


NATIONAL IMPLEMENTATION PLAN FOR THE STOCKHOLM CONVENTION

MONGOLIA

Global Environment Facility/United Nations
Industrial Development Organization

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May 2006

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NIP- National Implementation Plan
POPs -Persistent Organic Pollutants
PCBs- polychlorinated biphenyls
PCDDs- polychlorinated dibenzo-p-dioxins
PCDFs - polychlorinated dibenzofurans
DDT- Dichlorodiphenyltrichloroethane
HCB - Hexachlorobenzene
BAT/BEP - Best Available Technologies and the Best Environmental Practices
GEF - Global Environmental Facility
IMF -
WB - World Bank
ADB –Asian Development Bank
UNDP-
GDP –Gross Domestic Product
MNE – Ministry of Nature and Environment
MoH - Ministry of Health
MFA -Ministry of Food and Agriculture
NCSM- National Centre for Standardization and Metrology
MFE - Ministry of Fuel and Energy
MIT- Ministry of Industry and Trade
MSPL-Ministry of Social Protection and Labor
SPIA- State Professional Inspection Agency
MNT – Mongolian Tugrik
GCA- General Customs Agency
MECS - Ministry of Education, Culture and Science
MAS – Mongolian Academy of Science
MFA- Ministry of Foreign Affairs
GADP- General Authority of Disaster Prevention
NGOs –Non Government Organization
GC - Gas Chromatography
TEF - Toxicity Equivalency Factors
WWF –
NCCS - National Council for Chemical Safety
DNA-
R & D -

EXECUTIVE SUMMARY

The National Implementation Plan contains *the* national profile of Mongolia, description of the present legal and institutional framework of Persistent Organic Pollutants (POPs), as well as the evaluation of particular POPs issues considering the provisions of relevant international commitments, as well. Based on the above, detailed strategies and action plans, including timetables and costing of their implementation, were elaborated.

Persistent Organic Pollutants (POPs), generated by natural and anthropogenic factors, are chemical substances that persist in the environment, bioaccumulate through the food web, and pose a risk of causing adverse effects to human health and the environment. They are also semi volatile, enabling them to move long distances in the atmosphere and they have adverse effects on the health of ecosystems, wildlife, and people. Full cycle of contamination of POPs is created in the nature through the food chain. Laboratory investigations and environmental impact studies have implicated POPs in endocrine disruption, reproductive and immune dysfunction, neurobehavioural impairment and disorders, and cancer. They can even harm the immune system of infants and children through mother's milk.

The Stockholm Convention on Persistent Organic Pollutants was adopted in 2001 for the purpose of protecting and preventing human health and environment from the harm of these substances and presently 151 states signed and 115 of them are Party, including Mongolia. The provisions of the Convention cover the following 3 types of substances, including 9 types of pesticides (aldrin, dieldrin, chlordane, hexaclorobenzene, heptachlor, DDT, endrin, mirex and toxaphene), which are used for agricultural pest controlling purposes, the polychlorinated biphenyls (PCBs), which are used as dielectric and heat-exchange fluids in electric transformers and capacitors and also as additives in paint, sealants, carbonless copy paper and plastics, and dioxins (polychlorinated dibenzo-p-dioxins (PCDD)) and furans (polychlorinated dibenzofurans (PCDF)), which are by-products of some chemical-industrial processes and combustion processes.

The Convention provides obligations for the activities to stop production and usage of pesticides, except DDT, and eliminate stockpiles and wastes, limit the use of DDT only for the permitted purposes, and stop usage of PCBs by 2025 and eliminate stockpiles and wastes by 2028 through environmentally sound methods. In addition, the Parties are obliged to focus their activities on the reduction of unintentional emissions of PCDDs and PCDFs and introduction of the Best Available Technologies and the Best Environmental Practices(BAT/BEP).

Mongolia began to use insecticides from 1950s to control internal parasites of livestock and disinfect the outer environment. The movement to exploit the virgin lands, initiated in Mongolia since 1958, was the beginning of the active development of agricultural sector in the country when the first agricultural entities were established. Different kind of pesticides, lindane and including POPs pesticides like hexaclorobenzene, chlordane, aldrin, dieldrin heptachlor, had been used in Mongolia. Among the chemicals, the hexachlorocyclohexanes or lindane had been used in large amount and all the above pesticide was called as a "dust". However, Mongolia does not have stockpiles and wastes of the pesticides, several sites contaminated with these substances were identified, according to prelimenary inventory and laboratory analyses.

PCBs had been used broadly until 1990s and as of 2005 over 13,000 equipment containing 5,500 tons of oil had been in use and over 90 percent of which produced before 1990 in Russia. During the POPs preliminary inventory, conducted in 2004-2005, over 500 equipment were analysed and over 10 percent of which contained PCBs concentration more than the permissible level.
Insufficient information and knowledge about the PCBs among companies and citizens lead to violation of minimum labor protection requirements during the handling of PCB-containing

equipment and materials and also the lack of procedure for disposing obsolete oils and fluids increases the number of contaminated sites and cause harms to the environment and human health. It should also be taken into account that equipment imported in recent years was usually old.

Dioxins and furans are emitted to the environment in form of gas and are also contained in the ashes or smoke filters. Major sources of these substances in Mongolia are as follows:

- power and thermal plants, boilers and household stoves, which are fired by coal
- uncontrolled combustion of wastes
- incinerators of medical wastes
- sludges from treatment facilities of industrial and household sewage
- about 150,000 automobiles, motorcycles, tractors and self propelling heavy mechanisms
- fires
- metallurgy industry
- brick, cement and lime production
- hide and leather and cashmere and wool processors.

The State Great Hural (Parliament) of Mongolia, at its general session on November 7, 2003, ratified the Stockholm Convention on Persistent Organic Pollutants. The Mongolian Law on the Protection from Toxic Chemical Substances has a provision regulating that "In case of dispute between the national laws and the international treaties that Mongolia has joined, the international treaty shall prevail." Therefore, the Stockholm Convention is a legal document, which Mongolia can follow in regulating POPs relations together with other national legislation.

The Ministerial Decree No. 75 of 14 May 1997 banned the use of aldrin, dieldrin, chlordane, DDT, endrin, hexachlorobenzene, heptachlor and toxaphene, the joint Decree No 63/89 of the Minister of Nature and Environment and the Minister of Health includes 12 POPs chemicals in the National list of the very toxic chemicals and another joint decree included POPs contained products in the "List of products that contain toxic and hazardous chemicals". In addition, "Procedure for Coordinating Import, Transport and Usage of Products Containing Hazardous and Toxic Chemicals" was approved. On the whole, it can be concluded that the legal background to implement the Stockholm Convention is created in Mongolia.

National Implementation Plan

At its session of 03 May 2006, the Government of Mongolia heard the National Implementation Plan for the Persistent Organic Pollutants and decided to approve it.

The aforementioned international and domestic situations required the development of the National Implementation Plan on POPs and it was developed pursuant to the basic principles and guidelines of the Stockholm Convention and in accordance with Mongolian legislation and state policy.

The National Implementation Plan on the Persistent Organic Pollutants is planned to be implemented in 2 stages in Mongolia.

STAGE I (2006-2010) legal framework to implement the plan will be improved, quantity, sources, wastes volume and contaminated sites of POPs will be identified precisely, preparatory measures for actions to reduce emissions and decontamination will be taken and a national capacity will be strengthened.

STAGE II (2011-2020) actions to stop usage of POPs containing equipment, eliminate stockpiles, decontaminate polluted sites and reduce emissions will be implemented.

The lead agency to implement the National Implementation Plan is the Ministry for Nature and Environment and it takes responsibilities of administering, coordinating and supervising and will work together with other relevant ministries, agencies, research institutes and non-governmental organizations.

The NIP includes a total of 48 *actions* grouped into 11 *activities, strategies and action plan.* The ones that are not specific to Mongolia or the ones covered by other groups of activities have been omitted and information on where to find relevant data has been provided. Within the framework of the plan, the following activities are proposed to be implemented:

- to develop standards and permissible levels of POPs in air, soil, water and food products, procedures and guidance on handling POPs containing products and equipment and waste disposal;
- to establish an integrated information database by analyzing and labeling PCBs containing equipment, create monitoring system of PCBs containing equipment, execute remediation and replacement of PCBs containing equipment and eliminate PCBs containing wastes on environmentally sound manner by 2020;
- to identify sources of dioxins and furans and volume and scope of their emissions and releases precisely and create a monitoring system, introduce technological renovation in the major sources, and to reduce their emissions applying best environmental practices;
- to organize awareness raising activities on pesticides, strengthen control on the import food products, and identify sites polluted by pesticides and decontaminate them;
- to establish information database and network, as well as monitoring system on POPs chemicals and conduct research works on impacts of POPs chemicals on environment and human health and future trends of illness associated with the impacts;
- a set of training materials will be prepared for the curricula of higher educational institutes and schools and training materials will also be prepared for risk groups, and
- national capacity will be built for laboratories and experts to conduct monitoring and research on POPs chemicals.

The total cost for implementing the NIP in 2006-2020 amounts to 5 billion 180 million and

5,179,600,000 Tugriks, equivalent to 4,43 million US$.

In ddition, the NIP also includes 4 project proposals, which will be submitted to GEF for funding.

Pursuant to the provision of the Stockholm Convention Parties are obliged to develop their National Implementation Plan and implement its measures. Mongolia, as a Party to the Convention, will implement the activities proposed under this plan with financial support from the Global Environmental Facility and other donor governments and organizations, as well as with in-kind contribution by the Government of Mongolia and national agencies, companies and individuals.

1. INTRODUCTION

In early 1990, Mongolia started a fundamental shift from a socialist and centrally managed political system towards a democratic free market economy. During this period many industries and organizations have been divided into small operating units, have undergone privatization and have been experiencing economic difficulties.

Integrated control of toxic substances and coordination of the utilization of those substances have been difficult during the transition period towards the new system. Due to lack of the integrated control on import, many organizations, factories, enterprises and individuals have been importing different kinds of chemical substances, as there was no legal basis for exercising a proper control.

The Government of Mongolia revised the Law on Protection from Toxic Chemicals, which was approved by Mongolian Parliament in 1995, with the purpose of regulating the production, export, import, storage, trade, transportation, use and disposal of toxic chemicals. During the development process of NIP, the Parliament approved the revised version of the law, namely, Law on Toxic and Hazardous Chemicals, on 25 May 2006.

Mongolia has signed the Final Act of the Stockholm Convention during the Conference of Plenipotentiaries in May 2002 and started the enabling activities to ratify the Convention. Hence, the State Great Hural (Parliament) ratified the Stockholm Convention at its General Session on 7th of November 2004.

So far, there have been no complete and reliable statistics on chemicals and chemical management available in the country. There is no documented statistics on persistent organic pollutants either.

However, the problem of POPs chemicals is highly relevant in the context of the national efforts aimed at achieving the goals of Agenda 21 on the Sound Management of Chemicals, although very little work and attention has been paid on the problem so far. The main problems related to POPs in Mongolia are mainly caused by the following factors:

- Lack of data on the quantities of POPs chemicals and their geographical locations in the country;
- Lack of knowledge of existing alternatives to POPs;
- Low level of education and awareness among users, decision makers and public.

Though most of the twelve persistent organic pollutants are banned in Mongolia since 1997, their presence in the environment cannot be controlled for the reasons given above.

The National Implementation Plan was developed within the framework of the POPs Enabling Activities Project, which was implemented in 2003-2006 and approved by the Government on 03 May 2006.

2. COUNTRY BASELINE

2.1. COUNTRY PROFILE

2.1.1. Geography and population

The territory of Mongolia is located in the central part of Asia between 41°35”-52°06” of altitude and 87°47”-119°57” of longitude, neighboring with Russia along 3,485 km to the north and with China along 4,676.9 km to the south. Mongolia comprises 1564.1 thousand km^2 territory with width of 2,392 km from west to east and 1,259 km from north to south. Mongolia is placed at 17th in the list of countries in the world by its territory.

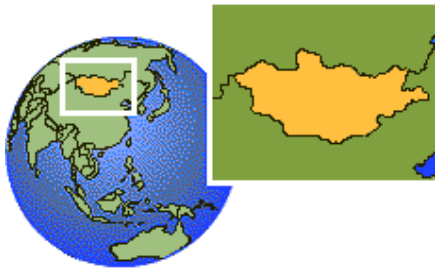


Figure 1. Geographical location

Average altitude is 1,580 m above the sea level. The highest point is the Huiten peak (4,653m) in the west and the lowest is the Khokh Nuur lake depression in the east (532 m above sea level). The Capital city is elevated 1,350 m above the sea level. The Altai Mountain range s in the southwest rises to the heights above 4,000 m (14,000 ft). The Gobi Desert covers a wide arid tract in the central and southeastern areas.

Table 1. Land classification of Mongolia (Mongolian Statistical Book)

Total area	**156 411 600 hectares**	**100.00%**
Land of agricultural designation	130 541 100 hectares	83.46%
Land of cities, villages and other urban settlements	416 400 hectares	0.27%
Lands under roads and networks	336 900 hectares	0.22%
Lands of the forestry fund	18 292 000 hectares	11.69%
Lands of the water fund	1 667 400 hectares	1.07%
Lands of special needs	5 157 800 hectares	3.30%

The most important rivers are the Selenge River and its tributary, the Orhon Gol river, in the north. Large lakes include the Har Us, Hyargas, Uvs, and Huvsgul. Huvsgul lake is 262.4 m deep hence ranking after Baikal lake in the territory of Russian Federation.

The climate of Mongolia is continental and there are 4 seasons. Strong storms blow during the short spring (April to May). January is the coldest month when temperature drops to the lowest point below zero and July is the hottest month of year.

Mongolia's climate is harsh, with average temperatures ranging between -15° and -30° C (-5° and -22° F) in winter and 10° and 26.7° C (50° and 80° F) in summer. Winters are dry, and summer rainfall seldom exceeds 380 mm (15 in) in the mountains and 125 mm (5 in) in the desert.

Resident population of Mongolia stands at 2 533 100, yielding an overall population density of about 1.6 persons per square km (about 4 per sq mile). The ethnic composition of Mongolia is fairly homogeneous. Halh (Khalkha) Mongols constitute more than 75 percent of the population. Other groups are the Kazakhs and the Durvuds. The society is about 59 percent urban.

Table 2. Urban and Rural Population (2004)

Total	**2533.1**	**100.0%**
Urban,	1 498.2	59.1%
including		
Ulaanbaatar	928.5	36.7%
Rural	1 034.9	40.9%

(Mongolian Statistical Book)

Currently, 49.6 percent of the population is male and 50.4 percent is female. The percentage of population aged under 15 years is 32.6, aging 15-64 years was 63.9 and 65 years and over is 3.5.

Birth rate: 18.1 live births per 1,000 populations.

2.1.2. Political and economic profile

Mongolia is Parliamentary republic. An election of State Great Hural (Parliament) takes place once in every four years and 76 Parliament members are elected. Local elections also take place once in every four years. By the local elections, the voters elect representatives to the Citizens Hural (Assembly) of aimags, Capital city, districts and soums. President of Mongolia is directly elected by public once in every four years.

The official language is Mongolian. The traditional religion in Mongolia is Lamaist Buddhism. The Capital city is Ulaanbaatar.

Mongolia is divided administratively into 21 aimags (provinces) and the Capital city. Aimags are divided into soums, which are further divided into baghs (the smallest administrative unit). The Capital city, Ulaanbaatar, is divided into 9 districts, which are, in turn divided into horoos.

Table 3. Administrative Units

Aimags and the Capital	**Number of soums and districts**	**Number of baghs And horoos**	**Territory (thous. km^2)**	**Population, (in thousands)**
Total	*340*	*1 671*	*1 564.1*	*2 533.1*
Arkhangai	19	99	55.3	94.9
Bayan-Olgii	14	84	45.7	101.2
Bayankhongor	20	101	116.0	83.8
Bulgan	16	73	48.7	60.8
Gobi-Altai	18	83	141.4	60.9
Dorno-Gobi	14	51	109.5	52.5

Dornod	14	65	123.6	73.7
Dund-Gobi	15	68	74.7	52.5
Zavkhan	24	113	82.5	80.7
Ovorkhangai	19	108	62.9	113.2
Omno-Gobi	15	54	165.4	46.8
Sukhbaatar	13	65	82.3	56.6
Selenge	17	49	41.2	100.8
Tov	27	102	74.0	88.9
Uvs	19	89	69.6	81.0
Khovd	17	90	76.1	87.8
Khovsgol	24	121	100.6	121.4
Khentii	17	83	80.3	71.2
Darkhan-Uul	4	24	3.28	87.8
Ulaanbaatar	9	121	4.7	928.5
Orkhon	2	19	0.84	78.4
Gobi-Sumber	3	9	5.54.	12.3

Employment

Table 4. Employment (Mongolian Statistical Book)

Population of working age: *including,*	1 531 100 *790 300 females*	100.0% *51.6% female*
Economically active population: ***including,*** of which: Employed ***including,*** Unemployed *including,*	986 100 *503 000 females* 950 5 00 *483 400 females* 35 600 *19 600 females*	64.4% *51.0% female* 62.1% *50.9% female* 3.6% *55.1% female*
Labor force participation rate		64.4%
Employment rate		62.1%
Unemployment rate		3.6%

Table 5. Number of registered unemployed persons and the unemployment rate

Years	2000	2001	2002	2003	2004
Unemployed (thousands)	38,6	40,3	30,9	33,3	35.6
Rate of unemployment (%)	4,6	4,6	3,4	3,5	3.6

2.1.3. Profiles of Economic Sectors

The most impressive of achievements of the pre-1990 socialist period were the improvements in social development indicators. Life expectancy at birth increased from 46.7 years in 1960 to 62.5 years in 1990. Adult literacy rose to 95%. Virtually the entire population had access to health services, 98% of pregnant received pre natal care, 87% of one-year children was immunized against diseases, and malnutrition was rare. On average, Mongolian received 7 years of schooling with girls receiving nearly as much education (6.8 years) as boys (7.2 years). There was no recorded income poverty and unemployment. Many of these gains were directly linked to both the heavy external subsidies during the pre 1990 period and assured export of Mongolian products to

the COMECON countries. When this external support was cut in 1990 the extensive social service network that had been established across the nation was simply not sustainable with Mongolia's limited national resources. Likewise, many of the domestic industries were either not viable or ill equipped to enter the competitive global economy. This combination of the deterioration in social services and the loss of employment from the closing former state industries have led to Mongolia's present problems, poverty and human security. However, since 1995 the adoption of the progressive and corrective measures with support of external donors has resulted in a reversal of the deterioration of living standards. Agriculture and private particularly, informal sectors have observed much of the labor released from the state sector. Much has been accomplished in dual transition of our country to democracy and market economy. But there is still a lot that needs to be done in short and medium term. Apart from issues of economic management, there are complex inter-related problems that need to be addressed in the domains of unemployment, poverty, health, education, environmental degradation and social protection. The balance sheet attached to this paper as an annex shows the social development and environmental quality.

External Environment of Mongolian Economy

Mongolia is one of the countries with economy in transition, being an integral part of the world economic growth trends. Mongolia has a unique location situating herself amongst vertical, horizontal and inclined axis. Mongolian foreign economic relations have also versatile nature. Today Mongolia is dependent on Russia on energy sources, gasoline and fuel, from China on consumer goods and food items. Two neighboring countries are friendly as well as the rest of the world. The good economic neighborhood policy is the main strategy. The status of Mongolia's geographic strategy has been changed dramatically since the 1990s and has become an open country networked with the rest of the world. Super powers' attitude towards Mongolia has been changing and multilateral relationship with other nations has been maintained. Fruitful cooperation has also been maintained with Russia, China, the USA and Japan.

Foreign assistance and loans

The Government policy towards fruitfully utilizing the foreign aid and assistance has been pursued to overcome complications in social sector and stabilize macroeconomic situation, create and maintain effective governance structure, develop infrastructure and promote private sector development. The number of donor countries and international agencies has reached over 40 as a result of effective collaboration with IMF, WB, ADB and UNDP. Mongolia assistance group meetings have been held seven times since 1991 with assistance of the World Bank and the Japanese Government followed by significant foreign aids and loans. The preparations for the 8th Mongolia assistance group meeting to be held in Paris from the end of November to the beginning of December 2000 are in full swing. A total of US$ 1 bln loan agreement was signed during the period of 1991-2000 and over US$900 mln worth of loan was used. 30 countries and international organizations have rendered assistance and implemented grant projects (50% of all assistance projects were grant projects). 95% of total foreign aid and credit was used for infrastructure development (50.6% energy sector, 30.8% transport, 13.6% communications) and 4.1% was used for social infrastructure development.

Economic growth

During the last 3 years period inflation rate has radically declined and macroeconomic stability can be observed as a result of the private sector encouraging Government towards enhancing structural adjustment measures, improving banking, finance, budget, tax, social insurance, price liberalization and social security systems. GDP real growth was /in line with 1993 constant price/2.4% in 1996, 4% in 1997 and 3.5% in 1998 and declined to 3.0% in 1999 preliminary record. According to the survey, indicators for agriculture, mining, extracting, trade and service

industries have been steadily increased but processing industry is not promising. Financial resources are needed to renovate processing industries technology and equipment and paying revolving fund balances.

Investment and stock market
Total investment share of GDP was 20.4% in 1997, 23.7% in 1998 respectively and increased up to 25.8% in 1999. Stock market sale/trade has expanded facilitating to increase investment sources. Foreign investment size and scope has been increasing with every passing year. The most investment was made in geology, mining, light industries, processing of animal husbandry raw materials and trade and services. Approximately 70% out of above-mentioned shares were invested in geology and mining sectors. Direct foreign investment has been enhanced. Since 1990, over 1400 foreign companies from 61 countries have been registered to carry out activities/businesses in the country with over US$313.3 mln assets and 60% out of them are working effectively.

Price, inflation
Inflation rates have been declining: 44.6% in 1996, 20.5% in 1997, 6% in 1998 and 10% in 1999 respectively. Unfavorable external factors, inadequate banking and financial systems, budget balance deficit have been negatively affecting the price stabilization.

Budget revenue, expenditure, balance
Budget revenue vis-a-vis GDP was 27.8% in 1996, 29.3% in 1997, 27.4% in 1998 and 26.4% in 1999. However, tax revenue vis-a-vis GDP was 20.6% in 1996, 21.6% in 1997, 17.6% in 1998 and 18.6% in 1999. Total budget expenditure of GDP was 36% in 1996, 37.9% in 1997, 39.1% in 1998 and 38.7% in 1999 respectively. Total budget loss of GDP was 8.2% in 1996, 8.6% in 1997, 11.7% in 1998 and 8.6% in 1999. The current budget surplus balance was 26.1 bln tugrugs in 1996, 13.4 bln tg in 1997, 5.6 bln tg in 1998 and 3 bln tg in 1999. It is needed to take measures in order to increase the revenue of current budget balance by expanding the budget revenue, improving tax policy, enhancing structural adjustment and reform process, reduce unnecessary expenditures and creating proper budget expenditure mechanism.

Money and credit
The monetary policy is being pursued directed at stabilizing exchange rate, supporting economic growth, decreasing inflation rate and establishing adequate balance between total amount of money and reserve money. Currency rate fall is being regulated through direct and indirect limitation of money supply. Tugrug rate was falling to 46.4% in 1996, 17.3% in 1997, 10.9% in 1998 and 18.9% in 1999. Exchange rate is US$1 = 1190 Tugrugs as of March 1, 2006.
Export, import: Mongolia maintains trade relations with over 70 countries. Our export structure has been changed dramatically of late, as is still dependent on a few number of commodities.. Recent trend shows declining export and increasing import supply.

Privatization
Within last 4 years 90% of total immovable assets, 95% of small enterprises, 70% of big objects or large enterprises have been privatized. Most of crop farming, construction and construction materials, food, light industry, transport, gold mining, veterinarian, trade, supply, service entities have almost been completely privatized and a bulk of state owned immovable assets have been transferred to the private sector. Over 95% of state owned apartments have been privatized. Private sector is producing about 70% of the GDP.

Gross Domestic Product

The Gross Domestic Product in 2003 at 1995 prices increased by 5.5 per cent over previous years. Per capita Gross Domestic Product (at current prices) has reached 547.2 thousand Togrogs.

Table 6. Industrial composition of domestic products, at current prices, percentage (Mongolian Statistical Book)

Years	1995	2000	2001	2002	2003	2004
Agriculture, hunting and forestry	38.0	29.1	24.9	20.7	20.0	21.3
Mining and quarrying	12.0	11.5	9.0	10.1	9.5	17.3
Manufacturing industry	12.1	6.1	8.1	6.3	6.0	5.3
Electricity, gas and water supply	1.8	2.4	3.0	3.8	3.4	3.0
Construction	1.7	1.9	2.0	2.3	3.1	2.6
Wholesale and retail trade, repair	17.0	24.0	26.7	27.7	26.5	24.6
Transport, storage and communication	6.4	11.0	13.0	14.7	13.9	12.7
Education	3.8	4.6	4.5	4.6	4.5	4.2
Health and social work	2.6	1.9	1.9	1.8	1.7	1.6

Since early 1990, when Mongolia's transition to the market economy system started, a significant part of GDP has been produced by private sector.

Table 7. Private sector share in GDP, percentage

Years	1999	2000	2001	2002	2003	2004
Private sector share in GDP	70.3	72.2	75.0	74.5	73.0	76.0

Agriculture. The added value of the agriculture sector was 21.3% of GDP in 2004. The livestock production comprised 80.0% of total agricultural production. The number of livestock by 5 types (horse, camel, cattle, sheep, and goat) reached 28.0 mln. heads in 2004. The agriculture land of Mongolia is 115.6 thous.hectares, of which, 200.5 thous.hectare is for crop production. 138.5 thous.tons of cereals, 80.2 thous.tons of potatoes, 49.2 thous.tons of vegetables were harvested in 2003.

Table 8. Gross agricultural output (Mongolian Statistical Book)

Years	2000	2001	2002	2003	2004
Total, mln.Togrog	419 519.7	394 196.5	358 196.2	410 945.3	474 844.6
including:					
• Livestock, %	84.4	80.8	79.5	79.5	80.0
• Crops, %	15.6	19.2	20.5	20.5	20.0

In livestock sector, the main producer is herder households. Households that run livestock production (meat, hide and skin, sheep and camel wool, cashmere, milk and milk products) for their livelihood are considered as herder households.

Table 9. Number of livestock, thous.heads (Mongolian Statistical Book)

Years	2000	2001	2002	2003	2004
Number of livestock, thous.heads	30 227.5	26 075.3	23 897.6	25 427.7	28 027.9

In crop sector, the main producers are companies, enterprises and households. Main grains of crop production are wheat, potatoes, vegetables and fodder.

Table 10. Sown areas, by hectares (Mongolian Statistical Book)

Years	2000	2001	2002	2003	2004
Total	209 256.2	217 598.1	285 719.2	225 874.4	200 498.3
• Wheat	194 734.6	199 593.6	263 045.6	207 311.2	172 328.3
• Potatoes	7 882.6	8 859.4	10 232.9	8 421.1	9 078.6
• Vegetables	5 373.3	5 561.7	7 095.7	5 869.3	4 918.5
• Fodder crops	755.8	1 907.8	2 953.7	3 229.6	5 118.5

Mongolia began to use insecticides from 1950s to control internal parasites of livestock and disinfect the outer environment. The movement to exploit the virgin lands, initiated in Mongolia since 1958, was the beginning of the active development of agricultural sector in the country when the first agricultural entities were established. Since then, use of different kind of pesticides has been certainly required for plant protection practice. Especially during the year of 1963-1985, the agricultural entities on crop production broadly used extensive amount of fungicides and herbicides to contol seed and plant infections. The wheat planting entities were mostly using Granozan (C_6H_5YgCl) for crop treatment.

From the end of 1970s until the beginning of 1980s, TMDT ($C_6H_{12}N_2S_4$) was used to control vegetable seed infection and some soil insects. The remains of this insecticide is still in use for vegetable treatment in some companies. Use of HCH ($C_6H_6Cl_6$), Chlorfos ($C_4H_8O_4Cl_3P$) – 40% and 80% and Carbofos ($C_{10}H_{19}O_6PS$) had been predominated during 1960s to mid 1980s for vegetable insects. The Chlorfos was also used in animal husbandry and veterinarian sector for internal parasites of livestock and disinfect the outer environment of meat factories from fly species. Huge amount of Zink Phosphide (Zn_3P_2) was applied during the period from mid 1960s until mid 1980s for harmful rodents in pasture and agricultural land.

Since the end of 1970s, Ammonium Sulfate-40% and Butyl ethir-70% have been in use to contol the crop field weeds.

The usage of the most organochlorinated pesticides was banned since 1990s and the introduction of perythroid insecticides is getting to prevail in practice.

Although the Sumi-8 and Divident are permitted for use for seed treatment, the high price of the fungicides is making a problem for the agricultural entities to take regular control over infection. Therefore, there is an increasing trend of crop seed diseases in the country. For pest and insect control, Decis–2.5%, Sumitsidin-20% and Karate-5% are most commonly used by the local companies. For example, 12 tons of Sumitsidin was used in 2002-2003 for controlling pasture harmful grasshopper, 68 tons of Bromadiolone in 2002-2003 for Brandt's vole and 132 tons of Raundap and 140 tons of Butyl ethir were used in 2001-2003 for weeds. According to the annual report from the Forest Research Center of Mongolia, Chlorphos – 80% and Decis-2,5% are used for forest pests.

Until 1990, Mongolia imported all pesticides from former Soviet Union and since 1990s with the transition to the market economy the importation of pesticides from countries such as the Russian Federation, Germany, China and the Republic of Korea is taking place. Mongolia produced 58,882 tons of insecticides and bio-pesticides in 2003.

Annual list of pesticides to be used and tested in Mongolia is approved by a joint ordinance of Ministers of Nature and Environment, Health and Food and Agriculture. Along with the approved list, a tender for producing and importing pesticides is announced. Please, see Annex 1 for List of Pesticides used in 2003.

Mongolia produces bio-fertilizers in small amounts, however, does not produce mineral fertilizers.

Table 11. Import of mineral fertilizers (1,000 tons)

Years	1999	2000	2001	2002	2003	2004
Mineral fertilizers	9.0	10.4	13.3	14.4	12.4	18.4

(Mongolian Statistical Book)

Industry. Transition towards market economy forced transformation and changes in the Mongolian industrial sector. During this period, many industries and companies have been divided into small operating units, have undergone privatization and are experiencing economic difficulties. Since 1997, the economical situation in Mongolia has been stabilized and the share of gross industrial output in GDP has been increasing.

The added value of the industry sector was 19.0% of GDP of Mongolia in 2003. The same year, industrial output increased by 2.0% at constant prices of 1995, compared with 2002, among which the manufacturing output grew by 6.7 %.

Table 12. Gross industrial output (Mongolian Statistical Book)

Years	2001	2002	2003	2004
Total, mln.Tugrugs	726 270.0	750 825.7	801 213.4	1 164 484.3
Mining and quarrying, %	47.2	47.3	49.6	64.7
• Mining of coal	5.7	5.8	6.0	5.2
• Mining of metal ores	37.7	38.8	40.4	56.8
Manufacturing industry , %	34.9	34.0	32.5	22.0
• Manufacture of food products and beverages	12.2	12.2	11.1	8.4
• Manufacture of textiles	11.6	8.7	6.2	5.5
• Manufacture of wearing apparel dressing and dyeing of fur	4.4	6.0	7.0	3.2
Electricity, thermal energy and steam, %	16.0	16.4	16.2	12.0

Major part of total required chemicals for agriculture and industry is imported and only a slight portion is produced in the country. For example:

1. Petroleum products
2. Consumer chemicals/soap, washing powder, shampoo and cosmetics/

3. Pharmaceuticals

Table 13. Chemical Production /by percentage of total gross industrial output/
(Mongolian Statistical Book)

Years	2000	2001	2002	2003	2004
Chemical production	0.6	0.7	0.6	0.6	0.3

Table 14. Chemical Production and Trade

Chemical Type	Production/ Manufacturing (tons/year)	Imports (tons/year and value)	Formulation/ Packaging (tons/years)	Exports (tons/years)
Pesticides (agricultural, public health, consumer use)	58,882	150.6	No	No
Fertilizers a) Chemical b) Biological	174.2	14,400.0	No	No
Petroleum Products	139204.7 barrel	470.6	No	129.4 barrel
Industrial (used in manufacturing/ Processing facilities)	No	1,160.5	No	No
Consumer chemicals	No	7,827.4	No	No
Ozone depletion substances	No	9.9	No	No
Other chemicals - Liquid medicine - Medical tablets	191.6 t 8611.0 thous.packs			

(Mongolian Statistical Book)

2.1.4. Environmental Overview

Climate and Topography

Climate- Mongolia lies in a transitional zone at 420 - 520 N, between the boreal forests of Siberia and the Gobi desert, spanning the southernmost border of the permafrost and the northernmost deserts of Central Asia. Large distances and high mountain chains separate the country from the oceans. It has an extreme continental climate with marked differences in seasonal and diurnal temperatures and low precipitation. Mean annual observed precipitation ranges from 38.4 mm at Ekhiin gol in Bayanhongor aimag (province) to 389.3 mm at Dadal in Hentii *aimag*. Most of the rainfall occurs in summer, between June and August. Mean monthly temperatures for the last thirty years range from
-11.80C (January) to 25.20C (July) at Ekhiin gol, the warmest place, and from -320C (January) to 12.80C (July) at Rinchinlumbe, the coldest place in Mongolia.

Topography- Although most of the country is flat, with rolling hills, there are several significant

mountain ranges, notably the Altai, Khangai, Knentii and Khuvsgul. About half of the land is at an altitude of about 1,400 m or more above mean sea level. The altitudes range from 560 m (above sea level) at the lowest point of Khokh Nuur in the eastern steppes, to the highest of 4,374 m (above sea level) at Khuiten peak in the Altai Mountains. Administratively, the country is divided into 21 *aimags* (province) each of which is divided into *sum* (territorial administrative unit subordinate to district) and *bag* (the smallest administrative unit in rural district). The capital city consists of districts and khoroo (blocks/subdivision of district in city).

Ecosystem

Mongolia's position, size and topography have resulted in a unique assembly of ecosystems or natural zones. Studies of the flora and fauna of the country, together with climatic and geographic data, have resulted in the classification of Mongolia into 6 broad ecological regions, 16 provinces and 47 bio-geographical zones. Mongolia also has been divided into 6 broad vegetation zones (Alpine, Taiga, Forest-Steppe, Steppe, Desert-Steppe and Desert), that are discussed in the following sections. Ecosystems are fragile and extremely vulnerable to many forms of economic exploitation.

The different types of vegetation zones are described in the following part.

Taiga: Mountain taiga forest covers areas of the Khuvsgul and Khentii mountains, the area north of the Tarbagatai Mountains, the upper reaches of the Orhon river, and the Khan Khokhii range. It is the southern edge of the Siberian taiga, the largest continuous forest system in the world. Photo 2.2 shows typical taiga forest zone.

Forest-Steppe: This zone lies between the steppe and the taiga, in the Khnagai and Altai mountain chains, including parts of Orhon and Selenge river basins and Khyangan Mountains of eastern Mongolia. Coniferous forests are found on the northern slopes, while the southern slopes are covered with open steppe vegetation

Alpine: High mountains rising above the tree line occur in the Altai, Khangai and Khentii and Khuvsgul ranges. As seen in photo 2.1, the tops of these mountains are relatively flat, with few sharp peaks. Vegetation consists of low shrubs and herbs, sedges, mosses, algae and lichens, and there are few birds and mammals living at this altitude.

Steppe: The steppe zone extends from the western Great Lakes Depression past Khangai and the middle Khalkha highlands to the steppes of Khentii, Dornogobi and Dornod. As seen in photo 2.4, it is characterized by flat plains and rolling hills covered in feather grass and shrubs.

Desert-Steppe: Mongolia's desert-steppe or semidesert ischaracterized by a dry climate with mean annual precipitation of 100-125 mm and vegetation dominated by low grasses and shrubs. Many of Central Asia's endemic plants occur in this zone

Desert: Desert occurs predominantly in the south. The Mongolian desert is extremely dry, with mean annual rainfall lower than 100 mm, and some areas remain without rain for several years at a time. High winds and dust storms are frequent in spring and summer. There are oases with poplar, but for the most part the desert consists of bare sandy plains and rocky mountains

Land

Land Resources

With its territory of 156.412 million ha, Mongolia occupies 17th place by the size of territory and first place by per capita land resources (65 ha) in the world. Per capita agricultural land in Mongolia (53.8 ha) accounts for 20 times over the world's average. As per the Provision 10 of "Land Law" of Mongolia, land is classified in six categories as stated below:

1. Agricultural land
2. Urban land
3. Roads and Communication land
4. Forest land
5. Water land
6. Land reserve

Minerals Processing and Mining

Mongolia is rich in mineral resources: 8000 mineral deposits bearing over 600 mining sites have been discovered - including coal, iron, tin, copper, molybdenum, gold, silver, tungsten, zinc, tin, lead, phosphates, fluorspar, uranium and nickel. In addition, over 200 deposits of construction materials (marble, granite, etc.) have been discovered and these are currently in operation. The Erdenet coppermolybdenum mine and ore-processing complex, which produces annually about 0.4 million tons of copper concentrate for export, dominates the mineral sector. Other substances like oil shale, and semiprecious stones (agate, lapis, lazuli, garnet) are also found in Mongolia. Of 200 known coal deposits, 32 have been exploited of which 13 sites are now closed. There are many large deposits of low-grade brown coal that cannot be used in some coal-fired installations as it has high sulfur content and air pollution potential. One uranium mine is under exploitation at present in Eastern *aimags.*

Freshwater Resources

There are more than 3,800 rivers and streams with regular run-off in Mongolia. The total length of the river network is about 6,500 km. There are 186 glaciers of a total volume of 62.5 km3 and 3500 lakes covering total surface area of 15,600 km2 (surface area of each exceeding 0.1 km2) with a total volume of 500 km3 and 8,000 river lets. Table 2.3 presents the details of surface water resources in Mongolia. There are three major drainage basins: rivers in the west drain to the enclosed Basin of Central Asia; rivers in the north drain to Arctic Ocean Basin; and rivers in the east drain to Pacific Ocean Basin. The potential water resources of the country are estimated to be about 36.4 km3. Of this, the surface water resources are 22.0 km3 and the usable groundwater resources are 12.6 km3. About 78% of the river run-off is formed on 36 % of the territory in northern, western, and north-eastern mountainous areas and 22 per cent is formed on 64 % of the territory in the south of the
country. Water balance is distributed as follows:

- Total annual precipitation 360.0 km^3
- Total annual run-off 36.6 km^3
  of which:
  - Surface run-off 24.6 km^3
  - Ground water flow 12.0 km^3
- Total soil moisture 202.0 km^3
- Total evaporation 190.0 km^3

On an average, the annual amount of water resources per capita is 17,300 m^3. However, it ranges from 4,500 m^3 per capita in the Gobi area to 46,000 m^3 per capita in northern and central areas. Total mean annual precipitation over Mongolia is estimated to be 360 cubic km. of water or 230 mm per year (nationwide average); about 90 % of this is lost through evapotranspiration, 4 %

infiltrates to aquifers, and 6 % contributes to surface flow. At present, there are 107 guards and 17 stations acting at 70 rivers, 1 spring and 9 lakes. Guards and stations undertake studies on water regime, quality and composition. They take measurements on water biology with 54 indices, evaporation with 8 indices and water pass-over with 81 indices. In fact, these measurements are three times lower than the world average.

Mongolia's total surface run-off reaches 69.5 cu.km in the year of 5 % probability (high flow) and goes down to 23 cu.km in the year of 75 % probability (low flow). In 2000 (77 % of probability) 19 cu.km of water was formed in the territory of Mongolia. Mongolia's annual surface run-off has been increased since 1988 and reached its maximum of 78.4 cu.km. Water quality is found to be good in mountainous areas of Mongolia. Mongolia is a country through which the world watershed line crosses. Rivers and surface streams originating in high mountain areas carry absolutely clean water.

Forest

The recorded forest resources of Mongolia accounts for about 11.6 % of its land area. Area actually under closed forest is only about 8.1 % equal to about 12.9 million ha. which is a substantial resource compared to that in many countries. The natural regeneration of Mongolian forests is slow, and fires and insects often damage the forests. Mongolia's forest resources consist of more than 140 species of trees and shrubs and bushes, and it is seen from figure 2.6 that 81.2 % of the forest area is covered by natural coniferous forest, 15.8 % by saxauls (Haloxylon ammodendron), and 3.0% by shrubs and
bushes. Of the total forest land of Mongolia, 91.2 % or 16.68 million ha. is forest area, and 8.8 % or 1.60 million ha is non-forest area. Of the total forest resources of 1379.2 million m3 in Mongolia , 58.8 % is Siberian Larch, 5.2 % is pine, 7.7% is cedar, 8.8 is Siberian Spruce and Fir, and 16.0% is saxaul. Other species like birch, poplar and willow and shrubs are spread in small quantities

Biodiversity

Animals – Mongolian fauna is relatively rich in animal species which inhabit different habitats of the country's variable natural zones, such as forests, steppes, deserts, and high mountains. The Mongolian fauna includes many species which are common in Siberian Taiga, European forests, or West Asian and Triennia deserts. But there are also species which are endemic to the steppe and deserts of Central Asia, and are common in Mongolia. In addition, Mongolia is one of the richest countries in the world by prehistoric remains of various animal species.

Mammals: Altogether 138 mammalian species belonging to 73 genera, 22 families, and 8 orders, out of which, 13 are insectivoruos, 12 chiropters, 6 lagomorphs, 69 rodents, 24 carnivores, 2 perissodectyls, 1 tylopods and 11 artiodactyls, exist in Mongolia.

Birds: 449 species belonging to 193 genera, 56 families and 17 orders have been recorded so far in Mongolia. More than 330 species from this total are migratory, and the remaining 119 species inhabit Mongolia year round. 322 species nest in spring in Mongolia, and more than 10 species, nesting in the Tundra and in Arctic Ocean coasts, stay over winter in Mongolia. Approximately, 50 species migrate through Mongolia and 20 species are observed here occasionally.

Molluscs have also been registered in Mongolia.

Although the study has just started, 456 species of parasites have been found. They include 88 Monogenea species, 31 Trematoda species, 115 species of Cestodea, 201 species of Nomatoda, 18 species of Acanthocephala and 2 species of hirudinea.24 species of Protozoa that live on fish have been registered. They include 1 species of Hymenostomata, 7 species of Peritrichida, 1 species of Parasitomonadina, 13 species of Myxosporodia and 2 species of Coccidiomorpha.

Plants

Detailed plant collections have still not been made for some regions so it is likely that there are over 3,000 species of flowering plants in Mongolia. There are 845 species of medicinal plants, 68 species of soil-binding plants, and 120 species of important food plants in Mongolia. The factors threatening the Mongolian biological diversity are climate change, desertification, forest insects and disease; pasture harmful insects and unsustainable human activities. The Mongolian biodiversity resources have declined in recent years.

ENVIRONMENTAL CONDITIONS

Atmosphere and climate change

The climate of Mongolia is harsh continental with sharply defined seasons, high annual and diurnal temperature fluctuations and low rainfall. Because of high altitude, it is generally colder than other countries of the same latitude. Average annual temperatures are around 8.5^{o} C in the Gobi and -7.8^{o} C in the high mountainous areas. The extreme minimum temperature is -31.1^{o} C to -52.9^{o} C in January and the extreme maximum temperature is 28.5^{o} to 42.2^{o} C. The annual precipitation is low, averaging 200-220 mm and ranging from 38.4 mm per year in the extreme south (Gobi desert region) to 389 mm per year in limited areas in north. Most precipitation occurs in June, July and August; the driest months are usually from November to March.

Droughts in the spring and summer occur once in every five years in the Gobi region, and one in every ten years over most other parts of the country. Mongolia has an average 3,000 hours of sunshine annually, which is well above the amount received by other countries of the same latitude.

Climate change studies in Mongolia clearly demonstrates that Mongolians should be concerned about climate change resulting from anthropogenic emissions. These studies suggest that during the last 60 years the average temperature in Mongolia has increased by 1.56^{o} C. These temperature increases are stronger in winter months and in mountain areas of western and northern Mongolia than in the Gobi and steppe areas. The maximum temperature increases of 3.6^{o} C were observed in the winter season. The annual precipitation has decreased over 1940's to mid 1980's, but witnessing increasing tendency since mid 1980's in most areas, except the Gobi desert area. It is expected that the severity and frequency of agricultural drought in the Gobi desert area, and also floods due to rain in the central and northern parts of the country may increase with climate change.

According to the results of studies based on General Circulation Models (GCM) scenarios, in case of Mongolia, the annual mean temperature might be increased by about 1.8^{o} C- 2.8^{o} C in the first quarter of the 21st century with greater increase in winter (1.4^{o} C- 3.6^{o} C) and smaller in summer (1.0^{o} C- 3.0^{o} C). In the second quarter this increase will continue and be twice as much as been predicted for the first quarter. An increase in total precipitation by 20%-40% can also be expected over the same period. According to GCMs scenarios, the prediction of significant increase of precipitation amount in period up to 2040 might be declined in the period between 2040 to 2070. In general, the changed climate with increased temperature and precipitation amount in 2040's, may be to some extent a pleasant condition for vegetation growth, but during 2070's, the increased temperature followed by the same or decreased precipitation might negatively affect vegetation growth. It is expected that the natural zones in Mongolia may be changed under climate change. The forest area may be decreased and the steppe zone may move forward to the forest steppe. Also desert may extend its area to the north. Particularly, it has been predicted that the high mountains tundra and taiga may decrease by 0.1%- 0.5% till 2020 and by 4%- 14% before 2050. The area of forest steppe may decrease by 3% in the first quarter of the 21st century, and by 7% in the second. Desert steppe area might decrease by 7 %, while the desert region may extend its area up to 13%.

As the atmosphere is one of the very changeable elements of ecological system a change in it will have negative impact on the level of soil moisture, heat supply, vegetation cover and the habitat of herbivorous animal. According to the statistics of 1970's, a damage of 5-7 billion Tgs was caused annually because of several natural factors such as: changes in hydrological and meteorological phenomena, natural disasters, and after all, the incidences of heavy snow (i.e. *Zud*) and drought. During the drought periods in desert zone the wild life and domestic cattle die in large numbers due to depletion of subsoil water level and drying of wells and lakes.

2.2. INSTITUTIONAL POLICY AND REGULATORY FRAMEWORK

2.2.1. Environmental Policy, Sustainable Development Policy and General Legislative Framework

The competences of the various legislative organs in Mongolia are regulated by the Constitution. The concept of environmental protection is standardized in Articles 16 and 38 of the basic law.

Article 16

The citizens of Mongolia are guaranteed to enjoy:

2) The right to healthy and safe environment and to be protected against environmental pollution and ecological imbalance

Article 38

The Government shall exercise the following powers:

4) To undertake measures on the protection of the environment and on the rational use and restoration of natural resources.

Environmental management is based on extensive and systematically updated laws. The State Great Hural of Mongolia (Parliament) adopted about 30 laws for environmental protection. (Please see Annex 2 for List of Environmental Laws)

Mongolian law, following the socialist legal tradition, does not recognize natural resource law as a distinct branch of law or legal science. However, land, water, forestry, the atmosphere, flora and fauna are subject to law. So-called ecological law has achieved recognition as a branch of legal science and a distinct subject of legal and general education. Ecological law is now firmly established as a distinct discipline.

The environmental legal tradition of Mongolia reflects its nomadic history and is based on religious principles. Modern nomads continue to be dependent on the grass and waters that nourish their herds and continue to respect the teachings of their religious history. Since the beginning of the 1920's, the Mongolian Government has emphasized the importance of natural resources in a legal framework and carried traditions of environmental protection forward into modern times.

Mongolia, through its Constitution of 1992, has guaranteed the right of citizens to live in a healthy and safe environment and state that the public own the land and natural resources. These are protected by the state by signing, along with 168 other nations, the Convention on Biological Diversity. Since that time, the Government has been actively developing a body of law designed to conserve its natural heritage while at the same time responding to demands of a newly formed market economy. Many Mongolian laws, programs, legislative acts, and international treaties have some relevance or impact on the protection of the environment.

In 1997, the Government policy on ecology was developed and deliberated by the Parliament. The document is aimed to establish legal and economic bases for achieving ecological balance,

which is a core principle of Mongolia's sustainable development for the next twenty years. The Government Action Plan for the period of 2004-2008 includes 11 main objectives and 3 of them are for environmental priority issues:

1. to provide sustainable development and ecological balance
2. promote land reform
3. mitigate air, water, soil and environmental pollutions in the major cities and towns

The Nature and Environment Policy was reflected in the Government Action Plan, saying "The Government shall aim to rationally utilize the natural resources with due consideration of deposits, to ensure an eco-oriented economic growth by the means of restoring nature, to define the civil rights and liabilities related to the utilization and protection of local natural resources and to create a mechanism of self awareness among the citizens in protecting the nature and environment".

The Parliament and Government approved a number of programmes and policy documents on environmental protection (Annex 4):

The Ministry of Nature and Environment is the state central administration authority supervising and coordinating environmental protection activities.

Main environmental policy and activities of the Ministry of Nature and Environment are following:

- Report the State of Environment, and develop policy to ensure ecological security
- Development of environmental laws
- Policy on protection and prevention of air, water, land and environmental pollution
- Environmental impact assessment, introduction of environmentally sound technology and clean development mechanism

The documents approved and issued by the Ministry of Nature and Environment on chemical safety are:

1. Classification list of hazardous chemical substances /approved by the 86/A160 ordination of the Minister of Nature and Environment and Minister of Health, 1998 which secures the plants in Mongolia/.
2. The ordination on permission for producing, importing, trading and using hazardous chemicals /approved by the 86/A120 ordination of Minister of Nature and Environment and Minister of Agriculture and Food, 1998/.
3. Procedure for storing, guarding, transporting and eliminating hazardous chemical substances /approved by the 84 ordination of Minister of Nature and Environment, 1998/.
4. Regulation on registering and testing pesticides in Mongolia /approved by the joint ordination of Minister of Nature and Environment, Minister of Industry and Agriculture, Minister of Health and Social Security, 86A164, 1999/.
5. The list of chemical substances that are banned to use and limited to use /approved by the 75th ordination of Minister of Nature and Environment, 1997/.
6. Methodological guidance on keeping a record of usage of chemical substances /approved by of Minister of Nature and Environment, 2000, 45th ordination/.
7. The classification list of chemical substances by its hazard and negative influences on human and animal body /approved by the Minister of Nature and Environment, 2002, 63/89 ordination/.
8. The list of pesticides to be used in 2003 in Mongolia /approved by the Minister of Agriculture and Food, 2003, A63, 1001ordination/.

Figure2. Structure of the Ministry of Nature and Environment

Chemical safety policy of the Government of Mongolia is based on the general concept of the Rio Declaration on Environment and Development Agenda 21-Chapter 19 (Environmentally sound management of toxic chemicals including prevention of illegal international traffic in toxic and

dangerous products) to ensure the national level implementation of the national, international and inter- governmental documentations on chemical safety.

For the last 10 years, Mongolia has adopted "The law on import, export and transboundary transport of hazardous wastes", "The law on disaster reduction" and "The law on household and industrial waste". As mentioned in the Introduction section, "The Lw on Toxic and Hazardous Chemicals" is the latest and the principal law for regulating the chemicals management in Mongolia.

Since 2000 regular state inspection and inventory of chemical substances are carried out for every 2 years in accordance with the Government Resolution No 29 of 2000 on "Some actions for ensuring safety of chemical substances".

"The rule of sorting, gathering, packaging, temporary stocking, transporting, risk reduction, storage, and disposal of hazardous waste and waste of chemical substances", approved by the Government Resolution No 135 of 2002 is under implementation.

Mongolia has ratified the "Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade" and the "Stockholm Convention on Persistent Organic Pollutants (POPs) in 2001 and 2003 respectively.

In order to implement the conventions at the national level it is very essential to assess the current situation of the national infrastructure and institutions to manage the issue and to define a collaborative structure for POPs management, control, monitoring and R & D including their responsibilities.

The assessment of the national capacity for law enforcement and regulatory controls is very significant to implement the convention at the national level. This work includes identifying the main problems of the national institutions to manage the POPs issues, opportunities to strengthen them and the priority actions to be undertaken together with the financial needs.

Brief Introduction to Major Environmental Laws of Mongolia

Article 16.1.2 of the Constitution of Mongolia provides that everyone has the right to live in a healthy and safe environment and to be protected against environmental pollution and ecological imbalance. The transition to a market economy has required Mongolia to fundamentally transform its approach to environmental regulation. The creation of a legal basis for the protection and rehabilitation of the environment and natural recourses are becoming more common. This was included in the package of twenty-five environmental laws, passed by the State Great Hural since 1994. In addition, twenty-three Environmental National Programs on protecting biological diversity, combating desertification, and protecting water and specially protected areas were approved. Mongolia has also joined ten international environmental conventions since 1994.

The general environmental laws include the Law on Environmental Protection and the Law on Environmental Impact Assessments. Both of these laws are intended to have general applicability and set environmental protection standards. The Law on the Environmental Protection of Mongolia (LEPM) 250 is the umbrella law for all environmental and natural resource laws. LEPM was adopted by the State Great Hural in March of 1995, and became effective in June of the same year.

Mongolian legal doctrine suggests that a healthy and safe environment can only be achieved by complying with certain principles. Government policy protecting the environment is as follows:

- compliance with the right to a healthy and safe environment;
- ensuring healthy and safe conditions for the vital activity of humans;
- scientifically-substantiated combination of ecological, economic, and social interests of man, society, and the State for the purpose of ensuring stable development and a healthy environment;
- protection, regeneration, and national use of natural resources as necessary conditions for ensuring a healthy environment and ecological security;
- responsibility of agencies of State power of Mongolia, agencies of local self government to ensure a healthy and safe environment and ecological security on respective territories;
- payment for use of nature and compensation for harm to the envitonment;
- independence of control in the domain of environmental protection;
- obligatory nature of conducting State ecological expert examination of project and other documentation substantiating economic and other activities which may exert a negative influence on the environment and create a threat to life, health, and property of citizens;
- recording nature and socio-economic peculiarities of territories when planning economic activity;
- priority of preserving natural ecological systems and landscapes;
- admissibility of the influence of economic and other activity on the natural environment by proceeding from requirements in the domain of environmental protection;
- ensuring a reduction of the negative influence of economic and other activity on the environment in accordance with normative standards in the domain of environmental protection which may be achieved on the basis of using the best existing technologies, taking into account economic and social factors;
- preservation of biological diversity;
- ensuring integrated and individual approaches to establishing requirements in the domain of environmental protection for subjects of economic and other activity who effectuate such activity or are planning to do so;
- prohibition of economic and other activity, the consequences of whose influence are unpredictable for the environment, and also the realization of projects which may lead to the degradation of natural ecological systems, a change and/or destruction of the genetic fund of flora, fauna and other negative changes in the environment;
- compliance with the right to receive reliable information concerning the state of the environment, and also the participation of citizens in adopting decisions affecting their rights to a healthy and safe environment;
- responsibility for a violation of a legislation in the domain of environmental protection;
- organization and development of a system of ecological education, nurturing, and the formation of ecological culture;
- participation of citizens, non-governmental organizations in resolving tasks of environmental protection;
- international cooperation of Mongolia in the domain of environmental protection.

Law on Toxic and Hazardous Chemicals

This old version of this law is the result of serious waste disposal problems experienced in Mongolia. Until the approval of the old version, there was no specific law regulating toxic chemicals or hazardous wastes. The newly approved Law on Toxic and Hazardous Chemicals of Mongolia was adopted on 25 May 2006 regulates the production, export, import, storage, trade, transport, use and disposal of toxic chemicals. However, this law covers not only toxic and hazardous chemicals, but all the chemical substances, including pesticides and household or consumer chemicals. It is divided into three charters covering general provisions, requirements for protection and administrative penalties. There are several advantages in the new version of th chemicals law, including more control over chemical substances, with special emphasis on their import. As provided by the new law, chemicals shall be imported only through a few designated border ports and strict control and monitoring will be started from this point. In addition, classification of chemicals will be done in accordance with international standards such as the GHS. Risk assessment issues also reflected in the law.

Land Law

Land Tenure Rights

With its territory of 156.412 million ha, Mongolia occupies seventeenth place in terms of size of territory and first place in terms of per capita land resources (65 ha) in the world. Per capita agricultural land in Mongolia (53.8 ha) is twenty times greater than the world's average. In 1995, Mongolia adopted a package of land laws to regulate land relations in market economy situations. The principles of land ownership are laid out in Article 6 of the Constitution of Mongolia. It provides for the possibility of private ownership of urban and arable land. The land Law and Civil Law define three types of land tenure rights (I) Possession, (II) Use and (III) Ownership. Each of these rights will be briefly illustrated below.

Right of Possession of land. Elements of possession of land:

- Physical occupancy;
- Abstract or "Legal" possession (by means of documents and registration or rights);
- Exclusion of other persons from the land; and
- Processes for claiming protection of the rights of land tenure in courts.

Land possession, as defined by the law, means to be in legitimate control of land within the framework allowed by law and in accordance with the terms and conditions specified in respective contracts. Land may be given possession with a license to Mongolian citizens, business entities, and organization for duration of fifteen to sixty years. The land possession license may be extended for no longer than forty years at a time.

Right to use. This term generally describes the transfer of rights of possession and the right to carry out precisely-defined use of land that is owned by the state, for a limited period of time, or for an unlimited period, so long as the defined use continues.

Elements of use of land include:

- taking natural fruits produced on the land and retaining the profit from their sale or use,
- removing natural objects and changing the natural character of the land surface,

- exploiting subsurface resources, and
- building on the land and making improvements to its landscape.

Right to Private Ownership. The idea of ownership or private land is something which has only been introduced in the last ten years. 1992 Constitution of Mongolia establishes the right to private ownership of natural resources and thus, the right to private land ownership. Citizens are prohibited from transferring land in their possession to foreign citizens or stateless persons by way of selling, bartering, donating or pledging or by way of transfer to others for exploitation of pastoral land.

Elements of the disposition of rights to land include:

- purchase and sale;
- inheritance;
- pledge of land as security for other obligations; and
- grant of option rights to acquire land in the future.

Land can be allocated to citizens for family needs or agricultural purpose.

Land to be allocated to families for ownership depends on location and size (hectares).

- Capital City – Up to 0.07 hectares; and
- Centers of other regions, the cities of Darkhan and Erdenet, and other main regional cities – Up to 0.35 hectares; and
- Centers of aimags, soums and villages – Up to 0.5 hectares

Law on Atmosphere

The Law on the Atmosphere of Mongolia (LAM) was adopted in March 1995 and became effective in June of the same year. It contains four chapters governing the general purposes, administration and information related to air quality, the various measures for protection, and the fines and liabilities for violation of the law. The purpose of LAM is the regulation of the protection and proper use of the atmosphere in relation to the right to live in a healthy and safe environment, to provide environmental balance, and for the sake of present and future generations.

Law on Fauna

Mongolia is relatively rich in animal species inhabit different habitats of the country's variable natural zones, such as forests, steppes, deserts, and high mountains. In addition, Mongolia is one of the richest counties in the world in terms of prehistoric remains of various animal species.

The Law on Fauna of Mongolia (LFaM) was enacted in May of 2000 as a counterpart to the Law on Hunting. It contains twenty-seven articles in five chapters which define the overall rights and responsibilities for faunal protection; the specific methods to be used; the classification of species as Very Rare and Rare; the ownership, possession and use of Fauna; the collection and cataloguing of information; the participation of non-governmental organizations; the export and import of fauna, and the civil and criminal penalties for violation of its provisions. Although it is not purely an endangered species act as described in the introduction to the species conservation section, it does contain similar elements. Its overall purpose is the adequate protection of all faunal species including those otherwise governed by the terms and conditions of the Law on Hunting.

For the most part unchanged from the previous Law on Hunting, the new Law on Fauna establishes two classifications – Very Rare and Rare. The classification of Abundant Species has been dropped.

Law on Forests

The Law on Forests of Mongolia (LFoM) was adopted on 31 March 1995 and became effective in June of that same year. It is divided into 7 chapters covering the possession and use of forests, the various forest types and zones, forest inventories, protection measures and fines for the violation of the law. The stated purpose of the LFoM is to manage the protection, proper use and regeneration of Mongolian's forests. The forest fund consists of areas covered by forests including all species of trees and scrub, replanted forests, and saxaul.

The forest fund is divided according to its ecological and economic importance: strict zone forest; protected zone forests; and utilization zone forests. The recorded forest resources of Mongolia account for about 11.6% of its land area. The area under closed forest is only about 8.1%, equivalent to 12.9 million ha. This is substantial compared to that of many countries. The natural regeneration of Mongolia forests is slow with fires and insects often causing sever damage. Shrinking forest resources are a major concern. Increased human activities combined with forest fires and insect pests have resulted in accelerating loss of forest cover.

Law on Hunting

The current Law on Hunting of Mongolia (LHM) was adopted in may of 2000. It contains only one chapter (instead of three) and only seventeen articles. Unlike its predecessor, it is more focused on the issue of hunting management and leaves the classification and protection of Very Rare and Rare species to the provisions of the Law on Fauna.

The purpose of the Law on Hunting is to "regulate the hunting and trapping of game animals and the proper use of their hunting reserves". Game animals are loosely defined as any mammals, birds or fish which are native to, have been reintroduced to, or are migratory, within the territory of Mongolia. Their habitat consists of any place where their necessary living conditions are found. The remaining provisions of the law spell out the details of hunting management practices, the establishment of hunting reserves, the types of hunting permitted and procedures for establishing hunting limits, permits and licenses, the control of firearms and ammunition, hunting seasons, hunting methods and finally administrative and criminal liability.

Law on Natural Plants

Mongolians have had specific laws and regulations on plant protection, collection and utilization for centuries. The Law on Natural Plants continues this tradition.

The Law on Natural Plants of Mongolia (LNPM) was adopted in its present form in April 1995 and became effective in June of that same year. It contains four chapters covering general provisions, plant protection and restoration, plant use, and fines for violation of the law. The state purpose of the LNPM is the regulation of plant protection, restoration and proper use. Plant resources governed by the law include all species of vascular plants, moss, algae, lichens, fungi and other micro organisms within the territory of Mongolia, excluding forests and cultivated plants.

Considering plant reserves and their restorative capacity, plants are classified as follows:

1. Very rare plants include those with no natural restorative capacity, a very restricted distribution, no usable reserves which are in danger of extinction;

2. Rare plants including those with limited natural restorative capacity, with a restricted distribution and reserves which are in danger of extinction; and

3. Abundant. Plants including those plants with a natural restorative ability, a wide distribution and abundant reserves.

Although detailed plant collections have still not been made for some regions but it is likely that there are over 3,000 species of flowering plants in Mongolia.

Law on Specially Protected Areas

The current Law on Specially Protected Areas of Mongolia (LSPAM) was adopted in 1994 and became effective on 1 April 1995. It is divided into eight chapters covering general provisions, Strictly Protected Areas, National Parks, Nature Reserves, National Monuments, governmental rights and responsibilities, land use and research, and administrative penalties. The purpose of the MLSPA is to regulate the "use and procurement of land" for state protection, to preserve and conserve the "original condition" to protect "specific traits, unique formations, rare and endangered plants and animals, historic and cultural monuments, natural beauty, and to foster scientific research".

The MLSPA established four protect ed area categories each managing land for a different purpose under a separate management directive. They include Strictly Protected Areas (SPA), National Parks (NP), Nature Reserves (NR), and National Monument (NM). Some of these protected areas are remote or inaccessible tracts with only limited occupation by humans possible. Examples of these would include the Great Gobi Strictly Protected Areas, the Khan Khentii Strictly Protected Area, the small Gobi Strictly Protected Areas, Nomrog Strictly Protected Areas, and Siilkhemiin Nuruu National Park. Today, special protected areas of Mongolia encompass 20.5 million ha of land covering 48 areas of 124 soums and districts of 19 aimags and the capital (roughly 13.1% of the whole country's territory). Also, 115 areas encompassing 1.13 million ha of land are under local protection.

Law on Water

The current Law on Water of Mongolia (LWM) was adopted in April 1995 and became effective in June of the same year. It contains four charters which cover general provisions, the creation of a databank, an institutional and management structure, protective measures, the use of water contracts and administrative penalties. The purpose of the LWM is to regulate the protection, proper use and restoration of water. One of the principal legal mechanisms contained LWM is the establishment of three types of water protection zones – protected, sanitary, and community protection zones. These are basically riparian zones set at varying distances depending on the water type and the use involved.

There are more than 3,800 rivers and streams with regular run-off in Mongolia. The total length of the river network is about 6,500 km. There are 186 glaciers of a total volume of 62.5 km^2 (surface area of each exceeding 0.1 km^2) with a total volume of 500 km^3. Furthermore, there are 8,000 rivers.

Water quality is found to be particularly good in mountains areas of Mongolia. It is the country through which the world watershed line crosses. Rivers and surface streams originating in high mountain areas are very clean. However, demands for water in Mongolia are mainly met from the ground water sources. In recent years, cities and towns are experiencing a shortage of water due to the lowering of the ground water table and drying up of many springs and small streams. The increasing consumption of water due to population growth and industrial and agriculture activities has resulted in the lowering of ground water tables.

2.2.2. Roles and Responsibilities of Ministries, Agencies and Other Governmental Institutions Involved in POPs Lifecycles (from source to disposal, environmental fate and health monitoring)

As reflected in the Government Resolution, which approved the National Implementation Plan, a Council for POPs issues under the state central administrative organ in charge of nature and environment shall be responsible for nationwide organization, coordination and monitoring of the NIP implementation. The Council may have a full-time Secretary.

The composition of the Council shall be represented by the following stakeholders, including:

Ministry of Health
Ministry of Food and Agriculture
Ministry of Trade and Industry
Ministry of Social Welfare and Labor
Ministry of Finance and Economy
Ministry of Infrastructure
Ministry of Foreign Affairs
General Authority of Disaster Prevention
Research and scientific organizations
Industries
NGOs

The following establishments and agencies shall control and monitor the implementation of the Programme in each stakeholder.

State professional inspection agency
Central customs authority
Standardization and metrology centre
Monitoring laboratories

Proposed responsibilities of the institutions

1. Ministry of Nature and Environment/The Council

- Develop national policy and action plan on the implementation of the Stockholm Convention and coordinate the collaboration of the co-implementing agencies;
- Develop proposal on making amendment to the convention
- Draft amendments to the existing laws and regulation, import, control and disposal of POPs chemicals and by-products;
- Conduct POPs inventory and establish information database;
- Provide information to the individuals, industries and other organizations;
- Exchange information with international organizations;
- Public awareness and training, and
- Evaluate the performance of tasks of the co-implementing agencies and report to the Convention Secretariat

2. Ministry of Health

- Develop and implement the national policy on protection of human health from POPs risk;
- Carry out studies and make assessments of POPs impact on human health, especially risk to women and children and the genetic reproduction of the population;
- Coordinate the use and import of POPs chemicals for public health including household and sanitary insecticides;

- Undertake preventive measures from POPs originated deceases for the public; and
- Establish poison research centers

3. Ministry of Food and Agriculture

- Develop and implement the national policy on use and import of POPs pesticides for agriculture and protection of food products from POPs contamination;
- Take measures to use non-POPs pesticides for plant protection and adopt new technologies;
- Strengthen the national capacity to identify POPs concentration in food products;
- Expand public awareness activities on risk of the POPs contained products, food stuff and possible sources; and
- Establish evaluation mechanism for law enforcement at the industries and economic entities within the sector

4. Ministry of Industry and Trade

- Develop and implement the national policy to encourage technological renovation of the industries to reduce the POPs emission; and
- Establish inventory and information database of industrial sources of POPs

5. Ministry of Social welfare and Labor

- Conduct assessment on negative impacts of POPs chemicals to the reproduction if the population and implement the necessary actions;
- Develop special provision regarding POPs for amending to the safety criteria of working condition; and
- Public awareness on POPs impact to human body

6. Ministry of Finance and Economy

- Incorporate the necessary funding for the activities to prevent from socio-economic implications of POPs in the state long or mid-term socio-economic development plans and budgets;
- Provide financial support to strengthen the technical capacity of the central and local chemical laboratories and to establish POPs poisoning research centers;
- Provide economic incentives and encouragement for the production of POPs alternatives and use of modern technologies; and
- Support to find financial assistance from donor organizations to implement projects/programs on POPs

7. Ministry of Infrastructure

- Develop and implement action plans to reduce the POPs emission from combustion and use for the infrastructure machineries; and
- Conduct inventory on POPs emission sources in the sector and to strengthen the capacity to identify the emission and accumulation amount of POPs

8. Ministry of Foreign Affairs

- Coordinate the international cooperation in framework of the implementation of the Stockholm Convention, including the linkage between the international organizations and the national implementing agencies;
- Develop and implement the external policy of the country on ensuring chemical safety and POPs; and
- Provide support on cooperating with the international organizations and foreign countries on POPs issues and sharing experience and information

9. National Disaster Prevention Authority

- Identify the total amount of POPs resources and the location of the major contaminated sites, conduct hazard assessments and take the necessary measures;
- Dispose the POPs wastes by an environmentally-sound technology;
- Conduct hazard assessment of POPs emission from disasters like forest fires, develop and implement the action plans; and
- Carry out assessment on the national capacity of the chemical laboratories to analyze POPs chemicals, identifying the needs to strengthen for submission to the relevant authorities for funding

10. Research institutions, industries and NGOs

- Scientific support on identification and recognition of POPs chemicals and their sources;
- Carry out research and studies on distribution and transport of POPs in humans, animals, food products and environment and POPs caused diseases, reporting the result to the relevant authorities;
- Public awareness on POPs threats and prevention measures;
- Provide information on POPs alternatives and new technologies;
- Establish internal control mechanisms to identify the POPs;
- Provide scientific based data to avoid POPs import and use;
- Attract community control on POPs import and use;
- Support for international and national law enforcement; and
- Initiate various measures to reduce unintentional production of POPs and eliminate POPs wastes in environmentally sound manner

11. State Professional Inspection Agency

- Ensure the enforcement of international and national laws on POPs;
- Provide an integrated professional control on all POPs issues in environment, health, food, agriculture, industry, work safety, quality, standards, household and plant protection; and
- Take the necessary actions

12. General Customs Authority

- Customs control on import of POPs and their by-products in accordance with the law;
- Prepare report of the import of POPs and their by-products for the relevant authorities;
- Control on the illegal import and export of the POPs products through the borders;
- Take measures to improve the knowledge and qualification of the customs officers on POPs; and

- Share experiences on POPs issues with customs offices of the 2 neighboring countries: China and Russia

13. Standards and Metrology Center

- Develop national standards on permissible residues of POPs chemicals in production and products;
- Define the maximum acceptable concentration of toxic and hazardous chemical substances, including POPs, in food products and develop standards of criteria (by chemical substances) for ecological safety of food; and
- Develop methodological standardization of equipment for POPs analysis and control

14. Monitoring laboratories

- Carry out emission and accumulation analyzes of POPs sources;
- Analysis of POPs concentration in products;
- Analysis of POPs concentration in food, human body and animals by each elements; and
- Responsible for acting as verifying inspector for conflict between producer and user or seller and control organization

2.2.3. Relevant International Commitments and Obligations

Mongolia has joined eleven multilateral environmental agreements so far, five of which are associated with chemicals and hazardous wastes, namely;

1. The Vienna Convention on Ozone Layer Protection (1996)
2. The Montreal Protocol on Ozone Layer Depleting Substances (1996)
3. The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (1997)
4. The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (2000), and
5. The Stockholm Convention on Persistent Organic Pollutants (2004)

2.2.4. Description of Existing Legislation and Regulations Addressing POPs (manufactured chemicals and unintentionally produced POPs)

The Law on Toxic and Hazardous Chemicals was revised and ratified by the Parliament bit after the approval of the NIP. The new law states, “In case of dispute between the national laws and the international treaties that Mongolia has joined, the international treaty shall prevail”.

The Parliament session of 07 November 2003 adopted “The law on ratification of the Stockholm Convention on Persistent Organic Pollutants (POPs)”.

Use of Aldrin, Chlordane, Dieldrin, Endrin, Heptachlor, Toxaphene and DDT was banned by the Decree No 75 of the Minister of Nature and Environment of 1997.

By the joint Decree No 63/89 of the Minister of Nature and Environment and the Minister of Health, the 12 POPs are included in the National list of the very toxic chemicals. The POPs contained products are included in the "List of products that contain toxic and hazardous chemicals" approved by the joint Decree No 126/171 of the Minister of Nature and Environment and the Minister of Health. In addition, the decree has approved the "Rule on activities related to import, transportation and use of products that contain hazardous and toxic chemicals" which also regulate the 12 POPs chemicals and products under an exceptional control.

Finally, it can be concluded that the legal background to implement the Stockholm Convention in the country has already been created.

Table 15. Provisions of the Stockholm Convention on Persistent Organic Pollutants vs. Mongolian law (as of 1 July 2005)

Stockholm Convention		Mongolian legislation	Comments
Article	Provisions	Normative act, regulations	
3	**Para 1.** (a) Prohibition and/ or undertaking the legal and administrative measures necessary to eliminate: (i) Production and use of the chemicals listed in Annex A (aldrin, chlordane, dieldrin, hexachlorobenzen, mirex, heptachlor, toxaphene and PCB) (ii) Import and export of the chemicals listed in Annex A in accordance with the provisions of para.2; (b) Restricted production and use of the chemicals listed in Annex B (DDT)	**Decree No 75 of the Minister of Nature and Environment of 1997.** Use of Aldrin, Chlordane, Dieldrin, Endrin, Heptachlor, Toxaphene and DDT was banned.	
	Para 2. Take measures to ensure: (a) that a chemicals listed in Annex A or Annex B is imported only with the purpose of: (i) Sound disposal as set forth in paragraph 1 (d) of Article 6; Or (ii) Use application for purposes permitted under Annex A of Annex B; (b) Export of chemicals substances listed in Annex A or Annex B only: (i) For the purpose of safe	**Article 7. para. 2. Law on Protection of Chemicals.** - a permission for production and import of hazardous and low hazardous chemical substances shall be taken from the Governors of provinces and the Capital city. - a permission for export and import of high hazardous chemical substances shall be taken	

	disposal as set forth in paragraph 1 (d) of Article 6; or **(ii)** For a use or purpose which is permitted for that party under Annex A or Annex B **(iii)** To the State, being not the Party to this Convention which provided the certificate, specifying the type of the intended use of that chemical and stating the obligation of protecting human health and environment and observing the provisions of art.6 para. 1 and provisions of para. 2 part II of Annex B; (b) Prohibition of exporting chemicals listed in Annex A, for which specific production and use exemptions are not longer in effect, except for export with the aim to eliminate it according to art. 6 para. 1 (d). **Para.3.** Preventing the production and use of new pesticides and industrial chemical substances which, on the basis of criteria contained in Annex D para. 1, revel POP characteristics. **Para. 4.** Application criteria defined in Annex D para. 1 for the assessment of the currently used pesticides or industrial chemical substances; **Para. 5.** para. 1 and para. 2 shall not apply to the quantities of chemicals used for laboratory testing purposes; **Para. 6.** Minimization of environmental releases of substances used under the regulations, excluding them from	from the state central organ after appropriate conclusionis made by Board. **Para. 4. Law on transportation and import of hazardous substances.** - prohibits to import hazardous wastes into Mongolia for the purpose of usage, storage, temporary placement and disposal**.** - Prohibits to transiting hazardous wastes through Mongolian territory. **Para 5**. a permission for export of hazardous wastes shall be taken from the state central organ in charge of environment, basing on the decisions and conclusionis made by specialized institutions on the following cases: -when there is no specific equipment and technology to process and use the hazardous wastes; - when import of the hazardous wastes is recognized by the importing country; - Exporter of hazardous wastes shall prepare an application letter, a contract concluded with the importer, a request by the importer in written form, a license obtained from an authoritative organ of importing country by the importer	

	the rules of the present Convention	for importing hazardous wastes. **Registering and testing regulation of pesticides in Mongolia** /approved by the joint ordination of Minister of Nature and Environment, Minister of Industry and Agriculture, Minister of Health and social security, 86A164, 1999/.	
4	Cooperation with the Secretariat of the Convention in respect of the register of specific exemptions		
5	Measures to reduce or eliminate releases from the unintentional production. Development of the National Action Plan-during 2 years since the entry of the Convention into life – in order to identify and characterize the releases of substances as listed in Annex C (PCDDs/PCDFs, HCB, PCBs) and undertake the activities enabling prompt, considerable reduction of the level of releases or elimination of emission sources	**Article 31. para. 6. Environmental protection law** - to keep records on toxic substances, adverse impacts and wastes discharged into the environment while engaged in production or services and to write reports and collect data on the measures taken to reduce or eliminate toxic chemicals, adverse impacts and wastes, as well as on any monitoring equipment and its operation and to submit these to the relevant organisation on time - companies and organizations involved in production and servicing with quality of certain hazards and impacts to the environment shall indicate a fund in their annual budget expenses required for restoring damaged lands, contaminated soils and polluted waters and reproduction of fauna and flora;	

		Article 10. para. 3. Law on Air - in case if emissions from companies and industries to air and their physical toxicity is proved to be detected that the emissions and impacts are exceeded the standard limit, to halt or temporarily close activities of the company or industry until the violation and impacts eradicated. - If repeated violations by companies and industries are obsrved, violating companies shall be shut down or in some cases the production shall be changed to another production. -.prohibits to contaminate, open disposal and burning of hazardous and unpleasent odor substances and wastes in urban and settled areas. **Article 13. para. 3.** -.when using physically harmful impacts and high emission resources in the production, individuals, companies and organizations shall equip their production facilities with controlling devices for monitoring every emission and pollution resources, as well as with impacts-reducing equipment. - corresponding state central organ, Governors of settlements and districts and environmental	

		inspectors shall control the implementation of obligations in the above paragraph and the exploitation condition of the devices and equipement. **Article 13. para. 2. Law on water** - Any activities of production, service or property units with water use technology not consistent with international or national standards shall be prohibited. **Article 15.** 1. It is prohibited to discard wastes, garbage or polluting substances into and around water sources, riverbeds, channels, dry ravines, and in protected zones. . **Article 50. para. 6. Law on Land** - to take measures at their expense to preserve land characteristics and quality, to prevent deterioration of soil fertility, deterioration of vegetation cover, soil erosion, degradation, soil becoming arid, marshy, soil salinization, its pollution and poisoning (chemical pollution) due to natural causes and human factors	
6	Measures to reduce or eliminate releases from stockpiles and wastes **Para 1.** Develop appropriate strategies for identifying: stockpiles, products and articles in	**Law on household and industrial waste.** - The Government shall approve a procedure for	

	use and wastes consisting of chemicals listed in annex A,B and C **Para 2.** Cooperation with the Basel Convention bodies in the matter of control of transborder movement of hazardous, POP-containing waste	handling and transporting hazardous wastes. - The Government shall define a security criteria for collection, transportation and landfill of hazardous wastes. Mongolia has ratified the Basel Convention in 1997.	
7	Development of a plan for implementation of obligations under the Convention and control of its execution	The NIP has been prepared.	
8	Cooperation with the Secretariat of the Convention in respect of the register of enlisting the substances in Annex A, B and C according to criteria specified in Annex D; development of the risk profile in accordance with Annex E. Analysis and preparation of conclusions in this respect.		
9	The responsibilities in the respect of information exchange between the Parties via Secretariat of the Convention (establishment of the national focal point in accordance to para. 3)		
10	Public information and education of society	**Article 36. para. 7. Environmental protection law** - 1. The Government shall adopt and organise the implementation of a programme of ecological training and education and the development of environmental protection methods and skills within the framework of formal and informal educational systems. 2. Activities on ecological training and education shall be organised in the following ways: 1) the teaching of basic courses and skills on	

		environmental protection at pre-school education institutions and secondary schools; 2) the teaching of scientific and legal courses on environmental protection and proper use of natural resources at colleges, universities, institutes and vocational training schools, taking account of their professional orientation; 3) the publication in the mass media of ecological education, traditions and customs related to environmental protection and environmental legislation.	
11	Research, development and monitoring	**Environmental protection law** **Article 10. Environmental Monitoring** 3. The monitoring network shall conduct the following activities: 1) to regularly conduct surveys on the level of physical, chemical, and biological changes to the environment and of pollution, and to establish and assess the extent of environmental changes; **Article 11. Environmental research and funding** 1. Research to establish the potential for State and regional development, the restoration, breeding and raising of endangered animals and plants, protection of soil, water, and air, and for humans to live in a healthy and safe environment shall be	

		funded by State and local budgets 2. The central State administrative body and relevant Governors shall request the appropriate certified organisations to conduct environmental research, and develop proposals and shall fund this by means of the Science and Technology Fund and relevant budgets, and shall encourage interested citizens, business entities, and organisations to conduct research at their own expense.	
12	Technical assistance for developing countries and the countries under the economic transformation		
13	Financial resources and mechanisms aimed at financial support of the developing countries		
14	Reporting: the duty of submitting the reports on activities, statistical data concerning production, export and import	Minister's Decree	

2.2.5. Key Approaches and Procedures for POPs Chemicals and Pesticides Management Including Enforcement and Monitoring Requirements

With The tabular format, we tried to give understanding on the legal background on the enforcement and monitoring practices.

Table 16. Major legislation for enforcement and monitoring

Type	Number	Issuing authority	Official name	List of amendments	Explanation
Law	1995.03.30	Parlia-ment	Environmental protection law	22.01.1998 10.07.2002 19.04.2002 02.01.2003 06.01.2005	It contains 39 articles in 7 chapters, which define the overall rights and responsibilities for environmental protection
Law	1995.04.14	Parlia-ment	Law on Protection of	28.04.2000	It contains 19 articles in 3 chapters, which define

			Chemicals	30.11.2001 10.07.2002	the overall rights and responsibilities for protection of chemicals: Toxic chemical substances and their classification; regulation for handling toxic chemicals; information database; basic requirements for production, import, storage, transportation, disposal and usage of toxic chemicals; determination of permissible level of toxic chemicals; licensing for the usage of toxic chemicals, legal obligations and penalties etc.
Law	22.01.1998	Parlia-ment	Law on Environmental Impacts Assessment	22.11.2001	It contains 13 articles in 4 chapters, which define the overall rights and responsibilities for Environmental Impacts Assessment: General and detailed environmental impact assessment, environmental protection planning, programme for environmental monitoring, analyses and verification of detailed environmental impact assessment, authorization and withdrawal of license for conducting detailed environmental impact assessment, rights and obligations of parties to the environmental impact assessment, legal obligations and penalties
Law	03.11.200 0	Parlia-ment	Law on transportation and import of hazardous substances		It contains 8 articles which, define the overall rights and responsibilities for transportation and import of hazardous substances: prohibition of

					import and transboundary movement of hazardous wastes, licensing for export of hazardous wastes, regulation on collecting, storing and transporting hazardous wastes, legal obligations and penalties
Law	28.11.2003		Law on household and Industrial Waste		It contains 23 articles in 6 chapters: ownership of wastes, rights and obligations of state and self-governance bodies, citizens and companies; regulation on collecting, transporting, disposal, recycling and landfilling wastes; additional requirements for collecting, transporting, disposal, recycling and landfilling hazardous wastes; information database on wastes; economic coordination of wastes; legal obligations and penalties
Law	31.03.1995		Law on Air	30.11.2001	It contains 21 articles in 4 chapters which define the overall rights and responsibilities for air: Air protection management, monitoring and information, Air protection measures, Air polluting substances, physical adverse impacts and inventorization of their sources; requirements for using air for industrial purposes; Intentional impact on the state of air and climatic events; payment, legal obligations and penalties
Law	22.04.2004		Law on Water		It contains 38 articles in 6 chapters, which define the overall rights and responsibilities for Water:

					Water resources, exploration and research; water monitoring and research networking; water database and cadastre; water inventory; full competencies of state organs in relation to water relations; water utilization; protection of water resources, quality assurances and restoration; water facilities; legal obligations and penalties
order	86/A160 ordination of the 1998	Minister of Nature and Environ-ment and Minister of Health,	9. Classification list of hazardous chemical substances		List of extremely toxic, toxic and harmful chemicals
order	63/89 ordination of the 2002	Minister of Nature and Environ-ment and Minister of Health,	Approval of the classification of hazardous chemicals and additions to the high toxic chemicals list		List of extremely explosive, explosive, flammable, extremely corrosive, corrosive, strongly irritant, irritant,
order	63/89 ordination of the 2002	Minister of Nature and Environ-ment and Minister of Health,	The classification list of chemical substances by its hazard and negative influences on human and animal body		Nervously paralytic, saffocative exposure, psychotic exposure,
order	86/A120 1998	Minister of Nature	The ordination on permission for producing, importing,		Issuing license for production, import, export, utilization and

		and Environ-ment and Minister of Agricul-ture and Food	trading and using hazardous chemicals		trade
order	84 1998	Minister of Nature and Environ-ment	Procedure for storing, guarding, transporting and eliminating hazardous chemical substances		Regulation on storage, transportation and disposal
order	86A/86 À164, 1999	Minister of Nature and Environ-ment, Minister of Industry and Agricul-ture, Minister of Health and Social Security	Regulation on registering and testing pesticides in Mongolia		Requirements for testing and registering plant protection substances, withdrawal from the tate registration and release for usage
order	À/144 1999	Minister of Health and Social Security	Regulation on state registration of toxic chemicals for combating household pests and rodents and for sanitarization purposes		State registration, withdrawal and licensing of the toxic chemicals
order	75 1997	Minister of Nature and	The list of chemical substances that are		The list of chemical substances that are banned to use and limited to use in Mongolia were listed in the

		Environ -ment,	banned to use and limited to use		Stockholm Convention Annexes Use of Aldrin, Chlordane, Dieldrin, Endrin, Heptachlor, Toxaphene and DDT was banned
order	45 2000	Minister of Nature and Environ -ment,	Methodologic al guidance on keeping a record of usage of chemical substances		Regulation on registering high toxic, high flammable, high explosive, high reactive, high acidic, ozone layer depleting and plants protection substances, and substances for sanitization and persistent substances
order	249/201 2002	Minister of Health and Minister of Nature and Environ -ment	Guidance on classification, collection, storage, transportation and disposal of medical wastes		Classification, collection, storage, transportation and disposal of wastes from medical organizations
order	126/171 2003	Minister of Nature and Environ -ment and Minister of Health	Methodologic al guidance on environmental ly friendly collection, transportation and landfilling of chemical wastes		Collection, transportation and landfilling of chemical wastes, construction of dumping and landfilling sites, disposal methods, and selection of disposal methods; approval of products containing toxic and hazardous chemicals list

Although the sufficient legal background has been established to manage the POPs issues in the country, the capacity of the national institutions to coordinate the implementation, control and monitoring activities is still at low level. Stakeholder organizations in the implementation have only general understanding of the convention. The comprehensive knowledge on various issues like concepts of each article of the convention, obligations of the party, reduction and disposal of the intentionally and un-intentionally by-products and others is lacking not only to the local community and economic entities, but also to the institutions responsible for POPs management and monitoring. Organizations lack the well experienced professionals on POPs and equipment and laboratory facilities to analyze these chemicals.

The institutions lack the comprehensive knowledge on the sources of the POPs chemicals and professional staff to use the identification toolkits.

Instructions or guidelines on general and specific tasks of the collaborating national institutions and the unified structure to reduce and dispose of the POPs are not available.

The first and the largest effort in the country to raise the awareness at all levels was the series of training programs on general concept of the Stockholm Convention, POPs risk to human health and environment and preliminary inventory of the POPs chemicals, which were carried out in framework of the Enabling Activities Project for the relevant officers of the respective Ministries, agencies and professional control authorities and the environmental inspectors of all soums (administrative unit under province) of 21 provinces of Mongolia.

2.3 ASSESSMENT OF THE POPs ISSUE IN THE COUNTRY

The chemical structures of the pesticide POPs generally correspond to those of aromatic chlorinated hydrocarbons, although some of them contain other elements, such as oxygen and sulfur.

In general, these pesticides are slightly soluble in water and are stable in the presence of sunlight, moisture, air, and heat, which make them quite persistent in the environment. As a result, many countries allow their use exclusively in public health campaigns to combat insect vectors of diseases of epidemiological importance, for example, malaria and dengue. Other countries have prohibited or restricted their use.

In the countries where the use of these compounds has been limited or prohibited, their residues are still frequently found in food, especially of animal origin, precisely because they are very stable in the environment.

The Stockholm Convention addresses the challenge posed by these toxic chemicals by starting with 12 of the worst persistent organic pollutants ever created. Nine of the 12 POPs are pesticides: aldrin, chlordane, DDT, dieldrin, endrin, heptachlor, hexachlorobenzene, mirex, toxaphene.

The Convention also targets two industrial chemicals: hexachlorobenzene (HCB), which is also used as a pesticide and can be a byproduct of pesticide manufacture, and the class of industrial chemicals known as PCBs, or polychlorinated biphenyls.

In addition, The Convention covers two other unintentional chemical by-products: polychlorinated dioxins and furans. These compounds have no commercial use. Dioxins and furans result from combustion and from industrial processes such as the production of pesticides, polyvinyl chloride, and other chlorinated substances.

Mongolia does not produce and export chemicals therefore; none of the POPs chemicals are locally produced in the country and exported abroad.

During the past few years Mongolia is producing a small amount of bio-pesticides and insecticide –Avermonmec against livestock parasites. The POPs pesticides have never been produced in Mongolia, only imported from the former Soviet Union.

Mongolia does not produce polychlorinated biphenyls (PCB) and hexachlorobenzene.

The Ministerial Decree No. 75 of 14 May 1997 banned the use of aldrin, dieldrin, chlordane, DDT, endrin, hexachlorobenzene, heptachlor and toxaphene.

The table below summarizes the current situation according to the official statistics:

Table 17. Current situation of POPs

Name of chemicals	**Situation in Mongolia**
Aldrin	Never produced, used, and importation banned since 1997.
Chlordane	Never produced, used, and importation banned since 1997.
Dieldrin	Never produced, used, and importation banned since 1997.
DDT	Never produced and importation banned since 1997. Not used.
Endrin	Never produced, not used, and importation banned since 1997.
Heptachlor	Never produced, used, and importation banned since 1997.
Hexachlorobenzene (HCB)	Never produced, used.
Mirex	Never produced, not used.
Toxaphene	Never produced, not used, and importation banned since 1997.
Polychlorinated Biphenyls (PCBs)	Used in existing electric transformers
Polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/PCDF)	Emissions in Mongolia were determined as result of the preliminary inventory of POPs chemicals.

However, the preliminary inventory discovered cases of illegal import and use of some of the banned pesticides. The detailed result of the inventory is described in the following chapter.

The Preliminary Inventory of POPs chemicals were conducted throughout the country in 2004-2005 within the framework of the Enabling Activities Project. This was the first nationwide effort in Mongolia to identify the release of the 12 POPs chemicals, status of their use, export and import, the contaminated sites and obsolete stocks, assess the current national capacity of POPs management including institutions, regulatory controls, monitoring and R & D, socio-economic implications of POPs in the country and further to build up the baseline data for formulating the National Implementation Plan.

Constraints

- Lack of human resource capacity with professional knowledge on POPs and skills to identify POPs chemicals and products;
- Lack of financial capacity to improve the infrastructure facilities (laboratory equipment, techniques for sampling analyses, professional training, establishment of poison study centers etc.);
- Lack of national standards and knowledge for POPs application, procurement. storage, transport and disposal;
- Lack of information on POPs alternatives and opportunities to introduce new technologies;
- Lack of experience and expertise sharing with the other countries;
- Lack of financial capacity of the users and importers for technological renovation;

Strengths

- National regulations on POPs, based on the international legal acts have been adopted;
- Ratified the Stockholm Convention on POPs

- Enabling Activities Project is under implementation, and the first large scale national training on POPs were organized for the relevant Ministry officials, environment inspectors, professional inspectors and scientists of all soums and aimags;
- Structure of customs control and professional inspection was established;
- Traditional use of POPs chemicals and the number of sources and stockpiles are comparatively small;

Necessary actions are reflected in the NIP.

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

A preliminary inventory of POPs pesticides was conducted throughout the country in 2004 and tried to establish and assess the amount of POPs pesticides (Aldrin, Dieldrin, Endrin, Chlordane, DDT, Heptachlor, Toxaphene, Mirex and Hexachlorobenzene) used in Mongolia, to define the residual amounts of POPs pesticides and to reveal contaminated sites. Please find below the results of the inventory.

Usage of Pesticides

POPs Pesticides inventory summarizes the information on the usage of pesticides in Mongolia during 1958-2003. The inventory covers the usage of POPs Pesticides of Stockholm Convention as well as the usage of insecticides, herbicides, fungicides and rodenticides which are used in Mongolia for plant protection.

The following is the summary of the POPs pesticides revealed during the preliminary inventory.

1. **Hexachlorobenzene (HCB) (C_6Cl_6)** – About 5983,6 liters of HCB was used in 17 soums of 9 aimags during 1970-2003, 0,6 liters of deposits in Ugtaal, Jargalant secondary schools of Tuv aimag;
   (Table 1)

2. **Chlordane ($C_{10}H_6Cl_6$)** - About 311,5 liters of chlordane was used in 6 soums of 6 aimags during 1973-2003; (Table 1)

3. **Aldrin ($C_{12}H_8Cl_6$)** – About 61 liters of aldrin was used in 4 soums of 3 aimags during 1990-2003; (Table 1)

4. **Dieldrin ($C_{12}H_8Cl_6O$)** – About 162,5 liters of dieldrin was used in 1 soum for plant insects; (Table 1)

5. **Heptachlor ($C_{10}H_5Cl_7$)** – About 564,5 liters of heptachlor was used in 6 soums of 3 aimags during 1972-2003; (Table 1)

6. **Dichlorodiphenyltrichloroethane (DDT) ($C_{14}H_9Cl_5$)** During 1960-1990, Mongolian herder households had commonly been used white powder chemicals to disinfect the livestock, fences and shelters and to control grasshoppers in pastureland and called all of them as DUST. Generally, as the practice in Mongolia, people do not distinguish the DDT from other pesticides like hexachlorocyclohexanes, TMTD-80 and gamma isomers of HCH and call all of them as “DUST”.

Table18. Usage of POPs Pesticides

No	Soum, aimag	Used period	Amount (tons)	Deposit (tons)
Hexachlorobenzene (HCB) (C_6Cl_6)				
1	Arkhangai aimag Ikh tamir soum	1970-1980	320	-
2	Bayan-Ulgii aimag Tsengel soum	1970	1000	-
3	Uvurkhangai aimag Esun zuil soum	1970	15	-
4	Dornod aimag Bayandun soum	1980-1987	-	-
5	Selenge aimag Mandal soum Dulaan khaan	1990-1992 1992-1997	250 500	- -
6	Sukhbaatar aimag Ongon Munkhkhaan Dari ganga Khalzan	 1999-2003 1990 - 1970	 20 40 30 150	 - - - -
7	Tuv aimag Lun soum Ugtaal /secondary school/ Jargalant /secondary school/	 1989 1987 -	 250 + 0,6	 - 0,5 0,1
8	Khovd aimag Khovd Myangad Must	 1972-1982 1969-1989 1970-1990	 400 + 3000	 - - -
9	Darkhan-uul aimag Sharuun gol	2002-2003	8	-
Total 17 soums of 9 aimags			5983,6	0,6
Chlordane ($C_{10}H_6Cl_6$)				
1	Bayankhongor aimag Baatsagaan	-	70	
2	Dornogobi aimag Khatanbulag	2003	1,5	
3	Gobi-Altai aimag Tugrug	1973-1990	85	
4	Selenge aimag Sant	1976-1990	5	
5	Sukhbaatar aimag Ongon	1999-2003	150	
6	Khuvsgul aimag Shine-Ider	2003	+	
Total 6 soums of 6 aimags			311,5	
Aldrin ($C_{12}H_8Cl_6$)				
1	Zavkhan aimag Uliastai soum Telmen soum	 1990 2003	 10 10	

2	Selenge aimag Khuder soum	-	1	
3	Khuvsgul aimag Jargalant soum	2001	40	
Total 4 soums of 3 aimags			61	
Dieldrin ($C_{12}H_8Cl_6O$)				
1	Sukhbaatar aimag Tumentsogt	1982-1995	162,5	
Heptachlor ($C_{10}H_5Cl_7$)				
1	Bayankhongor aimag Baatsagaan soum Bayan-Ovoo Galuut Jinst	 - - - -	 100 20 25 19	
2	Khovd aimag Khovd soum	1972-1982	400	
3	Khuvsgul aimag Shine-ider soum	2003	0,5	
Total 6 soums of 3 aimags			**564,5**	

According to the information and data collected during the inventory process and experiences of specialist who have been working in the plant protection sector of Mongolia since 1950, it was revealed that DDT has never been used in the country. The above-mentioned pesticide, commonly known as "DUST", was 12% hexachlorocyclohexanes imported from the former Soviet Union for technical use. Moreover, the samples taken from the old pesticides storages and farms were analyzed at the Korean National Institute of Agriculture and the results proved that the samples contained hexachlorocyclohexanes α-, β-, δ-, γ-isomers. According to the inventory results, hexachlorocyclohexanes was widely used for veterinary and plant protection to combat animal parasites, disinfect livestock shelters and control grasshoppers in pastureland. During 1958-2003, a total of 1985.24 tons of hexachlorocyclohexanes were used by 90 soums of 19 aimags. /Table.2/

Khovd, Bayan-Ulgii, Uvurkhangai and Zavkhan aimags and Khovd, Altai, Must and Uench soums of Khovd aimag had been using large amount of hexachlorocyclohexanes for controlling grasshoppers in pastureland. Because of the consideration that hexachlorocyclohexanes has the similar infection to the environment as DDT, it has been excluded from the list of chemicals used for plant protection and its use is prohibited in Mongolia.

Table 19. Use of hexachlorocyclohexanes (HCH) ($C_6H_6Cl_6$)

No	Soum, aimag	Used period	Amount (tons)	Diposit (tons)
Arkhangai aimag				
1	Khashaat	1958-1990	8,3	
2	Ikh tamir	1972-1986	0,3	
3	Erdenemandal	1969-1985	6,5	
4	Tsetserleg	1964-1993	5,8	
5	Tuvshruulekh	1985-2000	0,1	
	Total		21,0	
Bayan-Ulgii aimag				
6	Bugat	1960-1978	15,0	
7	Bayannuur	1970-1990	20,0	
8	Sagsai	1981	6,0	
9	Tsengel	1968-1990	20,0	
10	Ulgii	1994-2000	0,1	

11	Ulaankhus	1989-1990	4,0	
	Total		65,1	
Bayankhongor aimag				
12	Bayanbulag	1980-1990	0,45	
13	Jargalan	1980-1990	-	
14	Buutsagaan	1960-1980	-	
	Total		0,45	
Gobi-Altai aimag				
15	Taishir	1970	0,08	
16	Jargalan	1970-1991	2,0	
17	Togrog	1970-1991	3,0	
18	Tonkhil	1960-1993	2,0	
19	Bayan-Uul	1960-1970	-	
20	Chandmani	1971	0,02	
21	Darkhan (ancillary entity)	1978-1986	0,225	
	Total		5,325	
Dornod aimag				
22	Bayantumen	-1970	0,18	
23	Khankh gol	-1974	0,91	
24	Bulgan	-1970	0,15	
25	Bayan-Uul	1980-1997	1,5	
26	Kholonbuir	-1975	0,15	
27	Sergelen	1999	0,005	
	Total		2,895	
Dornogobi aimag				
28	Altanshiree	1997	+	
29	Mandakh	1980-1990	5,0	
30	Urgun	1958-1988	19,0	
31	Khovsgol	1972-1990	0,35	
32	Erdene	1960-1985	12,5	
33	Dalanjargalan	1975-1990	0,5	
34	Ikhkhet	1975-1997	7,2	
	Total		44, 55	
Dundgobi aimag				
35	Saintsagaan	1960-1980	28,0	
36	Saikhan-Ovoo	-1999	0,25	
	Total		28,25	
Darkhan-Uul aimag				
37	Darkhan	1978-1986	0,225	
	Total		0,225	
Zavkhan aimag				
38	Telmen	1960-1992	2,9	
39	Aldarkhaan	1980-2001	3,5	
40	Erdenekhairkhan	1969-1973	3,5	
41	Tes	1959-1991	5,0	
42	Tudevtei	1960-1993	30,0	
43	Tosontsengel	1970-1998	7,0	
44	Uliastai	-1999	0,024	
	Total		51,924	
Uvurkhangai aimag				
45	Arvaikheer	1987-1990	75	
46	Khairkhan dulaan	1988-1991	100	
47	Zuun bayan ulaan	1987-1988	50	
48	Tugrug	1985-1988	50	
49	Sant	1986-1988	75	
50	Guchin us	1987-1988	25	
51	Taragt	1981-1991	100	
52	Khujirt	1987-1990	150	
53	Bayangol	1988-1991	75	
54	Bayan-Undur	1985-1988	150	

55	Uyanga	1987-1988	50	
56	Kharkhorin	1973-2002	0,150	
57	Burd	1980-1990	5,0	
58	Bogd	1960-1992	1,280	
	Total		906,43	
Umnugobi aimag				
59	Khankhongor	1950-1990	30,0	
60	Tsogttsotsii	-1964	1,0	
	Total		31,0	
Tuv aimag				
61	Lun	1975-1990	0,2	
62	Bayandelger	1970-1992	5,0	
63	Erdene	1970-1990	10,0	
64	Bayan	1970-1990	8,0	
65	Ugtaal	-1987	0,05	
66	Tseel	-1976	1,21	
67	Mungun morit	1960-1990	2,0	
68	Batsumber	1980-2000	12,0	
	Total		38,46	
Selenge aimag				
69	Mandal	1960-1990	90,0	
70	Bayangol	1968-2003	2,62	
71	Eruu	1976-2000	5,0	
	Total		97,62	
Sukhbaatar aimag				
72	Tumentsogt	1967-2002	0,500	
73	Sukhbaatar	1982-1995	0,300	
74	Tuvshinshiree	1960-1990	0,060	
75	Asgat	1960-2003	0,250	
76	Munkhkhaan	1959-200	12,0	
77	Khalzan	-1972	0,350	
	Total		13,46	
Khovd aimag				
78	Khovd	1959-1992	100,0	Dund river, Ulaan buraa soil is contaminated
79	Zereg	1970-1995	50	
80	Dorgon	1975-1988	3,9	
81	Uyench	1958-1996	76,0	
82	Altai	1958-1996	76,0	
83	Most	1965-1985	260,0	
84	Darvi	1958	16,0	
85	Duut	1970-1980	15,0	
	Total		596,9	
Khentii aimag				
86	Norovlin	1985-1990	0,05	
Khuvsgul aimag				
87	Bayanzurkh	1960-1989	24,0	
88	Tosontsengel	1985-1990	0,2	
89	Tarialan	1971-1984	28,0	
90	Tsagaan-Uul	1965-1990	12,5	
	Total		64,7	
Uvs aimag				
91	Naranbulag	1965-1985	15,0	
Orkhon aimag				
92	Bayan-undur	1978-1993	0,9	
93	Jargalant	1978-1993	1,0	
	Total		1,9	
	Total		1985,24	

Table 20. Use of hexachlorocyclohexanes (HCH) ($C_6H_6Cl_6$)
/the list of aimags where the usage is uncertain/

	Soum, aimag	**Used period**
1	Arkhangai -Tariat	1940-1990
2	Bayankhongor -Bumburgur -Erdenetsogt	-
3	Gobi-Altai -Tonkhil -Erdene	
4	Dornod -Bayandun	1975-1985
5	Dornogobi -Khatanbulag	-
6	Khentii -Kherlen	1955-1985
7	Zavkhan -Numrug -Shiluustei	 1962-1992 1936-1990
8	Selenge -Dulaankhaan	1977-1995
9	Umnugobi -Dalanzadgad -Bulgan	 - 1980-1990
10	Khuvsgul -Tsagaannurr -Tunel -Erdenebulgan	
11	Uvs -Tes	
12	Sukhbaatar -Naran -Dariganga	 1960 -
13	Khovd -Myangad -Chandmani -Erdeneburen -Mankhan	 1967 1970 1970-1990 -

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

The objectives of PCB inventory**,** which had been conducted within the framework of POPs Enabling Activities project were as follows:

- To identify and assess potential PCB-containing equipment (transformers, capacitors, other equipment with PCB-containing oils);
- to assess import, export of PCB-containing equipment;
- to identify PCB-containing equipment with PCB concentration levels greater than 50 ppm and organize registration and labeling works of PCB-containing equipment;
- to identify and register PCB stockpile, PCB-containing equipment and PCB waste;
- to assess laws and legal environment of PCB production, import, export and disposal of PCB, PCB containing equipment;
- to assess the national capacity to manage PCB, including institutions, regulatory controls, monitoring of environmentally sound storage, transportation and disposal of PCB and PCB waste;
- to identify and assess PCB-contaminated sites;

- to introduce identification, registration and labeling system of PCB-containing materials, equipment, PCB-containing waste.

The initial PCB inventory was organized by the method of dividing all organizations and companies which are using PCB-containing equipment into 2 parts:

-organizations from Fuel and energy sector
-others (industries, factories and mining companies)

Fuel and energy sector

The electric energy in Mongolia is produced mainly at eight big power plants, which are operating on coal. Three of these eight power stations are located in Ulaanbaatar city, the rest are in the country side. The electric energy produced at power plants are distributed through the transmission network to the distribution network companies and from there to the customers.

The initial inventory on PCB-containing equipment was carried out jointly with the Ministry of Fuel and Energy, for the reason that the power and heating plants, distribution and transmission networks, coal mines are working under the jurisdiction of the Ministry of Fuel and Energy. The PCB questionnaires were distributed among these organizations with the purpose of collecting information on PCB and PCB-containing equipment. Based on the gathered information, the inventory has been proceeded with the collection of samples for analyses from used equipment, PCB waste and contaminated sites.

At the first stage, the simple test for chlorine ion identification (copper wire is heated and the change in color of flame indicates the presence of chlorine ion) and CLOR-N-OIL screening Test Kits were used. Afterwards, selected samples were analyzed using Gas Chromatography (GC), analytical test.

According to the analysis, the equipment and waste containing PCB less than 50 ppm have been identified and the labeling of all PCB-containing equipment has been executed by PCB working group.

Others (industries, factories and mining companies)

The main 33 state and private industries and factories which are using transformers, capacitors were covered in the PCB inventory. Information from these organizations were collected by the members of PCB working group by visiting and interviewing the responsible staffs.

Production of PCB in Mongolia

Mongolia does not produce chemicals locally, except for a small number of pharmaceuticals and fertilizers. Almost 100% of chemicals are imported from abroad, thus, it is possible to state that there is no production of PCB in Mongolia.

Usage of Polychlorinated biphenyl (PCB)

Mongolia has begun to produce electro energy for the first time in 1930. The Energy system of Mongolia has been founded in 1968.

Presently, in Mongolia the use of oil containing equipment such as transformers, capacitors, liquid filled circuit breakers, reactors, turbines, electric cables are widespread. According to PCB

inventory it can be summarized that at present, 4637 transformers, 3847 liquid filled circuit breakers, 83 capacitors, 17 reactors, 4525 electrical cables are registered throughout the country.

Transformers

According to the inventory results, 35 types of transformers manufactured in Russia, China, Bulgaria, Japan, Romania, Korea, Germany, Czechoslovakia, and Hungary are now used in Mongolia and almost 96% of the existing transformers in use are manufactured in the former USSR during 1968-1980 and most of them are fairly worn at present.

Table 21.Types of transformers presently used in Mongolia

Types of transformers	Manufactured country
ÒÏ, ÒÃ, ÒÌ, ÒÌÍ, S, ÀÒÖÄÒÍ, ÒÌÍ, ÍÊÔ, ÇÍÎÌ, ÒÔÇÌ, CZ9, ÍÀÌÈ, ÒÔÇÌ, LB, ÍÎÌ, ÇÐÓ, ÒÄÒÍ, ÒÌÃ, ÂÌÒ, ÒÄÍ, ÍÒÌÈ, ÇÐÓ, ÒÄÒÍ, ÒÌÃ, ÂÌÒ, ÒÄÍ, ÍÒÌÈ,ÒÌÒÍ, ÂÊÝ, ÒÐÄÍ, ÇÍÎË, ÒÄÑ, ÒÐÄÍÑ,	Russia
LCWB ,ÒÂ, SII-M R, CtB	China
L, SOU-DYC, ZT	Japan
FTDO	Germany

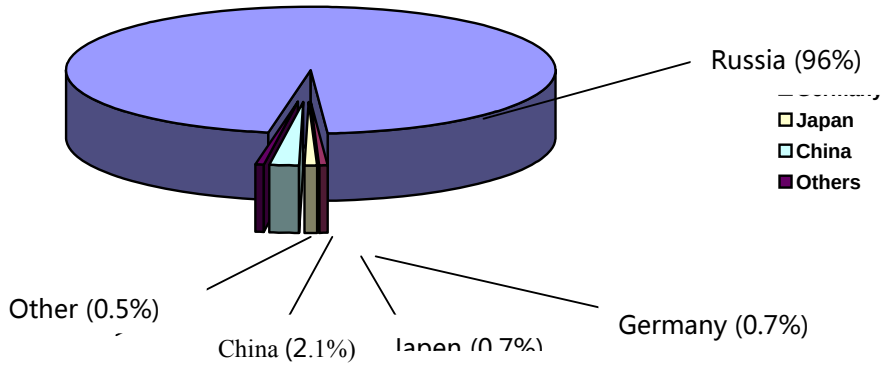


Figure 3. The transformers used in Mongolia, by the country of origin

According to the results of the inventory, it has been registered a total of 4,637 transformers, 97,8 % of which are manufactured before 1995, and 2,2 % after 1995. The oldest one was manufactured in 1965 which has been used for 40 years.

Figure 4 shows the use of transformers in Mongolia based on the year of manufacture. 18, 6 % of transformers were manufactured before 1970, 34,5% during 1971-1980, 36,9 % during 1981-1990, 10,1 % during 1991-2004. The figures below shows that the transformers manufactured during 1971-1990 are more prevalently used in Mongolia.

Due to the fact that the Russian Federation was the producer of PCB-containing oil until 1993 (*source: PCB inventory report of Russia*), it can be concluded that 96-98% of all transformers used in Mongolia might have PCB-containing oils.

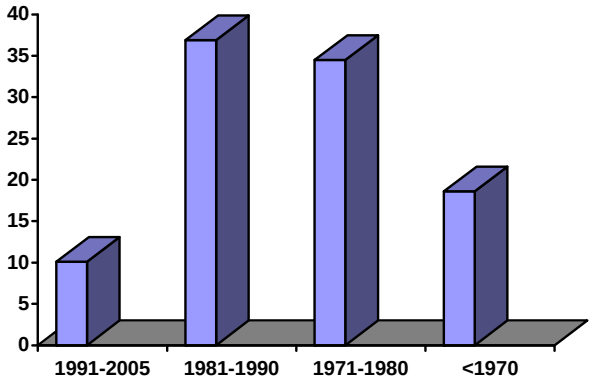


Figure 4. The Use of transformers in Mongolia, by manufacture years

Breakers

The results of the inventory shows that the thermal electrical stations, energy distribution and transmission networks are using almost 3,847 breakers of types MKP, KHBU, K, S, BT, BMPE, U, BKE, HL, BMT, BMG, BMUE manufactured in Russia, Czechoslovakia and Bulgaria. All breakers, except three are manufactured during 1962-2005 in Russia.

Capacitors

Six large factories of Mongolia were involved in the inventory and 83 capacitors had been inventoried. The inventory revealed that the most of these capacitors are not used. The capacitors were manufactured during 1965-1985 in Russia, Czechoslovakia, Japan, Germany and Hungary. The table below summarizes the types of capacitors.

Table 22. The types of capacitors used in Mongolia

No	Types of capacitors	Manufactured country
1	KS-2-6,3-75-2 U3 UK 038-300 NPU3	Russia
2	VC	Czechoslovakia
3	AF 662	Japan
4	NKA	Germany
5	C-8166, C-8805	Hungary

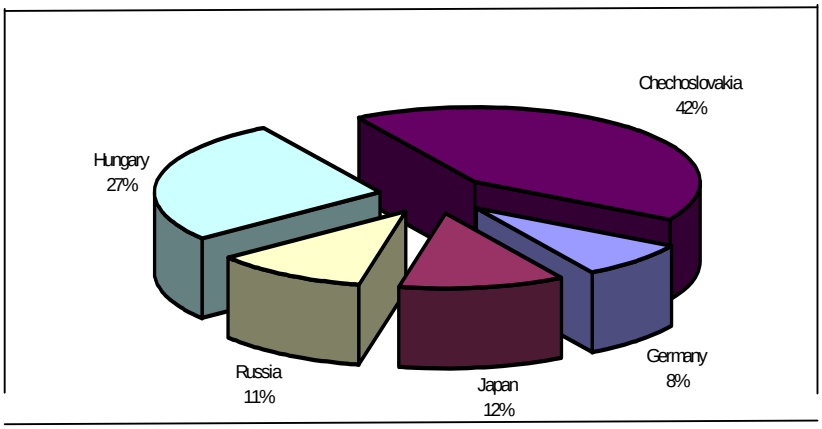


Figure 5. The usage of capacitors in Mongolia, by country

Other oil containing equipment

According to the inventory 17 reactors, turbines of types RTM, RTD, RZDCOM manufacture in 1975-2000 and 4,525 pieces of power cauldrons manufactured in 1974-1980 are inventoried.

Oil

The results of the inventory shows that approximately 5518,345 tones of fluids are used in all aforementioned equipment and 2595,428 tones or 47, 03% are used in transformers, 2472.715 tones or 44.81% in breakers, 7.497 tones or 0,14 % in capacitors and the rest 442.705 tones or 8.02 % as fluids in other equipment.

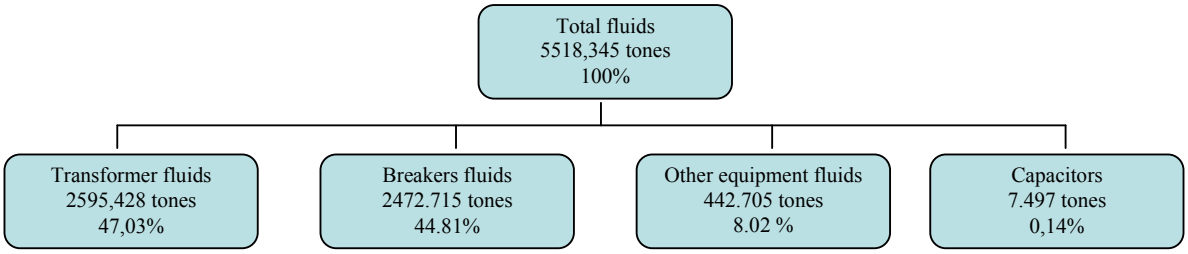


Figure 6. The use of oil

According to the inventory results, 4743, 243 tones or 87, 18% of total fluids are mainly used in energy system of the country, 775,102 tones or 12. 82% are used in factories, railways, air transportation sectors.

The fluids usage by regions shows that 5353,239 tones (97%) are utilized in central region, 96,766 tones (1, 75%) in eastern and south east region, the rest 68,34 tones (1,24%) in the western region.

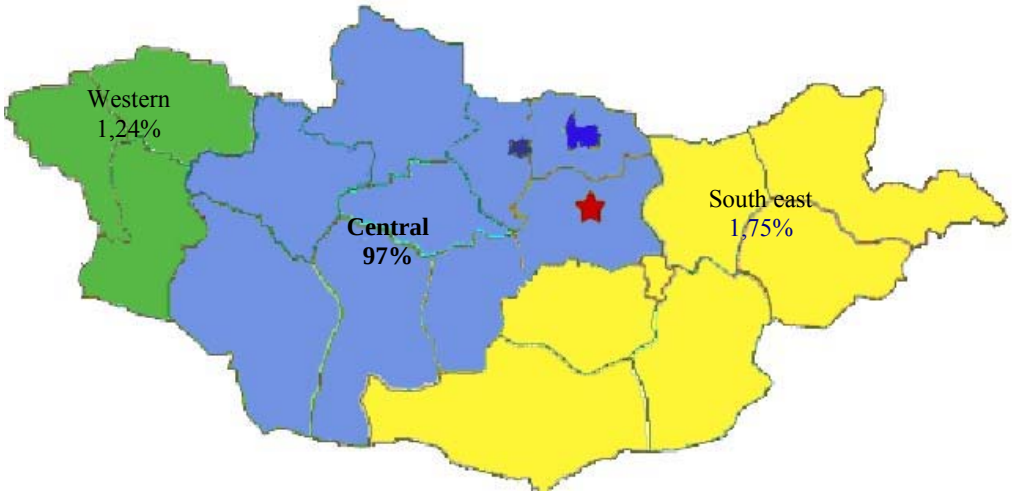


Figure 7. The usage of fluids, by regions

However the data received from energy sector companies, distribution and transmission networks, industries, mining companies has shown that the use of fluids of types GK (TU38-101-1025-85, TU381011025-85-1-4), TKP (GOST982-80), TM-1500, Sovtol-10, TK-750, TK-1500 (GOST 98268), JIS C2320, TC-1500, TP-22 are prevalent but the majority of companies answered that they don't know the type of cooling liquid.

The capital maintenance works of the equipment at the thermal electrical stations, distribution and transmission networks, and power plants are performed once in 4-6 years. On-going maintenance works per annum. The maintenance work usually is performed by the way of taking samples and analyzing moisture, dielectric capability and solid colloids of fluids. In case if the analyzed fluids meet all requirements, the distribution and transmission companies don't change fluid, only add more to top it up. In other cases, the fluids are cleaned in the cleaning machine for re-use.

The maintenance works of the most companies of energy sector are performed by the local energy transmission network companies. The PCB analyses haven't been performed in Mongolia yet. During the inventory samples have been taken from 14 transformers of the Metallurgical Factory in Darkhan for PCB analyses. The results of the analyses showed that transformer fluids contain 10, 4 ppm of PCB, which is not high.

During the PCB inventory process, carried out within the framework of the project, samples from almost 1000 equipment have been taken and 557 selected samples were analyzed by Test Kit CLOR-N-OIL. From 557 analyzed samples only 12.4 % haven't contained PCB. The results of the analyses revealed that 7.5% of the samples contained PCB higher than 50 ppm.

Export and import of PCB

Until 1990 Mongolia has imported most of transformers, breakers and other equipment from Russian Federation and a small amount from China, Bulgaria, Japan, Romania, Korea, Germany, Czechoslovakia and Hungary.

The most part of transformers, almost 70% of all transformers were imported during 1970-1990, which coincides with the period of progressive development of production and industry in the country.

Since 1990, after the transition to the market economy the importation structure has been changed.

As of 2003, 40,3 % of imported 390 transformers were from Russia, 24,1 % from China, 7,4 % from Japan, 6,4% from Korea, 5,1% from Canada, 4,1 % from USA, 3,3 from Czechoslovakia, 2,6 % from Singapore, 2,6 % from Australia, 1,8 % from Germany, 2,3 % from Finland, France and Spain. During the same period, 46 capacitors were imported from Korea, Germany, Japan, and USA. Most of these equipment are old, thus the probability of PCB contamination is high. Besides, there is no monitoring or registration by the customs authority whether the fluids used in these equipment contains PCB.

2.3.3 Assessment with respect to Annex B chemicals (DDT)

DDT has never been used in Mongolia for malaria control and DDT related information is detailed together with POPs pesticides (2.3.1).

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

Dioxins and furans, more precisely polychlorinated dibenzo-*p*-dioxins (PCDD or dioxins) and polychlorinated dibenzofurans (PCDF or furans) are two of the twelve classes of Persistent

Organic Pollutants (POPs) covered by the Stockholm Convention on Persistent Organic Pollutants (POPs). PCDD's and PCDF's, listed in Annex C of the Convention, are unintentionally formed and released from thermal processes involving organic matter and chlorine as a result of incomplete combustion or chemical reactions.

These chemicals are very stable and resistant to chemical and biological breakdown. They are persistent in the environment and can be detected long after releases have ceased. Dioxins and furans have potential for long-range environmental transport through air, water or migratory species, and are known to bio accumulate in the fatty tissues of exposed animals and humans. These exposures are believed to contribute to a wide variety of health disorders including skin diseases, disturbances to the immune, reproductive, endocrine systems and potentially different cancers. Protection of human health and the environment requires the introduction of measures to reduce or eliminate the production and release of dioxins and furans.

A national inventory, based on calculations of potential dioxin/furan releases throughout Mongolia was completed under the framework of the "*Enabling activities to facilitate early actions on the implementation of Stockholm Convention on Persistent Organic Pollutants (POPs) project*". Completion of the inventory involved the following steps:

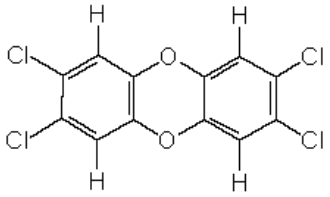
- Identification of potential dioxins and furans sources within Mongolia;
- Calculation of potential dioxin/furan emissions from potential sources; and
- Calculation of total annual releases of dioxins/furans within Mongolia.

In addition six samples were collected from different locations and sent to Canada for high-resolution GCMS analyses. The results of these analyses are presented in a separate data report.

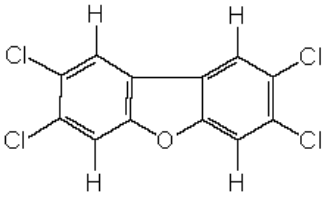
Definitions and Background

Polychlorinated dibenzo-*p*-dioxins (PCDD) and polychlorinated dibenzofurans (PCDF) are tri cyclic, aromatic compounds formed by two benzene rings connected by two oxygen atoms in PCDD's and by one oxygen atom and one carbon-carbon bond in PCDF's. Hydrogen atoms can be replaced with between one and eight chlorine atoms to form 210 congeners with differing toxicities.

Chemical and physical properties: Solubility in water 25^0 C 0.43-0.0002 ng/liter, condensation pressure 20^0 C $2\text{-}0.007*10^{-6}$ mm.Hg.c



2,3,7,8-TCDD



2,3,7,8-TCDF

Polychlorinated dibenzo-*p*-dioxins (PCDD) and polychlorinated dibenzo furans (PCDF) have low solubility in water, are highly persistent in the environment, and bio- accumulate in the fatty tissues of animals and humans. To calculate the overall toxicity of a mixture of dioxin/furan congeners, an international system has been developed which assigns toxicities to each congener relative to the most toxic form 2,3,7,8-TCDD (TEF's or Toxicity Equivalency Factors).

Results

An evaluation of potential dioxin/furan emissions to the air, land, water, residues and products are compiled and summarized for the national level in Annex 1.

During the inventory, in particular calculation of potential dioxin/furans releases, the inventory team faced difficulties using the "Standardized Toolkit for Identification and Quantification of Dioxin and Furan Releases". The Toolkit was more appropriate for the needs of developed countries, or countries where better data are available. In Mongolia, the team had significant difficulties collecting baseline and production data for potential emission sources, which made it hard to follow all requirements of the Toolkit.

Table 23 . Dioxins/furans potential releases

Categories	Potential source amount (gTEQ/Years)	Potential source amount (%)
Waste incineration	0.124	0.02
Ferrous and Non-Ferrous Metal Production	1.500	0.19
Power generation and Heating/ Cooking	39.258	5.23
Production of Mineral products	0.129	0.02
Transport vehicles	5.683	0.76
Uncontrolled combustion (fire) processes	52.408	6.98
Chemical and consumer goods production	6.06-0.06	0.8-0.008
Miscellaneous	0.001	-
Waste/Landfill	651.610	86.80
Total	750.713	100.00

Category.1 Waste Incineration /burning/

In Mongolia, there are no facilities for processing and incineration of municipal solid wastes. Municipal solid wastes are collected at the special waste dumps, where some open incineration of waste occurs accidentally due to environmental and human activities. During the inventory, the calculation of emissions of dioxin/furans released during this processes were calculated as "Uncontrolled combustion processes", Category. 6.

Category.2 Ferrous and Non-ferrous Metal Production

Presently, in Mongolia there is no production of ferrous and non-ferrous metal, only scrap metal processing factories. Most of these factories are small-private factories with low production capacity and no pollution control technology.

Category.3 Power generation and Heating

All of the thermal electric stations and power plants, currently operating in Mongolia, use coal. Moreover, households in gers areas use significant amounts of coal and wood for heating and cooking, although these quantities are difficult to estimate. Although Mongolian coal is generally described as brown coal it has a base heating capacity of 3,500-4,000 cal/kg. Calculations of dioxin/furan emissions were made using an average heating capacity of 3,500 cal/kg. Different

kinds of wood are used for heating in Mongolia, which produce different amounts of heat, and an average value of 2,800 cal/kg was estimated for the purposes of calculations.

Category.4 Mineral production

Currently mineral production in Mongolia is primarily focused on the production of cement, bricks and lime. However prior to 1990, there were many state industries engaged in mineral production, often based on old Russian technologies. For mines or factories that are still active, these old (highly polluting) technologies are still being used. Of the factories active in the mineral production sector, only cement factories use dust filters, although emissions are not systematically monitored.

Category.5 Transport

Almost 80 % of Mongolia's fuel and gas is imported from Russia. The following types of fuels are imported into Mongolia: A-76, A-80, A-70, AI-92, AI-93, diesel fuel, aircraft fuel TC-1. According to published standards, ethylated fuels should contain no more than 0.17 gr/dm^3 of lead (Pb), non- ethylated fuels 0.013 gr/dm^3. During calculations this information was also considered.

Results of Dioxin and Furan Analyses

The results of the inventory indicate that sludge generated from households and industrial sewage treatment is the major source of dioxins and furans releases into the Mongolian environment. It was estimated that sewage sludge accounts for approximately 86% of all dioxin/furans releases. Sewage treatment facilities in Mongolia use biological treatment, plus chlorine for sterilization. Sludge is usually disposed directly into the environment, or into holding ponds, and may contaminate the surrounding environment, including soil and water resources. A proper evaluation of sewage sludge and the primary sources of contamination should be undertaken, and mitigation strategies developed.

The second main source of dioxin and furan releases to the environment is waste incineration and forest fires. These emissions are estimated to account for approximately 7% of the total. The amount of dioxins/furans released can be minimized by reducing the number of waste incinerators, and using modern pollution control devices. Forest fires can be reduced through better education and monitoring.
Emissions of dioxins/furans from thermal electric stations, power plants, households heating are estimated to account for approximately 5 % of total releases. Approximately 89% of these emissions are a result of burning coal and wood.

Inventory calculations estimate annual emissions of dioxins/furans in Mongolia at 750,713 gram TEQ; air 28,341 (3.8%), water 3,242 gram TEQ (0.4%), soil 0.035 gram TEQ, products 6.06-0.06 gram TEQ, residues (ash) -719,095 gram TEQ (95.8%) TEQ.

Samples were collected from potential sources of dioxins and furans and analyzed using high resolution GC/MS in Canada. The tables and graphs below illustrate the results of these analyses. The highest concentrations of dioxin/furans were found in ash samples from the waste incineration stove at the Child and Maternity Hospital in Ulaanbaatar city. In addition, significant levels of dioxin and furans were found in the samples of dust collected from a scrap metal processing facility, sludge samples from the municipal sewage treatment facility in Ulaanbaatar, dust and ash samples from filters and stoves of Power Plant #4, and dust samples from filters of Khutul Cement and Lime Factories.

Table 24. Results of High Resolution Dioxins and Furans Analyses

Concentration (pg/g, dry weight basis)						
Compound	Children's Hospital Waste Incineration	Metallurgical Factory Darkhan	ESP Fly Ash Power Plant#4	Bottom Ash Power Plant#4	Municipal sewage Sludge#2	Hotul/Khargal cement & Lime Factory
2,3,7,8 –TCDD	68.5	**15.3**	**0.26**	**0.102**	**1.64**	**0.151**
1,2,3,7,8-PECDD	239	**24.1**	**0.688**	**0.090**	**1.16**	**0.340**
1,2,3,4,7,8-HXCDD	178	**11.1**	**0.644**	**ND**	**2.84**	**0.301**
1,2,3,6,7,8-HXCDD	421	**16.4**	**1.19**	**0.136**	**2.58**	**0.297**
1,2,3,7,8,9-HXCDD	592	**30.8**	**2.1**	**0.185**	**2.47**	**0.443**
1,2,3,4,6,7,8-HPCDD	2490	**57.8**	**7.84**	**0.549**	**75.6**	**0.885**
OCDD	3190	**62**	**18.9**	**0.849**	**753**	**1.54**
2,3,7,8-TCDF	**981**	2270	**0.266**	**0.284**	**5.08**	**0.177**
1,2,3,7,8-PECDF	1140	**637**	**6.16**	**0.332**	**2.39**	**0.614**
2,3,4,7,8-PECDF	1690	**121 0**	**16**	**0.724**	**2.95**	**0.766**
1,2,3,4,7,8-HXCDF	1510	**414**	**8.72**	**0.374**	**4.17**	**0.641**
1,2,3,6,7,8-HXCDF	1580	**266**	**6.03**	**0.342**	**2.66**	**0.596**
2,3,4,6,7,8-HXCDF	1960	**260**	**10.3**	**0.628**	**2.63**	**0.657**
1,2,3,7,8,9-HXCDF	108	**20.9**	**0.846**	**ND**	**0.31**	**0.310**
1,2,3,6,7,8-HPCDF	6440	**368**	**22.3**	**1.030**	**17.0**	**1.40**
1,2,3,7,8,9-HPSCDF	628	**55.5**	**4.75**	**0.205**	**1.49**	**0.456**
OCDF	2400	**110**	**21.1**	**0.0664**	**38.3**	**1.130**
TOTAL TETRA-DIOXINS	3720	**357**	**3.13**	**0.414**	**19.1**	**0.160**
TOTAL PENTRA-DIOXINS	4800	**264**	**5.55**	**0.547**	**18.9**	**0.599**
TOTAL HEXA-DIOXINS	5940	**194**	**12.6**	**1.170**	**30.4**	**1.92**
TOTAL HEPTA-DIOXINS	5400	**119**	**15.1**	**0.967**	**149**	**1.46**
TOTAL TETRA-FURANS	26900	**20500**	**102**	**8.110**	**67.0**	**6.12**
TOTAL PENTRA-FURANS	21600	**9400**	**86.3**	**1.640**	**36.5**	**4.44**
TOTAL HEXA-FURANS	16100	**2680**	**58.3**	**2.850**	**28.6**	**3.17**
TOTAL HEPTA-FURANS	9180	**598**	**36.6**	**1.650**	**29.6**	**2.09**
2,3,7,8-TCDD TEQs(ND=0)	**2040**	**1010**	**12.4**	**0.681**	**7.69**	**1.12**
2,3,7,8-TCDD TEQs(ND=1/2DL)	**2040**	**1010**	**12.4**	**0.715**	**7.69**	**1.15**

Ash generated by the Children's Hospital Incinerator and at the Metallurgical Factory in Darkhan contained total TCDD-TEQ concentrations several orders of magnitude above those measured in municipal sewage sludge solids, ash generated by two power plants, and kiln dust from a cement and lime factory (Figure 8). Total TCDD-TEQ concentrations exceeded 1,000 pg/g in Metallurgical ash, while ash generated through the incineration of waste material from the Children's Hospital exceeded 2,000 pg/g.

These values are high, but as far as specific guidelines for industrial ash concentrations of dioxins/furans, Canada and the US work with weight per unit volume emitted rather than weight per weight. CCME standards for TEQ concentrations in air emissions from hazardous, medical, municipal, and sewage waste incineration are 80 pg I-TEQ/m^3

(http://www.ccme.ca/assets/pdf/d_and_f_standard_e.pdf). US EPA standards for dioxins/furans concentrations in commercial/industrial solid waste incinerator emissions are 400pg/m^3 (http://www.epa.gov/ttn/atw/129/ciwi/fr27mr01.pdf).
Ash generated by incineration of medical and scrap automobile waste, and bottom ash produced by the power plant were highest for tetra-furans; concentrations of each subsequent furan in the tested series (4-8) was progressively lower than its predecessor (Figure 9). A similar trend was observed in municipal sewage sludge solids, although total octa-furans were higher than hexa- or hepta-furans. Octa-furans were also considerably higher than hexa-furans in fly ash from the power plant.

Trends within the series of dioxins measured at the six facilities exhibited much lower consistency than trends within the furans series. Both hospital waste ash and bottom ash generated by the power plant were highest in hexa-dioxins, while scrap automobile waste ash was significantly higher in tetra-dioxins than any of the other dioxins in the tested series (Figure 9). Municipal sewage sludge solids and fly ash from the power plant both contained elevated octa-dioxin concentrations. These congener profiles are generally consistent with low temperature combustion processes.

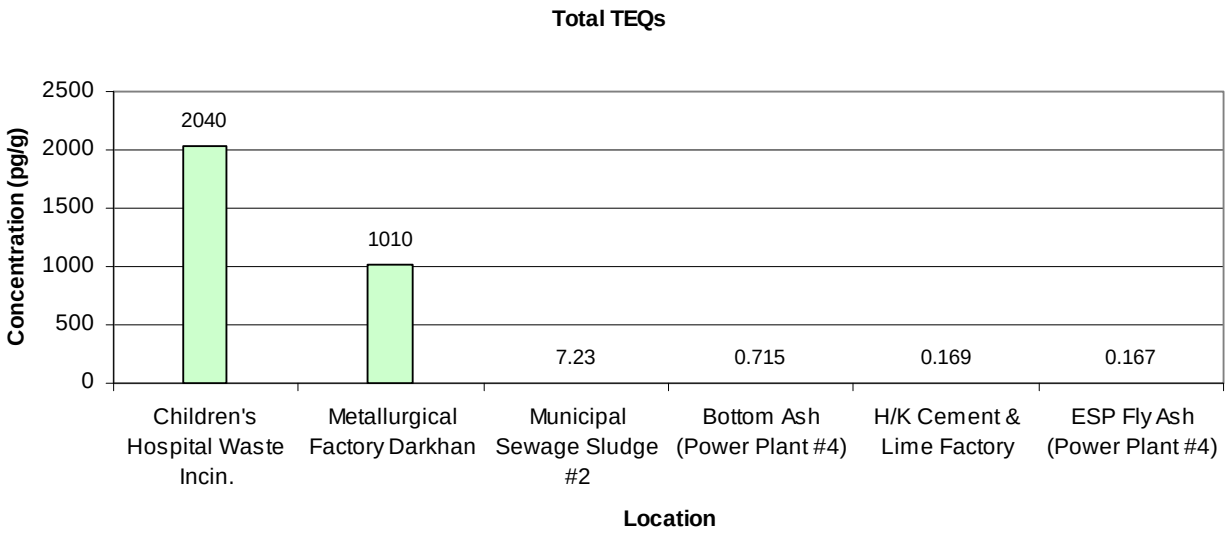


Figure 8. Total 2,3,7,8-TCDD TEQ concentrations in Waste Outputs from Six Different Media Collected in Mongolia

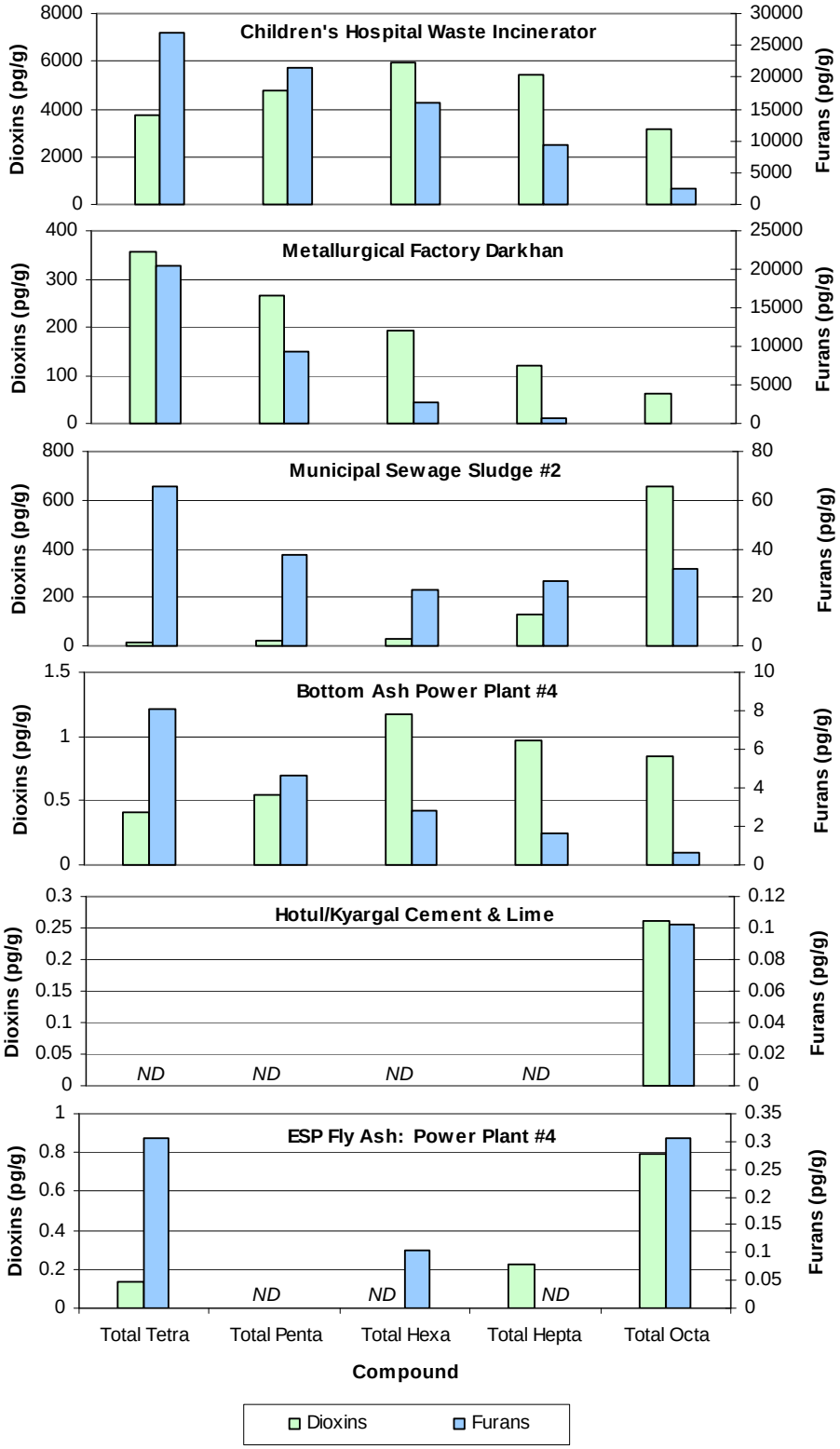


Figure9. Comparison of Dioxin and Furan Concentrations from Six Different Samples Collected in Mongolia

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

The basic act of law for regulating relations of waste in Mongolia is the Law on Household and Industrial Wastes, which was ratified in 2003. In addition, Government resolution No 256 of 2001 on Some Measures for Improving Waste Management, Government resolution No 135 of 2002 on Classification, Collection, Packing, Temporary Storage, Decontamination, Storage and Disposal, Ministers' Order No 249/201 of 2002 on Guidance on classification, collection, storage, transportation and disposal of medical wastes, and Ministers' order No 126/171 of 2003 on Methodological guidance on environmentally friendly collection, transportation and landfilling of chemical wastes were approved**.**

In present situation, which is regulated by the aforementioned laws and regulations, there is no specific provisions and articles on how to dispose of, and decontaminte wastes containing POPs chemicals, and how to reduce emission fo POPs chemicals produced during the process of waste recycling and disposal.

Within this context, amendments and changes to the law regulations is neccessary and need to carry out more activities and take measures for awareness raising among organizations and companies that produce POPs containing wastes and for the workers who handle these type of wastes.

Mongolia does not have disposal sites and methods/technologies for eliminating POPs containing wastes, which consequently contributes to environmental pollution, by way of open dumping, re-using etc.

According to the preliminary inventory conducted in 2005, the following sources were identified for the emissions and production fo POPs containing wastes in Mongolia, including:

- PCBs containing equipment and obsolete oil
- sludge from treatment facilities
- residues of ashes from waste dumping areas
- ashes of medical wastes
- waste metal processors
- power and thermal plants, individual boilers and household stove ashes
- filter dusts from power and thermal plants
- filter dusts and ashes from minerals industries

Wastes from the aforementioned sources are dumped in open areas as they are not considered as a hazardous waste and they pollute soil, water and air through wind and water. Improving the waste management would have a significant impetus for reducing the environmental pollution, caused by POPs.

With regard to stockpiles, Mongolia does not have stockpiles of pesticides, however, it was registered that some electricity distribution and transmission networks and some large companies still have some wastes that may contain PCBs.

POPs Wastes

Basing on collected information; the quantity of decommissioned equipment and interim storage of waste oil, the PCB inventory team has made the following conclusion. During the usage of all these equipment 2 kinds of waste are formatting:

-Waste oil
-Decommissioned equipment

Moreover, during the inventory process it has been found that the contaminated oil from transformers and other equipment are cleaned by fluids cleaning equipment and re-used by distribution and transmission network companies of energy sector. The most contaminated waste fluids, which are not possible to use any more are stored in the special preserve for interim storage of waste oil. A little quantity of this oil is sold to organizations and companies as a lubricating materials and hydro fluids for tractors, excavators and other equipment.

Power plants are also storing these waste fluids in waste fluids preserve and using as a hydro fluids or incinerating as raw material during the heating of stoves.

In case of industries and factories, there is no formation of waste oil, for the reason that the maintenance works are executed by professional organizations. However, in case of big mining companies the waste oil are formatted and these waste oils are temporarily stored for re-usage as a lubricating material.

According to the inventory 17, 76 tones of waste oil, temporarily stored in the special preserve are registered. Usually these waste oils are stored in the special preserve, which is land filled and located within the territory of the particular organization.

The decommissioned equipment is usually not demolished and used us scrap.

Contaminated Sites

The first attempt ever was made to identify contaminated sites in 2004-2005 preliminary inventories. The activity was made through a questionnaire and took samples from a few sites. Therefore, the result was not sufficient. The results of lab test of the samples showed that sites contaminated with pesticides were numerous in rural areas and it was also concluded that there could be high probability of sites contaminated with PCBs. But, we need more research to be done in order to precisely identify all contaminated sites.

PCBs

The results of the inventory questionnaire show that during the winter time the Erdenet Mining Corporation is leaking 2 tones of waste oils to the roads in order to reduce road slippery. The soil analyses taken from this area shows that the PCB contamination is high (more than 50 ppm). Besides this, 20 m^3 of soils in Erdenet-Bulgan energy transmission network, 2 m^3 in Darkhan branch of Central regions energy transmission Network Company are contaminated by transformer fluids.

Pesticides

According to the inventory results, there wasn't any special storage for POPs pesticides, and the storage condition and facilities for all pesticides were generally very inadequate. Pesticides were stored in the storage of Veterinarian Service of the aimag and soum, livestock fences or mostly in open area. The poor knowledge and education of the pesticide users on safe use of the products lead to create the risks to their own health as well as the natural environment.

Several inventory registrars have mentioned particular areas contaminated by pesticides and proposed to make sample analyses of soil and water. For example, pasture areas around Dund us and Ulaanburaa brigades, Khovd soum of Khovd aimag, western Mongolia have been seriously contaminated by pesticides, storing them for many years in open area.

In the inventory of Zereg soum of Khovd aimag it was recorded that many veterinarians of the area have got serious liver disorders .

In Khalzan soum of Sukhbaatar aimag, eastern Mongolia, there is a big old pool to wash 40-45 % of all livestock of 9 soums and the nearest wells and soils are badly contaminated by insecticides.

Moreover, the agricultural land and the nearest water resources of Khongor soum of Darkhan-Uul aimag, central Mongolia is the another proposed area for sample analyses, because a significant amount of pesticides are used in this region for agriculture.

Dioxins and Furans

Within the framework of the project for enabling activities, samples have been taken from several sites, which used to be pesticide storehouses, waste dumping areas and agricultural fields where pesticides used extensively. The samples were analyzed in the Korean National Agricultural Institute. Results of dioxin/furan analyses were given in the Table below. Results show that soil in the former pesticide storehouses had been contaminated by dioxin and furans significantly.

Table 25 . Results of dioxin/furan analyses

Compound	Site Concentration (pg/g, dry weight basis)			
	Old veterinary medical storage Hongor sum, Soud Gobi aimag / soil/	Old veterinary medical storage Bayan-Olgii aimag / soil/	Wheat field Hongor sum, Darhan-Uul aimag /soil/	Old waste dump Dari-Ekh, Ulaanbaatar
2,3,7,8 -TCDD	33.53	131.31		
OCDD		46.06	0.36	
1,2,3,7,8-PECDF		6.36		
1,2,3,4,7,8-HXCDF		1.32		
1,2,3,6,7,8-HXCDF		0.96		
2,3,4,6,7,8-HXCDF		2.3		0.06
1,2,3,4.6,7,8-HPCDF		0.41		
1.2,3,6.7,8-HXCDD		3.14		

Probability of dioxin and furan contamination can be higher in urban settlements. Japanese scholar, Kamo Yoshaiki, made dioxin/furan analyses in soils from the Ulaanbaatar city center territory, the Suhbaatar District, in 2002. Results of the analyses are given in the Table below.

Table 26. Result of the dioxin/furan analyses in soils from the Suhbaatar District, Ulaanbaatar.

Compound	Content, pg/g	Compound	Content, pg/g
2,3,7,8-TeCDD	N.D.	2,3,7,8-TeCDF	5.0
1,3,6,8-TeCDD	62	1,2,7,8-TeCDF	6.2
1,3,7,9-TeCDD	31	TeCDFs	260
TeCDDs	150	1,2,3,7,8-PeCDF	13
1,2,3,7,8-PeCDD	2.7	2,3,4,7,8-PeCDF	9.3
PeCDDs	190	PeCDFs	160
1,2,3,4,7,8-HxCDD	5.1	1,2,3,4,7,8-HxCDF	8.1
1,2,3,6,7,8-HxCDD	12	1,2,3,6,7,8- HxCDF	8.3
1,2,3,7,8,9- HxCDD	4.5	1,2,3,7,8,9- HxCDF	(1.4)
HxCDDs	250	2,3,4,6,7,8- HxCDF	10
1,2,3,4,6,7,8-HpCDD	39	HxCDFs	94
HpCDDs	86	1,2,3,4,6,7,8-HpCDF	21
OCDD	64	1,2,3,4,7,8,9- HpCDF	2.1
Total PCDDs	740	HpCDFs	33
		OCDF	(4.1)
		Total PCDFs	550
Total (PCDDs+PCDFs)		**1300**	

As seen from the Table, soil in the Ulaanbaatar city has significant level of contamination by dioxin and furan.

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

POPs pesticides are listed in a banned chemicals in the country and their usage is also stopped. Therefore, Mongolia does not need to submit requests for exemption. However, PCBs containing equipment are still in use and according to the goals set forth in this Programme is to phase out these equipment and eliminate environmentaaly sound manner by 2020.
Presently, the number of in-use PCBs containing equipment and their stockpiles are not determined completely. A detailed inventory is expected to be carried out throughout the country in the near future and consequently will file request for exemption in case of necessity.

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

No programmes are in place for the moment for monitoring releases and environmental and human health impacts.

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

Public awareness raising activities commenced during the POPs Enabling Activities Project. The project team tried to involve all the stakeholders and as much as possible people in the seminars, workshops and trainings. Representatives from all relevant ministries, agencies, representatives

from agricultural and energy sector, research institutions, NGOs, as well as environmental offices in 360 soum/settlements and 21 provinces in the country. Several books and brochures have been printed and distributed, a TV prigramme on POPs hazards have been broadcasted on the national television and informations have been distributed through internet website.

As result of these activities, awareness on POPs hazards and the necessity to reduce and eliminate the usage of POPs is created in ministries, agencies and relevant specialized agencies, a swell as among the rural environmental offices. However, needs more to be done for general public.

In addition, trainings and seminars were organized for companies and organizations, which use PCBs containing equipment and produce dioxin and furans with broad participation of senior level staff. Good pratice is the participants were encouraged to disseminate their knowledge to their subordinates.

2.3.9 Relevant activities of non-governmental stakeholders

Number of non-governmental organizations in environment sector, especially in chemicals, is not sufficient in Mongolia. In the table you will see some of the possible actors in the implementation of the Programme.

Table 27. List of NGOs

	Names of NGOs
1	WWF Mongolia Office
2	Ecology Education Society
3	Association of Ecologist Women
4	Nature and Women Center
5	Mongolian National Environmental Society
6	Chemistry and Environment

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

It can be noted that POPs monitoring activities have not yet started in the country. Basically there aren't any databases or research results on POPs releases in environment and their impacts on humans and animals.

The only available data is the estimation of PCDD/PCDF concentrations in soil of the territory of Sukhbaatar District in the report "Environmental analyze of Mongolia" by Mr. Kamo Yoshaiki, a research worker of the Chu Yo University of Japan in 2001, PCDD/PCDF and pesticides analyses made in the Republic of Korea and Canada during the preliminary inventory. In addition, PCBs quality analyses had been made in the Central Environmental Laboratory of Mongolia.
Some chemical laboratories with good equipment facilities like Central Customs Laboratory are making quality analyzes for importing products, however no any laboratory is able to make POPs analyses.

Table 28. Some chemical laboratories

1	Name of laboratories	Equipment	Make POPs analysis
1	Central Environmental Laboratory	GC, LC, IC, AAS	PCB by Test Kit and GC,

2	Central Customs Laboratory	GC, AAS, GC/MS	Never analysed
3	Laboratory of State Professional Inspection Agency	GC, AAS, LC, Spectroscopy	Never analysed
4	Institute of Public Health	GC, LC, AAS	Never analysed
5	Central Laboratory of Energy	GC, AAS	Never analysed
6	Laboratory of University of Science Technology	GC, LC, IC, AAS, UV-Spectroscopy, X-RAY fluorescence Spectroscopy	Never analysed
7	Institute of Chemistry and Chemical Technology, Mongolian Academy of Science	GC, Spectrophotometer	Never analysed

Constraints

- Lack of research or study on POPs at the national level by local researchers and inspectors due to the lack of laboratory facilities and techniques;
- Lack of national capacity and unified system or methodology to carry out hazard and risk assessment of POPs; No encouragement or incentive for this activity at all levels;
- Unavailability of national database on serious cases of POPs impact, diseases, concentration in humans, animals and food products;

Strengths

- Sufficient resources of well-educated professionals with high level theoretical knowledge on different sectors;
- Fundamental resource of research laboratories;
- Theoretical and research experience of different sciences;
- Network of hydro-meteorology and environment monitoring throughout the country;

Necessary actions for strengthening monitoring and R & D capacity

- Establish monitoring system on POPs;
- Establish a specialized laboratory for POPs analysis;
- Establish research databases by carrying out assessment of POPs concentration in food, environment, humans and animals;
- Conduct regular assessments and studies on POPs in collaboration with the neighboring countries;
- Share experiences and expertise with the foreign countries on monitoring and R & D;

2.3.11 Identification of impacted populations or environments, estimated scale and magnitude of threats to public health and environmental quality and social implications for workers and local communities

Understanding of social and economic implications of POPs chemicals, including their impacts to human health and environment, is not satisfactory in Mongolia. In one hand, it relates to the long-lasting promotion of the chemical substances as a mean to support the economy, without paying attention to their toxicity, on the other hand, it relates to the misunderstanding among the community that Mongolia is far from chemicals hazards because of the under-development of the chemical industries in the country. Therefore, the regulatory control of the different kind of

imported chemical substances, including their inventory and registration, is still very inadequate, besides the insufficiency of specific guidelines and training.

However, for the last several years, some positive initiatives has been taken by the Government of Mongolia to adopt the AGENDA-21 - Sustainable development program of Mongolia for the XXI century (1998), the Law on Toxic and Hazardous Chemicals (2006), the Law on import, export and transboundary transport of hazardous waste (2000) and their related regulations and rules, all based on the global sustainable development concept.

Particularly, the ban for use of Aldrin, Dieldrin, Chlordane, DDT, Endrin, Heptachlor, Mirex and Toxaphene by the Government resolution had created a favourable primary condition for the country to join the Stockholm Convention.

It should be noted that due to the subjective factors of widespread misinformation throughout the nation, mentioned earlier in the report and some other objective elements related to the current situation of the national capacity, it was quite complicated to make the given assessment.

In the first nationwide preliminary inventory of POPs chemicals there were involved in total about 300 soums of 21 aimags and the inventory was carried out by the local environmental inspectors who are initially trained on the procedure.

The most of the inspectors have noted that any information or data were found on the implications of the POPs pesticides to the human health and environment of our country and mentioned some facts that the work safety rules are not enforced in the practice. Use of a general name of DUST for different pesticides like DDT, HCH, TMTD-80 and Lindane also made it difficult to achieve concrete statistics of the pesticides. However, the use of 6 POPs pesticides was revealed by this preliminary inventory, although the given data is still inadequate. This is mostly because of the poor registration process and database that have been developed at all levels.

Some places seriously contaminated by pesticides have been suggested for further analyses of soil and water. We cannot conclude that these kinds of impacts are not seen in the other areas where pesticides are used. Generally, the information on pesticides which are used under the name of DUST throughout the whole country is very inadequate and it is necessary to look for more detailed statistics on the allocation of the powder in the state archives.

Except the POPs 12, many other toxic chemicals that are already excluded from the global use such as TMDT, Chlorfos, Carbofos, Butyl Ethir and Granozan are still in use for agriculture and animal husbandry in Mongolia were reported during the inventory. For instance, Khongor soum of Darkhan-Uul aimag used 5 kinds of insecticides, 4 kinds of fungicides, 3 kinds of herbicides and 2 kinds of rodenticides from 20 to 151200 litres during the year of 1980-2003. From this, we can assume that the other agricultural companies, who are not involved in the inventory may also use such amount of pesticides.

According to the inventory result, the PCB is a widely used chemical in the country as transformer oils or fluids.

The 81,3% of the transformers and 98,4% of the transformer fluids are located in the central districts of Ulaanbaatar city and the a few other biggest towns. This concentration proves that the toxic impacts of the PCBs already exist in those most populated regions of the country. Moreover, the disposal process of the obsolete transformers and transformer oils is extremely poor. It was recorded that the Erdenet copper mining factory is spraying the fluid in open mining area to reduce dust. It is obvious that the human health and environment have been already impacted by

those substances. However, in Mongolia there are not any available database or research materials on the active implications of the POPs chemicals to the human health, environment and socio-economy of the country.

It should be highlighted that the materials compiled under the preliminary inventory is an important resource that can be used as baseline data for further development of the National Implementation Plan of the POPs management in Mongolia, although it was not possible to make full-scale assessment of socio-economic implications of the POPs chemicals based on the inventory results.

To reveal the POPs indirect implications we need to adopt many modern methodologies into practice to carry out long years permanent and field surveys.

The world scientists have defined that the POPs chemicals acutely affect human body, precisely, central nervous system, reproductive effect, mutagenesis and cancer, immune system and others. But there is no direct evidence that they 100% caused by POPs chemicals.

In Mongolia, the situation is the same and could be unclear in terms of the impact to the health of the population.

Very few cases of soil and water pollution and human illness that might be caused by POPs chemicals were revealed by this time inventory. Therefore, we could assume that there are no any database is available in the country to be used for the assessment.

The following activities are recommended:

- Strengthening the enforcement of the Ministerial decree No 75 of 1997 to ban 7 persistent organic pollutants, specially strengthen the customs control on import; legislate the indication of chemical formula of the substances in import certificate and other documents, specially in permit license.
- Establish baseline database for POPs impact assessment in Mongolia by carrying out case frequency study of the diseases, that are globally recognized as POPs effected, basing on the last 30-40 years statistics of the country and regularize the work;
- Develop and implement general safety guideline or instruction to work with POPs;
- Introduce new alternatives for all sectors of food, agriculture, environment and health;
- Carry out regular risk assessment and monitoring on identifying POPs residues in the human body, animals, plants, soil, water and air in the territory of Mongolia;

By implementing the above mentioned activities, the country will have certain possibility to clearly identify the POPs affected spots and reduce their socio-economic implications.

Another essential activity is to strengthen the institutional capacity to manage the issue in the country. Today in Mongolia, it can be considered that the favourable legal background on chemical safety as well as POPs management has been established. This issue is described in detail in the respective report. However, the capacity of the national institutions needs to be improved and the following activities are recommended:

- Strengthening the technical facility – Establish modern laboratory for POPs analysis
  We have 2 ways of solution for this issue:
  - Renovate the existing comparatively high capacity laboratories, namely Central Customs Laboratory or Analytical Laboratory of the Mongolian University of Science and Technology, with special equipments and techniques;

- Newly establish a special laboratory for POPs analyzes by using financial resources from state budget and international donor assistance; this version is more advantageous for the country, but requires more funds.

This preliminary inventory was conducted by non-professional officers using individual questionnaires and interview methods. Therefore, the result of the inventory is not fully sufficient for using as a baseline data for policy making purposes. The modern laboratory should play an important role for establishing the technical and analytical database.

- Strengthen the human resource capacity – Establish professional research and monitoring team
  Prepare national trainers through on-job training programs and study tours for the chemicals, chemical technologists and hygienists in modern laboratories of the high-developing countries.

The control and monitoring of the un-intentionally produced PCDD/PCDF are the most complicated issue in Mongolia. The following activities are recommended in this respect:

- Establish baseline database of emission estimation of dioxin and furan in air, water and soil;
  It can be solved 1) through establishing national laboratory facilities; 2) sending samples to foreign laboratories for analysis;

- Conduct detailed inventory of emission sources on regular bases;

- Carry out annual surveys to estimate the area and biomass covered by the steppe and forest fires, which occur every year over huge amount of territory.

According to the statistics of the Fire Fighting Agency, during the period of 1996-2002 there were 1,410 fires devastating 0.3 million km^2 of land where 20% of the vegetation area of the country. The national scientists consider that the forest and steppe fires are one of the potential emission sources of dioxin and furan in Mongolia.

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

There is no system for registering new chemicals presently. In accordance to the previously used classification of chemical substances, only 434 chemicals were covered, i.e. no control over the use of other hazardous and toxic chemicals, not included in the list. But, the newly ratified law on chemicals provided to apply the Global Harmonized System for classification and labeling of chemicals in Mongolia. Therefore, all new chemicals shall be classified from now on, conditioning the control over the usage.
New pesticides are registered according to the Regulation on registering and testing pesticides in Mongolia by the Joint Decree of the Ministers of Environment and Health. Another joint decree by the Ministers of Environment and Food and Agriculture approves the annual list of pesticides to be used and tested in Mongolia. The new pesticides to be tested in Mongolia, which are included in the list, shall be tested by specialized laboratories under supervision of state inspector and results shall be sent to the State Inspection Service of Agriculture. The pesticides that meet the tst requirements shall be listed in the state registration.

For the household pesticides, the Minister of Health passed a decree in 1999 on registering, de-listing and licensing procedures.

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

Usage of any chemicals that not banned in Mongolia and not covered in international treaties to which Mongolia is a party is allowed in Mongolia. According to the old chemicals law, companies and organizations, which use chemicals classified as “high toxic” were obliged to receive permission from the Ministry of Nature and Environment and provincial and capital city governors issue permission for other chemicals. But the newly ratified law provides that permission for importing all chemicals shall be issued by the Ministry of Nature and Environment. The ministry is duly responsible for registration and monitoring of the chemicals.

Methodological guidance on keeping a record of usage of chemical substances was approved by the Minister of Nature and Environment in 2000 and obliged the users of chemicals to keep registration of their chemicals, classifiying into a number of categories as toxic, flammable, explosive and erosive etc. and keep records on volume used, stock, storage condition etc.

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

3.1. POLICY STATEMENT

Drafting of the National Implementation Plan went in 3 steps as following.

1st Step – First draft was sent to all ministries for comments, and received comments and additions have been inserted

2nd Step – Discussed and endorsed at the NIP Endorsment Workshop

3rd Step – Discussed and approved at the Nature and Environment Minister's Council

During the 1st Step, the first draft was distributed to the following ministries including, the Ministry of Justice & Domestic Affairs, Ministry of Foreign Affairs, Ministry of FInance, Ministry of Construction and City Planning, Ministry of Defence, Ministry of Education, Culture & Science, Ministry of Road, Transportation & Tourism, Ministry of Social Protection & Labor, Ministry of Fuel & Energy, Ministry of Industry & Trade, Ministry of Food & Agriculture, Ministry of Health, Minister of Professional Inspection and Minister of Emergency for comment. Total of 27 comments and proposals for addition received from the ministries, and 18 of which were added to the document.

The NIP Endorsement Workshop was organized in 21-22 March 2006 in Ulaanbaatar, gathering together about 70 representatives from relevant ministries, agencies, industries, research institutions and non-governmental organizations. Participants were urged to deliberate on each of the items, objectives and activities of the National Implementation Plan.

The amended draft of the plan was submitted to the Council of the Minister of Nature and Environment and discussed and approved the plan on 11 April 2006, where decided to submit the plan for the approval of the Government.

At its session of 03 May 2006, the Government of Mongolia heard the National Implementation Plan for the Persistent Organic Pollutants and decided to approve it.

Translation and copy of the resolution of the Government, which approved the NIP was annexed to this document.

The National Implementation Plan on the Persistent Organic Pollutants is planned to be implemented in 2 stages in Mongolia.

STAGE I (2006-2010) legal framework to implement the plan will be improved, quantity, sources, wastes volume and contaminated sites of POPs will be identified precisely, preparatory measures for actions to reduce emissions and decontamination will be taken and a national capacity will be strengthened.

STAGE II (2011-2020) actions to stop usage of POPS containing equipment, eliminate stockpiles, decontaminate polluted sites and reduce emissions will be implemented.

The lead agency to implement the National Implementation Plan is the Ministry for Nature and Environment and it takes responsibilities of administering, coordinating and supervising and will work together with other relevant ministries, agencies, research institutes and non-governmental.

3.2. IMPLEMENTATION STRATEGY

3.2.1. Introduction

Although we concluded that basis for implementing provisions of the Stockholm Convention is established in Mongolia, we have several problems in successfully realizing POPs activities, as identified in result of the preliminary inventory of POPs.

Table 29. The SWOT analyses of possibilities to fulfil the provisions of the Stockholm Convention

Strength	Weakness
No POPs production and import Relatively low volume of POPs pesticides were used Number of Dioxins and Furans sources are few Number of POPs contaminated sites are few	No standards, norms, procedures and instructions No information database No information exchange network No complete data and information on sources No complete data and information on contaminated sites No special laboratories (equipment, analyses methods etc) No qualified experts No storages and containers for keeping out-of-use equipment and oil, no oil draining equipment and no labor protection appliances No national capacity for collecting, transporting, storing, decontaminating and eliminating POPs containing or contaminated articles and wastes. No monitoring system Public awareness and knowledge is insufficient
Opportunities	**Threats**
• The Convention is ratified • Political will of the POPs problem in Mongolia, demonstrated, *inter alia,* by the: - Ecological policy of the Government of Mongolia - Sustainable Development Programme of Mongolia in the 21 Century - Programme on Waste Disposal - Action Programme on Environment - Measures for Chemical Safety Provision • Legislative framework, incl.: - Environmental protection law - Law on Land - Law on Protection of Forest from Fire - Law on Protection of Natural Plants - Law on Air - Law on Protection of Chemicals - Law on Environmental Impacts Assessment - Law on transportation, import of hazardous substances - Law on Household and Industrial Wastes	Political instability Economic hardship No financial resources for implementing the activities Insufficient knowledge and information of decision-makers and enterprises managements on POPs Scarcity of specialized professionals Technologies in most industries are out-of-date

3.2.2. NIP Policy Basis and Implementation Objectives

Legal background

"The law on protection from toxic chemicals" states that the issue of chemical safety shall refer to the responsibility of the Government institution in charge of nature and environment.

According to the "Amendment to the law on protection from toxic chemicals" a National Council for Chemical Safety (NCCS) is working under the Ministry of Nature and Environment. The

NCCS's mandate is to provide technical advice on the import of very toxic substances and issue import permits. It has a network in 21 aimags (Mongolian regions), which are sub-divided into more than 300 soums (Mongolian counties). The rule of the NCCS shall be approved by the Government. The NCCS is an inter–sectoral body represented by 35 members from different ministries, agencies, economic entities, research institutes, professional inspection agencies and others.

3.2.3. Implementation Principles

Principles to overarch during the implementation of the NIP will be as following, but not limited to:

- Inclusion of public and stakeholder participation;
- Transparency in information sharing and exchange, particularly related to monitoring and reporting on implementation activities;
- Integration with overall environmental management and sustainable development policies;
- Adherence to and use of technologies and applications of international standards; and
- Commitments regarding public awareness and education.

3.2.4. Priorities and Conditionality

Depending on the results of preliminary inventories and current situation in the country, priority actions of POPs were determined as following.

1. Stop usage of PCBs containing equipment, eliminate their stockpiles and wastes in environmentally sound manner and decontaminate polluted sites.
2. Improve management of hazardous wastes, especially medical wastes, used oils, plastics etc, and reduce hazards of POPs wastes by way of eliminating and recycling environmentally friendly methods.
3. Build capacity for research and monitoring of POPs chemicals.
4. Raise awareness on POPs chemicals among general public and "risk groups" and create a sound information exchange system.
5. Development of proposals for the improvement of the inventory system of PCDD/PCDF, HCB and PCB releases from industrial processes and from non industrial sourses, including the updating and verification of emission factors.
6. Restoration of POPs contaminated sites.

3.2.5. Major Milestones

As mentioned earlier in this Chapter, the National Implementation Plan on the Persistent Organic Pollutants is planned to be implemented in 2 stages in Mongolia.

2006-2010 legal framework to implement the plan will be improved, quantity, sources, wastes volume and contaminated sites of POPs will be identified precisely, preparatory measures for actions to reduce emissions and decontamination will be taken and a national capacity will be strengthened.

2011-2020 actions to stop usage of POPs containing equipment, eliminate stockpiles, decontaminate polluted sites and reduce emissions will be implemented.

3.2.6. Institutional/Organisational Arrangements and Assignment of Responsibility

As reflected in the Government Resolution, which approved the National Implementation Plan, a Council for POPs issues under the state central administrative organ in charge of nature and environment shall be responsible for nationwide organization, coordination and monitoring of the NIP implementation.

Also, the plan will be implemented through the way by assigning certain tasks to the existing government and non-government organizations. Following are the major responsibilities of the Ministries and agencies for the implementation of NIP.

The Ministry of Nature and Environment is lead agency of implementing the National Implementation Plan of the Stockholm Convention in Mongolia, as well as of coordinating activities of and cooperation between relevant stakeholders of the plan.
The Ministry shall be responsible for the following issues:

- to make legal coordination, make amendments and additions to relevant legislation and develop regulations and procedures for POPs related activities;
- to facilitate cooperation inter-relations between stakeholders and to provide the stakeholders with centralized management;
- to conduct inventories of production and utilization of POPs chemicals;
- to make a database and establish an information sharing network;
- to provide individuals, agencies and companies with information;
- to exchange information with international organizations;
- to organize proliferation activities, trainings, workshops and seminars, and
- to monitor and assess the implementation of responsibilities and duties of stakeholders and prepare a report and then submit the report to supreme bodies and the Convention Secretariat.

Ministry of Industry and Trade is responsible for the coordination of import and export of POPs-containing products, assistance in conducting inventory of POPs use and production and for the provision of policy and coordination to introducing and applying alternatives of POPs-containing products and equipment and environmentally sound technology.

Ministry of Fuel and Energy is responsible for assisting in the implementation of the activities and measures for limitation, elimination and monitoring of import and use of PCB-containing equipment and reduction of unintentional production of POPs chemicals. In addition, the Ministry shall be in charge of making amendments and additions to relevant laws and regulation, as well as develop rules and procedures in relation to the above activities and measures.

Ministry of Food and Agriculture is responsible for developing and implementing policy and measures for safeguarding food security. It should also the main decision-maker on pesticides to be used in agriculture, and to devise a mechanism for supervising the implementation of pesticides related policy and regulations and a mechanism for incriminating those who do not obey the regulations.

Ministry of Health is responsible for developing and implementing policy and measures for preventing human health from POPs, determining parameters of potential risks of POPs chemicals

to human health and conduct research works and surveys on diseases and ailments caused by POPs chemicals.

Ministry of Social Protection and Labor is responsible for making amendments and additions to the regulations on labor protection of manpower, which direct handle POPs-containing equipment and products, and for initiating actions for improving labor conditions.

Ministry of Education, Culture and Science is responsible for developing curricula on POPs chemicals, their hazards to human health and environment and possible prevention measures for all level education institutions.

Ministry of Finace is responsible for reflecting required financial resources in the annual, mid-term and long-term budget and socio-economic development plans and for facilitating to make use of other financial resources e.g. soft loans and grant-in-aids from international community for POPs reduction and disposal projects.

State Emergency Agency is responsible for rendering assistance in locating POPs stock and residue and large sources and sites of strong POPs contamination, assessing risks and hazards, preventing hazards and eliminitaing aftermath of hazards and accidents in case if such incidents occur.

General Customs Agency controls and ensures compliance with the prohibition of import and export of POPs, and internally organize activities for raising knowledge and understanding of POPs among customs officers and upgrading their qualification.

State Professional Inspection Agency is responsible for monitoring the implementation of international treaties and national legislation on POPs, as well as monitoring of overall compliance with POPs related regulations in relation to environment, health, food, agriculture, production, labor ptotection, standardization and quality and responsible for calling to legal account of any violation.

National Centre for Standardization and Metrology shall approve the national standard of permissible level of POPs chemicals in air, water and soil.

Governors of aimag, soums, Capital city and districts shall carry out activities targeted at the POPs elimination and POPs generation reduction activities at their respective level. Main responsibilities of the bodies include the promotion of cleaner fuels and BAT in the energy production.

Energy and other enterprises are obliged to modernize their technologies by introducing BAT/BEP, aiming at the reduction of unintentional generation of POPs and elimination of POPs-containing equipment and wastes.

The Ministry of Nature and Environment will have the following organizational system, supporting the implementation of the provisions of the Stockholm Convention:

- *Executive team/National Council*

- *National Committee/DNA of the Convention*

3.2.7. Implementation Approach

The following are the major activities to be implemented under the NIP to implement the Stockholm Convention.

- to develop standards and permissible levels of POPs in air, soil, water and food products, procedures and guidance on handling POPs containing products and equipment and waste disposal;
- to establish an integrated information database by analyzing and labeling PCBs containing equipment, create monitoring system of PCBs containing equipment, execute remediation and replacement of PCBs containing equipment and eliminate PCBs containing wastes on environmentally sound manner by 2020;
- to identify sources of dioxins and furans and volume and scope of their emissions and releases precisely and create a monitoring system, introduce technological renovation in the major sources, and to reduce their emissions applying best environmental practices;
- to organize awareness raising activities on pesticides, strengthen control on the import food products, and identify sites polluted by pesticides and decontaminate them;
- to establish information database and network, as well as monitoring system on POPs chemicals and conduct research works on impacts of POPs chemicals on environment and human health and future trends of illness associated with the impacts;
- a set of training materials will be prepared for the curricula of higher educational institutes and schools and training materials will also be prepared for risk groups, and
- national capacity will be built for laboratories and experts to conduct monitoring and research on POPs chemicals.

3.2.8. Implementation Strategy Review Mechanisms

The strategy to implement the National Implementation Plan shall have a mechanism for Reviewing and Reporting.

Reporting to The Convention Secretariat:

1. Developing an assessment system and report in every 4 years on the NIP implementation progress.
2. Progress on activities for PCBs eliminating in every 5 years.
3. Basing on the monitoring results, report on changes of emissions and residues of POPs in environment in every 4 years.

Reporting to Government:

1. NIP implementation progress report annually.
2. Reports on NIP implementation in each stages.

3.3. ACTIVITIES, STRATEGIES AND ACTION PLANS

3.3.1. Activity: Institutional and regulatory strengthening measures

Objectives. The major goal is to create institutional and organizational basis for the realization of the Stockholm Convention in Mongolia.

Background. In order to implement the convention at the national level it is very essential to assess the current situation of the national infrastructure and institutions to manage the issue and to define a collaborative structure for POPs management, control, monitoring and R & D including their responsibilities. The assessment of the national capacity for law enforcement and regulatory controls is very significant to implement the convention at the national level. This work includes identifying the main problems of the national institutions to manage the POPs issues, opportunities to strengthen them and the priority actions to be undertaken together with the financial needs. In addition, it is requisite to establish a management system that should consist of legal, financial and organizational subsystems to implement the Stockholm Convention and the National Implementation Plan.

Legal background. The State Great Hural (Parliament) of Mongolia, at its general session on November 7, 2003, ratified the Stockholm Convention on Persistent Organic Pollutants. The Mongolian Law on Toxic and Hazardous Chemicals has a provision regulating that "In case of dispute between the national laws and the international treaties that Mongolia has joined, the international treaty shall prevail."

The Ministerial Decree No. 75 of 14 May 1997 banned the use of aldrin, dieldrin, chlordane, DDT, endrin, hexachlorobenzene, heptachlor and toxaphene, the joint Decree No 63/89 of the Minister of Nature and Environment and the Minister of Health includes 12 POPs chemicals in the National list of the very toxic chemicals and another joint decree included POPs contained products in the "List of products that contain toxic and hazardous chemicals". In addition, "Procedure for Coordinating Import, Transport and Usage of Products Containing Hazardous and Toxic Chemicals" was approved. On the whole, it can be concluded that the legal background to implement the Stockholm Convention is created in Mongolia.

But, there is no standard of permissible level of POPs chemicals in air, water, soil, food products and products containing POPs. Also, norms for workers, which directly handle PCBs on their labor condition, labor protection and safety has not yet been developed.

Below are 8 actions proposed under Activity 3.3.1 Strengthening regulatory and implementation mechanism of the plan.

Action A1. Make changes in the List of Chemical Substances Prohibited and Limited to Use in Mongolia.
Hexachlorobenzene, Mirex and Polychlorinated Biphenyls (PCBs) will be added to the list, approved by the Order 75 of the Minister of Nature and Environment, dated 1997.

Supervising authority: MNE
Implementing agency: MNE
Costs and their category: 0.5 mln MNT
Source of funding: state budget
Implementation period: 2006

Action A2. Develop procedure for collecting information on POPs
A procedure will be developed and enacted on the collection of information and data on POPs containing equipment, stocks and residues, as well as collect information from the sources, which unintentionally generate POPs.

Supervising authority: Ministry of Nature and Environment (MNE)
Implementing agency: MNE, MFE, MIT, MFA
Costs and their category: 1.0 mln MNT
Source of funding: state budget
Implementation period: 2006

Action A3. Develop guidelines and procedures for creating information database and network
A procedure will be developed and enacted on the development of guidelines and procedures for creating and operating electronic information database and network for synthesizing information taken from relevant sources nationwide and for exchanging information.

Supervising authority: MNE
Implementing agency: MFE, MIT, MFA
Costs and their category: 1.0 mln MNT
Source of funding: state budget
Implementation period: 2007

Action A4. Develop POPs emission standards
Standards of permissible level for monitoring POPs emission will be developed to control unintentional production from sources.

Supervising authority: MNE
Implementing agency: NCSM, MFE, MIT, MoH
Costs and their category: 1.5 mln MNT
Source of funding: state budget
Implementation period: 2007

Action A5. Develop a standard of maximum permissible level of POPs chemicals
The standards for POPs chemicals in air and drinking water of workplaces and in sewage, soil, sediment, food and lubricants will be developed.

Supervising authority: MNE
Implementing agency: NCSM, MoH, MFE, MIT, MFA
Costs and their category: 1.5 mln MNT
Source of funding: state budget
Implementation period: 2007

Action A6. Insert amendments to the Classification Standard of Labor Condition
Amendment on classifying labor condition of workers, which directly handle PCBs, as "Toxic" will be inserted in the Classification Standard of Labor Condition.

Supervising authority: MNE
Implementing agency: MoH, MSPL
Costs and their category: 0.8 mln MNT
Source of funding: state budget

Implementation period: 2006

Action A7. Develop a procedure for collecting, storing, transporting, eliminating and decontaminating POPs-containing wastes

Instruction manual and procedure for collecting, storing, transporting, eliminating and decontaminating POPs wastes will be developed in order to facilitate implementation of activities to eliminating POPs containing wastes in environmentall sound and harmless to human health methods.

Supervising authority: MNE
Implementing agency: MNE
Costs and their category: 2.0 mln MNT
Source of funding: state budget
Implementation period: 2008

Action A8. Financial facilitation and promotion of introducing BAT/BEP
Government agencies and private sector enterprises, which introducing and implementing technological renovation and upgrading in their production and introducing alternatives of POPs containing equipment and products for the purpose of reducing POPs stock and generation will be supported through financial means e.g. privilege in tax.

Supervising authority: Ministry of Finance (MoF), MNE
Implementing agency: MFE, MIT
Costs and their category:
Source of funding: state budget
Implementation period: 2008-2020

Action A9. Revision of legal acts related to disposal of medical wastes

Amendment with regard to the improvement of management and operations for classifying, collecting, storing, transporting and disposing of medical wastes and reduction of dioxin/furans from this source will be made in the Joint Decree by the Minister of Nature and Environment and Minister of Health, numbered 249/201 of 2002 on Classification, Collection, Storage, Transportation and Disposal of Wastes from Medical Organizations.

Supervising authority: MNE
Implementing agency: MNE, MoH
Costs and their category: 1.0 mln MNT
Source of funding: state budget
Implementation period: 2008

Workplan for actions under Activity 3.3.1.

	Implementation Schedule		
Year	2006	2007	2008
Actions	A1,A2, A6,	A3, A4, A5,	A7, A8,A9,

Coordinator of entire activity: MNE
Total implementation cost: 9.3 mln MNT

3.3.2. Activity: Measures to eliminate releases from intentional production and use

Mongolia has never produced Annex A chemicals of the Stockholm Convention, only imported them.

Usage of POPs pesticides are depicted in Activity 3.3.3 and Decree No75 of 1997 by the Minister of Nature and Environment banned the usage and import of POPs pesticides.
Actions related to PCBs usage and elimination are described in Activity 3.3.4.

3.3.3. Activity: Production, import and export, use, stockpiles and wastes of Annex A POPs pesticides (Annex A, Part I chemicals)

Objective. To determine and assess stockpiles and wastes of pesticides containing Annex A substances of the Convention.

Background. As Mongolia has been maintaining an extensive livestock tradition, the country started using insecticide from 1950s for the purpose of combating internal and external parasites and diseases and using pesticides from 1958 in plants protection as agrarian sector started developing.

According to the preliminary inventory of POPs pesticides, conducted in 2004, Mongolia used hexachlorobenzene, chlordane, aldrin, dieldrin and heptachlor in small amount in 1969-2003 period. The most popular or broadly used pesticide was hexachlorocyclohexanes and this pesticide is presently not listed in the Annexes of the Stockholm Convention.

It can be concluded that Mongolia does not have obsolete pesticides landfills, stockpiles and wastes of POPs pesticides, however, probably there are sites contaminated with these chemicals.

Action B1. Locate and restore sites contaminated by POPs pesticides

Contamination level of possible sites, where pesticides had been used previously, will be estimated and also possible impacts from these sites to surrounding environment and human health will be determined. In case of necessity, decontaminating and restoration measures will be taken.

Supervising authority: MNE
Implementing agency: MFA, SPIA
Costs and their category: 500 mln MNT
Source of funding: GEF, donors, budget of Province
Implementation period: 2009-2020

Action B2. Establish mechanism for improving control over pesticides content in foodstuffs and pesticides import

Mechanism for improving control over import of foodstuffs and pesticides, especially household insecticides, will be devised. Successful implementation of this action will enable end bringing foodstuffs that contain exceeded amount of POPs pesticides higher than the permissible level and or foodstuffs with uncertain contents and ingredients.

Supervising authority: SPIA
Implementing agency: MFA, MoH, General Customs Agency (GCA)
Costs and their category: 1.5 mln MNT
Source of funding: state budget

Implementation period: 2008

Action B3. Cadastrial registration of sites

Location of sites contaminated by POPs chemicals, sites licensed for companies and economic entities to use POPs chemicals and decontaminated sites will be listed in the cadastrial registration system and quality of sites and lands will be inspected and assured in every 1-3 years.

Supervising authority: MCCP
Implementing agency: MNE
Costs and their category: 100 mln MNT
Source of funding: GEF, donors
Implementation period: 2011-2020

Workplan for actions under Activity 3.3.1.

	Implementation Schedule	
Year	2008	2009-2020
Actions	B2	B1, B3

Coordinator of entire activity: MNE
Total implementation cost: 601.5 mln MNT

3.3.4. Activity: Production, import and export, use, identification, labelling, removal, storage and disposal of PCBs and equipment containing PCBs (Annex A, Part II chemicals)

Objective. Elimination from the use of PCBs in electrical equipment and other articles, and decontamination of PCBs-polluted equipment
Background. In a bid to implement the provision of the Stockholm Convention on stopping usage of PCB-containing equipment by 2025, the following actions need to be taken in Mongolia:

- Stop use of PCBs-containing equipment and complete de-contamination of polluted equipment by 2020,
- Environmentally sound storage of PCBs-containing equipment until their final elimination and
- Complete elimination of PCBs containing wastes through environmentally sound method by the end of 2020.

Mongolia does not produce PCBs locally and 96-99 percent of total equipment such as transformers and capacitors were imported from the Soviet Union until 1990s.

During 2004-2005, preliminary inventory of PCBs was conducted throughout the country and the the tavle below shows the results of the inventory.

Results of PCBs Inventory

Table

1	**Items**	**Volume**
1	Volume of oils that might contain PCBs (presently in use, tons)	5,518,345
2	Total equipment (pieces), including transformers capacitors and other oil equipment	13 109 4 637 8 472
3	Obsolete oil (tons)	17,76
4	Contaminated sites (m^3)	22

Samples were taken from the oils that might contain PCBs and test result shows that only 12.1 % did not contain PCBs, when 0.9% of the samples contain PCBs higher than 50 ppm, 6.7 % PCBs concentration is approximately 50 ppm. Concluding from the figures, about 90 percent of the equipment contained PCBs to some extent and almost 10 percent probably contained PCBs concentration higher than the permissible level set by the Stockholm Convention.

Lack of or insufficient information and knowledge about the PCBs among customers and citizens lead to violation of minimum labor protection during the handling of PCBs containing equipment and materials. Lack of procedures for disposing obsolete oils and fluids causes wide distribution of contaminated sites and harms to environment and human health. For instance, there are examples of re-using of obsolete oils and fluids. The Erdenet copper mining industry leaked approximately 2 tons of obsolete oils every year for the purpose of reducing dust in open mining area and reduce road slippery. Result of test made on the samples taken from soil around the site showed high content of PCBs.

It can be concluded that notwithstandin the preliminary inventory in 2004-2005 and chemical analysis results made during the inventory, no other activities and measures taken for PCBs monitoring and research in Mongolia.

Therefore, for eliminating the use of PCB-containing equipment and decontamination of wastes, it is requisite to take the following measures:

- Carry out detailed inventories of PCBs and equipment containing at least 5 dm^3 of PCB-contaminated liquids with concentrations of 0,005%, as well as contaminated sites and develop central database,
- Devise a mechanism for collecting, storing and transporting PCBs containing equipment and wastes,
- Decontaminate and eliminate PCBs containing equipment and waste using BAT/BEP, and
- Develop PCBs monitoring system.

Action C1. Developing PCBs database

Within the framework of this action, detailed inventories of PCBs and equipment containing at least 5 dm^3 of PCBs contaminated liquids with concentrations of 0,005%, as well as contaminated sites will be carried out in entire energy and industry sector and other relevant economic entities and central database will be developed. In addition, PCBs containing equipment will be labeled. As result of this action, PCBs location, stockpiles and volume will be determined.

Supervising authority: MNE, MFE, MIT
Implementing agency: A team nominated by MNE, MFE and MIT
Costs and their category: 300 mln MNT
Source of funding: budget of electric energy distribution and transmission companies and transformer user companies
Implementation period: 2007

Action C2. Develop PCBs monitoring

The database, which will be created as result of Action C1, will be upgraded and extended as a national network for exchanging information. In addition, monitoring capacity of PCBs contamination in air, water and soil and the contamination distribution will be created. This action will also create a mechanism for improving the implementation of Environmental Protection Law and for the management and supervision of usage, elimination, storage of PCBs containing equipment and wastes.

Supervising authority: MNE

Implementing agency: MFE and MIT
Costs and their category: 50 mln MNT
Source of funding: GEF and donors
Implementation period: 2007

Action C3. Create a mechanism for collecting, storing and transporting PCBs containing equipment and wastes

In compliance with the Law on Protection from Toxic Chemical Substances and Procedure for Coordinating Import, Transport and Usage of Products Containing Hazardous and Toxic Chemicals (Joint decree by the Ministers of Nature and Environment and Health, No126/171, 2003), as well as international regulations and recommendations, a guidelines for collecting, storing and transporting PCBs containing equipment and wastes will be developed. In addition, a special storage for keeping PCBs containing equipment and wastes until elimination and disposal will be built.

Supervising authority: MNE
Implementing agency: MNE, MFE, MIT
Costs and their category: 200 mln MNT
Source of funding: GEF and donors
Implementation period: 2008

Action C4. Eliminate usage and decontamination of PCBs containing equipment

In order to implement the provision in the Article 6 of Stockholm Convention and Annex A, Part II, the deadline for eliminating usage and decontamination of PCBs containing equipment will be as following:

2012	20%
2014	40%
2016	60%
2018	80%
2020	100%

Financial support from GEF and other financial organizations is necessary to implement the action.

Supervising authority: MNE
Implementing agency: MNE, MFE, MIT
Costs and their category: 500 mln MNT
Source of funding: budget of electric energy distribution and transmission companies and transformer user companies, GEF and donors
Implementation period: 2008-2020

Workplan for actions under Activity 3.3.4.

	Implementation Schedule		
Year	2007	2008	2008-2020
Actions	C1, C2	C3	C4

Coordinator of entire activity: MNE
Total implementation cost: 1050 mln MNT

3.3.5. Activity: Production, import and export, use, stockpiles and wastes of DDT (Annex B chemicals) if used in the country

Mongolia does not produce and use DDT

3.3.6. Activity: Register for specific exemptions and the continuing need for exemptions

POPs pesticides are listed in banned chemicals in the country and their usage is also stopped. However, PCBs containing equipment are still in use and according to the goals set forth in this Programme is to phase out these equipment and eliminate environmentally sound manner by 2020. No practice of using DDT in Mongolia. Therefore, Mongolia does not need to submit requests for exemption.

3.3.7. Action plan: Measures to reduce releases from unintentional production

Objective. The aim of this activity is to take action, pursuant to Article 5 of the Convention, to reduce unintentional releases of PCDDs/PCDFs, HCB and PCBs formed in certain industrial processes.

Background. Unintentional production of substances listed in Annex C of the Convention takes place during the processes of chlorinating hydrocarbons in the chemical industry, in metallurgical processes and in processes of fuel combustion in energy production as well as during incineration of waste and in secondary alluminium production.
As for Mongolia with long-lasting cold season and enormous resource of coal, a large volume of solid fuels such as coal and wood and animal dung are used for energy production both in central and individual plants and households. This is one major source for dioxin/furan emissions in Mongolia.
Among this, uncontrolled combustion process or uncontrolled combustion of wastes is the main factor for dioxin/furan emissions,. So far, Mongolia does not have a specially designed furnace for burning household and industrial wastes and wastes collected at the dump areas are burned most often intentional and unintentional human factors.

In addition, disposal of medical wastes is a considerable matter of concern and most of the clinics and hospitals burn their wastes at dumping areas or in their surroundings as they have no special stoves and furnaces. Even in the hospitals with special stoves, a disposal is being executed insufficiently. Their stoves are located in populated area and have no filters and purifying system, however they are special stoves for medical waste. In addition, the workplace for the people, directly executing the incineration, does not answer minimum requirements of labor protection.
Within the framework of the “Enabling activities to facilitate early actions on the implementation of Stockholm Convention on Persistent Organic Pollutants (POPs) project”, the preliminary inventory on dioxin/furan sources was conducted in 2005. During the inventory, calculation of potential dioxin/furans releases was made using the “Standardized Toolkit for Identification and Quantification of Dioxin and Furan Releases”. The results of the inventory indicate that sludge generated from households and industrial sewage treatment is the major source of dioxins and furans releases into the Mongolian environment. It was estimated that sewage sludge accounts for approximately 86% of all dioxin/furans releases. According to the analysis in the sludge, content of dioxins/furans was relatively high.

Out of 150,000 automobiles and self-propelling mechanisms, which are mostly used for many years, 14 percent uses diesel fuel and remaining 86 percent uses gas. There is an estimation that about 20 percent of total dioxin/furans in the air are generated from these automobiles.

Mongolian metallurgical industries use only waste metals as raw material and except one enterprise, mostly small-scale private enterprises, operate with out-of-date technology and equipment and no smoke filters and purifiers installed. Generation of dioxin/furan in these snterprises is comparatively high as they do not clean their raw materials or waste metals up from certain substances such as paints and oils before production process.

Although, there are some emissions from the production of brick, cement, lime. hide and skin processing and wool and cashmere processing, the emissions are relatively low in comparison to other sources.

Reduction of unintentional production from energy and heating

Power plants, boilers and household stoves, which use solid fuels, produce many substances as dioxin and furan, nitriñ oxides, sulphur and carbon dioxide, which are harmful to the environment and human health and cause various diseases like cancer.

In order to reduce emissions of dioxin/furans from energy production, it is considerably possible to increase the portion of renewable energy (solar, wind and hydro) in the production of energy and upgrade the existing technology in the energy production sector.

Although, there is a possibility to reduce pollution from household stoves by way of replacing solid fuels with effective gas or liquid fuel or improved fuel, connecting households and enterprises to the central electricity, thermal and hot water distribution grid, and replacing presently using household stoves with full combustion and low consumption stoves, it is only in start-up stage due to economic and financial problems.

For the moment, the feasibility of reducing the consumption of coal, which is the cheapest and abundant fuel, is slightest in the near future, because of the country's economy and people's subsistence level is weak and low. Therefore, reduction of dioxin/furan emissions in Mongolia can be more successful in case of adopting BAT/BEP.

In order to reduce unintentional emissions from energy and heating production, it is necessary to take the following measures, including:

- to replace low efficiency, high consumption and high polluting furnaces, boilers and stoves in all energy and heating producers and households with high-efficiency and full combustion devices,
- to reduce losses from heating distribution networks and implement technological renovation for effective use of heating,
- to introduce BAT/BEP in the reduction of dioxin/furans from power plants and individual boilers,
- to connect enterprises with partial heating system to the central grid,
- to replace existing household stoves with low consumption and full combustion stoves,
- to establish improved briquette fuel production,
- to replace coal with environmentally sound fuel like gas and promote its use, and
- to reduce coal use by way of establishing new sources of renewable energy.

Reduction of unintentional emissions of dioxin/furans from waste incineration

Improving waste management, reducing volume of wastes by way of recycling and introducing BAT/BEP in waste elimination process shall have direct impact on the dioxin/furans emissions. In order to do so:

- to establish waste sorting out system,
- to reduce volume of waste by way of re-using and recycling,
- to build central furnaces specifically for waste incineration, specially medical and hazardous wastes, in Ulaanbaatar and other large cities,
- to prohibit intentional burning of wastes in dump areas and or public areas, and
- to stop burning hazardous wastes such as plastics, rubbers, plastic packages and tires by way of improving and increasing public awareness activities.

Reduction of unintentional emissions of dioxin/furan from transport means

Volume and content of toxic gases emitted from transport vehicles depends on the fuel types, as well as the specific features of the vehicle itself. Leaded gasolene produces 2 times more dioxin/furan during combustion in comparison to gasolene without lead.

In order to reduce emissions from this source, it is necessary to take the folowing measures, including:

- stop import of this type of liquid fuel or leaded gasolene,
- standardize permissble level of dioxin/furans in smoke from vehicles, and
- establish a mechanism of prohibiting usage of vehicles with higher emission of dioxin/furans than the standard level.

Storage and disposal of sludge from sewage treatment facility

The following activities shall be carried out to store and dispose of sludge from industrial and household sewage traetment facilities:

- to establish special storage points for sludges, and
- to select and apply a environmentally-friendly sludge eliminating technology.

Reduction of unintentional emission of dioxin/furans from ferrous and non-ferrous metal production

It is feasible to reduce dioxin/furans emissions from these sources by stopping operation of industries with out-of-date technology and introducing technological renovation.

Action D1. Emission level of dioxin/furan producing sources

The expected output of this action will be a detailed list of dioxin/furan sources among the presently in-use technologies and operation and emission levels of these sources. The obtained results will be used in further activities and actions towards the reduction of dioxin/furan emissions.

Supervising authority: MNE
Implementing agency: MFE, MIT
Costs and their category: 12 mln MNT
Source of funding: state budget, GEF, donors
Implementation period: 2009

Action D2. Calculation and verification of distribution factors for major sources of dioxin/furans

Distribution factors of dioxin/furans will be verified on each of major sources at present level and will be calculated after application of new technologies and upgrading operations in the sources. The results obtained will be used in emission inventories and for reporting.

Supervising authority: MNE
Implementing agency: MFE, MIT
Costs and their category: 10 mln MNT (each time)
Source of funding: budget of companies and state budget
Implementation period: each time

Action D3. Establishment of database on unintentional production of POPs

A guidance will be worked out for collecting information on unintentional production of POPs from technological processes and a consolidated database will be established. Data and information in the database will be used for reporting to relevant bodies including Convention Secretariat and in activities and actions towards reduction of emissions.

Supervising authority: MNE
Implementing agency: MFE, MIT
Costs and their category: 7 mln MNT
Source of funding: Environmental protection fund
Implementation period: 2009

Action D4. Measurement at each major dioxin/furans emission sources

Major sources of dioxin/furans emissions to be measured will be determined and will be estimated the measurement frequency and required funding for this action.

Expected outcome is the real value of dioxin/furans from major sources will be calculated. In addition, the outcome of this action will enable the budgeting of financial expenditures for periodical measurement.

Supervising authority: MNE
Implementing agency: A team nominated by MNE
Costs and their category: 150 mln MNT
Source of funding: GEF and donors
Implementation period: 2010

Action D5. Feasibility study of introducing BAT/BEP in dioxin/furan sources

Information on BAT/BEP, which can be applied in the country's major sources of dioxin/furans, including energy and heating producers, will be collected and experts will select compatible versions of BAT/BEP in Mongolian condition.

Supervising authority: MNE
Implementing agency: MNE
Costs and their category: 20 mln MNT
Source of funding: GEF and donors
Implementation period: 2010

Action D6. Introduce BAT/BEP in Dioxins and Furans sources
BAT/BEPs will be introduced in major sources of Dioxin and Furan in accordance with assessments made by experts.

Supervising authority: MNE
Implementing agency: MEF, MIT
Costs and their category: 500 mln MNT
Source of funding: GEF and donors, budget of companies
Implementation period: 2010-2020

Action D7. Environmental impact assessment of dioxin/furan sources

Assessment of adverse impacts from the sources to air, soil, water and human health will be made, as well as their scope will be determined.
The results will be used in public awareness raising activities and training, reporting and in activities for reducing the pollution.

Supervising authority: MNE
Implementing agency: MNE
Costs and their category: 12 mln MNT
Source of funding: GEF and donors
Implementation period: 2010

Workplan for actions under Activity 3.3.7

	Implementation schedule			
Year	2009	2010	2010-2020	Each time
Actions	D1, D3	D4, D5, D7	D6	D2

Coordinator of entire activity: MNE
Total implementation cost: 711 mln MNT (10 mln each time)

3.3.8. Activity. Measures to reduce POPs releases from stockpiles and wastes

Objective. Objective of this activity is to reduce releases of persistent organic pollutants and POPs-containing substances from stockpiles and wastes pursuant to Article 6 of the Stockholm Convention.

Background

The basic legal act, regulating waste and its management, in Mongolia is "Law on Industrial and Household Wastes", adopted in 2003. In addition, the Government of Mongolia approved "Some Measures for Improving Waste Management" and "The rule of sorting, gathering, packaging, temporary stocking, transporting, risk reduction, storage, and disposal of hazardous waste and waste of chemical substances" in 2001 and 2002, respectively.
The aforementioned legal acts, which are presently in force, have no provisions and contents on POPs-containing wastes, on how to decontaminate, how to dispose and how to recycle, as well as on measures for reducing POPs chemicals that can be produced during waste incineration processes.

Therefore, it is neccessary to increase and intensify awareness raising activities among general public and companies and enterprises that produce POPs-containing wastes and to make changes in legal coordination of wastes in relation to certain specific wastes such as PCB-containing

wastes, industrial and household wastes, medical wastes and sludge from sewage treatment facilities.

There is no specific methods, technology and disposal points for POPs-containing toxic wastes in Mongolia and it causes environmental pollution.

One of the most appropriate ways of protecting environment and human health from POPs harms is to introduce environmentally sound technology and use best pratices of eliminating POPs-containing wastes and stockpiles.

Hazardous wastes containing chlororganic substances are eliminated by 2 methods – incineration and non-incineration.

Incineration methods. Volume of POPs chemicals that produced unintentionally during incineration process depends on the following factors:

1. Technology: malfunction in incineration process, and filtering function is insufficient.
2. Incineration temperature: intensive dioxins and furans emission process occurs at 200^{o}C-650^{o}C and the highest emission interval is 200^{o}C -450^{o}C or at point of 300^{o}C.
3. Waste composition: metals like copper, iron, lead and aluminium serve as a catalyst in the reaction of dioxins and furans emissions and intensify the reaction. Sulphur and nitrite has negative influence on the production of dioxins and furans, but has positive influence on the unintentional production of POPs substances. Chlorines in organic and inorganic compounds and monochlorine are direct factor for the production of POPs substances.

Therefore, POPs containing wastes shall be burned at high temperature, using progressive technology and the emissions shall be filtered up to the standard level.

Large volume of toxic gas and heat emits from the waste incineration process. In case of large volume of wastes, incineration method would be appropriate and larger the volume of wastes, larger the heat emission. Synchronously, emissions of toxic gases are also high. Considerably high cost is required for decontaminating the emitted toxic gases and this cost can be reduced by using the heat produced during the incineration process.

Non-incineration methods. This method can be used in case where POPs substances in waste are low, low heat from the incineration and waste composition is not so diverse. Initial cost of non-incineration method is 10 percent more in comparison to the incineration method, however, costs during operation is 20 percent lower.

Results of preliminary inventory conducted during 2005 show that the following types of POPs containing wastes are produced in Mongolia, including:

- PCBs containing equipment and obsolete oils
- sudge from treatment facilities
- residues of burned wastes in dumping areas
- ashes from medical wastes
- dust and slag from furnaces of metallurgy industries
- ashes from power and thermal plants, boikers and household stoves
- dust from filters of power plants
- dust and ash from filters of mineral industries

The aforementioned wastes are not considered as toxic and hazardous wastes and therefore they are dumped in open areas, polluting soil, water and air through wind and rain waters. In further, it is possible to reduce environmental pollution by POPs containing wastes and their residues by way of improving waste management.

The following actions shall be undertaken for the reduction of POPs chemicals produced by wastes. These action include:

- collect information on BAT/BEP and technologies and practices compatible to Mongolian condition will be selected by relevant experts;
- evaluate infrastructural, environmental and economical factors that can influence on the introduction and application of BAT/BEP for eliminating POPs containing wastes;
- implement technologies for eliminating POPs containing wastes and estimate investment cost and operational cost;
- make amendments and alterations to legal acts regulating activities for eliminating POPs containing wastes;

The aforementioned actions can be harmonized with the ”Action Plan for Eliminating Wastes in Environmentally Sount Methods” (Annex to Government resolution 256 of 2001) and be integrated into the waste management improvement programme.

Action E1. Selection of methods for eliminating PCB-containing equipment and wastes

As result of this action, BAT/BEP compatible to Mongolian condition will be selected by relevant experts. This will enable to fulfill Article 6 of the Convention, to eliminate the wastes by environmentally sound methods.

Supervising authority: MNE
Implementing agency: MNE
Costs and their category: 10 mln MNT
Source of funding: GEF and donors
Implementation period: 2008

Action E2. Elimination of PCB-containing wastes

This action will be completed by 2020 as indicated in Action C5 of this programme.
As result of this action, obligation taken by the Convention will be accomplished. It is necessary to obtain financial support from GEF and other financial organizations required for accomplishing this action.

Supervising authority: MNE
Implementing agency: MNE, MFE, MIT
Costs and their category: 1 000 mln MNT
Source of funding: GEF and donors, budget of companies
Implementation period: 2008-2020

Action E3. Precise determination of technological processes that produce POPs containing wastes

Detailed list of technological processes that produce POPs containing gas, liquid and solid wastes as byproducts will be prepared.
This list will be used in making guidance for actions for reducing and processing the wastes.

Supervising authority: MNE
Implementing agency: MNE
Costs and their category: 30 mln MNT
Source of funding: GEF and donors, Environmental protection fund
Implementation period: 2010

Action E4. Guidance for improving management of POPs containing wastes produced as byproducts during technological process

Guidance for replacing technologies that produce POPs containing wastes and introducing BAT/BEP will be prepared. This guidance will be a base of collecting and processing system of POPs containing wastes as result of technological processes.

Supervising authority: MNE
Implementing agency: MNE
Costs and their category: 5 mln
Source of funding: GEF and donors, Environmental protection fund
Implementation period: 2010

Workplan for actions under Activity 3.3.8

	Implementation schedule		
Year	2008	2010	2008-2020
Actions	E1	E3, E4	E2

Coordinator of entire activity: MNE
Total implementation cost: 1045 mln MNT

Strategy: Identification of stockpiles, articles in use and wastes

Objective. The goal of this strategy is to develop procedures facilitating identification of POPs found in unidentified sites and in equipment still in use (concerns PCBs).

Background. Presently, there is no specific landfills for POPs containing wastes in Mongolia. According to 2004-2005 preliminary inventory, there was no data and information about the pesticides that were disposed of in the soil but there was some information about used oils buried in special holes.

Sewage treatment facilities and metallurgic and producers of mineral goods usually do not have landfills and dumps their wastes in open areas, polluting the environment.

PCBs-containing equipment presently in use will be identified and labelled in accordance with Activity 3.3.4.

Action F1. Assessment of landfills for POPs containing industrial wastes

Location of identified and unidentified landfills for industrial wastes, their conditions, capacity, content and value of POPs chemicals and environmental impacts of these sites will be assessed.

Results of this assessment will be used in developing requirements for industrial waste landfills.

Supervising authority: MNE
Implementing agency: MNE
Costs and their category: 30 mln MNT
Source of funding: GEF and donors
Implementation period: 2009

Action F2. Requirements for POPs containing industrial waste landfills and development of methodological instruction for monitoring

Requirements for establishing landfills for POPs containing industrial wastes, requirements for operating and burying wastes will be worked out and a methodological instruction for monitoring of operating the landfills will also be developed.

This instruction will serve as a basic document of assessing the existing landfills for POPs containing industrial wastes and guidance for establishing new landfills. It can also be used for monitoring impacts of landfills to the ground water quality.

Supervising authority: MNE
Implementing agency: MNE
Costs and their category: 1.5 mln MNT
Source of funding: budget of companies and Environmental protection fund
Implementation period: 2010

Work plan for actions under activity 3.3.9

	Implementation schedule	
Year	2009	2010
Actions	F1	F2

Coordinator of entire activity: MNE
Total implementation cost: 31.5 mln MNT

3.3.10 . Activity. Management of stockpiles and appropriate measures for handling and disposal of articles in use

Detailed actions regarding PCB-conaining equipment are proposed under Activities 3.3.4 and 3.3.8.

3.3.11. Strategy: Identification of contaminated sites and remediation in an environmentally sound manner

Issues connected to the identification of PCB-contaminated sites will be executed in accordance with Activity 3.3.4 and assessment for requirements and methods for remediation will be made.

Issues connected to the identification of sites contaminated by POPs pesticides will be executed in accordance with Activity 3.3.3 and methodologies for restoration will be developed.

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

Objective. Aim of this activity is to establish a system of information exchange on POPs at national and international level.

Background.

Legal basis for access to and exchange of information. Pursuant to the Articles 9 and 10 of the Convention, Parties should provide public access to and update information on POPs, as well as

information may be circulated within the existing system and of information dissemination or through the Convention Secretariat.

Information exchange. Parties and stakeholders shall exchange information in the following fields:

- Reduction or elimination of production, use and releases of POPs, and
- Potential risks for humans and the environment, including information on accompanying economic and social costs.

In accordance with the provisions of the Convention, information on health and safety of humans and the environment is not regarded as confidential, but Parties that exchange information will protect any confidential information as mutually agreed.

To initiate exchange of information, it should first be obtained from different level administration bodies and entities from outside the administration and then should be adequately inventoried. Information on POPs may be distinguished as information on pollutants, on release and emissions processes, on technologies applied, on health and environmental threats and on substances alternative to POPs. These information will be used in POPs inventory and information system.

Under the Convention, Parties shall nominate a national information exchange center or focal point. This focal point shall carry out the following function:

International information exchange

- Preparation of information on activities performed under the Convention and for the purposes of Conference of the Parties;
- Exchange of information with Parties directly or through the Convention Secretariat, and
- Preparation and updating information on government agencies and organizations that run similar activities through the line of other international treaties.

National information exchange

- Reports of national POPs inventories;
- Statistics and information taken from relevant organizations on import, use and disposal of Annex A and B substances;
- Information on emissions from unintentional production of Annex B substances;
- Results of monitoring activities on POPs chemicals, and
- Reports from research works on POPs .

For Mongolia, information collecting and exchange system is not in place for the moment and information collecting and exchange activities are carried out under the enabling activities project.

Action G1. System for the collection and exchange of information

As result of this action, a system for collecting and exchanging information at national and international level will be developed.

Supervising authority: MNE
Implementing agency: MNE
Costs and their category: 10 mln MNT
Source of funding: state budget
Implementation period: 2009

Work plan for action under Activity 3.3.12

	Implementation schedule
Year	2009
Actions	G1

Coordinator of entire activity: MNE
Total implementation cost: 10 mln MNT

3.3.13. Activity. Public awareness, information and education

Objective. Goal of this activity is to accelerate public awareness raising activities and incorporate into national education system an information on POPs related issues, pursuant to Article 10 of the Convention.

Background. Awareness and information raising activities started in Mongolia since 2003 under the Project for Enabling Activities to Facilitate Early Action on Implementation of the Stockholm Convention. The activities involved officers from relevant ministries and agencies, environmental inspectors from 21 aimag provinces and 360 soum settlements, employees from agricultural and energy sector, and representatives from higher educational institutes, NGOs and research organizations. The activities include publication and distribution of books and leaflets, braodcasting of TV programmes and place information on website.

It can be concluded that the activities performed under the project were successful, the stakeholders like relevant ministries and agencies and representatives from provincial professional bodies had sufficient information on harms of POPs and their reduction and disposing measures. However, the activities carried out so far are not enough among general public.

It is important to deliver information and giving education to politicians and other decision makers, general public, relevant sectors, research workers and mass media means on POPs sources, POPs releases, harms and progressive technologies. Specially, awareness raising activity for general public has vital importance in encouraging them to protect themselves and the environment from POPs harms, in strengthening public control on POPs sources and in reducing processes that produce POPs substances.

The scope of education activities. Educational activities concerning POPs should focus on the following issues:

- Properties and characteristics of POPs;
- their sources;
- application and use;
- emissions and releases;
- effects and impacts;
- methods for preventing and avoiding threats from POPs;
- health hazards, and
- management and treatment of waste containing POPs.

These activities should be carried out among general public and “groups at risk”. The Groups at Risk can be the workers who directly handle PCB-containing equipment, workers of thermal plants and boilers, workers who handle agricultural pesticides, workers of waste metal processors and workers from minerals production, especially from lime production.

Awareness raising. Awareness raising shall be carried out for general public and selected target groups, e.g. for businesses, customs and professional inspection inspectors, NGOs etc.

Also, this activity can be made through, TV and radio broadcasts and internet, as well as through books, posters and booklets. Reports and results of inventories, monitoring, research works and updates on scientific achievements improve the efficiency of awareness raising activities.

It shall also be taken into consideration of involving NGOs into the awareness raising activities.

Action H1. Preparation of a set of educational materials for students

Set of education kits and materials for different types of schools and higher education institutes on POPs hazards and preventing measures will be prepared. The materials shall be included in the curriculum of subject on ecology.

Supervising authority: MNE
Implementing agency: MECS
Costs and their category: 5 mln MNT
Source of funding: GEF
Implementation period: 2007

Action H2. Implementation of education programmes for teachers of ecology and doctors of toxicology

Supervising authority: MNE
Implementing agency: MNE, MoH
Costs and their category: 60 mln MNT
Source of funding: GEF
Implementation period: 2007

Action H3. Preparation of instruction for workers who directly handle PCB-containing equipment and wastes and organize training

Supervising authority: MNE
Implementing agency: MFE
Costs and their category: 50 mln MNT
Source of funding: GEF
Implementation period: 2007

Action H4. Awareness raising activities on POPs

Awareness raising materials will be prepared on dioxin/furan emissions, their hazards and impacts on human health and the environment, and actions for reducing dioxin/furan emissions. The materials shall be disseminated to public through radio, TV and press regularly. This awareness raising action shall focus on stopping the uncontrolled combustion of wastes and burning hazardous and toxic wastes in undesignated places and houses.

Supervising authority: MNE
Implementing agency: MNE, NGOs
Costs and their category: 200 mln MNT
Source of funding: GEF
Implementation period: 2007-2010

Action H5. Training programme for customs officers, environmental inspectors and officers from professional inspection agency

The training will strengthen the control on the import, export, use, storage and disposal of POPs-containing products.

Supervising authority: MNE
Implementing agency: MNE
Costs and their category: 60 mln MNT
Source of funding: GEF
Implementation period: 2007

Action H6. Raise qualification of professional POPs experts and trainers in developed countries.

Supervising authority: MNE
Implementing agency: MNE
Costs and their category: 100 mln MNT
Source of funding: GEF
Implementation period: 2007

Work plan for actions under Activity 3.3.13

	Implementation schedule	
Year	2007	2006-2010
Actions	H1, H2, H3, H5, H6	H4

Coordinator of entire activity: MNE
Total implementation cost: 475 mln MNT

3.3.14. Activity. Effectiveness evaluation

Objective. Goal of this activity is to establish a system for the evaluation of the effectiveness of activities under this programme and its verification and updating pursuant to Article 16 of the Convention.

Background. Pursuant to Article 16 of the Convention, the effectiveness of undertaken action under the Convention shall be evaluated in every four years after the entry into force of the Convention, an evaluation methodology will be selected suitable for the country's condition and an regular evaluation system will be developed.

Action I.1 Development and implementation of monitoring and evaluation system of NIP implementation.

Supervising authority: MNE
Implementing agency: MNE
Costs and their category: 0.3 mln MNT
Source of funding: state budget
Implementation period: 2006

Workplan for action under Activity 3.3.14

	Implementation schedule
Year	2006
Action	I1

Coordinator of entire activity: MNE
Total implementation cost: 0.3 mln MNT

3.3.15. Activity. Reporting

Objective. Aim of this activity is to meet the obligations of the Convention concerning the reporting on POPs related activities.

Background. Under the Stockholm Convention, Parties are obliged to submit to the Conference of Parties periodical reports on the implementation of the provisions of the Convention, as well as to provide statistical data on the total production, import and export of all chemical substances listed in Annexes A and B. In addition, Parties are also obliged to carry out scientific research and monitoring and submit reports of these works to the Convention Secretariat.

Reports shall be prepared in two types - periodical and definite actions.
Report on definite actions shall be prepared and submitted after implementation of definite actions such as inventories, disposal, monitoring and research.
Periodical reports shall be prepared and submitted to the Ministry of Nature and Environment and the Convention Secretariat quarterly and annual basis, reflecting all the activities carried out during the given period.

Action J1. Preparation of national reports to the Conference of Parties
Reports on activities undertaken in Mongolia aimed at the implementation of the Stockholm Convention will be prepared in accordance with the rules and guidelines.

Supervising authority: MNE
Implementing agency: MNE
Costs and their category: 0.6 mln MNT every 4 years (Total 3.6 mln MNT)
Source of funding: state budget
Implementation period: 2006-2020

Action J2. Preparation of reports on progress in the elimination of PCBs
A report on progress in eliminating PCBs will be prepared on the basis of the given guidelines and submitted to the Conference of the Parties pursuant to Annex A, sub-paragraph (g) every 5 years.

Supervising authority: MNE
Implementing agency: MNE
Costs and their category: 0.5 mln MNT every 5 years (Total 0.9 mln MNT)
Source of funding: state budget
Implementation period: 2006-2020

Action J3. Inventory reports on POPs emissions and reductions
In relation to the implementation of the Stockholm Convention, reports on POPs emissions and changes in POPs concentrations in the environment shall be prepared on the basis of outcomes from monitoring activities.

Supervising authority: MNE
Implementing agency: MNE
Costs and their category: 0.5 mln MNT every 4 years (Total 1.5 mln MNT)
Source of funding: state budget
Implementation period: 2008-2020

Action J4. Reporting to the Government of Mongolia on NIP Implementation

Report on progress of the NIP implementation shall be prepared annually and reports on NIP implementation in each stages shall also be preapred.

Supervising authority: MNE
Implementing agency: POPs national council
Costs and their category:
Source of funding:
Implementation period: 2008-2020

Action J5. Revewing of NIP

Proceeding from the results of activities undertaken by NIP, it shall be reviewed periodically and revised in case of necessity.

Supervising authority: MNE
Implementing agency: POPs national counsel
Costs and their category:
Source of funding:
Implementation period: 2008-2020

Work plan for actions under Activity 3.3.15

	Implementation schedule	
Year	2006-2020	2008-2020
Actions	J1, J2	J3, J4, J5

Coordinator of entire activity: MNE
Total implementation cost: 6 mln MNT

3.3.16. Activity: Research, development and monitoring

Objective. The aim of this activity is to increase the level of knowledge on the impacts of POPs to the environment and to provide decision-makers, through integrated monitoring, with information on the state of the environment with regard to POPs contamination, with data on changes in this area pursuant to Article 11 of the Convention.

Background. It can be considered that the POPs monitoring activities have not yet started in the country. Basically there aren't any databases or research results available on POPs releases in

environment and their levels in human body, animals and foodstuffs. During the preliminary inventory, conducted in 2005, analyses of PCBs in oil and polluted soil were made and this action was a first attempt to conduct analyses on POPs chemicals.

As Mongolia will be involved in the Monitoring Network of East Asian Countries in 2006, it can be considered that monitoring activities will be commenced in Mongolia.

A national laboratory with capacity to make analyses of POPs chemicals is requisite for defining emissions and releases of POPs chemicals, their impacts to the environment and human health and running monitoring and research works in this field. However, there are some chemical laboratories with good equipment. They undertake quality analyses for imported products, however none of them is able to make POPs analyses – no apparatus and equipment for analyzing POPs chemicals and no professional staff are available to do the analyses.

In this regard, it is necessary to set up a specialized unit, responsible for monitoring, research and development, at one of these laboratories and provide this unit with the required equipment and methodology, as well as qualified and specialized experts.

The following *research and development* actions shall be commenced as soon as possible in order to facilitate the implementation of the Stockholm Convention, including:

- research on POPs chemicals in air, water and soil;
- research on POPs chemicals from industrial sources;
- research on contamination level of "risk groups", and
- research on pollution in foodstuffs and drinking water by POPs chemicals.

Monitoring of concentrations of POPs chemicals in air, water, soil and sediment shall be established.

Air monitoring will be conducted in areas where POPs sources concentrated and POPs chemicals level will be identified using emission factors. In order to conduct monitoring, one or two sites for measuring the background emission in areas regarded as "clean" shall be established and the results obtained from these measurement sites would be used as baseline data for monitoring. Dioxins and furans, PCBs and HCB should mainly be subject to monitoring.

Water monitoring should comprise waters of rivers in urban and settled areas, where production sector is developed and sampling shall involve water, sediment and living organisms. PCBs, dioxins and furans and pesticides will be determined.

Soil monitoring should focus on particular sites and regions of the country where possible contamination by POPs occurred and sites where used POPS containing products.

Biological monitoring should focus on food contamination or content of POPs substances in food products. Samples should be taken from agricultural products that might be contaminated with POPs chemicals and from imported products.

Action K1. Laboratory capacity strengthening

Potential laboratory that is able to make research and analyses of POPs chemicals will be selected and provided with requisite equipment, tools and methodology. Staff of the laboratory will be prepared by training in developed countries. International experts will be invited to organize training.

Expected outcome of this action will be a well-developed capacity for conducting research and development on POPs chemicals and for establishing monitoring system.

Supervising authority: MNE
Implementing agency: MNE
Costs and their category: 1 000 mln MNT
Source of funding: GEF and donors
Implementation period: 2007-2010

Action K2. Assessment of POPs contamination level and emission level

Contamination and emission level of POPs chemicals will be defined in their concentration in water, air, soil and sediment, particularly in major sources of POPs emissions, and their impacts on the environment and human health will be assessed.
Results obtained will be used for reporting and public awareness activities.

Supervising authority: MNE
Implementing agency: MNE
Costs and their category: 30 mln MNT
Source of funding: GEF and donors
Implementation period: 2010-2020

Action K3. Research on health hazards of "Risk Groups"

Research works will be conducted among "risk group" members e.g. workers who directly handle POPs containing equipment and products and who work close to POPs sources. Risk assessment to their health will also be made.
Results of this action will be used in activities for protecting and preventing human health from hazards of POPs chemicals.

Supervising authority: MoH
Implementing agency: MNE, MAS
Costs and their category: 60 mln MNT
Source of funding: GEF and donors, state budget
Implementation period: 2010-2020

Action K4. Research on POPs concentration in food products and drinking water

Selection will be made from products from agricultural production and import that might be contaminated by POPs chemicals and will be involved in constant research and monitoring. Also, a constant monitoring will be made in drinking water sources in surrounding areas of major sources of POPs and contaminated sites.
This action will enable to control the concentration of POPs chemicals in food products and drinking water and enable to identify polluting sources.

Supervising authority: MFA
Implementing agency: MNE, MAS
Costs and their category: 80 mln MNT
Source of funding: GEF and donors, state budget
Implementation period: 2010-2020

Action K5. Assessment of the levels of dioxins and furans emissions from burning coal and evaluation of possibilities to reduce the emissions

Research on PCDD/PCDF and hexachlorobenzene emissions from power plants, individual boilers and household stoves, which use coal, will be made in correlation with the features and characteristics of the fuel, combustion technology and stove types and assessment will be made. This assessment will be used for determining possible emissions reduction measures.

Supervising authority: MNE
Implementing agency: MNE, MAS
Costs and their category: 50 mln MNT
Source of funding: GEF and donors, state budget
Implementation period: 2009-2010

Action K6. Establishment of constant monitoring system

Methodology for conducting monitoring of POPs chemicals in air, water, soil, sediment and food products will be developed and monitoring sites and measurement periods will be defined. Measurement results will be integrated and used for preparing monitoring reports.
Monitoring results will also be used for national and regional information sharing, preparation of the report on state of environmental pollution and activities for reducing the pollution.

Supervising authority: MNE
Implementing agency: MFA, MAS
Costs and their category: 20 mln MNT
Source of funding: GEF and donors, state budget
Implementation period: 2008-2010

Workplan for action under Activity 3.3.16

	Implementation schedule			
Year	2007-2010	2008-2010	2009-1010	2010-2020
Actions	K1	K6	K5	K2, K3, K4

Coordinator of entire activity: MNE
Total implementation cost: 1240 mln MNT

3.3.17. Activity: Technical and financial assistance

Objective. Determine technical and financial assistance and resources for activities undertaken to fulfill provisions of the Convention.

Background. Implementation of provisions of the Stockholm Convention requires considerable financial resources and it seems unlikely for Mongolia that all associated costs could be fully covered by national sources of funding.

The Global Environmental Facility and other donor organizations are providing financial assistance to developing countries and countries with transition economies, supporting their efforts to protect environment and human health from POPs hazards. The "Project for enabling activities to facilitate early actions on the implementation of Stockholm Convention on Persistent

Organic Pollutants" (POPs), which is being implemented in Mongolia since 2003 with financial support from GEF, is one brilliant example of the assistance. Within framework of this project, initial actions have been implemented in identification of POPs emissions, releases and current state of contamination, as well as public awareness raising activities. Also, as result of this project, this National Implementation Plan was developed for implementing provisions of the Stockholm Convention.

Financial assistances can also be obtained from bilateral relations and cooperation mechanisms in addition to GEF and other donor organizations.

At the national level, it is also important to mobilize domestic resources, in particular, those who produce POPs chemicals and emissions and those who use POPs containing equipment and products.

Technical assistance from the Global Environment Facility
The Ministry of Nature and Environment will submit the National Implementation Programme for POPs and action plans to GEF through UNIDO in form of following projects, including:

3.4 DEVELOPMENT AND CAPACITY-BUILDING PROPOSALS AND PRIORITIES

1. Project for stopping usage of PCBs containing equipment and eliminating stockpiles and wastes

The main objective of this project is to stop the use of PCBs containing equipment and eliminate stockpiles and wastes by 2020 and enable and supervise harmless usage in relation to environment and human health of this kind of equipment until the stockpiles will be eliminated.

Within framework of this project, detailed inventories will be conducted on PCBs containing equipment, stockpiles and contaminated sites, and consequently will establish a PCBs database and information exchange network.

Mechanism for collecting, storing, disposing and decontaminating will be developed.

Estimated cost: 2 million US$
Expected commencement date: 2006

2. Project for capacity improvement of information and monitoring of POPs chemicals

A national capacity on conducting monitoring and research works on POPs chemicals will be strengthened and a stable information-monitoring system will be established.

Estimated cost: 1 million US$
Expected commencement date: 2007

3. Project for identifying sources of dioxins and furans and reduce emissions

Sources of dioxins and furans and their emission level swill be identified and introduce BAT/BEP in emissions reduction.

Estimated cost: 500,000US$
Expected commencement date: 2009

4. Project for the establishment of public education and awareness system on POPs chemicals

Objective of this project is to increase the awareness of POPs among decision-makers, indutrial sector and public.

Estimated cost: 200,000US$
Expected commencement date: 2007

3.5. TIMETABLE FOR PLAN IMPLEMENTATION AND MEASURES OF SUCCESS

No	Sym-bols	Action	Implementation cost of actions under given years									Total
			2006	2007	2008	2009	2010	2012	2015	2018	2020	
3.3.1. Activity: institutional and regulatory strengthening measures **Action A1.**												
1	A1	Make changes in the List of Chemical Substances Prohibited and Limited to Use in Mongolia	—									0.5 mln MNT
2	A2	Develop procedure for collecting information on POPs	—									1.0 mln MNT
3	A3	Develop guidelines and procedures for creating information database and network		—								1.0 mln MNT
4	A4	Develop POPs generation standards		—								1.5 mln MNT
5	A5	Develop a standard of maximum permissible level of POPs chemicals		—								1.5 mln MNT
6	A6	Insert amendments to the Classification Standard of Labor Condition	—									0.8 mln MNT
7	A7	Develop a procedure for collecting, storing, transporting, eliminating and decontaminating POPs-containing wastes			—							2.0 mln MNT
8	A8	Financial facilitation and promotion of introducing BAT/BEP			—	—	—	—	—	—	—	
9	A9	Revision of legal acts related to disposal of medical wastes			—							1.0 mln MNT
		Total										**9.3 mln MNT**
3.3.3. Activity: Production, import and export, use, stockpiles and wastes of Annex A POPs pesticides (Annex À, Part I chemicals)												
10	B1	Locate and restore sites contaminated by POPs pesticides				—	—	—	—	—	—	500 mln MNT
11	B2	Establish mechanism for improving control over pesticides content in foodstuffs and pesticides			—							1.5 mln MNT

		import										
12	**B3**	Cadastrial registration of sites										100.0
		Total										**601.5 mln MNT**
3.3.4. Activity: Production, import and export, use, identification, labelling, removal, storage and disposal of PCBs and equipment containing PCBs (Annex A, Part II chemicals)												
13	C1	Developing PCBs database										300 mln MNT
14	C2	Develop PCBs monitoring										50 mln MNT
15	C3	Create a mechanism for collecting, storing and transporting PCBs containing equipment and wastes										200 mln MNT
16	C4	Eliminate usage and decontamination of PCBs containing equipment										500 mln MNT
		Total										**1050 mln MNT**
3.3.6. Activity: Register for specific exemptions and the continuing need for exemptions												
17	D1	Emission level of dioxin/furan producing sources										12 mln MNT
18	D2	Calculation and verification of distribution factors for major sources of dioxin/furans										10 mln MNT
19	D3	Establishment of database on unintentional production of POPs										7 mln MNT
20	D4	Measurement at each major dioxin/furans emission sources										150 mln MNT
21	D5	Feasibility study of introducing BAT/BEP in dioxin/furan sources										20 mln MNT
22	D6	Introduce BAT/BEP in dioxin/furan sources										500 mln MNT
23	D7	Environmental impact assessment of dioxin/furan sources										12 mln MNT

		Total										**711 mln MNT**
3.3.8. Activity. Measures to reduce POPs releases from stockpiles and wastes												
24	E1	Selection of methods for eliminating PCB-containing equipment and wastes			—							10 mln MNT
25	E2	Elimination of PCB-containing wastes			—	—	—	—	—	—	—	1000 mln MNT
26	E3	Precise determination of technological processes that produce POPs containing wastes					—					30 mln MNT
27	E4	Guidance for improving management of POPs containing wastes produced as byproducts during technological process					—					5 mln MNT
		Total										**1045 mln MNT**
3.3.9. Strategy: Identification of stockpiles, articles in use and wastes												
28	F1	Assessment of landfills for POPs containing industrial wastes				—						30 mln MNT
29	F2	Requirements for POPs containing industrial waste landfills and development of methodological instruction for monitoring					—					1.5 mln MNT
		Total										**31.5 mln MNT**
3.3.12. Activity: Facilitating or undertaking information exchange and stakeholder involvement												
30	G1	System for the collection and exchange of information				—						**10 mln MNT**
3.3.13. Activity. Public awareness, information and education												
31	H1	Preparation of a set of educational materials for students		—								5 mln MNT
32	H2	Implementation of education programmes for teachers of ecology and doctors of toxicology		—								60 mln MNT
33	H3	Preparation of instruction for workers who		—								50 mln

		directly handle PCB-containing equipment and wastes and organize training										MNT
34	H4	Awareness raising activities on dioxin/furans										200 mln MNT
35	H5	Training programme for customs officers, environmental inspectors and officers from professional inspection agency										60 mln MNT
36	H6	Raise qualification of professional POPs experts and trainers in developed countries										100 mln MNT
		Total										**475 mln MNT**
3.3.14. Activity. Effectiveness of evaluation												
37	I1	Development and implementation of monitoring and evaluation system of NIP implementation										**0.3 mln MNT**
3.3.15. Activity. Reporting												
38	J1	Preparation of national reports to the Conference of Parties										0.6 mln MNT
39	J2	Preparation of reports on progress in the elimination of PCBs										0.5 mln MNT
40	J3	Inventory reports on POPs emissions and reductions										0.5 mln MNT
41	J4	Reporting to the Government of Mongolia on NIP Implementation										
42	J5	Revewing of NIP										
		Total										**6 mln MNT**
3.3.16. Activity: Research, development and monitoring												
43	K1	Laboratory capacity strengthening										1 000 mln MNT
44	K2	Assessment of POPs contamination level and emission level										30 mln MNT
45	K3	Research on health hazards of “Risk Groups”										60 mln

												MNT
46	K4	Research on POPs concentration in food products and drinking water										80 mln MNT
47	K5	Assessment of the levels of dioxins and furans emissions from burning coal and evaluation of possibilities to reduce the emissions										50 mln MNT
48	K6	Establishment of constant monitoring system										20 mln MNT
		Total										**1240 mln MNT**
TOTAL												**5179.6 mln MNT**

ANNEX 1

МОНГОЛ УЛСЫН ЗАСГИЙН ГАЗРЫН ТОГТООЛ

2006 оны 5 дугаар сарын 3-ны өдөр | Дугаар 99 | Улаанбаатар хот

"Удаан задардаг органик бохирдуулагчийн тухай үндэсний хөтөлбөр" батлах тухай

Удаан задардаг органик бохирдуулагчийн тухай конвенцийг хэрэгжүүлэх зорилгоор Монгол Улсын Засгийн газраас ТОГТООХ нь:

1. "Удаан задардаг органик бохирдуулагчийн тухай үндэсний хөтөлбөр"-ийг 1 дүгээр хавсралт, хөтөлбөрийг хэрэгжүүлэх үйл ажиллагааны төлөвлөгөөг 2 дугаар хавсралт ёсоор тус тус батлсугай.

2. Үндэсний хөтөлбөрийг эрхлэх ажлынхаа хүрээнд болон тухайн нутаг дэвсгэрийнхээ хэмжээнд хэрэгжүүлэхэд шаардагдах хөрөнгийг тухайн жилийн төсөвт тусгаж, олон улсын байгууллага, хандивлагчдын зээл, тусламжийг чиглүүлэх арга хэмжээ авахыг Байгаль орчны сайд И.Эрдэнэбаатар, аймаг, нийслэлийн Засаг дарга нарт үүрэг болгосугай.

3. Хөтөлбөрийн хэрэгжилтийн явц, үр дүнг нэгтгэн жил бүрийн II улиралд багтаан Засгийн газарт танилцуулж байхыг Байгаль орчны сайд И.Эрдэнэбаатарт даалгасугай.

Монгол Улсын Ерөнхий сайд М.ЭНХБОЛД

Байгаль орчны сайд И.ЭРДЭНЭБААТАР

GOVERNMENT OF MONGOLIA

Date: 03 May 2006 No 99
Ulaanbaatar

Approval of National Programme
On Persistent Organic Pollutants

The Government of Mongolia, in order to implement the Stockholm Convention on tent Organic Pollutants, ORDERS:

1. to approve the National Programme On Persistent Organic Pollutants according to Annex 1 and the National Implementation Plan according to Annex 2, respectively.

2. to instruct Minister of Nature and Environment, I.Erdenebaatar, and Governors of provinces and the Capital city, to reflect required funding for the implementation of the programme in annual budgets and to channel and coordinate loans and financial assistances from international organizations and donors for the implementation of the programme.

3. to instruct Minister of Nature and Environment, I.Erdenebaatar, to submit and introduce reports of the progress of the implementation on an annual basis to the Cabinet within the 2nd quarter of every financial year.

PRIME MINISTER OF MONGOLIA B.ENKHBOLD

MINISTER OF NATURE
AND ENVIRONMENT I.ERDENEBAATAR

ANNEX 2. PESTICIDES USED IN 2003

No	Trade name of pecticides	Main chemicals	Admixture	Producer
	For livestock			
1	Super killer E	Cypermetrin $C_{22}H_{19}Cl_2NO_3$ ((RS)-a-Cyano-3- phenoxybenzyl -(1RS, 3RS, 1RS, 3RS)-3-(2, 2-dichlorvinyl)-2, 2-dimethylcyc-lopropane carboxylate/ (RS)-cyano-(3-phenoxyphenyl)methyl (1RS)-cis -, trans-3-(2, 2- dichloro ethenyl) - 2, 2-dimethylcyclopro-pane carboxylate)	Xylol	Shinil Chemical & livestock Co., Ltd, Korea
2	Avermonmec MNS5009:2001	Avermektin H_2B_{1g} -$C_{12}H_{74}O_{14}$, Avermektin H_2B_{1b} -$C_{47}H_{72}O_{14}$,	Ethanol, propylene glycol, glycerol formal	"Tsagaan zalaa agvet" Co.,Ltd, Mongolia
3	Almonzol	Albendazol $C_{12}H_{15}N_3O_2S$ (methyl- 5- propyl- thio - 1H – benzimidazole)	Liquid paraphin, Propilen glycol, Twin-80, Phenylmethanol, ÎD-10, water	"Tsagaan zalaa agvet" Co.,Ltd, Mongolia
	Insecticide			
1	Mavric 3808.10.00	τ-phluvalinate		*
2	Decis 3808.10.00	δ-metrin		*
3	Danitol 3808.10.00	Phenpropatrin		*
4	K- othrin 3808.10.00	δ-metrin		*
5	K-obiol 3808.90.00	δ-metrin		*
6	Sumi-alfa 3808.10.00	Esvenvalereat		*
7	Sumicidin 3808.10.00	Phenvalereat		*
8	Kinmix 3808.10.00	β-cypermetrin		*
9	Pirimor 3808.10.00	Dimethylkarbamat		*
10	Karate 3808.10.00	λ-cygalotrin		*
11	Ambush			*

	3808.10.00	permetrin		
12	Sulfur 3808.10.00	Sulphur		*
	Herbicide			
1	Fluazifor-P 3808.30.00	Fluazifop-p-ethyl		*
2	Fenoxsapron-P Furore 3808.30.00	Fenoxsapron-P-ethyl		*
3	2.4 D 3808.30.00	Ether Acid Acetic		*
4	Gezagard 3808.30,00	Iso-propilamin		*
5	Fenotiol 3808.30.00	Phenothyol		*
6	Basta 3808.30.00	Glyphosat		*
7	Pound up |3808.30.00	Glyphosat		*
8	Sethoxydim 3808.30.00	Sethoxydim		*
9	Sencor 3808.30.00	Metribusin		*
10	Banvel 4 C 3808.30.00	Dichlormetoxibenzoic acid		*
11	Dialensuper 3808.30.30	Dichlormetoxibenzoic acid		*
	Fungicide			
1	Brestan 3808.20.00	Pentiacetate		*
2	Shirlan 3808.20.00	Phuasinam		*
3	Dividend star 3808.20.00	Diphenokonasol+cyprokonasol		*
4	Copper sulfate 3808.20.00	Copper sulfate		*
5	Colloidal sulfur 3808.20.00	sulphur		*
6	Tiram 3808.20.00	Tiram		*
7	Sumi 3808.20.00	Dinikonasol		*
8	Zineb 3808.20.00	Zineb		*
9	Topsin 3808.20.00	Thyophanatmethyl		*

10	Tilt 3080.20.00	Propikonasol		*
11	Divident 3808.20.00	Diphenokonasol		*
12	Sandofen 3808.20.00	Mankozeb + oksadixyl		*
13	Kasugamaycin 3808.20.00	Kasugamaycin		*
	Rodenticide			
1	Bromadilion 3808.90.00	Bromium substances		*
2	Brodifacoum 3808.90.00	Brodifacoum		*
3	Clerat 3808.90.00	Brodifacoum		*
4	Biorat 3808.90.00	Strain of Isichenko		*
5	*Salmonella enteridis* var 7/30 3808.90.00	*Salmonella enteridis* var 7/30		*

* - import from Russia, China and Germany

Mongolia uses mineral and bio-fertilizers in agriculture. Mineral fertilizers are imported from Russia and China while bio-fertilizers are produced in Mongolia. In 2003, a total of 174.2 tons of bio-fertilizers were produced.

ANNEX 3

LIST OF ENVIRONMENTAL LAWS

/by 30 November 2004/

No	Name of the environmental laws	Ratified	Entered into force
1.	Environmental protection law	1995.03.30	1995.06.05
2.	Law on Land	2002.06.07	2003.01.01
3	Law on Land Fees	1997.04.24	1997.07.01
4	Law on Land ownership	2002.06.27	2003.05.01
5	Regulation to implement Law on Land ownership to Mongolian citizen	2002.06.28	2003.05.01
6.	Law on Cadastral survey and land registration	1999.12.16	1999.12.26
7	Law on Geodesy and topography	1997.10.31	1997.11.15
8.	Law on Protected Area	1994.11.15	1995.04.01
9.	Law on Buffer Zone	1997.10.23	1997.11.21
10	Law on Water (amended)	2004.07.22	2004.07.01
11	Law on fees for utilization of water and spa	1995.05.22	1995.07.01
12	Law on Forest	1995.03.31	1995.06.05
13	Law on Forest timber usage fees	1995.05.19	1995.07.01
14	Law on Protection of Forest from Fire	1996.05.28	1996.05.28
15	Law on allocation percentage of revenues from natural resources usage fees for the protection of environment and restoration of natural resources	2000.01.28	2000.10.01
16	Law on Natural Plants	1995.04.14	1995.06.05
17	Law on Natural Plants Usage fees	1995.05.19	1995.07.01
18	Law on Protection of Natural Plants	1996.03.22	1996.06.05
19	Law on Hunting	2000.05.05	2000.05.16
20	Law on Wildlife	2000.05.05	2000.05.16
21	Law on Foreign trade in specimens of endangered species of fauna and flora	2002. 11. 07	2002. 11. 18
22	Law on Hunting Licenses	1995.05. 22	1995.07.01
23.	Law on Land Entrails	1994.12.05	1995.06.05
24.	Law on Minerals	1997.06.05	199707.01
25	Law on Air	1995.03.31	1995.06.05
26	Law on Meteorological and Hydrological monitoring	1997.11.13	1997.12.13
27.	Law on Toxic and Hazaedous Chemicals	2006.05.25	
28	Law on Environmental Impacts Assessment	1998.01.22	1998.01.28
29	Law on transportation, import of hazardous substances	2000.11.03	2000.11.14
30	Law on Household and Industrial Waste	2003.11.28	2004.07.01

ANNEX 4

THE PARLIAMENT AND GOVERNMENT APPROVED PROGRAMMES AND POLICY DOCUMENTS ON ENVIRONMENTAL PROTECTION:

1. National Development Concept of Mongolia (Parliament resolution 26, 1996)
2. National Security Concept of Mongolia, Ecological Security (Parliament resolution 65, 1994)
3. Ecological policy of the Government of Mongolia (Parliament resolution 106, 1997)
4. National Programme on Special Protected Areas (Parliament resolution 29, 1998)
5. National Programme to support Forest Production, Social and Employment Issues of the Foresty Sector (Parliament resolution 30, 2000)
6. National Programme on Red Deer (Parliament resolution 31, 2000)
7. Sustainable Development Programme of Mongolia in the 21 Century (Government resolution 82, 1998)
8. National Programme to Combat Desertification (Government resolution 163, 1996)
9. National Action Programme to Protect Biological Diversity (Government resolution 163, 1996)
10. National Programme on Ecological Education (Government resolution 255, 1997)
11. National Programme on Forest (Government resolution 122, 1998)
12. National Programme to Combat Natural Disasters (Government resolution 25, 1999)
13. National Programme on Water (Government resolution 43, 1999)
14. Programme on Waste Disposal (Government resolution 50, 1999)
15. National Programme on Air Protection (Government resolution 82, 1999)
16. National Programme on Protection of Ozone Layer (Government resolution 129, 1999)
17. National Pogramme on Climate Change (Government resolution 120, 2000)
18. National Programme on Environmental Information and Data (Minister's resolution 39, 1999)
19. Programme on Environmental Laws Revision (Minister's resolution 88, 1999)
20. National Programme on Environmental Capacity (Minister's resolution 52, 2000)
21. Action Programme on Environment (Minister's resolution 247, 2001)
22. National programme to support the quality and management of environmental sector (Government resolution 146, 2002)
23. Programme for the Hydro-Meteorological Sector Develop (Government resolution 182, 2002)
24. Action Programme on Protection, Rational Use of Rare Plants of Mongolia (Government resoltuion 105, 2002)
25. National Action Programme on Protection of Argali Wild Sheep (Government resoltuion 269, 2002)
26. Action Plan on Protection of Falcon Species (Government resolution 121, 2003)
27. Procedure on licensing import and usage of ozone depleting substances (Government resolution 104, 1994)
28. Approving Rules of the National Board on Coordinating the Use of Hazardous Chemical Substances (Government resolution 186, 1998)
29. Measures for Chemical Safety Provision (Government resolution 29, 2000)
30. The regulation on classifying, gathering, packing, provisional stationing, transporting, safety, storing and destroying chemical wastes and hazardous wastes (Parliament resolution 135, 2002)