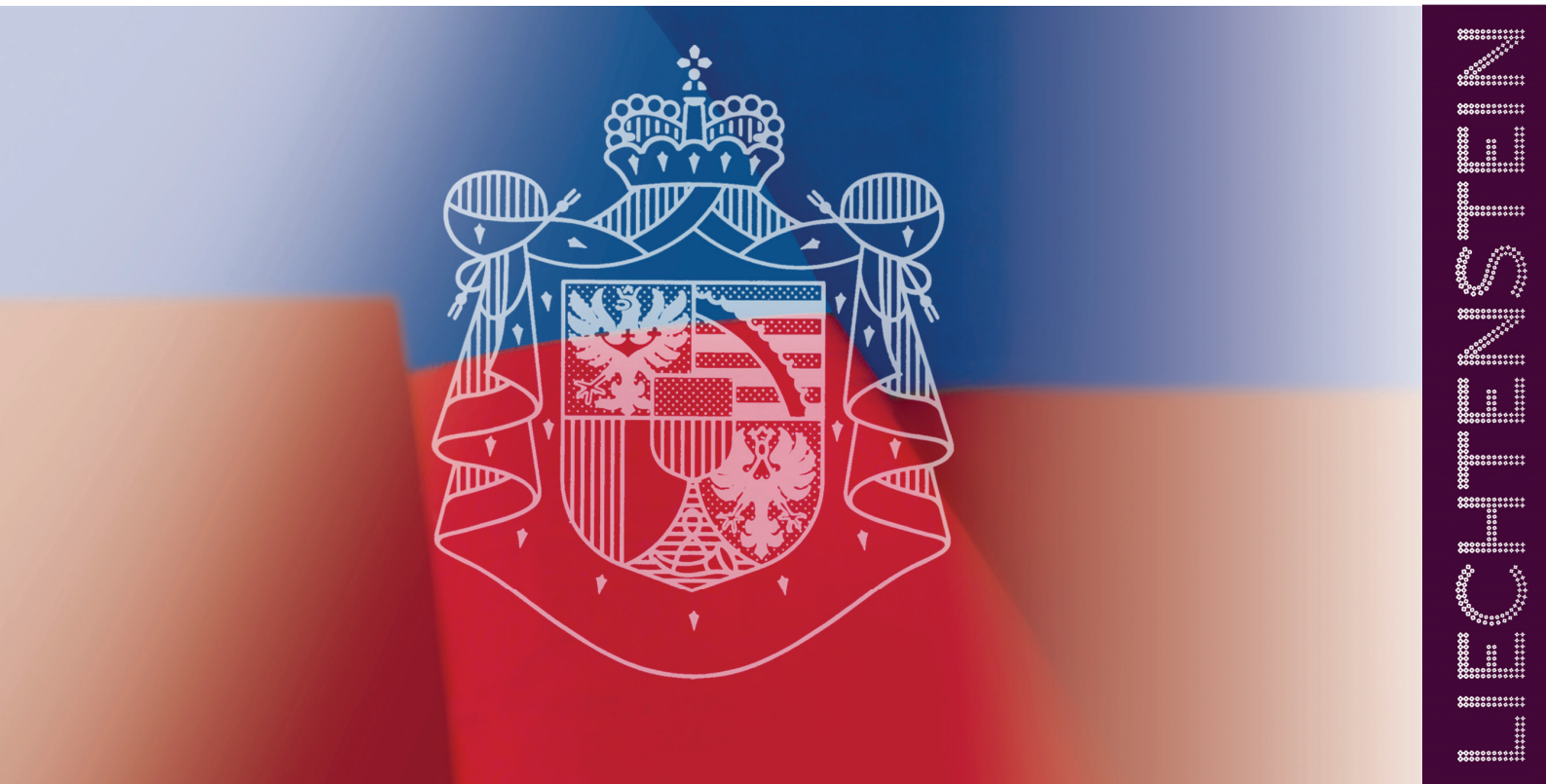
REGIERUNG
DES FÜRSTENTUMS LIECHTENSTEIN

Stockholm Convention
on Persistent Organic Pollutants (POPs)

Liechtenstein`s National Implementation Plan

To be submitted to the Conference of the Parties to the Stockholm Convention

Vaduz, April 2007



Published and distributed by:
Office of Environmental Protection
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Vaduz, 23 April 2007

Foreword

Liechtenstein was one of some ninety countries that signed the POPs (persistent organic pollutants) Convention in Stockholm on 22 May 2001. On 3 March 2005 the Convention came into force in Liechtenstein. It aims to protect human health and the environment from the effect of persistent organic pollutants. The substances in question can spread out globally through the air and water, as well as through the food chain after their release, and have been observed to have a potential significant impact on human health and the environment. Liechtenstein is also affected by this process, although the use and the production of POPs are forbidden and the compliance of the Convention's obligations is fairly advanced in Liechtenstein.

Article 7 of the Stockholm POPs Convention obliges the parties to draw up National Implementation Plans (NIPs) addressing the country's future compliance with the Convention's requirements. The individual countries' NIPs have to be submitted to the Conference of the Parties (COP) within two years of the date on which the Convention came into force in their country.

Thus, the Liechtenstein NIP had to be ready by 3 March 2007, which is why the present document has been prepared. The Office of Environmental Protection was in charge of preparing the NIP for Liechtenstein. With this report which was adopted by the Government of the Principality of Liechtenstein on 18 April 2007. Liechtenstein is fulfilling its responsibilities in accordance with the Stockholm Convention.

The plan will be updated as necessary to reflect decisions made by the Conference of the Parties, such as amendments to the Convention or its annexes, including the addition of chemicals to Annexes A, B or C, or the adoption of guidance or guidelines.

Due to the Customs Treaty with and the geographical vicinity to Switzerland, the legal and environmental situation in both countries is comparable and in many cases transferable to each other. Switzerland has already completed its NIP in April 2006. Therefore, the Liechtenstein NIP contains some similar parts and refers in some chapters to the Swiss NIP. This mainly corresponds to the parts 1, 2.2 and 2.3.

By submitting this plan to the Conference of the Parties, Liechtenstein fulfils an important obligation of the Stockholm Convention. Thereby, Liechtenstein gives proof of its endeavour for a general sustainable development as well as for a higher standard on an international level.

Vaduz, 23 April 2007

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Acronyms and Abbreviations

ChemO	Ordinance on Chemicals
ChemPICO	PIC Ordinance
COP	Conference of the Parties (to the SC)
DDT	1,1,1-trichloro-2,2-bis(4-chlorophenyl)ethane
DEA	Swiss Department of Economic Affairs
Dept.	Department
DETEC	Swiss Department of the Environment, Transport, Energy and Communications
DHA	Swiss Department of Home Affairs
EAWAG	Engl.: Swiss Federal Institute for Aquatic Science and Technology
EF	Equivalence factor
EG	(engl. EC) European Community
EU	European Union
EWG	(engl. EEC) European Economic Community
FOEN	Federal Office for the Environment (until 2005: Swiss Agency for the Environment, Forests and Landscape (SAEFL))
GDP	Gross domestic product
GEF	Global Environment Facility
HCB	Hexachlorobenzene
INC	Intergovernmental Negotiation Committee
IOMC	Inter-organisation program for the sound management of chemicals
LGU	Liechtenstein society of environment (Liechtensteinische Gesellschaft für Umweltschutz)
EPA	Federal Act on the Protection of the Environment
MAO	Ordinance on Protection against Major Accidents
NCC	National Coordinating Committee
ng	Nanogram
NGO	Non-governmental organisation
NIP	National Implementation Plan
OAPC	Ordinance on Air Pollution Control
OBP	Ordinance on Biocide Products
OCRC	Ordinance on the Charge for the Remediation of Contaminated Sites
OEA	Office of Economic Affairs
OECD	Organization for Economic Co-operation and Development
OEL	Occupational exposure limit
OMW	Ordinance on Movements of Waste
OPPP	Ordinance on Plant Protection Products
Ord.	Ordinance
ORDEA	Ordinance on the Return, the Taking back and the Disposal of Electrical and Electronic Appliances
ORRChem	Ordinance on Risk Reduction related to Chemical Products
PARCHEM	*Projekt Ausführungsrecht Chemikaliengesetz* = project enacting legislation regarding the law on chemicals
PCB	Polychlorinated biphenyl
PCDD	Polychlorinated dibenzo-dioxin
PCDF	Polychlorinated dibenzo-furan
PET	Polyethylene-terphthalate
pg	Picogram
PIC	Prior informed consent
POPs	Persistent organic pollutants
SC	Stockholm Convention
SR	Systematic register (regarding federal legislation)
Subst.	Substance
TOW	Technical Ordinance on Waste
UN ECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Program
VCL	Automobile Club of Liechtenstein (Verkehrsclub Liechtenstein)

Executive summary

I. Introduction

This report summarizes the basic information and activities of the Principality of Liechtenstein with respect to POPs. With a population of 34'905 as of 31 December 2005, Liechtenstein is a small central European State in the Alpine region. Its structure is comparable to that of its neighbouring countries, Switzerland and Austria. Liechtenstein is a constitutional hereditary monarchy on a democratic and parliamentary basis. The relationship between Liechtenstein and Switzerland is very close and heavily influenced by the Customs and Currency Treaty between the two countries (customs and currency union). The Customs Treaty with Switzerland has a significant impact on environmental and fiscal strategies. Many Swiss environmental provisions (e.g., environmental standards) are also applicable in Liechtenstein or are implemented into Liechtenstein law on the basis of specific international treaty rules.

At the same time, Liechtenstein has implemented large portions of EU legislation and has participated in various EU programs since joining the European Economic Area (EEA) in 1995. The EU Regulation (EC) No 850/2004 on persistent organic pollutants is presently being incorporated into the Liechtenstein legislation. The process is still ongoing and under discussion. It is expected to come into force this year. The regulation is applicable as a national law in Liechtenstein.

II. Structure of the Liechtenstein NIP

Though the following chapters will show that the importance of different aspects of the SC differs significantly when considering the Liechtenstein situation, it was decided to adhere as closely as possible to the "Guidance for developing a National Implementation Plan for the Stockholm Convention" edited by UNEP Chemicals. This decision was taken in view of the comparability of the NIPs to be submitted to the COP and in view of the comprehensiveness of the present plan.

III. Summarizing the Current Situation and Key Action Items to be addressed

It can be said that all pesticides covered by the SC as aldrin, chlordane, DDT, dieldrin, endrin, heptachlor, mirex and toxaphene have never been produced or used in Liechtenstein. For a time PCB was used for different technical purposes, for example in equipment, and also in products such as paint, sealing material and self-copying paper. Gradually, all substances, installations or appliances containing PCBs were disposed environmentally friendly and in accordance with the existing law. Liechtenstein's problems with POPs are mainly related to unintentionally produced dioxins. Nevertheless, the amount of the unintentionally produced POPs (HCB, PCDF, PCDD) is negligible in consideration of the fact that Liechtenstein has no heavy and an inconsiderable chemical industry and there is no waste incineration plant. All materials are disposed in Switzerland. The emissions of wood burning stoves and smaller combustion plants are controlled once a year and if necessary renewed. Measures were taken to reduce the emissions, including provision of air pollution threshold, building and plant regulations, provisions of fuel and the prohibition of waste burning outdoors. In addition, it is assessed that there are no stockpiles or contaminated sites of POP's waste. All known contaminated sites are continuously monitored using groundwater observation.

In summary, Liechtenstein fulfils all obligations of the convention. Monitoring of the POPs could be enforced to ensure an absolute absence of POPs, especially the unintentionally produced PCDDs and PCDFs. In case of a listing of a new chemical, Liechtenstein will be anxious to find a suitable substitute or to reduce the use and production of that substance as fast as possible. It will also examine applicable measures if necessary.

1. Introduction

1.1 The Stockholm POPs Convention and its Article 7

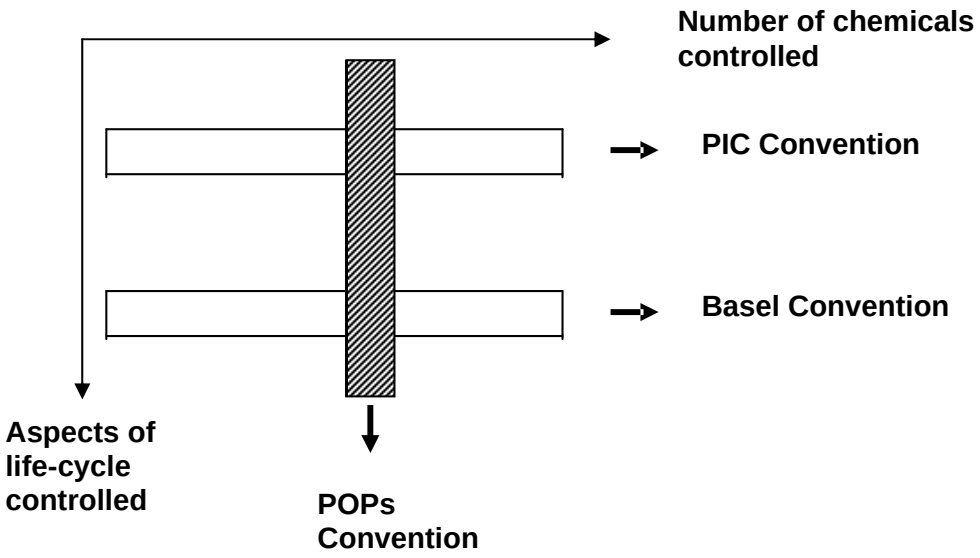
The Stockholm POPs Convention (SC) was signed by more than 90 countries, including Liechtenstein, Switzerland, and EU (the European Union) in May 2001 in Stockholm. It became the third important international agreement of the so-called “chemical cluster” which also includes the Basel Convention (dealing with the transboundary movement of hazardous chemical waste) and the Rotterdam PIC Convention (controlling imports and exports of hazardous chemicals).

Unlike the other two mentioned agreements, the Stockholm POPs Convention (SC) addresses not more than a quite restricted number of chemicals. But these chemicals are highly relevant because of their persistence, toxicity, and world-wide translocation, and the SC has a more in-depth impact than the Basel and the Rotterdam Convention in the sense that it covers the whole life-cycle of the products in question and that it eliminates them completely or at least to a far reaching extent. The following table and figure (**table 1 and figure 1**) illustrate this point.

Table 1: The 12 POPs specified under the Stockholm Convention

Chemical	Pesticide	Industrial chemical	Unintentionally formed by-product (Annex C)
Aldrin	X		
Chlordane	X		
Dieldrin	X		
Endrin	X		
Heptachlor	X	X	X
Hexachlorobenzene (HCB)	X		
Mirex	X		
Toxaphene	X		
Polychlorinated biphenyls (PCBs)		X	X
DDT (1,1,1-trichloro-2,2-bis(4-chlrophenyl) ethane	X		
Dioxins (polychlorinated dibenzo-p-dioxins			X
Furans ((polychlorinated dibenzofurans)			X

Figure 1: Impact of the main conventions of the “chemical cluster”



The present Liechtenstein's National Implementation Plan (NIP) regarding the SC is based on the convention's Article 7 which reads as follows:

Implementation plans

1. Each Party shall:

   (a) Develop and endeavour to implement a plan for the implementation of its obligations under this Convention;
   (b) Transmit its implementation plan to the Conference of the Parties within two years of the date on which this Convention comes into force for it; and
   (c) Review and update, as appropriate, its implementation plan on a periodic basis and in a manner to be specified by a decision of the Conference of the Parties.

2. The Parties shall, where appropriate, cooperate directly or through global, regional and subregional organizations and consult their national stakeholders, including women's groups and groups involved in the health of children, in order to facilitate the development, implementation and updating of their implementation plans.

3. The Parties shall endeavour to utilize and, where necessary, establish the means to integrate national implementation plans for persistent organic pollutants in their sustainable development strategies where appropriate.

This article 7 has been the basis for significant international collaboration since the early phases of intergovernmental negotiations regarding the SC. It not only addresses the parties' obligations, i.e. the elimination or mitigation of the use of the specific persistent organic pollutants as defined by the convention, but in addition it requests that the measures to be taken be, where appropriate, integrated into sustainable development strategies. This means in practical terms that article 7 became a motor for national capacity building in many countries and for international collaboration and solidarity regarding the sound management of hazardous chemicals.

The present interim guidance document for developing a national implementation plan for the Stockholm Convention (NIPs) will result in a significant alignment of the different countries' NIPs, which will facilitate the COP's assessment of these plans and was Liechtenstein's reason to adhere to that guidance as far as possible.

1.2 The Approach to Preparing Liechtenstein's NIP

All substances listed in the convention have already been prohibited for years in Liechtenstein. All chemicals are newly and completely regulated in the Swiss Federal Chemicals Act, which came into force on 1 August 2005, and its related ordinances (Ordinance on Risk Reduction related to Chemical Products SR 814.81) which are applicable to Liechtenstein on the basis of the Customs Treaty. Even though Liechtenstein has already fulfilled all the obligation resulting from the convention, it is still affected by the accumulation of the substances in the food chain. The global impact of the persistent organic pollutant can only be kept under control, if the problem is approached worldwide. Therefore, the convention will particularly support the developing countries and countries in transition in implementation of the requirements of the convention.

After ratification of this convention, Liechtenstein can continue its external engagement for a general sustainable development as well as for a higher on an international level.

Due to the fact that Liechtenstein has just a small chemical industry as well as no waste incineration plant, Liechtenstein forbore from forming a protracted and complex approach. The existing report shows the situation in Liechtenstein and its action plans.

1.3 NIP Structure and Targets according to the Guidance Document

The development of a NIP Guidance Document and the edition of corresponding drafts were initiated already in view of INC-6, the sixth meeting of the Intergovernmental Negotiating Committee taking place in Geneva in 2002. This process was then provisionally completed by INC-7, the seventh meeting of the Inter-governmental Negotiating Committee, which recommended that the parties use this tool, while still underlining that it was meant to be a living document.

The details of the proposed NIP-structure as contained in the earlier drafts were for some time representing a "moving target", while the essence remained unchanged. Since 2004, the NIP Guidance Document (today available on the Internet via http://www.pops.int (→ INC-7 Follow-up → Guidance for developing a national implementation plan for the Stockholm Convention) is not anymore called a draft, and that's why Liechtenstein is now wherever reasonable using the guidance of this version – at least for part 2 of this NIP.

The essential target of the NIP consists, of course, in ensuring compliance with the Stockholm POPs Convention's requirements. They were summarized as Annex 6 in the CD-version of the Draft Guidance for developing a National Implementation Plan for the Stockholm Convention as prepared in view of INC-7, and they shall be cited here in spite of the fact that the respective annex is not anymore found in the actual Internet-version of the same document:

Excerpt from the CD draft NIP guidance document prepared for INC-7:
15. ANNEX 6
Convention Requirement Check List
This checklist is provided as an *aide memoire* and does not substitute for a legal interpretation of the Convention.
The Stockholm Convention includes a number of major provisions that obligate its Parties to:
• Prohibit and/or take legal and administrative action necessary to eliminate production and use of Annex A chemicals (aldrin, chlordane, dieldrin, endrin, heptachlor, hexachlorobenzene, mirex, toxaphene and PCBs) – Article 3.1(a);
• Restrict production and use of Annex B Chemicals (DDT) - Article 3.1(b);
• Ensure that chemicals listed in Annex A or Annex B are imported only for the purpose environmentally sound disposal or for a use permitted for the Party under either annex – Article 3.2(a);
• Ensure that chemicals listed in Annex A or Annex B are exported only for the purpose of environmentally sound disposal, to a Party that has a permitted use of the chemical under either of the annexes or to a non-Party that certifies that it is committed to comply with certain provision of the Stockholm Convention – Article 3.2(b);
• Take measures under existing regulatory and assessment schemes to prevent the production and use of new pesticides and industrial chemicals exhibiting the characteristics of POPs and take the criteria for identification of POPs into consideration in such schemes - Article 3.3, Article 3.4
• Register specific exemptions to Annex A or Annex B if needed and upon becoming a Party and, if an extension such a registration is to be requested, provide a suitable justification report for the extension - Article 4.3, Article 4.6;
• Develop and implement an action plan on a national, sub-regional or regional basis, as appropriate, for the reduction of total releases of Annex C chemicals (PCDD, PCDF, HCB, PCB) from anthropogenic sources within two years of becoming a Party – Article 5;
• Manage POPs stockpiles and wastes in a manner protective of human health and the environment including developing strategies for their identification, and application of environmentally sound handling, collection, transport and disposal measures - Article 6.1;
• Prohibit disposal of POPs stockpiles and wastes involving or leading to recovery, recycling, reclamation, direct use or alternative use - Article 6.1 (d) (iii);
• Regulate transboundary movement of POPs stockpiles and waste POPs in accordance with international rules, standards and guidelines - Article 6.1 (d) (iv)
• Submit a national implementation plan to the Conference of the Parties within two years of becoming a Party and review the plan on a periodic basis - Article 7.1;
• Designate a national focal point for exchange of information on POPs - Article 9;
• Exchange information with other Parties related to reduction or elimination of production, use and release of POPs and alternatives to POPs - Article 9;

• Provide the public with access to current information on POPs including information relating to health and safety of humans and the environment - Article 10.2.
• Provide technical assistance, if a developed country, to developing countries Parties and Parties with economies in transition - Article 12.1, Article 12.2;
• Provide financial support and incentives for national activities intended to achieve the objective of the Convention - Article 13.1;
• Provide financial support, if a developed country, to developing country Parties and Parties with economies in transition for agreed incremental costs associated with meeting their obligations under the Convention - Article 13.2;
• Provide periodic reports to the Secretariat on implementation of Convention provisions including statistical data on production, import and export of Annex A and Annex B chemicals - Article 15.1, Article 15.2**.**
• A more extensive description of the Convention provisions that create obligations on Parties is contained in Annex Z.

1.4 The role of the Office of Environmental Protection

The Office of Environmental Protection is Liechtenstein's designated national authority for the Stockholm Convention. Accordingly, Liechtenstein's responsibility for developing and implementing a national implementation plan (NIP) for meeting Stockholm Convention obligations lies with the Office of Environmental Protection.

2 Country baseline

2.1 Country profile

2.1.1 Geography and Population

Geography

The territory of the Principality of Liechtenstein lies between Switzerland and Austria. Liechtenstein consists of 11 rural municipalities, the largest two of which have slightly over 5'000 inhabitants each. One quarter of the territory of the country is located in the Rhine Valley, while the remaining three quarters are covered by the slopes above the Rhine Valley and the inner-Alpine region. The capital and seat of the national authorities is Vaduz.

Land use

The country covers 160 km^2, 41% of which is forested, 34% agricultural (cropland, pastures, plantations, alp meadows), 10% populated, and 15% unproductive (as of the end of 2006). Built-up areas were more than doubled between 1950 and 1990 and increased again by 7.8% to 15.6 hectares between 1996 and 2002. Transport infrastructure covers nearly 2.5% of the country's area. Between 1955 and 1995, cropland decreased by 15%, but only by approx. 1.5% between 1996 and 2002.

Population

At the end of 2005, Liechtenstein had a resident population of 34'905 people, the size of a small city. However, the population of the country is spread out over 11 municipalities. 34.3% of the resident population are foreigners. Of all the foreign citizens living in Liechtenstein, 49.8% are from the countries of the European Economic Area (EEA)[1], especially from Austria and Germany, and 30.5% from Switzerland. The proportion of the foreign population from third countries is therefore 19.7% - including 7.5% from Turkey and 4.4% from Serbia and Montenegro.

The following key figures characterize Liechtenstein's geography and population (Statistic Yearbook 2005):

- Area of the country:	160 km^2
- Surface coverage:	34% agriculture area 41% forests 15% non-productive area 10% settlement area
- Official language:	Standard German
- Population:	34'905 (as of the end of 2005) of which 34% are foreigners, mainly Swiss, Austrians; Italians and Germans
- Birth rate:	10.3 births per year and 1'000 inhabitants
- Life Expectancy at birth:	male: 72.1 year; women: 76.3 year
- Unemployment rate:	2.4%

[1] The European Economic Area was created out of the 15 Member States of the European Union and the EFTA States Iceland, Liechtenstein, and Norway. The 10 new EU Member States have been part of the EEA since 1 May 2004.

2.1.2 Political and Economic Profile

System of State

The Principality of Liechtenstein is a constitutional hereditary monarchy on a democratic and parliamentary basis. The power of the State is embodied in the Reigning Prince and the People. The relatively strong position of the Reigning Prince is balanced by far-reaching direct-democratic rights of the People.

Separation of powers

In the dualistic system of State of the Principality of Liechtenstein, the power of the State is embodied both in the Reigning Prince and the People. Separation of powers is further safeguarded by vesting separate rights in the executive branch (Government), the legislative branch (Parliament), and the judicial branch (Courts).

Government

The Government consists of five Ministers: the Prime Minister, the Deputy Prime Minister, and three other Ministers. The Ministers are appointed by the Reigning Prince on the recommendation of Parliament. The Government is the supreme executive authority, to which over 30 offices and several diplomatic missions abroad are subordinate. About 50 commissions and advisory councils support the work of the administration.

The Government has the power to issue ordinances and is therefore also a rule-making authority. Ordinances may, however, only be issued on the basis of legislation and international treaties.

Municipalities

Municipal autonomy plays an important role in Liechtenstein. The autonomous scope of authority of the 11 municipalities is laid down in article 110 of the Constitution. The eligible voters of each municipality elect a Municipal Council headed by a Mayor who, depending on the size of the municipality, exercises his office full-time or part-time. The municipal authorities conduct their affairs autonomously and manage the municipal assets. Citizens may call a referendum against their decisions.

Economy

GDP was determined for the first time in 1998, as part of Liechtenstein's National Economic Accounting. Older GDP figures were calculated using a different method and can therefore not be compared directly. In 2003, nominal gross domestic product (GDP) stood at 4.1 billion (thousand million) Swiss francs. Figure 3 shows the development of nominal GDP between 1998 and 2003.
According to economic sector, industry and manufacturing generated 42% of added value in 2003, general services 27%, financial services 24%, and agriculture and households 7%.

Figure 2 : GDP at current prices (nominal) 1998-2003(OEA 2006)

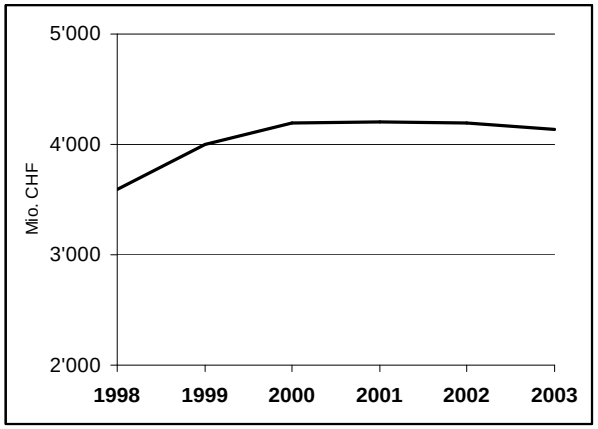
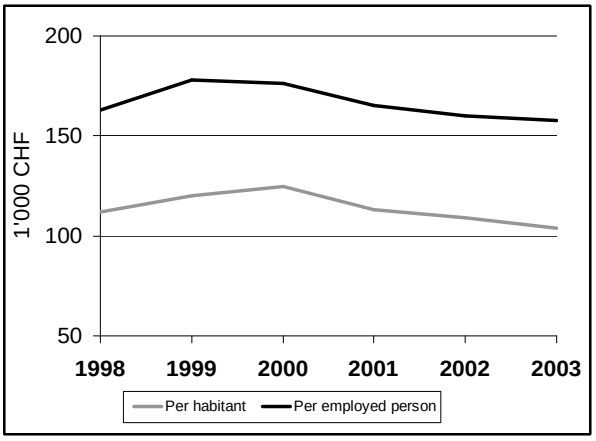


Figure 3 shows the development of nominal GDP per inhabitant and per employed person (in full-time equivalents). In 2003 GDP per capita was 104'000 CHF and GDP per employed person was 158'000 CHF.

Figure 3: GDP at current prices (nominal) per inhabitant and per employed person (in full-time equivalents) 1998-2003 (OEA 2006)



The unemployment rate calculated according to the domestic principle (in percentage of total number of employed persons) was 2.4% in 2005. Almost half of the work force lives abroad, commuting from Switzerland, Austria, or Germany to Liechtenstein. Just over two thirds of the workforce are foreign citizens.

2.1.3 Profiles of Economic Sectors

Economic area

Since entry into force of the Customs Treaty in 1924, Liechtenstein has formed a common economic area with Switzerland. The border between the two States is open; the border to Austria is controlled by Swiss border guards. Pursuant to the Currency Treaty with Switzerland, the Swiss franc is legal tender in Liechtenstein. As above-mentioned, Liechtenstein has participated in the European Economic Area since 1995, in which it forms a uniform single market with the EU Member States, Norway, and Iceland. After enlargement by the two new EU States on 1 January 2007, the EEA now includes a total of 30 Member States.

Economic structure

Liechtenstein is a modern industrial and service economy with worldwide connections. The foundations of its economic success in recent decades have been favourable framework conditions ensured by liberal business law. Liechtenstein is also home to a highly productive, globally oriented industrial sector, which contributed in 2004 approximately 40% of the overall added value of the country (gross domestic product). In addition, Liechtenstein has well-developed service enterprises, especially in the financial sector, with legal counselling, professional trustees, and banks. The country enjoys a worldwide reputation as a modern financial center with first-class know-how. In 2004, financial services and general services generated 52% of the added value of the country (gross domestic product). Liechtenstein is one of the most heavily industrialized countries in the world. This broad diversification was and is the key for the continuous and crisis-resistant growth of the Liechtenstein economy.

Employment structure

The small size of Liechtenstein and the continuing economic growth entail that a large part of the workers must be recruited abroad and commute across the national borders (cross-border commuters). At the end of 2005, 16'872 residents of Liechtenstein were employed, or just about 50%

of the resident population. Of these, 15’667 were employed in Liechtenstein and 1’205 were employed abroad. The 15’667 persons living and working in Liechtenstein were joined by 14’503 workers commuting to Liechtenstein from neighbouring countries, so that a total of 30’170 persons were employed in Liechtenstein at the end of 2005. Compared with the total population of 34’905, this is a very high number.

Table 2: Details on workforce in the economic sector

Economic sector	Workforce 31.12.2005
Total sector 1 (agriculture and forestry)	**381**
Total sector 2 (industry)	**13'242**
Mining	44
Food, beverages, tobacco	1'823
Textiles	105
Wood excl. furniture	208
Paper, printing, editing	273
Chemical industry	154
Rubber, plastics	87
Production of other non-metallic materials	565
Metals	1'050
Machineries	1'915
Electronics, precision instruments, optics	2'515
Vehicles	1'563
Other industries producing goods	205
Energy- and water-supply	207
Construction	2'528
Total sector 3 (services)	**16’547**
Total	**30’170**

Most workers are employed in the construction sector, followed by the electronics, precision instruments and optics sector. The chemical industry is weakly represented by only 154 employees. The chemical industry primarily produces paints and dental products. Furthermore, some companies in the chemical industry manufacture tarmac, medical products (pills), ink for ink jet printers or man-made fibres. 381 are working in the agriculture and forestry sector. Compared to the other two sectors, it is just a small amount. The service sector is the most important one by an amount of 16’547. More details to the particular sector are mentioned below.

Agriculture and forestry

Farmland (excluding the Alps) accounts for some 24% of Liechtenstein’s 16’000 ha. The area occupied by farms was 3’725 ha (whereby the additional approximately 1’751 ha of Alps, essentially all grassland, are not considered). In 2005, 1.0% of all those employed in Liechtenstein worked in agriculture and horticulture, while 0.2% were employed in forestry. More than half of the gross agricultural return comes from the dairy industry. Some 90 farms produce 13 to 14 million kg milk per year.

Table 3: Agriculture Returns from 1975 to 2005

	1975	1985	1995	2000	2005
Cattle	5'625	6'228	6'089	5'054	5'564
of which cows	2'129	2'777	2'656	2'562	2'851
Horses		173	295	379	409
Pigs	3'890	3'784	2'738	2'013	1'703
Sheep	1'861	2'373	3'118	3'319	3'603
Goats	43	125	206	239	324
Poultry	2'573	2'464	2'728		10'364
Bee colonies		1'320	1'022	953	1'033
Milk production (in 1000 kg)	6'270	12'814	12'729	12'968	13'471

Agriculture is no longer of great significance to the national economy. However, it still plays an important role with respect to self-sufficiency in times of crisis and with respect to cultivation and preservation of the natural and cultural landscape. 1.0% of all persons employed in Liechtenstein at the end of 2005 still worked in the primary (agricultural) sector.

Industry

Although the service sector (commerce, financial services, hotels and restaurants, education, etc.) is continually growing and encompassed 54.8% of the fully employed population at the end of 2005, Liechtenstein continues to have an active and diversified secondary sector (industry, trades, construction, etc.), in which 43.9% of all fully employed persons work.

Liechtenstein has a broadly diversified economic structure with a significant emphasis on industrial production. In comparison with other national economies, Liechtenstein is more strongly industrial and less service-oriented than is generally assumed.

Despite the small size of the country, the Liechtenstein national economy covers 15 of the 16 economic segments in the international classification, more than most small European States. The most important branches of the heavily export-oriented industry are mechanical engineering, plant construction, manufacturing of precision instruments, dental technology, and the food-processing industry. In all of these areas, the emphasis is less on the production of mass and inexpensive goods, but rather on the development of high quality, high-tech products. In matters of POPs it should be mentioned that Liechtenstein does not have any heavy industry and just an inconsiderable chemical industry.

Many industrial firms are active in very specialized market niches. Through intense research and development work, domestic companies have achieved the status of global market leaders in their areas.

In addition to many large companies, the many small and medium-size businesses make up the backbone of Liechtenstein industry. The average business in Liechtenstein has less than 10 employees, but these employees distinguish themselves by high qualifications and productivity.

Services (as compared to the other economic sectors)

Financial services represent an important economic sector in Liechtenstein, but not the largest. 14.3% of persons employed in Liechtenstein are in the financial services sector. Due to the high added value intensity of this economic sector, persons employed in the financial services sector contribute a share of about 30% to the Liechtenstein gross domestic product. The services offered include in particular private asset management, international asset structuring, investment funds, and insurance solutions.

Especially significant for the development of the Liechtenstein financial center were the entry into force of the Customs Union with Switzerland in 1924, the adoption of the Swiss franc as the legal currency,

and the creation of specific corporate legal foundations in 1926. The last 15 years have been a particularly dynamic period for the Liechtenstein financial center. The number of banks increased from 3 to 16, and new fields of business have opened up in the funds and insurance sectors. The accession to the European Economic Area in 1995 acted as a catalyst for a series of fundamental changes and made access to the markets of other countries possible.

One quarter of gross value added in Liechtenstein is in the area of general services. This sector includes tourism, services for companies, real estate and information technology, cleaning and repair services, and retail. Public administration constitutes a special branch within this sector. The largest private employers are services for companies, real estate companies, and information technology companies. They provide about 9% of Liechtenstein jobs. A further 8% of employees in Liechtenstein work in retail and repairs. The State, including the National Administration and the municipalities, employs about 16%. This includes primarily jobs in education, healthcare and social services, and public administration.

2.1.4 Waste Management

Liechtenstein does not have any waste incineration plant. All waste materials are disposed of in Switzerland. The nearest waste combustion dump is situated in Buchs/SG. Thus, Liechtenstein does not consider the emission of any waste combustion dump.

Because of the customs union treaty with Switzerland the Swiss waste-law is also applied in Liechtenstein and there is no custom control between Liechtenstein and Switzerland. The borders with Austria are controlled by Swiss authorities. The Swiss Agency for the Environment, Forests and Landscape (FOEN) checks the import, export and transit of wastes and hazardous wastes for Liechtenstein. Switzerland is a member of the OECD and the Basel Convention and therefore carries out these controls according to the OECD and the Basel Convention -Decisions. The authorities of Liechtenstein will be informed in every case and have the possibility to refuse unwanted exports, imports and transits of wastes under control.

Table 4 displays an overview addressing waste management in Liechtenstein.

Table 4: Waste management in Liechtenstein

Type of waste	annual amount (in t)	Disposal
Construction demolition / excavation	390’800	landfills
mixed municipal garbage	8'038	Incineration abroad
Glass, PET, paper …as separately collected by private household	4’113	Recycled in Switzerland
Special waste	19.5	Disposed in special companies with approved equipment abroad
Sewage sludge (dry weight)	1'499	Incineration abroad

The annual amount of construction demolition/excavation is the far biggest compared to the other types of waste. More details are mentioned in chapter 2.3.5.2. It is difficult to specify the national recycling rate due to the narrowness of Liechtenstein. Glass, PET and paper can also be disposed in supermarkets in Switzerland and therefore, it will not be included in the national statistic. The recycling rate can be compared with the Swiss rate. For further information compare chapter 2.1.4 in the Swiss National Implementation Plan.

2.1.5 Environmental Overview

It is safe to say that Liechtenstein is taking care of its environment. About 98% of the waste water from the entire private and public sectors passes through waste water treatment stations. In the industrial sector all companies are connected with the sewage water system (basis 2005). All heating systems in Liechtenstein are routinely inspected. The insulation of buildings is generally at a high level, which reduces the consumption of energy and the generation of greenhouse gases; patrol-driven vehicles

are (with negligible exceptions) all equipped with catalytic converters. Leaded fuel has disappeared, industrial emissions are strictly controlled. Farmers increasingly produce organic products and take account of the principles of integrated production (resulting in reduction of the use of agrochemicals) and recycling is well developed in industry, households and the public and business sector.

Nevertheless, awareness has to be kept at a high level, and further action is still needed in order to maintain the sustainability of the measures taken.

Thus, Liechtenstein may be regarded as advanced due to the above-mentioned points – and the fact that it signed (in 1979) the UN ECE Convention on Long-range Transboundary Air Pollution as well as its 1998 Protocol on POPs, i.e. a kind of closely related regional predecessor of the Stockholm POP's Convention, is one of the reasons allowing for this current assessment.

2.1.6 Relations with Switzerland

The relations between Liechtenstein and Switzerland are very close and friendly. The two countries have concluded numerous bilateral agreements. The most important treaty is the Customs Treaty of 1923, which, together with other agreements, ensures an open border between Liechtenstein and Switzerland also for passenger traffic. Also of great importance to the Liechtenstein economy is the Currency Treaty, which governs the use of the Swiss franc as the official currency in Liechtenstein.

The Customs Treaty provides that all Swiss customs regulations and all other Swiss federal legislation shall apply to Liechtenstein to the extent to which their application is necessary for the customs union. All provisions of Swiss federal legislation that would give rise to a contribution requirement by the Swiss Confederation are exempt from this rule. In addition, all trade and customs treaties concluded between Switzerland and third countries apply to Liechtenstein pursuant to the Customs Treaty. Switzerland is also authorized to represent Liechtenstein at such negotiations and to conclude these treaties effective for Liechtenstein. In principle, the Customs Treaty is limited to the transport of goods. In the 1990's, the Customs Treaty was adapted as a consequence of European integration. Since then, Liechtenstein has been able to become a State party to international conventions and a member of international organizations concerning the scope of the Customs Treaty, as long as Switzerland also belongs to these conventions and organizations. On the other hand, Liechtenstein may also join such conventions and organizations even if Switzerland does not join. In this event, Liechtenstein and Switzerland conclude a special agreement, such as in 1994 pursuant to Liechtenstein's accession to the European Economic Area (EEA). In addition to its effect under international law, the Customs Treaty also has symbolic significance for the particularly close relations between Liechtenstein and Switzerland. It has created the basis for legal alignment and harmonization in the fields of economics and social law, extending far beyond the scope of the treaty. These close links manifest themselves today in a wide range of agreements and treaties, including in the areas of social security, vocational training, transport, indirect taxes, and cross-border police cooperation.

The Customs Treaty is also relevant to environmental law. The bulk of Swiss environmental standards also apply to Liechtenstein. Environmental taxes and tax incentives are not covered by the Customs Treaty, due to Liechtenstein's tax sovereignty. It is therefore planned to conclude a special bilateral treaty relating to environmental taxes, which includes a parallel levy of environmental taxes in Switzerland. Until this treaty comes into force, the existing Swiss environmental taxes will be declared applicable to Liechtenstein, as part of an interim solution on the basis of the Customs Treaty. A similar treaty framework already exists in the area of transport with respect to the Heavy Vehicle Fee (HVF).

2.1.7 Liechtenstein and the EU

The relations between Liechtenstein and the EU are close, and cooperation is intensive. Since 1 May 1995, Liechtenstein has been linked with the European Union (EU) and its member States through an extensive association agreement – the Agreement on the European Economic Area (EEA). This agreement extends the Single Market of the EU by three of the four EFTA States, namely Liechtenstein, Iceland, and Norway. Including the new member States that joined on 1 January 2007, the EU now has 27 members and the EEA 30 members.

Through the EEA Agreement, the EU member States and the three EEA/EFTA States Liechtenstein, Iceland, and Norway are brought together into a Single Market, in which the same basic rules (acquis

communautaire) apply to all participating States. The rules relate to the four basic freedoms (free movement of goods, free movement of persons, free movement of services, and free movement of capital) and to joint competition rules.

In addition to the legal provisions concerning the Single Market, the EEA Agreement also contains horizontal and flanking policies aimed at strengthening the Single Market. These additional areas of cooperation include environmental protection, consumer protection, research and development, education, statistics, company law, and social policy. A large share of EU environmental standards therefore also applies in Liechtenstein. Liechtenstein also takes part in EU programs in the aforementioned areas, such as in the 7th Framework Program for Research and Technological Development (2007-2013), and, through its participation in committees, has a voice in the development and execution of the programs.

Liechtenstein engages in an active foreign policy characterized by the goal of strengthening State sovereignty and the goal of better political and economic integration at the international and European levels. Through the industrialization and economic development that began in the 1960's and has continued until today, this integration has been realized step by step.

Already in 1960, Liechtenstein was integrated into the European Free Trade Association (EFTA) through its Customs Treaty with Switzerland. In 1991, it joined EFTA as an autonomous member. Liechtenstein joined the Organization for Security and Cooperation in Europe (OSCE) in 1975 and the Council of Europe in 1978. It became a member of the United Nations in 1990 and a member of the European Economic Area (EEA) and the World Trade Organization (WTO) in 1995.

Today, Liechtenstein maintains diplomatic missions to the United Nations in New York, the European Union in Brussels, to EFTA, the UN, and the WTO in Geneva, a Permanent Mission to the Council of Europe in Strasbourg and a Permanent Mission to the OSCE and the UN in Vienna. Bilateral embassies have been established in Berne, Berlin, Brussels, Washington, Vienna, and to the Holy See.

2.2 Institutional, Policy and Regulatory Framework

2.2.1 Environmental Policy, Sustainable Development Policy and General Legislative Framework

The deliberate decision was made not to establish superordinate environmental protection legislation; the relevant provisions are to be found in the individual sectoral policies. With respect to technical implementation, Liechtenstein is for the time being bound by the Customs Treaty with Switzerland in some areas (e.g., Substance Ordinance, VOC tax, SO_2 tax). An autonomous Liechtenstein law in this area is under preparation. Air pollution thresholds are also largely identical with those of Switzerland; in some areas, however, they have been adapted to the thresholds provided by relevant EU directives, pursuant to the EEA Agreement.
In Liechtenstein, several laws substantially influence environmental policy concerning the Liechtenstein NIP.

- The comprehensively revised *Clean Air Act (2003)* now also specifies climate policy objectives. It lays down ongoing reduction of greenhouse gases and a reduction of CO_2 emissions from the energy-related use of fossil energy sources of at least 10% by the year 2010, relative to 1990. With regard to technical aspects, the Clean Air Act governs the limitation of emissions for stationary installations, the maximum air pollution level, measures to be taken in the event emissions thresholds are exceeded, and the requirements on engine and heating fuel. Important elements include the polluter-pays-principle and the obligation to provide information to the public. The ordinance on the Clean Air Act was amended in 1999. The amendments lay down new requirements on petrol and diesel oil, but also a new threshold for particulate matter in air. The annual average for sulphur dioxide (threshold) was reduced from 30 micrograms/m^3 to 20 micrograms/m^3. Beginning on 1 January 2000, the ordinance prohibits the sale of leaded supreme petrol. The lead content in unleaded petrol has also been reduced from 0.013g/l to 0.005 g/l, and the share of carcinogenic benzene in petrol has been reduced from 5% to 1%. The sulphur content in diesel has been reduced from 0.5 to 0.35 g/kg.

- The *Waste Prevention and Disposal Act (1988)* requires the separate disposal of different types of waste. At the level of an ordinance, the Government may require that certain waste be recycled, if such recycling improves the ecological balance. This law is also based on the polluter-pays-principle. Almost no waste is disposed of in reactor dumps. All trash is incinerated in the waste incineration plan in Buchs, Switzerland, and the energy generated is reused.
- In the *Act on Water Protection (2003)*, it is mentioned that the law aimed to protect the waters against harmful effects and to ensure the sustainable usage. This law is also based on the polluter-pays-principle. Polluted waste water must be treated and all households have to be connected with the sewage water system.
- The *Act on Forest (1991)* lays down the principles on the protection of the forests.
- The article 1 of the *Act on the Protection of Nature and Environment (1996)* says that the local animal and plant species and their habitat are protected. The landscape is protected against further impact and existing impairments are reduced.
- The *Act on Soil Protection (1990)* should protect the soil as natural fundamentals of life for human beings, animals and plants and should preserve their biocoenosis and habitats. The fundamentals for the use of pesticides are laid down. It must be paid attention of the environmentally friendly and sound use of pesticides. The polluter-pays-principle is also mentioned there.

Due to the Customs Treaty, many acts and ordinances, i.e. the Federal Act on Chemicals, the Ordinance on Plant Protection Products, the Federal Act on Foodstuffs and Utility Articles, the Federal Act on Narcotics and Psychotropic Substances, are totally or partially assumed in the Liechtenstein's legislation.

The Federal Act on Chemicals, which came into force on 1 August 2005, is a cornerstone of the development of sound chemicals management in Switzerland and is an important step towards harmonisation with EU legislation 26. In addition, it initiated a transition period of a couple of years, which is expected to be characterized by new awareness, change, and improvements.

In fact, the Federal Act on Chemicals had passed the parliamentary hurdles in 2000, and the Federal Council itself had in view of the relevance of the changes in the related ordinances opened the respective hearing procedures in March 2003 and delegated responsibility to the Department of Home Affairs. But the further developments were still slow for two main reasons: the significance of the change, and the uncertainty as to the precise results of the related legislative process in the EU.

Here, it has to be mentioned that a whole set of ordinances regarding the new federal legislation on chemicals has recently been enacted or is currently being prepared. These ordinances are built on three main pillars, i.e. the Federal Acts on Chemicals (SR 813.1, dated 2000), on Technical Barriers to Trade (from 1995), and on the Protection of the Environment (SR 814.01, dated 1983), and are considering a fourth, i.e. the Federal Act on Agriculture 34 (SR 910.1, dated 1998). But there are additional fields, of course, which are affected by this legislation – and the issue of the "Ordinance on the Suspension and Amendment of Ordinances in the Context of the Enactment of the Chemicals Act" (AS 2695) reflects the complexity of the endeavour.

Finally, the new legislation certainly has major advantages, such as a simplification of the procedures for professional permits or the registration of chemicals by a joint approval procedure (plant protection products still forming an exception) and due to a joint strategy involving the Swiss departments of home affairs (DHA), economic affairs (DEA), and environment, transport, energy and communication (DETEC).

Currently, a new superordinate Act on Environmental Protection – comparable to the Swiss Federal Act on Protection of the Environment – is in discussion in the parliament. The most important principles are:

- precautionary principle,
- polluter-pays-principle,
- holistic approach,

- protection for harmful and bothersome impacts,
- information to the public and
- cooperation principle

The new Act on Environmental Protection incorporates among other things the existing Act on Waste, the Act on Soil Protection and the Act on Air Pollution Control. Furthermore, it will broach the issue of contaminated sites and their remediation.

The EU Regulation (EC) No 850/2004 on persistent organic pollutants is presently being incorporated into the Liechtenstein legislation. The process is still ongoing and under discussion. It is expected to come into force this year. The regulation is applicable as a national law in Liechtenstein.

2.2.2 Roles and Responsibilities of Ministries, Agencies and other Governmental Institutions involved in POPs Life Cycles (from Source to Disposal, Environmental Fate and Health Monitoring)

There is no specific set of laws or institutions and agencies etc. in Liechtenstein that address the POPs alone, but there are laws and offices that address the environmental and use-related dimensions which are relevant to the POPs issue. The related measures are based on a few relevant principles as

- sustainability (ensuring ecological and economic feasibility)
- precautionary approach (preventing damage rather than repairing)
- fighting pollution at the source and
- polluter-pays (linking liability and dues for preventive or corrective measures to causative action).

In Liechtenstein, the substances mentioned in the Stockholm Convention do not exist in any stage of their life cycle. In this case, the contact points for environmental concerns involved in the POPs life cycles are the Office of environmental protection and the Office of Forest, Nature and Land Management.

Due to the Customs Treaty with Switzerland and the Agreement on the European Economic Area (EEA), the export and import is regulated by the Swiss Agency for the Environment, Forest and Landscape (FOEN) in Switzerland, and the administration in Germany concerning the market of the EEA. The Office of Environmental Protection is responsible for the storage, use and distribution, transport (Ordinance on the transport of dangerous goods by road (VTGGS), LGBl. Nr. 57 1998) and monitoring (Ordinance to the Major Accidents Act, LGBl. Nr. 79 1998). There is no production or chemical transformation of any substances concerning the SC.

2.2.3 Relevant International Commitments and Obligations

Liechtenstein is a member of some international commitments and obligations. It got involved in international activities since 1984 by signing the protocol on transboundary air pollution control. The following table points out the most relevant commitments and obligations.

Table 5: Agreements, programmes or organizations

Agreements, programmes or organizations	Comments
UN membership	Since 1990
EEA membership	Also resulting in the adaptation of a number of laws to EU-standards
UN ECE protocol on transboundary air pollution control	Precursor of the POPs Convention (ratified in 1984)
Stockholm POPs Convention	Ratified in July 2004
Basel Convention	Regarding the transboundary movement of wastes containing hazardous chemicals and incl.

	POPs (since 1992)
Rotterdam PIC Convention	Regarding prior informed consent of the importing state about the importation of hazardous chemicals incl. POPs (2004)
Montreal Protocol	Addressing volatile, mainly halogenated products endangering the ozone layer (1989)
Aarhus Convention	Addressing the public right to know and regarding environmental justice etc. It is not signed, yet, but ratified in 1998.
SAICM (Strategic Approach to International Chemicals Management)	Promotion of a safe and sound management of chemicals throughout their life-cycle all over the world and to ensure that by 2020, chemicals are used and produced in ways that lead to the minimization of significant adverse effects on human health and the environment.
Convention on transboundary impact of industrial waste	The convention inured in 2000. The parties of contract committed to inventory their potentially dangerous industrial facilities and in case of an accident with transboundary effect to inform their neighbouring countries. Furthermore, the best available technology should be provided in these facilities.

2.2.4 Description of Existing Legislation and Regulations addressing POPs (Manufactured Chemicals and Unintentionally Produced POPs)

The following table shall be strictly concentrating upon agreements or ordinances directly or indirectly mentioning persistent organic pollutants or the actual list of POPs and shows only the Swiss legislation, which is applicable in Liechtenstein. Due to the Custom Treaty with Switzerland, the Swiss legislation is applicable in Liechtenstein. For further particulars, see the Swiss NIP chapter 2.2.4.

Table 6: Swiss legislation applicable in Liechtenstein

Name (Ordinance or signed agreements)	Link to the Swiss legislation
Ordinance on Chemicals	ChemO (SR 813.11)
Ordinance on Risk Reduction related to the Use of certain particularly dangerous Substances, Preparations and Articles	ORRChem (SR 814.81)
Ordinance on Biocide Products	OBP (SR 813.12)
Ordinance on Plant Protection Products	OPPP (SR 916.161)
Ordinance on the Suspension and Change of Ordinances in the Context of the Enactment of the Law on Chemicals	(AS 2695)
Ordinance on Air Pollution Control	OAPC (SR 814.318.142.1)
Ordinance on the Pollution of Soil	OPS (SR 814.12)
Technical Ordinance on Waste	TOW (SR 814.600)
Ordinance on Movements of Waste	OMW (SR 814.610)
Ordinance on the Return, the Taking Back and the Disposal of Electrical and Electronic Appliances	ORDEA (SR 814.620)
Ordinance on Waste Water Discharge	OWWD (SR 814.255.21)
Ordinance on the Remediation of Polluted Sites	ORPS (SR 814.680)
Ordinance on Protection against Major Accidents	MAO (SR 814.012)
Ordinance on Incentive Taxes on Volatile Organic Compounds	OVOC (SR 814.018)
Ordinance on Environmental Impact Assessment	OEIA (SR 814.011)
PIC Ordinance addressing the implementation of the Rotterdam Convention on prior informed consent	ChemPICO (SR 814.82)

Independent from the Swiss legislation, additional domestic ordinances or acts are relevant in Liechtenstein. In the following table the most important ordinances and acts are listed, in which POPs are mentioned directly.

Table 7: Liechtenstein legislation relevant to the POP-issue

Name	Related POPs
Ordinance on drinking water (TWV)	aldrin, Chlordan, Heptachlor
Ordinance on air pollution control (LRV)	PCB
Ordinance to the Major Accidents Act	Dibenzofurane, Dibenzodioxine
Water Protection Act	fertiliser, pesticides
Ordinance on the transport of dangerous goods by road (VTGGS)	

2.2.5 Key Approaches and Procedures for POPs Chemical and Pesticide Management Including Enforcement and Monitoring Requirements

All the intentionally produced POPs are in essence banned in Liechtenstein since the late 1970's. The respective steps were taken on the grounds of the so-called UN ECE-agreement.

Due to the Custom Treaty with Switzerland, the above-mentioned Ordinance on Risk Reduction related to Chemical Products (ORRChem) also is applicable in Liechtenstein. Mirex, which had hitherto not been officially banned but which had obviously never been on the Swiss or Liechtenstein market, was added to the list of prohibited substances in the ORRChem, which came into force on 1 August 2005. Given the fact that all intentionally produced POPs named in the Convention are totally banned, Liechtenstein did not notify any registration in the list of specific exemptions established under Article 4 of the convention.

On the basis of the prevailing general conditions, it is not reasonable for Liechtenstein to monitor the substances mentioned in the SC. If there is the risk of pollution with POPs, an appropriate solution will be found in every case and suitable measures will be taken.

2.3 Assessment of the POPs Issue in the Country

2.3.1 Assessment with Respect to Annex A, Part I Chemicals (POPs Pesticides)

2.3.1.1 History of POPs Pesticides in Liechtenstein and Current Monitoring Needs

None of the POPs pesticides have ever been produced in Liechtenstein. It is not known that any of the POPs pesticides have ever been in use in Liechtenstein. Therefore, there are no monitoring needs.

2.3.1.2 Current and Projected Future Production, Use, Import, Export of POPs Pesticides

The ratification of the POPs Convention has no effect on production, import and export, because the substances in question have already been completely eliminated and there is no current and no planned future intentional use of POPs pesticides in Liechtenstein.

2.3.1.3 Regulatory and Policy Framework on POPs Pesticides

The regulatory and policy framework on POPs pesticides has already been extensively addressed in the preceding chapters. Therefore, it should simply be said that this framework is perfectly sufficient for the complete elimination of the use, production, import and export of POPs pesticides (Stockholm Convention Annex A, Part 1 chemicals).

2.3.2 Assessment with Respect to Annex A, Part II Chemicals (PCBs)

2.3.2.1 History of PCBs in Switzerland and Current Monitoring Needs

It can be said, that PCB have never been produced in Liechtenstein. PCBs in electrical installations and appliances, paints, varnishes, permanently elastic sealants and anti-corrosions coatings were detected in Liechtenstein. Gradually, all substances, installations or appliances containing PCBS could be disposed environmentally friendly and in accordance with the existing law. Unfortunately, there are nor an existing report about the measures and activities neither any data available in this field, yet.

2.3.2.2 Current and Projected Future Production, Use, Import and Export of PCBs

The legal situation and the control mechanisms in place make it highly unlikely that there could be any intentional current or future use of PCBs in Liechtenstein, while some objects or installations emitting minor amounts of PCBs are probably still in use. With regard to production, import and export it should be reiterated that PCBs were never produced in Liechtenstein. In addition, there is no planned future production, import or export.

2.3.2.3 Regulatory and Policy Framework regarding PCBs

The regulatory and policy framework regarding PCBs in Liechtenstein is very clear, because the Swiss legislation is applied in Liechtenstein: PCBs are prohibited, and extensive efforts to eliminate them entirely have been and are being undertaken.

2.3.3 Assessment with Respect to Annex B Chemicals (DDT)

2.3.3.1 History of DDT in Liechtenstein and Current Monitoring Needs

It can be said, that DDT has never been produced in Liechtenstein. It is possible but quite unlikely that DDT was transported to or was in use in Liechtenstein.

2.3.3.2 Current and Planned Future Production, Use, Import and Export of DDT

There is no current or planned future production, use, import or export of DDT in Liechtenstein.

2.3.3.3 Regulatory and Policy Framework for DDT

The regulatory and policy framework for DDT in Switzerland, and therefore in Liechtenstein as well, is very clear: DDT is prohibited in agricultural, industrial and consumer products. Thus, there also is no intention of making an exception under the Stockholm POPs Convention.

2.3.4 Assessment of Releases from Unintentional Production of Annex C Chemicals (PCDD/PCDF; HCB and PCBs)

2.3.4.1 History of Unintentionally Released POPs in Liechtenstein and Current Monitoring Needs

PCDDs and PCDFs as natural products:

PCDDs and PCDFs were never intentionally produced, while they are (and always were) formed from chlorine containing materials in fires. Thus, they exist since prehistorical times and may almost be regarded as natural products.

Anthropogenic PCDDs and PCDFs:

As mentioned PCDDs and PCDFs are and always were formed in fires, because the burning of wood is resulting in fly-ashes containing them in trace amounts and human beings have been burning woods since prehistorical times. In addition, large amounts of wood are still burnt today, which, therefore, is an anthropogenic source of PCDDs and PCDFs in Liechtenstein like everywhere else. But newer developments resulted in significant additional PCDD- and PCDF-sources. They included especially

- open garbage incineration,
- burning fuels with chlorine containing additives in cars, and
- chemical reactions.

The private or industrial combustions in Liechtenstein are inspected annually. The controls are implemented by the chimney sweepers of every community for private combustions, and by the Office of Environmental Protection for industrial combustions. Combustions also include chimneys in private households. One may assume that the illegal combustion of waste is not a problem in Liechtenstein. Between 2002 and 2004, all heating systems exceeding 1 MW were brought up to the most current level of technology, which entails a significantly lower consumption of natural gas and petroleum.

Moreover, it can be excluded, that any PCDDs or PCDFs are emitted by any combustion plants, because there is no combustion plant in Liechtenstein. All waste from private households is disposed in Switzerland.

Most of these newer sources of PCDDs and PCDFs were recognized in the late 1970's. At least, that was the time when they got a lot of public attention. The reason was in part the famous 1976 chemical accident in Seveso, Italy. This was not the first 2,3,7,8-TCDD-event, but certainly the one getting the strongest media-coverage. In addition, the same accident was raising public awareness again when the barrels with the critical remnants from the reactor disappeared and when their odyssey across Europe was making headlines for weeks. This was especially true in Switzerland, because a Swiss industry group, Roche, had actually bought the concerned Icmesa factory in Seveso just a little before the famous accident.

These developments had multiple and far-reaching consequences in Switzerland and partially in Liechtenstein:

- They facilitated the enactment of the Federal Act on environmental Protection.
- They raised a strong public "dioxin-awareness".
- They resulted in a quantum leap regarding PCDD-analysis.
- They also resulted in a quantum leap regarding garbage incineration technology.
- They promoted the investigation of other "dioxin-sources" and ultimately led to more innocent fuel for cars.
- Finally, they had a strong impact upon the chemical industry's planning of their production processes (avoiding reactions delivering trace amounts of "dioxin-by-products" or of larger amounts of "dioxin" in case of a failure of the systems controlling the reactors).

Thus, one is on safe grounds in claiming that the PCDD- and PCDF-pollution started to decrease again in the 1980's – even though there are not too many details substantiating that statement.

2.3.4.2 Current and Projected Future Release of PCDDs / PCDFs in Liechtenstein

Unfortunately, there are no data available for release of PCDDs or PCDFs for Liechtenstein. Due to the fact that Liechtenstein does not have any heavy and just an inconsiderable chemical industry and all waste is disposed in Switzerland the release of PCDDs / PCDFs is rather small. There is no current or planned future production, use, import or export of PCDDs / PCDFs in Liechtenstein.

2.3.4.3 Regulatory and Policy Framework on PCDDs and PCDFs

This chapter opens with the remark that the regulations addressing the release of PCDDs and PCDFs have, of course, a quite analogous effect on the release of HCB and PCBs, though the “unintentional” release of the latter very probably plays a minor role in comparison to the impact of their earlier intentional use.

The focus of the regulations addressing the reduction of the PCDD-/PCDF-release is two-fold:

- on the avoidance of precursors and
- on the equipment or processes in which the pollutants could be formed.

Avoiding precursors:

In Switzerland, Annex 3.1 of the OSubst prohibited the manufacture, marketing, import and use of a number of halogenated substances which may be contaminated by PCDD / PCD when manufactured or which are known to be-precursors for the formation of PCDD / PCDF when incinerated, i.a.

- hexachlorobenzene (HCB)
- halogenated biphenyls, terphenyls, naphthalines, and diaryl-alkanes,
- trichlorophenoxy fatty acids and derivatives
- polychlorinated phenols and derivates (penta- and tetrachlorophenols)

In 2005, the ORRChem superseded the OSust, and polybrominated biphenylethers were added to the list of prohibited substances. It also prohibits the use of liquid organic halogenated substances like dichloromethane, trichloro-ethylene and perchloro-ethylene as components in

- detergents for textiles and
- cleansers

Furthermore, the ORRChem prohibits the mixing of halogenated waste solvents like dichloromethane, dichloro ethane, or chloroform with other waste or waste solvents. Reserved is the mixing for the direct purpose of state-of-the-art incineration in appropriate ovens.

The Ordinance on Air Pollution Control in Liechtenstein and a series of ordinances relating to vehicles prohibit leaded fuel, which also eliminates the need for chlorinated scavengers and reduces the traffic-related formation of PCDDs and PCDFs.

Finally there are a number of guidelines that support the implementation of the above-mentioned ordinances. They may not be regarded as part of the regulatory framework in the strict sense of the word, but they still have a significant impact.

Regulations addressing potential PCDD /PCDF-forming processes and systems:

There are a large number of laws and ordinances addressing heating and incineration processes. They all are geared towards ensuring a high performance of the combustion, which also limits the formation of PCDDs/Fs. For example, there is the obligation to submit all private heating installations to regular checks (based on the Ordinance on Air Pollution Control), and there is the obligation of annual exhaust checks for motor vehicles. Also important in this context is the installation of catalytic converters in cars, in Liechtenstein mandatory for new vehicles.

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

UNEP's guide to developing an NIP for the Stockholm Convention has the above title and firstly addresses known POPs hot spots in the country under discussion. There are no such specific POPs hot spots in Liechtenstein.

However, there are contaminated sites containing an abundance of problematic products. They are commented on in the following subchapter, while waste management in general is again addressed in the subsequent one.

2.3.5.1 Contaminated Sites

Currently, Liechtenstein is developing a national land register of polluted sites. In the concept of that register, there are included all industrial companies, landfills and known sites where accidents happened. The register is not completed, yet. Thus, the following information is based upon estimations.

In the course of this concept, from 700 companies settled in Liechtenstein, 100 are assumed to be surveyed more detailed. The companies are mainly composed of small trade. As above-mentioned, there is no heavy and just a small chemical industry in Liechtenstein.

Moreover, 200 contaminated sites were detected, of which about 20 need to be considered further. The contamination primarily consists of construction waste, municipal solid waste, household waste and industrial waste (solvent, hydrocarbons, VOC, heavy metal).

Pursuant to data collection, there are 200 scenes of an accident known. About 10% of them must be monitored due to environmental protection. Mostly, they were accidents relating to oil and, therefore, not relevant to the POP issue.

All applications for planning permission are tested for relevance of contaminated sites. In the course of some building projected, a few sites were remediated. The majority of all contaminated sites are located along the River Rhine. They are monitored using groundwater observation.

Relevant regulations concerning contaminated sites are the Act on Waste and the Act on Water Protection. An appropriate Act on Contaminated Sites does not exist in Liechtenstein, but the issue of contaminated sites and their remediation is mentioned in the currently discussed Act on Environmental Protection as above-mentioned. Some Swiss regulations are also implemented in Liechtenstein. Worth mentioning are the Federal Act on the Protection of the Environment (EPA (SR 814.01)) and the Technical Ordinance on Waste (TOW (SR 814.600)).

2.3.5.2 General Aspects of Waste Management

Table 8: Amounts of type of waste in 2005

Type of Waste	Amount 2005 in tons	Percental amount 2005
Construction Waste and excavation material in landfills	348'800	78.0%
Construction Waste	42'000	9.4%
Separately colleted Waste (including electronic appliances)	24'000	5.4%
Structural Bulk Goods	4'000	0.9%
Hazardous Waste	8'500	1.9%
Organic Waste	8'200	1.8%
Sewage Sludge	1'500	0.3%
Municipal Solid Waste	10'400	2.3%
Total	**447'400**	**100.0%**

Incineration residues:

The export of waste is regulated in the Basel Convention, and there is the declared policy to incinerate a maximum of waste in an environmentally sound way, avoiding exportation wherever possible. But the incineration still produces residues resulting from the filtration and washing of flue gases. Fortunately, there is no waste incineration plant or any heavy industry. Thus, the issue is not relevant to Liechtenstein concerning unintentionally produced POPs.

Sewage sludge:

Sewage sludge is not included in the types of special waste mentioned above. The total amount of respective dry mass produced in 2005 was 1'499 tons. All of them were disposed appropriately. The use of sewage sludge in the agricultural sector is forbidden since 2005. The sewage sludge is incinerated environmentally sustainably.

Landfills from construction waste, debris and excavation material:

Waste related to construction work represents by far the largest volume of waste generated in Liechtenstein year by year. It amounts to about 390'800 tons per year (2005). From it, 348'800 are disposed in landfills. About 90% of the waste disposed in landfills are excavation material, 10% are mineral construction waste. 42'000 tons are recycled by recycling companies located in Liechtenstein. Compared to the other types of waste, construction waste and excavation material are 88% of the total mass of waste. It can be said, that all generated construction waste, debris and excavation material is not contaminated by POPs.

Electrical and electronic appliances:

PCBs are the main POPs of interest in the context of electrical and electronic appliances. This has been mentioned above. But electrical and electronic appliances may contain other environmentally relevant materials such as heavy metals or ozone layer depleting substances. Therefore, the waste in question requires special handling as regulated by the Swiss Ordinance on the Return, the Taking Back and the Disposal of Electrical and Electronic Appliances (ORDEA – SR 814.620), which is also applicable in Liechtenstein. This ordinance ensures, inter alia, that suppliers have to take back equipment they have delivered as well as comparable items. Thus, there is a reliable guarantee that such problems will be handled with the required expertise and in line with the corresponding guidelines.

Relevant regulations and guidelines:

The following ordinances not already mentioned in chapter 2.3.5.1 are of interest in the present context: the above-mentioned Ordinance on the Return, the Taking Back and the Disposal of Electrical and Electronic Appliances (ORDEA – SR 814.620, applicable in Liechtenstein), the Ordinance to Water Protection Act (LGBl. 42 1997), and the Ordinance on Movements of Special Wastes, (OMSW,

SR 814.610, applicable in Liechtenstein). The latter two deal among other things with discharging waste into surface waters and with general movements of special wastes, respectively.

Finally, there are several guidance papers from the FOEN, which deserve to be mentioned here: The "Guidelines on the Disposal of Wastes in Cement Plants" and the "Fact-sheet on Limiting Emissions in Incineration Plants for Municipal and Special Wastes". Both these guidelines refer to the ordinances cited above, and both are also based on the Ordinance on Air Pollution Control. Therefore, they have an impact on the main elements influencing the sound management of waste, i.e. the control of

- the waste's composition,
- the limiting concentrations relating to specifically hazardous substances in the waste,
- the separation of specific components at the source or later,
- the incineration conditions,
- the treatment and disposal of residues,
- the emissions of the process (into air and water), and consequently
- the incentive to limit the generation of waste at the source.

2.3.6 Summary of Future Production, Use and Releases of POPs – Requirements for Exemptions

There is neither a planned future production of POPs, nor a requirement for exemptions. The only release faced for the future regards unintentionally produced PCDDs and PCDFs.

2.3.7 Existing Programmes for Monitoring Releases and Environmental and Human Health Impacts, including Findings

The practical absence of POPs purposely used or produced and the low levels of POPs unintentionally generated make it impossible to link exposure to POPs to health-related statistics. On this account, there are no existing programmes for monitoring releases and environmental and human health impacts, including findings in Liechtenstein.

2.3.8 Current Level of Information, Awareness and Education among Target Groups; Existing Systems to Communicate such Information to the Various Groups; Mechanism for Information Exchange with other Parties to the Convention

The level of information and general POPs-awareness in Liechtenstein is high – especially with regard to chemicals in electrical and electronic appliances. A main reason is that stores have not too long ago started to charge a recycling fee when selling corresponding equipment. Of course, the respective awareness is also high with the personnel of the respective stores.

The illegal combustion of waste in chimneys and the like is forbidden in Liechtenstein and it is all the more important, because Liechtenstein municipalities are charging garbage bag fees essentially everywhere.

Finally, there is, of course, international collaboration at the level of universities, Switzerland and industries as well as on the grounds of the agreements and programs.

2.3.9 Relevant Activities of Non-governmental Stakeholders

Some non-governmental organizations as LGU (Liechtenstein Society for Environmental Protection), VCL (Automobile Club of Liechtenstein), and the Fishing club concern with environmental issues. However, it may be said that the POPs-reducing impact of non-governmental organizations is today indirect rather than direct.

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

The occurrence or release of POPs in the environment and in materials of industrial or daily use may be assessed in several ways:

- indirectly on the basis of managerial information on the history or status of the environmental compartment or material in question,
- indirectly by characterizing the type of process applied,
- indirectly by analyzing the precursors and catalysts available in the compartment or material,
- indirectly by analyzing the by-products formed in the process, or directly by analyzing the contents in the material and/or the residues or gases released, respectively.

Contact point for environmental issue is the Office of Environmental Protection and the Office of Forests, Nature and Land Management. Further stakeholders are:

- professional - and industrial associations,
- other associations dealing with the environment, with technical inspections, or with consumer protection
- companies dealing with environmental-friendly technologies and, e.g. with the recycling or incineration of waste,
- (chemical, industrial, environmental and technical) laboratories

Generating a comprehensive compilation of a given technical capability in a developed country would be a very laborious task and would considerably expand the scope of this NIP – especially if the international interactions of all the organisations involved were to be included.

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

This short chapter shall be opened by compiling potential threats. Its second part will then attempt to weigh these threats and to draw conclusions, if applicable in view of required actions.

Thus, the following segments of the population and the environment may be regarded as exposed or potentially exposed:

- breast-fed babies (cp. the POPs-contents in mothers' milk),
- workers involved in the disposal of contaminated sewage sludge or residues,
- workers involved in the recycling of electrical and electronic appliances,
- workers involved in the destruction of buildings,
- workers in the chemical industry preparing products which could form POPs-by-products,
- the immediate vicinity of old chemical waste disposal sites,
- the segments of moving waters taking up contamination from waste water treatment plants, and
- the immediate vicinity of streets or roads with very heavy traffic.

Obviously, farmers handling pesticides have not been mentioned, because no POPs-pesticides are in use anymore – and future candidate POPs are not considered in this present discussion.

But now to the discussion of the above-mentioned threats:

- Breast-fed babies are exposed, and one will for quite some time to come just have to periodically re-address the respective risk/benefit-analysis.
- All the risks involving workers exposed to heavily contaminated materials can be and are controlled. Here, it is just important that the respective training and the implementation of the protective measures are periodically checked and strictly enforced. However, the dangers are so obvious and so well understood that there is actually no need for new interventions.
- The highest risk, therefore, concerns workers exposed to threats, which are usually almost approaching background-levels, because it may become difficult in these cases to really enforce protective measures. This could be the case for workers dealing with the recycling of

electrical and electronic appliances and eventually for workers destructing buildings. Here, training and know-how are especially important, and one might in this NIP consider a more thorough analysis of the situation or an awareness raising campaign.

- Analogously, “true hot spots” in the environment, like former chemical waste disposal sites, are so obvious that there is no need for further awareness raising – while the financing of the remediation might still lead to discussions, of course.
- However, the threats presented by minor contaminated sites will be the ones precipitating discussions, and one will have to carefully equilibrate spending on local or country-internal perfectionism versus spending on global actions. This discussion will be facilitated by a better understanding of local versus global dimensions of the POPs issue in general.
- The waters fed from waste water treatment and the immediate neighbourhoods of waste incineration plants are presenting a similar problem of equilibration of local and broader concerns. Thereby it appears logical to
  - limit the respective emissions in such a way as to guarantee that upper tolerable limits are exceeded nowhere and
  - avoid that drinking water is sourced from waters with above background contamination.

  To our knowledge both these requirements are actually fulfilled everywhere in Liechtenstein.
- Finally, there is the problem of the immediate neighbourhoods of major streets and roads, again a situation where the POPs-related threats are just slightly above background level. Nevertheless, it has to be said that Liechtenstein has too many of these situations anyway. Therefore, this is a general concern regarding environmental protection, spatial planning and socio-economic questions, and there is no need to address it under the umbrella of the POPs Convention.

In conclusion, it may be said that Liechtenstein has some real threats which also have a POPs-dimension, but that the POPs issue may in most cases still be regarded as quite negligible in comparison to more fundamental consequences of the high population and communication density in the country. Moreover, this shall by no means imply that one should neglect the POPs.

2.3.12 Details of any Relevant System for the Assessment and Listing of New Chemicals

As described in 2.2.2, the assessment and listing of new chemicals are managed by the Swiss Agency or - concerning the EU market - by Germany (Dortmund).

2.3.13 Details of any Relevant System for the Assessment and Regulation of Chemicals already in the Market

As described in 2.2.2, the assessment and listing of new chemicals are managed by the Swiss Agency or - concerning the EU market - by Germany (Dortmund).

3 Strategy and Action Plan Elements of the National Implementation Plan

3.1 Introductory Remark

The structure of part 2 of this NIP essentially corresponds to that UNEP's guidance paper 3. Part 3, however, is more individually adapted to the Liechtenstein needs. Nevertheless, it contains the relevant elements as required according to UNEP's guidance.

3.2 Summary of the Liechtenstein Situation regarding POPs

Liechtenstein does not have any heavy or just an inconsiderable chemical industry. All waste produced in Liechtenstein is disposed of in Switzerland. Thus, Liechtenstein does not have any waste combustion dump. None of the substances mentioned in the Convention have ever been produced in Liechtenstein and there is no intention to produce, import, export or use one of the substances in the future. Therefore, it can nearly be obviated that intentionally produced POPs are found in Liechtenstein.

There is a possibility to find unintentionally produced POPs, though it is rather small. As above-mentioned there is no waste combustion dump. The illegal disposal or burning of waste in private or industrial combustions is controlled once a year. Between 2002 and 2004, all heating systems exceeding 1 MW were brought up to the most current level of technology, which entails a significantly lower consumption of natural gas and petroleum. It is assumed that the amount of unintentionally produced POPs can be qualified as marginal. Table 9 summarises the assessments as described in detail in part 2 of this NIP.

Table 9: Summary of the Liechtenstein situation regarding POPs

Type of POP	Import, export, production, use	Elimination or reduction of release	Comments
Pesticides incl. DDT	Prohibited	Done	There are no POP contaminated sites known. No pesticides listed in the convention are in use or produced.
PCBs	Prohibited	Done	All facilities containing PCBs were inventoried and disposed environmentally friendly and in compliance with the law.
PCDDs/PCDFs	Prohibited	Done	Illegal disposal or burning in private or industrial combustions is controlled annually.

3.3 Liechtenstein Strategies regarding POPs

The strategies to be pursued will have to consider the following dimensions:

Specific focus on the twelve POPs versus general focus on PTS:

Liechtenstein is already very far advanced in the elimination of the Stockholm Convention POPs, so that in addition to eliminating sources of unintentionally produced POPs an effort to reduce other persistent, bioaccumulative and toxic substances (PBTs) should be made:

⇒ The Stockholm POPs Convention provides the unique advantage that a number of chemicals will be simultaneously and globally controlled, reduced, and eliminated.

This will not only result in an environmental improvement, but also deliver a focused and probably very tangible experience regarding the effect of this type of international agreement. It is, therefore, important to really collect the whole accessible experience in view of exploiting it to define the most effective approach to controlling other PTS.

⇒ Global and comprehensive monitoring of the twelve POPs in the relevant environmental compartments is therefore an important aspect of the Stockholm Convention, and Liechtenstein will accordingly have to intensify its effort.

⇒ Identification and elimination of other PBTs not regulated in the Stockholm Convention should be a goal in the regulatory domain.

Specific focus on the twelve POPs versus focus on their exemplary role in integrated ecosystems:

There are ecosystems and environmental concerns in which the POPs are just acting as one of a number of substances or effects resulting in an undesirable development. One might, therefore, ask whether the focus should be on the specific role of the twelve POPs or rather on the holistic and most effective way of protecting the ecosystem in question and of eliminating the respective concern.

⇒ It is obvious that ecosystem protection has a very high priority. And the Stockholm Convention certainly suggests that a reasonable effort should be made to determine the role the elimination of POPs might play in protecting the ecosystem.

⇒ It may therefore in the future be advisable to include POPs (monitoring, modelling, effect studies of new POPs) in ecosystem studies.

Harmonization and consistency versus efficiency and effectiveness:

The Stockholm POPs Convention contains provisions regarding the harmonization of approaches (e.g. in Art. 16-2a regarding effectiveness evaluation), while it reserves the taking into account of differences between regions. This asks for the definition of a respective strategy.

⇒ Harmonization and consistency, e.g. with regard to monitoring, should be pursued where this does not get into the way of speed and efficiency in implementing the main principles of the Convention.

3.4 Action Plans

Based on the above-mentioned facts, no measures are necessary to be taken in Liechtenstein itself to fulfil the obligations of the SC. This illustrates the fact that Liechtenstein is already in compliance with the SC's stringent obligations and that it also makes an effort to fulfil responsibilities imposed by those articles of the Convention that leave room for interpretation. Monitoring of the POPs could be enforced to ensure an absolute absence of POPs, especially the unintentionally produced PCDDs and PCDFs. In this context, Liechtenstein will review the possibility of the close collaboration with the Swiss Agency for the Environment, Forests and Landscape (FOEN) concerning the environmental monitoring in general and specifically concerning POPs.

Referring to PBCs in electrical installations, Liechtenstein will compose a report about the actual state of affairs and to emphasize the total elimination of PCB containing electrical installations. It can be assumed that there are no more existing PCB containing electrical installations in Liechtenstein and therefore, a need for further actions can be excluded in this subject area.

In case of a listing of a new chemical, Liechtenstein will be anxious to find a suitable substitute or to reduce the use and production of that substance as fast as possible. It will also examine applicable measures if necessary.

It goes without saying that sustainability must be taken into account in the implementation of all the programs mentioned. Nevertheless, these programs are suitable for underlining that POPs related problems must be solved with a holistic and sustainability-orientated view.

3.5 Financial Implications

The following (freely translated) passages from the dispatch to the Liechtenstein parliament regarding the ratification of the SC describe the general picture:

All duties and responsibilities resulting from the Convention will create additional work and expense which can be accomplished by The Office of Environmental Protection. […] The financial implications are limited to the annual financial contribution for the future Convention Secretary which will amount to around 200 USD for Liechtenstein.

The costs resulting from the Stockholm Convention are marginal.

Cited Literature and Information Sources

- Dispatch on the Stockholm Convention on Persistent Organic Pollutants (POPs-Convention), 16 Oct. 2002.
- Draft Guidance for Developing a National Implementation Plan for the Stockholm Convention (CD prepared by UNEP in view of INC-7).
- Government of the Principality of Liechtenstein, 2004: Report of the Government to the Parliament of the Principality of Liechtenstein of 13 September 2004 on the Stockholm Convention of 22 May 2001 about Persistent Organic Pollutants.
- Government of the Principality of Liechtenstein, 2005: Rechenschaftsbericht, Vaduz, 2005.
- Interim guidance for developing a national implementation plan for the Stockholm Convention (UNEP, World Bank), Revised, December 2003, http://www.pops.int (→ INC-7 Follow-up → Guidance → National implementation plan)
- International Commission of Water Protection for the Lake Constance Area, 2006. Report on the State of the Measures of Water Protection in the Countries and Cantons, Mannenbach/TG, 2006.
- Liechtenstein National Administration: www.llv.li
- Liechtenstein National Climate Report. Government of the Principality of Liechtenstein. Vaduz, 2005.
- OEA (Office of Economic Affairs), 2004: Statistical Yearbook 2004, Vaduz.
- OEA (Office of Economic Affairs), 2006: Statistical Yearbook 2006, Vaduz.
- Principality of Liechtenstein (official Internet portal): www.liechtenstein.li
- Statement of account. Government of the Principality of Liechtenstein. Vaduz, 2006.
- Stockholm Convention on Persistent Organic Pollutants (POPs), Text and Annexes (published by the Interim Secretariat for the Stockholm Convention on Persistent Organic Pollutants, United Nations Environment Programme (UNEP) Chemicals, International Environment House, 11-13 chemin des Anémones, CH-1219 Châtelaine, Geneva, Switzerland).
- Swiss National Implementation Plan, First Edition, Federal Office for the Environment FOEN, Bern, 2006.