3.9.1. List of main stakeholders involved in POPs activities

Crt. no.	Organization	Main activities regarding POPs
1.	OLTCHIM Str. Uzinei 1, 1000 Rm.Valcea, Valcea	Chemical substances and pesticides producer; Corporation
2.	FRMI Sos. Stefanesti 128/2 Bucharest	Forestry research and nurture
3.	Research and Production Institute for Pomology Maracineni Pitesti, 0300, Arges	Studies for pesticides usage in Pomology
4.	REC Romania Bd. IC Bratianu 44 bis, bl. P7, ap. 23, Bucharest	Non governmental association for environmental protection
5.	Public Health Institute Bucharest Dr. Leonte 1-3, sector 5, 76256 Bucharest	Research studies and surveillance activities for human health protection against toxic substances impact
6.	ICECHIM Spl. Independentei 202, 77208, sector 6, Bucharest	Research studies for chemical substances
7.	SETCAR Braila	Consultancy and expertise on environmental problems (recycling and treatment of hazardous wastes)

2.3.10. Overview of technical infrastructure for POPs assessment, measurement, analysis, alternatives and prevention measures, management, research and development - linkage to international programmes and projects

POPs infrastructure consists mainly in an approved incineration plant (PRO AIR CLEAN Timisoara) and laboratories specialized on POPs analysis.

Infrastructure for POPs assessment is according to standard procedures of analysis and is based on chromatographic techniques with various detectors, for instance:

- Gas-Chromatograph (GC) – Electron Capture Detector (ECD)/Flame Ionization Detector (FID) for aldrin, chlordane, DDT, dieldrin, endrin, hexachlorbenzene, mirex, toxafen, heptachlor, chlordecane, quintazene, PCBs;
- High Performance Liquid Chromatography (HPLC) – Gas-Chromatograph (GC)/Mass Spectrometer Detector (MSD) for pentachlorophenol;

- **High Performance Liquid Chromatography (HPLC) – UV/FL for PAHs;**
- **High Resolution Gas-Chromatograph (GC)/High Resolution Mass Spectrometer Detector (MSD) for dioxins and furans, etc.**

Alternative methods for qualitative and rapid analyses of unidentified POPs wastes could be spectral methods in UV-VIS-NIR domain for aromatic fingerprints (PCBs, PAHs), FT-IR for functional groups, and AOX techniques for total organic chlorine content.

All these instrumental methods are available for the participants of this program, and the following seven national laboratories have been identified and joint in a common strategy for POPs assessment (see table 2.3.10.1):

- **ICIM - Organic micro-pollutant analysis;**
- **NBC – Defense and Ecology Research Center – Chemical Analyses Laboratory;**
- **ECOIND;**
- **Institute of Public Health;**
- **Institute of Public Health – Pesticide Regime Laboratory;**
- **Central Laboratory for Pesticide Control in Crops and Vegetable Products;**
- **University POLITEHNICA of Bucharest – National Consultancy Center for Environmental Protection.**

Table 2.3.10.1 List of laboratories able to analyze POPs*

Institution Name	Address	Phone	Fax	Type of POPs analyzed	Matrices analyzed
ICIM – Organic Micropollutants analysis	Spl. Independentei 294, Sector 6, 77703 Bucharest 78	021-2219226	021-2218564	Organochloride and organo-phosphorous pesticides, PCBs, volatile compounds	Water, soil, biota
NBC Defence and Ecology Research Center – The Chemical Analysis Laboratory	Soseaua Oltenitei 225, sector 4 Bucharest	021-3322883	021-3322115	Organo-chloride and organo-phosphorous pesticides, dioxins and dibenzofuranes	Water, soil, organic solvent, oil, food and polymer
ECOIND	Sos. Panduri 90-92, sector 2, Bucharest	021-4106716	021-4100575	Drines, DDT, Heptachlor, PCBs	Water and soil
Public Health Institute- Pesticides Regime Laboratory	Dr. Leonte 1-3, 76256, sector 6 Bucharest	021-2249209 0722/ 345474 2249228	021-3123426	Plant protection products authorization, triazines, THM, Organochloride pesticides	water
Institute of Public Health - Iasi	Str. V. Babes 14, Iasi 6600	023-4100512	032-210399	PCB, pesticides	Water, soil, food
Central Laboratory for Pesticides Residues Control in Crops and Vegetal Products	Ion Ionescu de la Brad 8, sector 1, Bucharest	021-2317490 2317491	021-2317492	Organochloride and organo-phosphorous pesticides, carbamates, piretroides, ureic pesticides, herbicides, fungicides	Water, soil, crops
Central Laboratory of Plant Products Control	Sos. Afumati 11, 72964 Bucharest	021-2406890	021-2405445 2406891	Pesticides residues	Crops
Institute for Veterinary Medicines Control	Str. Dudului 37, Sector 6, Bucharest	021-2200872	021-2213171	Organochloride and organo-phosphorous pesticides	Medicines
Consulting Center for Environmental Protection	Str. Polizu 1, sector 1, Bucharest	021-3154193	021-3154193	PAH, PCB, pesticides	Water and soil
Research Institute for Soil Science and Agrochemistry	Bdul Marasti 1, sector 1 Bucharest	021-2241790	021-2225979	Pesticides, PCB PAH	Water and soil
ICECHIM Bucharest	Spl. Independentei 202, sector 6, Bucharest	021 - 3153299	021 - 3123493		

* inventoried in 2005

Management, alternatives and prevention measures

In order to select the best alternatives to POPs, an evaluation of the available alternatives presented in United Nations Environment Programme - POPs Database have been consulted and adopted to Romanian strategy taking into account following considerations:

Economic viability – the strategy must be affordable for the target population and efficacy of the POPs alternative in its intended area of use.

Environmental acceptability – the alternative must not cause environmental problems, such as contamination of water or food, toxic effects or cause the creation of hazardous waste.

Safety of the alternative to applicators and consumers’ -the alternative must be safe for the workers who will be applying and safe for the general public.

Resources for evaluation of the alternative - resources may be available for conducting such evaluations. Information on some of these sources can be obtained through UNEP Chemicals.

The Stockholm Convention recognizes that developing countries and countries with economies in transition such as Romania will require access to funding and technical assistance to meet their obligations under the Convention and special arrangements should be put in place to promote the transfer and adoption of alternative technologies and prevention measures.

Research and development

Several opportunities for research and development programmes in POPs area available for Romanian research community both at national and European level. One of the eleven national research programs, MENER – for Environment and Energy promotes topics related to Environmental Risk Assessment including POPs problem. Romania is also active in Bilateral cooperation programs, such as ESTROM – with Switzerland, having as one of priority field – POPs management in water system, with special reference to Stockholm Convention. In Framework 6 Programs, there is a special call launched (15 June 2004) for Romania, Bulgaria, and Turkey (FP6-204-ACC-SSA-2) dedicated to “Reinforcement of the Candidate Countries Research Capacities”.

Some of Romania Excellence Centers are involved in this competition, with topics in environmental analysis of traces, including technical infrastructure for POPs detection. During 2005 there will be a special call devoted to POPs detection in life cycle, and there is a high interest in this field of interest from Romanian partners.

The World Bank is engaged in ongoing work on Persistent Organic Pollutants (POPs), a new programme that aims at working with client countries including Romania to protect human health and the environment from POPs throughout the globe.

According to The Global Pursuit of the Sound Management of Chemicals the World Bank and International Chemicals Issues 2004, the Stockholm Convention has identified the GEF as its financial mechanism, and the Bank is an implementing agency for the GEF. As a result, the World Bank can be expected to be an active contributor to the efforts of its client countries to respond to the demands associated with implementing the convention. Bank activities as POPs are linked to many sectors in which the Bank is currently working with countries (agriculture, health, water supply and sanitation, transportation, industry, energy, mining, waste disposal). This should eventually translate into investments to identify alternative technologies to facilitate the phase-out of POPs, manage the safe disposal of POPs, identify contaminated sites and strengthen national regulatory frameworks and stocktaking and monitoring functions for chemicals. The World Bank also manages a Canadian POPs Trust Fund (US\$14 million, over a five-year period) that is being used to support countries in all regions in: assessing their Stockholm Convention obligations, current national POPs situations and initial capacity-building needs.

Linkage to international programmes and projects

The present project under UNIDO frame is a part of a network initial programmes of Stockholm Convention Implementation. It could be considered as a linkage to 12 Pilot Countries Project for the Development of National Implementation Plans (NIPs) for the Management of Persistent Organic Pollutants (POPs). The project comprises targeted activities that had to prepare an initial set of twelve pilot countries (Barbados, Bulgaria, Chile, Ecuador, Guinea, Lebanon, Malaysia, Mali, Micronesia, Papua New Guinea, Slovenia and Zambia) to meet the obligations set under the Stockholm Convention.

The activities in each country included an assessment of POPs relevant chemical management infrastructures, the establishment of POPs inventories and the identification of suitable management options for POPs that are adapted to the prevailing circumstances.

Contaminated site remediation capability

The number of assumed contaminated sites are 275 covering a surface area of 1,400 ha. The rehabilitated area is not significant: only 5 ha. Anyhow, more studies are required to establish the contaminated sites more accurately.

2.3.11. Identification of impacted populations or environments. Estimated scale and magnitude of threads to public health and environmental quality and social implications for workers and local communities

At present, a limited number of studies are performed (as mentioned in chapter 2.3.7) that identified exposed populations and assessed human exposure. These were especially focusing on drinking water and food exposure to POPs.

The population risk to POPs and magnitude of impacted population has not been assessed yet. For the time being there are not certain conclusions on the relation between POP emission and the state of population health. In the last year this problem has been revealed as necessary in the research programmes. Nevertheless some data could lead to some suppositions that POP emissions are related to the number of carcinogenic cases (e.g.: in the Western region malign tumor are frequently met; in 2001 a number of 5.2 persons per 1000 inhabitants) and region where POP emission is larger than in other areas. But it must be well stressed that the above observation has a high uncertainty.

In the framework of Danube River Protection Convention (ICPDR) – Environmental Programme for Danube River Basin and Trans National Monitoring Network, in which Romania had a very active participation, the National Reference Laboratory for Integrated Monitoring of Water Resources and Data Management (from ICIM) performed field and laboratory analysis of more than 91 water quality parameters, about 38 sediment associated pollutants, many of them being on international priority lists.

The County Phytosanitary Units and the labs for wastes control try to monitor POPs presence in intermediate or agricultural products (cereals, meat etc.) At present, there is no ordinance to legislate this action.

By entering into force of the transposed EC water directive 98/83/CEE (Law 458/2002 amended by Law 311/2004) a monitoring system for drinking water quality, including pesticides (POPs), will be developed, offering a better understanding of the magnitude of exposure to drinking water of the population. In these context, with the support of a PHARE Project, the administrative capacity of the Ministry of Health is strengthened in order to adopt the EU Acquis in the field of drinking Water and managing the related public health risks including risk of POPs.

Main objectives are:

- Enforcing the water polices as stipulated in the transposed water directive
- Adopting, together with other responsible ministries in the field of drinking water the complementary legislation and regulations
- Implementing the water directive by the Ministry of Health
- Training of specialized staff
- Developing a National Department for Water in the Institute of Public Health Bucharest, including a Reference Water Laboratory

The obligation to report accidental as well as occupational intoxication with pesticides (POPs) of the local Public Health Directions, makes it possible to have an accurate overview of accidental exposure and health impacts of inappropriate usage and handling of POPs. The Institute of Public Health Bucharest centralizes this information for the Ministry of Health.

The elaborated POPs inventory, within the framework of these projects is a good starting point for new projects to follow the impact in the most affected areas that were identified. A consortium of institutions which could perform in the future a more detailed assessments of the impact of POPs on the environment and public health by joining forces and finding the necessary financial and logistic support.

The impact of waste incinerators is another issue that needs more environmental and public health assessment. At present within the framework of the National Health Programs of the Ministry of Health, program nr.1: Community program for

public health, subprogram 1.4: Risk factors and Health (environmental risk factors) a national report was elaborated by the Institute of Public Health Bucharest, assessing the hospital waste production and disposal. According to this study for the years 1999-2001, 10-25% of hospital waste is considered hazardous waste. The final disposal of these is in 65% of the investigated medical facilities done by incinerating using the hospitals own incinerator. Few used other hospital incinerators. 30% were incinerating in improvised facilities, the rest were disposing the waste at the municipal waste site after decontamination. These procedures are generating environmental pollution problems as only few of the incinerators are complying with the environmental protection regulations in force.

Within the sub-programme 1.4 - Evaluation of health state and risk factors (environment and health component) the Objective no. 3 “Protection of health and prevention against being taken ill related to occupational risk factors” the activities of County Public Health Administration are:

- health impact assessment after occupational exposure to carcinogenic pollutants;
- monitoring of occupational diseases incidence at national level.

There is still a need for more studies in order to be able to assess the social implications for workers and local communities.

The activities developed within Regional Public Health Institutes are mainly focused on:

- health condition monitoring in relationship with the risk factors existing in the life environment and at the places of work;
- development of studies and research activities in the field of health condition related to the risk factors existing in the life environment and at the place of work;
- drawing up the projects of legal documents in the specific field.

At present the “National Public Health Strategy” is to be completed. The Office has drawn up this document for the Ministry of Health for Health Policies and Services within the loan given by the World Bank (June 2004). Within this strategy the filed of the environmental quality improvement and population protection against the environmental pollution risks has been approaches, being one of the priority purposes of the preventive medicine.

Epidemiological studies related to the population exposure to POPs

Epidemiological studies performed by researchers within the Public Health Institute of Bucharest - Food and Hygiene Laboratory concerning the presence of organ chlorinated pesticides residue (DDT, DDE, HCH isomers) in plants and animal fats have shown that before 1985 their concentrations exceeded frequently the admitted limits. Starting with 1986, as a result of forbidding their use, such concentrations began to decrease.

Recent data show that at the time being these are present in very low amounts in plants and very rarely in animal fats.

In order to observe the human body loading with such pesticides, determinations have been made from adipose tissues taken from XX-exposed persons and maternal milk. Compared to 1975 the HCH isomers levels decreased at 1996, but the amount DDE + DDT remained high. The maternal milk had a higher loading than the cow milk, prevailing the DDE in both maternal milk and adipose tissues.

Studies developed by researchers from the Institute of Public Health Bucharest - Environmental Hygiene Department Laboratory concerning the drinking water quality (1988 - 1996) have shown that the organ chlorinated pesticide pollution of the water sources and drinking water in the south of the country recorded frequent exceeding of the maximum admissible concentration of 0.5 µg/l (global pesticides according to STAS 1342). Although the pesticide amounts used in Romania do not justify the water contamination level a hypothesis could be the long-time use of pesticides (DDT and HCH) in farming. These pesticides have been forbidden in 1985 but they are slowly biodegradable and their management was inadequate: farming practices, transport and storage.

2.3.12. Details of any relevant system for the assessment and listing of new chemicals

At present, in Romania, the system of registering new chemicals designated for agriculture (products of phytosanitary use) is working on the base of Law 5/1982 modified and completed with Ordinance no 136/2000 regarding the homologation and utilization of pesticides included in the Law no 85/1995 regarding the manufacturing, marketing and use of phytosanitary products, a document agreed upon and signed by the ministers of Agriculture, Forests and Rural Development and of Environment and Waters Management.

The regulation stipulates that homologation needs tests of biological efficiency, chemical analysis of confirmation (also as it is stipulated in Stockholm Convention) as well as approvals of the Ministry of Agriculture, Forests and Rural Development and of Environment and Water Management. The validity period of homologation is 5 years.

At present, at Government there is a draft law regarding the new procedure of homologation of plants protection products in conformity with the Directive of the European Community Council 91/414/EEC with a view to their marketing and use on the Romanian territory. Right now the draft law is agreed upon and signed by all the concerned factors (ministries, research institutions).

The domestic legislation regarding chemical substances is comprehensive and corresponds to EU and international legislation.

All chemical substances that are to be launched on the market must be notified to the competent authority – National Agency for Dangerous Chemical Substances (NADCS), according to the Government Decision (GD) no 1300/2002, modified and completed by GD no 693/2004.

Some dangerous chemical substances are restricted to be used on the market according to GD no 347/2003, modified and completed by GD no 932/2004.

Chemical dangerous substances may be imported or exported in compliance with the procedure of beforehand consent of import or export of some dangerous chemical substances (GD no 697/2004).

The European List of notified chemical substances has been adopted by the Ministerial Order (Ministry of Industry and Resources) no 608/2002.

2.3.13. Details of any relevant system for the assessment and regulation of chemicals already in the market

In Romania the marketing of chemicals for agriculture is allowed only on the base of a Certificate of Homologation issued by the Inter-departmental Commission for Homologation of products of sanitary use.

The Code that includes homologated products of sanitary use, divided in 4 toxicity groups stipulated by Romanian Law, was issued on 5th of June 2004.

The County Phytosanitary Units and the laboratories for wastes control try to monitor POPs presence in intermediate or and agricultural products (cereals, meat etc.). At present, there is no ordinance to legislate this action.

According to Order 20/15th of February 1985 issued by the Ministry of Agriculture and Food Industry on the date, regarding the ceasing of the use of the Technical DDT and HCH based organ chlorinated insecticides, it is forbidden starting from 1st of March 1985 to homologate and use these products for agricultural cultures and the whole technological flux from the system of animal breeding and food industry. At the same time with the entering into force of this order, in Romania it is forbidden to use persistent organic products in agricultural practice.

3. STRATEGY AND ACTION PLAN ELEMENTS OF THE NATIONAL IMPLEMENTATION PLAN

3.1. Policy statement

By signing and ratifying the Stockholm Convention Romania has to award priority to the provisions of this Convention according to the provision of Art. 20 of the Romanian Constitution. In consequence, all the obligations resulted from the Stockholm Convention are included in the NIP.

In consequence, Law 261 of 29 June 2004 ratifying the Stockholm Convention on Persistent Organic Pollutants (POPs) could be considered the most important Policy Statement because all provisions of SC have the power of Law in Romania.

3.2. Implementation strategy

The Stockholm Convention is planned to be implemented by means of:

- legislation acts (mainly by ratification of Stockholm Convention with the resulted legal acts) which will give the priority actions in the National Environment Action Plan to the POPs reduction or elimination, according to the Stockholm Convention content;
- administrative/institutional measures mainly by organizing monitoring of POPs reducing or eliminating measures and actions by the central and local public authorities;
- technical measures;
- economical measures;
- informative measures.

3.3. Activities, strategies and action plans

The overall objective of the NIP is to protect human health and the environment from POPs.

Four main kinds of objectives are distinguished:

- A. objectives to reduce, or eliminate releases from existing stockpiles and wastes;
- B. objectives to eliminate production of POPs (Annex A of the Stockholm Convention);
- C. objectives to restrict the use of DDT (Annex B of the Stockholm Convention) and other POPs;
- D. objectives to reduce unintentional releases of Dioxins, HCB and PCBs from the social and economic activities.

No single objective or measure is sufficient to achieve the final POPs – related to human health and environment protection goals. Therefore a package of objectives, measures and action is proposed. There are two ways in which these measures and actions are directed:

- 1) discouraging the production, use or unintentional emission of POPs;
- 2) encouraging the production and use of environmentally friendly economic activities.

Romanian strategy is based on eleven key-objectives. The key-objectives are focused on a common approach to solving the key problems related to human health and environmental protection – problems caused by POPs production, use and elimination.

Lists of the key-objectives and their group of actions are presented in Table 3.1 and Table 3.2, respectively. The key-objectives and groups of action are itemized in these tables according to the priority rank that resulted from the discussions with ministries, NGOs, academics, etc. Each measure is associated with its corresponding instruments.

Based on the articles of the Stockholm Convention, according the guideline, these key-objectives can be grouped as follows in the sub-chapters 3.3.1 – 3.3.17.

Table 3.1 POPs strategy: key-objectives

Priority	Key Objective
III	Key-Objective 1: To eliminate pesticides stockpiles and wastes
II	Key-Objective 2: To eliminate existing stocks of PCBs
IV	Key-Objective 3: To eliminate not identified POPs (presumed to be POPs)
I	Key-Objective 4: To prohibit the production of POPs and other substances that might be included on the POPs list in the future
X	Key-Objective 5: To strive for the sustainable development of ecological agriculture
XI	Key-Objective 6: To enhance the production and use of “cleaner“ and more economical substances to be used for fighting disease vectors and/or arthropods causing discomfort
IX	Key-Objective 7: To improve environmental performance in the energy sector
VIII	Key-Objective 8: To improve environmental performance in the transportation sector
VII	Key-Objective 9: To improve transportation management in the urban sector
VI	Key-Objective 10: To improve environmental performance in the industrial sector
V	Key-Objective 11: To reduce POPs emission nuisance from waste incinerators

Priority setting criteria:

- 1) to what extent a particular key objective should be addressed in the national environmental protection strategy;*
- 2) to what extent it is considered the responsibility of the involved ministries to initiate, plan and implement the actions needed to achieve a particular key objective, and*
- 3) to what extent does a particular key objective address directly the most severe environmental problems caused by POPs releases.*

Table 3.2 POPs key-objective supporting groups of actions

Groups of actions	Priority
1.3. POPs wastes (except PCBs), including products and articles upon becoming wastes shall be reduced and finally eliminated by appropriate actions	1
1.2. Managing stockpiles (except PCBs), as appropriate in a safe efficient and environmentally sound manner	2
1.1. Identifying and inventorying POPs or other materials containing POPs (except PCBs)	3
2.3. Destroying PCBs wastes	1
2.2. Managing stockpiles, as appropriate, in a safe, efficient and environmentally sound manner	2
2.1. Identifying and inventorying PCBs	3
3.3. Elimination, or final disposal of POPs	1
3.2. Managing stockpiles of presumed POPs, as appropriate, in a safe, efficient and environmentally sound manner	2
3.1. Identifying new substances presumed to be POPs	3
4.2. Complete phase-out of POPs intentionally produced and used	1
4.1. Promoting the use of „cleaner“ and alternative substances	2
5.1. Implementation of fair and agricultural products prices; promoting the use of environmental-friendly products	1
6.1. Complete phase-out of DDT - base products	1
6.2. Promoting the use of substances - other than those in the Annex B of the Stockholm Convention - for fighting against disease vectors and/or arthropods causing discomfort	2
7.4. Applying the EIA/SEA principles to all levels of decision-making with respect to the energy production, transport and use	1
7.5. Providing environmental targets for the energy sector	2
7.1. Promoting the use of cleaner and alternative fuels, especially in PPC	3
7.6. Strengthening energy - environmental policy	4
7.3. Improving the hydro or other non-conventional energy production	5
7.2. Improving the energetic efficiency	6

8.9. Applying EIA/SEA principles to all levels of decision making with respect to the transportation system	1
8.1. Promoting cleaner/ more economical vehicle	2
8.3. Improving the efficient use of infrastructure (road transport)	3
8.2. Promoting the use of cleaner fuels	4
8.4. Promoting inter- urban public transport	5
9.3. Discouraging traffic in densely populated areas	1
9.4. Stimulation the efficient / quality of urban public transport	2
9.5. Strengthening transport environmental policy	3
9.2. Improving the preconditions for walking and cycling	4
9.1. Favouring short distances / public transport in urban structures	5
10.4. Enhancing the safety of the industrial processes with a potential for accidents where POPs might be emitted	1
10.3. Strengthening environmental policy with the industrial sector	2
10.2. Application of EIA/SEA principles to all levels of decision-making with respect to the industrial sector	3
10.1. Promoting air pollution control technologies and means in the non-ferrous industry, especially in secondary aluminium and copper production (for dioxins, PAHs and HCB) and in coke production and pig iron tapping (for PAHs)	4
11.1. Reducing the emissions nuisance of dioxins, HCB and PCBs from hospital waste incinerators, municipal, sanitary-veterinary incinerators and crematories	1
11.2. Reducing emissions from cement kilns firing hazardous wastes	2

Priority setting criteria:

- 1) to what extent a particular key objective should be addressed in the national environmental protection strategy;*
- 2) to what extent it is considered the responsibility of the involved ministries to initiate, plan and implement the actions needed to achieve a particular key objective, and*
- 3) to what extent does a particular key objective address directly the most severe environmental problems caused by POPs releases.*

In the National Implementation Plan **“Groups of actions”** are defined as specific steps necessary for the achievement of key objectives. There are technical, economical, institution, procedural and informative measures.

Activities and Actions are specific tools used for the implementation, such as “command and control”, environmental legislation, fiscal instruments monitoring means and enforcement regulations. An appointed and responsible party undertakes an action within a certain frame.

The relations between different types of actions and objectives in the context of decision makers’ policy are shown in Figure 3.1.

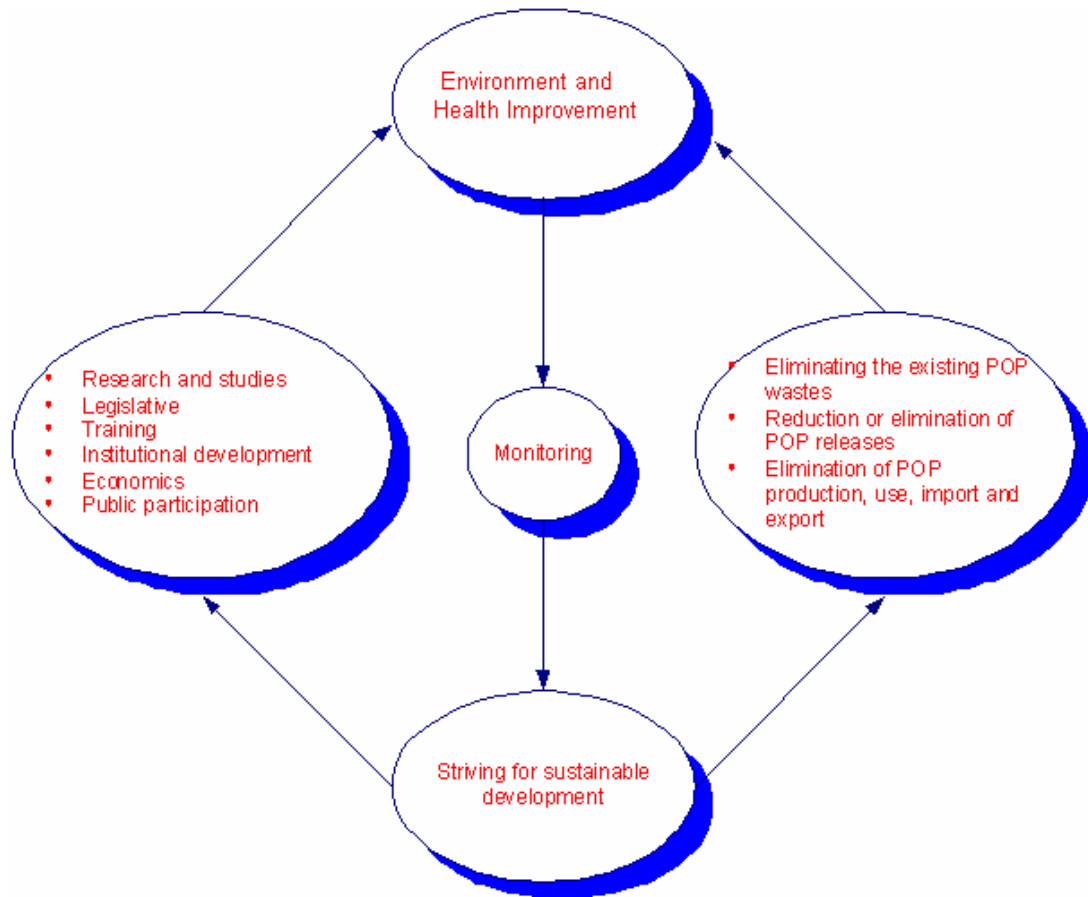


Figure 5.1. - Relation between actions and the overall objective in the context of decision makers policy

Public awareness, education and participation in the implementation of the Stockholm Convention represent a crucial group of actions, requiring special attention and that is why in the National Implementation Plan this issue is presented separately. According to the schedule of activities defined in the Terms of Reference at Phase (4), a national strategy for information exchange, education, communication and awareness raising has been developed.

The Action Plan consists of a list of term actions that Romania could take in order to implement the strategy of reducing or eliminating POPs.

The output defines the final “products” of the action. Objective and output are directly linked as formulated in the strategy.

The implementation of Action Plan should be coordinated by a central institution which can have a global view of all on-going activities and budget flow.

Responsibilities for activities

Projects should be executed under the responsibility of ministries or other institutions mentioned in Chapter 2.2.1.1, which are the authorities or organization responsible for the implementation or coordination of each specific activity.

There are four categories of identified priority projects:

- A. Assessment
- B. Prevention and safety
- C. Reduction / Elimination
- D. Monitoring

3.3.1. Activity: institutional and regulatory strengthening measures

3.3.1.1. Summary

Law 261/2004 has ratified the Stockholm Convention. The competent authority for environmental protection has the responsibility for implementation of this Convention. Romania is under the process of adherence to European Union and environmental issues cover one of the most important areas of the Government decisions. National Implementation Plan (NIP) of Stockholm Convention is an important component of environment activities directed to the conservation of human health and environment.

There are about 50 legal acts containing elements related to POPs management in Romania. The policy of POPs reduction and elimination as it is required by the Convention supposes an integrated environmental policy within the national economy development.

POPs are annually inventoried and reported to the central environmental competent authority (PCB are reported every five years), realizing in this way the effects resulted from the implementation of actions provided for reduction or elimination.

National Implementation Plan (NIP) comprises a set of measures scheduled over the period of time of Stockholm Convention (25 years) in order to achieve 11 key objectives. These objectives have prioritized after discussions with the representatives of the interested parties, namely central and local authorities, producers and consumers, academics, research institutes, NGOs.

The priority setting criteria were:

- 1) to what extent a particular key objective should be addressed in the national environmental protection strategy;
- 2) to what extent it is considered the responsibility of the involved ministries to initiate, plan and implement the actions needed to achieve a particular key objective, and
- 3) to what extent does a particular key objective address directly the most severe environmental problems caused by POPs releases.

There are 126 measures distributed on 11 defined objectives. These measures are defined and listed in paragraph 3.1.1.4. The measures corresponding to each objectives are listed in the priority order as it was established after discussions with the interested parties.

All works were coordinated by a Steering Committee under the presidency of the State Secretary of the Ministry of Environment and Water Management.

The measures included in NIP were evaluated to 52.6 million EURO of which 28.4 million EURO represent investments, and the rest man power input.

The effects resulted from the implementation of NIP are consistently monitories and reported to the central environmental authority. There are 7 measures to be taken to monitor NIP.

An important role to the successful implementation of measures presented in NIP is to be played by public. It was realized that without public awareness and its participation of the implementation of Stockholm Convention is doubtful. That is why public awareness education and training related to POPs reduction and elimination is subject of 18 measures included in NIP.

3.3.1.2. Overview of the current practices, inventories or legislation

The responsible institution for all environmental problems is the Ministry of Environment and Water Management.

Its role and responsibilities as well as the roles and responsibilities of other ministries and other governmental institutions involved in POPs life cycles is shown in Chapter 2.2.

Competent authorities for environment protection and for agriculture organize the inventories of exhausted pesticides included those which are included in POPs list. Another inventory of PCB is also organized, taking into consideration those, which are out of use – on one hand – and those, which are still in use – on the other hand.

POPs released into air are inventoried based on production data (e.g. quantities of secondary non-ferrous metal production, quantities of waste incinerated, energy produced by fossil fuel used, etc.) and emission factors defined by CORINAIR handbook.

The inventory of pesticides, PCB, dioxins, and other POPs released intentionally and unintentionally are updated every year. These inventories are elaborated by the National Research – Development Institute for Environment Protection (ICIM) based on the data conveyed by the National Institute for Statistics, territorial competent authorities for environmental protection and other institutions and organizations at the national or local levels.

At present no pesticides containing POPs are used in Romania. Since 1985 all pesticides containing POPs have not been produced.

Pesticide and PCB management throughout Romania are regulated by the existing legislation, which consists of about 50 legal acts related to wastes and other issues that could be connected to POPs issues.

In the main legal act Emergency Ordinance no 195/2005, the chapter entitled “Chemical Fertilizers and Pesticides Regime” foreseen the provisions regarding the management of pesticides (handling, transporting, depositing and use) are included and the responsibilities, as well.

Reduction or elimination of POPs was regarded in NIP as a consequence of an integrated environmental policy within the national economy development. In this context, Government Decision 1076 / 2004 – corresponding to the EU – CD 2001 / 42 / EC / 2001 – regards promoting sustainable development by environmental assessment of Plans and Programmes in agriculture, silviculture, fishing, energy, industry, transportation, waste management, urban and territorial planning, land use and other sectors. In order to develop on integrated environmental policy within the national economy, the Governmental Decision no 1097 / 2001 approved the setting up of an Interministerial Committee for coordinating the environmental protection activity within the sectorial policies and strategies at national level.

3.3.1.3. Proposed measures

The measures proposed have been established on the basis of consultations and debates in seminars organized by ICIM. The participants were representatives of central authorities (environment, industry, agriculture, health, public administration and transportation), local authorities (environment, mayoralities, health, water, statistics, phytosanitary directorates), stakeholders related to POP management (incineration plants, production plants), academics and research institutes (polytechnic university, plant protection institute, central laboratory for phytosanitary products, public health institute, etc.), NGOs (women association, environmental experts, environmental newspaper association).

The following steps have been followed:

- 1) Establishment of a POPs inventory and assessment of national infrastructure and capacity
- 2) Priority – setting and determination of objectives
- 3) Formulation of a prioritized and monetary estimated NIP and specific Action Plan on POPs
- 4) Endorsement of NIP by stakeholders

A Steering Committee has coordinated all works related to NIP establishment. Under the coordination of the Steering Committee – a working group initiated the draft of the implementation plan which was to be discussed in the organized meetings.

There are the following objectives, actions and measures related to institutional and regulatory strengthening measures:

Key Objective 1. To eliminate pesticides stockpiles and wastes	
1.1. Identifying and inventorying POPs or other materials containing POPs (except PCBs)	Action 1.1.2. Institutional arrangements of POPs stockpile sites inspection
1.2. Managing stockpiles (except PCBs), as appropriate, in a safe, efficient and environmentally sound manner	Action 1.2.5. Penalties for not respecting the legal rules established and taxes for pollution
1.3. POPs wastes (except PCBs), including products and articles upon becoming wastes shall be reduced and finally eliminated by appropriate actions	Action 1.3.1. Elaboration of guidelines on handling, collection, transportation and storage and final disposal, destruction or irreversible transformation, taking into account international rules, standards and other guidelines
	Action 1.3.2. Setting-up new legal acts and enforcement the existing legislation by special inspection (paid by Environment Guard)
Key Objective 3. To eliminate not identified POPs (presumed to be POPs)	
3.1. Identifying new substances presumed to be POPs	Action 3.1.2. Legal instruments for inspection, labeling, interdiction of use of new substances that are supposed to be POPs including taxes or fines for not respecting the rules established
Key Objective 4. To prohibit the production of POPs and other substances that might be included on the POPs list in the future	
4.2. Complete phase-out of POPs intentionally produced and used	Action 4.2.1. Elaboration of supplementary legislation regarding the prohibition of the import and export of chemicals listed in Annexes A and B and special provisions for exemptions for the purposes of environmentally sound disposal
Key Objective 7. To improve environmental performance in the energy sector	
7.2. Improving the energetic efficiency of PPC	Action 7.2.3. Increasing the energetically efficiency by administrative restructuring (e.g. privatization)
	Action 7.2.4. Setting-up taxes to discourage emission of POPs in combustion plants and establishment of low taxes to encourage fuel with low POP emission factors and combustion plant complying with environmental standards
7.4. Applying the EIA/SEA principles to all levels of decision - making with respect to the energy production, transport and use	Action 7.4.3. Agreement with neighboring states about a common approach to transboundary production, transport and use of energy infrastructure
7.6. Strengthening energy - environmental policy	Action 7.6.1. Increasing the number of inspections and environmental surveys for legislation enforcement

Key Objective 8. To improve environmental performance in the transportation sector	
8.1. Promoting cleaner/ more economical vehicle	
	Action 8.1.2. Set-up of vehicle inspection according to harmonized Directives
	Action 8.1.3. Set-up financial and taxation instruments: a) payment whatever the subsequent replacement decision by the owner; b) payment conditional on a specific kind of replacement vehicle being chosen; c) cash for replacement applied to owners who can afford to buy a new car; d) setting-up tax levels depending the age of cars
	Action 8.1.4. Create the institutions necessary to carry-out the (amended) laws and regulations
8.4. Promoting inter-urban public transport	
	Action 8.4.1. Harmonization with EU legislation relevant for the practice of EIA
	Action 8.4.2. Improvement of the practice of EIA
	Action 8.4.3. International cooperation with respect to environment assessment of transboundary infrastructure
8.5. Applying EIA/SEA principles to all levels of decision making with respect to the transportation system	
	Action 8.5.3. National task force and enforcement
Key Objective 9. To improve transportation management in the urban sector	
9.5. Strengthening transport environmental policy	
	Action 9.5.9. Improvement of the institutional framework for public transport
Key Objective 10. To improve environmental performance in the industrial sector	
10.1. Promoting air pollution control technologies and means in the non-ferrous industry, especially in secondary aluminum and cooper production (for dioxins, PAHs and HCB) and in coke production and pig iron tapping (for PAHs)	
	Action 10.1.3. Taxes reduction and credits offered in advantageous conditions for decreasing POP releases (complying with environmental standard limits)
10.3. Strengthening environmental policy with the industrial sector	
	Action 10.3.1. Elaboration of national strategy and policy paper for reduction or elimination of POP emission from the industry sector, strengthening the link between sustainable industrial development in the POP emitting plants and spatial policy
10.4. Enhancing the safety of the industrial processes with a potential for accidents where POPs might be emitted	
	Action 10.4.2. Regular inspection of the existing industrial units where pollution accidents might occur
	Action 10.4.5. Establishment agreements with neighboring states of common approach to transboundary pollution where POPs are involved
Key objective 11. To reduce POPs emission nuisance from waste incinerators	
11.1. Reducing the emissions nuisance of dioxins, HCB and PCBs from hospital waste incinerators, municipal, sanitary - veterinary incinerators and crematories	

Action 11.1.4. Penalties and other punishment, including interdiction of incineration plant operation from hospitals and other waste incinerators for exceeding POP allowable limits
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11.2. Reducing emissions from cement kilns firing hazardous wastes
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Action 11.2.8. Enforcement of legislation related to open burning waste by increasing the number of inspections on site

3.3.1.4. Work plan and budget

The implementation plan can be made operation within four years of its starting date.

To achieve all provisions of NIP is necessary to implement all actions without delay. The actions related to the reduction of unintentional release of POPs is expected to be continuing many years, due to the fact that reduction of POP emissions from combustion processes, from evaporation of different substances (pesticides, oils, etc.), or from waste spills, are far from being total.

The time schedule is presented for the whole period of Stockholm Convention implementation.

Most of the actions indicated in 3.3.1. are provided to be implemented in short term, except Action 10.3.1. – Elaboration of national strategy and policy paper for reduction or elimination of POP emission from the industry sector, strengthening the link between sustainable industrial development in the POP emitting plants and spatial policy – which is to be implemented in medium term, namely towards the end of 2014.

The total cost of NIP on short term is 52.6 million EURO, of which:

28.4 million EURO – implementation investment between 2004 – 2007 and

24.2 million EURO – man-power

The cost of actions corresponding to 3.3.1. is 1.290 million EURO.

3.3.1.5. Monitoring measures and success evaluation

POPs implementation plan is monitored by the territorial competent authorities for environmental protection.

Action 1.1.1. is related to the monitoring of the existing pesticide stockpiles and wastes.

Each year the quantity of pesticides is modified as a consequence of elimination of a part of them and of additional amount of expired pesticides.

PCB existing in deposits are monitored and reported every five years: to know the progress of their elimination. Action 2.2.1. provides this monitoring.

Each year the existing stockpiles in deposits are monitored (Action 3.2.2.).

Monitoring systems to enable the annual follow-up of the preconditions for walking and cycling in order to reduce POP emissions from urban traffic are provided with Action 9.4.3.

Action 10.1.2. is related to annual evaluation of the effects of laws and policies relating to the management of POP releases from industrial processes.

Consistent monitoring of the effects resulted from the application of NIP are provided under the measures regarding POP emissions from hospital waste incinerators and other waste incinerators – Action 11.1.2., from POPs incinerated in cement kilns, or other kilns operated in the industrial sector – Action 11.2.3.

3.3.2. Activity: measures to reduce or eliminate releases from intentional production and use

Not applicable.

3.3.3. Activity: production, import and export, use, stockpiles and wastes of Annex A POPs pesticides (Annex A, part. I Chemicals)

3.3.3.1. Summary

Elimination of the existing pesticides stockpiles and wastes was considered to be on the first place on the priority list of actions in NIP. This prioritization was made on the base of discussions in meetings of the working group, representatives of the interested parties – ministries, stakeholders, research institutes, NGOs, etc. All these activities have been coordinated by a Steering Committee organized at the central level (Ministries).

All pesticides – POPs and other unidentified pesticides are yearly inventoried in Romania. The responsible institution for pesticides regime is the central authority for environment protection.

The total amount of exhausted pesticides, including POPs is about 1347.1 tones (solid) and 592.2 m³ (2002).

The central authority for environment protection, in cooperation with the authorities for agriculture, forestry, health and their subordinated territorial units supervise the regime of pesticide use.

There are more than 30 legal acts related to waste management problems in which POPs – pesticides may have connections.

The actions that have to be taken in the period of NIP are presented in this chapter and ranked according to the priority established by the interested parties after debates in the organized meetings held for NIP endorsement.

There are six actions related to Activity 3.3.3. provided in NIP. These actions are to be achieved in a short time period, as it is shown in Chapter 3.5.

The cost of the implementation these actions is evaluated to be 35,075 million EURO of which 30,6 million EURO are investment and the rest is manpower.

3.3.3.2. Overview of the current practices, inventories, or legislation

Although POPs pesticides included in Annex A: part I. Chemicals are no more produced in Romania – a special attention must be paid to the existing stockpiles and wastes related to expired pesticides.

There are 2942 kg of toxaphene, 3544 kg of heptachlor and 6621 kg of DDT stored in 2001 in the existing deposits throughout Romania.

After discussions with the stakeholders and all the other interested parties the Activity 3.3.3. has been scored to have the first place in the list of priorities.

There are legislative acts, which regulate the production, import and export, use, stockpiles and wastes of substances included in Annex A – Part I of Stockholm Convention.

The main legal acts in force, related to Activity 3.3.3. are:

- w Emergency Ordinance no 195/2005. In this Emergency Ordinance – is related the provisions regarding the social and economic activities having impact on environment and the regimes of substances and hazardous waste and chemical fertilizers and pesticides respectively.
- w About 30 Laws, Government Decisions (GD), Emergency Ordinances (EO) and Ministerial Orders (MO) regarding wastes cover the following issues:
 - regarding the registration, classification, notification and labelling of wastes EO no 200/2000 modified by Law 324/2005; MO no 1144/2002, GD no 176/2004, GD no 856 /2002, MO no 95/2005, including chemical substances:
 - regarding the import or export or chemical substances, including wastes: GD no 258/2005, EO no 244/2000, GD no 9/2002, GD no 383/2000;
 - regarding waste management and depositing: GD no 394/2005, EO 16 /2001 – republished; GD no 1470 / 2004; EO no 61/2003 approved by Law no 431/2003; GD no 1159 / 2003; GD no 899/2004; MO no 367/2004; MO no 1229/2005; MO no 731/2005; MO no 117/2004 republished; Law no 426/2001; EO no 78/2000, with amendments; GD no 433/2004; MO no 757/2004;
 - regarding waste transportation, including transboundary transportation: Law no 265/2002;
 - regarding waste incineration: GD no 268/2005; MO no 756/2004; MO no 2/11/118/2004, MO no 756/2004;

- regarding packages: MO no 927/2005; GD no 899/2004; MO no 128/2004.

In addition, other few legal acts are important to be taken into consideration, namely:

• Order of Ministry of Health no 1041/2003, regarding setting up the information system on health related to environment.

By operating this information system it will be possible to realize the deleterious effect of POPs on health and to take the necessary measures, consequently.

• GD no 932/2004 – modifying and completing GD no 347/2003 – states the restrictions for introduction of some dangerous substances in the market and for their use.

A Protocol of Convention on the Long Range Transport of Atmospheric Pollutants (CLRTAP), regarding POPs has been adopted by the Legal Act 240698 / 2003.

According to the existing legislation all pesticides produced for plant treatment have to be produced by applying authorized technologies or biotechnologies (Emergency Ordinance no 195/2005 of environment protection)

All competent authorities (e.g. Ministry of Agriculture and Rural Department) with the consent of the central authority for environment have the obligation to elaborate the list of domestic and imported pesticides their regime and their maximum allowable concentrations. The central authority for environment protection, in cooperation with the authorities for agriculture, forestry, health and their subordinated units at the local level supervise the regime of pesticide use.

Natural and legal persons who produce, sell or use pesticides are obliged to obtain environmental consent or authorization to handle these products with the obligation to label these products, warning and indicating the safety conditions of use in such a way that the transport means and environment would not be contaminated (Emergency Ordinance no 195/2005 of environment protection). The natural and legal persons are also obliged to keep all pesticides packed in protected places.

3.3.3.3. Proposed measures

The measures related to reduction or elimination of pesticides stockpiles and wastes and to production, import, export and use have been initially proposed by the working group, then discussed with the stakeholders throughout the country and finally endorsed by the ministries involved in the pesticides management (environment, industry, agriculture, health, public administration, transport) and by stakeholders.

There are the following objectives, actions and measures related to production, import and export, use, stockpiles and wastes of Annex A POPs pesticides (Annex A, part. I Chemicals):

Key Objective 1. To eliminate pesticides stockpiles and wastes	
1.3. POPs wastes (except PCBs), including products and articles upon becoming wastes shall be reduced and finally eliminated by appropriate actions	
	Action 1.3.3. Final elimination of POP wastes (except PCBs), including products and articles upon becoming wastes by applying BAT and BEP
1.2. Managing stockpiles (except PCBs), as appropriate in a safe efficient and environmentally sound manner	
	Action 1.2.4. Providing the POP deposits with special safety means to ensure the security of humans and environment
1.1. Identifying and inventorying POPs or other materials containing POPs (except PCBs)	
	Action 1.1.3. Continuing identification of products and articles in use and wastes consisting of or containing chemicals listed in Annexes A, B or C of Stockholm Convention
Key Objective 3. To eliminate not identified POPs (presumed to be POPs)	
3.3. Elimination, or final disposal of POPs	
	Action 3.3.2. Complete phase-out of existing stockpiles of substances presumed/identified to be POPs
Key Objective 4. To prohibit the production of POPs and other substances that might be included on the POPs list in the future	
4.1. Promoting the use of „cleaner“ and alternative substances	
	Action 4.1.1. Elimination of production, use, import and export of chemicals listed in Annex A of Stockholm Convention
Key Objective 5. To strive for the sustainable development of ecological agriculture	
5.1. Implementation of fair and agricultural products prices; promoting the use of environmental-friendly products	
	Action 5.1.2. Fiscal instruments to encourage ecological products

These types of measures – namely elimination of pesticides stockpiles and wastes, or elimination of production, use and import and export of chemicals listed in Annex A of Stockholm Convention – have been chosen as priority measures because:

- w present a continuous danger (the owners desperately need to get rid of them)
- w the solutions available for elimination (incineration or export in view of elimination) are feasible and could be applied in short term .

3.3.3.4. Work plan and budget

All measures and actions mentioned above have been scheduled in Chapter 3.5.

Due to the urgency of actions mentioned in Paragraph 3.3.3. most of them are planned to be implemented in short term, namely until the end of 2007.

The short and long-term measures keep on the rails in effect which blend in with European Union legislation in this line, having in view that Romania is aspirant country for adherence to European Union.

The total cost of actions pertaining to the Activity defined under Paragraph 3.3.3. is 35.075 million EURO of which: investment 30.6 million EURO and man-power 4.475 million EURO.

3.3.3.5. Monitoring measures and success evaluation

Consistent monitoring of the effects resulted from NIP is provided by the existing legislation and especially underlined in Chapter 3.3.1. For example, Actions 1.1.1. and 3.2.2. are related to yearly monitoring of the existing stockpiles in deposits, as they are modified as a consequence of the yearly stock exchange.

3.3.4. Activity: production, import and export, use, identification, labeling, removal, storage and disposal of PCBs and equipment containing PCBs (Annex A, part II chemicals)

3.3.4.1. Summary

PCB existing in electrical equipment (transformers, capacitors and batteries) are annually inventoried by the central authority for environment protection, getting the county inventories from the territorial environment protection agencies.

The total amount of PCB existing in 146,267 transformers and capacitors is 2,422 m³, of which about 80% are still under operation. In consequence, the action of phasing-out of PCB is on going and will continue all the period of Stockholm Convention implementation.

The main legal acts related to PCB elimination is GD no 173 / 2000 – corresponding to CD 96 / 59 / CEE – provides the obligation of titleholders who own equipments containing PCB to elaborate elimination plans which are to be approved and controlled by the territorial competent authorities for environment protection.

Objective 2 – to eliminate stocks of PCBs – is to be achieved by taking 5 actions defined in 3.3.4.3. These actions and their priority and the whole NIP were discussed by all stakeholders and consented by the interested ministries.

The implementation of the actions was scheduled over the period of time indicated in the Stockholm Convention, namely by 2025 as it shown in Chapter 3.4.

The necessary budget to implement the actions presented in this Chapter is 9.463 million EURO of which 1.463 million EURO represents the total man-power (0.273 million EURO domestic man-power and 1.190 million EURO international man-power) and 8 million EURO investments.

3.3.4.2. Overview of the current practices, inventories, or legislation

PCB is present in electrical equipment, namely transformers, capacitors and batteries. A part of them are stored in deposits – being out of use – and another one is still under operation.

The central environment protection authority elaborates, updates and publishes the national inventory of equipments and materials which contain PCB. This inventory is annually updated.

The total amount of PCB inventoried in Romania, in 2004 was 2,422 m³ of which 1,912 m³ are still under operation and the rest is deposited as waste. These quantities are included in 146,267 pieces-transformers and capacitors, of which 94,267 are still under operation.

The main PCB stakeholders are from industrial sector (owners of electrical kilns, and those which produce electrical energy for their own needs) electrical energy producers and transporters. They are not even distributed over the territory of Romania. For instance, the regional environment protection authority from Pitești (South region of Romania) reported in 2004, the existence of 40.6 percent of the whole amount of PCB quantity in Romania. That is why the actions provided in NIP will be concentrated in the zones where PCB presence is predominant.

The territorial environment protection authorities give technical assistance to the PC stakeholders for preparing their inventories, centralize the data at the county level and convey the data to the central environment protection authority for preparing the national inventory. The territorial environment protection authorities approve the plans of PCB elimination and make inspections of the equipments and materials containing PCB in their area of responsibility.

The existing domestic legislation regulates the regime of waste including PCB and PCT (see 3.3.3.). GD 173 / 2000 regarding the special regime of PCB and similar substances management and control, corresponds to CD 96 / 59 / CEE – related to elimination of polychlorinated bi and triphenyls (PCB and PCT).

According to the Common Position of EU – Romania has been invited to give the following information:

§ a National Plan for elimination of equipments and materials containing PCB / PCT towards the end of 2005.

Taking into account the schedules provided in the Directive 96 / 59 / CEE this Plan will include phases of PCB / PCT elimination, beginning with the equipments and materials out of use and temporarily deposited;

§ updated National Inventory and reviewing of the National Elimination Plan by the owners of the respective equipments and materials containing PCB;

§ elaboration of a List of components of equipments containing PCB not yet inventoried. These equipments are to be selected in view of elimination by the authorized companies. The respective List is to be elaborated by the Ministry of Environment and Water Management in cooperation with the Ministry of Economy and Trade, until the end of 2005.

3.3.4.3. Proposed measures

There are five actions to achieve Objective 2 of NIP, regarding the elimination of the existing stocks of PCBs.

This Objective regards the Activity “Production, import and export, use, identification, labelling, removal, storage and disposal of PCBs and equipment containing PCBs (Annex A, part II chemicals of Stockholm Convention).

There are the following objectives, actions and measures related to production, import and export, use, identification, labeling, removal, storage and disposal of PCBs and equipment containing PCBs (Annex A, part II chemicals):

Key Objective 2. To eliminate existing stocks of PCBs	
2.1. Identifying and inventorying PCBs	
	Action 2.1.1. Training for preparing PCB inventories and training workers for appropriate management
	Action 2.1.2. Continuing labelling and removing from use by 2025 the following equipments with the following priorities: 1) greater than 10 percent PCB and volumes greater than 5 liters; 2) greater than 0.05 percent PCB and volumes greater than 5 liters; 3) greater than 0.005 percent PCB and volumes greater than 0.05 liters
2.2. Managing stockpiles, as appropriate, in a safe, efficient and environmentally sound manner	

Action 2.2.2. Elaboration of guidelines for using appropriate equipments or placements, or other provisions to reduce exposure and risk to control the use of PCBs

Action 2.2.3. Emitting legal acts for: 1) not allowing export or import of PCB except for the purpose of environmentally sound waste management; 2) not allowing trans-boundary transportation without taking into account relevant international rules, standards and guidelines; 3) not allowing recovery for the purpose of reuse in other equipment of liquids with PCB content above 0.005 percent; 4) environmentally sound waste management of liquids with PCB above 0.005 percent concentration

2.3. Destroying PCBs wastes

Action 2.3.2. Phasing-out PCB by methods corresponding to environmentally sound disposal when destruction or irreversible transformation does not represent the environmentally preferable option, or PCB content is low, taking into account international rules, standards and guidelines, including those that are relevant to global and regional regimes governing the management of hazardous wastes

The actions and their priority have been discussed by stakeholders and supported by the interested ministries.

Some of the actions presented above have already been taken, namely:

- w GD no 173/2000 comprises the provisions corresponding to Action 2.2.3.;
- w Labeling, packing, collecting and depositing rules are operated according to the legal provisions (see 3.3.3.).

All actions enumerated in this Chapter are on-going according to the schedule provided in NIP.

3.3.4.4. Work plan and budget

The actions presented in this Chapter are scheduled as it follows:

- ÿ Short-term actions: see chapters 2.1.1.; 2.2.2.; 2.2.3.; 2.3.2.
- ÿ Long-term actions: see chapter 2.1.2.

The schedule corresponds to the provisions of Stockholm Convention and has been established after discussions with the interested parties and agreed by the interested ministries (industry, agriculture, health, public administration, transport and environment)

The cost of actions included in this Chapter has been evaluated to be 9.463 million EURO of which 1.463 million EURO represents the total man-power (0.273 million EURO domestic man-power and 1.190 million EURO international man-power) and 8 million EURO investments.

3.3.4.5. Monitoring measures and success evaluation

The effects of actions provided for achieving PCB elimination are measured by monitoring actions taken in Chapter 3.3.2. related to pesticides and other wastes.

3.3.5. Activity: production, import and export, use, stockpiles and wastes DDT (Annex B chemicals)

3.3.5.1. Summary

DDT is no more used in Romania. It has been prohibited since 1988. There are about 6.6 tones of DDT stocked as waste, which will be treated as such. DDT wastes are to be eliminated similarly to the way the exhausted (waste) pesticides is used (see 3.3.3.).

The actions provided in NIP refer to the discouraging the use of DDT (substances included in Annex B of Stockholm Convention) and commercial activities where these substances are involved.

Actions included in this Chapter are to be implemented during the period of time 2004 - 2007 and the expenses are evaluate to 0.096 million EURO.

3.3.5.2. Overview of the current practices, inventories or legislation

DDT was produced in Romania in one plant, namely petrochemical integrated plant in Borzești. The period of time 1975 – 1985 DDT was used as pesticides. Beginning with 1988 the products based on DDT have been interdicted in Romania.

In 2001 the Environment Protection Agencies have reported DDT stocks. The total quantity of DDT reported at the end of 2001 was 6621 kg.

3.3.5.3. Proposed measures

Due to the fact that DDT is prohibited in Romania there are only two actions related to DDT, aiming to get rid of the existing DDT – waste, at one hand, and to control the products containing DDT – as intermediate in production of dicofol or other products by interdiction of import and use. Both of actions are intended to achieve the Key Objective 6.

There are the following objectives, actions and measures related to production, import and export, use, stockpiles and wastes DDT (Annex B chemicals):

Key Objective 6. To enhance the production and use of “cleaner“ and more economical substances to be used for fighting disease vectors and/or arthropods causing discomfort	
6.1. Complete phasing-out of DDT – base products	
	Action 6.1.1. Applying additional taxes to discourage the use of substances in Annex B of Stockholm Convention
6.2. Promoting the use of substances – other than those in the Annex B of the Stockholm Convention – for fighting against disease vectors and/or arthropods causing discomfort	
	Action 6.2.2. Central authorities involved in approvals of imported chemicals listed in Annex B will control and approve the import only for the purpose of environmentally sound disposal or for use or purpose which is permitted under Annex B

3.3.5.4. Work plan and budget

The actions are scheduled as it follows:

- § Short term actions: 6.1.1.; 6.2.2.

3.3.5.5. Monitoring measures and success evaluation

The effects of actions applied are monitories and reported annually (Chapters 3.3.14., 3.3.15. and 3.3.16.).

3.3.6. Activity: register for specific exemptions and the continuing need for exemptions (article 4)

Not applicable.

3.3.7. Action plan: measures to reduce releases from unintentional production (Article 5)

3.3.7.1. Summary

POPs released unintentionally focused the attention of the participants to the elaboration of NIP. There are 33 actions which were established and prioritized on the base of discussions and debates held in meetings where the interested parties participated.

Competent authorities are responsible for inventorying POP releases in Romania. Only releases into air are evaluated as certain quantities. POP released into water is monitories as concentration. The other releasing into wastes and soil are not yet monitories in a centralized manner.

POPs emissions have been decreased beginning with 1990 because the industrial production decreased. Only PCBs emission from transport sector has been increased due to the increment of number of vehicles using gasoline-containing lead. Transportation sector focused attention of participants in the elaboration of NIP. The actions have been scheduled over the period of Stockholm Convention implementation. The total cost of these actions is 52.6 million EURO.

3.3.7.2. Overview of the current practices, inventories or legislation

At present, legal regulations for restriction of the activities emitting unintentionally POPs – polychlorinated dibenzo-p-dioxins and dibenzo furans (PCDD / PCDF), hexachlorbenzene (HCB) and polychlorinated biphenyls (PCB) – are being elaborated.

National inventory of POPs releases into air are yearly elaborated on the basis of production in sectors emitting POPs (e.g. tones of aluminum produced per year) and Emission Factor (e.g. in grammes of POP per tone of product). The Emission Factors are defined in CORINAIR handbook.

Central environment authority is responsible for elaboration of the national inventory of POPs emitted into air, water, wastes and soil.

Emission of PCDD / PCDF, HCB and PCB into air come from secondary aluminum, zinc and copper production, sinter plants in the iron and steel industry, waste incinerators, cement kilns – firing hazardous wastes, residential combustion, open burning, fossil fuel – fired utilities and industrial boilers, crematoria, motor vehicles, textile and leather, waste oil refineries.

Releases into water are mostly coming from the use of contaminated preservatives or dyestuffs for textiles, leathers, wood, etc., wastewater discharges from normal household operations (washing machines dishwashers, etc.). In the former time, municipal wastes use to be land filled. Leach ate formed by rainwater flowing through inadequately stored waste contains also POPs which are detected as organic micro pollutants.

So, POPs released into water is measured by analyzing the concentration in water, byt not by evaluating the quantity discharged into water.

Releases into wastes and into products are not quantified.

Taking the reference year – the year of 1989, which reflects the capacity of national production, directly related to the emission, it could be observed the decrement of POP emission into atmosphere during the following decade. So, the national emission of Dioxins decrease more than four times in 2001 since 1989 (409 gI – TEQ from 1811 gI – TEQ).

The same trend is observed in emissions of HCB (from 56.9 g - in 1989, to 3.5 g - in 2001), and emission of PAHs (from 149.5 kg, in 1989 to 104.2 - in 2001). This emission decrement is caused by the decrement of production in the industrial sector. The only sector where an increment of POPs emission is observed in the transport sector. PCB emission in transportation sector was increased from 29.6 g - in 1989 to 104.7 g - in 2001. The total PCB emitted in Romania has been increased due to the increment of the transport sector: from 126.4 g - in 1989 to 214.1 g - in 2001. The PCB emission from transport sector is caused by the increment of number of vehicles in the national fleet - on one hand and by the old-aged cars working with gasoline containing lead - on the other hand.

The existing legislation responds to the International and European requirements regarding POPs.

Air pollution control is based on Emergency Ordinance no 195/2005 regarding environmental protection, Law no 655/2001 regarding atmospheric protection. Legal regime of atmospheric protection is based on compliance with the integrated approaching principle of environment protection (Law no 655/2001 - Art. 2.).

3.3.7.3. Proposed measures

The reduction or elimination of unintentional POPs releases supposes a complex of actions covering a large area of economical sectors: energy, industry and transport.

There are 33 actions distributed over 4 objectives of which priorities have been discussed by all interested parties and supported by the interested ministries.

There are the following objectives, actions and measures related to measures to reduce releases from unintentional production (Article 5):

Key Objective 7. To improve environmental performance in the energy sector
7.2. Improving the energetic efficiency of PPC
Action 7.2.1. Establishment the release limit values and performance standards and environmental indicators related to POPs
Action 7.2.2. Elaboration of guidelines on prevention and release reduction in combustion plants producing thermal, electrical energy by using BAT and BEP

Key Objective 8. To improve environmental performance in the transport sector	
8.1. Promoting cleaner/more economical vehicle	
	Action 8.1.1. Vehicle emission standards and fuel efficiency improvements by encouraging the use of modern and more “cleaner”, economical vehicles
	Action 8.1.5. Training programmes of a working force for effective and efficient organisation of (periodic) inspections of vehicles
	Action 8.1.6. Car scrap page scheme with reusing parts of cars as much as possible, with collection of oil and batteries and treated and with land-filling the remains on environmentally sound facilities
8.2. Promoting the use of cleaner fuels	
	Action 8.2.1. Complete phase-out of lead from petrol (reduce the content of lead in fuel in several phases until there is a complete ban-production by refineries, import, fuel quality standards, applying lubricating additives to vehicle fleet to protect soft-valve seats from wear)
	Action 8.2.2. Use tax differentiation between unleaded and leaded petrol
8.3. Improving the efficient use of infrastructure (road transport)	
	Action 8.3.1. Create a better logistical for road freight transport
8.5. Applying EIA/SEA principles to all levels of decision making with respect to the transport system	
	Action 8.5.1. Preparation of the national policy paper on transport and the environment
	Action 8.5.2. Development of indicators for environmentally sound transport system
	Action 8.5.5. Establishment of a national office co-ordination of training activities
	Action 8.5.6. Development of a phased approach to the harmonisation of transport charging systems
Key Objective 9. To improve transportation management in the urban sector	
9.1. Favoring short distances /public transport in urban structures	
	Action 9.1.1. Elaboration of traffic plans
	Action 9.1.2. Implementing the Governmental awareness – raising plan
9.2. Improving the preconditions for walking and cycling	
	Action 9.2.1. Encouraging inter-urban transport by railway, improving the quality of services
	Action 9.2.2. Stimulating the efficiency and quality of urban public transport
9.3. Discouraging traffic in densely populated areas	
	Action 9.3.1. Taking into consideration the integration of transport, land use and environment in the urban planning and training to increase skills in integrated urban transport planning
	Action 9.3.2. Elaboration of master plans for major urban areas integrating transport, land use and environment
9.4. Stimulation the efficient/quality of urban public transport	
	Action 9.4.1. Elaboration of a comprehensive plan for small –scale infrastructure investments to improve walking and cycling facilities
	Action 9.4.2. Provision of safe and direct itineraries that avoid main roads, dangerous crossing and the like, but provide direct links between parts of town. Provision of safe and convenient bicycle parking at railway stations and any other points of interest (city center, theaters, offices, etc.)

	Action 9.4.3. Consistent monitoring systems to enable the annual follow-up of the preconditions for walking and cycling
9.5.	Strengthening transport environmental policy
	Action 9.5.1. Use of physical actions to control traffic access, namely gated access, lorry bans and traffic calming
	Action 9.5.2. Psychological action based around the use of information and education to reduce the perceived need to travel or to promote the use of efficient means of transport
	Action 9.5.3. Road charging and parking fees
	Action 9.5.4. Organizing an efficient network of goods transport in order to convey raw materials and products to and from industrial premises, and bulk goods and purchase to and from commercial premises
	Action 9.5.5. Construction of by-pass roads round for upgrading the main road corridors
	Action 9.5.7. Infrastructure measures to raise urban public transport speed and regularity
	Action 9.5.10. Upgrading of multimodal interchange points
	Action 9.5.11. Product differentiation in inter-city and regional bus transport
Key Objective 11.	To reduce POPs emission nuisance from waste incinerators
11.1.	Reducing the emissions nuisance of dioxins, HCB and PCBs from hospital waste incinerators, municipal, sanitary-veterinary incinerators and crematories
	Action 11.1.3. Establishment release limit values from hospital and other waste incinerators and performance standards
	Action 11.1.5. Elaboration and use of guidelines on prevention and release reduction by BAT and BEP applied to incinerators from hospital waste treatment and other waste incinerators
	Action 11.1.8. Building means for POP emission control from hospital (medical) or other waste incinerators
11.2.	Reducing emissions from cement kilns firing hazardous wastes
	Action 11.2.2. Applying economic instruments to encourage POPs co-incineration and to discourage the exceeding of the maximum allowable limit values

3.3.7.4. Work plan and budget

All actions regarding the reduction or elimination of POPs releases are scheduled over the whole period of Stockholm Convention implementation. Some of actions provided, like complete phasing out of lead of petrol or promotion of walking or cycling, or construction of ring roads, etc., cannot be planned on short term. All 33 actions have been scheduled as it follows:

2004 – 2007: See chapters 7.2.1.; 7.2.2.; 8.1.1.; 8.1.5.; 8.2.2.; 8.3.1.; 8.5.1.; 8.5.2.; 8.5.5.; 8.5.6.; 9.1.1.; 9.1.2.; 9.2.1.; 9.2.2.; 9.3.1.; 9.3.2.; 9.4.1.; 9.4.2.; 9.5.2.; 9.5.3.; 11.1.3.; 11.1.5.; 11.1.8.; 11.2.2.

2004 – 2014: See chapters 8.2.1.; 9.5.1.; 9.5.4.; 9.5.5; 9.5.7.; 9.5.10.; 9.5.11.

2004 – 2029: See chapter 9.4.3.

The total cost of actions provided for reduction of unintentional POPs releases is 9.967 of which 1.967 million EURO man-power (1.527 million EURO domestic man-power and 0.44 million EURO international man-power) and 8 million investments.

3.3.7.5. Monitoring measures and success evaluation

The effects of NIP will be monitories during the whole period of implementation of Stockholm Convention. Although there is not a special action provided for monitorizing unintentional releases of POPs – this action is obligatory for competent authority according to the Law of Environment and Law of Atmospheric Protection.

Yearly inventory and reporting on emissions is an obligation, which is provided to be the attribution of competent authorities phase environment protection and no other special measure is necessary. Otherwise this action would be doubled.

3.3.8 Activity: measures to reduce releases from stockpiles and wastes (article 6)

There are the following objectives, actions and measures related to measures to reduce releases from stockpiles and wastes (article 6):

Key Objective 1. To eliminate pesticides stockpiles and wastes
1.2. Managing stockpiles (except PCBs), as appropriate in a safe efficient and environmentally sound manner
Action 1.2.5. Penalties for not responding the legal rules established and taxes for pollution*

1.3. POPs wastes (except PCBs), including products and articles upon becoming wastes shall be reduced and finally eliminated by appropriate actions
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Action 1.3.2. Setting-up new legal acts and enforcement the existing legislation by special inspection (paid by Environment Guard) *

Action 1.3.3. Final elimination of POP wastes (except PCBs), including products and articles upon becoming wastes by applying BAT and BEP **

* This action has already been provided and evaluated in Chapter 3.3.1.

** This action has already been provided and evaluated in Chapter 3.3.3.

3.3.9 Strategy: Identification of stockpiles, articles in use and wastes

There are the following objectives, actions and measures related to identification of stockpiles, articles in use and wastes:

Key Objective 1. To eliminate pesticides stockpiles and wastes
1.1. Identifying and inventorying POPs or other materials containing POPs (except PCBs)
Action 1.1.3. Elaboration of methodologies for identification of products and articles in use and wastes consisting of or containing chemicals listed in Annexes A, B or C of Stockholm Convention**

** This action has already been provided and evaluated in Chapter 3.3.3.

3.3.10 Activity: manage stockpiles and appropriate measures for handling and disposal of articles in use

There are the following objectives, actions and measures related to manage stockpiles and appropriate measures for handling and disposal of articles in use:

Key Objective 1. To eliminate pesticides stockpiles and wastes
1.1. Identifying and inventorying POPs or other materials containing POPs (except PCBs)
Action 1.1.3. Elaboration of guidelines on handling, collection, transportation and storage and final disposal, destruction or irreversible transformation, taking into account international rules, standards and other guidelines *

* This action has already been provided and evaluated in Chapter 3.3.1.

3.3.11. Strategy: identification of contaminated sites (Annex A, B and C chemicals) and remediation in an environmentally sound manner

3.3.11.1. Summary

Decontamination of polluted soil by POPs and other dangerous substances is seriously taken into consideration in Programme of measures within the implementation of Water Framework Directive – Directive 2000 / 60 / EC of the European Parliament and of the Council of 23 October 2000, establishing a framework for Community action in the field of water policy. That is why the issue of soil decontamination has not been treated in NIP that is to avoid duplication of clean-up measures of contaminated sites.

Only two actions are provided, associated to the elimination of pesticides stockpiles and wastes and to improve environmental performance in the industrial sector. These actions are scheduled to be implemented in the period 2004 – 2007 (action 1.2.2.), respectively 2004 – 2014 (action 10.3.2.).

The cost of these measures implementation is 6.1 million EURO; of which 4.16 million EURO man-power (3.96 million EURO domestic man-power and 0.2 million EURO international man-power) and 1.94 investments.

3.3.11.2. Overview of the current practices, inventories, or legislation

Contaminated sites are inventoried and measures are taken in order to eliminate the influence of these sites on ground waters and surface waters within the framework of Programme of measures for implementation of Water Framework Directive (Directive 2000 / 60 / EC).

At present, the treatment of contaminated sites is not thought to be solved in short term by the authorities, due to the following reasons:

- § high costs of decontamination;
- § lack of technologies;
- § not too much need of land.

Although there are provisions of the existing legislation regarding the recovery of the exhausted deposits of industrial wastes or wastes from extraction of minerals, no centralized actions are planned for decontamination of such lands.

Contaminated sites with POPs are generally met around former uncontrolled deposits of pesticides or pesticides brought out and remained on land after 1989, when the former state forms were left. Other contaminated lands with POPs are met near by the chemical plants (their waste deposits). During the time some plants changed their profile of production and the polluted lands have remained sources of diffused pollution.

3.3.11.3. Proposed measures

There are only two actions corresponding to key-objectives 1 and respectively 10. In fact, there are only a few known placements where pesticides had been deposited before and only one remained without intervention and a special project has been referred to it (e.g. Project for soil decontamination at Turda).

There are the following objectives, actions and measures related to identification of contaminated sites (Annex A, B and C chemicals) and remediation in an environmentally sound manner:

Key Objective 1. To eliminate pesticides stockpiles and wastes	
1.2. Managing stockpiles (except PCBs), as appropriate in a safe efficient and environmentally sound manner	
	Action 1.2.2. Phase-out of improper placement of existing deposits and remediation in an environmentally sound manner
Key objective 10. To improve environmental performance in the industrial sector	
10.3. Strengthening environmental policy with the industrial sector	
	Action 10.3.2. Inventory of the sensitive areas for POPs impact (including areas where industrial accidents may occur) and of the corresponding responsible authorities

3.3.11.4. Work plan and budget

The actions mentioned above were scheduled as it follows:

2004 – 2007: See chapter 1.2.2.

2004 – 2014: See chapter 10.3.2.

The cost of actions provided in this Chapter is 4.16 million EURO.

3.3.11.5. Monitoring measures and success evaluation

The existing contaminated sites with the POPs distributed on it are monitoring and Action 1.2.1. is related to that.

3.3.12. Activity: facilitating or undertaking information exchange and stakeholder involvement

3.3.12.1. Summary

This chapter comprises the actions corresponding to facilitating or undertaking information exchange and stakeholder involvement.

The central competent authority for environment protection coordinates the exchange of information between the interested ministries and stakeholders.

The information exchange between Secretariat of Convention and Romania is assured by a focal point nominated by the central competent authority for environment.

There are seven actions included in this Chapter. These actions are scheduled over the whole period of implementation of Stockholm Convention and they are evaluated to cost 0.573 million EURO.

3.3.12.2. Overview of the current practices, inventories or legislation

The actions included in this Chapter aim the achievement of 6 objectives and they suppose to have the involvement of all stakeholders related to POPs management. The responsible for the information exchange is the competent authority for environment protection at central and territorial levels. The competent authority for environment will cooperate with the interested ministries in order to facilitate the right decisions regarding NIP for POP reduction or elimination. The environment protection competent authority has designated a focal point for the exchange of information relevant to the reduction or elimination of the production, use and release of persistent organic pollutants and to alternatives to persistent organic pollutants, including information relating to their risks as well as their economic and social costs. This information will communicate with the Secretariat of the Convention.

On the domestic level the information system between the relevant ministries and stakeholders is by the central authority for environmental protection. The information are to be relevant to:

- w inventory of POPs or other materials containing POPs;
- w management of POPs stockpiles;
- w state of elimination or final disposal;
- w state of intentionally POPs produced and used;
- w state of improving environmental performance in the economical sectors;
- w other information related to POPs management;
- w correlation between POPs and human health, or environment.

3.3.12.3. Proposed measures

Seven actions have been provided – corresponding to 6 objectives. The information related to the state of achievements of NIP is important to the general effort to protect human health and environment.

The exchange of information is to be between ministries related to environment, industry, agriculture, health, public administration, transport and all stakeholders involved.

There are the following objectives, actions and measures related to facilitating or undertaking information exchange and stakeholder involvement:

Key Objective 1. To eliminate pesticides stockpiles and wastes	
1.1. Identifying and inventorying POPs or other materials containing POPs (except PCBs)	
	Action 1.1.1. Training programmes for preparing POPs inventories
1.2. Managing stockpiles (except PCBs), as appropriate in a safe efficient and environmentally sound manner	
	Action 1.2.3. Training of workers involved in POP handling in the existing deposits
Key objective 3. To eliminate not identified POPs (presumed to be POPs)	
3.3. Elimination or final disposal of POPs	
	Action 3.3.1. Training of workers scientists, educators and technical and managerial personnel
Key objective 4. To prohibit the production of POPs and other substances that might be included on the POPs list in the future	
4.2. Complete phase-out of POPs intentionally produced and used	
	Action 4.2.2. Public participation to the actions taken regarding POPs production and use
Key objective 7. To improve environmental performance in the energy sector	
7.4. Applying the EIA/SEA principles to all levels of decision-making with respect to the energy production, transport and use	
	Action 7.4.2. Educational and training programmes and on - the job assistance
Key objective 10. To improve environmental performance in the industrial sector	
10.4. Enhancing the safety of the industrial processes with a potential for accidents where POPs might be emitted	
	Action 10.4.4. Elaboration of training programmes and on-the-job assistance
Key Objective 11. To reduce POPs emission nuisance from waste incinerators	
11.2. Reducing emissions from cement kilns firing hazardous wastes	
	Action 11.2.5. Training programmes on applying POP co-incineration by using cement or other industrial kilns

3.3.12.4. Work plan and budget

The actions provided are scheduled over the whole period of time of the Stockholm Convention implementation, as it follows:

§ Short term actions: 1.1.1.; 1.2.3.; 3.3.1.; 4.2.2.; 7.4.2.; 10.4.4.; 11.2.5.

The amount of money evaluated for implementation of the actions provided in this Chapter is 0.573 million EURO.

3.3.12.5. Monitoring measures and success evaluation

Monitoring measures are included in Chapters 3.3.15. and 3.3.16.

The success of the implementation of actions provide in this chapter will be felt by making easier the development and implementation of education and training programmes and the awareness of a public well informed.

3.3.13. Activity: public awareness, information and education (Article 10)

3.3.13.1. Summary

Public awareness, information and education is crucial in having good success in NIP for Stockholm Convention.

There are 9 actions directed to 7 objectives provided for making the public aware of POPs importance in human health conservation.

The actions included in NIP are planned for the whole period of implementation and even afterwards.

The cost evaluated for these actions implementation is 0.821 million EURO (0.561 million EURO domestic man-power and 0.26 million EURO international man-power).

The success of the implementation of these actions will depend on the way of doing the job of the personnel involved.

The environment protection competent authorities are responsible for coordinating the whole activity resulted from NIP and stakeholders are essential to make a public aware of POPs issue, by keeping them well and up to date informed by a good education and training to this end.

3.3.13.2. Overview of the current practices, inventories or legislation

The existing legislation (e.g. Law of environment protection, Law of water, Law of Atmosphere, etc.) gives high importance to public information and consultation on NIP regarding POPs.

To ensure the participation of the general public in the NIP establishment – proper information of planned measures and actions was necessary. Public awareness regarding POPs is considered to be essential for the implementation of actions for POPs reduction or elimination. That is why the measures and actions provided aim keeping the information up-to-date.

A special site has been set up. Reports, leaflets, mass media and other means of communications have been used.

Anyhow, these actions are necessary to continue in order to have the necessary support for implementation of Stockholm Convention.

3.3.13.3. Proposed measures

All actions provided were discussed and established by the stakeholders and supported by the interested ministries.

There are 9 actions associated with 7 objectives proving the importance given to public awareness, information and education.

There are the following objectives, actions and measures related to public awareness, information and education (Article 10):

Key Objective 2. To eliminate existing stocks of PCBs
2.1. Identifying and inventorying PCBs
Action 2.1.3. Develop public information and awareness as far as PCBs are concerned
Key objective 5. To strive for the sustainable development of ecological agriculture
5.1. Implementation of fair and agricultural products prices; promoting the use of environmental-friendly products
Action 5.1.1. Public awareness upon the negative effects of POPs used in agricultural sector and the positive effects on health and environment when ecological agriculture is put in practice
Key objective 6. To enhance the production and use of “cleaner” and more economical substances to be used for fighting disease vectors and/or arthropods causing discomfort
6.1. Complete phase-out of DDT – base products
Action 6.1.2. Public awareness regarding POPs listed in Annex B
Key objective 7. To improve environmental performance in the energy sector
7.5. Providing environmental targets for the energy sector
Action 7.5.1. Elaboration of public awareness programmes
Key objective 8. To improve environmental performance in the transportation sector
8.1. Promoting cleaner/more economical vehicle
Action 8.1.7. Campaign to raise awareness of the administrative bodies at national and county levels
8.5. Applying EIA/SEA principles to all levels of decision making with respect to the transportation system
Action 8.5.4. Campaign to raise awareness of the administrative bodies
Key Objective 10. To improve environmental performance in the industrial sector
10.1. Promoting air pollution control technologies and means in the non-ferrous industry, especially in secondary aluminium and copper production (for dioxins, PAHs and HCB) and in coke production and pig iron tapping (for PAHs)
Action 10.1.5. Education, training programmes and public information by industry and professional users of BAT or BEP
10.4. Enhancing the safety of the industrial processes with a potential for accidents where POPs might be emitted
Action 10.4.6. Public awareness programmes related to industrial pollution where POPs are involved
Key objective 11. To reduce POPs emission nuisance from waste incinerators
11.1. Reducing the emissions nuisance of dioxins, HCB and PCBs from hospital waste incinerators, municipal, sanitary-veterinary incinerators and crematories
Action 11.1.7. Training programmes and public awareness regarding the impact of incinerators on health and environment

3.3.13.4. Work plan and budget

The actions provided were scheduled over the whole period of Stockholm Convention implementation, as it follows:

§ Short term actions: 2.1.3.; 5.1.1.; 6.1.2.; 7.5.1.; 8.1.7.; 8.5.4.; 10.1.5.; 10.4.6.; 11.1.7.

The cost of implementation of actions presented in this chapter was evaluated to 0.821 million EURO of which 0.561 million EURO domestic manpower and 0.26 million EURO international manpower.

3.3.13.5. Monitoring and success evaluation

The effects of the implementation of actions presented in this chapter will be felt by making the time of some objectives achievement shorter, by an easier action implementation and by increasing the effectiveness of public participation. Training and education actions will be more effective while addressing to persons who are aware of the direct relation between POPs and human health.

Monitoring measures are included in Chapters 3.3.15 and 3.3.16.

3.3.14. Activity: effectiveness evaluation (Article 16)

3.3.14.1. Summary

Towards the end of May 2005 there will be the first time when the Conference of Parties will evaluate the effectiveness of Stockholm Convention. This evaluation is based on the national reports of each country – signatory of the Convention.

The effectiveness evaluation is to be done with every action provided for NIP, but the results of measures applied for industrial sector is more important to be analyzed because of the double effect of production decrement – on one hand – and action taken for diminishing POP releases by applying BAT or BEP – on the other hand.

The actions are implemented over the whole period of Stockholm Convention and the cost of implementation is 0.03 million EURO.

3.3.14.2. Overview of the current practices, inventories or legislation

The central competent authority for environment protection in cooperation with the other ministries and stakeholders is to analyze the data resulted from the monitoring activities and prepare the National Report to be submitted to the Conference of the Parties of Stockholm Convention. The report will also comprise non-compliance information.

3.3.14.3. Proposed measures

Because the effectiveness evaluation was provided for every action included in NIP a special attention is given to evaluate the effects of laws and policies relating to the management of POP releases from industrial processes. This action was considered more important when the interested parties discussed the priority of actions provided in NIP.

The effectiveness of Stockholm Convention is to be evaluated in accordance to the Secretariat requirements, but once per year for effects of management of POP releases from industrial processes.

3.3.14.4. Work plan and budget

The only action provided in this chapter is planned for 2004 - 2025 and is evaluated to cost 0.03 million EURO.

3.3.14.5. Monitoring and success evaluation

Not applicable. Even this action refers to monitoring results and effectiveness (success) evaluation.

3.3.15. Activity: reporting

3.3.15.1. Summary

Reporting to the Conference of the Parties of Stockholm Convention is an obligation, which has to be respected. The reports are to be made at periodic intervals. At the national level, reporting of the effectiveness of the actions implemented according to the NIP provisions is supposed to be the obligation of the stakeholders and the competent authority for environment protection in cooperation with the other interested ministries and stakeholders is responsible for preparing the national report.

The time interval for reporting POP – pesticides stock is one year and for reporting PCB stock is five years.

The cost of these actions is evaluated to be 0.06 million EURO.

3.3.15.2. Overview of the current practices, inventories or legislation

A National Report on the State of environment is every year prepared under the responsibility of the central competent authority for environment protection. This report contains, *inter alia*, data regarding POPs management in Romania and the state of all International Conventions in which Romania is a Party.

All stakeholders who deposited POPs are obliged to report the stocks of POPs, according to the existing legislation (e.g. GD 173 / 2000, etc.).

3.3.15.3. Proposed measures

There are the following objectives, actions and measures related to reporting:

Key Objective 1. To eliminate pesticides stockpiles and wastes
1.2. Managing stockpiles (except PCBs), as appropriate in a safe efficient and environmentally sound manner
Action 1.2.1. Monitoring of existing quantities of POPs in deposits and reporting every year on progress in eliminating POPs
Key Objective 2. To eliminate existing stocks of PCBs
2.2. Managing stockpiles, as appropriate, in a safe, efficient and environmentally sound manner
Action 2.2.1. Monitoring of existing quantities of PCB in deposits and reporting every five years on progress in eliminating PCB

3.3.15.4. Work plan and budget

Reporting on POPs – pesticides stocks is supposed to be achieved each year, while PCB stocks – five years.

The expenses of this work are evaluated to 0.06 million EURO.

3.3.15.5. Monitoring measures and success evaluation

Not applicable.

3.3.16. Activity: research, development and monitoring (Article 11)

3.3.16.1. Summary

The interested parties involved in NIP elaboration gave a special attention to research development and monitoring activities. A large number of actions related to the research of different POP issues were identified (23 actions).

It was concluded that research works are necessary to find out the most appropriate technical solution for the reduction or elimination of POPs emitted intentionally or not intentionally.

To ensure a good monitoring, precise and accurate POP analysis in environment, endowment of laboratory with proper equipment is necessary (Action 1.1.4.).

New further substances are to be found out to be included in POPs list and that is why continuous research works are to be maintained.

Monitoring of the effects of actions in accordance to NIP provisions are necessary to understand the causes of the present state of health related to POPs presence and to update NIP for the future activities.

The actions provided are planned for the whole period of Stockholm Convention implementation and the cost of all works presented in this chapter are evaluated to 3.601 million EURO.

3.3.16.2. Overview of the current practices, inventories or legislation

Persistent organic pollutants, their effects on human health and complicated technical solutions for their reduction or elimination are quite new environmental problems, especially due to the new findings regarding their effects on human health and environment.

These pose new problems for research and monitoring activities. That is why a special attention has been given to the research in this area.

At present, there are capabilities to initiate research directed to all kinds of subjects related to POP emission estimate, reduction or elimination, etc. Central competent authority for environment protection in cooperation with other ministries coordinates these researches, development and monitoring.

3.3.16.3. Proposed measures

There are a number of 23 actions directed to the achievement of 8 key - objectives.

There are the following objectives, actions and measures related to research, development and monitoring (Article 11):

Key Objective 1. To eliminate pesticides stockpiles and wastes
1.1. Identifying and inventorying POPs or other materials containing POPs (except PCBs)
Action 1.1.4. Providing the laboratories of key responsible institutions with proper equipment for POP analysis
Key Objective 2. To eliminate existing stocks of PCBs
2.3. Destroying PCBs wastes
Action 2.3.1. Researches to establish methods for release reduction or elimination of PCB
Key objective 3. To eliminate not identified POPs (presumed to be POPs)
3.1. Identifying new substances presumed to be POPs
Action 3.1.1. Research and studies for identifying new POPs in the existing stockpiles and wastes and to find out products and articles in use and wastes consisting of containing or contaminated with chemical listed in Annexes A,B or C from Stockholm Convention and for establishment of BAT or BEP to get rid off presumable POPs
3.2. Managing stockpiles of presumed POPs, as appropriate, in a safe, efficient and environmentally sound manner
Action 3.2.1. Elaboration of methodologies and guidelines for managing stockpiles of presumable POPs

	Action 3.2.2. Monitoring of existing stockpiles for updating the substances stored
Key objective 4. To prohibit the production of POPs and other substances that might be included on the POPs list in the future	
	4.1. Promoting the use of “cleaner” and alternative substances
	Action 4.1.2. Research and studies for assessment of new pesticides or new industrial chemicals to be included in the Lists of Stockholm Convention and for using “cleaner” solutions instead of POPs, including on their sources and releases into environment, presence levels and trends in humans and the environment
Key Objective 7. To improve environmental performance in the energy sector	
	7.1. Promoting the use of cleaner and alternative fuels, especially in PPC
	Action 7.1.1. Elaboration of methodologies to estimate inventories of POP emission from energy sector
	7.3. Improving the hydro or other non-conventional energy production
	Action 7.3.1. Researches and studies for promoting efficiency of energy production and consumption and for use of non-conventional energy resources
	7.4. Applying the EIA/SEA principles to all levels of decision-making with respect to the energy production, transport and use
	Action 7.4.1. Elaboration of methodologies to prepare Environment Impact Assessment (EIA) or Strategic Environmental Assessment (SEA) regarding the energy sector and a National Manual on EIA/SEA
Key Objective 9. To improve transport management in the urban sector	
	9.5. Strengthening transport environmental policy
	Action 9.5.6. Inventory of existing and planned public transport projects
	Action 9.5.8. Development and implementation of urban public performance monitor
Key objective 10. To improve environmental performance in the industrial sector	
	10.1. Promoting air pollution control technologies and means in the non-ferrous industry, especially in secondary aluminum and copper production (for dioxins, PAHs and HCB) in coke production and pig iron tapping (for PAHs)
	Action 10.1.1. Elaboration of a methodologies for estimating national POP emissions into atmosphere and projected releases from the non-ferrous industry (secondary aluminum, copper and zinc production), coke production, pig iron tapping and other POP emission sources from industrial sectors as they are mentioned in Annex C of SC
	Action 10.1.6. Setting up researches and studies regarding the effects of POP releases from industry sector on humans and environment
	10.2. Application of EIA/SEA principles to all levels of decision-making with respect to the industrial sector
	Action 10.2.1. Elaboration of national manuals on EIA and SEA and training the staff for have strategic thinking on POPs release reduction and voluntary application of EIA principles to the industrial sector
	10.4. Enhancing the safety of the industrial processes with a potential for accidents where POPs might be emitted

<p>Action 10.4.1. Setting up researches and studies for risk assessment of accidents and their possible effects on humans and environmental elaboration proposals for new chemicals to be listed in Annexes A, B or C of Stockholm Convention</p>
<p>Action 10.4.3. Elaboration guidelines for local action plans for prevention and coping with pollution accidents, including the methodology to make economic evaluation of damages on humans and environment in case of accident</p>
<p>Key Objective 11. To reduce POPs emission nuisance from waste incinerators</p>
<p>11.1. Reducing the emissions nuisance of dioxins, HCB and PCBs from hospital waste incinerators, municipal, sanitary-veterinary incinerators and crematories</p>
<p>Action 11.1.1. Establishment the methodology (emission factors) to estimate POP emissions from hospital waste incinerators, including co-incinerators municipal, hazardous or medical waste or of sewage sludge</p>
<p>Action 11.1.2. Consistent monitoring of the effects resulted from the implementation of actions provided in the national plan regarding POP emissions from the hospital waste treatment and other waste incinerators</p>
<p>Action 11.1.6. Setting up research development on sources and releases into environment and on effects of POP releases on human health and the environment (e.g. hospital waste treatment)</p>
<p>11.2. Reducing emissions from cement kilns firing hazardous wastes</p>
<p>Action 11.2.1. Establishment the emission factors to estimate POP emissions from cement kilns firing hazardous waste and establishment of release limit values</p>
<p>Action 11.2.3. Consistent monitoring of the POP quantity incinerated in cement kilns or other kilns operated in the industrial sector. Annual reporting</p>
<p>Action 11.2.4. Setting up research, development on other versions of POP co-incineration</p>
<p>Action 11.2.6. Setting up research and studies for establishing emission factors to calculate emission of POPs from crematoria and destruction of animal carcasses</p>

3.3.16.4. Work plan and budget

All 23 actions have been scheduled as it follows:

- Y Short term: See chapters 3.2.1., 7.1.1., 7.4.1., 10.1.1., 10.2.1., 10.4.3., 11.1.1., 11.2.1.
- Y Medium term: See chapters 1.1.4., 2.3.1., 3.1.1., 3.2.2., 9.5.6., 9.5.8., 10.4.1., 11.2.4., 11.2.6.
- Y Long term: See chapters 4.1.2., 7.3.1., 10.1.6., 11.1.2., 11.1.6., 11.2.3.

The necessary budget evaluated to implement the actions related to research, development and monitoring is 3.601 million EURO of which:

- 2.331 – domestic manpower
- 1.270 – international manpower

3.3.16.5. Monitoring measures and success evaluation

Consistent monitoring of research and development are essential for realizing what has been done and what is necessary to be done in the future for reduction, or elimination of POPs releases into environment. On the other hand, the investigation of POPs presence in environment and their relation of human health is also crucial for the implementation of Stockholm Convention.

At present, there is a paucity of data regarding the POPs presence in environment due to the lack of measuring equipment. Action 1.1.4. is related to the laboratories endowment with the proper measuring equipment for laboratories.

A very important issue is to monitor the existing stockpiles of POPs – pesticides and PCB stored. Such action has also been provided in NIP (Action 3.2.2.).

There are also actions provided for consistent monitoring of the effects of implementation of actions related to POPs and waste incineration (Actions 11.1.2. and 11.2.3.).

3.3.17. Activity: Technical and financial assistance (articles 12 and 13)

Romania being a country with economy in transition is keen to receive technical assistance from developed countries for the transfer of technology (BAT and BEP) in order to fulfill its obligations under the Stockholm Convention, namely to reduce or eliminate POP releases into environment.

NIP provides two actions related to technical and financial assistance.

There are the following objectives, actions and measures related to technical and financial assistance (articles 12 and 13):

Key Objective 10. To improve environmental performance in the industrial sector
10.1. Promoting air pollution control technologies and means in the non-ferrous industry, especially in secondary aluminium and copper production (for dioxins, PAHs and HCB) and in coke production and pig iron tapping (for PAHs)
Action 10.1.4. Elaboration and use of guidelines on prevention and release reduction by applying BAT and BEP to reach the release limit values or performance standards to be established
Key objective 11. To reduce POPs emission nuisance from waste incinerators
11.2. Reducing emissions from cement kilns firing hazardous wastes
Action 11.2.7. Providing installations to control POP emission from crematoria and destruction of animal carcasses

The amount of work requiring international assistance was evaluated to 0.1 million EURO. Beside technical assistance, Romania also needs financial support from developed countries to meet the agreed full incremental costs of implementing measures which fulfill its obligation under Stockholm Convention.

3.4. Development and Capacity building

The costs are estimated in terms of national and international personnel input (man-years) on the basis of professional judgment.

The total number of man-years is recalculated into EUROS by assuming the following unit costs:

- ◆ domestic input: 30,000 EURO per man-year (average for the PHARE countries, including overhead costs);
- ◆ international consultants: 200,000 EURO per man-year, including travel costs and subsistence.

These unit costs include all overhead costs: cost of higher management, buildings, travel and accommodation, secretarial support, unproductive time (like the organization were completely dependent on the sale of productive man-years at this tariff).

3.4.1. Key investment requirements and priorities

National Implementation Plan and the Action Plan elaborated by the project experts established a set of actions described in the previous chapters of this report. Consequently, a procedure for identifying priority project proposals has been developed. These short-term priority projects should be the concrete means to materialize the actions included in the Plan.

The procedure aimed to:

- collect the project proposals from both central and local levels;
- identify and select the project proposals which are appropriate for the foreseen actions;
- classify the received information in relation with key objectives;
- introduce the information from the projects in the data base, to validate, sort and process the data;
- assign each selected project to the appropriate group of actions;
- draw up the reports and disseminate the information.

In order to take into account each section priorities, the following institutions have been involved in the NAP up-dating process:

Ministry of Agriculture, Forests, Waters and Environment (MAFWE)

Ministry of Health

Ministry of Economy and Trade

Ministry of Transport, Constructions and Tourism

Ministry of Administration and Internal Affairs/ Civil Protection Commandment

A working group consisting in environmental protection experts appointed by each ministry has been set-up. This group and the project team experts have worked together for the applying the procedure of identifying, analyzing and selecting the project proposals.

The schedule for implementation of action plan (see table 3.4.1.1) assumes that:

- most actions and projects can be started up in the year of 2004;
- all actions are implemented without delay;
- most actions will take up years and will be continuing with the actions related to reduction of unintentional release of POPs.

Table 3.4.1.1. Schedule for measures/projects implementation

ACTIONS	2004	2005	2006	2007	2008 - 2014	2015 - 2029
Action 1.1.1. Training programmes on preparing POPs inventories						
Action 1.1.2. Institutional arrangements on POPs stockpile sites inspection						
Action 1.1.3. Elaboration of methodologies for the identification of products and articles in use and wastes consisting of or containing chemicals listed in Annexes A, B or C of the Stockholm Convention						
Action 1.1.4. Providing the laboratories of key responsible institutions with proper equipment for POPs analysis						
Action 1.2.1. Monitoring of existing quantities of POPs in deposits and reporting every year on progress in eliminating POPs						
Action 1.2.2. Phase-out of improper placement of existing deposits and remediation in an environmentally sound manner						
Action 1.2.3. Training of workers involved in POPs handling at existing deposits						
Action 1.2.4. Providing POPs deposits with special safety means to protect humans and the environment, namely: § Labelling and special notes for not identified substances § Insulating systems § Locks and monitoring systems § Ventilation systems § Alarming systems § Other installations (lighting, rain water collection and transportation, etc.)						
Action 1.2.5. Penalties for not respecting established legal rules established and taxes for pollution						
Action 1.3.1. Elaboration of guidelines on handling, collection, transportation storage and final disposal, destruction or irreversible transformation, taking into account international rules, standards and other guidelines						
Action 1.3.2. Passing new legal acts, and enforcing the existing legislation by special inspection (paid) by the Environment Guard in order to: § ensure that existing POPs are not recovered, recycled or used in any other way § ensure that no POP is transported across international boundaries without taking into account relevant international rules, standards and guidelines						
Action 1.3.3. Final elimination of POPs wastes (except PCBs), including products and articles upon becoming wastes by applying BAT and BEP						

Table 3.4.1.1. Schedule for measures/projects implementation

ACTIONS	2004	2005	2006	2007	2008 - 2014	2015 - 2029
Action 2.1.1. Training on preparing PCBs inventories and training workers in appropriate management						
Action 2.1.2. Continuing the identifying, labeling and removing from use by 2025 the following equipment in the following order § containing greater than 10 percent PCBs and volumes greater than 5 litres § containing greater than 0.05 percent PCBs and volumes greater than 5 litres § containing greater than 0.005 percent PCBs and volumes greater than 0.05 litres						
Action 2.1.3. Developing public information and awareness as far as PCBs are concerned						
Action 2.2.1 Monitoring of existing quantities of PCBs in deposits and reporting every five years on progress in eliminating PCBs						
Action 2.2.2. Elaboration of guidelines for using appropriate equipment or placements, or other provisions to control the use of PCBs and to reduce related exposure and risks, as it follows: § use only intact non-leaking equipment and only in areas where the risk from environmental release can be minimised and quickly remedied; § not use in equipment in areas associated with the production or processing of food or feed; § take all reasonable measures when used in populated areas, including schools and hospitals to prevent electrical failures which might cause damage to population health						
Action 2.2.3. Passing new legislation: § not allowing export or import of PCBs except for the purpose of environmentally sound waste management § not allowing transportation across boundaries without taking into account relevant international rules, standards and guidelines § not allowing recovery of liquids with a PCBs content above 0.005 percent for the purpose of reuse in other equipment § environmentally sound waste management of liquids with a PCBs concentration above 0.005 percent						
Action 2.3.1. Research to establish methods for release reduction or elimination of PCBs						
Action 2.3.2. Phase-out of PCBs by methods that constitute environmentally sound disposal where destruction or irreversible transformation does not represent an environmentally preferable option or the PCBs content is low, taking into account international rules, standards and guidelines, including those that are relevant global and regional regimes governing the management of hazardous wastes						

Table 3.4.1.1. Schedule for measures/projects implementation

ACTIONS	2004	2005	2006	2007	2008 - 2014	2015 - 2029
Action 3.1.1. Research and studies for identifying new POPs in existing stockpiles and wastes and identifying products and articles in use and wastes consisting of containing or contaminated with chemicals listed in Annexes A, B or C of the Stockholm Convention and for the establishment of BAT or BEP to eliminate presumed POPs	[Redacted]					
Action 3.1.2. Legal instruments for inspection, labelling, interdiction of use of new substances that are supposed to be POPs including taxes or fines for not respecting the rules established	[Redacted]					
Action 3.2.1. Elaboration of methodologies and guidelines for managing stockpiles of presumable POPs	[Redacted]					
Action 3.2.2. Monitoring existing stockpiles for updating information on stored substances	[Redacted]					
Action 3.3.1. Training of workers scientists, educators and technical and managerial personnel		[Redacted]				
Action 3.3.2. Complete elimination of the existing stockpiles of substances presumed / identified to be POPs	[Redacted]					
Action 4.1.1. Elimination of production, use, import and export of chemicals listed in Annex A of the Stockholm Convention	[Redacted]					
Action 4.1.2. Research and studies on the assessment of new pesticides or new industrial chemicals to be included on the Lists of the Stockholm Convention and for using “cleaner” solutions instead of POPs, including their sources and releases into environment, present levels and trends in humans and the environment	[Redacted]					
Action 4.2.1. Elaboration of supplementary legislation regarding the prohibition of the import and export of chemicals listed in Annexes A and B and special provisions for exemptions for the purposes of environmentally sound disposal	[Redacted]					
Action 4.2.2. Public participation in the actions taken regarding POPs production and use	[Redacted]					
Action 5.1.1 Raising public awareness of the negative effects pf POPs used in the agricultural sector and the positive effects of ecological agriculture on human health and the environment	[Redacted]					
Action 5.1.2. Fiscal instruments to encourage ecological products	[Redacted]					
Action 6.1.1. Applying additional taxes to discourage the use of substances in Annex B of the Stockholm Convention	[Redacted]					
Action 6.1.2. Raising public awareness regarding POPs listed in Annex B	[Redacted]					
Action 6.2.1. Regulatory work to implement suitable alternative products, and methods to ensure the continuing effectiveness of these alternatives	[Redacted]					

Table 3.4.1.1. Schedule for measures/projects implementation

ACTIONS	2004	2005	2006	2007	2008 - 2014	2015 - 2029
Action 6.2.2. Central authorities involved in issuing permits for imported chemicals listed in Annex B will exercise control and approve the import only for the purpose of environmentally sound disposal or for use or purpose which is permitted under Annex B						
Action 7.1.1. Elaboration of methodologies to estimate POPs emission from the energy sector for inventory purposes						
Action 7.2.1. Establishment of release limit values and performance standards and environmental indicators related to POPs						
Action 7.2.2. Elaboration of Guidelines on prevention and release reduction in combustion plants producing thermal, electrical energy by using BAT and BEP						
Action 7.2.3. Increasing the energy efficiency by administrative restructuring (e.g. privatization) in the energy sector						
Action 7.2.4. Setting up taxes to discourage the emission of POPs in combustion plants and establishment of low taxes to encourage the use of fuels with low POPs emission factors and for combustion plants complying with environmental standards						
Action 7.3.1. Researches and studies on promoting efficient energy production and consumption and on the use of non-conventional energy resources						
Action 7.4.1. Elaboration of methodologies to prepare Environmental Impact Assessment(EIA) or Strategic Environmental Assessment (SEA) regarding the energy sector and a National Manual on EIA / SEA						
Action 7.4.2. Educational and training programmes and on - the - job assistance						
Action 7.4.3. Agreement with neighboring states about a common approach to transboundary production, transport and use of energy infrastructure						
Action 7.5.1. Elaboration of public awareness programmes						
Action 7.6.1. Increasing the number of inspections and environmental surveys for legislation enforcement						
Action 8.1.1. Vehicle emission standards and fuel efficiency improvements by encouraging the use of modern and “cleaner”, economical vehicles						
Action 8.1.2. Setting up of vehicle inspection according to harmonised Directives						
Action 8.1.3. Setting up financial and taxation instruments: <ul style="list-style-type: none"> •payment whatever the subsequent replacement decision by the owner; •payment conditional on a specific kind of replacement vehicle being chosen; •cash for replacement applied to owners who can afford to buy a new car; • setting up tax rates depending on the age of cars 						

Table 3.4.1.1. Schedule for measures/projects implementation

ACTIONS	2004	2005	2006	2007	2008 - 2014	2015 – 2029
Action 9.3.2. Elaboration of master plans for major urban areas integrating transport, land use and environment related considerations	[Redacted]					
Action 9.4.1. Elaboration of a comprehensive plan for small-scale infrastructure investments to improve walking and cycling facilities	[Redacted]					
Action 9.4.2. Provision of safe and direct itineraries that avoid main roads, dangerous crossings and the like, but provide direct links between the different parts of town. Provision of safe and convenient bicycle parking at railway stations and any other points of interest (city centre, theatres, offices, etc.)	[Redacted]					
Action 9.4.3. Consistent monitoring systems to enable the annual follow-up of improvements regarding the preconditions for walking and cycling	[Redacted]					
Action 9.5.1. Physical actions to control traffic access, namely gated access, lorry bans and traffic calming	[Redacted]					
Action 9.5.2. Psychological action based on the use of information and education to reduce the perceived need to travel, or to promote the use of efficient means of transport	[Redacted]					
Action 9.5.3. Introduction of road charging and parking fees	[Redacted]					
Action 9.5.4. Organising an efficient network of goods transport in order to convey raw materials and products to and from industrial premises and bulk goods and purchase from and to commercial premises	[Redacted]					
Action 9.5.5. Construction of by-pass roads for upgrading the main road corridors	[Redacted]					
Action 9.5.6. Inventory of existing and planned public transport projects	[Redacted]					
Action 9.5.7. Infrastructure measures to improve the speed and regularity of urban public transport	[Redacted]					
Action 9.5.8. Development and implementation of a performance monitoring system for urban public transport	[Redacted]					
Action 9.5.9. Improvement of the institutional framework for public transport	[Redacted]					
Action 9.5.10. Upgrading of multimodal interchange points	[Redacted]					
Action 9.5.11. Product differentiation in inter-city and regional bus transport	[Redacted]					
Action 10.1.1. Elaboration of a methodology for estimating national POP emissions into atmosphere and projected releases from the non-ferrous industry (secondary aluminum, copper and zinc production), coke production, pig iron tapping and other POP emission sources from industrial sectors as they are mentioned in Annex C of Stockholm Convention	[Redacted]					
Action 10.1.2. Annually evaluation of the effects of laws and policies relating to the management of POP releases from industrial processes	[Redacted]					

Table 3.4.1.1. Schedule for measures/projects implementation

ACTIONS	2004	2005	2006	2007	2008 - 2014	2015 - 2029
Action 10.1.3. Tax reductions and credits offered under advantageous conditions for decreasing POPs releases (complying with environmental standard limits) from: 1) cement kilns firing hazardous wastes; 2) production of pulp using elemental chlorine or chemicals generating elemental chlorine for bleaching; 3) secondary copper production; 4) sinter plants in the iron and steel industry; 5) secondary aluminium production; 6) secondary zinc production; 7) thermal processes in the metallurgical industry not mentioned above; 8) fossil fuel fired utility and industrial boilers; 9) specific chemical production processes releasing unintentionally formed POPs, especially the production of chlorophenols and chloranil; 10) textile and leather dyeing (with chloranil) and finishing (with alkaline extraction); 11) shredder plants for the treatment of end of life vehicles; 12) smoldering of copper cables; 13) waste oil refineries.						
Action 10.1.4. Elaboration and use of guidelines on prevention and release reduction by applying BAT and BEP to reach release limit values or to establish performance standards						
Action 10.1.5. Education, training programmes and public information dissemination by industry and professional users of BAT or BEP						
Action 10.1.6. Initiating research and studies regarding the effects of POPs releases from the industrial sector on humans and the environment						
Action 10.2.1. Elaboration of national manuals on EIA and SEA and training the staff for have strategic thinking on POPs release reduction and voluntary application of EIA principles to the industrial sector						
Action 10.3.1. Elaboration of a national strategy and policy paper on the reduction or elimination of POPs emissions from the industrial sector, strengthening the link between sustainable industrial development regarding POPs emitting plants and spatial policy						
Action 10.3.2. Inventory of the sensitive areas for POPs impact (including areas where industrial accidents may occur) and of the corresponding responsible authorities						
Action 10.3.3. Inventory of the sensitive areas regarding POPs impact (including areas where industrial accidents may occur) and of the corresponding responsible authorities						
Action 10.4.1. Initiating research and studies on the risk assessment of accidents and their possible effects on humans and environment and elaboration of proposals for new chemicals to be listed in Annexes A, B or C of the Stockholm Convention						
Action 10.4.2. Regular inspection of the existing industrial units where pollution accidents might occur						

Table 3.4.1.1. Schedule for measures/projects implementation

ACTIONS	2004	2005	2006	2007	2008 - 2014	2014 - 2019
Action 11.2.4. Initiating research and development projects on other versions of POPs co-incineration	[REDACTED]					
Action 11.2.5. Training programmes on applying POP co-incineration by using cement or other industrial kilns		[REDACTED]				
Action 11.2.6. Initiating research and studies for establishing emission factors to calculate the emission of POPs from crematoria and the destruction of animal carcasses	[REDACTED]					
Action 11.2.7. Providing equipment to control POPs emissions from crematoria and the destruction of animal carcasses	[REDACTED]					
Action 11.2.8. Enforcement of legislation related to open burning waste by increasing the number of inspections on site	[REDACTED]					

3.4.1.1. Immediate Measures/Projects

Until the deadline established by MAPAM, 61 proposals have been received by e-mail or mail.

According to the key objectives, 61 the project proposals were analyzed and 39 proposed projects were selected.

Types of selected projects					
	PCBs	Pesticides	Hospitals waste	Others	Total
Number of selected projects	16	6	1	16	39

The projects have been classified in 4 categories, namely:

- A Assessment
- B Prevention, safety
- C Reduction / elimination
- D Monitoring

The next stage consisted in the development of an informing data base containing the filled in templates for each project area Word and Excel files including the all remaining project proposals after the above mentioned pre-selections.

The lists of projects are presented in the table below.

Table 3.4.1.2. Selected projects on short -term by category

Project code	Project title	County	Investments/and manpower costs (Thousand EURO)
<i>Category A : Assessment</i>			
A001	Research for identification Pop's emissions in thermo-refining of secondary copper; evaluation of elimination; technologies.	Maramures	25
A002	Development of a Regional Center on Ecologic Education concerning POPs risk management	National level	225
TOTAL category A 250 Thousand EURO			

Category B : Prevention, safety			
B001	Strengthening the institutional capacity of Environmental Protection Agency Pitesti regarding information exchange, communication, public education and sensibilisation regarding POPs management problems Campaign for public's information regarding ecological education in POPs management	Arges	350
B002	Campaign for public information regarding the utility of ecological agriculture applications	Buzau	10
B003	Modernizing of the existent installations in order to comply with HG 173/2000 requests regarding equipment's containing PCBs elimination	Bistrita-Nasaud	90
B004	Creation of a communitarian center for ecological education in POPs management	Calarasi	3
B005	Elimination of capacitors containing PCB from installations and stock-piles -new project	Calarasi	44
B006	Replacement of PCB containing capacitors (in exploitation) with performing non-PCB capacitors-piles -new project.	Calarasi	400
B007	Replacement of PCB containing capacitors (in exploitation) with performing non-PCB capacitors-piles -new project.	Constanta	500
B008	Elimination of capacitors containing PCB from installations and stock-piles -new project	Constanta	54
B009	Replacement of electrical capacitors piles containing PCB and their stockade in proper containers for waste at S.C. FIBREXNYLON S.A.	Neamt	462
B010	Modernizing the capacitors piles in electric transformer stations	Suceava	272
B011	Training for medium and high-level personnel for Pop's management connected activities. - Management, transport and incineration of POPs	Timis	40
B012	Development of sustainable partnerships in preventing accidents involving POPs	National level	195
B013	NGOs network on POPs - information, education and public awareness	National level	44
B014	Strengthening the operational capacity for emergency management in the POPs transport	Dolj Cluj, Bacau	260
TOTAL category B 2,724 Thousand EURO			
Category C : Reduction / Elimination			
C001	The reduction of the pollution with dangerous substances used in agriculture	Arges	400
C002	Gradual elimination of existent un-proper	Arges	1535

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	warehouses and their relocation in a safer way from environmental point of view.		
C003	Incinerator - common unit incinerator for chlorinated solvents waste fabrications and for chlorinated waste 2,4-D acid (regenerated chlorophenols) fabrications - new project	Bacau	3500
C004	Elimination of PCB stocks in Botosani county	Botosani	200
C005	Neutralization of expired/degraded pesticide, existed in Botosani county	Botosani	100
C006	Installation for PCB elimination from capacitors and transformers oil	Braila	290
C007	Elimination of material and equipments containing PCB	Caras Severin	90
C008	Elimination / controlled of storage HCH waste from Turda zone	Cluj	2000
C009	Elimination in environmental protective conditions the own PCB stocks	Galati	950
C010	Elimination of existing pesticides waste	Iasi	440
C011	Ecological installation for toxic and dangerous waste incineration in the N E development region of Romania	Iasi	22800
C012	Elimination of equipments containing PCB - new project	Neamt	680
C013	Elimination the pesticides waste in Salaj county	Salaj	40
C014	Co-incineration of Pop's together with pirited ashes at S.C. U.V.C.P. S.A. Turnu-Măgurele	Teleorman	1200
C015	Enlargement the S.C. PRO AIR CLEAN S.A's incinerator capacity. Installation for thermal energy recuperation from the incineration process.	Timis	1100
C016	Elimination of pesticides waste existed in collecting points Somcuta Mare, Seini, Lapusel, Ticau and rehabilitation of these warehouses.	Maramures	135
C017	Ecological incinerator for hospitals waste	Neamt	60
C018	Disposal by incineration of POPs from railway sleepers scrapings out of use	National level	850
TOTAL category C 36,370 Thousand EURO			
Category D: Monitoring			
D001	Strengthening the institutional capacity of Environmental Protection Agency Pitesti	Arges	500
D002	Monitoring of Pop's elimination in Bucharest through controlled storage or destruction of the existing pesticide waste, PCB stocks and unidentified substances supposed Pop's.	Bucuresti	500
D003	Equip with up-proper equipment for POP's	Galati	600

	analysis in ARPM Galati laboratory POPs to support the environmental impact assessment in the Region 2 (South-East.)		
D004	Modernization and equipping of ARPM Sibiu in order to identify the POPs in waste deposits and in products containing or contaminated which such pollutants.	Sibiu	265
D005	National Integrated System for POPs control in the energetical sector	National level	270
TOTAL category D 2,135 Thousand EURO			

3.4.1.2. Medium - term Measures/Projects

See Table 3.4.1.1.

3.4.1.3. Long - term Measures Projects

See Table 3.4.1.1.

3.4.2. Conceptual Financing Plan

The conceptual financing plan is based on a case study prepared with the opportunity of visiting the incineration plant located in Timișoara. The unit has received the environment authorization from EPA Timișoara and is now working mainly for POP elimination by incineration.

3.4.2.1. Financial Performance of S.C. PRO AIR CLEAN S.R.L. Timișoara

The main activity of the company is transportation and elimination of hazardous wastes (including POPs) from all over the country.

The company has a stock of capital of 12.000.000.000 lei (291.850 Euro) on 31.12. 2003 and a turnover of 24.467.711.000 lei (595.075 Euro) reported also at the end of the year of 2003.

The balance sheet of the company is presented in Table 3.4.2.1.

During 2004 – first quarter of 2005 – the company had endowed a new installation of incineration. On this occasion the storage conditions and dangerous wastage transport calculated for incineration had been improved.

So, at present the existing endowment of the company is satisfactory for solving POPs (waste) management problems, especially in the western part of the country.

Table 3.4.2.1. SC PRO AIR CLEAN S.R.L. Timișoara - Balance Sheet on the Year of 2003

Indicators	Financial Activity in 2003	
	Million lei	Thousand Euro
I. Income from		
Total:	24.675	600
of which:		
• production sold	24.468	595
• production stocked	111	3
• other income	96	2
II. Running Expenses		
Total	11.361	276
of which:		
• production expenses	2.507	61
• services for tertiary companies	1.116	27
• staff costs	1.766	43
• assurance and social protection	618	15
• depreciation	5.354	130
III. O S M Results		
Profit	13.314	324
IV. Non-corporal immobility - Total	13	0,32
V. Corporal immobility		
Total:	28.013	681
of which:		
• land	15.921	387
• constructions	3.902	95
• technological equipment	7.003	170
• transportation means	1.007	25
• other means	180	4
VI. Circulating assets	6.777	165

In conclusion, the whole POPs management activity in the country must be organized according to the provisions of the National Implementation Plan of Stockholm Convention.

3.4.2.2. Financial feasibility

Cost – Time schedule

The NIP comprises an investment programme for POPs management throughout the country, including the folding up of the zone – deposits of the exhausted/historical POPs and incineration of POPs – waste. Each of the organized deposit will be provided with security means and other facilities necessary to keep in stand by the substances before elimination. Existing POPs will be eliminated in most cases by incineration. The wastes from hospitals or from other medical activities are to be separately collected, transported and incinerated and NIP comprises the necessary investments to get rid off dioxins and other volatile organic compounds by treatment.

The main unit operation applied is adsorption on activated carbon.

The cost – Time schedule is presented in Table 3.4.2.2.

Total costs of NIP is 209.554 million Euro

of which:

- in the first period of time (2004 – 2007): 52.6 million Euro,

of which:

- 28.4 million Euro - investments;
- 24.2 million Euro - other activities.

The investment cost (in thousand Euro) is distributed on the first period of the project implementation as it follows:

Year	Million Euro
2004	1.4
2005	15.0
2006	9.0
2007	3.0
> 2007	0.0

The constructions are provided to start in the year of 2004 and will be accomplished (first stage) in the year of 2007.

Table 3.4.2.2. Cost = Time Schedule

Million Euro

No.	Group of actions	Total	Year						
			2004-2007	2004	2005	2006	2007	2008-2014	2015-2019
0	1	2	3	4	5	6	7	8	9
	TOTAL	209.554 of which: 52.60 for the first period: 2004-2007	(Inv.) 28.40 <u>24.20</u> 52.60	(Inv.) 1.40 <u>6.0</u> 7.40	(Inv.) 15.00 <u>6.00</u> 21.00	(Inv.) 9.00 <u>6.00</u> 15.00	(Inv.) 3.00 <u>6.20</u> 9.20	42.00	90.00
1.	Research and studies	19.46	2.96	0.74	0.74	0.74	0.74	5.20	11.30
2.	Creating and use of legal instruments	14.43	3.43	0.87	0.87	0.85	0.84	3.50	7.150
3.	Training	5.92	0.92	0.23	0.23	0.23	0.23	1.60	3.40
4.	Institutional development	7.59	5.09	1.02	3.05	0.51	0.51	2.00	0.50
5.	Elimination of existing POP wastes	90.934	(Inv.) 16314 <u>9.570</u> 25.884	0.884	10.00	10.00	5.00	20.70	44.35

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0	1	2	3	4	5	6	7	8	9
6.	Reduction or elimination of unintentional POP releases	53.64	(Inv.) 12.00 <u>3.27</u> 15.27	(Inv.) 1.00 <u>0.27</u> 1.27	(Inv.) 3.00 <u>0.50</u> 3.50	(Inv.) 5.00 <u>2.00</u> 7.00	(Inv.) 3.00 <u>0.50</u> 3.50	12.21	26.11
7.	Elimination of POPs production, use, import and export	3.64 (investments included in nr.5 group of actions)	1.04	0.04	0.50	0.30	0.20	0.83	1.77
8.	Economic instruments	1.94	0.30	0.10	0.10	0.10	0.00	0.52	1.12
9.	Striving for sustainable development in relation to the reduction of POPs release	0.20	0.047	0.01	0.017	0.01	0.01	0.14	0.013
10.	Monitoring	4.20	1.20	0.10	0.50	0.30	0.30	1.00	2.00
11.	Public participation, awareness, education	7.60	1.00	0.20	0.40	0.30	0.10	2.10	4.50

Financing

25% grant is sought. That is 52.38 million Euro is expected to be financially supported by international organizations for the whole period (2004 – 2029), of which 13.15 million Euro is expected for the first period of time (2004 – 2007). The rest of money is supposed to be conveyed by the Romanian Government.

The international organizations expected to be donors for these actions are mainly, UNIDO, GEF, EBRD, WB, etc.

Financial statements and Cost-Benefit results

Health improvement is expected after the NIP. The below mentioned impacts are based on implementation of similar projects and are in general likely to be valid also for this NIP:

- Protection of environment – illness and deaths avoided thanks to cleaner air, drinking water, bathing water, diseases from eating fish, plants, or other organisms exposed to polluted environment by POPs;
- Improved safety for workers and the public.

The result of economic and financial analysis is summarized below:

- Internal Rate of Return (IRR) : 9.50%
- Net Present Value (NPV): 5.50%
- Benefit/Cost Ratio (B/C): 106.6%

3.5. Timetable for Plan Implementation and Measures of success

The work plan has already been discussed and described under the chapter 3.4.

With this implementation of this action plan no changes of priorities are supposed to arise due to political developments, for example. The strategy and the action plan needs to be evaluated, discussed and updated periodically. This evaluation should be done on the basis of progress reports which is supposed to be done every year.

Progress reports should provide:

1. Status of implementation of every action and project.
2. Specific problems and success factors.
3. Needs for implementation communication and co-operation.
4. Proposed adjusted time schedule.

The activities (steps) that need to be taken are defined for each action. A time schedule for these steps is presented for the whole period of the Stockholm Convention implementation.

There may be a tension between the urgency of some actions and the time needed to reach agreement with responsible bodies.

The implementation plan can be implemented within three periods of time of its starting date (see timetable from table 3.4.1.1.): short term, medium term and long term. This schedule assumes that:

- most action plans and projects can commence in 2004;
- all action plans are implemented without delay;
- most action plans will take years and will carry on with activities related to the reduction of unintentional releases of POPs even beyond that.

3.6. Resources requirements

The costs are estimated in terms of national and international personnel input (man-years) on the basis of professional judgment.

At this stage it is not possible to estimate exactly the concrete funding resources. To identify these it is necessary to take into consideration the potential financing a sources:

- Ÿ the state and local budget for the projects identified by NIP which will be included in Environment National Plan.
- Ÿ the contribution of the economic units which must solve the POP problems according to NIP provisions and the environmental compliance imposed by the Romanian legislation.

- external sources like international financing institutions, EU and UNO programs.
- pre-adhesion structural funds.

An appropriate procedure to attract financial support should be setting-up private public partnerships.

The financial resources requirements to accomplish the objectives of NIP will be provided by the titleholders responsible for POPs emission, applying the principle “Polluter pays”. 30% of the total funds are necessary for actions to be implemented in short term, namely those actions having high priorities. These actions are related to the elimination of the existing stocks of pesticides and PCB that are out of use.

20 percent of the necessary resources will be supported by the private companies which have exhausted pesticides, PCBs or other wastes presumed to be POPs. This part consists of 15 million EURO.

Another part – 60 percent of the necessary resources are to be supported by the Government.

Environmental Fund is one of the mechanisms, which is to be used.

The last part – 20 percent – is expected to be supported by external sources, namely from developed countries from which technical assistance is essential to reach the objectives of the Stockholm Convention.