EUROPEAN CHEMICAL REGIONS NETWORK

„Chemical Parks as Regional Growth Engines for European Chemical Regions"

Saxony-Anhalt (Central Germany)
North-Rhine Westphalia (GER)
Lower Saxony (GER)
Masovia (POL)
Limburg (NET)
Huelva (ESP)
Rhineland Palatinate (GER)
Piemonte (ITA)

December 2005

PROJECT PART-FINANCED BY THE EUROPEAN UNION

North East South West INTERREG IIIC

Introduction ECRN

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ECRN: The "European Chemical Regions Network" (ECRN) has the objective to exchange experiences about the joint challenges for chemical regions and initiate a mutual learning process for the strengthening of the chemical sector. Joint positions on relevant policy issues are developed to raise the regional voice in the European decision making process. The partner regions are Saxony-Anhalt, acting as the coordinator, North Rhine Westphalia and Lower Saxony, (GER), Huelva, Asturias and Catalunya (SPA), Lombardia and Piemonte (ITA), North East and North West of England (UK), Limburg (NL), Masovia (PL), and Ida-Viru (EST). Contacts to further chemical regions have been established to enlarge the network and become a stakeholder at European level. Rhineland Palatinate and Schleswig Holstein have recently joined the network. The total project budget is 1,639,000 €, 61% of which is funded by the European Union. More details about the ECRN can be found on its website at www.ecrn.net.

INTERREG IIIC is an EU-funded programme that helps Europe's regions form partnerships to work together on common projects. These projects enable regions to share knowledge and experiences that will help them develop new solutions to economic, environmental and social challenges. 98 percent of all European Union regions are involved in INTERREG IIIC projects. There are more than 250 INTERREG IIIC projects running, involving 2,500 local and regional actors from 50 countries. 20 percent of these actors are from the new EU Member States. More information on INTERREG IIIC can be found on www.interreg3c.net.

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The Project „European Chemical Regions Network" receives a funding from the European Commission in the framework of the Intereg III C Programme. Any liability for the content of this publication lies solely with the author. The Commission is not responsible for any use that may be made of the information contained therein.

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I Introduction: Actual and Future Trends of the Chemical Industry in Europe

(1) Actual and Future Trends

1. The chemical industry in Europe is experiencing a tremendous transformation process from diversified multinationals towards the concentration on the core business. This deep change has lead to restructuring processes, sales, mergers, outsourcing of business activities and services.[1] These processes have increased the outsourcing of infrastructure services to specialised chemical park companies. The chemical enterprises have concentrated their activities on the development and sales of their products, whereas the site companies are responsible for the further development of the location.[2]

2. The chemical parks have assumed a leading position in the global and European transformation process of the chemical industry. In the last two decades, the chemical sites have been remediated, modernised and restructured. The infrastructure has been renewed and extensive investments in production facilities have been completed. In this process, a specific knowledge of successful chemical park management has been developed and documented, giving a good basis for the exchange of experiences between chemical parks. Behind the background of increasing competition, chemical sites are strengthening their cooperation in the framework of location networks “Standortverbund”. These are often based on a material network creating synergy potentials for the development of efficient supply chains. Several chemical site initiatives (e.g. CeChemNet, ChemSite, ChemCologne, ChemCoast, etc.) have been established, offering a variety of practicable and efficient solutions for chemical park management.

3. The competition in the area of chemical parks will increase in the upcoming years. The main reasons are:

- The market growth of the chemical industry in Europe will be relatively low in the next 10 years (approx. 1.6 to 2%)[3].
- Sales opportunities will be reduced by the migration of important clients to Asia.
- Additional threats to the Western European chemical industry are not only caused by increasing imports of speciality chemistry (from China) and fine chemistry (from India), but also by imports of basic chemistry and polymers from Eastern Europe and the Far East[4]
- The number of “free investors” will decrease further, hence the chances for investments will mainly result from the existing portfolio.

[1] Source: Hambrecht, Jürgen; in: Industrieparks - Herausforderungen und Trends in der Chemie- und Pharmaindustrie; Preface, Festel Capital Hünenberg, 2004
[2] Source: Schüddemage, Horst-Dieter, a. a. O., page 35
[3] Source: Giesen, Volker, Congress report 8 June 2005
[4] Source:: A.T. Kearney Analysis, Author: Rings, Thomas

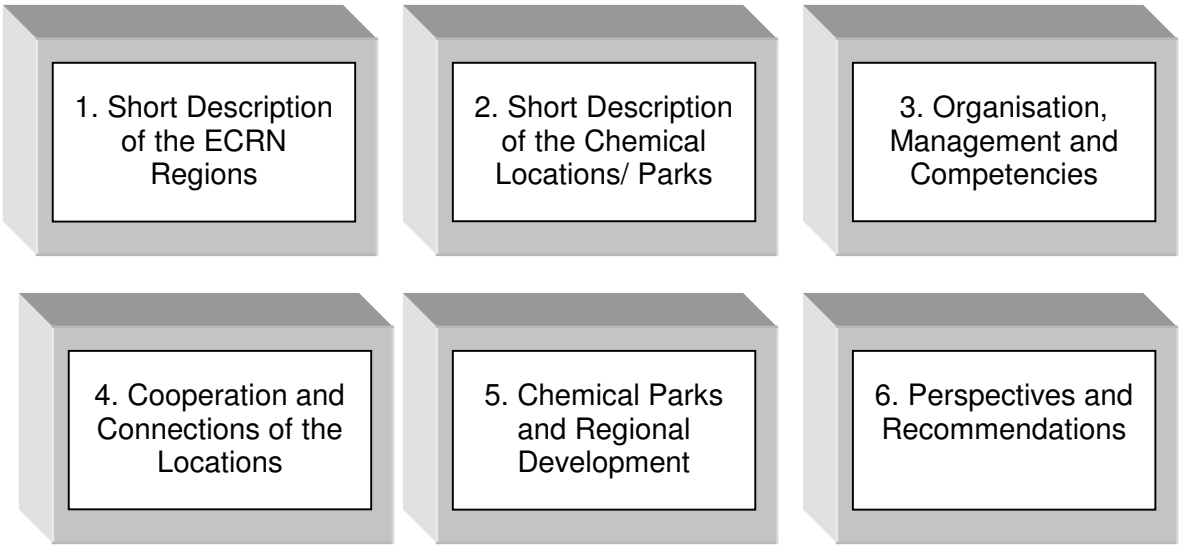
(2) Objectives of the Chemical Park Study

This benchmarking study concentrates on the following objectives of the ECRN-Network:

- Strengthen the exchange of experiences between the partners regions;
- Development of sustainable partnerships and further cooperation projects;
- Information about best practice solutions for the chemical park management
- Networking between the chemical park initiatives and mutual information of the involved stakeholders;
- Contribution to the representation of interests of the chemical parks on different political levels (regional, national, European).

(3) Main Contents of the Study

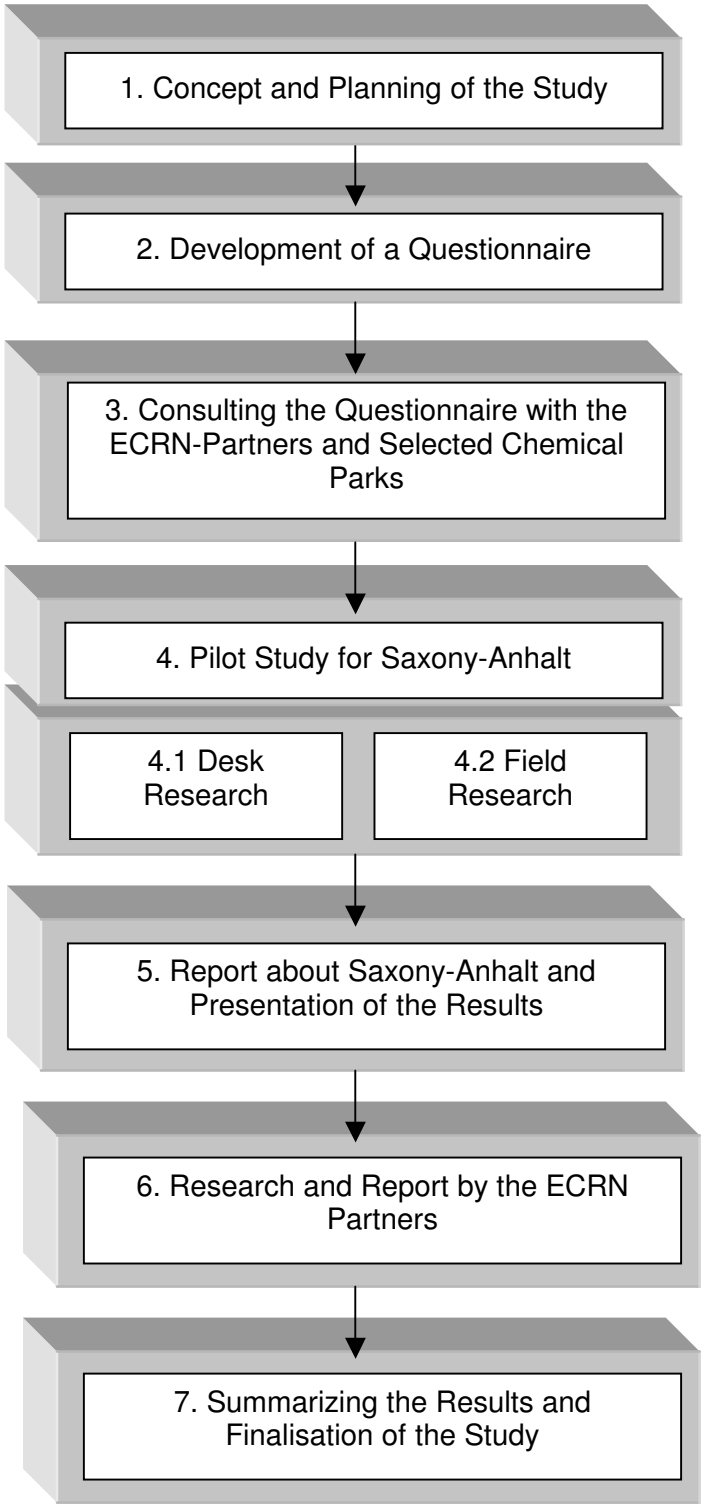
The study concentrates on the following main topics for the representation and development of chemical locations and chemical and/or industrial parks.



(4) Methodology

The study has been developed during a multi-level process with the following work steps.

Proceeding



II Test Results in the Partner Regions

II.1 Central Germany/Saxony-Anhalt

II.1.1 Short Description of the ECRN Region

II.1.1.1 Development of the Chemical Industry

Question 1: How has been the development of the chemical industry in your region?

1. The chemical industry in Eastern Germany is concentrated in Central Germany. Since the beginning of the 90s, 15 billion Euro have been invested for the remediation and restructuring of the chemical locations, for the modernisation of infrastructure, and the building of new production facilities. The high importance of the chemical sector is stressed by the fact that 90% of the foreign investments in Saxony-Anhalt have been addressed to the chemical industry.[5] The chemical cluster is an important growth factor for the region. The turnover of the regional chemical industry has increased by 14.1% in 2004 in relation to the previous year. The German average only reaches a growth rate of 4.2%.[6]

2. The chemical location and parks have assumed a leading position in the global restructuring process of the chemical industry. This development is based on 100 years of tradition and has resulted from the transformation process of Eastern Germany's chemical industry during the past 15 years. The Central German chemical competence is characterised by a specific knowledge of the complex transformation process.

3. The central German chemical location have successfully managed to address the present challenges such as outsoucing, concentration on core businesses and innovation development. The enterprises have proved their high flexibility and fast reacting on changing market conditions, for example caused by the enlargement of the European Union. They have established excellent relations between industry and politics. In the framework of the "Strategy Dialog Chemistry", several issues such as economic, environmental and especially European questions are focused by a close cooperation between chemical enterprises, site companies, politicians and social partners.

4. The central German chemical parks and the BASF location Schwarzheide (Brandenburg) are well positioned. The 7 chemical parks / industrial parks [7] cover an area of about 5,800 hectare altogether. Each location has developed a specialised profile and is focusing on the creation of synergy effects. The chemical locations offer best conditions for new settlements.

5 This statement applies to the period 1999 to 2002. Source: Industrial Investment Council IIC, in-invest_online, November 2004, p. 7

6 Sources: Destatis und VCI, Chemiewirtschaft in Zahlen, 2005, p. 32 and Statistic National Office Saxony-Anhalt, Statistic Reports, Produzierendes Gewerbe, 2003 and 2004

7 Altogether 7 chemical parks/industrial parks at 8 locations were included into the study.

The regional chemical parks and industrial parks are characterised by:

- 600 hectare available settlement areas;
- Modern and efficient chemical infrastructure and facilities in line with the latest environmental standards;
- Extensive service offers by chemical site companies;
- Settlement of more than 600 enterprises since 1995;
- General chemistry competence and high acceptance;
- Growing integration of chemical location in the innovation environment.

II.1.1.2 Indicators of the Chemical Industry

Question 2: Describe the development with the help of indicators!

(1) General indicators of the chemical / plastics industry in the region Central Germany[8]

Indicator	1995	2000	2003	2004
Turnover (Mio. €)	5,000	8,874	10,706	11,798
Number of enterprises	441	550	642	661
Number of employees	45,028	49,244	56,217	58,550
Share of R&D employees (estimate in %)	4.3s	3.2s	●	●
Exports (Mio. €)	(865)	(2,277)	3,766	4,253
Share of chemical / plastics industry on processing industry (%)	11.6	12.6	13.2	●
Number of chemical parks / industrial parks with chemistry focus	6	6	6	6
Investments (Mio. €)	●	923	818	●●●

Explanation: ● data not available ●●● Indication results later; s estimated number; ( ) Logical value reduced, since the value can contain errors

[8] Sources: Statistic National Offices of Saxony-Anhalt, Saxony, Thuringia, Statistic Reports, Produzierendes Gewerbe

(2) General indicators of the chemical industry/ plastics in the region Saxony-Anhalt [9]

Indicator	1995	2000	2003	2004
Turnover (Mio. €)	2,595	4,513	5,149	5,812
Number of enterprises	130	150	184	194
Number of employees	19,120	17,317	20,287	21,293
Share of R&D employees (estimate in %)	4.4s	3.0s	●	●
Exports (Mio. €)	574	1,378	1,943	2,244
Share of chemical / plastics industry on processing industry (%)	20.5	23.6	22.4	22.8
Number of chemical parks / industrial parks with chemistry focus	6	6	6	6
Investments (Mio. €)	●	489	379	455

Explanation: ● data not available ; s estimated number; ( ) Logical value reduced, since the value can contain errors

(3) General indicators of the chemical industry in the region Central Germany [10]

Indicator	1995	2000	2003	2004
Turnover (Mio. €)	3,204	5,827	6,640	7,318
Number of enterprises	160	185	218	221
Number of employees	27,810	24,503	27,241	27,827
Share of R&D employees (estimate in %)	6.3s	5.1s	●	●
Exports (Mio. €)	(756)	(1,722)	2,806	3,151
Share of chemical industry on processing industry (%)	7.4	8.2	8.2	●
Number of chemical parks / industrial parks with chemistry focus	6	6	6	6
Investments (Mio. €)	●	648	554	460

Explanation: ● data not available ; s estimated number; ( ) Logical value reduced, since the value can contain errors

[9] Source: Statistic national office Saxony-Anhalt, Statistic reports, Produzierendes Gewerbe
[10] Sources: Statistic national offices Saxony-Anhalt, Saxony, Thuringia, Statistic reports, Produzierendes Gewerbe

(4) General indicators of the chemical industry in the region Saxony-Anhalt [11]

Indicator	1995	2000	2003	2004
Turnover (Mio. €)	2,104	3,634	3,845	4,365
Number of enterprises	64	70	89	93
Number of employees	15,254	11,676	12,773	13,141
Share of R&D employees (estimate in %)	5.1s	4.0s	●	●.
Exports (Mio. €)	536	1,177	1,619	1,883
Share of chemical industry on processing industry (%)	16.6	19.0	16.7	17.1
Number of chemical parks / industrial parks with chemistry focus	6	6	6	6
Investments (Mio. €)	●	413	304	356

Explanation: ● data not available ; s estimated number; ( ) Logical value reduced, since the value can contain errors

(5) General indicators for the production of plastics/rubber goods in Central Germany[12]

Indicator	1995	2000	2003	2004
Turnover (Mio. €)	1,796	3,047	4,066	4,480
Number of enterprises	281	365	424	440
Number of employees	17,218	24,741	28,976	30,723
Share of R&D employees (estimate in %)	1.0s	1.3s	●	●
Exports (Mio. €)	110	556	960	1,102
Share of plastics / rubber industry on processing industry (%)	4.2	4.4	5.0	●
Number of chemical parks / industrial parks with plastics focus	1	1	1	1
Investments (Mio. €)	●	275	264	281

Explanation: ● data not available, s estimated number; ( ) Logical value reduced, since the value can contain errors

[11] Source: Statistic national office Saxony-Anhalt, Statistic reports, Produzierendes Gewerbe
[12] Sources: Statistic national offices Saxony-Anhalt, Saxony, Thuringia, Statistic reports, Produzierendes Gewerbe

(6) General indicators for the production of plastics/rubber goods in Saxony-Anhalt[13]

Indicator	1995	2000	2003	2004
Turnover (Mio. €)	491	879	1,304	1,447
Number of enterprises	66	80	95	101
Number of employees	3,866	5,641	7,514	8,152
Share of R&D employees (estimate in %)	1.8s	1.0s	●	●
Exports (Mio. €)	38	201	324	361
Share of plastics / rubber industry on processing industry (%)	3.9	4.6	5.7	5.7
Number of chemical parks / industrial parks with plastics focus	1	1	1	1
Investments (Mio. €)	●	76	75	99

Explanation: ● data not available ; s estimated number; ( ) Logical value reduced, since the value can contain errors

(7) In which sectors is the chemical/ plastics industry concentrated[14] **in Saxony-Anhalt?**

DG*	Sector category[15]	Enterprises	Employees
	***NACE Code**	**2004**	**2004**
24	**Chemical Industry**	**93**	**13,141**
24.1	Basic chemicals	41	8,634
24.2	Agro chemicals	●	●
24.3	Varnishes / Adhesive	4	●
24.4	Pharmaceuticals	14	2,098
24.5	Detergents / Cosmetics	10	924
24.6	Other chemical prod.	23	1,239
24.7	Man-made fibre	1	621
25	**Plastic & Rubber**	**101**	**8,152**
	Total (DG 24 and 25)	**194**	**21,293**

[13] Source: Statistic National Office Saxony-Anhalt, Statistic Reports, Produzierendes Gewerbe
[14] Source: Statistic National Office Saxony-Anhalt, Statistic Reports, Produzierendes Gewerbe

II.1.2 Overview of the Most Important Chemical Sites / Parks and Industrial Parks

II.1.2.1 Overview of Chemical Parks and Industrial Parks in the Region

Question 4: Give an overview of the chemical parks and industrial parks in your region!

Overview of chemical parks and industrial parks in the region

No.	Region Location	Name of the park	size (ha)
1	Saxony-Anhalt Bitterfeld Wolfen	P-D ChemiePark Bitterfeld Wolfen	1,200
2	Saxony-Anhalt Leuna	Chemiestandort Leuna	1,300
3	Saxony-Anhalt Schkopau Saxony Böhlen	Dow Olefinverbund GmbH: ValuePark®	>1,000
4	Saxony-Anhalt Zeitz	Chemie- und Industriepark Zeitz	232
5	Brandenburg Schwarzheide	BASF Schwarzheide	230
6	Saxony-Anhalt Piesteritz[16]	Agro-Chemie-Park SKW Piesteritz	389
7	Saxony-Anhalt Bernburg[17]	Industriepark Solvay Bernburg	43

A more detailed overview of chemical parks in Europe will be given in section III.1 of this study.

[15] Source: Statistic National Office Saxony-Anhalt, Statistic Reports, Produzierendes Gewerbe
[16] Source: Webpage, www.skwp.de , August 2005 and CeChemNet, July 2005
[17] Source: Webpage, www.solvay.de/standorte/bernburg, August 2005

II.1.2.2 Description of the Most Important Chemical Sites/ Parks and Industrial Parks

II.1.2.2.1 P-D Chemiepark Bitterfeld-Wolfen[18]

Question 5: What are the main characteristics of the most important chemical parks in the region?

No.		Answer
1	Name of the chemical site/park	P-D ChemiePark Bitterfeld Wolfen[19]
2	Park Operator	Preiss-Daimler ChemiePark Bitterfeld Wolfen GmbH
3	Address	Post-Office Box 11 51 D-06731 Bitterfeld
4	Contact Partner (Function)	Matthias Gabriel, Managing Director
5	Phone Fax	+49 (0) 3493 7 24 88 +49 (0) 3493 7 28 17
6	Web page Email	www.chemiepark.de chemiepark-gmbh@tpnet.de
7 7.1 7.2 7.3 7.4 7.5	Capacity and Investments Total Area (ha) Free Area (ha) Employees Number of Enterprises Investments (Mio. €)	 1,200 208 approx.11,000 360 Since foundation total: 3,500
8.	Raw materials, primary products, specialisation	See short description
9.	Research entities on the location	See short description
10.	List of biggest enterprises	See following table

[18] Source: www.cechemnet.de, September 2005
[19] Further sources: a) www.chemiepark.de, July 2005; b) brochure: P-D ChemiePark, Hauptproduktionslinien und Stoffstromverbund, Standortinformationen

ChemiePark
Bitterfeld Wolfen

Chemistry with a Capital "C" -
It Really Clicks

Today, the ChemiePark Bitterfeld Wolfen covers a total area of 12 square kilometres. More than 360 companies have settled here, including 60 production plants. These are companies active on the international scene such as Bayer Bitterfeld GmbH, Linde AG, Solvay Interox Bitterfeld GmbH, and Akzo Nobel Base Chemicals GmbH, but also 300 SMEs, serving the needs of supply and disposal, construction, training, and trade. A total of 3.5 billion Euros have been invested in the park up to now, creating 11,000 jobs.

Where Manufacturing is at Home

After privatisation in 2001, the Preiss-Daimler Group accelerated work already initiated on the chemical park's infrastructure. This engagement resulted in an outstanding road, rail and pipe bridge network as well as a completely refurbished water pipeline network, managing the supply of drinking and service water and the disposal of wastewater. The old supply systems have been dismantled. Contaminated earth has been removed. Additionally, the P-D Bitterfeld Wolfen GmbH has created parks and has renovated building structures worth keeping. Altogether, the company has invested a total of 230 million Euro in site infrastructure.

Local Excellence Stakes Out a Place on World Markets

Several companies, located at the ChemiePark Bitterfeld Wolfen, have entered markets for their products all over the world. An advantage of working at this site is the fact that companies from various sectors have joined forces to invent and build the systems and techniques they need for manufacturing their products.

Synergies in the Network

Concept of thechemical park offers a range of advantages to the enterprises, e.g. a fast availability of raw materials, closed material cycles, and synergies within the regional raw material network. The cooperation in connection with the high performance chlorine production serves as a very good example for the excellent conditions. Here enterprises use the advantages of a networking production. The P-D ChemiePark Bitterfeld Wolfen GmbH, serving as the park operator, provides the infrastructure and service achievements at competitive prices to the companies.

A Minimum of Red Tape and Low Cost Structure

Relying on the efficient, quick and extensive supply of services at the chemical park, the companies can concentrate on their core businesses.. The privatised service suppliers can serve everything established businesses or start-ups need to keep their business running. The available offer ranges from Internet links to rail connections, from security services to administration contacts, and from supplying media to disposing of sewage water. Another thing the companies appreciate about the

ChemiePark Bitterfeld Wolfen is the highly reduced bureaucracy which corresponds with low cost structures.

Partner for Research and Development

In the context of R&D, the ChemiePark Bitterfeld Wolfen concentrates and combines the available competences. Hence, the Chemical Park Institut CPI serves as a research and development partner for the enterprises.

Helping Start-ups Get Up and Running

The ChemiePark is also trying to initiate start-up processes. Following this objective, ChemiePark's Technology and Start-up Centre provides young and innovative companies with additional services. The offered support focuses on the development process of products and techniques, facilitating a good start for the new companies. In the long run, leading-edge technical companies are supposed to evolve, to relocate at the site and to develop synergies with existing companies.

List of enterprises in the chemical park

Enterprise	Business fields or products[20]
Bayer Bitterfeld GmbH Betrieb Selbstmedikation Betrieb Lackharze Betrieb Methylcellulose	 pharmaceuticals for example Aspirin® lacquer resins methyl cellulose
Akzo Nobel Base Chemicals GmbH	The products are chlorine, hydrogen chloride, caustic soda, sodium hypochlorite (bleaching lye), hydrochloric acid, hydrogen and sodium sulphate.
Degussa AG	silicon tetrachloride, tri chlorosilan
Heraeus Tenevo GmbH	synthetic quartz glass
Solvay Interox Bitterfeld GmbH	hydrogen peroxide
Guardian Flachglas GmbH	flat glass products coated glasses
Linde AG	technical gases

[20] Sources: a) brochure, „Hauptproduktionslinien und Stoffverbund im ChemiePark Bitterfeld Wolfen“
b) Webpages of companies so e. g. www.akzonobel-bitterfeld.de, September 2005

II.1.2.2.2 Chemiestandort Leuna[21]

Question 5: What are the main characteristics of the most important chemical parks in the region?

No.		Answer
1	Name of the chemical site/park	Chemiestandort Leuna[22]
2	Park Operator	InfraLeuna Infrastruktur und Service GmbH
3	Address	Am Haupttor D-06237 Leuna
4	Contact Partner (Function)	Andreas Hiltermann Managing Director
5	Phone Fax	+49 (0) 3461 43 30 01 +49 (0) 3461 43 42 90
6	Web page Email	www.infraleuna.de a.hiltermann@infraleuna.de
7 7.1 7.2 7.3 7.4 7.5	Capacity and Investments Total Area (ha) Free Area (ha) Employees Number of Enterprises Investments (Mio. €)	 1,300 100 approx. 9,000 more than 100 Since foundation more than 5,000
8.	Raw materials, primary products, specialisation	See short description
9.	Research entities on the location	Cooperation with external partners: University of Halle-Wittenberg and Merseburg University for Applied Research; mitz[23].
10.	List of biggest enterprises	See the following table

[21] Source: www.cechemnet.de, September 2005
[22] Further sources: a) CeChemNet, CD, We talk Chemistry, Halle/Germany, July 2005; b) Brochure: Leuna Chemical Site; c) Webpage: www.infraleuna.de, August 2005
[23] Merseburg Innovation and Technology Centre

InfraLeuna Infrastruktur und Service GmbH

Chemical Powerhouse -
The Region is Poised for the Future
with the Petrochemical Industry

Our Infrastructure Is What Attracts Investors

Leuna has been the home for chemical industry for more than 85 years. In the 1930s, Leuna was known for its trail-blazing developments in high-pressure syntheses all over the world. Today it is a synonym for state-of-the-art chemical technology with an international format. Within Leuna‘s area of 1,300 hectraes, there is still 110 hectares available for new companies including all building permits already in place. The chemical park is perfectly suitable for growth-orientated chemical companies to build up their market position. They are surrounded by chemical service suppliers completing the well-organised environment. Besides the excellent infrastructure, the tradition and geographical location of the chemical park cause its very good future prospects. Leuna is located in the growth region Leipzig-Halle, in direct proximity to Poland and the Czech Republic. The foundation for a good development within the enlarged European Union is laid.

This Is What Synergy Is All About

Leuna‘s production structure ranges from special chemical products to chemicals for the mass production. The companies have formed procurement alliances accordant their needs, creating synergies for the individual production plants. The core of the alliance at the Leuna chemical site is formed by the TOTAL Refinery, the state-of-the-art refinery in Europe, the DOMO Group’s caprolactam synthesising plant, and Linde AG‘s gas centre, the world-largest centre generating industrial gases.

Tailor-Made Solutions for Infrastructure and Service

One of the measures, Leuna was made attractive for new industrial plants with, was the implementation of a comprehensive programme re-engineering the infrastructure within this self-contained industrial zone. The Leuna site is also known for a minimum of red tape. Supported by the local technical service provider, investors can obtain the necessary permits from the public administration without problems. The InfraLeuna Infrastruktur und Service GmbH, the owner and operator of the infrastructural situated at the Leuna chemical site, works in accordance with a low profit principle. The partner’s interests are divided between numerous companies which have their seat at the park. InfraLeuna‘s attractive selection of services includes generating and supplying power, supplying and disposing of water, security services such fire protection, analytical services, logistics, telecommunications, etc. Furthermore, InfraLeuna is not only a service provider, also a site developer providing assistance to new companies settling in Leuna.

Going New Ways with New Ideas

Following international trends, the Leuna Chemical Park is occupying in new businesses by identifying projects and attracting investors in the biotechnology

industry. InfraLeuna is presently formulating a strategy for a production start-up centre. If this and other innovative projects are launched medium term, Leuna will change from a petrochemical site, concentrated on the production of commodities, to an integrated commodity and specialty chemical site with a biotechnology accentuation.

List of enterprises in the chemical park

Enterprise	Business fields or products[24]
DOMO Group	DOMO is operating an integrated production, which extends from caprolactam to polyamide granulate and fibres. The range of products also includes phenol, acetone, cyclohexanone, sulphuric acid and ammonium sulphate.
TOTAL Raffinerie Mitteldeutschland GmbH	The state-of-the art in Europe was erected at the Leuna site. Mineral oil products have been manufactured in the new refinery since 1997. The refinery in Leuna is able to turn about 11 mill. tons of crude oil, mainly coming from Russia, into fuels, heating oil, liquid gas, bitumen, naphtha, and methanol.
Linde AG, Gas Center Leuna	The world's largest gas centre of Linde AG produces hydrogen, oxygen, nitrogen, CO, CO_2, special gases such as argon, and other inert gases and gas mixtures in various distribution forms such as pipelines, trailers and bottles to both clients at the Leuna site and the central Germany. The pipeline network connects the chemical sites of Bitterfeld, Piesteritz, Schkopau, Boehlen, and Zeitz.
Leuna-Harze GmbH	Leuna-Harze GmbH continues the Leuna-Werke tradition in the production and the distribution of epoxy resins and special resins with its newly erected, modern plants. The epoxy resins (Epilox) and the ketonic resins (L2 resin) are used in the construction and gloss paint industry, but also for the production of fibre reinforced plastics and the electrical and electronics industry.
Taminco GmbH	Beides Methylamines, a base product for the Pharma and Chemical industries, Taminco is specialized in the production of a number of Methylamine derivatives among which are agrochemicals, feed additives, solvents, watertreatment and surfactants.
Leuna-Tenside GmbH	Today, Leuna-Tenside produces anionic and non-ionic surfactants, special products and flame protection agents.
Dow Plant Leuna	At the Leuna site, low-density polyethylene (LDPE) for packaging and protective foils and high purity LDPE specifically made for the cable industry is being produced.
ChemComm Leuna GmbH	ChemComm Leuna GmbH produces selected products such as sodium hydrosulphide and has expanded its product range with potassium hydrogen sulphide and sodium sulphide. Examples for new production lines are iodine recycling, iodine derivates, dinitrosobenzol and contract manufacturing.
ARKEMA GmbH	ARKEMA GmbH produces formaldehyde/glue and hydrogen peroxide in its plants in Leuna.

[24] Source: InfraLeuna Infrastruktur und Service GmbH

List of enterprises in the chemical park

Enterprise	Business fields or products[25]
Leuna Polymer GmbH (Octel)	LEUNA Polymer GmbH operates a revamped high-pressure polymerisation plant for the manufacture of special products based on ethylene and vinylacetate: EVA, PE-waxes and additives for middle distillates.
Rhodia	Rhodia has been producing latex dispersions in Leuna since 1997.
Leuna Carboxylation Plant (LCP)	After reconstruction, LCP has been running a carboxylation plant for the production of ortho- and para-hydroxy benzoic acid since 2005.
ADDINOL LUBE OIL GmbH	Based on a 60 year old tradition, ADDINOL develops and manufactures more than 150 different industrial lubricants for the automotive industry delivered from its Leuna site.
KataLeuna GmbH (CRI)	KataLeuna produces hydrogenating and selective hydrogenating catalysts, together with special catalysts for the processing of crude oil.
Chemtec Leuna (Schenectady)	As contract manufacturer, Chemtec is able to efficiently produce batch productions of multilevel synthetics and specialty chemicals for the research departments of the pharmaceutical industry.
LEUNA-Miramid GmbH (BASF)	On the basis of an integrated production, LEUNA-Miramid GmbH produces a client-specific PA 6 and PA 6.6 compound using the latest technology.
Kartogroup Deutschland GmbH	Based on cellulose, household and sanitary papers are produced. The capacity of the new plant is 50,000 tons per year.
MVV TREA Leuna	The company is a hundred per cent subsidiary of the MVV Energie AG based in Mannheim. The waste incineration plant is going to treat 80 % of municipal waste and 20 % of industrial waste.
STEAG AG	At the Leuna site, STEAG is responsible for the operation of the refinery power station.
Mitteldeutsche Energie AG (enviaM)	In Leuna enviaM operates a gas and turbine steam power station.

[25] Source: InfraLeuna Infrastruktur und Service GmbH

II.1.2.2.3 Dow Olefinverbund GmbH: ValuePark®[26]

Question 5: What are the main characteristics of the most important chemical parks in the region?

No.		Answer
1	Name of the chemical site/park	Dow Olefinverbund GmbH: ValuePark®
2	Park Operator	Dow Olefinverbund GmbH Value Park®
3	Address	P.O. Box 1163 D-06201 Merseburg
4	Contact Partner (Function)	Dr. Christoph Mühlhaus, Managing Director Klaus-Dieter Heinze, ValuePark® Manager
5	Phone Fax	+49 (0) 3461 490 +49 (0) 3461 49 31 79
6	Web page Email	www.dow.com/ValuePark dhheinze@dow.com
7 7.1 7.2 7.3 7.4 7.5	Capacity and Investments Total Area (ha) Free Area (ha) Employees Number of Enterprises Investments (Mio. €)	 150 60 750 14 350
8.	Raw materials, primary products, specialisation	See short description
9.	Research entities on the location	See short description
10.	List of biggest enterprises	See the following table

[26] Source: www.cechemnet.de, September 2005

Dow ValuePark®

This is Where You'll Find Success

After completing the reconstruction in 2000, Dow Olefinverbund GmbH is a highly integrated site with four locations in central Germany today. The beginning of the modernization period was marked by the merger of the companies Buna Schkopau, Sächsische Olefinwerke Böhlen and Leuna-Polyolefine into Buna Sow Leuna Olefinverbund GmbH (BSL), and by Dow's investment in 1995. During the restructuring phase, 15 plants were being built newly, nine plants were being modernized, and the infrastructure was being completely modernized meeting business needs.

About 2,300 employees ensure the smooth run of operations. Leading-edge technologies allow the highest safety standards and improved environmental protection. In the Halle/Leipzig region, Dow is one of the largest employers and is home to one of the largest training centres in the region. It is also the largest plastics and synthetic rubber producer in the eastern part of Germany.

Dow in central Germany is well positioned for further growth to the benefit of all stakeholders. The site has the capability to serve Germany and Western Europe as well as Eastern European markets.

Integration Is Key

A pipeline network with a combined length of more than 1,200 km connects Dow's locations Schkopau, Böhlen, Leuna and Teutschenthal. Two about 400 km long pipelines – between Rostock and Böhlen and between Stade and Teutschenthal – ensure the continuous and reliable supply of raw materials for the downstream production plants in central Germany.

The core of the Böhlen facilities is the steam cracker - the starting point for the entire chain of production. This is where naphtha is split into the basic chemical substances ethylene and propylene. Additionally, Böhlen also manufactures a wide range of raw materials for plastics, dyes, glues and cosmetics. The majority of them are further processed within the company, mainly at the Schkopau and Leuna locations. There, polymerisation plants put out large volumes of polyethylene, polypropylene, polystyrene, synthetic rubber, and PET among others. These plastics leave the plants in the form of pellets (granulates) and are converted into everyday objects either locally, by ValuePark® companies, or customers all over the world.

ValuePark® - Profiting from Strong Business Partners

The ValuePark® opened in 1998. Since then it has provided a location for plastics processing companies and service providers to take advantage of the competitive infrastructure at the Schkopau site. In the proximity of Dow's polymer plants, reliable supply of raw materials for plastic processors is guaranteed. To date, 14 national and international companies have invested more than € 350 million and created over 700 jobs.

Dow offers all necessary services from one source, such as pre-investment counselling as well as services and resources for production operations. Access to state-of-the-art infrastructure and competitive services are the basis for low-cost

production in the long term. The companies that join ValuePark® can benefit from synergies, a streamlined supply chain and lower facility and operating capital requirements.

Networks Offer Potential for Development

More than 80 companies and institutions have joined forces in the "Fördergemeinschaft für Polymerentwicklung und Kunststofftechnik in Mitteldeutschland e.V." (Central German Society for Promoting Polymers and Plastics Technology) to turn Central Germany into a center of engineering excellence for polymer development. The fact that Fraunhofer has opened a Pilot Plant Center for Polymer Synthesis and Processing in the ValuePark® bears witness to its ideal location.

The automotive cluster Eastern Germany focuses on the interests of component suppliers to the automotive industry in the new federal states. Both networks provide a huge development potential for ValuePark® investors and regional companies.

List of enterprises in the chemical park[27]

Enterprise	Business fields or products
Dow Olefinverbund GmbH ValuePark® operator and "major user"	**Products Schkopau / Leuna** High-density polyethylene – HDPE Linear low-density PE – LLDPE Polypropylene – PP Polystyrene – PS Polyethylene terephthalate – PET Dispersion powder – PA Expandable polystyrene – EPS Extruded polystyrene – XPS Polyvinyl chloride - PVC*** Sodium hydroxide solution – NaOH Emulsion styrene butadiene rubber - ESBR cis Polybutadiene rubber – BR Solution Elastomere – SSBR
INEOS Vinyls Deutschland GmbH	PVC production plant
RP Compounds GmbH	LDPE and other compounds
Manuli Stretch Deutschland GmbH	Stretch film
Kurotec-KTS Kunststofftechnik Stade GmbH	FRP processing (vessels and tubes)
DSK Polypack GmbH	BOPS-film
Kometra Kunststoff-Modifikatoren und Additiv GmbH	Plastics modifiers
Pasec Industrieverpackung GmbH	Pallets
Fraunhofer Pilotanlagenzentrum für Polymersynthese und Polymerverarbeitung (Fh-PAZ)	Combining modern polymer synthesis and processing technologies under a single roof, the pilot plant is available as a centre of excellence for solving complex problems in the entire polymer value chain - from monomers to tailor-made components.
Hoyer GmbH	Logistics service, including silo storage
MKL Mitteldeutsche Kunststofflogistik GmbH & Co. KG	Plastics logistics
Mitteldeutsche Eisenbahngesellschaft mbH (MEG)	Rail transportation/logistics
DMC 1 GmbH	Pipeline management
Jacobs Alliance Service GmbH	Engineering & construction
Industrie-Rohr-Bau GmbH	Apparatuses and tank engineering

[27] Source: www.dow.com/ValuePark, September 2005

II.1.2.2.4 Chemie- und Industriepark Zeitz[28]

Question 5: What are the main characteristics of the most important chemical parks in the region?

No.		Answer
1	Name of the chemical site/park	Chemie- und Industriepark Zeitz
2	Park Operator	ZSG Zeitzer Standortgesellschaft mbH
3	Address	Hauptstraße 30 D-06729 Elsteraue OT Alttröglitz
4	Contact Partner (Function)	Dr. -Ing. Peter Schwarz, Managing Director Wolfgang Bauer, Managing Director
5	Phone Fax	+49 (0) 3441 84 24 02 +49 (0) 3441 84 20 29
6	Web page Email	www.industriepark-zeitz.com zsg_mbH@t-online.de
7 7.1 7.2 7.3 7.4 7.5	Capacity and Investments Total Area (ha) Free Area (ha) Employees Number of Enterprises Investments (Mio. €)	 232 85 approx. 1,000 40 357
8.	Raw materials, primary products, specialisation	See short description
9.	Research entities on the location	See short description
10.	List of biggest enterprises	See the following table

[28] Source: www.cechemnet.de, September 2005

ZSG Zeitzer Standortgesellschaft mbH

An independent Mission with Adipic Acid

The Chemical and Industrial Park Zeitz is recognised as an economically successful site on the international scene. It was built in 1996 as a completely new industrial plant on the grounds of the once mighty hydrogenation plant. Up to now, the companies Radici Deutschland GmbH, Puralube GmbH, Jowat Klebstoffe GmbH, Deurex Micro Technologies GmbH and SITA Rohstoffwirtschaft GmbH have committed themselves to this 0,232 km² area, which also houses a variety of supply and service companies. When this industrial park‘s final capacity limits are in place, about 2,000 persons will be employed there.

Modular Connecting Systems with State-of-the-Art Standards

More than 87 million € have been invested in the Chemical and Industrial Park´s modern infrastructure, creating completely new and highly efficient systems for traffic communication, rain, sewage, drinking, service and extinguishing water, electricity and telecommunications, steam, natural gas and industrial gases, and disposing of municipal and industrial sewage water.

The Zeitz Industrial Park offers superior conditions both for large-scale industry on larger areas and small businesses wishing to move here. The technical plants represent the latest international standards satisfying the expectations of the most demanding investors.

Service from One Place

The Chemical and Industrial Park Zeitz offers an extensive variety of services for the companies while they can concentrate on their core business. This includes the supply of electrical power, natural gas, drinking, service, extinguishing, cooling and treated water, hydrogen, steam, compressed air, and nitrogen for operating whatever plants require. The disposal of sewage water is also garanteed. The wide range of technical services provided include maintaining industrial plants, building pipelines, containers and plants, and managing rail transport. Additionally, industrial services are available such as site management ranging from commercial services, staff management, vocational training to on-going education As well as site development, consultation and support in permitting procedures, project channelling, construction planning, and project assistance.

Future: Regenerating Raw Materials

The development of a competence centre for industrial white biotechnology is planned at the Chemical and Industrial Park Zeitz. This centre is intended to force the implementation of R&D results in the industrial production of organic chemical products and polymers gained from renewable raw material.

List of enterprises in the chemical park and industrial park[29]

Enterprise	Business fields or products
Radici Deutschland GmbH	Production of adipic acid
Puralube GmbH	Recycling of waste oils
Jowat Klebstoffe GmbH & Co. KG	Adhesives for the furniture industry
Deurex Micro Technologies GmbH	Production of special waxes
envia Mitteldeutsche Energie AG	Supply of electric power and steam
SITA Rohstoffwirtschaft GmbH	Processing of old plastic in the context of the binary system
Institut für Neuwertwirtschaft GmbH	Development of technologies and innovations
Zeitzer Container Transport GmbH	Recycling and disposal of waste materials
Progas GmbH & Co. KG	Supply of LPG, LPG-filling station
ARCO Transportation GmbH	Railway operation on the area of the industrial park
Feuerschutz Wilhelm	Sale and maintenance of fire-fighting equipment
Weber Rohrleitungsbau GmbH	Industrial maintenance and pipeline construction
Linde Gas AG	Supply of hydrogen, nitrogen, compressed air
Stadtwerke Zeitz GmbH	Supply of natural gas

[29] Source: www.industriepark-zeitz.com, enterprises, September 2005

II.1.2.2.5 BASF Schwarzheide[30]

Question 5: What are the main characteristics of the most important chemical parks in the region?

No.		Answer
1	Name of the chemical site/park	BASF Schwarzheide
2	Park Operator	BASF Schwarzheide GmbH
3	Address	Schipkauer Straße 1 D-01986 Schwarzheide
4	Contact Partner (Function)	Dr. Volker Knabe, Chairman of the Management Board Bernd Güttes, Leader of Settlement Management
5	Phone Fax	+49 (0) 357 526 25 61 +49 (0) 357 526 29 77
6	Web page Email	www.basf-schwarzheide.de bernd.guettes@basf-sh.de
7 7.1 7.2 7.3 7.4 7.5	Capacity and Investments Total Area (ha) Free Area (ha) Employees BASF Employees whole park Number of Enterprises Investments (Mio. €)	 230 100 2,100 approx. 3,000 more than 20 1,300
8.	Raw materials, primary products, specialisation	See short description
9.	Research entities on the location	See short description
10.	List of biggest enterprises	See the following table

[30] Source: www.cechemnet.de, September 2005

BASF Schwarzheide GmbH

Benefits of integration

BASF

The Chemical Company

Growing Further

Making progress is one of the main ideas of the BASF GmbH and stands for continous development. The Schwarzheide site can look back on a long tradition in chemical industry. The site has existed for more than 70 years. In the last years, BASF has invested a sum of 1.3 billion € for the complete modernization and extension of the site. With its numerous new production plants, the Schwarzheide location has developed to an attractive production centre for high refining chemicals and plastics. Embedded in a wooded landscape in the south of Brandenburg, the spacious site covers an area of about 0.23 square kilometres. More than 3,000 employees are working in around 20 companies there producing several chemical poducts. The product range contains polyurethane basic products and systems, crop-production agents, water-borne coatings, engineering plastics, dispersions and laromer-grades.

Investigating Lead

Innovation is enforcing the steady growth of a company. Taking this into account, BASF has established a research department in Schwarzheide. Company research is directed primarily to the field of base products for polyurethanes. This centre of expertise, equipped with excellent analytics and modern technologies, is developing prelimary products.

Best Infrastructural Conditions

A network of transportation routes connects BASF Schwarzheide GmbH with the important economic centres in Europe. In addition, the Schwarzheide site is equipped with an excellent infrastructure within its borders. All supply and disposal facilities have been modernized or have been built up completely new for the last decade. Synergies have arised leading to a reliable delivery within short time, a reduced environmental impact, and high qualitiy standards. In summary, BASF Schwarzheide offers new investors a chemical site, equipped with a modern and efficient infrastructure, proximate to the future markets in Central and Eastern Europe.

Going Forward with Sustainability

The key for the future is sustainable development. BASF Schwarzheide GmbH has committed themselves to this approach, acting in line with environmental responsibility. Following this, not only includes the protection of the environment, but also the protection of the employees' and neighbours' health.

"We purchase our raw material Neopolen from BASF. The history of our cooperation with BASF supported our choice. We see a great development potential for our Schwarzheide site. therefore, we intend to strenghten our commitment even further." (Hans Wörthwein, Managing Director of FEBRA-Kunststoffe GmbH)

List of enterprises in the chemical park[31]

Enterprise	Business fields or products
BASF Schwarzheide GmbH	The production range embraces polyurethane raw materials (chemicals, base products and systems), crop protection agents, waterborne coatings, engineering plastics,foams, dispersions and Laromer brands.
Deutsche Air Liquide GmbH	Industrial gases
FEBRA-Kunststoffe GmbH & Co. KG	Moldings for transport and packaging materials.
BASF GE Schwarzheide GmbH & Co. KG	Production: polybutylene terephthalate (PBT), an engineering plastic for which it possesses an annual capacity of 80,000 metric tons.
Pluralis GmbH	Pluralis manufactures polyurethane hot cast elastomers.
Biodiesel Schwarzheide GmbH	Germany's biggest biodiesel plant.
Cyclics Europe GmbH	Cyclics began building work on a production plant for high performance CBT resins.
BIOP Biopolymer Technologies AG[32]	The BIOP AG produces a raw material for plastics on the basis of regenerating raw material, particularly of potato strenght. In cooperation with research units, this is used for packing foils, carrying bags, garbage bags, agrian foils and flower pots as well as plastic links.
Alfred Talke GmbH & Co. KG[33]	Chemistry logistics centre for the storage of raw materials and finished products and disposal of production
Rethmann Entsorgungs-wirtschaft GmbH & Co.KG	Rethman has set up a pretreatment plant for waste.
Mitteldeutsche Wasserchemie GmbH	Mitteldeutsche Wasserchemie produces the water treatment product polyaluminum chloride (PAC).

[31] Source: www.basf-schwarzheide.de, September 2005

[32] The BIOP AG is establishing a new plant in Schwarzheide, which will take up production in September 2005. By the decision of the BASF to manufacture Ecoflex®, one of the company's raw material, in Schwarzheide in the future, the location became attractive for the BIOPAR® Granulat production, described de Jong (Chairman of the Board). So far, the BIOP AG has produced in the Netherlands. "In addition to the misalignment, we will save transport costs and expect further synergies by professional location management, short ways and opening markets for bio plastics." Source: www.biopag.de, Press release July 2005

[33] The implant logistics centre was opend at BASF Schwarzheide on 14 July 2005. It covers an area of 21 square kilometres altogether. The area for self storage and blockstorage is 9,800 sqare metres. Source: www.talke.com, Press release 14 July 2005.

II.1.2.2.6 AgrochemistryPark SKW Piesteritz[34]

Question 5: What are the main characteristics of the most important chemical parks in the region?

No.		Answer
1	Name of the chemical site/park	Agro-Chemie-Park SKW Piesteritz
2	Park Operator	SKW Stickstoffwerke Piesteritz GmbH
3	Address	Möllendorfer Str. 13 D-06886 Lutherstadt Wittenberg
4	Contact Partner (Function)	Rüdiger Geserick, Chairman of the Management
5	Phone Fax	+49 (0) 34 91 68 0 +49 (0) 34 91 68 43 00
6	Web page Email	www.skwp.de info@skwp.de
7 7.1 7.2 7.3 7.4 7.5	Capacity and Investments Total Area (ha) Free Area (ha) Employees Number of Enterprises Investments (Mio. €)	 389 40 660 (SKW Piesteritz) approx. 25 since foundation: 130
8.	Raw materials, primary products, specialisation	See short description
9.	Research entities on the location	See short description
10.	List of biggest enterprises	See the following table

[34] Source: www.skwp.de, September 2005

Chemie-Park SKW Piesteritz

The production of fertilizer specialities and industrial chemicals has a long tradition in Piesteritz. The SKW Stickstoffwerke Piesteritz GmbH was created in 1993, feeling obligated to this tradition. It is the largest urea and ammonia producer in Germany and an important manufacturer of nitrogen fertilizers. The product portfolio includes high quality mineral fertilizer specialities both in solid and fluid form.

Research as Guarantor of the Future

The company sets high standards to themselves to constantly improve existing products and procedures as well as to realise new product ideas meeting the needs of the market. Additionally, SKW runs its own R&D department and an agricultural application research site in Cunnersdorf, covering an area of 144 hectares. Laboratory tests, pot trials and field trials are used to test products under certain locational conditions to gain knowledge about crop effectiveness and ecological influences.

Location Successfully with Investors

Since the establishment of the SKW Piesteritz approx. 130 million Euro have been invested in the production site. A new urea granulation plant, a new nitric acid plant and a urea-mix granulation plant have been built. In addition, the capacity of the liquid fertilizer production has been extended. In June 2005, the AMI Agrolinz Melamine International GmbH, opened a new plant for the production of Melamin. The company have invested 130 million €, creating 200 new jobs within the plant and its environment. Another three settlements are planned by companies, active in the renewable energy industry.[35] [36]

[35]:Sources www.skwp.de, Press reports, Leipziger Volkszeitung, 13 Juli 2005
[36] Source: Mitteldeutsche Zeitung on 22 August 2005, Interview with Rüdiger Geserick. in www.skwp.de , press article

List of enterprises in the chemical park

Enterprise	Business fields or products[37]
SKW Stickstoffwerke Piesteritz GmbH	**Agrochemistry** (nitrogen fertilisers, feed urea) **Industrial chemistry - Speciality products** (Amino resins, reducing agents for nitrogen, oxide in flue, special blacks, process chemicals, components for EP and PUR systems, cleaning products)
Agrolinz International Melamin Deutschland GmbH	Melanin
CWP Chemische Werke Piesteritz	Special phosphates, phosphoric acid
PCI Augsburg GmbH, Werk Wittenberg	Building chemistry products

[37] Source :Web pages of comanies in the chemical park, September 2005

II.1.2.2.7 Industriepark Solvay Bernburg[38]

Question 5: What are the main characteristics of the most important chemical parks in the region?

No.		Answer
1	Name of the chemical site/park	Industriepark Solvay Bernburg
2	Park Operator	Solvay Infra GmbH
3	Address	Köthensche Straße 1-3 06404 Bernburg
4	Contact Partner (Function)	Gerhard Eder, Plant Manager Volker Lorenz
5	Phone Fax	+49 (0) 3471 323- 654 +49 (0) 3471 323-603
6	Web page Email	www.solvay.de/standorte/bernburg www.IPBernburg.de volker.lorenz@solvay.com
7 7.1 7.2 7.3 7.4 7.5	Capacity and Investments Total Area (ha) Free Area (ha) Employees Number of Enterprises Investments (Mio. €)	 43 12 no data available approx. 24 450 since 1991
8.	Raw materials, primary products, specialisation	Solvay products particularly soda and hydrogen peroxide
9.	Research entities on the location	Cooperation with Fachhochschule Anhalt (University of applied sciences)
10.	List of biggest enterprises	See the following table

[38] Source: www.solvay.de, September 2005

Industriepark Solvay Bernburg[39]

Stabilization of the Location by Investments

In addition to the existing products soda and hydrogen peroxide, Natriumbicarbonat will be produced in the plant Bernburg starting from the end of 2005 (Solvay product name BICAR®). In the future, the production capacity will be approx. 100,000 tons each year .

Favourable Conditions for Investors

The existing infrastructure offers the advantage for companies to start working without high additional investments usually necessary.

These are some examples for the range of infrastructural and other services provided at the industrial park:

- An industrial power station ensures a reliable supply with electrical energy.
- The industrial park's railway system is more than 6 kilometres long and is connected to the network of the Deutsche Bahn AG.
- The Solvay Central Laboratory can take over monitoring routine tasks , special analyses and advisory activities.

Vocational Training on Site

The Solvay GmbH has established a modern training centre in the industrial park. Currently, 40 apprentices are trained as Prozessleitelektroniker (process control electronic technician), Energieelektroniker (energy electronic technician), Chemiekant (chemical technician), and Chemielaborant (chemistry lab assistant).

List of enterprises in the chemical park

Enterprise	Business fields or products[40]
Solvay Chemicals GmbH	Soda, natriumbicarbonat; hydrogen peroxide
Solvay Infra GmbH	Various services
Air Liquide GmbH	Hydrogen
Mitteldeutsche Energie AG (envia)	Electric power

[39] Location brochure, www.solvay.de/Bernburg, September 2005
[40] Sources: Web pages of companies in the industrial park, September 2005

Other relevant companies are located in the near surrounding of the industrial park Bernburg, also connected to the raw material network. Two examples are the esco-European salt company GmbH & Co. KG and the cement producer SCHWENK.

II.1.3 Organisation, Management and Competencies of the Chemical Parks

II.1.3.1 Organisation Forms of the Chemical Parks

Question 6: Which organisation type exists in the chemical park?

Question 7: What are the characteristics of the location?

Location of the chemical / industrial park	Bitterfeld Wolfen	Leuna	Schkopau Böhlen	Zeitz	Schwarz-heide	Piesteritz	Bernburg
6. Organisation type park operator[41]	Independent private location company	Independent location company with shareholders	Major-User	Independent private location company	Major-User	Major-User	Major-User
7. Structure of the location[42]	Open Mixed type	Closed	Closed	Open Mixed type	Closed	Closed	Closed

[41] Possible organisation types: a) independent park operator b) Major-User c) Multi User d) others
[42] Possible park structures: a) open b) closed c) mixed type

II.1.3.2 Short Description of Performances of the Chemical Parks

(1) Overview of Selected Infrastructure Offers in the Cemical Parks[43]

Chemical location	Bitterfeld-Wolfen		Leuna		Schkopau		Zeitz		Piesteritz	
Infrastructure offers	**Park operator**	**Third**	**Park operator**	**Third**	**Park operator**	**Third**	**Park operator**	**Third**	**Park operator**	**Third**
Electrical energy		X	X		X			X	X	
Steam		X	X		X		X	X	X	
Communications network		X	X		X			X		
Hydrogen gases		X		X	X			X		
Central corridor systems	X	X	X		X			X	X	
Railway system		X	X		X		X		X	
Pipe routes / pipe bridges	X		X		X		X		X	

[43] Source: project documentation, CeChemNet, Halle, March 2004

(2) Evaluation of Infrastructure Offers

1. Based on the extension of modern infrastructure capacities, new settlements can be managed without problems. A large and not limited settlement area can be offered to investors for a broad range of activities.
2. The chemical parks and industrial parks offer particular infrastructure service packages provided by location companies or external service providers. These offers create best conditions for the enterprises to concentrate their activities on the core businesses.
3. The scope of the available infrastructure, provided by both the site companies and the external service providers, varies on the particular chemical sites. Many activities concerning infrastructure services are enforced by the Infraleuna and the site companies, organised in Major-User Models (e.g. Dow Schkopau, SKW Piesteritz).
4. A secure and sustainable operation of the chemical production plants requires a reliable infrastructure especially in the following areas:
    - Energy supply (electricity, gas, steam);
    - Water supply and disposal;
    - Supply with technical gas;
    - Telecommunication network;
    - Road and railway infrastructure;
    - Central pipeline route and pipe bridges.
5. The infrastructure supply implicates specific demands and conditions, such as the management of fixed costs as one of the main tasks, the conclusion of long-term supply contracts, and the establishment of high entry and exit barriers to the site.
6. Compared to international standards, the Eastern German chemical locations still struggle with an unfavourable proportion of the provided infrastructure to the realised „business“ on the sites. In order to strengthen the competiveness of the locations, the further development of the settled companies and new settlements must be strongly supported and encouraged in the future.

(3) Overview of Service Offers in the Chemical Parks[44]

Chemical location	Bitterfeld-Wolfen		Leuna		Schkopau		Zeitz		Piesteritz	
Service offers	**Park operator**	**Third**	**Park operator**	**Third**	**Park operator**	**Third**	**Park operator**	**Third**	**Park operator**	**Third**
Security services		X	X			X		X		X
Fire brigade		X	X		X			X		X
Equipment construction		X		X		X		X		X
Settlement management	X		X		X		X		X	
Facility management	X		X		X		X		X	
Laboratory		X	X	X	X	X		X	X	
Forwarding business		X	X			X		X		X

[44] Source: project documentation, CeChemNet, Halle, March 2004

(4) Evaluation of Service Offers

1. The analysed chemical parks and industrial parks offer a broad range of competitive services provided by location companies as well as external companies. Both quality of services and achieved cost effects strongly influence the productivity and the competitiveness of the settled companies.
2. The service offers are concentrated on the following areas:
   - Settlement management;
   - Facility management;
   - Security and health protection;
   - Engineering and Construction;
   - Chemical analysis and laboratory services;
   - Organisation and IT services;
   - Logistics and mailing services.
3. The service providers adapt to the needs, emerged by the site development and trend of demand, which results from the restructuring process of settled companies. Exemplifiying this reactivity, the provision of production oriented services has been expanded extremely. Increasingly, companies tend to outsource technical services, chemical analysis and laboratory services.
4. The development of service enterprises has contributed to increased service activities, offered by local companies locatedoutside the park. Since the regional chemical sites are becoming well established and working production and service locations, their importance according regional growth potentials is strengthened. They can foster multiple effects for upstream and downstream industries.

II.1.3.3 Most Important Tasks of the Park Operator

Question 9: What are the most important tasks of the park operator? What are the future perspectives for the chemical park management?

1. At present, the restructuring process (development and remediation of sites) is almost completed. A few activities will continue until 2010.

Example: Remediation[45] of the Chemical Site Leuna
▪ Construction of an underground leak-proof wall ▪ Afterwards, the remediation of 6 major contamination areas ▪ Duration: to be continued till 2010 ▪ Costs: 140 Mio. €

2. Further acquisitions of companies is required to fill free areas - more than 600 hectares are still available and ready for use in the chemical parks. The relation of existing infrastructure and business activities on the sites have to be improved.
3. Innovation capacities of the chemical sites have to be strengthen to make them more attractive generally and to foster the development of value chains:
   - Establishment of research infrastructure on the sites (e. g. the Fraunhofer Pilot Plant Centre for Polymer Synthesis and Processing in the Value Park® Schkopau),
   - Development of network structures between industry and science, especially human resources development, joint research programmes, etc. ,
   - Support for setting up new businesses on the sites.
4. Chemical park companies foster growth of downstream companies, especially in the plastics industry.
5. Preparing activities helping to cope with future demographic challenges, and initiating an alliance for “new employment”.
6. Establishment and further development of networks between the chemical parks in order to create synergies, for instance concerning the location marketing.

[45] Source: Ministry of Agriculture and Environment Saxony-Anhalt; Press Release, No. 118/05, 5 August 2005

II.1.4 Cooperation and Connection between the Locations

II.1.4.1 Evaluation of Cooperation within and between the Chemical Parks

Question 10: What kinds of cooperation inside and between the chemical parks exist in the region or are planned? How would you assess these cooperation?

Field of cooperation	Existing	Planned	Assessment[46]				
			++	+	0	-	--
Raw material network / feedstock cooperation	X		X				
Product network	X			X			
Procurement cooperation		X				X	
Marketing Cooperation / location marketing	X			X			
Joint investor attraction	X			X			
Location network	X		X				
Financial cooperation		X					X
Development of human resources	X			X			
Logistic cooperation	X				X		
Cluster politics	X			X			
Innovation network	X				X		
Others							

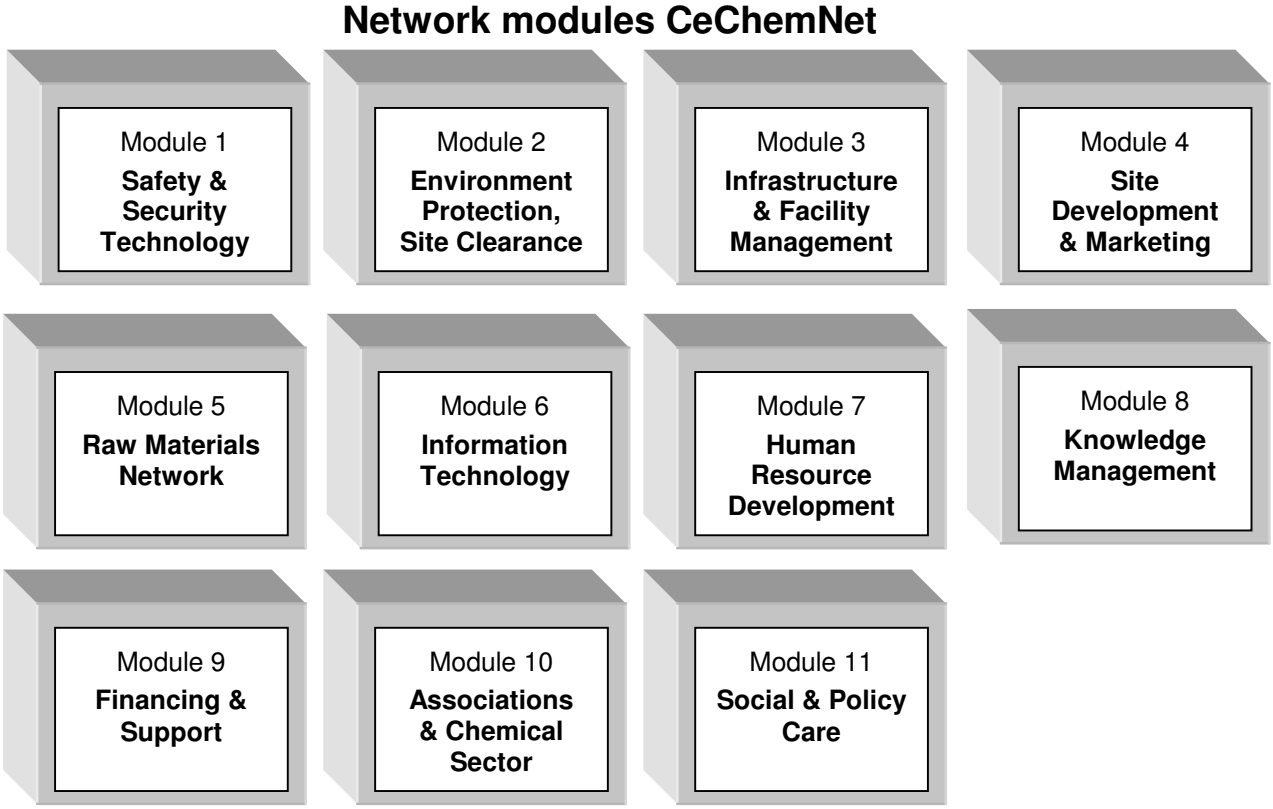
[46] Evaluation of the present condition

II.1.4.2 Best Practice Solutions for Cooperation

Question 11: What are best practice solutions for cooperation? Describe perspectives for future developments!

1. **CeChemNet** (**Ce**ntral European **Chem**ical **Ne**twork) is an interdisciplinary network that combines a wide range of expertise, specialised engineering excellence and successful site management. It focuses regional capacities in chemical site development, creates synergies with its raw material procurement alliance while promoting the cross acquisition of know how in its six chemical facilities. CeChemNet summarises knowledge about important aspects of location development and combines it to a broad and detailed compendium. On this basis, an interesting and up to date guideline, containing practical and proved solutions for restructuring chemical locations, can be offered. These information are especially directed to Central and Eastern European locations, facing similar challenges caused by transformation processes.

   In several module teams, 100 experts in chemical park management have systematically formulated their expertise in a modular list of best practice solutions.



2. The research activities in the **cluster chemistry** / **plastic** are coordinated by the Cluster Board at the Merseburg University of Applied Science. The objectives are to enforce coordination and networking among existing regional research institutions. Another focus is laid on establishing transfer institutions for industrial research at the regional universities. The project have already achieved a success

in creating the IPW (Institute for Polymer Materials) at the Merseburg University.[47]

In the framework of cooperation between research centres and industry, several research networks have been developed in the following areas[48]:

- Active substances and special chemistry,
- New materials,
- Polymers research,
- E-Services for transregional networks,
- Wet coating.

3. The network **Polykum** - Polymer Development and Plastic Techniques (Fördergemeinschaft für Polymerentwicklung und Kunststofftechnik in Mitteldeutschland – Polykum e. V.) was founded in 2002 with the objective to foster cooperation in the plastic processing industry, including all steps of the value chain. The plastic industry has become an important growth sector in Central Germany during the past few years.
4. The future development will be characterised by an intensified cooperation in the framework of the cluster chemistry/plastic. Existing cooperation structures will be strengthened. For instance, the cooperation of chemical sites within the CeChemNet will get focused more strongly on integrating chemical parks to the innovation landscape, and improving joint marketing activities in order to attract new companies.

   Another important aspect for future cooperation development will be the closer collaboration of industry and science. The Fraunhofer Pilot Plant Centre for Polymer Synthesis (PAZ), located in the Value Park Schkopau, will facilitate the innovation process of SMEs. Following this aim, modern infrastructure services have to be provided to SMEs at a better quality.

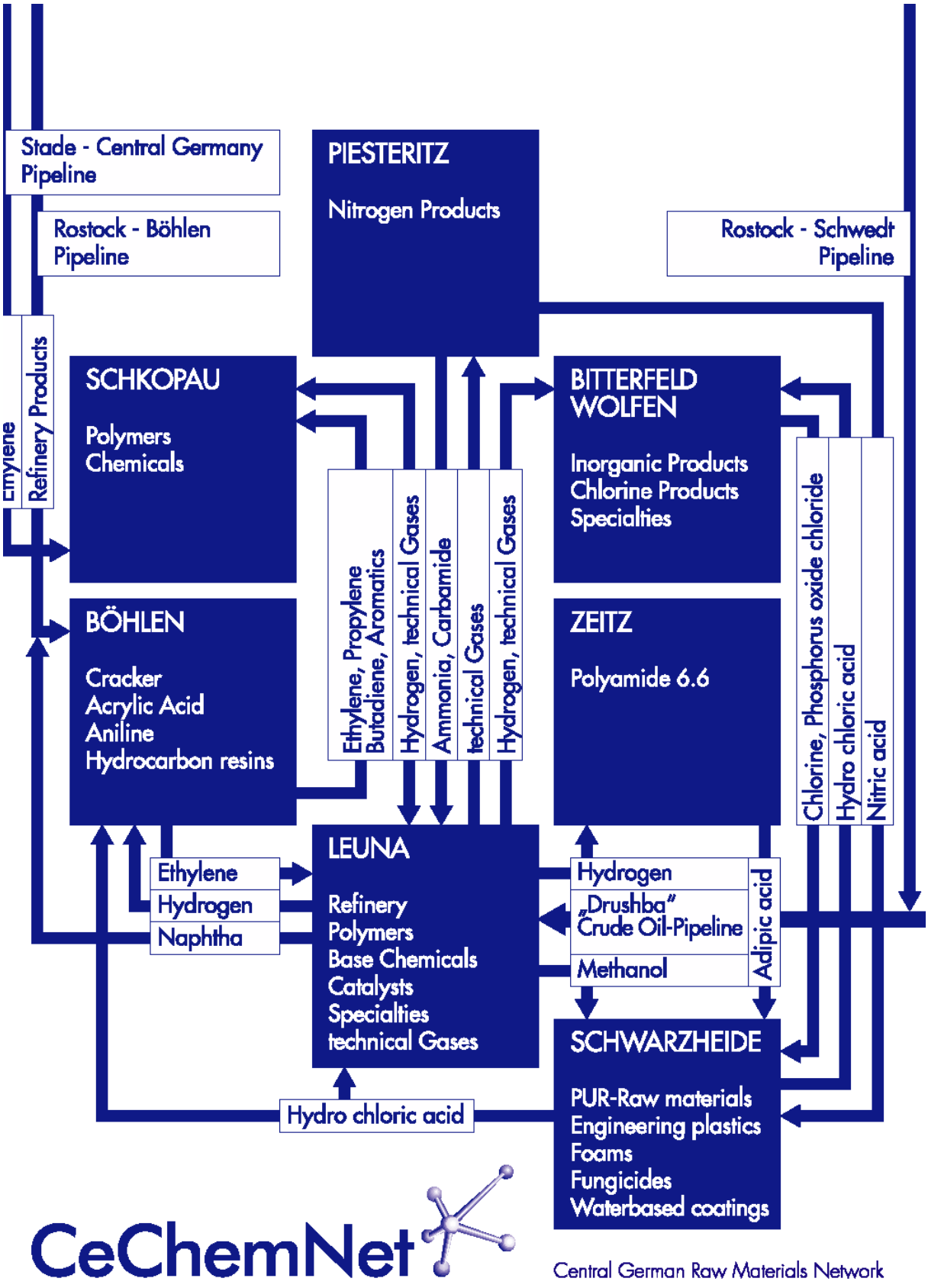
[47] Source: ChemSME, Regional Chemical Cluster, Halle 2005, page 6
[48] Source: ChemSME, Regional Chemical Cluster, Halle 2005, page 6

II.1.4.3 Presentation of Existing Material Flows

Question 12: Give an overview of the existing material flows! (feedstock cooperation, raw material networks, Produktverbünde)

1. The chemical parks have developed an extensive raw material network that creates synergy effects, jointly used by the partners. The raw material network, connecting the particular chemical sites in Central Germany, builds the basis for a complex material flow. As a result, several business opportunities along the value chain will occur. The feedstock cooperation is an advantage, because it increases the settlement interest of potential investors by realising high accessibility to raw materials.
2. An important result of the CeChemNet project, supported by the Land Saxony-Anhalt, is a central database of available raw materials. It gives an insight into raw materials of Eastern chemistry and particularly of the chemical sites. „The demand for raw amterials is the cardinal question beside available infrastructure and markets. These points are decisive for investors planning a settlement. (Andreas Hiltermann, Managing Director InfraLeuna) [49]
3. Resulting from the cooperation between chemical parks, a raw materials matrix for the chemical industry in Central Germany has been developed. It contains the following data:
    - Available raw materials / products,
    - Internal location connections,
    - Regional pipeline connections,
    - Transregional pipeline connections,
    - Road and railway logistics.
4. The charts below shows the existing raw material and logistic networks in the Central German Chemical Triangle[50].

[49] Source: www.cechemnet.de, September 2005
[50] Source: www.cechemnet.de, September 2005


Stade - Central Germany Pipeline
Rostock - Böhlen Pipeline
PIESTERITZ
Nitrogen Products
Rostock - Schwedt Pipeline
Ethylene
Refinery Products
SCHKOPAU
Polymers
Chemicals
BITTERFELD WOLFEN
Inorganic Products
Chlorine Products
Specialties
Ethylene, Propylene
Butadiene, Aromatics
Hydrogen, technical Gases
Ammonia, Carbamide
technical Gases
Hydrogen, technical Gases
Chlorine, Phosphorus oxide chloride
Hydro chloric acid
Nitric acid
BÖHLEN
Cracker
Acrylic Acid
Aniline
Hydrocarbon resins
ZEITZ
Polyamide 6.6
Ethylene
Hydrogen
Naphtha
LEUNA
Refinery
Polymers
Base Chemicals
Catalysts
Specialties
technical Gases
Hydrogen
„Drushba" Crude Oil-Pipeline
Methanol
Adipic acid
SCHWARZHEIDE
PUR-Raw materials
Engineering plastics
Foams
Fungicides
Waterbased coatings
Hydro chloric acid
CeChemNet
Central German Raw Materials Network

Transport p 1	2 Rohrleitung																		Tankzug 6						Behälterwag 7					
	intern (Standortgebur 3						regional (Mitteldeutsche Chemiedreiecl 4						überregional 5																	
Standort / Medium	Schkopau	Böhlen	Leuna	Zeitz	Bitterfeld	Piesteritz	Schkopau	Böhlen	Leuna	Zeitz	Bitterfeld	Piesteritz	Schkopau	Böhlen	Leuna	Zeitz	Bitterfeld	Piesteritz	Schkopau	Böhlen	Leuna	Zeitz	Bitterfeld	Piesteritz	Schkopau	Böhlen	Leuna	Zeitz	Bitterfeld	Piesteritz
Anorganika																														
Schwefel			L																								L			
Schwefelwasser-stoff			L																											
Schwefelsäure / Oleum																					L						L			
Salpetersäure		V		V		L																		L						L
Salzsäure			L		L																L		L				L		L	
Sonstige																														
Sole	V						V																							
Ammoniumsulfat																											L			
Dimethylsulfat					V																								V	

Legend:

1 = transport; 2 = piping; 3 = internal; 4 = regional; 5 = transregional; 6 = fuel truck and trailer rig; 7 = container car
V = group; L = group and supplier

Source:CeChemNet, Project documentation, 2004

II.1.5 Importance of the Chemical Parks for the Regional Development

II.1.5.1 Relevance of the Chemical Parks for the Regional Development

Question 13: How important are the chemical parks for the region?

1. Chemical parks are regional growth poles that have a strong impact on the regional development. The transformation process of the Eastern German chemical industry could only be successful on the basis of restructuring the large chemical locations.
2. Chemical parks are very important for the development of SMEs, especially in the down and upstream industries (e.g. plant engineering) and services. The restructuring process of the chemical industry itself has been connected to the establishment of many SMEs. They have been created as management-byouts of the old chemical enterprises as well as new settlements on the restructured chemical sites.
3. Chemical parks have a strong effect on employment, whereas there is a stronger focus on innovative products and services. As a result, the demand on qualification and training are rising.
4. Chemical parks have strong impact on the development and the extension of infrastructure, especially in the areas of transportation, logistics and IT. The improved, new and modern infrastructure have contributed to strengthening the location attractiveness. On the chemical sites it represents an important competitive advantage for the sites' companies.
5. The industrial and innovative focus of chemical parks influences the innovative profile of the region. The chemical sites are important network stakeholders concerning the relation between science and industry. Increasingly, the scientific profiles of regional universities and research institutions are influenced by the successful development of chemical locations.
6. The cooperation of chemical parks and the development of synergy effects increases international attention and strengthens the competitiveness of settled companies. On the one hand, creating synergy potentials and cooperation projects, results from global development trends within the chemical industry, e.g. concentration on core business and outsourcing of other activities. On the other hand, stronger consultations and cooperation is required in order to create a favourable business environment for the chemical industry. This includes coordination concerning joint interest, the development of human resources, utility costs, and costs and provision of raw materials.

II.1.5.2 Integration of Chemical Parks into the Regional Innovation Landscape

Question 14: How are the chemical parks integrated in the regional innovation environment? Which contacts are established between industry and science/research? What are the innovation potentials of the location? Which innovation activities are planned in the future?

1. Chemical parks are important stakeholders for the creation of cluster structures in chemistry/plastics. They support the development of a high quality knowledge management system, especially related to the marketing of specific locational know-how. As a consequence, not only potential investors are getting informed about the attractiveness of the chemical parks. Moreover good approaches are established for the development of new services, which can be offered to other European chemical parks by location comapnies.
2. In order to identify development needs of chemical parks and to express them to political and administrative stakeholders, the "Strategy Dialogue Chemistry" has been initiated as a communication platform of chemical industry, and regional and federal government. A consequent strategic lobbying, especially regarding the basic conditions of locational development in chemical industry, provides the basis for strengthening the competitiveness of Central German chemical locations in the long run.
3. A stronger focus on innovation oriented infrastructure and companies on the sites improves the conditions of the sites. This can be realised by the settlement of research institutions and the integration to network structures, connecting science and industry. The integration in cluster structures opens up many possibilities and new approaches to use regional synergy potentials.
4. A stronger focus will be laid on innovation activities in order to develop growth poles and centres of excellence.

Example: Growth Pole Reactive WetCoating in the region Bitterfeld-Wolfen[51]
The network connects 12 companies with a total number of 260 employees as well as further partners and research institutions. The core competence of the network is the three-dimensional coating technology for surface modification and high-tech products. The technology is used in the manufacturing of flat-panel displays, packaging foils or membrane filters.

5. Development of chemical relevant human resources is being supported.
6. The cooperation of chemical parks is strengthen by the establishment of a German platform for chemical parks, presenting the chemical location Germany. An increasing participation in EU projects is helping to include chemical companies in international and national research co operations.

[51] Source: ChemSME, Regional Chemical Cluster, Halle 2005, p. 7 and www.tig-ev.de, September 2005

II.1.5.3 Relevance of Chemical Parks for Human Resources

Question 15: How relevant are chemical parks for the development of human resources? (e.g. public acceptance, training, qualification)

1. A large number of different manufacturing and service companies are located in chemical parks, demanding employees of specific qualifications. The pooling of several hundred companies at one location directly influences the work force development within a region in quantitative and qualitative terms.
2. Cooperation of chemical park companies in the area of training and qualification takes place in joint training systems, training programs, etc. Increasingly, employees are getting qualified concerning specific tasks, e.g. security problems.
3. Joint strategies are developed with the objective to meet the future demand for specialised staff. These activities are necessary against the background of demographic development and changing age structures (e.g. „Alliance for Youth Employment“).
4. Joint actions, for example active school projects and youth activities, have been initiated to improve the acceptance of chemistry among students and the rest of the population.: Examples are:
    - “Touchable Chemistry” (“Chemie zum Anfassen“),
    - Young Career Central Germany (JUKAM-Junge Karriere Mitteldeutschland) (linking young professionals to the region),
    - School sponsorship,
    - Open days,
    - Visitor Centres.

Example: Touchable Chemistry[52]
▪ Cooperation between Dow Chemicals and the Merseburg University for Applied Research ▪ Supporting practical training of students in chemistry, processing and engineering with the help of excursions, trainings and supervision of thesis ▪ Additionally, school-related project, in which pupils have the opportunity to experiment in modern laboratories.

5. Chemical park operators and sites’ companies interact with universities in joint projects, and trying to influence research structures (e.g. the appointment of professors). Universities are being integrated in the strategic cluster development to identify human resource needs . Additionally, the participation of universities fosters the arrangement of proactive regional activities to mobilise and develop human resources.

[52] Source: ChemSME, Regional Chemical Cluster, Halle 2005, p. 6

II.1.5.4 Importance of the Chemical Locations for the Development of SME

Question 16: Which role do chemical locations have for the development of SMEs? (e.g. outsourcing, industrial services, spin-off processes and start-ups)

1. During the restructuring process of the chemical locations (privatisation of state owned enterprises), many SMEs have been founded (e.g. management-buy-out).
2. Chemical locations are important regional investment centres with transregional relevance. Therefore they are influencing the development of a SME sector related to the specific location.
3. Chemical park operaters and located companies play an important role to establish regional networks and cluster structures. On this basis, new connections emerge, linking structure dominating international companies with SMEs both on the location and in the regional environment.
4. The restructuring process of the chemical industry, characterised by concentration on core businesses and outsourcing processes, influences the present development of SMEs. The most intensive influence on business development appears in the areas of IT/media, logistics, and services.
5. Chemical parks are growth poles, facilitating the formation of a specific innovation and service environment, meeting the needs of the chemical industry. Thus, considerable impulses are released for the development of service providers, creating several new jobs.
6. Developing chemical parks encourages start-up activities, strongly orienting on innovation. New supply chains are created by new and growing innovative SMEs.

Advantages for SMEs in Chemical Parks	
Reliable supply – direct integration in value chain and local raw material networks on the site and in the region Impact: ▪ Price advantage ▪ Avoiding hazardous materials transport ▪ Reduction of storage etc.	**Materials supply decreases break down risks and increases profitability** Impact: ▪ Using economies of scale, ▪ Planning reliability, ▪ Stable cost structures etc.
Avoiding fix costs and single sourcing without giving up core competence Impact: ▪ Broad offer of highly specialised service providers ▪ Competition of suppliers on the location, etc.	**Integration into networks creates growth opportunities and stability** Impact: ▪ Integration in efficient networks, e.g. Polykum and CeChemNet ▪ Cooperation with VCI, Trade Unions, Employment Agency, etc.

II.1.5.5 Integration of the Chemical Locations in Economic Initiatives or Networks

Question 17: How are the chemical locations integrated in regional economic initiatives or networks for the promotion of the chemical cluster in your region?

1. Chemical parks, especially park operators, and sites' companies influence the development of regional network structures intensively. Accordingly, the network "Mitteldeutsche Kunststofftechnik" (Central German Plastics) has been established within the framework of the regional innovation strategies (RIS) in the region Halle-Leipzig-Dessau, bringing together representatives of regional economy, science, administration and politics.
2. The VCI, regional chemical companies, the trade union IG BCE, and the regional governments of Saxony-Anhalt, Saxony and Thuringia have jointly initiated the "Strategy Dialogue Chemistry". Objectives of the dialogue are to identify needs for further improving the business environment of the chemical industry, to agree on joint development targets, and to represent the cluster's interests in structuring economic, environmental and innovation policies at regional (regional governments of Saxony-Anhalt, Thuringia and Saxony), national and EU levels.
3. For central Germany, joint activities, carried out by regional governments together with the regional chemical industry, are combined within the framework of the "Chemistry Initiative Saxony-Anhalt". Regular conferences are organised by this initiative.During these conferences joint positions are developed to represent regional interests concerning important policy issues, affecting the chemical sector (e.g. REACH).
4. The chemical parks are some of the most important actors, initiating transregional cooperation structures in the framework of the Regionenmarketing Mitteldeutschland (Regional Marketing for Central Germany). The most important regional companies are working together in order to advertise the region transregionally. A central activity is to establish and facilitate the cluster "Chemistry / plastics" in Central Germany as one of the most important growth areas for the Länder Saxony-Anhalt, Thuringia and Saxony.
5. The chemical parks, and especially the cooperation within the network CeChemNet are building an important basis for the success of a chemistry conference for the new Bundesländer, which is planned to be hosted in 2006. The objective of this conference is to combine the potentials of Eastern Germany, the federal government and the chemical industry in order to strengthen one of the most significant industrial sectors in the new Bundesländer.

II.1.6 Perspectives and Basic Conditions for Chemical Parks

II.1.6.1 Success Factors for the Efficiency of Chemical Parks

Question 18: What are the success factors for the performance of chemical parks?

Success Factors	Assessment				
	++	+	0	-	- -
Attraction of new investors	X				
New business ideas		X			
Innovation development		X			
Low prices / costs		X			
Scope and quality of services	X				
Facility leasing			X		
Outsourcing		X			
Networks and partnerships		X			
Settlement of external research infrastructure on the location		X			
Joint marketing activities	X				
Location / chemical site network		X			
International cooperation and exchange of experiences		X			
Others					
State aid		X			

II.1.6.2 Development Needs for Chemical Parks

Question 19 a: What are the most important development needs for the future of chemical parks?

1. The new Bundesländer are presently eligible for support because of the objective 1 status. This high level of financial support has to be contuined It partly helps to compensate distortion of competition, caused by tax policies, environmental policies, and the development of wages in the new Member States. Because of the retained objective 1 status, the locations are staying and even becoming more attractive. Consequently, the current relation of existing infrastructure and below average business activities on the site can be improved.
2. Continuing the support to attract investors and to further develop companies in the chemical parks and their surroundings will contribute to an increased efficiency of business promotion policy. If the support was cutted extremely, and if big companies were excluded from the support measures, the specific conditions of a highly interconnected chemical and plastic production would not be met, and the development of competitive cluster structures would be affected in a negative way.
3. Direct and indirect financial support should be concentrated on sustainable cluster structures in the new Bundesländer. The further development and implementation of transregional policy approaches should be improved. Existing and additional value chains should be facilitated, especially in the area of chemistry and plastics. That is connected to the development of product oriented services.
4. The transport infrastructure should be further developed and upgraded, focussing on companies, active on international markets, especially in Central and Eastern Europe. Tri modal transport systems, pipeline systems and the development of harbour locations for the inland chemical sites are essential. Trans-European Networks should be used for the market development in Central and Eastern Europe.
5. In order to strengthen an innovation oriented focus of the chemical parks, companies have to be intregrated in the regional and international innovation landscape more intensively. The further establishment of research infrastructure on the locations are as important as the stronger development of synergies with the universities (e.g. appointments of professors at universities) and research institutions.
6. Being an essential prerequisite for medium-term and long-term competiveness of the chemical locations, an active strategy to cope the specific effects of the demographic change in the new Bundesländer (e.g. aging of employees, employment gap for young professionals) has to be developed. Very important development needs are joint activities to attract and keep qualified employees.

Question 19 b: Which further requirements exist for the development of the chemical parks?

Question	Answer
(1) Is there enough free area available for new chemical investments?	Yes
(2) How large is the area available for settlements?	Approx. 600 Hectare
(3) How do you assess the development in the future? Is there a need to build up new settlement areas outside the existing chemical parks?	At the present, the focus lays on improving the utilisation of the parks
(4) Number of newly planned chemical / industrial parks:	No plans known
(5) Size of new settlement area to be developed in the next 5 years:	No detailed figures available, in particular cases same areas will be made available after remediation

II.1.6.3 Needs for Improvement of Competitiveness of Chemical Parks

Question 20: Which actions are needed to further improve the competitiveness of the chemical parks?

1. Further development of the network connecting chemical locations:
   - Stronger cooperation in the area of joint marketing (international marketing, internal marketing);
   - Cooperation of chemical parks in Central Germany aiming at efficiently using existing potentials and generating synergy effects in order to benefit from specific competitive advantages;
   - Establishing new forms of cooperation (e. g. purchase cooperation with modern means - electronic procurement development; cooperation concerning human resource issues).
2. Settlement of research institutions or some of their departments on the sites, establishing strong ties between production and science on the regional and international level.
3. Further development of the cluster Chemistry / Plastics, directed to clear medium-term and long-term objectives; integrating relevant regional stakeholders in joint objectives.
4. Stronger cooperation of chemical parks and regional authorities in order to cope with the demographic change.
5. Strengthening cooperation concerning international issues, to improve the visibility of chemical parks as attractive investment sites. Development of joint marketing strategies, integrating municipal, regional or national economic promotion agencies.

II.1.6.4 Conclusions for the Positions of the Chemical Locations in Relation to National Governments and the EU

Question 21: Which conclusions can be drawn for the development of joint positions of chemical locations towards the national government and the European Union?

1. Chemical parks should be presented as an important and successful organisation form, accomplishing the process of global restructuring in the chemical industry. Chemical parks serve as typical development solution to improve international competitiveness of chemical clusters in Europe (Chemical park development as important approach for the implementation of the Lisbon Strategy).
2. Conclusions for the future business promotion policy should be drawn, considering the cooperation large companies and SME on chemical sites. The support of growth sectors should not only be focused on SMEs. Moreover it has to be taken into account that activities of large companies generate positive effects in the chemical parks, facilitating the development of SMEs directly and indirectly.
3. In order to reach a stronger position in the knowledge society, chemical parks have to further develop from production focused locations towards knowledge intensive locations. Integrating chemical parks in the developing innovation landscape will help to strengthen regional growth poles. This includes the further extension of research infrastructure, and the integration of the locations to innovation oriented industry and research networks.
4. A closer cooperation between infrastructure companies and sites' companies improves corporate stability and prospects of success for start-ups. Connected to this, there should be an assessment process, auditing the criteria for loan allocation in the framework of Basel II. That could lead to a positive ranking of the chemical park's companies.
5. In order to reach international competitiveness, a harmonisation of taxation and environmental legislation is required. Activities of particular governments, strengthening the competitiveness of companies, should be aligned as well. If this attempt is not successful, specific compensation measures (financial support) will be necessary for the harmonisation of competition strategies.

II.2 North-Rhine Westphalia

II.2.1 Short Description of the ECRN Region

II.2.1.1 Development of the Chemical Industry

Question 1: How has the chemical industry developed in your region? (regional importance, major activities, stakeholders and investments, restructuring and present challenges)

The chemical industry is the No.1 industrial sector in Germany and in North Rhine-Westfalia (NRW). No other industry sector achieves a comparable turnover. As the third-largest industrial employer, the chemical industry provides about a tenth of jobs in the European chemical industry and about a third of jobs in the German chemical industry.

NRW is both, the largest of all federal states in Germany, and the industrial centre of Germany. With approximately 18 million inhabitants, an area of more than 34,000 square kilometres and more than 1.5 million people employed in industry, NRW is by far the leader among the German states. The economic figures are impressive: Germany is the largest chemicals producer in Europe with around 25% of European production, and North Rhine-Westphalia is the leading chemicals-producing state, responsible for around 34% of the total.

This leading position of the chemical industry in NRW is maintained not only by its economic strength (30% of the top 20 German chemical companies have their headquarters or central administration in NRW), but also by its powerful position concerning innovation and its renowned training facilities.

The “chemicals country” of North Rhine Westfalia is dominated by the production of basic chemicals and petro-chemicals, whose best-known representatives are Bayer AG and BP. The petro-chemicals industry, settled along the Rhine from Leverkusen to Cologne and Bonn, represents an important link in the value-creation chain of the chemicals industry in NRW as a processor of raw materials and manufacturer of intermediate products for other companies, e.g. specialist chemicals producers such as Degussa AG. The manufacture of cosmetics and cleaning/washing agents is also well-represented in NRW by many skilled companies both large and small sized – e.g. Henkel KGaA.

Two strong initiatives help to foster the strength of the chemical industry in NRW: ChemCologne and ChemSite. Both initiatives have the objective to increase the attractiveness of the region as a chemical location to German and foreign investors. Both regional areas, represented by the named initiatives, offer a highly developed industrial infrastructure with efficiently integrated production, highly qualified personnel, renowned research institutions and promising perspectives for tomorrow’s markets.

II.2.1.2 Indicators of the Chemical Industry

Question 2: Describe the development with the help of indicators!

General indicators of the chemical industry in the region

Indicator	1995	2000	2003
Turnover (Mio. €)	37,953	45,454	45,527
Number of chemical companies	408	429	452
Number of employees	160,461	134,098	128,781
Share of R&D employees in Germany (estimate in %)	9	10	9
Exports (Mio. €) (foreign turnover)	15,908	22,022	21,616
Share of chemical industry on manufacturing industry (%)	14.9	15.3	15.9
Number of chemical parks / industrial parks with chemistry focus			
Investments (Mio. €)			

Question 3: In which sectors is the chemical industry concentrated?

DG*	Sector category	Enterprises	Employees
	***NACE Code**	**2003**	**2003**
24	**Chemical Industry**	**452**	**128,781**
24.1	Basic chemicals	159	69,677
24.2	Agro chemicals	4	2,865
24.3	Varnishes / Adhesive	72	13,634
24.4	Pharmaceuticals	42	11,964
24.5	Detergents / Cosmetics	69	17,231
24.6	Other chemical prod.	95	11,025
24.7	Man-made fibre	12	2,386
25	**Plastic & Rubber**	**720**	**72,439**
25.1	Rubber	71	10,205
25.2	Plastics	649	62,235
	Total (DG 24 and 25)	**1,172**	**201,220**

II.2.2 Overview of the Most Important Chemical Sites / Parks and Industrial Parks

II.2.2.1 Overview of Chemical Parks and Industrial Parks in the Region

Question 4: Give an overview of the chemical parks and industrial parks in your region!

Overview of chemical parks and industrial parks in the region

No.	Region Location	Name of the park	size (ha)
1	NRW	Bayer Chemical Park, Location Dormagen	600
2	NRW	Bayer Chemical Park, Location Leverkusen	340
3	NRW	Bayer Chemical Park, Location Krefeld-Uerdingen	300
4	NRW	Chemical Park Marl	650
5	NRW	Chemical Park Gelsenkirchen-Scholven	300
6	NRW	Chemical Park Gelsenkirchen-Horst	160
7	NRW	Chemical Park Castrop-Rauxel	106
8	NRW	Intermunicipal Industrial Park Dorsten/Marl	136
9	NRW	Industrial Park Troisdorf	18
10	NRW	Pharma- und Chemiepark Wuppertal	20
11	NRW	Industrial Park Knapsack	160
12	NRW	Industrial Park Oberbruch	107
13	NRW	Industrial Park Solvay Rheinberg	261

The Bayer Chemical Park

"Tailor made services for investors and start-ups"

With a total area of around 17 square kilometres, the Bayer Chemical Parks make up Germany's largest chemical park network. As their owner and operator, Bayer Industry Services (BIS), provides investors and start-up businesses with tailor-made services for all aspects of chemical production. The Bayer Chemical Parks offer a host of synergies in the form of an all-encompassing network.

A tailor made infrastructure for partner companies forms the backbone of the services provided by BIS. The Bayer Chemical Parks have around 240 hectares of land available for companies wishing to set up business there. Investors will find fully developed industrial lots that offer optimum conditions.

Chemical start-ups at the Bayer Chemical Parks have competent, experienced BIS experts on hand to help smooth the way ahead for them. Excellent financial, supplier and customer contacts, combined with extensive chemical know-how and excellent infrastructure for chemical and pharmaceutical research, are all available, enabling promising new start-ups to enjoy a powerful launch with the fewest possible teething troubles or undue difficulties.

Already, over 40 national and international companies make extensive use of our services, together with the operational subgroups of Bayer AG. At the four Bayer Chemical Park sites – Leverkusen, Dormagen, Krefeld-Uerdingen and Brunsbüttel – all these companies benefit considerably from the strategic alliances and the variety of services provided by Bayer Industry Services.

Chemiepark Knapsack

InfraServ Knapsack is the operating company of Knapsack Chemical Business Park. It provides all companies on the site with a made-to measure package offering industrial services as a one stop shop. The companies in Knapsack Chemical Business Park make use of the "All-round-Carefree-Packages" offered in the fields of development, planning, construction, management and maintenance of chemical and industrial installations, enabling them to concentrate on their core business and achieve best possible levels of production.

Knapsack Chemical Business Park is connected to an extensive supply - and best logistic network of infrastructure. Very good energy supply and contracting situation and short, effective approval times for new construction projects are further advantages.

Fact and Figures	
Area	160 hectares
Vacant development area	20 hectares
Employees	2,500
Important companies	Basell, Bayer CropScience, CABB, Clariant, InfraServ Knapsack, Praxair, Nexans, Schmidt Heilbronn, Thermphos, Vinnolit
Products	Plastics, crop protection products, chlorine, PVC, special chemical, high-temperature super conductors, additives, industrial gases

Service provider InfraServ Knapsack - range of services:

- Management of chemical and industrial business parks
- Chemical analysis
- Engineering & contracting
- Training
- Industrial maintenance
- Information and communications technology
- Site logistics
- Personnel management
- Safety / health/ environment
- Energy supply pipeline
- Waste water treatment and waste disposal
- General site maintenance.

Degussa in the Cologne area

Degussa AG is a multinational German company for special chemicals with high margins. In the fiscal year 2003, the 46,000 employees generated sales of approximately Euro 11.5 billion.

In the Cologne area, there are three major production facilities at Kalscheuren, Wesseling and Niederkassel-Lülsdorf. In Kalscheuren, a wide range of carbon blacks is produced. At this site, Degussa's global centre of competence for filler systems is located, including R&D and applied technology departments. Counting for 15 manufacturing plants, Wesseling is one of the multi-user sites within the Degussa AG. Here six business units of the company are mainly producing performance silicas and derivates of hydrogen cyanide, for example the amino acid methionin. In Niederkassel–Lülsdorf, base intermediates (chlorine, potassium hydroxide, caustic soda, hydrogen, potash) and organic products (alcoholates, esters and derivatives) are produced for the pharmaceutical and agricultural industries.

Additionally, smaller Degussa production units are situated in the immediate vicinity at Leverkusen (fumed silica) and Bonn (matting agents).

There is an opportunity for new investments, especially in Niederkassel-Lülsdorf where infrastructure and industrial building space are available. At the site, the supply of energy, electricity, water, steam, mechanical / biological wastewater treatment is guaranteed, and a landfill facility is also available. In the field of logistics, the plant is connected to major pipelines, its own Rhine harbour, as well as to the rail and highway systems.

Industrial Park Troisdorf

After various restructuring measures at the former "Dynamit Nobel" location, the site's premises have progressively been transformed into the Industrial Park Troisdorf. Located centrally in the Rhine-Sieg-District, between the cities of Cologne and Bonn, the park covers an area of more than 850,000 sqm. All spheres of competency, necessary for a professional site operation are provided. Primarily, plastics are produced in the companies of the park. However, non-plastics also benefit of the comprehensive infrastructure.

Compared to surrounding industrial areas, the Industrial Park Troisdorf provides a functional, well established environment for all kinds of industrial use. The estate is registered as an "industrial zone" which permits commercial use all day long throughout the whole year. Because of this essential feature, the Industrial Park distinguishes from other parks in the Rhine-Sieg-District. Every section of the area is provided with vital energy sources such as electricity, gas, drinking and cooling water as well as steam and compressed air. The dual sewage system enables cost-effective disposal of surface and cooling water, simultaneously ensuring the environment-friendly drainage of industrial effluent into an industrial sewage treatment plant. The fact that the industrial park is a hedged, sealed-off area does not only provide benefits for security-conscious companies. For example, it also enables easy in-plant transport of hazardous materials, which otherwise in an open industrial estate would be subject to official regulations.

In addition to the infrastructure Long-term resident companies and other companies, relocating to the modern Industrial Park Troisdorf, can rely upon a variety of available

services such as workshops, testing laboratories, engineering services, a company medical officer, security services, training rooms and know-how about various fields of interest. The workshops provide valuable experiences in plastics processing. Competitive advantages for already establishes companies as well as new companies, which have decided to relocate to the Industrial Park, are especially the regional and professional proximity, and related immediate availability in case of malfunction.

The energy departments do not only provide a reliable energy supply and distribution. They also ensure the functionality of a comprehensive data and communications network, including the fire detection system. The main environmental protection as well as safety and security functions ensure high quality in this sensitive area, and simultaneously eliminate the need for our customers to provide staff for this purpose. Personnel services, raniging from the provision of a time recording system to payroll accounting and the recruitment of new employees, occupational safety and company medical service, round off the services, provided at the Industrial Park Troisdorf.

The "Pharma- und Chemiepark Wuppertal"

The "Pharma- und Chemiepark Wuppertal" is Bayer HealthCare´s specialist site for production and development of pharmaceutical active ingredients using both chemical and biotechnological methods.

The Park is an excellent site for an investment in a pharmaceutical production plant. Comprehensive services are offered to companies wishing to integrate their operations into the high quality infrastructure. Furthermore, non – resident customers can benefit from the services and system solutions as well.

All the elements of the process of pharmaceutical R&D and production are available on this site, including specific analysis, GMP-documentation and the preparation of registration documents.

The infrastructure offers everything from roads and production facilities to specialized warehouses and ready-to-use laboratory facilities, with utilities such as water, purified water, waste and waste-water handling, electricity, steam, industrial gas and refrigeration facilities as well as communication networks.

The standard service package includes site safety services that encompass security, fire safety and incident management, an ambulance facility and environmental monitoring. In addition, other technical and quality-oriented services are available on request.

Oberbruch Industrial Estate

The Industriepark Oberbruch, located in the region Cologne-Düsseldorf-Aachen-Maastricht, is a modern and innovative manufacturing site with state-of-the-art infrastructure. The production is concentrated on chemicals, plastics and new materials. The industrial park provides appropiate solution ideal for the requirements of manufacturing companies. The park currently covers an area of about 110 hectares. 20 national and international companies are locates there, employing 2,000 qualified people with many years of experience in the chemicals industry.

Thanks to various links with the Aachen University, the industrial park is regarded as an extended workbench for the Aachen Research and Technology Region. Production-oriented start-ups will find excellent conditions on 40 ha of newly developed industrial space.

The industrial estate is run by NUON, an important European power company, headquartered in Amsterdam, the Netherlands. NUON is continuously investing in its infrastructure to secure the competitive strength of the companies on the industrial estate. Especially because of the high reliability of supplies at the Oberbruch location, the Japanese carbon fibre manufacturer Tenax Fibers, a subsidiary of Teijin, decided to build its third production plant in Oberbruch. Additionally, the power company NUON can offer a very competitive all-round supply of services.

The properties and facilities are owned by the companies on the Oberbruch Industrial Estate. Unlike many other chemical parks, they are independent of the operating company and other firms, located on the site. Simultaneously, they benefit from existing synergy effects of the industrial estate.

Industrial Park Cologne North

The Industrial Park Cologne provides ideal conditions, specifically for setting up chemical production plants or chemistry-related manufacturing plants.. The park covers an areaof about 100 hectares, which contains a total of 69 hectares of pure building land, the majority of which is classified as an industrial estate. Investors benefit from technical and logistic services provided, infrastructure securing supply and disposal , as well as the availability of preliminary and semi-finished products. The pipeline system for nitrogen, natural gas and industrial gases such as ethylene and propylene also secures the best possible production conditions for chemical companies.

The areas are in close vicinity of dynamic world-wide companies, active in the chemical industry. The regional companies range from Exxon Mobil via Infineum GmbH to Air Products GmbH, Kilian GmbH & Co. KG, Vinnolit GmbH or Akzo Nobel Chemicals GmbH.

The Cologne Office of Economic Development is a competent partner for all companies based in Cologne or have decided to set up their future location here. The Office helps setting up new business and provides assistance with the consolidation of existing enterprises. The range of activities is wide, and the service is free of charge.

Here entrepreneurs can find personal business partners, providing advise concerning applicable planning law as well as development possibilities. They also provide information on support programs. To speed up permit procedures (e.g. building licences, residence permits, work permits), the office clarifies open questions up front.

II.2.2.2 Description of the Most Important Chemical Sites / Parks and Industrial Parks

II.2.2.2.1 Bayer Chemical Park – Dormagen

Question 5: What are the main characteristics of the most important chemical parks in the region?

No.		Answer
1	Name of the chemical site/park	Bayer Chemical Park, Location Dormagen
2	Park Operator	Bayer Industry Services GmbH & Co. OHG, Leverkusen
3	Address	Post Box D - 51368 Leverkusen
4	Contact Partner (Function)	Juergen Gemke, Head of Communications Dr. Joerg-Michael Soeder, Marketing of Bayer Chemical Parks
5	Phone / Fax	+49-214-30-53958 / +49-214-30-21257 +49-214-30-31930 / +49-214-30-9631930
6	Web page Email	www.bayerindustry.de juergen.gemke.jg@bayerindustry.de joerg-michael.soeder.js@bayerindustry.de
7 7.1 7.2 7.3 7.4 7.5	Capacity and investments Total Area (ha) Free Area (ha) Employees Number of Enterprises Investments (Mio. €)	 600 29 9,700
8.	Raw materials, primary products, specialisation	Cl_2, H_2, CO, Toluene Benzene, Ethylene, HCN, Nitric Acid (HNO_3), Propylene, Butadiene
9.	Research entities on the location	
10.	List of biggest enterprises	Bayer AG, Lanxess, Dorlastan Fibers GmbH, Perlon-Monofil GmbH, Chemion Logistik, Innovne BP Cologne, Dralon, Heraeus-Kulzer, Hoyer, Praxair, RWE Power, Polymer Latex, KARL SCHMIDT SPEDITION GmbH & Co. KG, Yara (former Norsk Hydro)

II.2.2.2.2 Bayer Chemical Park Leverkusen

Question 5: What are the main characteristics of the most important chemical parks in the region?

No.		Answer
1	Name of the chemical site/park	Bayer Chemical Park, Location Leverkusen
2	Park Operator	Bayer Industry Services GmbH & Co. OHG, Leverkusen
3	Address	Post Box D - 51368 Leverkusen
4	Contact Partner (Function)	Juergen Gemke, Head of Communications Dr. Joerg-Michael Soeder, Marketing of Bayer Chemical Parks
5	Phone / Fax	+49-214-30-53958 / +49-214-30-21257 +49-214-30-31930 / +49-214-30-9631930
6	Web page Email	www.bayerindustry.de juergen.gemke.jg@bayerindustry.de joerg-michael.soeder.js@bayerindustry.de
7 7.1 7.2 7.3 7.4 7.5	Capacity and investments Total Area (ha) Free Area (ha) Employees Number of Enterprises Investments (Mio. €)	 340 25 30,000
8.	Raw materials, primary products, specialisation	Cl_2, H_2, Toluene, Benzene, Ammonia, Ethylene, Silicon, Nitric Acid (HNO_3), CO
9.	Research entities on the location	
10.	List of biggest enterprises	Bayer AG, Bertschi AG, Chemion, Degussa, Dynevo, DyStar, GE Bayer Silicones, Kronos Titan, H.C.Starck, Lanxess

II.2.2.2.3 Bayer Chemical Park Krefeld-Uerdingen

Question 5: What are the main characteristics of the most important chemical parks in the region?

No.		Answer
1	Name of the chemical site/park	Bayer Chemical Park, Location Krefeld-Uerdingen
2	Park Operator	Bayer Industry Services GmbH & Co. OHG, Leverkusen
3	Address	Post Box D - 51368 Leverkusen
4	Contact Partner (Function)	Juergen Gemke, Head of Communications Dr. Joerg-Michael Soeder, Marketing of Bayer Chemical Parks
5	Phone / Fax	+49-214-30-53958 / +49-214-30-21257 +49-214-30-31930 / +49-214-30-9631930
6	Web page Email	www.bayerindustry.de juergen.gemke.jg@bayerindustry.de joerg-michael.soeder.js@bayerindustry.de
7 7.1 7.2 7.3 7.4 7.5	Capacity and investments Total Area (ha) Free Area (ha) Employees Number of Enterprises Investments (Mio. €)	 300 24 7,000
8.	Raw materials, primary products, specialisation	Acetone, Benzene, Phenol, Cyclohexane, Bisphenol, Co, CL_2, Nitric Acid (HNO_3)
9.	Research entities on the location	
10.	List of biggest enterprises	Bayer AG, IVG Logistik GmbH, Kerr-Mc Gee, Chemion Logistik GmbH

II.2.2.2.4 Chemical Park Marl

Question 5: What are the main characteristics of the most important chemical parks in the region?

No.		Answer
1	Name of the chemical site/park	Chemical Park Marl
2	Park Operator	Infracor GmbH, Marl
3	Address	Building 139/03 Paul-Baumann-Str. 1 D-45764 Marl/Germany
4	Contact Partner (Function)	Dr. Margarete Gersemann, President of ChemSite Initiative Dr. Joerg Marth, General Manager of ChemSite Initiative
5	Phone / Fax	+49-2365-49-2530 / +49-2365-49-6805 +49-2365-49-5081 / +49-2365-49-6805
6	Web page Email	www.chemsite.de margarete.gersemann@infracor.de joerg.marth@infracor.de
7 7.1 7.2 7.3 7.4 7.5	Capacity and investments Total Area (ha) Free Area (ha) Employees Number of Enterprises Investments (Mio. €)	 650 60 approx. 10,000
8.	Raw materials, primary products, specialisation	Extensive range of specialty and basic chemicals, based on Benzene, Ethylene, Propylene, C_4, Acetylene, Syngas, Phenol, Fatty Alcohol, Chlorine.
9.	Research entities on the location	
10.	List of biggest enterprises	Degussa AG, Innovene Deutschland GmbH, SASOL Germany GmbH, VESTOLIT GmbH & Co. KG, Infracor GmbH, PolymerLatex GmbH & Co. KG, OXENE Olefinchemie GmbH, Nova Innovene Germany GmbH, LANXESS Buna GmbH, ISP Marl GmbH, NEW Natural Energy West GmbH, Linde AG, Rohm and Haas, Air Liquide Technische Gase GmbH

II.2.2.2.5 Chemical Park Gelsenkirchen-Scholven

Question 5: What are the main characteristics of the most important chemical parks in the region?

No.		Answer
1	Name of the chemical site/park	Chemical Park Gelsenkirchen-Scholven
2	Park Operator	BP Refining & Petrochemicals GmbH
3	Address	Alexander-von-Humboldt-Strasse D-45876 Gelsenkirchen / Germany
4	Contact Partner (Function)	Dr. Thomas Sunderbrink, Business Development Petrochemicals Dr. Margarete Gersemann, Head of ChemSite
5	Phone / Fax	+49-209-6043-7143 / +49-209-6043-607143 +49-2365-49-2530 / +49-2365-49-6805
6	Web page Email	www.bprp.de and www.chemsite.de thomas.sunderbrink@de.bp.com margarete.gersemann@infracor.de
7 7.1 7.2 7.3 7.4 7.5	Capacity and investments Total Area (ha) Free Area (ha) Employees Number of Enterprises Investments (Mio. €)	 300 89
8.	Raw materials, primary products, specialisation	BP/Ruhr Oel's Gelsenkirchen-Scholven plant operates one of Germany's largest ethylene production capacities. Infrastructure: Pipeline link to the inland ports in Horst and Bottrop, highway access, plant rail system with cargo handling facilities and national link, crude oil pipelines from Rotterdam and Wilhelmshaven. Products: Ammonia, Ammonium hydroxide, Argon, Benzene, Bitumina, C_4-cut (Butadiene, Butene, Butane), Carbondioxid, Cumene, Cyclohexane, Ethylene, Hydrogen, LPG, Methanol, Nitrogen, o-Xylene, Oxygen, p-Xylene, Propane, Propylene, Solvents, Special oils, Sulphur, Syngas, White spirits
9.	Research entities on the location	
10.	List of biggest enterprises	BP Refining & Petrochemicals GmbH, SABIC Polyolefine GmbH

II.2.2.2.6 Chemical Park Gelsenkirchen-Horst

Question 5: What are the main characteristics of the most important chemical parks in the region?

No.		Answer
1	Name of the chemical site/park	Chemical Park Gelsenkirchen-Horst
2	Park Operator	BP Refining & Petrochemicals GmbH
3	Address	Alexander-von-Humboldt-Strasse D-45876 Gelsenkirchen / Germany
4	Contact Partner (Function)	Dr. Thomas Sunderbrink, Business Development Petrochemicals Dr. Margarete Gersemann, Head of ChemSite
5	Phone / Fax	+49-209-6043-7143 / +49-209-6043-607143 +49-2365-49-2530 / +49-2365-49-6805
6	Web page Email	www.bprp.de and www.chemsite.de thomas.sunderbrink@de.bp.com margarete.gersemann@infracor.de
7 7.1 7.2 7.3 7.4 7.5	Capacity and investments Total Area (ha) Free Area (ha) Employees Number of Enterprises Investments (Mio. €)	 160 11
8.	Raw materials, primary products, specialisation	Focus: Total range of oil products, especially motor fuels. Products: Calcined coke, Diesel, Flux Oils, Gasoline, Heavy heating oil, i-Butane, Jet, Light heating oil, Petrol coke Infrastructure: Rhine-Herne canal, 3 ports (Horst I and II and Bottrop), plant rail system and national link, highway access, crude oil pipelines from Rotterdam and Wilhelmshaven
9.	Research entities on the location	
10.	List of biggest enterprises	BP Refining & Petrochemicals GmbH

II.2.2.2.7 Chemical Park Castrop-Rauxel

Question 5: What are the main characteristics of the most important chemical parks in the region?

No.		Answer
1	Name of the chemical site/park	Chemical Park Castrop-Rauxel
2	Park Operator	Infracor GmbH, Marl
3	Address	Paul-Baumann-Str. 1 D-45764 Marl / Germany
4	Contact Partner (Function)	Dr. Margarete Gersemann, Head of ChemSite Dipl.-Ing. Wolfgang Helsper, RÜTGERS Chemicals AG Kekuléstraße 30 D-44579 Castrop-Rauxel
5	Phone / Fax	+49-2365-49-2530 / +49-2365-49-6805 +49-2305-705-450 / +49-2305-705-424
6	Web page Email	www.chemsite.de margarete.gersemann@infracor.de www.ruetgers-chemicals.de wolfgang.helsper@ruetgers-chemicals.de
7 7.1 7.2 7.3 7.4 7.5	Capacity and investments Total Area (ha) Free Area (ha) Employees Number of Enterprises Investments (Mio. €)	 106 15
8.	Raw materials, primary products, specialisation	Focus: Aromatics from coal tar for paints, coatings, cosmetics, pharmaceuticals, electrode binders, aromatic oils Infrastructure: Rhine-Herne Canal, oil/dry cargo ports, 22 km railway, highway access
9.	Research entities on the location	
10.	List of biggest enterprises	RÜTGERS Chemicals AG

II.2.2.2.8 Intermunicipal Industrial Park Dorsten Marl

Question 5: What are the main characteristics of the most important chemical parks in the region?

No.		Answer
1	Name of the chemical site/park	Intermunicipal Industrial Park Dorsten / Marl
2	Park Operator	Projektgesellschaft Industriepark Dorsten / Marl mbH
3	Address	Duisburger Straße 170 D-46535 Dinslaken/Germany
4	Contact Partner (Function)	Klaus Langenberg
5	Phone Fax	+49-2064-608-249 +49-2064-608-344
6	Web page Email	www.industriepark-dorsten-marl.de klaus.langenberg@steag.de
7 7.1 7.2 7.3 7.4 7.5	Capacity and investments Total Area (ha) Free Area (ha) Employees Number of Enterprises Investments (Mio. €)	 136 65
8.	Raw materials, primary products, specialisation	Kicked-off by an initiative of STEAG AG, the communities Marl and Dorsten together offer a fully developed industrial area to investors from the chemical or chemical related industry. Chemical products processing and refining industries profit additionally from the neighbouring Marl Chemical Park and from other sites like BP and Sabic Polyolefine with their comprehensive offer of raw materials, infrastructure and services.
9.	Research entities on the location	
10.	List of biggest enterprises	

II.2.2.2.9 Chemical Park Knapsack

Question 5: What are the main characteristics of the most important chemical parks in the region?

No.		Answer
1	Name of the chemical site/park	Chemical Park Knapsack
2	Park Operator	InfraServ GmbH & Co. Knapsack KG
3	Address	Industriestrasse D-50354 Hürth/Germany
4	Contact Partner (Function)	Peter Siebert, Head of Communication
5	Phone Fax	+49-2233-48-65 70 +49-2233-48-69 83
6	Web page Email	www.infraserv-knapsack.de peter.siebert@infraserv-knapsack.de
7 7.1 7.2 7.3 7.4 7.5	Capacity and investments Total Area (ha) Free Area (ha) Employees Number of Enterprises Investments (Mio. €)	 160 20 2,500
8.	Raw materials, primary products, specialisation	Plastics, crop protection products, chlorine, PVC, special chemical, high-temperature super conductors, additives, industrial gases
9.	Research entities on the location	
10.	List of biggest enterprises	Basell Polyolefins, Bayer CropScience, CABB, Clariant, Praxair, Thermphos, Nexans, Schmidt Heilbronn, Vinnolit, InfraServ Knapsack

II.2.3 Organisation, Management and Competencies of the Chemical Parks

II.2.3.1 Organisation Forms of the Chemical / Industrial Parks

Question 6: Which organisation type exists in the chemical park?

Question 7: What are the characteristics of the location?

Location of the chemical / industrial park	Dormagen	Leverkusen	Krefeld-Uerdingen	Marl	Gelsenkirchen-Scholven	Gelsenkirchen-Horst	Castrop-Rauxel	Dorsten-Marl	Knapsack Hürth
6. Organisation type[53]	Major independent park operator Multi-User	Major independent park operator Multi-User	Major independent park operator Multi-User	Multi-User	Major-User	Major-User	Major-User	Multi-User	Major independent park operator Multi-User
7. Structure of the location[54]	Major open type	Major open type	Major open type	Major open type	Major open type	Major open type	Major open type	Major open type	Major open type

[53] Possible organization types: a) independent park operator b) Major User c) Multi User d) others
[54] Possible park structures: a) open b) closed c) mixed type

II.2.3.2 Most Important Tasks of the Park Operator

Question 9: What are the most important tasks of the park operator and what are future perspectives for the chemical park management?

North Rhine Westfalia offers attractive sites to investors in the chemical industry. The sites especially facilitate numerous combined possibilities with companies already located here and thus provide cost-cutting synergies. Good examples for chemical locations in NRW are the chemical parks of Bayer Leverkusen and Bayer Dormagen, the pharmaceutical and chemical park of Bayer HealthCare in Wuppertal, the chemical park Knapsack, the Industrial Park Cologne-North and the Industrial Park in Oberbruch, as well as the sites of Degussa AG in Lülsdorf and the Industrial Park in Troisdorf, The same advantages are also given on the six chemical parks within the ChemSite region around Marl and Gelsenkirchen.

In partical the advantages, companies benefit from, are to obtain feedstock and intermediate products in the chemical parks, to jointly use technological plants, safety and social facilities. Complete services are provided by a single source, offering investors all services ranging from planning, via construction and operation, to maintenance and certification of industrial plants. Services, such as information technology, analytics, logistics, waste water treatment and waste disposal, are also offered at the sites. Investors will find a highly-developed infrastructure, specially tailored to the needs of chemical companies.

II.2.4 Relevance of Chemical Parks for the Regional Development

II.2.4.1 Relevance of Chemical Parks for the Regional Development

Question 13: How important are the chemical parks in the region?

In North Rhine Westphalia, all active regions offer attractive sites to investors in the chemical industry as well as to people who are well trained and want to get employed. In the region, the inhabitants of the cities know the importance of the chemical industry very well. Many families make out their living of the chemical industry. Thus, the chemical industry is a major and vital part of the regional economy. Only one fact, which shows the importance of the chemical industry in NRW and the chemical parks in particular, is the number of jobs in the chemical industry: In NRW around 130,000 people are employed in this sector.

II.2.4.2 Integration of the Chemical Parks into the Regional Innovation Landscape

14. How are the chemical parks integrated in the regional innovation environment? Which contacts are established between the industry and the science/research? What are the innovation potentials of the location? Which innovation activities are planned in the future?

The chemical regions are some of the locations, characterised by the highest density of universities, research facilities and progressive companies worldwide. All of them decisively contribute to making the results of basic research usable for industry and to strengthening the region's competitiveness. A close network, consisted of

incubators and technology centres, offers entrepreneurs of new businesses attractive start-up conditions, whereas medium-sized and large companies can develop additional innovation potential.

II.2.4.3 Relevance of Chemical Parks for Human Resources

Question 15: How relevant are chemical parks for the development of human resources (e.g. public acceptance, training, qualification)?

North Rhine Westfalia has very well-known training facilities. Within its borders, 54 universities and technical colleges, 10 Max-Planck Institutes, 5 Fraunhofer Insititutes and 3 major research institutions are located. The public acceptance in the Land NRW in regard to the training of human resources is very good.

Investors can draw on a large pool of very well-trained and highly motivated employees. Great importance is traditionally attached to vocational training and further training in the chemical region. The chemical companies offer training opportunities in over 50 different vocations. Furthermore, companies, located here, benefit from flexible wage agreements as another cost saving factor.

With numerous chemical companies, established here since the beginning of the 20th century, the chemical industry looks back on a long tradition in the region. Offering over 300,000 jobs, the chemical industry enjoys a high acceptance by people living here.

II.2.4.4 Integration of Chemical Locations in Economic Initiatives or Networks

Question 17: How are the chemical locations integrated in regional economic initiatives or networks for the promotion of the chemical cluster in your region?

In North Rhine-Westfalia, two major organisations, subordinated to the Ministry of Economy, intensely support chemical companies in doing their business. These are ChemCologne and ChemSite. Both initiatives are very active in their regions. ChemCologne is focussing on the southern part of NRW along the Rhine, whereas ChemSite operates in the northern part.

The ChemSite initiative is an innovative alliance of well-known global acting partners from industry and commerce, politics and the local communities concerned for the purpose of marketing industrial areas at developed, fully integrated and interlinked chemical sites in the Ruhr region.

ChemSite offers a total of 252 ha (or 626 acres) of fully developed industrial areas at six different completely integrated high-tech sites just north from the Ruhr valley, the industrial heart of Germany. At ChemSite locations investors enjoy a wide range of benefits:

- A comprehensive interlinked materials flow system ("Verbund") for energies, raw materials and products at and between the sites,
- Custom services in the areas of supply and disposal, safety, environmental protection, authority management, technology and telecommunications,
- Short planning approval times due to the innovative public and private-partnership with dedicated political partners,

- A local community that has experience with the chemical industry and is friendly towards chemical investors

ChemCologne is an organization with the objective to increase the awareness of German and foreign investors in respect of the region as an attractive chemical location. The combination of existing competence and potentials forms a network of partners, which ensures to shape and develop the region as the leading chemical location in Germany. The initiative is supported by numerous chemical companies, the state of North Rhine-Westphalia, the Employers' Federation Chemicals Cologne, the City of Cologne as well as the other towns and districts in the region, the chambers of commerce and industry, the Cologne regional government and the local universities as well as the Trade Union for Mining, Chemistry and Energy, and the Corporation for Economical Development NRW.

The list of companies supporting ChemCologne reads like a who's-who of the international chemical industry. They all take advantage of the excellent location in the heart of one of Europe's key economical regions. About 70,000 people work here in some 150 chemical companies of all sizes. Chemistry secures more than 300,000 jobs in the region.

II.3 Lower Saxony

II.3.1 Short Presentation of ECRN Region

II.3.1.1 Development of the Chemical Industry

Question 1: How has been the development of the chemical industry in your region?

Lower Saxony is better known as an agricultural region with a large industry of nourishment and with an important aspect of tourism. In addition, it is well known as the "VW-Land", respectively recently as "Airbus-Land" together with Bremen and Hamburg. For a long time, the chemical industry did not seem to become much important for the region although some of the region's chemical enterprises were already founded in the 19th century. Examples for those traditional companies are Wolff Walsrode in Bomlitz, processing celluloses, H. C. Starck in Goslar, producing special metals and metal compounds, based on the mining industry of the Harz-Region, Honeywell Specialty Chemicals in Seelze (formerly known as Riedel-de Haen), working in the field of chemical specialties, and Pelikan and GEHA, located in the region of Hanover, producing chemical material especially for the office use. Another example is the "old" Kali Chemie, which today belongs to the Belgium Solvay Group. It is one of the older and well-known companies in the region. Compared to that, the petrochemical industry of Lower Saxony is relatively young. It was founded not until thirty years ago, situated mainly on the coast site of the Northern Sea.

The chemical industry of Lower Saxony offers a wide range of products. Nearly every chemical product is manufactured here, rangning from paintings, adhesives, detergents, cosmetics, flavorous and odorous substances, films, medicine and drugs to organic and inorganic raw material, special materials and electronic chemicals. Due to the importance of the automobile and aircraft industry in the region, the production of modern special plastic materials is especially well developed.

Today, the chemical industry is ranking at the sixth position compared to other industrial sectors in Lower Saxony. There are 173 companies, mainly small and medium-sized, generating an estimated turnover of approximately 8 billion EUR in 2005. Nearly 58 per cent of this amount is due to export activities. Up to now the chemical industry has created about 27,000 jobs in the region. Geographically, chemical sites are concentrated in the Harz-Region, Holzminden, Hanover, Lemförde, Lingen, Seelze, Stade, Walsrode and Wilhelmshaven (see following chart).


Chemiestandorte in Niedersachsen
Wilhelmshaven
810
Nordenham
370
Stade
2.760
Walsrode
2.390
Nienburg
300
Hannover
1.890
Lingen
990
Lemförde
1.160
Holzminden
2.550
Seelze
1.080
Goslar
1.880

II.3.1.2 Indicators of the Chemical Industry

Question 2: Describe the development with the help of indicators!

General indicators of the chemical industry in the region

Indicator	1995	2000	2003
Turnover (Mio. €)	6,648	8,540	8,083
Number of chemical companies	165	162	173
Number of employees	27,851	26,235	27,783
Share of R&D employees (estimate in %)			
Exports (Mio. €)	5,945	4,858	4,852
Share of chemical industry on processing industry (%)			6,6
Number of chemical parks / industrial parks with chemistry focus			5 (1 in Schleswig-Holstein)
Investments (Mio. €)			

Question 3: In which sectors is the chemical industry concentrated?

DG*	Sector category	Enterprises	Employees
	***NACE Code**	**2003**	**2003**
24	**Chemical Industry**	**173**	**27,783**
24.1	Basic chemicals	56	11,152
24.2	Agro chemicals	5	Not published
24.3	Varnishes / Adhesive	29	3,421
24.4	Pharmaceuticals	33	4,819
24.5	Detergents / Cosmetics	17	1,409
24.6	Other chemical prod.	31	6,043
24.7	Man-made fibre	2	Not published
25	**Plastic & Rubber**	**269**	**42,509**
25.1	Rubber	56	13,861
25.2	Plastics	240	28,648
	Total (DG 24 and 25)	**442**	**70,292**

II.3.2 Overview of the Most Important Chemical Sites / Parks and Industrial Parks

II.3.2.1 Overview of Chemical Parks and Industrial Parks in the Region

Question 4: Give an overview of the chemical parks and industrial parks in your region!

Overview of chemical parks and industrial parks in the region

No.	Region Location	Name of the park	size (ha)
1	Brunsbüttel (Schleswig-Holstein)	ChemCoast-Park Brunsbüttel	2,000
2	Wilhelmshaven	CostSite Wilhelmshaven GmbH	1,000
3	Stade	Dow ChemCoast-Standort Stade	900
4	Bomlitz/Walsrode	Industriepark Walsrode IPW	120
5	Nienburg	Industriepark Nienburg IPN	20

The chemical network ChemCoast e. V., organised as registered association, combines the chemical parks in Bomlitz/Walsrode, Brundbüttel, Seelze, Stade, and Wilhelmshave, providing more than 2,500 ha of industrial area altogether.

II.3.2.2 Description of the Most Important Chemical Sites / Parks and Industrial Parks

II.3.2.2.1 ChemCoast e.V.

Question 5: What are the main characteristics of the most important chemical parks in the region?

Main characteristics of the ChemCoast Initiative

No.		Answer
1	Name of the organisation	ChemCoast e. V.
2	Tasks	Coordination and Marketing
3	Address	Güntherstraße 130519 Hanover
4	Contact Partner (Function)	Birgit Schneider, Managing Director
5	Phone	+49 511 984 90-17
6	Web page Email	www.chemcoast.de schneider@lv-nord.vci.de
7 7.1 7.2 7.3 7.4 7.5	Capacity and investments Total Area (ha) Free Area (ha) Employees Number of members Investments (Mio. €)	 2,500 9,600 10 Since foundation total: ca. 900
8.	Raw materials, primary products, specialisation	e.g. petrochemicals, chlorine products, cellulosics, films, special materials, PVC, polyurethane
9.	Research entities on the location	Research institutions are located in the parks in Seelze and Bomlitz
10.	List of biggest enterprises	See following table

The chemical network ChemCoast e. V., organised as registered association, combines the chemical parks in Bomlitz/Walsrode, Brundbüttel, Seelze, Stade, and Wilhelmshave, providing more than 2,500 ha of industrial area altogether. ChemCoast is acting as a coordinator and is developing joint marketing strategies for the chemical region of Northern Germany.

List of the ChemCoast Members

Name	Main areas of activity
Dow Deutschland Anlagengesellschaft mbH, Stade	Chlor, Natronlauge HCl, Propylenoxid, Propylenglykol, Glycerin, Epichlorhydrin, Allychlorid, Epoxidharz, Polycarbonat, Perchlorethylen, Trichlorethylen, Chloriertes Polyethyeln, Ethylendichlorid, Propylengycolether, Methylchlorid, Methylenchlorid, Chloroform, Methylcellulose, Methylldephenyldiisozyanat, Ionenaustauscherharze
ChemCoast-Park Brunsbüttel	Isocyanates, Polyurethanes, rubber chemicals, insecticides, fatty alcohols, derivates, high-purity alumina, textile dyestuffs, bitumen and bunker products, fertilisers, plant-based methyl esters, mineral oil products
Coast Site Wilhelmshaven GmbH, Wilhemshaven	Regional marketing
Honeywell Specialty Chemicals, Seelze	Inorganic fine chemicals, process chemicals, electronic chemicals, high performance materials, high purity acids, fluorescent pigments
INEOS Chlor Atlantik GmbH INEOS Vinyls GmbH, Wilhelmshaven	Chloralkali, chlorine derivatives; Ethylendichlorid, Polyvinylchlorid (PVC), PVC-Hartfolien, PVC-Compounds
Industriepark Walsrode	Cellulose chemistry, breathable polyurethane films, food packaging, BOPP films, agricultural spraying systems, pharmaceutical and life sciences
IPA Investment Promotion Agency Lower Saxony	Marketing and economical development in Lower Saxony
Sasol Germany GmbH, Site Brunsbüttel	Fatty alcohols and derivates, high-purity alumina
VCI Nord Association of the Chemical Industry of Northern Germany	Representing the interests of the Northern German chemical industry in public and policy
WTSH Wirtschaftsförderung und Technologietransfer Schleswig-Holstein GmbH	Marketing and economical development in Schleswig-Holstein

II.3.2.2.2 ChemCoast Brunsbüttel

Question 5: What are the main characteristics of the most important chemical parks in the region?

No.		Answer
1	Name of the chemical site/park	ChemCoast Park Brunsbüttel
2	Park Operator	egeb Entwicklungsgesellschaft Brunsbüttel mbH
3	Address	Elbehafen 25541 Brunsbüttel
4	Contact Partner (Function)	Jens Wrede, Project Manager
5	Phone	+49 4852 83 84-19
6	Web page Email	www.chemcoast.de wrede@egeb.de
7 7.1 7.2 7.3 7.4 7.5	Capacity and investments Total Area (ha) Free Area (ha) Employees Number of Enterprises Investments (Mio. €)	 2,000 501 4,000 17 5,800 (since foundation in 1973 to 2004)
8.	Raw materials, primary products, specialisation	Organic chemistry, oil, fertilysers
9.	Research entities on the location	
10.	List of biggest enterprises	See following table

List of important enterprises in the chemical park

Enterprise	Main business fields or products
Bayer Material Science	Isocyanates, Polyurethanes
Sasol Germany	Fatty alcohols and derivates, high-purity alumina
Dystar	Textile dyestuffs
Total	Bitumen and bunker products
Yara	Fertilisers (ammonia, urea, technical gases
Shell Deutschland Oil	Refinery for mineral oil products
Port of Brunsbüttel	Port logistics
Vattenfall	Electric power
EOn	Energy production
RWE-Dea	Production and processing of crude oil
Marina Biodiesel	Plant-based methyl esters
Lanxess	Rubber chemicals, insecticides
SAVA	Hazardous waste disposal services
Spedition F.A. Kruse	International haulage and warehousing

II.3.2.2.3 Industriepark Nienburg IPN

Question 5: What are the main characteristics of the most important chemical parks in the region?

No.		Answer
1	Name of the chemical park	Industriepark Nienburg IPN
2	Park Operator	Industriepark Nienburg GmbH
3	Address	Große Drakenburger Str. 93-97 31582 Nienburg
4	Contact Partner (Function)	Jürgen Wnuck, Managing Director
5	Phone Fax	+49 5021 988-172 +49 5021 988-380
6	Web page Email	www.industriepark-nienburg.de juergen.wnuck@flexys.com
7 7.1 7.2 7.3 7.4 7.5	Capacity and investments Total Area (ha) Free Area (ha) Employees Number of Enterprises Investments (Mio. €)	 20 5 400 4 (Producers); 5 (Services)
8.	Raw materials, primary products, specialisation	Sulphuric acid, santicizer oil, sodium silicate, aluminium hydrate
9.	Research entities on the location	No
10.	List of biggest enterprises	See following table

List of important enterprises in the chemical park

Enterprise	Main business fields or products
Flexys Verkauf GmbH	Insolvable sulphur
Engelhard Process Chemicals GmbH	Catalytic converter
Chr. Hansen GmbH	Enzymes for the nourishment industry
FERALCO Deutschland GmbH	Aluminium sulphate

II.3.2.2.4 Industrial Park Walsrode IPW

Question 5: What are the main characteristics of the most important chemical parks in the region?

No.		Answer
1	Name of the chemical park	Industriepark Walsrode IPW
2	Park Operator	Industriepark Walsrode IPW
3	Address	August-Wolff-Str. 13 29699 Bomlitz-Walsrode
4	Contact Partner (Function)	Alf Wilkens, Site Manager
5	Phone Fax	+49 5161 44-2157 +49 5161 44-2653
6	Web page Email	www.industriepark-walsrode.de alf.wilkens.aw1@wolff-walsrode.de
7 7.1 7.2 7.3 7.4 7.5	Capacity and investments Total Area (ha) Free Area (ha) Employees Number of Enterprises Investments (Mio. €)	 120 20 2,500 23 Since foundation total: approx.100 year 2004: approx. 30
8.	Raw materials, primary products, specialisation	Cellulosics, acid, leach, solvent, films, based on PE, PP, PA Output: high-quality films for packing, medical and technical applications; thermoplastic elastomer films; Cellulose derivates; casings
9.	Research entities on the location	R&D for cellulose chemistry, films packaging industry, PE,PP,PA
10.	List of biggest enterprises	See following table

List of important enterprises in the chemical park

Enterprise	Main business fields or products
Wolff Cellulosics	Cellulose chemistry
WIPAK Walsrode	Food packaging
Wipak Walothen	BOPP films
Epurex films	Breathable, polyurethane films
Probis	Technical services
Atos Origin	IT services
CaseTech	casings
Teejet	Agricultural spraying systems
ASM Rearch Chemicals	Pharmaceutical and life sciences

II.3.3 Organisation, Management and Competencies of the Chemical Parks

II.3.3.1 Organisation Forms of the Chemical Parks

Question 6: Which organisation type exists in the chemical park?

Question 7: What are the characteristics of the location?

Location of the chemical / industrial park	ChemCoast	Brunsbüttel	Nienburg	Walsrode
6. Organisation type park operator[55]	Coordinator	Multi-User	Major-User	Multi-User
7. Structure of the location[56]	Mixed type	Major open type	Major open type	Closed type

II.3.3.2 Short Description of Performances of the Chemical Parks

Question 8: Which competencies does the chemical park management have? Which services are offered?

Services offered at the Industrial Park Walsrode IPW

Module	Short description of services
Safety & Security Technology	site security, fire service
Environment Protection & Site Clearance	served by a specialised company for technical services (Probis)
Infrastructure & Facility Management	supply of energies (gas, electricity, steam) waste disposal and recycling full service asset management works railway operator
Site Development & Marketing	site development, site marketing
Raw Materials Network	Combined procurement of raw materials and technical goods
IT Information Technologies	Delivered by external company by contract
Human Ressources Development	Delivered by contract
Social Policy & Care	Responsible Care, works council, medical services

[55] Possible organization types: a) independent park operator b) Major User c) Multi User d) others
[56] Possible park structures: a) open b) closed c) mixed type

II.3.3.3 Most Important Tasks of the Park Operator

Question 9: What are the most important tasks of the park operator and what are future perspectives of the chemical park management?

The most important tasks, performed by the park operator are the following:

- Optimise services,
- Optimise cooperation between chemical park partners,
- Integration of new companies in existing forward and backward value chain,
- Political lobbying.

The chemical park operator should aim at achieving an increase in investment both by existing and new companies, and minimising costs of infrastructure. Additionally, the most appropriate competencies to reach these objectives are to flexible react to customer needs and to ensure quality of provided services.

II.3.4 Cooperation and Connections between the Locations

II.3.4.1 Evaluation of cooperation within and between the Chemical Parks

Question 10: What kinds of cooperation inside and between the chemical parks exist in the region or are planned? How would you assess these cooperation?

Evaluation done by ChemCoast Brunsbüttel

Field of cooperation	Existing	Planned	Assessment				
			++	+	0	-	--
Raw material network / feedstock cooperation	X		X				
Product network	X		X				
Procurement cooperation	X			X			
Marketing cooperation	X		X				
Joint investor attraction	X				X		
Location network	X			X			
Financial cooperation							X
Development of human resources	X				X		
Logistic cooperation	X		X				
Others							

Evaluation done by Industriepark Nienburg

Field of cooperation	Existing	Planned	Assessment				
			++	+	0	-	--
Raw material network / feedstock cooperation	X				X		
Product network							
Procurement cooperation							
Marketing cooperation							
Joint investor attraction							
Location network							
Financial cooperation							
Development of human resources	X				X		
Logistic cooperation							
Others: Engery and steam	X		X				
Maintenance	X		X				
Environmental activities like purification plant	X		X				

Evaluation done by Industrial Park Walsrode

Field of cooperation	Existing	Planned	Assessment				
			++	+	0	-	--
Raw material network / feedstock cooperation	X				X		
Product network							
Procurement cooperation	X			X			
Marketing cooperation	X			X			
Joint investor attraction	X			X			
Location network	X		X				
Financial cooperation							
Development of human resources	X			X			
Logistic cooperation	X		X				
Others							

Question 10: What kinds of cooperation inside and between the chemical parks exist in the region or are planned? How would you assess these cooperation?

Evaluation done by ChemCoast

Field of cooperation	Existing	Planned	Assessment				
			++	+	0	-	--
Raw material network / feedstock cooperation		X	X				
Product network							
Procurement cooperation*							
Marketing cooperation	X		X				
Joint investor attraction		X	X				
Location network	X				X		
Financial cooperation							
Development of human resources	X				X		
Logistic cooperation		X		X			
Others: Port logistic	X		X				

* Not on the level of ChemCoast but possibly at the individual locations

II.3.4.2 Best Practice Solutions for Cooperation

Question 11: What are best practice solutions for cooperation? Describe perspectives for future developments!

ChemCoast is a cross-state initiative to strengthen economical development and competitiveness of the Northern German chemical locations. It is supported by the governments of Schleswig-Holstein and Lower Saxony. The idea to initiate ChemCoast arose at the end of 1999.

ChemCoast includes the locations Brunsbüttel (Schleswig-Holstein), Bomlitz/Walsrode, Seelze, Stade and Wilhelmshaven in Lower Saxony. Some of the main tasks are to connect the Northern German petrochemical locations to existing raw material networks, to develop a joint marketing strategy, to increase the public's level of awareness about Northern Germany as a chemical region and to improve cooperation inside the region and abroad.

Meanwhile there is a first connection to an existing raw material network by the Dow Pipeline from Stade to Böhlen. A Sasol ethylene pipeline from Brunsbüttel to Stade is under construction and will be finished at the end of 2006. In Stade, the harbour facilities have been expanded to one of the largest ethylene transhipment ports in Europe. Additionally, the British INEOS group is planning to invest more than a billion EUR for the development of the chemical location in Wilhelmshaven. This investment includes the completion of a pipeline connection from Wilhelmshaven to Marl in North Rhine Westphalia as well.

On 8 March 2005, ChemCoast e. V. was established, consisted of 10 founding members. The main task of the "new" association will be to develope and realize a common systematic marketing strategy in the future. At present, first results of success are to be stated already. So, an increasing level of public awareness and an improved cooperation between the locations can be reached.

With its modern seaports, a well developed and modern logistic and the almost perfect strategic position in the middle of new and old Europe, the ChemCoast-Region is offered good opportunities to make its mark in international competition and prove itself as an interesting location for potential investors.

II.3.4.3 Presentation of Existing Material Flows

Question 12: Give an overview of the existing material flows!

Ethylene Pipeline from Stade to Böhlen; Ethylene Pipeline from Brunsbüttel to Stade is under construction and will be finished in the end of 2006; Ethylene Pipeline from Wilhelmshaven to Marl/Gelsenkirchen is planned.

II.3.5 Importance of the Chemical Parks for the Regional Development

II.3.5.1 Relevance of the Chemical Parks for the Regional Development

Question 13: How important are the chemical parks for the region?

Most important features concerning the importance of chemical parks for the regions are to be seen in the follwing facts:

- biggest taxpayer,
- biggest employer,
- centre of industrial know how,
- social and cultural benefits.

II.3.5.2 Integration of Chemical Parks in the Regional Innovation Landscape

Question 14: How are the chemical parks integrated in the regional innovation environment? Which contacts are established between industry and science/research? What are the innovation potentials of the location? Which innovation activities are planned in the future?

Usually, SMEs do only have rather good contacts to universities of Applied Sciences (“Fachhochschule”) in their region, whereas their contacts to big universities or other national scientific and research institutions are pretty loose. ChemCoast/VCI is planning to improve the cooperation between chemical industry and universities by developing the new project, called “ChemieContact – ideas look for partners”. The first step has been done in having completed a synopsis of special fields, chemical research is done in at Northern German universities. The next steps will be to introduce the results to the members of ChemCoast. In the following, they are supported in contacting those university teachers whose scientific work could match their product specification. Long term, ChemCoast/VCI North intends to create a platform allowing university teachers as well as representatives of chemical enterprises/parks to improve the cooperation between each other and to exchange experiences.

II.3.5.3 Relevance of Chemical Parks for Human Resources

Question 15: How relevant are chemical parks for the development of human resources? (e.g. public acceptance, training, qualification)

The Industrial Park Walsorde hosts the biggest service company for vocational training in the area. The chemical industry secures are large part of vocational trainings within the whole region. Young people are qualified in 12 different professions. Additionally, the service company serves as important partner for several other companies in the field of “on- and off-the-job trainings”.

II.3.5.4 Importance of the Chemical Locations for the Development of SME

Question 16: Which role do chemical locations have for the development of SMEs? (e.g. outsourcing, industrial services, spin off and start-ups)

The chemical parks are playing an important role facilitating the development of regional SMEs. For example, the Industrial Park Walsrode stated that the park has concluded several contracts with regional SMEs, mainly providing technical services and maintenance. All activities, not within the core business of the chemical park, have been outsourced. They are served by regional companies now, generating turnover.

In addition to outsourcing activities, chemical parks are supporting the development of SMEs by providing an excellent business environment to several spin-offs and start-ups, located on the locations.

II.3.5.5 Integration of Chemical Locations in Economic Initiatives or Networks

Question 17: How are the chemical locations integrated in regional economic initiatives of networks for the promotion of the chemical cluster in your region?

The Northern German chemical locations in Bomlitz/Walsrode, Seelze, Stade, and Wilhelmshaven in Lower Saxony as well as in Brunsbüttel in Schleswig-Holstein are integrated in the ChemCoast-Project. In Schleswig-Holstein, regional authorities are beginning to promote the development of a chemical cluster at the West Coast (Brunsbüttel). In Lower Saxony, first cluster structures are developing in Wilhelmshaven/Stade (petrochemical industry) and in the Harz-Region (inorganic chemical industry and metal compounds). Both of them are supported by regional politic and are integrated in corresponding initiatives.

The members of ChemCoast e. V. – Dow, Honeywell, INEOS, Sasol and Wolff are also members of the Association of Chemical Industry VCI, representing the regional chemical industry on national and international level.

The Industrial Park Walsrode is a member of ChemCoast e. V. as well, cooperating mainly concerning marketing objectives with other Northern German chemical sites and locations. It is also a member of the VCI.

II.3.6 Perspectives and Basic Conditions for Chemical Parks

II.3.6.1 Success Factors for the Efficiency of Chemical Parks

Question 18: What are the success factors for the performance of chemical parks? ***Answer given by ChemCoast***

Success Factors	Assessment				
	++	+	0	-	- -
Attraction of new investors	X				
New business ideas	X				
Innovation development	X				
Low prices / costs		X			
Scope and quality of services		X			
Facility leasing			X		
Outsourcing			X		
Networks and partnerships		X			
Settlement of external research infrastructure on the location			X		
Joint marketing activities	X				
Location / chemical site network		X			
International cooperation and exchange of experiences			X		
Logistics		X			
State aid		X			

Question 18: What are the success factors for the performance of chemical parks?

Answer given by Industrial Park Walsrode

Success Factors	Assessment				
	++	+	0	-	- -
Attraction of new investors	X				
New business ideas		X			
Innovation development		X			
Low prices / costs		X			
Scope and quality of services	X				
Facility leasing			X		
Outsourcing			X		
Networks and partnerships		X			
Settlement of external research infrastructure on the location			X		
Joint marketing activities			X		
Location / chemical site network			X		
International cooperation and exchange of experiences		X			
State aid		X			

II.3.6.2 Development Needs for Chemical Parks

Question 19: What are the most important development needs for the future of chemical parks?

The most important needs for chemical park to develop favourably in the future can be summarised as follows:

- Political support
- Joint marketing strategy and activities
- Innovation
- New business ideas
- Cost reduction
- Excellent technical facilities
- Well qualified employees
- Good infrastructure
- Further investments.

II.3.6.3 Needs for Improvement of Competitiveness of Chemical Parks

Question 20: Which actions are needed to further improve the competitiveness of the chemical parks?

It depends on the individual strength of every chemical park which acivities have to be implemented to further improve the competitiveness. The majority of chemical parks are competitive concerning major success factors. Some improvement needs are to communicate the skills and advantages of the sites, to develop and present a clear profile and the Unique Selling Point.

II.3.6.4 Conclusions for the Positions of the Chemical Locations in Relation to National Governments and the EU

Question 21: Which conclusions can be drawn for the development of joint positions of chemical locations towards the national government and the European Union?

The chemical parks should jointly emphasise the following requirements and lobby them within the political decision making process:

- Reduction of regulations,
- A feasible REACH, also bearable by SMEs,
- Political support in solving challenges,
- Reasonable and competitive costs for energy,
- Competitive business environment,
- Good conditions for research and development,
- State aid for the construction of infrastructure like motorways, railways and raw material pipelines,
- Improvement of logistics,
- Speed up authorisation processes,

- Reliable legislation,
- Stable energy policy,
- Fair rules for public financial support.

II.4 Limburg

II.4.1 Short Description of ECRN Region

II.4.1.1 Development of the Chemical Industry

Question 1: How has been the development of the chemical industry in your region?

Limburg is a Dutch Province and an European Region. Being the hub, situated between the main ports of Europe, Limburg is located between Amsterdam / Schiphol to the north, Rotterdam / Antwerp to the west, and the German Ruhr and Central European hinterland to the east.

The region is very diverse in terms of landscape, culture, environment, business and industry. A broad mixture of SMEs and bigger companies are making use of the extensive infrastructure and regional knowledge centres.

In Limburg, basic petrochemical industry, fine chemical industry have clustered, including R&D institutions, chemistry related industries, suppliers and end-users (like automotive) of chemical products. Historically, the development of the regional chemical industry is strongly related to the history of DSM (the Dutch State Mines), the present Chemelot-site. Within a century, DSM evolved from coalmining company to chemical specialty companies. The table below states the development of DSM chronologically:

Products	Technology	Starting Year
Coal	Mechanical engineering	1902 →
Fertilizers	Chemical engineering	1930 →
Petro-Chemicals	Monomer / Polymer technology	1950 →
Performance materials	Material science Medical materials Coatings	1970 →
Life science products	Fine chemicals Pharmacy Neutraceuticals Veterinary science	1990 →
Biomaterials Biologics	Agribusiness Bio-technology Biomaterials	2005 →

The Dutch government established the nationalized coalmining company 'De Nederlandse Staatsmijnen' in 1902. Later it was called DSM. As the mining operation grew so did the company's coal-processing operation, giving rise to a growing by-product, coke oven gas. This was turned into a profitable commodity, ammonia, and an ingredient in nitrogenous fertilizers.

In the post-war era, chemical products became more prominent. DSM reacted to use the opportunity. The production was extended, providing industrial chemicals and raw materials for synthetic fibres and yarns. DSM started its polyolefin activities in the

early 1950s. Only some years later, these activities developed into DSM's core business, based in Geleen (Netherlands).

It was not long after this that worldwide use of coal began to decline. Oil and natural gas were much more profitable and coal turned out to be more polluting. DSM responded by changing its focus. By 1970 the production of chemicals and fertilizers became the company's main business, accounting for two-third of DSM's total turnover. In the 1970s and 1980s, the profits, generated by the production of raw materials for plastics, increased. In 1985 DSM started a number of innovation projects resulting in specialties such as the polyethylene fiber "Dyneema".

In 1989 DSM was privatized and went public. During the 1990s the company focused on products for the pharmaceutical and food industries, performance materials for the automotive, transport and electronics industry.

Within only a few years, DSM has changed its core business from "petrochemicals" to life science and nutritional products like vitamins, coatings and resins. In 2002 DSM completed the sale of its petrochemicals operation to SABIC.

The site is owned by Chemelot B.V., a 100 % DSM subsidiary. The DSM production site, Chemelot, can be positioned in a triangle:

- A bigger economic triangle with Germany (Hamburg/ Hanover and North Rhine-Westphalia) in the east and Rotterdam (Netherlands) and Antwerp (Belgium) in the west.
- A smaller knowledge triangle with Aachen University (Germany) in the east, the universities of Leuven/Hasselt Liège (Belgium) in the west, Eindhoven (Netherlands) in the north, and Maastricht University and Academic Hospital in the centre.[57]

[57] Source: www.erischemieinlimburg.nl

II.4.1.2 Indicators of the Chemical Industry

Question 2: Describe the development with the help of indicators!

General indicators of the chemical industry in the region Limburg[58]

Indicator	1995	2000	2003
Turnover (Mio. €)			1,300
Number of chemical companies	175	195	210
Number of employees direct indirect		15,200 7,800 7,600	14,870
R&D employees (total R&D in Limburg region) in enterprises in universities in research insitutitons Chemical R&D employees (estimate)	4,222 4,119 103 1,500	6,217 4,585 1,543 89	5,964 4,185 1,606 173 1,100
Exports (% of total turnover)			70%
Share of chemical industry on processing industry (%)			
Number of chemical parks / industrial parks with chemistry focus	1	1	1

[58] Source: BCI, CBS, E'til 2003

Question 3: In which sectors is the chemical industry concentrated?

DG*	Sector category	Enterprises[59]	Employees
	**NACE Code*	April 2004	April 2004
24	**Chemical Industry**	**86**	**13,400**
24.1	Basic chemicals	43	11,500
24.2	Agro chemicals	3	7
24.3	Varnishes / Adhesive	2	50
24.4	Pharmaceuticals	10	450
24.5	Detergents / Cosmetics	12	250
24.6	Other chemical prod.	15	400
24.7	Man-made fibre	5	750
25	**Plastic & Rubber**	**105**	**1,550**
25.1	Rubber	11	350
25.2	Plastics	95	1,200
	Total (DG 24 and 25)	**191**	**14,950**

[59] Source: E'til, The Province of Limburg 2003; CBS 2004 code 24: 92 / 10,457, code 25: 119 / 4,378

II.4.2 Overview of the Most Important Chemical Sites / Parks and Industrial Parks

II.4.2.1 Overview of Chemical Parks and Industrial Parks in the Region

Question 4: Give an overview of the chemical parks and industrial parks in your region.

There is only one chemical park in Limburg, e.g. Chemelot in Geleen, which sizes almost 850 ha. The most important chemical companies in the region are listed below:

Name[60]	Location
Akzo Nobel Functional Chemicals B.V.	Herkenbosch
Akzo Nobel Ink & Adhesive Resins B.V.	Maastricht
Alko Research Int. BV	Roggel
Basic Pharma Holding B.V.	Roermond
Biomaterials,	Maastricht university
BRB B.V.	Ittervoort
Bredox B.V.	Weert
Carbolim BV	Chemelot site Geleen
Celanese Emulsions B.V.	Beek
Chemelot B.V., Utility Support Group (+ EdeA)	Chemelot site Geleen
Chemshop B.V.	Weert
Chemson B.V.	Roermond
Ciba Specialty Chemicals B.V.	Maastricht
Cilian AG	Munstergeleen
CPS Color B.V.	Sittard
Dalli-Dicom B.V.	Hoensbroek
Dex Plastomers Vof	Heerlen
DSM Holding Dyneema B.V.	Heerlen
DSM Limburg B.V. Agro; Elastomers; Engineering Plastics; Fiber Intermediates; Fine chemicals; Human Resources Services; Pharmaceuticals; Melamine; Venturing & Business Development	Chemelot site Geleen
Manufacturing Center Research B.V. Solutions b.v. (Kenniswinkel)	Chemelot site Geleen Campus / Chemelot site Geleen
DSM Pharma Chemicals B.V.	Venlo

[60] Source: www.erischemieinlimburg.nl

Name[61]	Location
Enci	Maastricht
Frencken Fabrieken BV	Weert
Helichem	Belfeld
Honeywell Fluorine Products Europe B.V.	Weert
Ineos Silicas Netherlands BV	Eijsden
Johnson Matthey B.V.	Maastricht
Limburgse Urethaan Chemie B.V.	Brunssum
LVM: Limburgse Vinyl Maatschappij N.V.	Geleen
Maastricht Instruments	Maastricht university
Moxba Metrex BV	Heerlen
Nuon Power Buggenum BV	Haelen
Oculus Innovative Sciences Netherlands B.V.	Sittard
Penn Color International B.V.	Venray
Peter Greven Nederland CV	Venlo
PQ Europe	Maastricht
Romar-Voss	Roggel
Rubber Resources BV	Maastricht
Sabic Europe B.V.	Sittard
Scotts International B.V.	Heerlen
Sekisui S-Lec BV	Roermond
Solvay Chemie B.V.	Herten
Terreco	Geleen
Trespa International B.V.	Weert
Umicore Nederland B.V.	Eijsden

[61] Source: www.erischemieinlimburg.nl

II.4.2.2 Description of the Important Chemical Sites / Parks and Industrial Parks

II.4.2.2.1 Chemelot

Question 5: What are the main characteristics of the most important chemical parks in the region?

No.		Answer
1	Name of the chemical park	Chemelot
2	Park Operator	Chemelot B.V.
3	Address	Mijnweg 2 Postbus 500, 6160 MJ Geleen
4	Contact Partner (Function)	G. Wagemans
5	Phone Fax	+31 / 46 476 62 40 + 31 / 46 476 96 06
6	Web page	www.chemelot.com
7 7.1 7.2 7.3 7.4 7.5	Capacity and investments Total Area (ha) Free Area (ha) Employees Number of Enterprises Investments (Mio. €)	 800 98 7,000 (5,000 direct; 2,000 indirect) 25 (55 plants) 5,000 since foundation
8.	Raw materials, primary products, specialisation	Gasoline; Naphtha; Ethylene; Gases (natural); Phenol, Propylen, Amonia
9.	Research entities on the location	R&D Campus DSM-research SABIC Research 4 other (smaller) entities
10.	List of biggest enterprises	See following table

List of important enterprises in the chemical park Chemelot[62]

Enterprise	Business fields or products
DSM	Production of: Fine chemicals, EPDM-rubbers, Nylon 4.6, Acrylonitril (ACN), Ammonia, sulfuric- and nitric ammonia, Caprolactam, cyclohexanon, Calcium ammonium nitrate fertilizer, Nitric acid, Sulfuric acid, Melamine, Polyethylene (Ultra High Molecular Weight UHPE), Ureum Research & Development
SABIC Europe Petrochemicals	Production of: Hydrocarbons, Polyethylene (hdPE / ldPE), Polypropylene (PP), Piping transport Naphthaen Hydrocarbons Research
LVM	Production of: Polyvinylchloride (PVC)
DEX-PLASTOMERS	Production of: Plastomers, Polyethylene (LldPE)
Holland Sweetener Company	Production of: Sweeteners / Aspartames
Sekisui	Polyvinyl butyral (PVB)-resin (under construction)
Celanese	Production of: Resins
CeDo recycling	Recycling of Polymers
Carbo Lim	Carbon Dioxid
Chemelot	Delivery of: General and technical support services, Consultancy
EdeA	Production and delivery of: Electricity, Steam, Water (several qualities), Supplier of Air and Gases

[62] Source: Chemelot 2005.

II.4.3 Organization, Management and Competencies of Chemical Parks

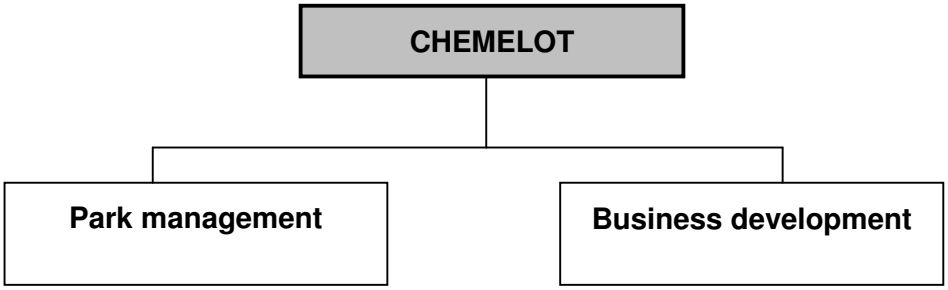
II.4.3.1 Organisation Forms of Chemical Parks

Question 6: Which organisation type exists in the chemical park?

Question 7: What are the characteristics of the location?

Location of the chemical / industrial park	Chemelot
6. Organisation type / park operator[63]	Multi-User, independent park operator
7. Structure of the location[64]	Open type

Present organization of the Chemelot site:



Chemelot BV, the park operator and developer, is a small, but focused company (max 30 fte). Chemelot BV is owned by DSM B.V. (100 %). It owns the land and infrastructure, and provides offers land lease and site contracts to the site users. Furthermore, Chemelot is providing several support services to all site users.

The goals of Chemelot are to:

- Acquire new investors / site users (business development),
- Develop and operate an attractive site for the located companies by development of value chains.

The Chemelot site is developed as fertile breeding ground for innovation by:

1. Clustering chemical plants in value chain concept
2. Optimal use of the area in relation with its environment
3. Developing an open high chem research & business campus
4. Venture capital stimulating new enterprises.

Ingredients are: reconstruction, sustainability, park management, utilities, multi-modal transport facility (pipelines, roads, railways, ships).

[63] Possible organization types: a) independent park operator b) Major User c) Multi User d) others
[64] Possible park structures: a) open b) closed c) mixed type

To cope future challenges, the following competencies have to be developed and provided on Chemelot Park:

- Chemical engineering,
- Advanced (bio) organic synthesis, catalysis and process-development,
- Analytical capabilities (innovative climate, bridging innovation and markets),
- High-end services: modern buildings, labs and enterprises.

II.4.3.2 Short Description of Performances of the Chemical Park

Question 8: Which competencies does the chemical park management have? Which services are offered?

Available services, provided in collaboration of the park operator (Chemelot), site companies and service providers:

Services offered at Chemelot

Module	Short description of services	Offered by
Safety & Security Technology	24/7 site safety & security of area, buildings, process, people, traffic	Chemelot
Environment Protection & Site Clearance	Quality, Environment, Safety & Health Services Site permit Environmental expertise Fire Brigade Services Plant Inspection Soil Remediation Solid and Liquid Waste Services Wastewater Treatment	Chemelot (QESH) Service Providers
Infrastructure & Facility Management	Contribution to common infrastructure Housing Buildings, roads, railways (Rail Services) Facility management & services Cleaning services Taxi services en transport (people)	Chemelot Service Providers
Site Development & Marketing	Permitting process Business development & consultancy Integrated/coordinated proposals (one stop shop) Land Lease Site Services	Chemelot
Raw Materials Network	Pipe Racks Services (MMC of OBL Pipelines) Naphtha, ethylene, propylene Natural gas Ammonia Sulfuric and nitric-acid Several utilities	Chemelot and Site users

Services offered at Chemelot

Module	Short description of services	Offered by
IT Information Technologies	Center of IT Solutions (CITS) Telephony and Trunking Data management Document services: production, print- copy- and scan	Service Providers
Human Ressources Development	HRM center for employment, legislation, training, instruction and coaching Whole care and Health services Training facility Workforce pooling (DSM-HRM)	R&D campus and Service Providers
Competence Development & Knowledge Management	**Research campus** (Know how brokerage) Materials Technology Biotechnology Biomedical materials Petro & Organic chemicals Polymer chemistry	R&D campus
Financing & Support	Finance & control offers (consultancy) Venture capital available!	Chemelot DSM, LIOF
Association & Chemical Sector	Laboratory Services	Provider
Social Policy & Care	Catering and Business Restaurant	Chemelot, Service Providers
Other	Management assistance Purchasing	Chemelot

II.4.3.3 Most Important Tasks of the Park Operator

Question 9: What are the most important tasks of the park operator? What are the future perspectives of the chemical park management?

The most important task of the park operator is to provide a full range services, meeting the needs of all site users, including:

- Acquisition & attract investors (Chemelot and site users)
- Energy, air, gas, water, steam supply services (Edea)
- Environment, Health & Safety Services (Chemelot) (obliged)
- Facility Services (Chemelot)
- Fire Brigade Services (Chemelot) (obliged)
- Housing Services (Chemelot)
- Laboratory Services (Provider)
- Pipe Racks Services (Chemelot) (obliged)
- Rail Services (Raillion)
- Site Security Services (Chemelot) (obliged)
- Soil Remediation Services (Chemelot)
- Solid & Liquid Waste Services (Chemelot and service provider)
- Telephony and Trunking Services (service provider)
- Wastewater Treatment (Chemelot)

The future perspective of the chemical park management:

Regarding future perspective, the chemical park management will remain the services and fulfil its tasks as described. However, the operational tasks are going to be outsourced by the foundation of an operating park management company. It will manage the assets of Chemelot and directly (non obliged) provide services to the site users. This implicates a more independent position for the provider and prevents conflict of interests between Chemelot (100 % DSM subsidiary) and non-DSM related users.

II.4.4 Cooperation and Connections between the Locations

II.4.4.1 Evaluation of Cooperation within and between the Chemical Parks

Question 10: What kinds of cooperation inside and between the chemical parks exist in the region or are planned? How would you assess these cooperation?

The fields of cooperation, listed below, are specific for the Chemelot site[65]:

Field of cooperation	Existing	Planned	Assessment[66]				
			++	+	0	-	--
Raw material network / feedstock cooperation	X	X (extension)	X				
Product network	X		X				
Procurement cooperation							
Marketing Cooperation / location marketing							
Joint investor attraction (permitting)	X						
Location network	X						
Financial cooperation							
Development of human resources							
Logistic cooperation							
Others: R&D campus	X		X				

[65] DHV interviews with Chemelot employees, 2005.
[66] Evaluation of the present condition

As there is only one major chemical park in the Limburg Region, Chemelot in Geleen, there is no interaction with other parks in the region. Neither is there any, or very little, cooperation with other major Chemical parks abroad.

However, there is some interaction and cooperation between the Chemelot park and individual chemical companies elsewhere in the Limburg Region. These companies are somehow related to the supply chain of the larger companies on the Chemelot park. The cooperation is mainly based in the field of “raw material network” and “research and development”.

On the Chemelot park itself there is no, or very little, cooperation in the field of procurement, marketing, financing, and human resources. The cooperation inside the chemical park is primarily concentrated on the fields of public infrastructure, maintenance and facility management, and the development of the R&D campus and joint investor attraction. There is cooperation in the field of raw material / waste management. (Solid) waste material of one company is used as raw material in another company. (see also overview flow of materials)

There is cooperation in the field of licensing. The Chemelot site is regarded as one entity concerning environmental licensing (e.g. safety, noise and air-emissions). All site users are licensed by just one license to operate. This license is granted to the Chemelot Site Permit b.v. (the site authority in the field of safety and environment). Chemelot Site Permit b.v. coordinates the sub-licenses to the local authorities. Each individual plant still has its own (environmental) sub-license to operate.

II.4.4.2 Best Practice Solutions for Cooperation

Question 11: What are best practice solutions for cooperation? Describe perspectives for future developments!

Local government and private companies work together successfully in accommodating new business developments. In a very densely populated area, it is highly important that local government and private companies work together in the field of spatial planning, especially in terms of environmental issues. This has been successful in terms of accommodating new companies and the development of knowledge-based companies.

Strengths[67]	**Weakness**
▪ Sustainability (Dow-index) ▪ Knowledge area: performance materials, life sciences and industrial chemicals ▪ Universities & research institutes: Maastricht, Eindhoven, Hasselt (B), Aachen (D) with social networks ▪ Infrastructure (MM-terminals) ▪ Clustering (full service network) ▪ Stability of European Market	▪ Oil delivery (EU) ▪ (Over) capacity (petro chemicals) ▪ Competition of chemical regions ▪ Knowledge is split ▪ **Costs**: Labor, energy and logistics (EU)
Opportunities	**Threats**
▪ Co-siting (synergy) ▪ Bio-chemicals ▪ High-tech support (graduates) ▪ Innovation and automation ▪ (E-knowledge) ▪ Integration of supplies chain ▪ Venture Capital	▪ Time to market (REACH act, patent & legislation of new chemicals) ▪ Oil price and return on investment ▪ Currency - exchange risk ($ - €) ▪ Grow-markets (Asia) ▪ Move to low-costs area (footloose)

Cooperation

Recently private companies (primarily located on the Chemelot Park), local government and the Province of Limburg initiated cooperation in the field of a joint strategy for chemical industry in the Limburg Region (this collaboration is called “There is Chemistry in Limburg” in short: “Chemie Cluster”). The cooperation focuses on:

- Developing a research and business campus (R&B campus).
- Upgrading the Chemelot site.
- Acquiring new high-chem companies.

[67] BCI 2004

Best practice

Best practice turns out to be cooperation among private companies, local government, private investors and knowledge-centers / universities. This kind of cooperation focuses on acquiring and accommodating new companies on the Chemelot site by means of licensing, financial support (venture capital), and sharing knowledge.

Research &Business Campus and sharing knowledge

DSM Research supports an open innovation model in order to facilitate growth in the chemical industry for the Limburg region.

A recent example is the bioterials project. For this project, Maastricht University and Maastricht Academic Hospital work together with DSM with the objective to develop biomaterials for clinical application and medical technology. This project is financially supported by the Province of Limburg and the Dutch Government (Ministry of Economic Affairs).

Upgrading industrial site

Local government and DSM support anupgrading of the Chemelot site. For this purpose, a master plan has been made for special planning and infrastructure, and is financially supported by DSM and the local government.

Acquiring high-chem companies

DSM decided on opening up the former closed, one user site, and transforming it to an open multi user site. One of the main goals is to attract new companies to the site, in order to strengthen the chemical industry in the region. This is done by joint efforts of government and private companies.

Long term perspective

The Chemelot site is becoming an open multi user site, which accommodates a variety of companies, which can be divided in two main categories.

Costs driven (base-chemicals):

- Low cost supply of utilities and services (service providers)
- Feedstock connection and supply.

Knowledge-driven (high-chem):

- Developing a valley concept around the research campus
- Cooperation research / innovation on materials technology.

Competencies/activities for the international exchange of experiences

Chemelot has enough space and a beautiful environment. Plants and enterprises are build around its:

- raw materials network (pipelines, infrastructure). This network is a precondition for future investments in the petro-chemical industry (cost driven)
- full range R&D laboratories. This is a precondition for future investments in high-chem companies (knowledge driven).

Chemelot offers a complete range (pool) of skills. Specific competences on Chemelot Park are:

- Chemical engineering,
- Analytical R&D capabilities,
- Process-development, synthesis, catalysis,
- High-end services: buildings, labs and enterprises.

Like other innovative industries, Chemelot is based on (shared) knowledge and cross-selling:

- Knowledge centers are nearby;
- Graduates and qualified workers are available.
- Public acceptance is related to sustainable space and environment. DSM has been rated the world's best-performing chemical company in the Global Dow Jones Sustainability Index.

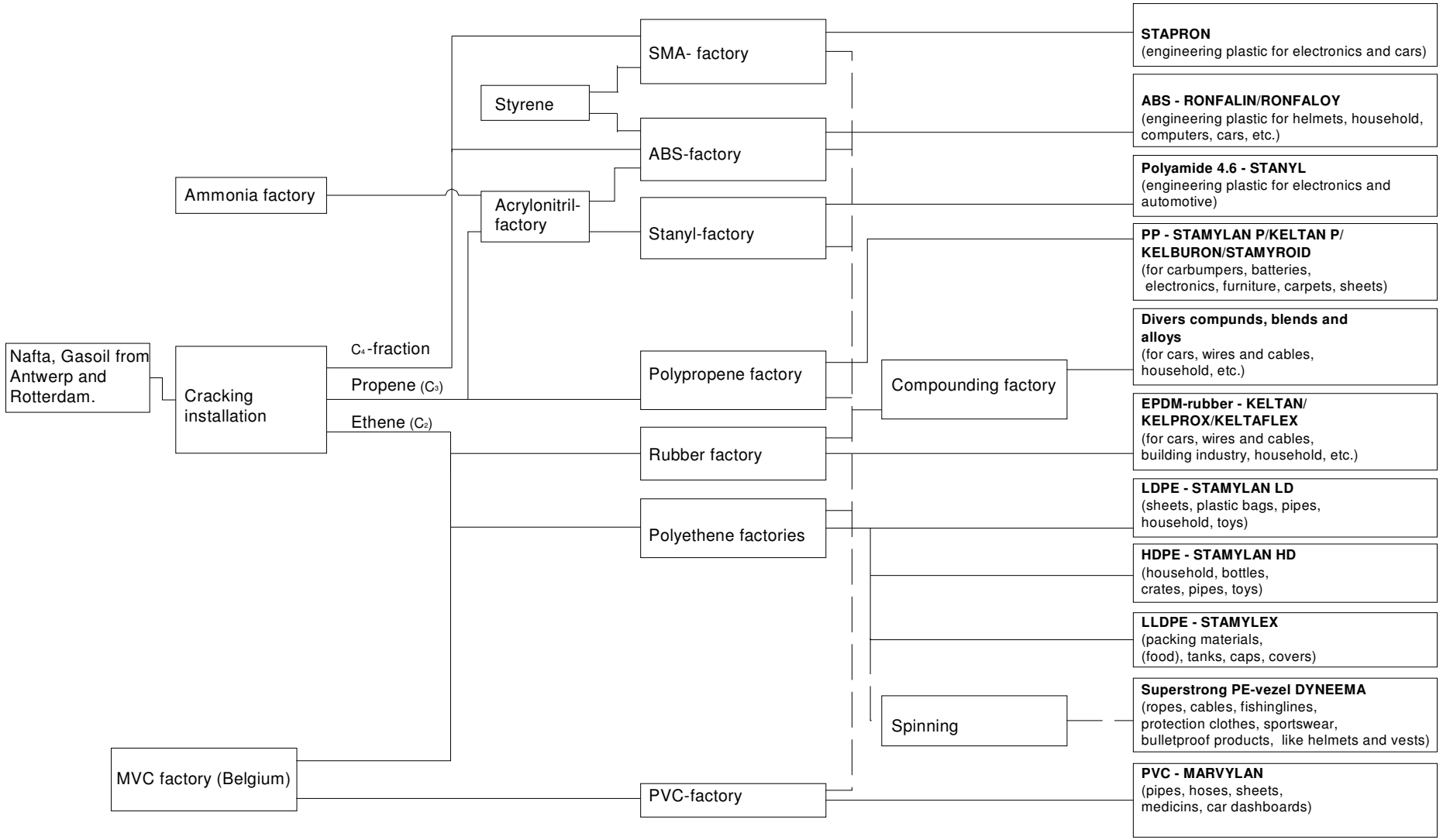
Best practice solutions

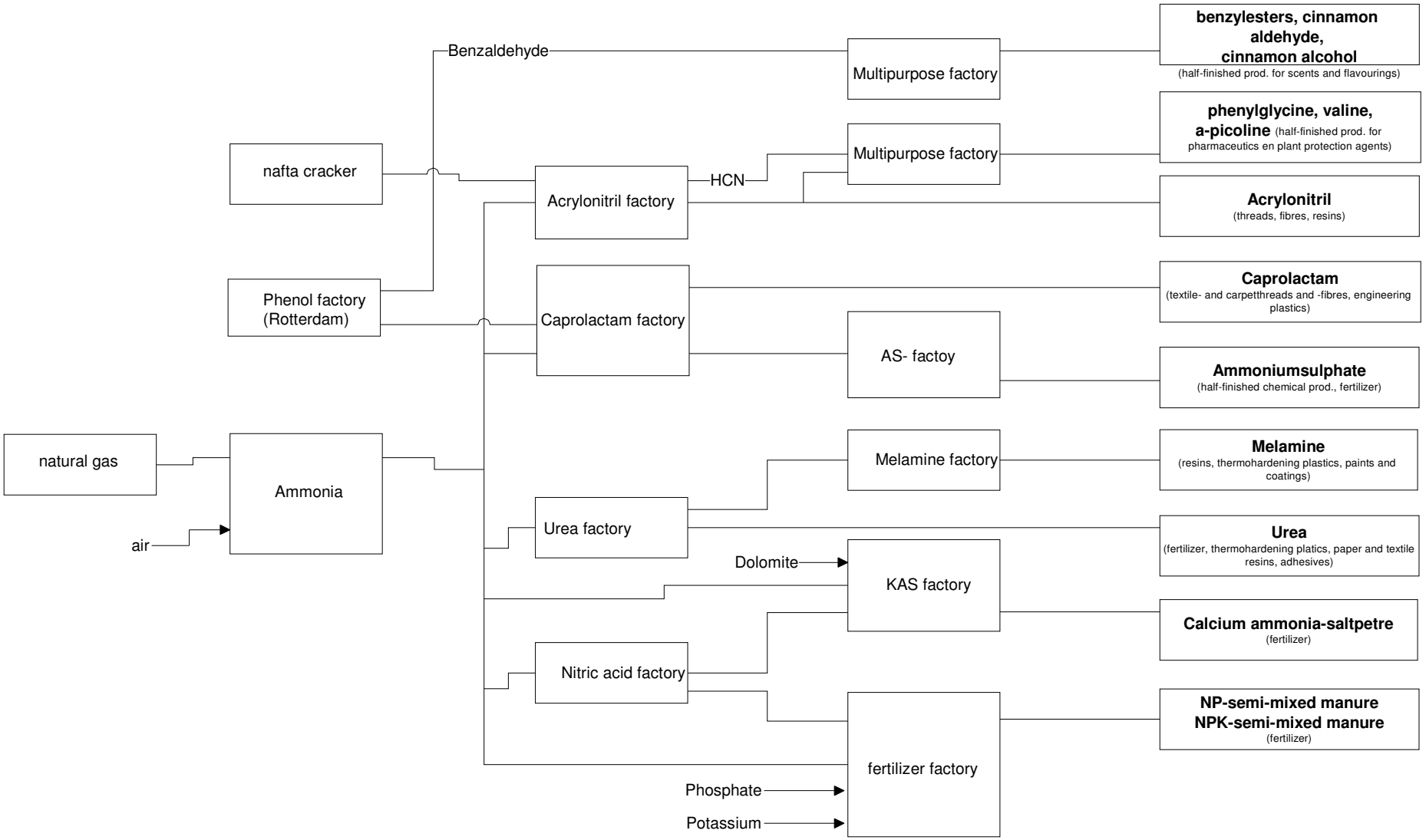
- Chemelot Site Permit (site permit: one environmental permit for all chemical site-user). The Chemelot site is regarded as one entity in the field of environmental licensing (e.g. safety, noise and air emissions). All site users are licensed by just one license to operate. This license is granted to the Chemelot Site Permit b.v. (the site authority in the field of safety and environment). Chemelot Site Permit b.v. coordinates the sub-licenses to the local authorities. Each individual plant still has its own (environmental) sub-license to operate.
- Clustering users in an inner R&D knowledge circle (network) with special services (labs) in joint ventures with universities in the Netherlands, Belgium and Germany.
- Private companies, local government and the Province of Limburg work together to develop a joint strategy for chemical industries. This collaboration, "Chemie Cluster", focuses on:
    - Developing a research and business campus (R&B campus).
    - Upgrading the Chemelot site.
    - Acquiring new high-chem companies.

DSM Knowledge-shop provides access to all DSM knowledge for SMEs in the region.

II.4.4.3 Presentation of Existing Material Flows

Question 12: Give an overview of the existing material flows!




Benzaldehyde
Multipurpose factory
benzylesters, cinnamon aldehyde, cinnamon alcohol
(half-finished prod. for scents and flavourings)
nafta cracker
Acrylonitril factory
HCN
Multipurpose factory
phenylglycine, valine, a-picoline (half-finished prod. for pharmaceutics en plant protection agents)
Acrylonitril
(threads, fibres, resins)
Phenol factory (Rotterdam)
Caprolactam factory
Caprolactam
(textile- and carpetthreads and -fibres, engineering plastics)
AS- factoy
Ammoniumsulphate
(half-finished chemical prod., fertilizer)
natural gas
Ammonia
air
Melamine factory
Melamine
(resins, thermohardening plastics, paints and coatings)
Urea factory
Urea
(fertilizer, thermohardening platics, paper and textile resins, adhesives)
Dolomite
KAS factory
Calcium ammonia-saltpetre
(fertilizer)
Nitric acid factory
NP-semi-mixed manure
NPK-semi-mixed manure
(fertilizer)
fertilizer factory
Phosphate
Potassium

II.4.5 Importance of the Chemical Parks for the Regional Development

II.4.5.1 Relevance of the Chemical Parks for the Regional Development

Question 13: How important are the chemical parks for the region?

The chemical cluster is very important for the region of Limburg:

- Employment: 15,000 workers are employed in the chemical, rubber and synthetic industries in the region[68], accounting for27.5% of total employment in the regional industry. On the Chemelot site, 7,000 employees are working. This makes Chemelot the most important employer in the region.
- Knowledge: The industrial activity displayed on the Chemelot site provides a breeding ground for scientific research in cooperation with the universities in the region. The acquired knowledge is accessible for regional SMEs . The knowledge transfer is made attractive by means of knowledge vouchers provided by local government.
- Economy: The added value accounts for € 1,300 million, meaning 22.5% of Limburg's amount over all industries (in Europe 15.1 %). The prospected growth ranges from a minimum of € 1.7 billion to a maximum of € 2.4 billion in 2020.

II.4.5.2 Integration of Chemical Parks into the Regional Innovation Landscape

Question 14: How are the chemical parks integrated in the regional innovation environment? Which contacts are established between industry and science/ research? What are the innovation potentials of the location? Which innovation activities are planned in the future?

The chemical park is strongly integrated in the regional innovation environment by several initiatives:

Chemiecluster

Sabic, DSM, Chemelot, Liof (regional development and investment bank) and the local and regional government work together on a program focused on developing a Research & Business Campus (Chemiecluster) and acquiring new high-chem companies.

Regiegroep Technologische Topregio (TTR) Limburg

In the process of developing a Technologic Top Region in Limburg, local, regional and national government, the universities, the Academic Hospital of Maastricht and the private companies DSM and Sabic, work together on strengthening the knowledge and innovational strength in the fields of Life Sciences / High Chem and Agribusiness / food

TTR ZON

[68] Source: BCI, 2004

There is a steering committee called “Regiegroep Toptechnologie Regio Zuidoost-Nederland”, short TTR ZON. This committee has made an agenda to address the conditions to be improved within the region of south east Netherlands:

- high tech systems, devices and materials
- medical technology and life sciences
- food and nutrion

TTR versnellingsagenda(top gear)

The Province of Limburg has made a top gear agenda (Versnellingsagenda), which indicates the major projects to improve the regional economy. Chemie, Health, Care & Cure and Agrofood are identified as the main industry clusters. For the chemical park, the projects Centre for Bioterials and the Research & Business Campus on Chemelot are relevant.

R&B Campus

On the R&B Campus on the Chemelot site, “where science and business meet”, start-ups, spin outs and other new companies are accommodated. The Campus provides a chemical research infrastructure by means of a high tech laboratory, office accommodation and shared research support services. Venture capital is available. The Campus is involved in the Oil project (Innovation point), supporting SMEs in innovation projects using the SIPS-method (Systematic Innovation and Problem Solving) .

Knowledge shop

DSM has made knowledge available to SMEs by establishing a Knowledge Shop.

Public -Private Partnerships

All the partners mentioned collaborate in projects. A recent example is the Bioterials-project. During this project the Maastricht University, Maastricht Academic Hospital and DSM together are developing biomaterials for clinical applications and medical technology.

II.4.5.3 Relevance of Chemical Parks for Human Resources

Question 15: How relevant are chemical parks for the development of human resources? (e.g. public acceptance, training, qualification)

1. On the Chemelot site, 7,000 workers are employed.
2. Sabic and DSM have their own educational program on all levels. Job rotation is a standard practice.
3. Both Sabic and DSM offer internships on all levels.
4. On the Chemelot site, companies participate in various science and eduction related events. For instance DSM organized “the National Chemistry Olympiade” in 2005.
5. The companies present on the Chemelot site offer various professorships at several universities, and therefore make a valuable contribution to education in the Netherlands and abroad.
6. Open Days are organised on a regular basis for local schools.
7. DSM has developed a chemical suitcase (Chemiekoffertje), which is used for educational purpose on primary scools.
8. DSM provides visiting lecturers (“Gastdocenten”) for technical and vocational training (beroepsonderwijs).
9. Employees on the Chemelot site form a platform for the High schools and universities.

II.4.5.4 Importance of the Chemical Location for the Development of SME

Question 16: Which role do chemical locations have for the development of SMEs? (e.g. outsourcing, industrial services, spin-off processes and start-ups)

Suppliers

There are 2,000 indirect jobs out of total 7,000 jobs , created by the Chemelot site. They are related to the supply chain of the companies on the Chemelot site. Currently, the number is even increasing.

Outsourcing / Start-ups / Spin outs

On the chemical site, chemical enterprises focus on their core business. They are accomplishing innovations and market prospectives, and market their products. All other activities are being outsourced, e.g. production, maintenance, process control, expedition. This implicates prospects for SMEs. Hence the restructuring of the large chemical enterprises focusing on their core business is causing the foundation of many start-ups and spin outs.

Knowledge exchange

SMEs benefit from the presence of knowledge on the Chemelot site. Knowledge is available through knowledge shops.

Raw material network

SMEs also benefit from the presence of the raw material network, e.g. pipelines and infrastructure.

II.4.5.5 Integration of the Chemical Location in Economic Initiatives or Networks

Question 17: How are the chemical locations integrated in regional economic initiatives or networks for the promotion of the chemical cluster in your region?

Chemelot is associated with several regional initiatives like:

- Innovation Platform
- TTR Limburg: Chemics in Limburg
- Top Gear Agenda (Versnellingsagenda)
- Chemiecluster.

The Province of Limburg and Liof organises quarterly meetings with SMEs, called “Chemcafé”, in the Limburg Chemical Region. The obejctives of these meetings are:

- The creation of a knowledge network and
- The facilitation of new creative chemical ideas.

International acquisition and marketing activities are joint team activities, organised by a task force consisting of the Province of Limburg,, the LIOF (Limburg Industrial Development and Finance Agency), DSM, SABIC and Chemelot.

II.4.6 Perspectives and Basic Conditions for Chemical Parks

II.4.6.1 Success Factors for the Efficiency of Chemical Parks

According to Chemelot, the following success factors are addressed to the new users (new ideas, research, investors, network, joint marketing; start-up in outsourcing and facilities):

Question 18: What are success factors for the performance of chemical parks?

Success Factors	Importance				
	++	+	0	-	- -
Attraction of new investors	X				
New business ideas	X				
Innovation development		X			
Low prices / costs	X				
Scope and quality of services			X		
Facility leasing				X	
Outsourcing				X	
Networks and partnerships				X	
Settlement of external research infrastructure on the location		X			
Joint marketing activities		X			
Location / chemical site network			X		
International cooperation and exchange of experiences	X				
State aid				X	

New business activity creates business opportunities for other companies as well. Larger, innovative companies take along other companies related to their supply chain and create business to business opportunities. In order to create this new business activity it is important to:

- attract new companies to the Chemelot site by facilitating investment / venture capital.
- jointly make an effort in acquiring new companies by chemical industry in Limburg.
- create a site attractive for settlement / establishment of companies, providing all non-core activities of these companies at low cost.
- facilitate knowledge exchange among companies on the Chemelot site in order to create innovative business.

II.4.6.2 Development Needs for Chemical Parks

Question 19a: What are most important development needs for the future of chemical parks?

In order to develop an attractive chemical park, as well for present as for future users, the following issues are to be addressed:

1. Knowledge and innovation: Create an attractive, open campus, in terms of state of the art working environment, infrastructures, buildings, ICT, high-tech support and analytical capabilities, knowledge network of innovative industries, universities and graduates.
2. Venture Capital for accommodating investment projects.
3. Low cost raw material networks and logistic (pipelines, rail, harbor, roads).
4. The chemical park has to be state of the art in the field of safety, health and environment.
5. Park operator organising and managing all the non-core activities of the site users.
6. Regarding permits, licensing and legislation, there is a need of more consistent policy, based on transparency and simplicity. A reliable government policy is crucial for business investment.

Question 19b: How much free area is available for the settlement of new chemical investments? How do you assess the future development and is there the need to build up new settlement areas outside the existing chemical parks?

The spatial needs for the Chemelot site are indicated below.[69]

Space needs		Min (ha)	Max (ha)
Basic chemicals	DSM	8	18
	SABIC	5	15
High chemicals	Others	3	10
Related	Transport	4	12
	Rail terminal	5	5
	Offices	0,5	2
R&D		2,5	4
		28	66

In the present situation, the avaible space is about 100 ha on the Chemelot Park. This includes an area of approx 25 to 50 ha, suitable for basic chemical industry, and about 70 ha suitable for R&D activities.

Until 2015 the spatial need will be approx. 25 - 60 ha for the chemical and the chemistry related industry, and 3 – 6 ha for R&D activities[70]. The need for space after 2015 is not clearly predictable. It will depend on future developments and the success of the chemical cluster to attract new businesses.

II.4.6.3 Needs for Improvement of Competitiveness of Chemical Parks

Question 20: Which actions are needed to further improve the competitiveness of the chemical parks?

1. Knowledge and innovation: Create a leading position on today's value proposition; research and special services, with high-tech support and analytical capabilities (R&D campus, labs and graduates).
2. Park Management is offering competences/services to multiple users. This full service organisation has to be unlinked from the major organisation DSM, currently responsible for the park management, by outsourcing. The park management company should organise all non-core activities for all site-users. Chemical parks must be able to depend on a full range of services. The Chemelot Park must be changed into an attractive Business Park for all users by an efficient facilitating organisation, and a breeding place for innovation and investment where information and knowledge can be shared.
3. Low cost raw materials network and logistics (pipelines, rail, harbour and roads). Optimisation of the park, assets and facility management is needed in order to obtain a sustainable competitive advantage.

[69] Source BCI 2004.
[70] BCI, 23 June 2005

4. Investment for the development of a rail terminal and the construction of a EPDC pipeline is crucial for the further development of a competitive and attractive site.
5. Venture capital is needed. Investment projects should be facilitated in every possible way. Government and private sector should cooperate in order to attract new businesses to the region.
6. Resize safety circles and restructure available space in order to create an efficient, sound and safe chemical park. The environmental issues on the Chemelot site and its surroundings have to be dealt with as well.

By implementing the actions mentioned above, the feedstock and competence related business[71] are achieved in the following order:

1. R & B Campus.
2. High Chem: different dynamics and approach.
3. New, base / petro chemicals.
4. Chemical industry related and service providers.

II.4.6.4 Conclusions for the Positions of Chemical Locations in Relation to National Governments and the EU

Question 21: Which conclusions can be drawn for the development of joint positions of chemical locations towards the national government and the European Union?

- *A common platform to exchange ideas and information about chemicals in Europe is crucial.*

  There is an existing platform called “the European Chemical Regions Network” (E.C.R.N.): Chemelot indicates the need to use this platform to discuss the implementation and the consequences of policies issuing the chemical development in Europe and legislation. The platform should facilitate the discussion amongst stakeholders in the development of chemical industry: government, universities and businesses / chemical parks.

- *To maintain one’s position in the world market sufficient reinvestments are required.*

  In developing economies (China, Middle East), vast investments are made. In order to maintain a competitive position on the world market Foreign Direct Investment (FDI) in chemistry should be promoted by European Union.

- *Chemical locations urgently need innovation beyond barriers (geographic as well as between disciplines).*

  Governmental support should not be stopped at geographical borders and or disciplinary borders. Often good initiatives of companies are turned down because they do not fit in regulations. National financial aid programs are constricted by national geographic borders and not suitable for cross-border

[71] Interview Chemelot Employees, 2005

cooperation. For instance Dutch companies are not able to use financial aid to initiate cooperation with Belgian or German companies.

- *Pilot to issue and solve contradictory legislation*

  Regulations have to be transparent and reliable. Regulations at different levels of government turn out to be inconsistent and contradictory at times. A pilot study pointing out and solving these contradictions can benefit the chemical industry.

II.4.7 ANNEX: Scan of Business Parks in Limburg's Chemical Cluster[72]

A Introduction

1 ***The chemicals industry is important to Limburg in many different respects:*** economically (20,000 jobs, directly and indirectly), spatially (the massive DSM/Sabic complex) and environmentally. The Province's of Limburg's view of the chemicals cluster and its plans for that cluster are intended to bolster the existing petrochemicals industry and develop the high-chem industry while maintaining the quality of the environment. A cluster is a geographical concentration of allied businesses, specialist suppliers, service providers and associated organisations that are all active in a specific field, in a particular country or region.

2 In order to survey the demand for space by Limburg's chemicals cluster, the following **key questions** must be considered:
What is the scale of the long-term demand for space by the chemicals cluster in Limburg? What role does the Chemelot site play in that regard and to what extent will additional space be required beyond the Chemelot site?

3 Buck Consultants International has identified four **segments** in the chemicals cluster:

A Petrochemicals and basic chemicals
B High-chem production
C Chemicals-related companies
D R&D

A Petrochemicals and basic chemicals

Process industry in which homogenous products are fabricated in bulk. This would include cracker processes, PVCs, resins and similar process plants.

B High-chem production

Fine chemicals and specialty chemicals. Specialist process systems in which special products are made in relatively small quantities in such areas a performance/functional/smart materials, medical and biomedical technology, life sciences, nutritional food applications and other materials that result from similar processes.

C Chemicals-related companies

A Companies that supply to the chemicals industry and require an environment suitable for activities in the higher environmental pollution categories, for

[72] Survy done by BCI 2004

example waste processing filling gas cylinders and transport of hazardous substances.

B Companies that supply to the chemicals industry but can be situated in normal business parks. These include scaffolding companies, maintenance firms, transport companies (non-hazardous substances) and cleaning firms.

D R&D

Creative work undertaken on a systematic basis in order to increase the stock of knowledge…and the use of this stock of knowledge to devise new applications.

B Analysis of Limburg's chemicals sector

4 The chemicals sector accounts for twice the level of **employment** (proportionally speaking) in Limburg as in the rest of the country (27.5% versus 13%). In the EU, the chemicals sector accounts for 10.8% of employment.
Chemicals, rubber and plastics contribute 22.4% of total **industrial added value** in Limburg, 16.8% in the Netherlands and 15.1% in Europe.

Extrapolation of the scenarios developed by the Netherlands Bureau for Economic Policy Analysis (CPB) allows us to draw the following **conclusions**:

- the share of global turnover in the chemicals industry accounted for by the EU is declining;
- the added value of Limburg's chemicals, rubber and plastics industry is expected to rise by EUR 0.4 - 1.1 bn up to 2020, which represents substantial growth considering the present added value of EUR 1.3 bn;
- by 2020, employment in Limburg's chemicals, rubber and plastics industry will decline by 1,700 – 2,700 direct jobs (excluding the establishment of new chemicals firms);
- the chemicals sector is promising and scores well on investment, innovation and exports.

5 The reports by Buck Consultants International includes detailed ***SWOT analyses*** (Strengths-Weaknesses-Opportunities-Threats) for each segment.

6 DSM and Sabic are the pillars of Limburg's chemicals cluster.

DSM is concentrating increasingly on innovation in the life sciences, specifically in pharmaceuticals and biotechnology.

- Chemelot is a core site for DSM and a regular target for investment (EUR 300 m in five years);
- DSM's strategy is to focus mainly on technologies and production activities, something for which the Chemelot site is less suited;
- DSM is seeking opportunities
  - to optimise the Chemelot site
    - production inplants belonging to other companies
    - park management
  - to alter its use of the Chemelot site
    - expansion of R&B Campus

Sabic (petrochemicals and basic chemicals) regards the trends in the chemicals cluster as positive. Potential threats to its position are:

- inadequate investment in infrastructure. Sabic is currently exploring the possibility of a modal shift from road haulage to rail and, to a lesser extent, to waterways;
- potential problems concerning the available environmental space, specially air quality;
- the supply of well-educated employees in the region.

Sabic sees little added value in the DSM campus development. Sabic is too heavily entrenched in basic chemicals and petrochemicals.

C Supply of and demand for space

7 The word "space" must be **interpreted** with caution in the chemicals industry. On the supply side, not every vacant hectare is actually available, owing to Health, Safety and Environment limits. But the concept of space has multiple dimensions on the demand side as well: an R&D lab requires a different quality of space than a cracking plant. This quick scan attempts to cover all these various elements. A full investigation – as opposed to a quick scan – would need to look at this factor in painstaking detail.

8 Comments on ***calculation of space requirement per segment:***

- A "top-down approach" based on the four CPB scenarios was not possible owing to the lack of reliable regional data (including growth in added value, current use of space by chemicals and chemicals-related companies).
- A "bottom-up approach" was therefore selected, with an estimate being made of the demand for space based on the number of anticipated investments.

- Note that the planning periods are relatively long.

9 ***Space requirement by chemicals cluster, 2005-2015***

			Period 2005-2015	Total
A	Basic chemicals	DSM	8-18 ha	25-60 ha
		Sabic	5-15 ha	
B	High-chem production	Outside investors at Chemelot	3-10 ha	
C	Chemicals-related			
	C1 Transport general (including transport related to Sabic)		4-12	
	Rail terminal		5 ha	
	C2 Office work		0.5-2 ha	3-6 ha
D	R&D [1)]		2.5-4 ha	

1) Part of which will be built on existing campus

10 Approximately 98 ha is ***ready for allocation*** at Chemelot, with 25-50 ha available for basic chemicals and petrochemicals. The bandwidth is determined by the precise location of the various plots, the available/licensable environmental space and advances in technology.

11 Total ***requirement up to 2015*** that can be related to Chemelot:

- Basic chemicals+high-chem production+chemicals-related activities (i.e. transport) } 25-60 ha → can be accommodated at Chemelot
- R&D Campus } 2.5-4 ha → can be accommodated at Chemelot
- Office-related activities } 0.5-2 ha → can be accommodated at or close to Chemelot

In quantitative terms, it should not be difficult to accommodate the anticipated space requirement up to 2015, insofar as that requirement remains within the Health, Safety and Environment limits.

In qualitative terms, an active policy on restructuring ("swap new for old") and vacant lots will be required. In addition, the design and image of the R&B Campus will need to be modified (see BCI report).

No problems are anticipated in qualitative terms either.

12 Survey of supply and demand ***after 2015***

- Demand for new production locations difficult to assess at this point:
  - DSM's strategy: focus on life sciences, with major DSM concentrations outside Limburg;
  - trends & developments in the chemicals sector (see report);
  - difficult to determine whether successful chemicals companies can be attracted in this period.
- Conclusion: impossible now to determine the space requirement after 2015, but that does not mean that there will not ***be*** a space requirement then

II.5 Masovia

II.5.1 Short Description of ECRN Region

II.5.1.1 Development of the Chemical Industry

Question 1: How has been the development of the chemical industry in your region?

For more than four centuries, Masovia (at present Mazowieckie Voivodeship or Mazovian Province) has been a gateway to Poland. It lies at a crossing of trade and communication routes connecting the east and the west of Europe. Warsaw, the national capital, is located in the heart of Masovia. It is here, in Poland's most populous province, that hundreds of the largest domestic and foreign companies have established their headquarters; it is here that all the major government offices are located.

Masovia is the leader in terms of Polish transformation. It is Poland's fastest developing province, attracting the biggest volume of foreign investment. Almost half a million firms now operate in Masovia. The region accounts for over 20 per cent of the country's GDP. The main sectors include trade, telecommunications, financial services, insurance, IT, the motor and petrochemical industries.

Masovia, as the most important research and development region in Poland, with its universities, research institutes, science and technological development centres located in Warsaw, Plock, Radom and Siedlce, has developed modern and progressive productions in the chemical and petrochemical sector, as well as in pharmacy and cosmetics. Since 1990 numerous international companies active in the chemical industry have placed their investments in Masovia. In 2003 the overall production income of chemical products was over 3.6 billion Euro, making the net income equal to over 2.4 billion Euro. Export was worth over 898 million Euro.

Masovia is home for the largest refinery in Poland, PKN Orlen S.A., a company producing Plock Petrochemicals and Central Petroleum Products. Orlen is one of the 20 biggest refinery - petrochemical companies in the world, and one of the 10 most modern in Europe.

In terms of absorptive capacity, potential and infrastructure, Masovia remains the country's most attractive region for foreign investors.

II.5.1.2 Indicators of the Chemical Industry

Question 2: Describe the development with the help of indicators!

General indicators of the chemical industry in the region

Indicator	1995	2000	2003
Turnover (Mio. €)	-	-	> 3,500
Number of chemical companies	-	-	1,159
Number of employees	-	-	79,496
Share of R&D employees (estimate in %)	-	-	-
Exports (Mio. €)	-	-	~ 900
Share of chemical industry on processing industry (%)	-	-	34.9%
Number of chemical parks / industrial parks with chemistry focus	0	0	0

Question 3: In which sectors is the chemical industry concentrated?

DG*	Sector category	Production Structure (%)
	***NACE Code**	**2003**
23	**Petrochemicals**	**68**
24	**Chemical Industry**	
24.1	Basic chemicals	13.2
24.2	Agro chemicals	
24.3	Varnishes / Adhesive	3.3
24.4	Pharmaceuticals	5.8
24.5	Detergents / Cosmetics	4.6
24.6	Other chemical prod.	5.1
24.7	Man-made fibre	
	Total	**100**
25	**Plastic & Rubber**	**-**
25.1	Rubber	-
25.2	Plastics	-

II.5.2 Overview of the Most Important Chemical Sites / Parks and Industrial Parks

II.5.2.1 Overview of Chemical Parks and Industrial Parks in the Region

Overview of chemical parks and industrial parks in the region

No.	Region Location	Name of the park	size (ha)
1	Masovia Plock	Plock Industrial and technological Park Joint-Stock Company	200

II.5.2.2 Description of the Most important Chemical Sites / Parks and Industrial Parks

II.5.2.2.1 Plock Industrial and Technology Park

Question 5: What are the main characteristics of the most important chemical parks in the region?

No.		Answer
1	Name of the chemical park	Plock Industrial and Technology Park (PPPT)
2	Park Operator	Plock Industrial and Technology Park Joint-Stock Company
3	Address	Kobylinskiego 25 Street 09-400 Plock; Poland *contact address:* Zglenickiego 42a Street 09-411 Plock; Poland
4	Contact Partner (Function)	Krzysztof Lewandowski President of Board
5	Phone Fax	+48/24/ 364-03-50 +48/24/ 364-03-52
6	Web page Email	www.pppt.pl Krzysztof.Lewandowski@pppt.pl pppt.sekretariat@vp.pl
7 7.1 7.2 7.3 7.4 7.5	Capacity and investments Total Area (ha) Free Area (ha) Employees (park operator) Number of Enterprises Investments (Mio. €)	 200 200 5 3 *investment activity of park operator began in 2005*
8.	Raw materials, primary products, specialisation	Profile of PPPT is defined by the basic operations of PKN ORLEN and Basell Orlen Polyolefins. That is added by the existing local study and research potential within the scope of the economic viability connected with the chemical industry and its interrelated domains, such as: environmental protection, waste treatment and recycling, logistics, financial and banking services, IT and telecommunications.
9.	Research entities on the location	PPPT co-operates with: 1. R&D Center of the Refinery Industry; 2. Center of Excellence 'CERED' – Reduction of the Influence of Processing Industry on Natural Environment (research entity within Warsaw Technical University) 3. Warsaw Technical University and its Plock affiliate: School of Technical and Social Sciences.
10.	List of biggest enterprises	See following table

The names of potential investors listed below are not disclosed by the Park Operator

List of important enterprises in the chemical park

Enterprise	Business fields or products
Potential investor no. 1	American investor Branch: chemical, plastics processing
Potential investor no. 2	German investor Branch: manufacturer of ventilating tubes
Potential investor no. 3	Polish investor Branch: chemical
Potential investor no. 4	Polish investor Branch: manufacturer of technical gases
Potential investor no. 5	Polish investor Branch: IT
Potential investor no. 6	Polish investor Branch: construction
Potential investor no. 7	Polish investor Branch: producing and processing products coming from refinery process of crude oil
Potential investor no. 8	Polish investor Branch: handling of redundant waste – salvage, segregation and preparing for sale, also scrap-metal
Potential investor no. 9	Polish investor Branch: recycling of plastics waste
Technology Commercialization Center Ltd.	Commercialization and technology transfer
Institute of Decision Process Support Ltd.	Human Resources (HR), Financial and Enterprise Resource Planning (ERP) systems, optimization of logistic chains and technological lines, data mining, ITC sector
LUMENA Ltd.	Branch: IT systems

II.5.3 Organisation, Management and Competencies of the Chemical Parks

II.5.3.1 Organisation Forms of the Chemical Parks

Question 6: Which organisation type exists in the chemical park?

Question 7: What are the characteristics of the location?

Location of the chemical / industrial park	Plock Industrial and Technological Park
6. Organisation type / park operator[73]	Major independent park operator; Multi-User*
7. Structure of the location[74]	Mixed type

*Many users will be operating within PPPT, nevertheless management operations will stay in the competence of the managing operator.

II.5.3.2 Short Description of Performances of the Chemical Park

Question 8: Which competencies does the chemical park management have? Which services are offered?

Services offered at PPPT

Module	Short description of services
Safety & Security Technology	Thanks to the co-operation with companies, belonging to the PKN ORLEN Capital Group, PPPT guarantees the following services: personnel and property security, health care, fire protection. Thanks to the co-operation with the Institute of Decision Process Support, Warsaw Technical University and Research and Development Center of Refinery Industry, PPPT is able to secure: technological research, safety audit of technologies being in use, commercialization and transfer of the latest technologies, security of IT and information systems.
Environment Protection & Site Clearance	Thanks to the co-operation with municipal companies, PPPT secures the best available services in the range of: waste managing, water and power supplying, as well as other facilities. Thanks to the co-operation with science centres, PPPT is able to secure studies on technologies being in use in relation to their influence on natural environment, investment influence on natural environment, as well as studies and implementation in the range of technologies friendly to the environment.

[73] Possible organization types: a) independent park operator b) Major User c) Multi User d) others
[74] Possible park structures: a) open b) closed c) mixed type

Services offered at PPPT

Module	Short description of services
Infrastructure & Facility Management	PPPT offers the possibility of locating investment operations within well communicated area of the city. By the end of 2006, full technical infrastructure will be prepared, e.g. water mains system – drinking, potable and industrial water, sewage system, light-pipe and heating network, internal roads. Moreover, the material infrastructure will be prepared for investors by the end of 2005 – Adminsitrative Center of PPPT with offices for rent, conference and exibition rooms. As for management, the Park itself and in co-operation with the Technology Commercialization Center offers services in the range of investment location, conducting the investment process and administration as well as management of the area destined for investment operations.
Site Development & Marketing	Depending on the profile of conducted activity, PPPT offers the possibility of joint marketing in co-operation with the park operator, as well as with the City of Plock, PKN ORLEN and Basell Orlen Polyolefins. Partnership offer in the business activity offered by PPPT also includes the co-operation in the range of capital and industrial investments in Poland, creation of the so-called 'synergy effect' between economy and science, promotion of knowledge based economy.
Raw Materials Network	The raw material base which is defined in the profile of PPPT, is based on the operation of PKN ORLEN and entities of the Capital Group of PKN ORLEN, especially Basell Orlen Polyolefins.
IT Information Technologies	In co-operation with the Institute of Decision Process Support Ltd., PPPT offers support in implementing suitable information and informatics techniques in order to lower activity costs and increase the market attractiveness of the products. Sphere of services: IT support for business and industry companies, Enterprise Resource Planning (EPR), Human Resources (HR), Financial Systems (FS), optimization of supply chains an production lines, data warehousing, data mining for business and industry systems, optimization and support of market analysis, information security management systems, quality assurance for IT projects.
Human Ressources Development	In co-operation with colleges, located in Plock as well as with company dependent on PPPT – Education Centre Ltd., the Park guarantees its clients the possibility of: trainings and courses related to law, marketing, IT, as well as specialized technical, language and organizational courses. There is also a possibility of organising the courses according to the needs of the potential investors.
Competence Development & Knowledge Management	PPPT, in co-operation with the Foundation of Polish Rectors, is conducting research studies in the range of competence and knowledge management development in Masovia, especially in the region of Plock. Research studies results are being used in the process of creating the support offered to investors, as well as in the development process of the concept for the Central Region of Knowledge, Science, High Technology and Education Technology (PPPT is one of its links).

Services offered at PPPT

Module	Short description of services
Financing & Support	PPPT offers support to investors in the range of financing their investment processes, especially state aid, EU structural funds, investment funds, seed capital, share issuing. Additionally, in co-operation with the City of Plock and the Board of Masovia it is possible for SMEs to procure credits and bank loans through the Credit Warranty Fund in Plock and the Masovian Credit Warranty Fund. Moreover, according to the local law, investors locating their activities within PPPT will be temporary exempted from the property tax.
Association & Chemical Sector	By PPPT's participation in various networks and business organisations, investors get the possibility to benefit from the potential offered by the partners, associated parks and enterprises from Poland and Europe. Currently, PPPT is taking part in an initiative, creating an organisation, dealing as a common representation and cooperation platform for polish industrial, technological and science parks. PPPT also cooperates with the region of Walloon in Belgium on the basis of governmental agreement signed by both Polish and Walloon Governments. The range of cooperation includes: best practices transfer within the scope of establishing new companies, connections between science and industry, technology transfer with regard to innovation financing. PPPT has also been invited to join the 'European Chemical Site Promotion Platform' (ECSPP) – an European association whose main objective is to promote investment locations destined for chemical activity and to indicate them as attractive sites to invest by international chemical companies. In co-operation with the Board of Masovian Province, PPPT participates in the project of Common Initiative INTERREG III – 'European Chemical Regions Network' (ECRN) in the range of defining the common regional policy for chemical regions in Europe.
Social Policy & Care	Park clients will have access to health care services, offered by one of the company of PKN ORLEN Capital Group. PPPT is also planning to co-operate with provincial and municipal hospital operating in the city of Plock. Within the wide range of social services it is planned to develop those services which will be serviced by one Park occupiers to other in the sphere of catering business, banking and insurance.

II.5.3.3 Most Important Tasks of the Park Operator

Question 9: What are the most important tasks of the park operator? What are the future perspectives for the chemical park management?

The objective of the Plock Industrial and Technological Park is to create a compact and functional model, ensuring that science, research and knowledge are being used for the development of new technologies, which are being implemented to the industry, and the industry works for science, knowledge and new technologies as well as for the creation and development of new jobs. Its mission is to establish and develop a centre with an European perspective, geared towards the creation and support of economic processes based on modern technologies, innovative scientific, educative and research projects. As consequences, favourable business conditions

will be provided in the region, new technologies will be developed and commercialised, the rate of innovation and competitiveness of products and services will be systematically increased, and the products will be adapted to market trends. PPPT is one element of a broader programme to establish a Central Region of Knowledge, Science, High Technology and Education Technology in Poland. Within this project, it is planned to affect research on a worldwide scale and to develop modern perspectives in economic technologies based on a global understanding. That will contribute to the economic success of the City of Plock and the region.

In 2004, the park operator submitted an application for the project: 'First stage of building technical and material infrastructure for the Industrial Park in Plock' (the area included in the project were approx. 130 ha) within the European Regional Development Fund (ERDF), Sectoral Operational Programme – Improvement of the Competitiveness for Enterprises, measure 1.3 "Creation of favourable conditions for companies development".

The value of the project amounts for more than 54 miollion PLN. The above mentioned application was approved, and currently, beginning from January 2005, the investment process is being carried out. Investment works related to the project include the following: renovating and modernising the buildings of the usable area of 5.000 sq. m. for the future Administrative Centre of the Park (with all needed equipment); water-pipe and sewage network as well as telecommunication infrastructure using light-pipe system; central heating network with all required installation; system of internal roads.

Currently, the biggest challenge for PPPT is undoubtedly the realisation of infrastructure investments which will provide the potential investors with full access to modern technical and material infrastructure.

The park operator is also preparing another application to the ERDF for the future realisation of the first stage of building Technological Park as another component of PPPT. The realisation of the technological component of PPPT, as well as science and research component in the nearest future, will allow to start synergic processes between the economy (industrial component) and R&D (technological, science and research component).

II.5.4 Cooperation and Connection between the Locations

II.5.4.1 Evaluation of Cooperation within and between the Chemical Parks

Question 10: What kinds of cooperation inside and between the chemical parks exist in the region or are planned? How would you assess these cooperation?

Field of cooperation	Existing	Planned	Assessment[75]				
			++	+	0	-	--
Raw material network / feedstock cooperation		X		X			
Product network		X		X			
Procurement cooperation		X		X			
Marketing cooperation	X		X				
Joint investor attraction	X		X				
Location network		X		X			
Financial cooperation	X			X			
Development of human resources	X		X				
Logistic cooperation		X		X			
Others							

Notice: The scope of cooperation and connection concerns entities from Masovia and Poland, as well as parks in Poland and Germany. There is only one chemical park in the area of Masovia.

[75] Evaluation of the present condition

II.5.4.2 Best Practice Solutions for Cooperation

Question 11: What are best practice solutions for cooperation? Describe perspectives for future developments!

Taking into account the chemical profile of PPPT which is determined by the presence of one of the largest petrochemical companies in Central Europe, the most desired investors are those conducting activities consistent with the profile of the Park. The detailed profile of PPPT is mainly determined by the basic operations of PKN ORLEN and Basell Orlen Polyolefins. Added to this is the existing local study and research potential within the scope of the economic viability connected to the chemical industry and its interrelated domains, such as: environment protection, waste treatment and recycling, logistics, financial and banking services, IT and telecommunications. Other functions of PPPT are defined by the municipal planning and strategic documents. In accordance with the local spatial plan, PPPT has been divided into several zones of various characters where a wide range of activities might be conducted, e.g. study and research, public and state institutions and their service facilities, industry related to the profile of PPPT, small, medium and large-sized enterprises, consulting, technical and social services, financial sector and logistics.

Currently, the main focus is laid on the area described as a production/services and offices zone. Within this area, industrial activities with a low environmental hazard level, research and implementation, scientific, technological, office and administration services are preferred to be located. The zone is covering approx. 130 ha. There the technical infrastructure is being built.

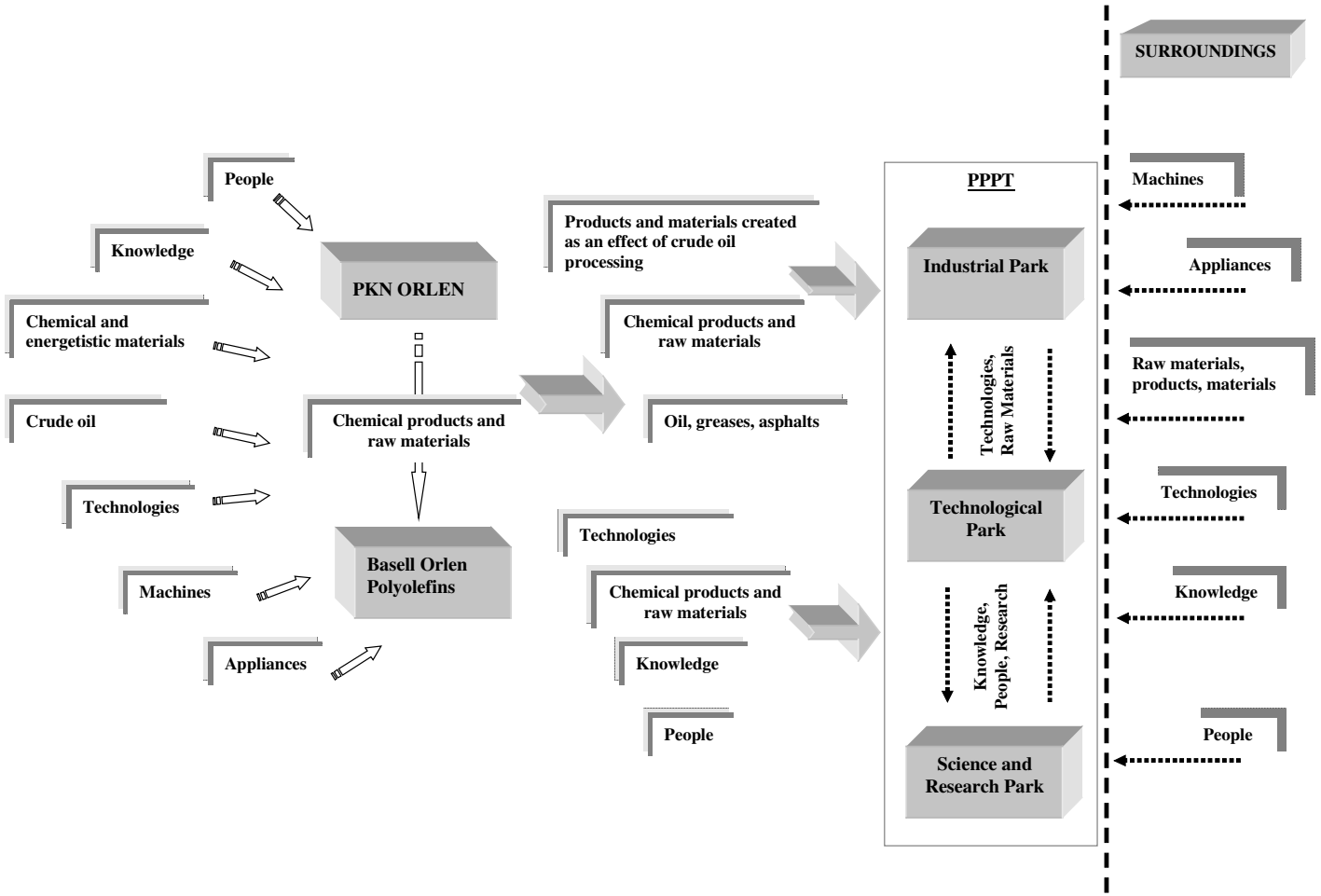
When the above mentioned investment process is finished, PPPT will be investing in another area of approx. 70 ha purposed for the industrial park. This area consists of two zones of production and industrial character with preferred activities in the range of: petrochemical and refinery production, industrial, technological, research and implementation activity – in particular chemical and biochemical production, processing of petroleum products and raw materials for the manufacture of petroleum.

Potential investors willing to operate within PPPT may contact directly with the park operator. They may also obtain information on the possibilities offered by PPPT through the Investor Service Center within Plock City Hall, suitable units in PKN ORLEN and Basell Orlen Polyolefins, as well as in the Polish Information and Foreign Investment Agency.

II.5.4.3 Presentation of Existing Material Flows

Question 12: Give an overview of the existing material flows! (feedstock cooperation, raw material networks, Produktverbünde)

The raw material base which defines the profile of the Plock Industrial Technological Park consits of products and components mainly used in PKN ORLEN and Basell Orlen Polyolefins installations. The following scheme shows the relations between PPPT, consisting of industrial, technological, scientific and research areas, with the environment.



II.5.5 Importance of the Chemical Parks for the Regional Development

II.5.5.1 Relevance of the Chemical Parks for the Regional Development

Question 13: How important are the chemical parks for the region?

The “Development Strategy for the Mazovian Province” indicates the sustainable development of the province as a most profitable scenario of its future development. The vision drawn in this document assumes, that, in general, advantages can be taken from the existing intellectual potential in the provincial educative, scientific and research centres. In addition, it indicates the city of Plock as one of five sub-regional centres where existing economic, intellectual and cultural potential needs to be intensified and to be directed to areas outside the territory influenced by the city of Warsaw.

The “Spatial and Development Plan for Mazovian Province” shows that areas located in the periphery have difficulties in getting access to services offered by the state and regional capitals. In this situation, former provincial capitals, such as Radom, Plock, Siedlce, Ciechanów and Ostrołęka, which are considered as regional centers of sustainable development in the “Policy of Poland’s Spatial Development”, have to play a very important role. While having the importance as provincial capitals, economic and service potentials of these cities has been considerably increased. Currently, these cities are in the process of restructuring, looking for new bases of development. In the “Spatial and Development Plan for Mazovian Province”, Plock is allocatedto the main area of accelerated development which is stimulated by integration processes with European Union Member States. Plock is also defined as one of the main regional centres for sustainable development.

Plock Industrial and Technological Park is a common venture of the Polish oil concern ORLEN and local governmental authorities represented by the city of Plock. It consists of three main and closely related components: the industrial park, the technological park and the research and science park. Until 2004, there was no economic area organised as an Industrial and Science or Technological Park. Because of the ongoing restructuring process within the Capital Group of PKN ORLEN and the slow economic development of the city, strong activity is required to stimulate local and regional development and to level the negative effects of ORLEN’s restructuring process. On the other hand, the possibility has emerged to use modern branches of economy based on potential, assets and human resources of PKN ORLEN. The realisation of the PPPT can cause the soluation of the following problems laying in the social and economic sphere of the city and the region:

- high level of unemployment (currently 19%),
- the social and economic development of the city is strongly dependent on the investment policy of PKN ORLEN,
- few possibilities to use development ideas generated by enterprises, whose business activity is based on chemical and petrochemical products and components,
- economic and social consequences resulted from the restructuring process of PKN ORLEN.

II.5.5.2 Integration of the Chemical Parks into the Regional Innovation Landscape

Question 14 How are the chemical parks integrated in the regional innovation environment? Which contacts are established between industry and science/research? What are the innovation potentials of the location? Which innovation activities are planned in the future?

The concept of the PPPT, having been realised since 2004, is unique on a global scale, mainly because of the direct engagement of PKN ORLEN, the biggest petrochemical company in Poland, and many other partners operating in various industry sectors, such as Basell Orlen Polyolefins Ltd., Orlen Eko Ltd., Zakład Budowy Aparatury Joint-Stock Company, Technology Commercialization Centre Ltd., Orlen Projekt Joint-Stock Company, ORLEN Laboratorium Ltd. Among others, there are partners operating in the area of research and science, like the Research and Development Center of Refinery Industry, the Centre of Excellence "CERED" - Reduction of the Influence of Processing Industry on Natural Environment (research entity within Warsaw Technical University, School of Technical and Social Sciences in Plock), and the Regional Centre of Technology Development, the Incubator of Innovative Measures in Plock.

Co-operation between the park operator and the above entities is being legally conducted on the basis of bilateral agreements or bilateral frame contracts between the park operator and the partners. PKN ORLEN is a very attractive partner for PPPT clients. It offers markets for their products, and provides support concerning preparation and implementation of various technologies, products, distribution and sale, financing and contacts with other organisations. By conducting their operations, the partners create the possibilities to execute technological projects and effectivly implement technology transfer and commercialisation of innovation generated by the science and research units, but based on the ideas to its implementation in industrial companies. Synergy effects are created. The industrial companies will be able to cooperate with science and research insitutions in creating new products and technologies. Thus, the so-called "technological suction" effect will be achieved. Thanks to these processes, in the aspect of modern economy, the most required mechanism of generating dynamic development will be created. Taking into consideration the current trends of technology development throughout the world, it is important to include the development of specific technologies to the profile of the PPPT in order to build an knowledge based economy. The profile of PPPT, based initially on petrochemistry, will be further developed in compliance with the postulated profile of the whole PPPT. The existing potential and partners' experiences indicate that the following branches might be constantly developed on a worldwide scale: petrochemistry, carbon and hydrogen chemistry, new materials, plastics, other areas of advanced chemistry, biotechnologies, e.g. biomass used for energy generation and hydrocarbon production (currently produced from crude oil and natural gas), alternative sources of energy, technologies of clean production and environmental protection, IT and telecommunication, knowledge technologies – new ways of knowledge getting, processing and offering based on the advanced mathematics.

II.5.5.3 Relevance of the Chemical Parks for Human Resources

Question 15: How relevant are chemical parks for the development of human resources? (e.g. public acceptance, training, qualification)

A research study, conducted by the Foundation of Polish Rectors to evluate the PPPT activity as an instrument of implementing the principles of the Knowledge-Based Economy, indicates the huge potential impact of the Park on the development of human resources in the region. A survey among the graduates proved that the PPPT is a subject of great interest. The results also indicate that in the aspect of macroeconomic difficulties in conducting own business activities, the PPPT will play a significant role for the creation of favorable conditions for starting business activities by graduates.

The creation of new regional companies is also dependent on the continous education and on adaptation processes, making the education offers of the Plock colleges suiteable to the requirements of the local and regional labor market. The education potential of the Plock colleges and other institutions considerably guarantees the the development of human capital meeting the needs of the companies (staff with higher education in Plock region). It is necessary though to further develop this potential according to the needs of the local and regional labor market, and also in the aspect of assuring the development of human resources in the future when new needs will occur because new companies will locate on PPPT or the existing will extend their acitivites. fObviously, there will be a need to create new education specialisations in the Plock colleges. The range of activity might be broaden in the institutions because of general demands on highly qualified personnel (for example new specialisations opened by Warsaw University on daily, free, university studies). Theory and practice of economic activity should be included in the range of wide-profiled education.

The companies and institutions operating within PPPT will cooperate with many various economic and scientific entities located in the European Union. One of the major tasks to be coped by the European Union will be the transformation of EU countries to information societies. Especially the educationl sector has to be sufficiently involved in this long and hard process. Institutions of constant education specialised in aspects of the information society and the knowledge based economy will play an important role in realising this process.

Undoubtedly, Plock Industrial and Technological Park will intensify and stimulate the processes of human resources development in the region.

II.5.5.4 Importance of the Chemical Locations for the Development of SME

Question 16: Which role do chemical locations have for the development of SMEs? (e.g. outsourcing, industrial services, spin off and start-ups)

Plock Industrial and Technological Park gives economic and social benefits, also for small and medium-sized enterprises. They are presented below:

- the possibility of using intellectual and economic potential of the city of Plock through the creation of a knowledge-based economy within the PPPT,
- constant stimulation of new jobs in competitive sectors (as a way of reducing the level of unemployment in Plock and the region),
- active neutralisation of the so far poorly diversified economy of the city and the region
- increase of economic activity, conducted by individual entrepreneurs, through the creation of favourable business conditions for SME,
- effectively using the production and material base of PKN ORLEN.

Thanks to the realisation of the PPPT project, the SMEs will be offered:

- possibility to lease investment area with full infrastructure, office and laboratory spaces,
- access to the unique technical infrastructure (power supply with high, guaranteed parameters, telecommunication lines),
- access to IT and analytic equipment,
- technical, organisational, legal, patent, financing and marketing support,
- full range of office, telecommunication, and IT services, available conference rooms, libraries, economic data, property security,
- sources to finance the economic ventures, support in getting access to capital as well as necessary recommendations to obtaining required capital,
- possibility to analyse the technologies and products markets,
- access to data banks with information on new technologies,
- possibility to lease production and research rooms with all needed equipment for preliminary research, production tests and quality check of final products.

It is expected that throughout the next five years the following factors will be a subject to distinct increase:

- number of organisations being supported,
- number of newly created and sustained jobs,
- average salaries paid by the companies on the PPPT and in the region,
- number of new enterprises in general,
- turnover of supported enterprises,
- rate of long-lasting activity of newly established enterprises,
- quality of technology and services, e.g. IT,
- private capital involved in PPPT,
- number of R&D projects,
- quality of natural environment (reduction of waste),

- number of new products,
- prices for 1 sq. m. of land at PPPT.

II.5.5.5 Integration of the Chemical Location in Economic Initiatives or Networks

Question 17: How are the chemical locations integrated in regional economic initiatives or networks for the promotion of the chemical cluster in your region?

Regarding the development of the chemical industry, the Plock Industrial and Technological Parkmay benefit from the existing marketing and promotion potential, generated by its partner and shareholder, PKN ORLEN, and by the largest project partner, Basell Orlen Polyolefins. Potential of the city of Plock is also of a great importance. Thanks to its cooperation with various partner cities in Europe, Plock has a significant impact on the promotion of the PPPT.

By PPPT's participation in various networks and business organisations, investors get the possibility to benefit from the potential offered by the partners, associated parks and enterprises from Poland and Europe. Currently, PPPT is taking part in an initiative, creating an organisation, dealing as a common representation and cooperation platform for polish industrial, technological and science parks. PPPT also cooperates with the region of Walloon in Belgium on the basis of governmental agreement signed by both Polish and Walloon Governments. The range of cooperation includes: best practices transfer within the scope of establishing new companies, connections between science and industry, technology transfer with regard to innovation financing.

Moreover, by PPPT's participation in various networks and business organisations, investors get the possibility to benefit from the potential offered by the partners, associated parks and enterprises from Poland and Europe. Currently, PPPT is taking part in an initiative, creating an organisation, dealing as a common representation and cooperation platform for polish industrial, technological and science parks. PPPT also cooperates with region of Walloon in Belgium on the basis of governmental agreement signed by both Polish and Walloon Governments. Range of cooperation includes: the exchange of best practices within the scope of establishing new companies, connections between science and industry, technology transfer with regard to innovation financing.

PPPT has been also invited to join "European Chemical Site Promotion Platform" (ECSPP) – an European association whose main objective is to promote investment locations destined for chemical activity and to indicate them as an attractive sites to invest by international chemical companies.

In co-operation with the Board of Mazovian Province, PPPT participates in the project of Common Initiative INTERREG III – 'European Chemical Regions Network' (ECRN) in the range of defining the common regional policy for chemical regions in Europe.

Additionally, with assistance of PKN ORLEN, PPPT has began cooperation with Belgian organisations, such as Agoria, Belgian Oil and Gas Group, Bepolux, Belgian Business Chamber, which operate within broadly understood chemical activities.

II.5.6 Perspectives and Basic Conditions for Chemical Parks

II.5.6.1 Success Factors for the Efficiency of Chemical Parks

Question 18: What are success factors for the performance of chemical parks?

Success Factors	Assessment				
	++	+	0	-	- -
Attraction of new investors		X			
New business ideas	X				
Innovation development	X				
Low prices / costs		X			
Scope and quality of services		X			
Facility leasing			X		
Outsourcing		X			
Networks and partnerships	X				
Settlement of external research infrastructure on the location	X				
Joint marketing activities	X				
Location / chemical site network	X				
International cooperation and exchange of experiences	X				
State aid	X				
Others					

II.5.6.2 Development Needs for Chemical Parks

Question 19a: What are the most important development needs for the future of chemical parks?

Taking into consideration the current trends of technology development throughout the world, it is important to define the development of specific technologies within the profile of PPPT, in order to support the generation of a knowledge-based economy. PPPT needs to specialise its technological profile and limit the number of sectors represented. Within a narrow profile of PPPT, clients will develop their competences and integrate their competitive potential. It will be much easier to create so-called synergy effects. On the other hand, a narrow specialisation means a bigger risk to PPPT because there is a dependence on the development of selected industry sectors. PPPT should locate several related sectors with a wide scale of development in order to avoid the so-called “dominoes effect” in times of unfavourable economic circumstances.

To a large extend, the profile of PPPT is determined by the basic operation of PKN ORLEN. In the same way, the existing local study and research potential within the scope of the economic viability connected with the chemical industry and its interrelated domains is important for the site as well.

Some benefits resulted from the business model of PKN ORLEN might be used by PPPT in the near future, e.g. the distribution network and systems and the creation of parallel network structure of the local technological centres (e.g. two-way logistics system, communication system).

It is probable that PKN ORLEN will be developing as a company similar to other oil companies: changing from fuel production on the basis of crude oil through the processing of other energy raw materials (gas, hydrogen) – alternative sources of energy with simultaneous increase of involvement into non-energy using of crude oil and gas – to the production of plastics, advanced chemical products extending the value added product chain. According to this, PPPT should prepare suitable technological and organisational solutions which automatically will be included in its profile, e.g. development of alternative energy sources, optimisation of management and organisation.

It seems to be especially interesting to have the possibilities to use the results of research studies on technologies related to knowledge technology, description of basic logical processes and creation of software systems (these technologies are the core branch of knowledge-based economy). There are strong science centres in Poland dealing with this type of specialisation. They are founded on the tradition of Polish mathematics school which are known worldwide, and are sound basis for stablishing a centre of international character. In the further perspective, PPPT’s own science centre, e.g. the Science and Research Center, initially based on petrochemistry, should constantly develop according to Park’s profile and work on new solutions, which are also attractive for PKN ORLEN.

Question 19 b: Which further requirements exist for the development of the chemical parks?

Question	Answer
(1) Is there enough free area available for new chemical investments?	Yes
(2) How large is the area available for settlements?	200.4 ha
(3) How do you assess the development in the future? Is there a need to build up new settlement areas outside the existing chemical parks?	Currently, PPPT covers an area of 200.4 ha destined for investment activity. PPPT is in the process of infrastructural investments, so at this stage it is impossible to say whether there is a need to build new settlement areas in the form of industrial and chemical parks in the near future. At this moment the matter of further development should be considered in the aspect of accessibility of specific infrastructure in Plock and in other locations. One can say that it is necessary to cooperate with the locations in Poland, not relating to the matter of assurance another investment areas. One cannot say though that those kind of needs will appear in the future. The concept of PPPT is open from the area accessibility point of view. Moreover, municipal spatial and development documents show further areas for the needs of PPPT, on condition that there will be a need to extend its existing functional and settlement borders.
(4) Number of newly planned chemical / industrial parks:	No data
(5) Size of new settlement area to be developed in the next 5 years:	No data

II.5.6.3 Needs for Improvement of Competitiveness of Chemical Parks

Question 20: Which actions are needed to further improve the competitiveness of the chemical parks?

It is easy to observe that industry, in its constant development, must satisfy the competitive needs of the global knowledge-based economy and information. Those needs are expressed in the clusters of related and geographically concentrated industries along with their key suppliers and support institutions. Simultaneous cooperation and competition of the companies concentrated in the given region helps them to generate benefits more effectively, both from the skills of employees, and from the technological possibilities, in order to increase the efficiency, creation of new products and success probability on the new markets. Companies concentrated on export are often the hearts of clusters. They assure the flow of finances from the outside and drive the economic growth of the region. Parks are an important part of economic development worldwide so they are undergoing transformations along their economic environment.

In the case of PPPT, its development concept provides the realisation of three components whose synergies and relations make a huge impact on the final success of the whole venture. In order to assure the proper development of PPPT, it is necessary to continue and develop the cooperation between institutions involved in the creation of industrial, technological and science components. Cooperation with academic institutions should generally relate to the educational and scientific sphere. Moreover, the laboratory and informatics infrastructure of academies should be used for the needs of PPPT. Along with the development of the science and research sphere, it is necessary to form and intensify the technological space, emphasising technology transfer and commercialisation.

Another important aspect is financing the investments at PPPT, as well as the investments conducted by its clients. Just like in Europe and other countries worldwide, the analysis of PPPT activities, indicate a huge need for the development of venture capital, especially in the sphere of technology commercialisation. Thus, the cooperation with investment funds will be significant for the development and competitiveness of PPPT. The Park has already taken benefits from the European Union funds, programmed for 2004-2006, in the range of financing technical and material infrastructure. It also intends to apply for EU funds, both for investment and development of human resources, in the next programming period of 2007-2013.

Additionally, in the PPPT case, it is significant to develop and intensify the synergies and connections with PKN ORLEN. The most important are: using the PKN ORLEN potential connected with purchase of materials and products to get lower prices for Park companies, using the negotiation potential of PKN ORLEN in order to get better contract conditions for Park companies, creation of “internal offset program” in order to attract strategic investors; using the trade mark of PKN ORLEN in order to promote PPPT and products of its companies.

II.5.6.4 Conclusions for the Positions of the Chemical Locations in Relation to National Governments and the EU

Question 21: Which conclusions can be drawn for the development of joint positions of chemical locations towards the national government and the European Union?

The biggest challenge for Poland is to assure a high rate of economic growth. Experiences of other countries show that industrial and technological parks might be an effective instrument in the development process. In fully developed countries, especially in the last years, the rate of economic growth was strongly related to the implementation of new technologies. In Poland, the important “growth engines” are SMEs. However, it seems that the possibilities of simple, extensive growth of these enterprises are almost finished. Currently, they are facing some serious threats and barriers, which resulted from several important factors, such as: activities of SMEs on the global market, opening of the Polish market, accession to the European Union (high level of competition, technological barriers, problems with manufacturing products of quality required on the present world market). Only a small number of Polish SMEs can successfully compete with other EU partners in the field of innovative technologies.

Without external help, the Polish SMEs will not be able to overcome these technological hurdles because they usually cannot afford to conduct their own research and development works or buy the necessary licenses. In order to survive on the market, they have to get support from specialised institutions, and from both state and EU resources.

The transfer of innovative solutions from Polish science should play a significant role in the modernisation process of the production technologies in SMEs. Meanwhile, Polish high science and research potential is rather poorly applied in the economy. The economic effects of expenditure on the research and science are extremely small. That is why Poland has one of the lowest rates of innovation among comparable countries. So far, the existing attempts to improve the cooperation between science and economy has not caused the expected effects. Moreover, less attention was paid to define the demands of Polish enterprises and to help them searching for suitable solutions in Polish scientific institutions.

Activities of the Polish Government in cooperation with the European Union should be concentrated on creating the instruments and systems, both institutional and economic, which will be able to increase the rate of innovation and competitiveness of enterprises. It will be a dynamic force for the creation of economic clusters like industrial and technological parks which are taking advantage of the created synergy effects for the economic benefits of the region.

II.6 Huelva

II.6.1 Short Description of the ECRN Region

II.6.1.1 Development of the Chemical Industry

Question 1: How has been the development of the chemical industry in your region? (regional importance, major activities, stakeholders and investments, restructuring and present challenges)

Huelva was born as a chemical region in the early sixties under a Government Plan created to develop the chemical industry based on the great local pyrites reserves, the availability of a port and the proximity of the large phosphate rock mine of Fosbucra in the Spanish Sahara. A big fertiliser complex, a copper smelter and a electro refinery, with “fatal” sulphuric acid production, and an electricity plant were erected on the left side of the Odiel River, adjacent to the city and the old port of Huelva in the south.

A second wood pulp complex was erected north of the city of Huelva on the right side of the Tinto River.

The erection of an oil refinery in the estuary of the rivers Odiel and Tinto and a new deeper port several kilometres away south-east, originated a third chemical complex. In this complex there are currently an oil refinery and petrochemicals plants, a chlorine/caustic plant, an ammonia/urea plant and a titanium dioxide, as well as liquid natural gas reception and gasification plant and electricity production units.

Chemical industry became the major contributor to the GDP of the Huelva province and it has been the main driver of the growth and convergence of the Huelva economy to the Andalusian and Spanish ratios.

Chemical activity pollution during the sixties and seventies shaped a big opposition from a part of the population and environmental organisations. A big effort to reduce pollutants was carried out by the industry and the regional governments. Successive environmental compliance programs were implemented.

After passing several crises the chemical industry in Huelva is engaged in the improvement of its competitiveness and to take advantage of the potential synergies of its extremely good logistics infrastructure and potentially available land for new investment and to set off its main weakness that is the current chemical production, not adequate as a backbone for further integration.

II.6.1.2 Indicators of the Chemical Industry

Question 2: Describe the development with the help of indicators!

General indicators of the chemical industry in the region

Indicator	1995	2000	2003	2004
Turnover (Mio. €)	1,925	3,433	3,359	3,429
Number of chemical companies	14	15	16	16
Number of employees	5,216	5,736	5,747	6,333
Share of R&D employees (estimate in %)	1%	0.5%	0.5%	0.4%
Exports (Mio. €)	577	1,035	1,186	1,016
Share of chemical industry on processing industry (%)	70%	53%	52%	43%
Number of chemical parks / industrial parks with chemistry focus	3	3	3	3
Investments (Mio. €)				

Question 3: In which sectors is the chemical industry concentrated?

DG*	Sector category	Enterprises	Employees
	***NACE Code**	**2003**	**2003**
21	**Pulp & Paper**	**1**	**9.4%**
23	**Refined Petroleum**	**1**	**19.8%**
24	**Chemical Industry**	**10**	
24.1	Basic chemicals	9	49.0%
24.2	Agro chemicals		
24.3	Varnishes / Adhesive		
24.4	Pharmaceuticals	1	0.8%
24.5	Detergents / Cosmetics		
24.6	Other chemical prod.		
24.7	Man-made fibre		
25	**Plastic & Rubber**		
25.1	Rubber		
25.2	Plastics		
27	**Basic Metals**	**1**	**16.1%**
40	**Electricity, Gas**	**3**	**4.9%**

II.6.2 Overview of the Most Important Chemical Sites / Parks and Industrial Parks

II.6.2.1 Overview of Chemical Parks and Industrial Parks in the Region

Question 4: Give an overview of the chemical parks and industrial parks in your region!

Overview of chemical parks and industrial parks in the region

No.	Region Location	Name of the park	size (ha)
1	San Juan del Puerto (Huelva)	Polígono de Celulosas	75
2	Huelva City	Polígono Industrial Punta del Sebo	800
3	Palos de la Frontera (Huelva)	Polígono Industrial Nuevo Puerto	1,500

II.6.2.2 Description of the Most Important Chemical Sites / Parks and Industrial Parks

II.6.2.2.1 Huelva Chemical Parks

Question 5: What are the main characteristics of the most important chemical parks in the region?

No.		Answer
1	Name of the park	All the parks at the Huelva Province
2	Park Operator	AIQB
3	Address	Avda. Tomás Domínguez 3, 3ª planta (Edificio CCEAA) 21.001 - Huelva
4	Contact Partner (Function)	
5	Phone Fax	+34 959 20 83 11 +34 959 26 35 07
6	Web page Email	www.**aiqb**.es gerencia@aiqb.es
7 7.1 7.2 7.3 7.4 7.5	Capacity and investments Total Area (ha) Free Area (ha) Employees Number of Enterprises Investments (Mio. €)	 2,375 6,333 16 Since foundation 1989 total: 2,259 year 2004: 523
8.	Raw materials, primary products, specialisation	Sulphuric acid, Phosphoric acid, Ammonia, Fertilisers, STPP, Oil refined products, Fuels, Paraffins, Aromatics, Cycloalkanes, Phenol/Cumeno, Chlorine/Caustic
9.	Research entities on the location	University of Huelva
10.	List of biggest enterprises	See following table

List of important enterprises in the chemical park

Enterprise	Business fields or products
ENCE	Wood Pulp
FMC FORET	STPP
RHODIA	STPP
FERTIBERIA	H_2SO_4, P_2O_5, Fertilizers
ATLANTIC COPPER	Copper High Grade Cathode, H_2SO_4
AIR LIQUIDE	Industrial Gases
ENDESA	Electricity
ENERGIA E INDUSTRIAS ARAGONESAS	Chlorine/Caustic
ENAGAS	Natural Gas distribution
REPSOL	Gasoline, Gas oil, GLP, distribution
CEPSA – LA RABIDA OIL REFINERY	Fuels, Paraffins, Aromatics, Cycloalkanes
CEPSA - ERTISA	Phenol, Cumeno, Acetone, Methylamine
FERTIBERIA	Ammonia, Urea
UNION FENOSA	Electricity
HUNTSMAN TIOXIDE	Titanium dioxide
ALGRY QUÍMICA	Choline Chloride

II.6.3 Organisation, Management and Competencies of the Chemical Parks

II.6.3.1 Organisation Forms of Chemical Parks

Question 6: Which organisation type exists in the chemical park?

Question 7: What are the characteristics of the location?

Location of the chemical / industrial park	Huelva
6. Organisation type / park operator[76]	Multi-User
7. Structure of the location[77]	Open type

II.6.3.2 Short Description of Performances of the Chemical Parks

Question 8: Which competencies does the chemical park management have? Which services are offered?

Services offered by AIQB

Module	Short description of services
Safety & Security Technology	AIQB does not provide services but promotes several initiatives between the members such as: ▪ The Pact for Mutual Help signed between the chemical companies and the Municipals Fire Brigades. ▪ Technical advisor to the Local Emergency Plan. ▪ Security service contracts shared between companies. ▪ The AIQB Health & Safety Commission focussed on sharing experiences and to promote the prevention.
Environment Protection & Site Clearance	Huelva industries have developed an immense effort in reducing emissions. AIQB provides the following services: ▪ Institutional relations. ▪ New environmental regulations follow up. ▪ Participation on the decision process. ▪ Studies and analysis of new regulations. ▪ Annual Environmental Report. ▪ Legal advice. ▪ Monthly and Annual reports on the control of pollutants to waters and environmental impact. ▪ AIQB Environmental Commission focussed on sharing experiences and debate. ▪ Participation on conferences, courses and forums.

[76] Possible organization types: a) independent park operator b) Major User c) Multi User d) others
[77] Possible park structures: a) open b) closed c) mixed type

Services offered by AIQB

Module	Short description of services
Infrastructure & Facility Management	There is not a management of the sites infrastructure. The accesses to the main utilities, such as energy, gas, industrial water, landfills, etc., are arranged by every company. Roads and train connections are managed by state owned companies. Industrial companies need to negotiate their necessities by their selves.
Site Development & Marketing	There is not an entity aiming to developing and marketing the Huelva chemical site. There are a number of public institutions with competences in this matter but there is a lack of coordination and common work to fix objectives. AIQB has conducted some studies to review the opportunities for the Chemical Industry at the Huelva site. The Port Authority is also very active providing industrial land and improving its services.
Raw Materials Network	As there is not any entity managing the sites, there is not any competency in this matter. Anyway, AIQB serves as an information platform of the products that could be used as raw materials by new companies.
IT Information Technologies	These services are provided by IT companies individually to every industry. The Port Authority has installed a cable net offering services to the companies.
Human Ressources Development	There is a HR Commission in AIQB that provides the following services: ▪ Exchange of experiences, ▪ Annual Report on salaries, absenteeism, shift organisation, etc, ▪ Communication training, ▪ Management training, AIQB industries are developing a number of initiatives together with local institutions aiming the development of the employees.
Competence Development & Knowledge Management	There are no plans for common development of other competences that are not belonging to the core business. Most of the relations established with the Huelva University are mainly focussed to the sponsorship rather than to promote innovation.
Financing & Support	There are not financing services offered to the new industries. AIQB provides free advice to the new industries to make easier the installation.
Association & Chemical Sector	AIQB represents the Chemical Sector in a number of institutions aiming to defend the common interests and to influence in front of the local, regional and national authorities in the decision making processes.
Social Policy & Care	AIQB makes a big effort on the Social Policy and Care. ▪ Communication and sponsorship.

II.6.3.3 Most Important Tasks of the Park Operator

Question 9: What are the most important tasks of the park operator? What are future perspectives for the chemical park management?

AIQB is organised through commissions and task forces dedicated to coordinate and to develop activities of common interest. The main responsibilities are the following:

1. Representation of interests of enterprises before local and regional institutions influencing in the making decision process and promotion of the industry.
2. Representation of the Huelva Chemical Enterprises before FOE (Huelva Employer Federation) and FEIQUE (Spanish Chemical Industry Federation).
3. Cooperation with other Spanish Chemical Sites (e.g. AIQT (Tarragona), AGI (Algeciras), AIQPA (Asturias)).
4. Communication & Public Relations Policy (e.g. campaigns, monitoring, sponsorship, Annual Report on the Economic Impact of the Huelva Chemical Industries).
5. Health & Safety (e.g. emergencies coordination, promotion campaigns, courses, seminaries, subcontractors).
6. Environmental Care (e.g. technical and legal statements on new regulations and EU directives, monitoring of pollution levels, Annual Environmental Report).
7. Human Resources (e.g. exchange of experiences forum, training courses, salary survey, in company training for students)
8. Maintenance (e.g. technical forums, training courses, management build up).

Further development of services should be focussed on attracting new investors in the area, but definitely this will depend on the creation of a new entity that could act really as a Park Developer applying the best practices achieved by other European Chemical Parks.

II.6.4 Cooperation and Connections between the Locations

II.6.4.1 Evaluation of Cooperation within and between the Chemical Parks

Question 10: What kinds of cooperation inside and between the chemical parks exist in the region or are planned? How would you assess these cooperation?

Field of cooperation	Existing	Planned	Assessment[78]				
			++	+	0	-	--
Raw material network / feedstock cooperation	X		X				
Product network	X			X			
Procurement cooperation		X			X		
Marketing cooperation / location marketing							X
Joint investor attraction							X
Location network	X					X	
Financial cooperation							X
Development of human resources	X			X			
Logistic cooperation	X					X	
Innovation network		X			X		

[78] Evaluation of the present condition

II.6.4.2 Best Practice Solutions for Cooperation

Question 11: What are best practice solutions for cooperation? Describe perspectives for future developments!

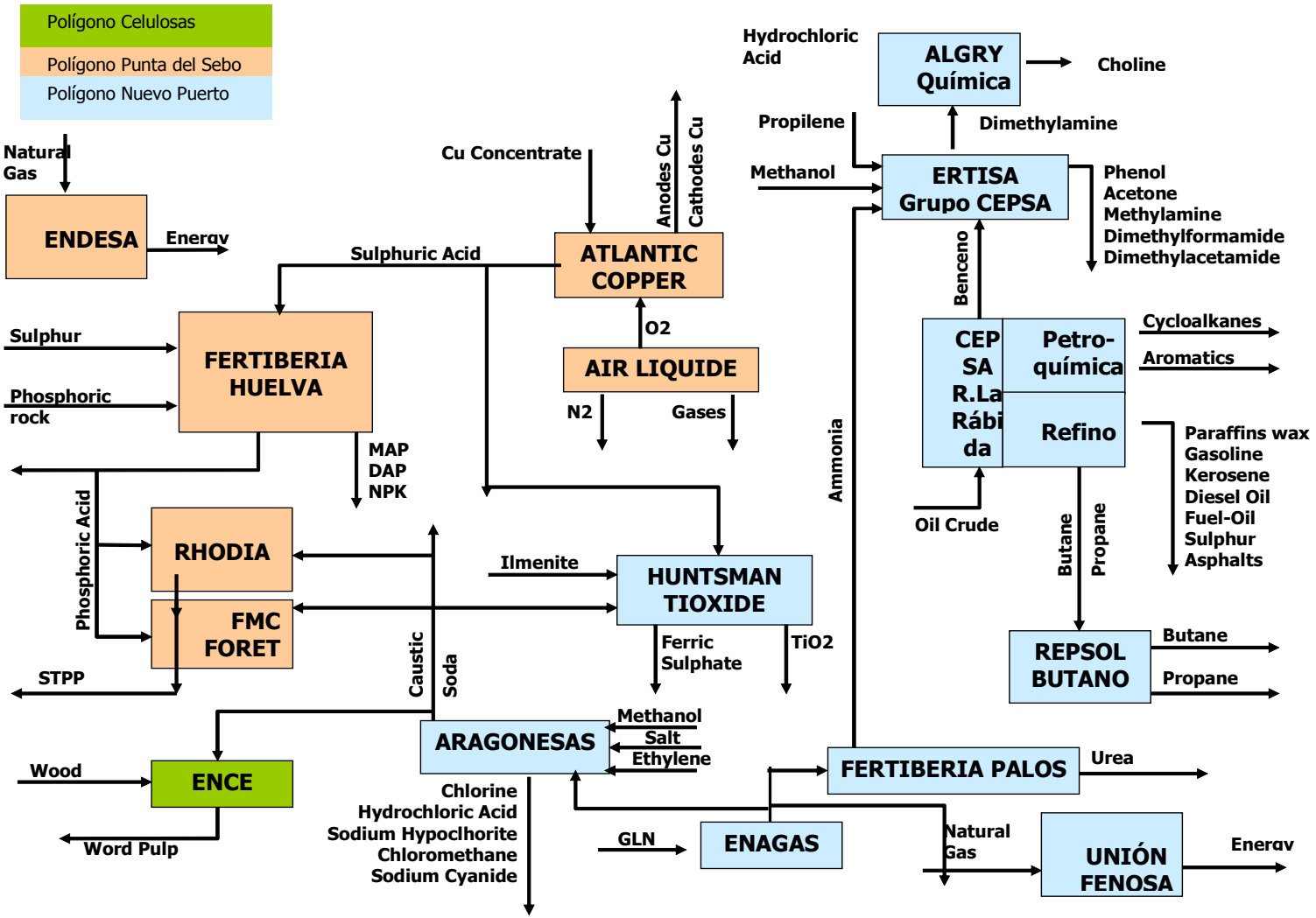
1. The Three Huelva Chemical Sites are well coordinate and essentially they can be considered as only one site from the coordination point of view. There is very good feedstock cooperation between enterprises and there is a good raw material and product network.
2. AIQB is a good practice solution for the coordination of the matters of interest, like representation before administrations and defence of common interest matters.
3. The organisation in commissions and specific task forces is a good practice to face shared problems and to promote mutual cooperation between companies and to create a climate of interchange of experiences and solutions between the managers.
4. AIQB is a good vehicle for increasing the knowledge of other Chemical Sites best practices and to maintain an open communication channel between enterprises, managers of different regions aiming to the sharing of experiences and solutions. AIQB keeps regular relations with AGI, AIQT and AIQPA.

Future perspectives of developments:

1. There are some experiences running on purchase cooperation that could serve as a starting point for further development taking advantage of the non used synergies.
2. Another field of incipient development is the innovation cooperation between the enterprises. Shared projects, experiences in TQM, continuous improvement processes, Six Sigma and other tools used for the innovation are being utilised as a new ground of cooperation.

II.6.4.3 Presentation of Existing Material Flows

Question 12: Give an overview of the existing material flows! (Feedstock cooperation, raw material networks)



II.6.5 Importance of the Chemical Parks for the Regional Development

II.6.5.1 Relevance of the Chemical Parks for the Regional Development

Question 13: How important are the chemical parks for the region?

1. Huelva Chemical Industry is the main driver of the Huelva economy. The Added Value of the Chemical Industry represents more than 10% of the GDP of the province.
2. Chemical Industry generates some 16,000 jobs which represents 10% of the total employment in the province.
3. The industry settled at the Huelva Chemical Sites contributes with 43% to the industrial GDP of the province and represents 48% of the total industrial employment of the province.
4. Infrastructure creator, roads, port, electrical and gas net, water reservoirs.
5. Chemical industry has a great importance as a business promoter for the development of the SMEs. The splitting and the outsourcing of services have created a wide range of new SMEs in the province.
6. Chemical industry is also an educational supporter, through the collaboration with primary, secondary and professional schools. It also provides good opportunities to professional and technical and science students to practising in the factories.
7. Chemical Sites promote innovation through its relation and participation in projects with universities and research groups.
8. The development of synergies between the enterprises increases the stability and competitiveness of the companies. This cooperation has a high level of potential opportunities for increasing the mutual collaboration between the industries.

II.6.5.2 Integration of the Chemical Parks into the Regional Innovation Landscape

Question 14: How are the chemical parks integrated in the regional innovation environment? Which contacts are established between industry and science/research? What are the innovation potentials of the location? Which innovation activities are planned in the future?

1. Chemical Industry plays an important role in the region as a promoter of the R&D activities. Innovation is the key of the new relations between enterprises and research groups of the universities and excellence centres.
2. Most of the chemical enterprises have established agreements with universities and technological institutions for specific projects.
3. Additionally, AIQB serves as a catalyser for increasing the relations between researchers and the industry.
4. There are several initiatives of AIQB and some of the enterprises of supporting annual awards for researchers and also creating cathedras in Huelva University to promote the relation between industry, science and innovation.
5. Andalusian government is implementing a complete package of measures dedicated to impulse the innovation in Andalusia. The recent foundation of the Technological Corporation of Andalusia (CTA), an institution financed by public and private funds for the promotion of the innovation, will be a great opportunity for chemical industry, universities and research centres as they will find in CTA a financer for relevant joint projects.

II.6.5.3 Relevance of Chemical Parks for Human Resources

Question 15: How relevant are chemical parks for the development of human resources? (e.g. public acceptance, training, qualification)

1. Traditionally, the Chemical Industry has played an important role for the development of the human resources. This industry needs well educated and trained employees and for this reason the enterprises provide an excellent opportunity for education and self promotion of the workers.
2. As a consequence of the existence of a qualified demand from the chemical industry, the specialised education for chemical plants operators and technicians has reached a high level of quality.
3. AIQB collaborates with the professional schools providing in-plant training to the students of different disciplines that are of the interest to the chemical industry.
4. AIQB also elaborates courses directed to teachers of primary and secondary levels in order to provide a wide knowledge about the local industry, the raw material they use, production processes, the common used goods produced from chemicals, the environmental protection and health & safety procedures, risk evaluation and risk management, etc.

II.6.5.4 Importance of the Chemical Locations for the Development of SME

Question 16: Which role do chemical locations have for the development of SMEs? (e.g. outsourcing, industrial services, spin off and start-ups)

1. Chemical Industry is a big promoter for the development of SMEs. Currently there are some 125 SMEs working for the Huelva chemical industry.
2. But there is still room for further improvements according with the following figures of the % of subcontracted services covered by local SMEs:

General services as canteen, medical services, security, house keeping, employees buses, transports of products, materials for offices, waste treatments	46 %
Mechanical, lagging, plastic, electrical, instrumentation, civil works, painting cranes, platforms and scaffoldings	72%
Spares and consumables	38%
Engineering, advisers, inspectors, special controls	21%
New projects and investments	75%

3. Some 64% of the cost of subcontractors, services and supplies (excluding raw materials) are provided by local SMEs.
4. Restructuring process of chemical industry connected with the concentration in the core business is a key element for the development of new SMEs trough splitting and outsourcing processes.

II.6.5.5 Integration of Chemical Locations in Economic Initiatives or Networks

Question 17: How are the chemical locations integrated in regional economic initiatives of networks for the promotion of the chemical cluster in your region?

1. Although there is some examples in the region of industrial clustering, unfortunately there are not initiatives for the promotion of the chemical cluster in the region.
2. AIQB and AGI maintain regular contacts to exchange experiences between both chemical sites and to coordinate their strategies to influence before the institutions.
3. Despite the great economic impact of the Chemical Industry in Andalusia, there is a lack of coordination between the regional government and the Chemical Industry for the elaboration, discussion and implementation of effective policies for the promotion of the chemical cluster.
4. The need of developing an important regional chemical strategy should move the regional authorities and the Chemical Industry representatives to initiate a dialog process to design and implement such kind of initiative.

II.6.6 Perspectives and Basic Conditions for Chemical Parks

II.6.6.1 Success Factors for the Efficiency of Chemical Parks

Question 18: What are success factors for the performance of chemical parks?

Success Factors	Assessment				
	++	+	0	-	- -
Attraction of new investors		X			
New business ideas	X				
Innovation development	X				
Low prices / costs	X				
Scope and quality of services		X			
Facility leasing		X			
Outsourcing			X		
Networks and partnerships		X			
Settlement of external research infrastructure on the location				X	
Joint marketing activities	X				
Location / chemical site network		X			
International cooperation and exchange of experiences			X		
State aid		X			
Others					

II.6.6.2 Development Needs for Chemical Parks

Question 19a: What are the most important development needs for the future of chemical parks?

1. Chemical Industry is facing an unfair competition from some of non EU countries which have poor social and environmental legislation. Also there is another competition distortions within the range of tax policy, environmental as well with the wage cost of the new entry countries.
2. If the Andalusian authorities decide that they want to maintain and to develop the chemical industry as a driver of the regional growth they must create a new Corporation devoted to the development and to the promotion of the Huelva chemical industrial site.
3. This entity would be organised as an independent organization and would have as the keys duties the following:
   - Clarify with all the competent authorities the designation of the existing industrial lands and those that could be designated as industrial in the future.
   - Establish an inventory of occupied land, free land and to know the interest of the owners of the occupied land to sale/rent a part of these lands to new investors.
   - Explore the interest of the existing companies to act as a driver in the process of make more efficient the added value chain.
   - Prepare a strategic plan for the growing of the chemical site.
   - Promote the image of the Huelva site within the private investors, engineering companies, industrial banks, etc...
   - Coordinate enterprises and institutions for the discussion, elaboration and implementation of efficient industrial policies that could serve as a motor for the social and economical growth of the region.
   - Collaborate with the Enterprises, Huelva University and other Research Institutions for increasing the number of R&D projects and to promote innovation.
   - Maintain regular contacts with other Chemical Parks to share experiences and to develop common projects.

Question 19b: Which further requirements exist for the development of the chemical parks?

Question	Answer
(1) Is there enough free area available for new chemical investments?	Yes
(2) How large is the area available for settlements?	Some 300 ha, sometimes in smaller parcels
(3) How do you assess the development in the future? Is there a need to build up new settlement areas outside the existing chemical parks?	Recent evolution augurs the necessity to generate new establishments
(4) Number of newly planned chemical / industrial parks:	None
(5) Size of new settlement area to be developed in the next 5 years:	Some1000 ha would have to be generated in adjacent zones to the Polygon New Port.

II.6.6.3 Needs for Improvement of Competitiveness of Chemical Parks

Question 20: Which actions are needed to further improve the competitiveness of the chemical parks?

For further improvement of the competitiveness of the Huelva Chemical Site, it is crucial to convert it in a modern Chemical Park. Most of the actions needed must be developed by the new Corporation described above. Between those actions we can mention the following:

1. Increase the cooperation within the regional authorities in mastering the industrial policies.
2. Increase the cooperation in marketing the site on international markets as well as internally to improve the image.
3. Increase the cooperation with other Andalusian and Spanish Chemical Industry Associations for the efficient use of the existing potentials and generation of new synergies, in order to exhaust aimed competition advantages.
4. To start a cooperation with other European Chemical Parks.
5. To continue with the experiences in purchasing cooperation.
6. Create regular and stables links between research institutes and universities to promote common projects of innovation.

II.6.6.4 Conclusions for Positions of the Chemical Locations in Relation to National Governments and the EU

Question 21: Which conclusions can be drawn for the development of joint positions of chemical locations towards the national government and the European Union?

1. Chemical Parks play a central role in the restructuring and development of the chemical industry in Europe and have shown to be a good solution to the increase of the global competitiveness of the European chemical industry.
2. Reinforcement of cooperation between chemical companies, contractors and services suppliers on the location acts as a catalyser effect in the business strengthening, economical stability and promotion of new enterprises.
3. Conversion of chemical parks into self-forming innovation landscapes is an essential factor for the growing of regional poles in the innovation oriented economies.
4. Chemical parks European network is a key element to contribute in the European decision making process of new regulations and must act as a counterweight actor, proposing economically sustainable balanced measures to contribute to the regional growth. This is especially relevant to make front to the continuous violation of the rules of the fair trade.

II.7 Rhineland Palatinate

II.7.1 Short Presentation of the ECRN Region

II.7.1.1 Development of the Chemical Industry

Question 1: How has been the development of the chemical industry in your region? (regional importance, major activities, stakeholders and investments, restructuring and present challenges)

Thanks to the BASF AG, that celebrated its 140th anniversary on 6th of April 2005, the chemical industry in Rhineland-Palatinate have occupied an outstanding position for a long time already. Still every fifth job in the manufacturing industry of Rhineland-Palatinate is within the chemical sector (approximately 21%; the national average is only 7.5%), about 38,500 of it alone at the BASF location Ludwigshafen. With approximately 5,800 persons employed at the location Ingelheim, the enterprise Boehringer Ingelheim is the next larger employer within the chemical industry. Despite this concentration the industry in the Rhineland-Palatinate has also a pronounced medium-size structure. In Rhineland-Palatinate 49% of the chemistry enterprises employ less than 100 coworkers, 23% employ up to 300, 16% up to 500 and only 12% employ 500 or more coworkers.

The chemical industry turned over approximately 20 billion € in the year 2003, representing approximately a third of the total turnover in the manufacturing industry. Thereby it occupies with distance a leading role (in the federal territory the turnover portion of chemistry is approximately 10%), followed by the vehicle and mechanical engineering. Last but not least the high export quota of approximately 62% in the Rhineland-Palatinate (in contrast to 53% in entire federal territory) underlines the great importance of this industry for the country.

II.7.1.2 Indicators of the Chemical Industry

Question 2: Describe the development with the help of indicators!

General indicators of the chemical industry in the region

Indicator	1995	2000	2003
Turnover (Mio. €)	15,617	18,720	20,000
Number of chemical companies	85	96	101
Number of employees	68,825	63,700	59,743
Share of R&D employees (estimate in %)	No data	No data	No data
Exports (Mio. €)	8,955 (57.3%)	11,142 (59.8%)	12,400 (62.1%)
Share of chemical industry on processing industry Employees Turnover	 21% 28%	 21% 30%	 21% 31.8%
Number of chemical parks / industrial parks with chemistry focus	2	2	2
Investments (Mio. €)			

Question 3: In which sectors is the chemical industry concentrated?

DG*	Sector category	Enterprises	Employees
	***NACE Code**	2003	2003
24	**Chemical Industry**		
24.1	Basic chemicals		
24.2	Agro chemicals		
24.3	Varnishes / Adhesive		
24.4	Pharmaceuticals		
24.5	Detergents / Cosmetics		
24.6	Other chemical prod.		
24.7	Man-made fibre		
25	**Plastic & Rubber**		
25.1	Rubber		
25.2	Plastics		
	Total (DG 24 and 25)		

II.7.2 Overview of the Most Important Chemical Sites / Parks and Industrial Parks

II.7.2.1 Overview of Chemical Parks and Industrial Parks in the Region

Question 4: Give an overview of the chemical parks and industrial parks in your region!

Overview of chemical parks and industrial parks in the region

No.	Region Location	Name of the park	size (ha)
1	Ludwigshafen	BASF AG	790

Further companies see appendix 2.

II.7.2.2 tDescription of the Most Important Chemical Sites / Parks and Industrial Parks

II.7.2.2.1 BASF Ludwigshafen

Question 5: What are the main characteristics of the most important chemical parks in the region?

No.		Answer
1	Name of the chemical park	BASF Ludwigshafen
2	Park Operator	BASF Aktiengesellschaft
3	Address	Carl-Bosch-Straße 38 67056 Ludwigshafen
4	Contact Partner (Function)	
5	Phone Fax	+49 621 60-0 +49 621 60-42525
6	Web page Email	www.basf-ag.de info.service@basf-ag.de
7 7.1 7.2 7.3 7.4 7.5	Capacity and investments Total Area (ha) Free Area (ha) Employees Number of Enterprises Investments (Mio. €)	 790 ha 50 ha ~35,300 (year 2004) ~200 Annual investment: ~550 mio. €
8.	Raw materials, primary products, specialisation	From Naphtha to specialities
9.	Research entities on the location	All kind of research: chemical, biological, engineering
10.	List of biggest enterprises	See following table

List of important enterprises in the chemical park

Enterprise	Business fields or products
Air Liquide	Bottling of gases
Basell	Catalysts
BASF IT Services	IT
DSM Composite Resins	Structural Resins
Dystar	Colouring for textiles
InstrAction GmbH	Chromatography
KTL Kombi-Terminal LU GmbH	Logistics
SolVin	Plastics production

II.7.3 Organisation, Management and Competencies of the Chemical Parks

II.7.3.1 Organisation Forms of the Chemical Parks

Question 6: Which organisation type exists in the chemical park?

Question 7: What are the characteristics of the location?

Location of the chemical / industrial park	BASF Ludwigshafen
6. Organisation type / park operator[79]	Major-User
7. Structure of the location[80]	Closed type

II.7.3.2 Short Description of Performances of the Chemical Parks

Question 8: Which competencies does the chemical park management have? Which services are offered?

Services offered at BASF Ludwigshafen

Module	Short description of services
Safety & Security Technology	Site Security ▪ Gate controls, ID cards and permits ▪ Surveillance of site Ludwigshafen ▪ Traffic supervision Fire brigade If there is a plant malfunction, the site fire brigade can reach any spot on the Ludwigshafen site within three to four minutes. The basis for this is a comprehensively designed major incident management system. In the company fire brigade, full-time fire fighters are responsible for emergency response and damage prevention. Technical equipment specifically tailored to the needs of the chemical industry is available. Safety engineering Modern plant and safety techniques, automatic monitoring of chemical processes and reliable warning systems help to ensure that the plants on the site are operated safely.
Environment Protection & Site Clearance	Environment Center For the surveillance of air, water and noise, the current values measured by 46 stations positioned inside and outside the site are passed to a process control system. At our Verbund sites we recycle resources and by-products particularly efficiently: Here, we network production plants, energy and waste flows, logistics and infrastructure with one another.

[79] Possible organization types: a) independent park operator b) Major User c) Multi User d) others
[80] Possible park structures: a) open b) closed c) mixed type

Services offered at BASF Ludwigshafen

Module	Short description of services
Infrastructure & Facility Management	BASF operates on the Verbund principle in the logistics of packaged chemical goods. At Ludwigshafen, BASF has its own rail network and cooperates with partners for long-distance transport, for example Rail4Chem. The services include the marketing of trains, wagon arrangements, forwarding business and assumption of the capacity risk. The north port of Ludwigshafen is designed for the transport of non-flammable liquids (acids, lyes and glycols), flammable liquids (naphtha, methanol) and liquefied gases (propylene, ammonia). The port is secured by a special water stop protective function. At the river port along the banks of the Rhine, bulk goods such as fertilizers and salt can be loaded. <u>Services Sales for engineering products and services</u> The Services Sales markets the infrastructure and other services as well as engineering products of the Ludwigshafen site to third parties. The infrastructure and other services comprise for example workshop and maintenance services, advisory services, human resources services and energy supplies. The engineering products include a variety of engineering products made by BASF's own workshops, for example high-pressure fittings/reactors and burners/flares. Thus Services Sales is the contact partner and contract partner at the Ludwigshafen site for all external companies.
Site Development & Marketing	Today, the Ludwigshafen site is the world's largest integrated chemical complex under a single management. BASF wants to develop this site further and fully exploit its potential. This is why the company is looking for partners who fit into the production Verbund and wish to benefit from its advantages. Companies from the chemicals industry and allied sectors as well as converters can enter into longterm partnerships with BASF in Ludwigshafen. For example, cositing partners can build and operate their own plants; joint ventures for building joint plants are also possible as is the use of existing production capacities for contract manufacturing. BASF makes co-siting easy for interested partners: The staff of Site Marketing and Service Sales offer a complete service package – this means professional help in the whole cositing process, from conception right through to the finished production plant.
Raw Materials Network	Production Verbund: A unique variety of raw materials and feedstocks Deliver competitive advantage through world-class procurement and supply chain excellence
IT Information Technologies	Applying available potential for rationalization is a top challenge for a company. Challenges which demand outstanding IT solutions. As your IT partner with many years of experience, BASF IT Services knows what is required these days in the process industry. They make this knowledge available for third parties.
Human Ressources Development	Universities for Apllied Science, Universities, Metropolitan Regions

Services offered at BASF Ludwigshafen

Module	Short description of services
Competence Development & Knowledge Management	Many years of experience in handling sophisticated reaction processes ▪ Complex plants can be built and operated extremely efficiently in the Ludwigshafen Verbund. ▪ A large selection of basic products and intermediates are available with minimum logistical effort: Co-siting partners can manufacture their products in direct Verbund with the BASF plants – expensive transportation can be dispensed with. ▪ Our central technology platforms in Ludwigshafen focus BASF's expertise and form the core of our research Verbund together with the worldwide research facilities and subsidiaries. Particularly substances that are highly reactive and those that are difficult to handle can be produced and processed safely in the Verbund.
Financing & Support	On the part of the state Rheinland-Pfalz: promotion of technology, provision of venture capital, property leasing, appropriation of aid for small businesses. On the part of BASF: BASF venture capital for start-ups exhibiting high potential for innovation and high risk.
Association & Chemical Sector	VCI (Verband der Chemischen Industrie), GDCh (Gesellschaft deutscher Chemiker), DECHEMA
Social Policy & Care	Region der Exzellenz in Wirtschaft, Wissenschaft und Lebensqualität The Metropolregion Rhein-Neckar represents one of the most important business areas of all Germany. 10 of the 100 largest German Enterprises are headquartered here. Science and research resources in the region are - with their figureheads Biotechnology and Life Sciences - exceptional. The metropolitan region exhibits a long tradition of excellent scientific work exemplified by 12 Nobel price winners and Germany's oldest university. This tradition is carried forward on 22 universities and on multiple other academic institutions.

II.7.3.3 Most Important Tasks of the Park Operator

Question 9: What are the most important tasks of the park operator? What are the future perspectives for the chemical park management?

It is our target to keep BASF a successful, independent Chemical Company with its own identity.

Ludwigshafen takes up the challenge to be one of the most performing and most efficient chemical Verbund Sites worldwide.

II.7.4 Cooperation und Connections between the Locations

II.7.4.1 Evaluation of Cooperation within and between the Chemical Parks

Question 10: What kinds of cooperation inside and between the chemical parks exist in the region or are planned? How would you assess these cooperation?

Field of cooperation	Existing	Planned	Assessment[81]				
			++	+	0	-	--
Raw material network / feedstock cooperation	X		X				
Product network	X	X		X			
Procurement cooperation (for third parties)		X		X			
Marketing cooperation	-	-					
Joint investor attraction	-	-					
Location network (Metropolitan Region)	X		X				
Financial cooperation	-	-					
Development of human resources	X				X		
Logistic cooperation	-	-					
Others							

[81] Evaluation of the present condition

II.7.4.2 Best Practice Solutions for Cooperation

Question 11: What are best practice solutions for cooperation? Describe perspectives for future developments!

Site Marketing

The BASF Group's biggest production site, corporate headquarters and centre of research, is open to other companies. With customers and tenants who supplement this Verbund, they would like to enter into long-term, stable business relationships in Ludwigshafen. The Ludwigshafen site lies right in the centre of the economically strong Metropolitan Region Rhine-Neckar, one of Germany's major conurbations. With its three cities Ludwigshafen, Mannheim and Heidelberg, the region offers numerous touristic attractions and a lively cultural.

Selected attractive BASF production sites are open to co-siting by other companies. Interested tenants, either suppliers or customers, can take advantage of the all-round supplies of a sound major chemical enterprise with infrastructure and other services that have proven themselves and been constantly improved over the years. There is offered the opportunity of cooperating with a globally operating, reliable partner.

II.7.4.3 Presentation of Existing Material Flows

Question 12: Give an overview of the existing material flows! (Feedstock cooperation, raw material networks, Produktverbünde)

II.7.5 Importance of the Chemical Parks for the Regional Development

II.7.5.1 Relevance of the Chemical Parks for the Regional Development

Question 13: How important are the chemical parks for the region?

The BASF location in Ludwigshafen represents the worldwide largest coherent chemical area under an uniform management; highly cost efficient networked structures for products, energy and waste disposal; utilization of existing plants possible by renting or through contract manufacturing, also on an temporary basis.

Long standing experience practising highly demanding production technologies, broad palette of chemical reaction processes in operation.

II.7.5.2 Integration of Chemical Parks into the Regional Innovation Landscape

Question 14: How are the chemical parks integrated in the regional innovation environment? Which contacts are established between industry and science/research? What are the innovation potentials on the location? Which innovation activities are planned in the future?

BASF, the city of Ludwigshafen and the state of Rhineland-Palatinate have set up the technology centre "chem2biz" in a unique cooperative venture. It is operated by the TechnologieZentrum Ludwigshafen am Rhein GmbH/BIC Rhein-Neckar-Dreieck (TZL) in partnership with BASF Aktiengesellschaft and offers a full range of services for start-ups and small and medium sized enterprises (SMEs).

The purpose of this cooperative venture is to make it easier for start-up entrepreneurs and SMEs from the following chemistry-based sectors Chemicals, Nanotechnology, New materials, Biotechnology and Process engineering & technology to set up a business and grow. Office areas and laboratories and numerous services such as analytics or scale-up know-how are available to the companies on the BASF site. Consulting on economic issues is provided by TZL.

“Everything that we offer in the way of services on our company site can also be used by the chem2biz companies”, says Michael Christill, head of Site Marketing and Service Sales of BASF Aktiengesellschaft. “Start-up companies can, as it were, move in with us and get cracking. In this way, their business models are not weighed down by high investment costs, for example for infrastructure, in the early phases. This means that the financial risk is correspondingly lower in the initial phase, which is so important. Furthermore, the time needed to develop a marketable product and thus to measurable success on the sales side is significantly shortened; efforts can be fully concentrated on developing the business.”

II.7.5.3 Relevance of Chemical Parks for Human Resources

Question 15: How relevant are chemical parks for the development of human resources? (e.g. public acceptance, training, qualification)

Work force can be re-qualified in a targeted manner. Layoffs in one company do not have to result in unemployment. Applying qualification schemes, worker's employment may continue in other ventures.

II.7.5.4 Importance of the Chemical Locations for the Development of SME

Question 16: Which role do chemical location have for the development of SMEs? (e.g. outsourcing, industrial services, spin off and start-ups)

SME and start-ups find better condition in place, specifically because they can take advantage of

- experience and know-how,
- services, energy and waste management

within the production network (Verbund).

II.7.5.5 Integration of Chemical Locations in Economic Initiatives or Networks

Question 17: How are the chemical locations integrated in regional economic initiatives of networks for the promotion of the chemical cluster in your region?

With support of the regional government a technological centre „Chemistry" (chem2biz) was founded to support innovate companies and the production of new developments. The Metropolitan Region Rhein-Neckar was established with substantial backing by BASF.

II.7.6 Perspectives and Basic Conditions for Chemical Parks

II.7.6.1 Success Factors for the Efficiency of Chemical Parks

Question 18: What are success factors for the performance of chemical parks?

Success Factors	Assessment				
	++	+	0	-	- -
Attraction of new investors	X				
New business ideas	X				
Innovation development	X				
Low prices / costs			X		
Scope and quality of services		X			
Facility leasing		X			
Outsourcing			X		
Networks and partnerships	X				
Settlement of external research infrastructure on the location		X			
Joint marketing activities			X		
Location / chemical site network	X				
International cooperation and exchange of experiences			X		
State aid			X		
Others					

II.7.6.2 Development Needs for Chemical Parks

Question 19a: What are the most important development needs for the future of chemical parks?

- Tax reduction and fiscal reform;
- Innovation and promotion of innovation;
- Investment incentives.

Question 19b: Which further requirements exist for the development of the chemical parks?

Question	Answer
(1) Is there enough free area available for new chemical investments?	Yes
(2) How large is the area available for settlements?	50 ha
(3) How do you assess the development in the future? Is there a need to build up new settlement areas outside the existing chemical parks?	No
(4) Number of newly planned chemical / industrial parks:	None
(5) Size of new settlement area to be developed in the next 5 years:	0 ha

II.7.6.3 Needs for Improvement of Competitiveness of Chemical Parks

Question 20: Which actions are needed to further improve the competitiveness of the chemical parks?

- Concentration of subsidies (Clustering);
- Promotion of R&D investments.

II.7.6.4 Conclusions for the Positions of the Chemical Locations in Relation to National Governments and the EU

Question 21: Which conclusions can be drawn for the development of joint positions of chemical locations towards the national government and the European Union?

- Reduction of bureaucracy;
- Workable implementation of REACH (Accept the recommendations of the industry-commission);
- Reduction of the associated employer outlay;
- More flexible wage agreements;
- Fiscal reform;
- Reduction of energy costs (more use of renewable energies).

II.8 Piemonte

II.8.1 Short Presentation of the ECRN Region

II.8.1.1 Development of the Chemical Industry

Question 1: How has been the development of the chemical industry in your region?

396,000 companies (45,000 in the manufacturing sector), 122,000 craft businesses, over 1,700,000 people employed (517,000 in the manufacturing sector). Piedmont represents a hotbed of excellence over a landscape which is 38% plains, 33% hills and 29% mountainous terrain set to be the backdrop for the 2006 Olympic Winter Games.

For what concern the chemical sector, in Piedmont there are about 7% of all the employees working in this sector at national level. The majority of the employees, the chemical production and research is concentrated in one Province, the Provincia di Novara, that has a common border with Lombardy Region. Provincia di Novara is one of the 20 Provincial Observatory of the Italian Observatory for the Chemical Sector, a operative branch of the Italian Ministry of Industry.

In Piedmont the following institutions related to the chemical industry are located:

- 3 universities with chemistry-related departments,
- 25 private and public research centres (excluding the departments of the universities) with a recognized specialisation in chemistry-related topics,
- 4 scientific & technological parks with chemistry-related competencies,
- 2 incubators,
- 2 business innovation centres.

The chemical industry is characterised by the following numbers:

- Companies: 1,800
- Employees: 50,000.

The main areas of activity are Basic Chemicals, Synthetic fibres, Pharmaceutical, Plastic and Rubber, Polymers, Petrochemical production.

Geographically, the chemical sector is concentrated in the Provincia di Novara with the two chemical sites of S. Agabio quarter and surroundings and S. Martino di Trecate (NO).

Chemical activities (not only Italian) are of great importance to region Novara. In fact, in the town Novara a prestigious engineer was born in 1922: Giacomo Fauser[82] who rapidly became famous globally. He managed the construction of a pilot plant in an area located east of Novara (Boschetto): This plant had a capacity to produce ammonia of 100 kg/day. The hydrogen necessary for the syntesis was produced by a water electolysis plant using very cheap electricity. The site became part of the

[82] Giacomo Fauser was born in Novara on January 11, 1892. He got his degree in mechanical engineering at the Milan Polytechnic. He dedicated himselfs to Research and Development reaching ambitious goals and awards together with patents and academic “honoris causa” degree both in Italian and foreign Universities. He died in Novara on 7 December 1971.

Società Elettrotecnica Novarese[83]. In the same area the ammonia plant grew up to a capacity of 100,000 ton/year.

“For about fifty years, Fauser dedicated himself totally to the nitrogen industry adopting new technologies for the production of nitric acid, urea and nitrogen based fertilisers. Within this field, he built several plants located in different parts of the world, always advanced from the engineering point of view as well as from the economical side. The explosion of his activity brought Montecatini to build very advanced research facilities in Novara. This center was inaugurated in 1942 and intitled to Guido Donegani after the end of the Second World War. There, Fauser conducted his research work and process developments up to the end of his life” (Maveri).

Fauser has played an important role in the modern petrochemical developments. He dedicated himself to the hydrogenation of heavy crudes. “In 1935 Montecatini Co. built the ANIC laboratories in Novara where Fauser exploited and developed the technologies in intiating the construction of the refineries located in Bari and Leghorn. On the basis of heavy crudes produced in Albania and Mexico, the two plant were able to satisfy the Italian needs of gasoline suitable also for aircraft, isooctane and lubricants. In 1936 Fauser developed technologies to produce ethylene from the thermal decomposition of butane. Such technology was economically more actractive than that applied in the tradition catalytic decomposition of ethanol at high temperature” (Maveri).

“Fauser got 50 patent and built more than 300 industrial plants in different parts of the world. This was an indication for the genious of this person” (Maveri). He helped Novara to raise as an important centre for the development of chemical industry both in Italy and abroad: wide and new perspectives for the industrial chemistry were open.

It is important to mention that in Novara and its surroundings there has never been a technological park. Nevertheless the chemical activity is the most important in the Piedmont Region.

Based on the activity of the Research Institute Guido Donegani, several spin off developed. A short description of their activities is presented below:

Novamont’s R&D Centre sepcialised in biodegradable polymers is located in Novara, while the their industrial production is located in central Italy (Terni).

Sud Chemie is part of an international company. In Novara, there is its R&D centre together with the production of some heterogeneous catalysts.

Isagro’s R&D centre is located in Novara, while the industrial production of pesticides and fitopharmaceutics is located in several plants inside Intaly and abroad.

MEMC Electronic Materials, part of a multinational organisation, is active in R&D and the production of Silicon Wafers in Novara.

Radici chimica has established its R&D department and the production of Nylon 6, Naylon 6 and their intermediates in the region.

[83] “On 1921 Fauser met Ing. Guido Donegani, President of the Italina Company Montecatini. Immediately, a strong reciprocal feeling and trust was generated. A new Company was formed Società Elettrochimica Novarese with plants in Novara. Inside of this factory the development of the Italian industry dedicated to ammonia and industrial nitrogen fertiliser started” (Maveri).

Novara Technology, part of Degussa, is producing silica products from xerogel and aerogel intermediates based on sol gel technologies. The company's R&D department is her as well.

Procos is focused on the production of appropriate mixes of intermediates for pharmaceutics.

Donegani Anticorrosione is headquartered in Novara. There is also its R&D centre. The company is carrying out services to prevent and protect industrial plants, plant components, and material from corrosion damage. Today the Donegani Research Institute is run by ENI S.p.A. (former Ente Nazionale Idrocarburi), specifically by one of its subsidiary (Polimeri Europa). The main stream of R&D are materials science, green processes, and new catalyst for polymers.

In addition to the named examples, there are other R&D facilities, together with qualified and specialised production sites located in Trecate (Novara) where a petroleum refinery, a carbon black plant, a sulphur derivates complex and other chemicals plants are run, together with their specific R&D.

Several other chemical plants are located in the Lago Maggiore and Lago d'Orta areas north o Novara (R&D and production of cellulose acetate, of Polyvinyl acetate, alcohol and other polymers, as well as aromatic intermediates suitable for surfactants).

Besides these productions of chemicals, there are a lot of product processing activities to obtain final products to be put on the market.

All in all, the chemical activity in Piedmont Region represent about 7% of the total Italian turnover.

II.8.1.2 Indicators of the Chemical Industry

Question 2: Describe the development with the help of indicators!

General indicators of the chemical industry in the region

Indicator	1991	2001	2003
Turnover (Mio. €)			
Number of chemical companies	~1,670	~1,800	1,874
Number of employees	~42,000	~48,700	
Share of R&D employees (estimate in %)			
Exports (Mio. €)		~3,800	~3,750
Share of chemical industry on processing industry (%)			
Number of chemical parks / industrial parks with chemistry focus	2	4	4
Investments (Mio. €)			

Question 3: In which sectors is the chemical industry concentrated?

DG*	Sector category	Enterprises	Employees
	***NACE Code**	**2001**	**2001**
24	**Chemical Industry**	**433**	**15,010**
24.1	Basic chemicals	75	4,581
24.2	Agro chemicals	Not available	Not available
24.3	Varnishes / Adhesive	106	2,118
24.4	Pharmaceuticals	36	2,820
24.5	Detergents / Cosmetics	105	2,457
24.6	Other chemical prod.	109	2,268
24.7	Man-made fibre	2	766
25	**Plastic & Rubber**	**1,347**	**33,265**
25.1	Rubber	228	15,104
25.2	Plastics	1,119	18,161
	Total (DG 24 and 25)	**1,780**	**48,275**

II.8.2 Overview of the Most Important Chemical Sites / Parks and Industrial Parks

II.8.2.1 Overview of Chemical Parks and Industrial Parks in the Region

Question 4: Give an overview of the chemical parks and industrial parks in your region!

Overview of chemical parks and industrial parks in the region

No.	Region Location	Name of the park	size (sqm)
1	Ivrea (Torino)	BIOINDUSTRY PARK CANAVESE	**16,000 sqm** of laboratories, offices and pilot production plants occuping six buildings. A separate **1,100 sqm** block housing the University of Turin's Advanced Methodologies Laboratory. An attractive **3,500 sqm** completely modernised farmhouse as headquarters of the park's service centre with congress hall, meeting rooms, offices, guest accomodation and cafeteria. An area of **70,000 sqm** equipped for production activities.
2	Torino	ENVIRONMENT PARK	**30,000 sqm** for research laboratories and offices (University, Politecnico), services centre and high technology infrastructures located in a **100,000 sqm** area.
3	Tortona (Aessandria)	PARCO SCIENTIFICO E TECNOLOGICO DELLA VALLE SCRIVIA	**26,500 sqm** for research laboratories and offices, **100,000** sqm for centre and common areas utilisation.
4	Verbania (Verbano Cusio Ossola)	TECNOPARCO DEL LAGO MAGGIORE	**30,000 sqm** for research laboratories; service centre covering **180,000 sqm**

II.8.2.2 Description of the Most Important Chemical Sites / Parks and Industrial Parks

II.8.2.2.1 Bioindustry Park Canavese

Question 5: What are the main characteristics of the most important chemical parks in the region?

No.		Answer
1	Name of the chemical park	Bioindustry Park Canavese
2	Park Operator	Finpiemonte SpA, Provincia di Torino, Istituto di Ricerca Cesare Serono SpA, RBM - Istituto di ricerche Biomediche "Antoin Marxer" SpA - LCG Bioscience, Telecom Italia SpA, Bioline Diagnostici srl, Associazione Industriali del Canavese, Federazione delle Associazioni Industriali del Piemonte
3	Address	Via Ribes 5 10010 Colleretto Giacosa (TO), Italia
4	Contact Partner	
5	Phone Fax	+39 0125 561311 +39 0125 538350
6	Web page Email	http://www.bioindustrypark.it/ bipca@bioindustrypark.it
7 7.1 7.2 7.3 7.4 7.5	Capacity and investments Total Area (sqm) Free Area (sqm) Employees Number of Enterprises Investments (Mio. €)	 ~150,000 ~130,000 18 (employed by management of the park) More than 20 more than 40 (since foundation)
8.	Raw materials, primary products, specialisation	Bioindustry, Liefe Sciences, R&D For more information see: www.bioindustrypark.it/inglese/links/images/bipcaprofile.pdf
9.	Research entities on the location	More than 20
10.	List of biggest enterprises	See following table

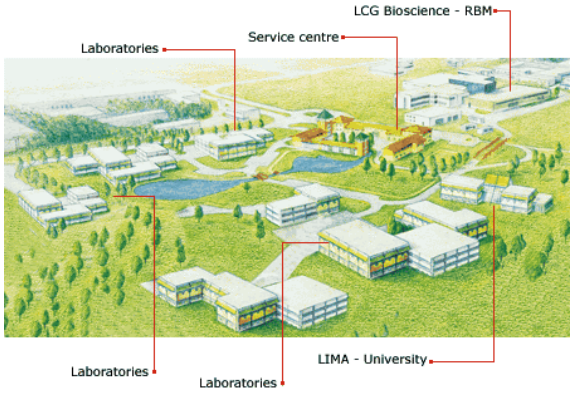
List of important enterprises in the chemical park

Enterprise	Business fields or products
AAA - Advanced Acceleration Applications	Development and commercialisation of innovative products and technologies in nuclear medicine with particular emphasis on cancer diagnosis and therapy.
AETHIA	ICT- Parallel computing and R&D in bioinformatics
ANBI	National Association of Italian Biotechnologists - Piedmont section
Bio3 Research	Biotech/pharma: development of pharma and biotech products
BIOLAB Group	Chemical Biological analysis - Scientific services in the agro-food, environmental, chemical and pharmaceutical sectors
BIOMAN	Biotechnology for environmental and agro-food sectors
BIONUCLEON	Development of a new technology to synthesise PNA aptamers for the realisation of libreries to be used to screen potential targets.
BIOPAINT	Identification and development of new Biocide and antifouling agents for eco-compatible antifouling ingredients for marine paints.
BiPCa	Added value services in high tech sectors
BIPCa Imaging & MRI lab.	Research, applied research and technology transfer. Early diagnosis using MRI on small animals
BIPCa LIMA	Research, applied research and technology transfer, Training in biological and chemical fields
BRACCO	Pharmaceuticals (pharmaceutical pilot production plant)
Bruker Spectrospin	Biomedical, Spectroscopy instrumentation and MRI
ChemSafe	Advanced services for chemical, agro-chemical and pharmaceutical companies for the development and registration of products
CIRCMSB	Interuniversity Consortium for R&D - R&D in chemistry and metals in biological systems
CNR	Research, applied research and technology transfer. Proteomics laboratory and training
CNSB	National Council of Students in Biotechnology - Piedmont section
COLGITECH	Seed capital providing company in biotech and life sciences
CREABILIS THERAPEUTICS	R&D in biotech and pharma sectors
CRONET	Hosted in ChemSafe. Services for the development of chemical and pharmaceutical products. Partnership between Pharmasafe sas (Pharmaceutical Drug Development) and ChemSafe sas (Chemical Notification and Safety assessment)
Discovery	Bio-incubator managed by Bioindustry Park
E3C	Expandable embedded computers
EICOSAMED	Pre-clinical development of a new selective cyclooxygenase-1 inhibitor for the treatment of cardiovascular disease. International patent filed.

List of important enterprises in the chemical park

Enterprise	Business fields or products
EPORGEN VENTURE	Seed capital providing company in biotech and life sciences
Fertirev	R&D in agro-food, agro-envi and biotech fields. Hosted by Medestea
Fondazione Biotecnologie	Diffusion of scientific culture linked to Life Sciences
IT Solutions	ICT - Training, services and development
Medestea research & production	R&D i biotech and pharma sectors
Narvalus	Development of single cell electroporation technology in order to offer technology able to find application in a potentially wide range of applications, from basis R&D to production processes optimisation (i.e. biotech proteins production). European Patent
Wolters Kluwer Italia (ex) OSRA	ICT - Research and Development
SITec Consulting	Support research and development activities within the biotech and pharmaceutical sectors.
Spider Biotech	Discovery and development of therapeutical dendrimeric peptides in the fields of bacterial infections. European Patent
Target Heart Biotech	Preclinical development of a protein (Melusina) cardiac muscle specific able to prevent heart failure in experimental animal models. Discovery, role and possible application of Melusine has been the content of an article published on Nature in 2003.
Università di Torino	Departement of Chemistry, Department of Genetics, Biology and Biochemistry
Vanadis	Custom synthesis of organic and polimeric products. Patent searches and competitive intelligence consulting

Others organisations like Onama, RIBES Informatica, Politecnico di Torino and UNINSUBRIA are located and/or operated inside the Park to offer services to tenants and to realise R&D activities. Near the Bioindustry Park the Research center RBM, one of the centres of Serono Pharmacology, is also localised.



II.8.2.2.2 Environment Park

Question 5: What are the main characteristics of the most important chemical parks in the region?

No.		Answer
1	Name of the park	ENVIRONMENT PARK
2	Park Operator	SpA with the following partnership: Comune di Torino, Finpiemonte S.p.A. – Istituto Finanziario Regionale Piemontese, SMAT – Società Metropolitana Acque Torino S.p.A., AEM – Azienda Energetica Metropolitana S.p.A., AMIAT – Azienda Metropolitana Servizi Igiene Ambientale Torino, CCIAA – Camera di Commercio di Torino, Unione Industriale di Torino, Provincia di Torino
3	Address	Via Livorno 60, 10144 Torino (Italy)
4	Contact Partner (Function)	
5	Phone Fax	+39 011 2257111 +39 011 2257221
6	Web page Email	www.envipark.com info@envipark.com
7 7.1 7.2 7.3 7.4 7.5	Capacity and investments Total Area (sqm) Free Area (sqm) Employees Number of Enterprises Investments (Mio. €)	 30,000 75 ~35 (since foundation)
8.	Raw materials, primary products, specialisation	▪ Investigation in hidrigen production as “energy vector” ▪ nanotechnologies for the eco-efficiency ▪ Environmental modelling ▪ Diagnostic adn electomagnetic propagation ▪ illuminotecnica
9.	Research entities on the location	~25
10.	List of biggest enterprises	See following table

List of important enterprises in the chemical park

Enterprise	Business fields or products
AGENZIA PER L'ENERGIA	Dissemination of the knowledges connected with energy saving using renewable resources. The agency is connected in projects with the province of Turin as well as the Torino town Municipality. Also project connected to the EU are pursued
ALLEMANO METROLOGY s.r.l.	Supply of intruments to measure physical and chemical parameters
AMBIO s.r.l.	Biological laboratory suitable for the environment diagnostic of the territory. Waste water, soil, air and agrosystems are evaluated together with biomonitoring and toxicological evaluation of environments. Dissemination of the information at the scientific level in the area of environmental research.
ARAP Centro Latte	Automatic measurements (medium infrared) of the milk chemical parameter. Crioscopic index in the milk. Measurements fo inhibitor in the milk. Microbiological analysis in foods. Aflatossina M1 (ELISA system) in the milk. Collection and transportation of samples with proper vehicals (refrigerates and thermally isolated). Supply of equipment for sampling (sterilized bottles, bags, etc.)
ASIA PROGETTI s.n.c	Assistance and consulting connected with the proper use of energy
ASSOCIAZIONE REGIONALE PRODUTTORI LATTE DEL PIEMONTE	Commercial, contractual, specialized assistance (PRATZ), milk management, promotional programmes in the production of the various quality of Piedmont cheese
AZZURRA s.r.l.	Consulting work within the programme Quality ISO 9000:2000. Health and security in the working environment. Formalisation and uniformation to the studies and audits, technical consulting on tanning and related import/export
BELOTTI SISTEMI S.a.s.	Services in the testing procedures connected with vibration and related shock
BIOFARMS	Control all the steps related to biological production of food crops starting from the field up to the complete product founded on the market
BIOSEARCH AMBIENTE srl	Bioremediation solves the possible diffuse contamination in the various step
BIOSINTESI s.r.l	Consulting work and field analyses on environmental and agrofood issues.
C.C.S. AOSTA S.r.l./C.C.S. CALTOR s.a.s.	Innovative applications in the production of plants in the wood
CARSICO	Measurements of contaminated sites according to the law 471/99
CERMET S.C.a r.l.	Metrological services

List of important enterprises in the chemical park

Enterprise	Business fields or products
COMAI TORINO S.r.l.	Design of systems connected to environmental and territorial systems. Applicative support in the decision making, optimisation and planning
CON.SE.CO Consorzio	Consulting and analyses in the environment: ▪ Solid, homogeneus and dangerous waste disposals ▪ Dangerous and non-dangerous waste transportation also in ADR both as solids and liquids ▪ Aspiration of material in the form of solids particles ▪ Environmental remediation (abusive solid waste disposal on land, hydrocarbon decontamination, contaminated areas) ▪ Asbestos decontamination both as compact material and friable ▪ Waste selective collection, recuperation of the values such as wood, paper, plastic, ferrous and non ferrous materials, gòlass ▪ Diggings and demolitions ▪ High pressure sand blasting and crust removal ▪ Inspection by television of pipe and mapping of the route ▪ Hire of press and container to collect inert urban wastes both dangerous and non-dangerous ▪ Cleaning of sewers in industrial and civil areas ▪ Grinding and complacting of wastes
ECOBIOQUAL s.r.l.	Consulting in toxicological and biological fields connected with the environment, human health related to product quality and industrial processes
ELEUSIS Consorzio Environment and Life Science	Special offers in life sciences: ▪ Education/Vocational training ▪ information ▪ Research projects ▪ Markecting and environmental communication
ENVISION s.r.l.	Consulting company active in international contacts and sustainable development
GIACHINO	▪ Bioecological architecture ▪ Consulting professionals, (public and private) companies in the environment including landscape ▪ Security in buildings and on es (law 494/96) ▪ Research, collaboration and teaching at the Politecnico di torino (Architecture Faculty in Torino and Mondovì) on topics connected with protection and valoristion of the rural and mountain areas ▪ Research in the field of designing green areas, gardens for persons including those unable ▪ Eco-design laboratory and wood prototype construction
GOLDER ASSOCIATES GEOANALYSIS s.r.l.	Engineering company in environmental science

List of important enterprises in the chemical park

Enterprise	Business fields or products
HYSYTECH s.r.l.	▪ Basic and detailed engineering, assembling of prototype reactors and plants based on catalysis (Reformers, Co-Clean up, sulplur removal, etc.) ▪ Model building (fluodinamic computation), dynamic simulation and multi level modelling for the optimization of catalytic reactors and downstram equipment ▪ Development of components and systems suitable for solid oxide fuel cells ▪ Building test equipment and supply certification ▪ Scientific coordination and consulting within research project ▪ Esperimental design on research activity (SOE) and prototype developments ▪ Development of the supply chain management in industrial processes ▪ Design, development and production of metallo-ceramic seals operating at high temperature ▪ Preparation through tape casting and creen printing technologies of anods, catods and interconnections for fuel cells SOFC, catalytic reactors, heat exchangers and boilers withhigh efficiency ▪ Development of innovative and traditional materials through autotermic syntesis having controlled particle size
IDREG PIEMONTE S.p.A.	Best use of regional hydraulic resources, looking mainly to the utilisation of the marginal resources. This is achieved by the design construction and reactivation of small hydroelectric plant forwarding the produced energy to the suttounfing local users
LABOIL s.r.l	Research and technological indipendent laboratory dedicated to energy and environment able to supply innovative analytical services, consulting work, global assistance capable of carrying out diagnostic inspection necessary for the maintenance of the equipment of electrical plant
LIFE CYCLE ENGINEERING	Environmental and energetic balances, sustainable design (eco-design), ecological structure (ecolabel, environmental declaration of products – EDP), environmental reporting and consulting linked to environmental management
MAAC99 s.r.l.	Applied acoustics
MICROBEL s.r.l.	Environmental and vibro acoustics: research adn development of new products, instruments and sales of very new products
MORO	Services in sustainable architectural layout: ▪ Environmental design as well as managing of jobs, taking mainly into account the environmenntal aspects ▪ Modelling and analysis of the indoor environment ▪ Vocational training and information.
Müller-BBM VAS Italia S.r.l.	
NANOVECTOR	

List of important enterprises in the chemical park

Enterprise	Business fields or products
NOLDEM	
ORDINE dei CHIMICI Piemonte e Valle d'Aosta	
PIANETA s.r.l.	To promote, assist and sell industrial plants connected with the production, storing and utilisation of hydrogen
RAMS&E	High level of consultancy in the system engineering and vocational training activity
REGIONE PIEMONTE – SETTORE FITOSANITARIO	Managing of the regional, national and international legislation in the field of pesticides, pesticides control, sanitary certification of vegetable materials, consulting to guarantee the development of products from eco-compatible agriculture, integrated agriculture; R&D of fitosanitarian experimental work; agrochemical fitopathological laboratories, agrometeorology
RINA-Registro Italiano Navale	Naval world certification company
RISTECO - Divisione Ambiente di Sotral S.p.A.	Services to guarantee the best practice to place good with the collective restaurants
S.T.A.RT. a r.l.	Automatic information systems suitable to manage environmental problem at the territorial level
SASSO - SASSO GREEN RESEARCH & DESIGN	Design and consulting on renewable energy resources, innovative systems of automation based on electrocontrol and eletromechanical controls
SGS Italia srl	Services and systems, testing and certification
SINERGOS s.r.l.	Specialised consulting activity in the hygene and security in the area of the environment
SMAT S.p.a.	Whole water integrated loop: waterworks, sewer, water treatments using a modern and most advanced production management
Studio TERRA	Management of the territory, design, planning and research in the agricultural land as well as in the territorial environ-technical fields
TEA S.c.r.l. Territorio Energia Ambiente	Bioremediation of contaminated sites. Evaluation and studies of environmental, geotechnical and hydrogeological impact
ASTER Information Technology Srl	Sales of Electronica Sillario products in Lombardy, piedmont, Liguria and Aosta Valley. Distribution of computer science devices and End Of Life ones (EOL), brockering activities
B MEDIA s.a.s.	Consulting, internet services and multimedia suitable for companies
BUSINESS OBJECTS ITALIA	Supply of business intelligence solutions
CHIOCCIOLA	Marketing services for companies

List of important enterprises in the chemical park

Enterprise	Business fields or products
C-Labs S.r.l.	Development of microprocessor systems; development of software for microprocessor systems; development of software suitable in linux/unix systems; consulting in anti-intrusion systems.
COLT TELECOM S.p.A.	Supply of telecommunication and large gap systems suitable for companies
CONSULTEAM s.r.l.	Provision of information systems, project design meeting today's und future needs, customer care
CSP s.c.ar.l.	Research laboratory and skills, aknowledged by the "Ministero della Ricerca Scientifica e della Tecnologia", in the field of information system and telematics
D² Soft	Software development, database management
DELCAM ITALIA s.r.l.	Development of software distribution systems CSD/CSM for modelling, processing and preparation of complex piece parts
DOXEA s.r.l.	Electronic management of technical and scientific information available in local and geographic grids
GOMMUNITY	Development of video and multimedia systems suitable for business and consumer markets.
HICARE S.p.A.	Development of competitive ICT systems
NETBRAIN s.r.l.	Consulting company to supply project design by telecommunication specialists
NSI ITALIA s.r.l.	Systems and skills to supply services and instruments to car assembling and part supplier with design of electric and electronic systems connected with the electronic centralised devices
OPENNET S.p.A.	Company founded in 1998 by FINPIEMONTE and CSI-Piemonte with participation of FEDERPIEMONTE, FEDERAPI and UNIONCAMERE Piemonte. Tasks: ▪ Build-up and manage an infrastructural centre based on ICT information suitable to provide systems to companies located in North-West Piedmont, with particular capabilities as far as performance, security in the networking application ▪ Organise a net of solution partners suitable to give strength to the enterpreunerial capabilities located in the territory ▪ Manage technological innovation suitable for SMEs through a network of Buisiness Partner
PROGETTI E SISTEMI s.r.l.	Supply of professional skills and turn-key job in the following areas: ▪ Systemistic capabilities in UNIX/WINDOWS fields ▪ Mainframe application development ▪ Mainframe application in WINDOWS fields connected with client-server technology
RETEITALY S.r.l.	Design and diffuse advanced solutions in integrated telecommunication based on IP protocol

List of important enterprises in the chemical park

Enterprise	Business fields or products
SEIWAY S.p.a.	Integration of systems dedicated to the acquisition of files and information as well as their elaboration transmission and generation of suitable information using techniques linked to marketing/ communication and engineering/planning in the field of finance and economy
TECNOMATIX TECNOLOGIES ITALIA s.r.l.	Tecnomatix is dedicated to software used for industrial automation and e-manufacturing.
W.P. FORMAT s.r.l.	▪ Design and management of informative systems suitable for running companies ▪ Design and preparation of local net and WAN ▪ Design and preparation of a personalised software ▪ Design and managment of vocational training using digguse applicative systems ▪ Consulting services on the use of applicative systems in systemistic fields
WPWEB	Design, preparation and manage of web sites; development of Web applicatives; Web Marketing; e-commerce solutions
CETAD - Centro Eccellenza Tecnologie Anziani e Disabili	Development and Diffusion of technologies for rehabilitation, independent from life of aged persons and not able persons with the tasks: ▪ Help in the development and technological transfer: ▪ improvement of life quality ▪ social reduction of costs
A.PA. Consulting s.a.s.	Consulting concerning economical and finance analyses, company audit related to the organisation; informative system diffusion to companies and Public Administration
ADACI (sezione Piemonte)	Supply Chain Management and material management
ARA Coop. Sociale scarl	web & call-contact center, help desk
Cimi.Montubi	Portfolio property management, commercialisation of properties, commercial and urban valorisation of the properties. Consulting for third parties
CISERT Tecnopiemonte	Network of services to public and private enterprises to provide a satisfactory answer to consultance, design and planning work, control, certifications and commissioning
Comitato EUROSEA	Feasibility study for the construction of a technological park based on nuclear medicine with the collaboration and connection of San Giovanni Bosco hospital
ProCom	Consulting company for EU project engineering skills
T.P.M srl	Project control and management together with advanced management at the industrial site in Italy and abroad

II.8.2.2.3 Parco Scientifico e Tecnologico della Valle Scrivia

Question 5: What are the main characteristics of the most important chemical parks in the region?

No.		Answer
1	Name of the park	Parco Scientifico e Tecnologico della Valle Scrivia
2	Park Operator	Public-private company with following partnership: Finpiemonte S.p.A., Banks, University, Industrial Union, Public Administration, Chamber of Commerce
3	Address	Strada Comuale Savonesa 9 15050 Rivalta Scrivia - Tortona (Alessandria), Italy
4	Contact Partner	
5	Phone Fax	+39 0131 86 01 15 +39 0131 86 06 56
6	Web page Email	http://www.pst.it/ info@pst.it
7 7.1 7.2 7.3 7.4 7.5	Capacity and investments Total Area (sqm) Free Area (sqm) Employees Number of Enterprises Investments (Mio. €)	 100,000 ~50,000 24
8.	Raw materials, primary products, specialisation	
9.	Research entities on the location	
10.	List of biggest enterprises	See following table

List of important enterprises in the chemical park

Enterprise	Business fields or products
ACKTEL	Internet applications of Internet e-business
ANADIAG ITALIA SRL	R&D on fitopharmaceutics linked toward their registration Qualified aids to those operating in the above field to orient them in the execution of research and experimental tests
ARTE DIGITALE	
Carlo Gavazzi Space SpA	Space systems – development and production
CHIMETE s.r.l.	R&D in chemistry (syntesis and analysis)
COBARR	
COLORTRONIC	
ECOSOL	
Energia e Territorio (Sportello Ambiente Valle Scrivia)	Managing of the Internet gate to evaluate the environmental situation of the Scrivia Valley
Eurotek S.r.l.	R&D an production of analogic and digital radio bridge useful in the radio-television broadcast, data transfer and video surveillance
Idealpack Srl	Services in the packaging areas
IdroCons S.r.l.	Research and analysis for monitoring the environment
INDETECH	
INNOVATE BIOTECHNOLOGY	Biotechnologies
ITA	
MICROLUX	
MILLENNIUM DATAWARE	
OMEGA	
Salute Web S.r.l.	Assembling and production of television platform
SINECO	
SISTEMA	
STILOS S.p.A.	Engineering and assembling of industrial plant, parts and components
T.Q.G	
Telematic Solutions S.p.A.	New system development based on projects co-financed by EU based on space R&D covering telematic, safety fleet managing, environmental managing, telemedicine and ICT

II.8.2.2.4 Tecnoparco del Lago Maggiore

Question 5: What are the main characteristics of the most important chemical parks in the region?

No.		Answer
1	Name of the park	Tecnoparco del Lago Maggiore
2	Park Operator	Finpiemonte SpA; SAIA SpA
3	Address	Via dell'Industria, 25 28924 - Verbania Fondotoce, Italy
4	Contact Partner	
5	Phone Fax	+39 0323 586 898 +39 0323 586 890
6	Web page Email	http://www.tecnoparco.it/ tecnoparco@tecnoparco.it
7 7.1 7.2 7.3 7.4 7.5	Capacity and investments Total Area (sqm) Free Area (sqm) Employees Number of Enterprises Investments (Mio. €)	 180,000 150,000 22 2.5 (since foundation)
8.	Raw materials, primary products, specialisation	laboratorio Tecnolab; laboratorio Tecnoverde; Incubatore d'impresa
9.	Research entities on the location	9
10.	List of biggest enterprises	See following table

List of important enterprises in the chemical park

Enterprise	Business fields or products
ABICH S.r.l.	ABICH laboratories offer a wide range of services in the field of biological and chemical analyses thanks to its well-experienced staff in different industrial areas such as cosmetics, biomedicals, textiles, environment, industrial hygiene, analytical chemistry and biological R&D.
BASF Coatings S.p.A.	R & D in the powder paints
Consorzio Lago Maggiore Holidays	It is a Consortium active in the coordination of tourist assistance and organisation of territory. It offers also expertises in the innovation of the structure and in the formation.
Legambiente Circolo Verbano	Promotion of energy saving and use of alternative and renewable energy.
EMISFERA S.c.r.l.	System information design, assembly and installation suited in the enterprise resources planning
Nobili Superinox S.p.a.	Engeenering of a new type of taps realised in stainless steel
CGM S.r.l.	Design and building of special and high tech equipments to automate the wood manufacturing goods and other materials.
ESSEGIEMME S.r.l.	Metal coatings; burners and components for gas kitchen.
Euro Plants S.r.l.	Design and building of pilot plants suitable to apply new and innovative methodology in the production of micro fibres and special fibre used in the dress system (mainly sport dress), as well as in industrial composite materials.
FABERFIN S.r.l.	Electromagnet industry expert in electromagnetic prototype production and in experimental trials. It is also specialized in the construction of equipment used for safety in the railway system.
GENERAL GAS APPLICATIONS S.r.l.	Company with capabilities in underwater technology where it develops a wide mix of innovative materials and products
GIACOBINI ALESSIO S.r.l.	New technology in industrial pipe idroformed substituting the melting technique.
LIPA s.n.c. di Zola G.Battista & C.	Design and construction of wires and connection suitable in the electronic and telecommunication fields. Distribution of electronic component.
ENTE SCUOLA EDILI	Managing formation and up date information and on the job safety in building sector.
Netwelink s.n.c.	Supply of hardware and software, specialised in safety network, availability of xDSL and wireless technology.
OX Motor S.r.l.	Engineering laboratory suitable for motor experimental test aimed to a new type of alternative motor with internal combustion.
PUBLISYSTEM S.r.l.	Graphic and design agency, public relation.
Reef S.r.l.	Injection moulding of thermoplastic, ceramic and metal materials.

List of important enterprises in the chemical park

Enterprise	Business fields or products
TECNOLAB del Lago Maggiore S.r.l.	Testing laboratory for process and product homologation in agreement with the European rules.
TECNOVERDE S.r.l.	Tecnoverde is an experimental nursery centre, started in the Tecnoparco to support the demands of the sector, and concentrating on azaleas, rhododendrons and camellias. This is another sector in which companies must keep up to date to respond to the rapid changes in the market. The services offered by Tecnoverde are therefore not confined to supplying young plants for transplanting, but range from water and soil analysis to research activity and experimental biotechnology
Confartigianato Novara e VCO	Formation and update information in different fields for associates.
Jupiter Distribuzione S.r.l.	R & D and production in the field of digital registration, DVD and AudioVideo. Contribution to the research aimed at the reproduction of natural sound.

II.8.3 Organisation, Management and Competencies of the Chemical Parks

II.8.3.1 Organsiation Forms of the Chemical Parks

Question 6: Which organisation type exists in the chemical park?

Question 7: What are the characteristics of the location?

Location of the chemical / industrial park	Canvese	Torino	Tortona	Verbania
6. Organisation type park operator[84]	Multi-User	Multi-User	Multi-User	Multi-User
7. Structure of the location[85]	Mixed type	Mixed type	Mixed type	Mixed type

[84] Possible organization types: a) independent park operator b) Major User c) Multi User d) others
[85] Possible park structures: a) open b) closed c) mixed type

II.8.3.2 Short Description of Performances of the Chemical Parks

Question 8: Which competencies does the chemical park management have? Which services are offered?

II.8.3.2.1 Bioindustry Park Canvese

Services offered at the Bioindustry Park Canvese

Module	Short description of services
Safety & Security Technology	Companies in the park can use the centralised services such as Surveillance, Monitoring of employees' presence, Anti-intruder and fire alarm systems, Maintenance
Environment Protection	Centralised services: waste management
Infrastructure & Facility Management	▪ Several conference rooms: for 150 people (Andromeda), 70 people (Pegaso), 40 people (Eridano), several others for 20 to 70 people (Cassiopea, Lyra, Perseo, Dorado) ▪ BiPCa provides multiplex areas of 200 sqm or a whole building ▪ The companies and BiPCa together work out the fitting of plant and the layout of the areas ▪ BiPCa completes the whole project and is responsible for obtaining all the administrative and regulatory authorisations ▪ BiPCa purchases the equipment and apparatus needed which is then at the disposal of the company ▪ BiPCa supplies the company with a turnkey laboratory completed with offices and services ▪ On behalf of the company BiPCa takes on responsibility for all investment and for leasing the premises and equipment with flexible contracts ▪ For the company, therefore, the setting up and the running costs are extremely favourable Other facilities: ▪ Flexible leasing contracts for premises and plant ▪ Centralised general services, R&D support services by BiPCa ▪ Option of choosing internal finishings and layout preferred ▪ Interest-free leasing of equipment and laboratory apparatus with purchase option after five years ▪ An extensive area in the heart of the country where technology and environment live side-by-side in harmony Furthermore the Park has available guest accommodation and has made agreements with the most important Canavese Hotels which can offer special rates to visitors.
Site Development & Marketing	See Finance & Support
IT Information Technologies	Centralised services: Centralised computer and telematics network; Internal telephone system; Remote control of plant and apparatus

Services offered at the Bioindustry Park Canvese

Module	Short description of services
Human Resources Development	The Park collaborates with universities, public and private training centres and foundations specialised in training courses on technical, scientific and managerial fields. Inside the Park there are some students, graduates and PhD who are guest for training periods on focused topics. Visits of students from high school level are also favoured. Organisation of some meetings on analytical and diagnostic biotechnologies, bioinformatics. The LIMA is a permanent training site for new graduates and researchers who intend to specialise in biotechnology and scientific methodologies oriented towards applied research in the chemical, pharmaceutical, diagnostics, biomedical and food industries.
Competence	See “Human Resources Development”
Financing & Support	The world of research in its present state needs scientific skills, the appropriate equipment and in order to optimise cost - and - benefits it is necessary to have the right management and planning expertise. In addition, the experience of the Bioindustry Park Team provides its internal and external customers with a vaste range of skills directly or through its partners network: ▪ Project management ▪ Assistance with national and international funding ▪ Assistance in obtaining patents - Patent Information Point ▪ Marketing technology ▪ Transfer technology ▪ Legal assistance ▪ Partners' research (European Partnersearch system) ▪ Quality problem solving (GLP/GMP) ▪ ICT support ▪ Human resources ▪ Assistance in Public Research centre relations ▪ Infrastructure Services (videoconference, meeting rooms, etc.) ▪ Translation and interpreting Document translations are also offered trough Translateit (http://www.translateit.net)
Scientific services & projects	The University of Torino and BiPCa have set up a laboratory for the development of advanced methodologies in chemical and biological fields for support and problem solving in companies working in the Park and also for external companies. The companies find the ideal partner for the development of their research in the Park's Advanced Methodologies Laboratory (LIMA): ▪ Fusion proteins ▪ DNA sequencing ▪ Transgenic animals ▪ Production of monoclonal and polyclonal antibodies ▪ Phage display analysis ▪ High resolution NMR ▪ Field cycling relaxometry ▪ Mass spectrometry ▪ Chemical analysis ▪ Spectrophotometry ▪ Synthesis ▪ Molecular calculation and graphics

II.8.3.2.2 Environment Park

Services offered at the Environment Park

Module	Short description of services
Environment Protection & Site Clearance	The Environment Park offers a range of services and structures to the enterprises located here. The services are marked by a low environmental impact and by high technological innovation, starting from the birth of the innovative business idea to its realisation.
Infrastructure & Facility Management	**Offices** – designed and built according to eco-compatible standards (management of the water cycle, utilisation of renewable energy sources) **Laboratories** **Service Centre** – The Service Centre provides numerous support services for the various needs of the enterprises settled in the Park **Parking lots** – the Park has been designed with particular attention to parking areas (21,000 sqm)
Site Develop. & Marketing	Special Marketing consulting for the enterprises settled in
IT Information Technologies	High quality and technical level structures: multimodal optic fibre wiring; switchboard and telephone services; High speed network in all buildings of the Park, with ATM OC3 155 Mb/s protocol and the possibility of implementing high security Virtula LANs in each enterprise; Terminal for internet broadband connection for data transmissions; videoconferences
Human Ressources Development	Multimedia training Managerial training courses
Competence & Knowledge	See “Human Ressources Development”
Financing & Support	The Park carries out a training service and innovation support for the SMEs and the newly founded ones, assisting them all along the launching phases and the first operational activities, providing services such as: ▪ Feasibility studies an business plans ▪ Tutorial for new enterprises ▪ Information on European Projects and Founding ▪ Partner Research

II.8.3.2.3 Parco Scientifico e Tecnologico Della Valle Scrivia

Services offered at the
Parco Scientifico e Tecnologico Della Valle Scrivia

Module	Short description of services
Safety & Security Technology	Electronic control system at the gates Safety, antintrusion devices, fire detector monitoring
Infrastructure & Facility Management	▪ Light emission plants ▪ Heating & climate control system ▪ Multifunction room (15 sites) ▪ VIP's meeting room ▪ Information on the opportunity and possibility of financing projects in favour of SMEs ▪ Consultation in the preparation of business plans ▪ Teaching directing to tutoring the persons of SMEs in the start-up activity ▪ Help assistance in finding partners and finance (also international) as the network of Business Angels ▪ Production of economical feasibility studies on territorial bases ▪ Consulting in the search for partnerships, in contract interpretation and preparation, in matters connected with MIUR, in contracts with offices of the Community (ALPS-IRC, CERI-CNR) ▪ Examination of the technological needs of the company ▪ Help finding research contacts with universities and research centres ▪ Feasibility evaluations connected with the application of innovative process steps or new product development ▪ Advanced site for the Italian mail ▪ It is foreseen the construction of an internal cafeteria
IT Information Technologies	Plants and high technology telematic connections. The Park is cabled with optical fibre (ATM) is equipped with satellite grids and server for internet TV distribution of information also through satellite grids Teaching classroom multimedia (25 position provided with PC) Video conference room (100 position) capable of simultaneous translation multilanguage
Human Ressources Development	Vocational training in: ▪ ICT ▪ Communication ▪ Languages ▪ Quality ▪ Entrepreneurship ▪ Mechanic performance of materials ▪ Optics ▪ Laser industrial application and protection
Competence & Knowledge	See "Human Resources Development"

Services offered at the
Parco Scientifico e Tecnologico Della Valle Scrivia

Module	Short description of services
Financing & Support	Analysis and special tests in the chemical laboratories dedicated to material science, those dedicated in industrial automation, optoelectronics and accelerometer certification. As far as the financing of the activities we offer to SMEs: ▪ Possibility of purchasing personalised and specific equipment with attractive conditions ▪ Site preparation starting from the needed lay-out located in an attractive area, applying very competitive reuting fees ▪ Possibility of adopting innovative and advanced services suitable for research and innovative tasks, possibility of using the existing compatibilities for the strategic management of the company with particular emphasis to the assistance in finding financial help from the Community ▪ Possibility of meeting with companies operating in different fields and of facilitating connection with university and excellent Researh Centres

II.8.3.2.4 Tecnoparco del Lago Maggiore

Services offered at the Tecnoparco del Lago Maggiore

Module	Short description of services
Infrastructure & Facility Management	Conference hall seats over 200 Tecnoparco is connected with the legal office Delfino e Associati Willkie Farr & Gallagher in Milano to get consulting assistance in finance and finacial law. It also offers support in laws connected with energy, telecommunication and information technology. Various Delfino skill assist the Tecnoparco in the field of tributary, of competition, of financial markets and insurance as well as litigation in front of the Court and Arbiter Colleges.
IT Information Technologies	**Computer laboratory area:** 11 PCs with Internet (Windows XP); Projection from Tutor PC, VHS and DVD projection; Shared colour printer. **Teaching area:** Seating for 30 speakers' platform with 3 microphones; VHS projector; Speaker and recording system (audiocassettes); Filming of courses and conferences with digital videocamera
Financing & Support	All innovation and development projects or series of projects must have an initial duration of five years (minimum duration of the partnership). Companies pay a highly competitive rent for the use of the Park's buildings, equipped workshops and service facilities. A contribution to the initial investment of less than one third of the total guarantees the use of machinery and equipment required to implement the project. The company has the option of buying off equipment and machinery at the end of the project. Competitive rates apply for the use of common facilities (Tecnolab, Conference Hall etc) Companies are guaranteed efficient assistance in elaborating EC programmes, business plans and draft agreements.

II.8.3.3 Most Important Tasks of the Park Operator

Question 9: What are the most important tasks of the park operator? What are the future perspectives for the chemical park management?

II.8.3.3.1 Bioindustry Park Canavese

Answer to question 9 - most important tasks of park operator - given by the Bioindustry Park Canavese

The Park believes that Life Science Technologies are strategic for the socio - economic development both on a local and global scale. Their integration with existent electronic and information technologies will lead to determing a range of solutions, which satisfy the needs of society in accordance with legal and ethical norms.

Furthermore the Park believes that it is necessary to encourage the relationship between business and research sectors in order to translate scientific discoveries into innovations so that everybody will profit from them:

- Stimulating collective projects of Research and Development
- Translating the results into patents and innovations
- Encouraging transfer technology process
- Supporting the creation of new companies through the creation of infrastructures
- Spreading all information and knowledge for an effective analysis of technologies and their productive potential.

The Park acts strategically in the identification, development and exploitation processes in order to achieve these targets.

Therefore the mission of the Park consists in:

- Creating a link between university and private research
- Assisting start-ups, spin-offs and the growth of innovative companies
- Providing incentives for R&D and technology transfer activities by offering scientific services and know-how
- Providing equipped premises at available and affordable costs in a highly specialised environment with logistic and scientific advantages
- Acting as positive factor for the development of the territory

II.8.3.3.2 Environment Park

Answer to question 9 - most important tasks of park operator - given by the the Environment Park
The Environment Park has been promoted by the Piedmont Region, the city of Turin and the EU. It represents an original experience inside of the European Scientific and Technological Parks for being able to connect technological innovation together with eco-efficiency jointly with very active companies and institutions. One of the most important goal of the park lies in the transfer of advanced and innovative technologies to SMEs as well as in the diffusion of the best practice linked to ICT and to the environment. Those results are achieved through special projects, information technologies and well oriented event organization. The Environment Park achieves the above project through a cluster in charge of doing R&D where the SMEs or public institution can develop R&D using areas well equipped and updated services which allow fruitful occasion of meetings for exchanging different experiences. The Park aims at forming new innovative SMEs is the fields connected with the environments and with ICT. This is achieved through technical support, managerial services and financing seeds in the start-up phase of a new company. The professional formation, together various information services contribute to the mission of the Environment Park also dedicated to increase the knowledge of the various faces within the environmental areas.

II.8.3.3.3 Parco Scientifico e Tecnologico Della Valle Scrivia

Answer to question 9 - most important tasks of park operator - given by the Parco Scientifico e Tecnologico Della Valle Scrivia
The Park is managed by a public-private partnership (public entities, research organisation and private companies) Its mission is to promote the diffusion of technological innovation as well as advanced management in close connection with the needs and characteristics of the SMEs in the territory. Thanks to an efficient and integrated management system, the Park is very active in promoting the connection between research activities and enterprises, which with years shall be able to create new job needs. The Park is a Business Innovation Center (BIC), which is part of an European network, operating in the assistance to SMEs start-up and innovation transfer. The Park is part of the Italian Business Angels Network (IBAN) and is the melting pot between people or organisations interested in the development of ideas and those who are avaible to take financial risk. On September 2003 the Park has achieved the UNI EN ISO 9001:2000 certification and its extension to the managing and people information. In conclusion the Park in Valle Scrivia is following the mission to help SMEs: 1. it is an organisation in which the SMEs can take advantages in terms of organised land, good technology and financial helps; 2. it is an active site for the research and innovation, also due to an integrated management system avaible for the SMEs located in the Park and those located in the surrounding territory.

II.8.3.3.4 Tecnoparco del Lago Maggiore

Answer to question 9 - most important tasks of park operator - given by the Tecnoparco del Lago Maggiore

The Tecnoparco project originated from a joint idea of the European Community and the Piedmont Region, with the aim of encouraging the development of new businesses through innovation in technology, processes, and organisation. Tecnoparco is currently the leading Technology Park for innovation and development in the north of Italy. It represents a new departure for this country, and will be of fundamental importance in the near future in the establishment of a competitive industrial sector with a high level of technology and quality.

To facilitate the achievement of these aims, Finpiemonte and Saia have founded Tecnoparco del Lago Maggiore S.p.A., a company which manages the development and operations of the Tecnoparco. The Park does not only offer the chance of development programmes, but something more: high quality computer links keep companies in close contact with universities, research institutes and EC data banks, as well as with other companies working in similar fields. The companies located in the Tecnoparco thus have the major advantage of almost instant access to outside sources of scientific, entrepreneurial and cultural information, and can remain at the centre of events while working in a tranquil natural environment.

The Tecnoparco is designed for dynamic companies, which may be small but which “think - and plan - big”. Companies thinking of locating in the Tecnoparco must possess certain requisites:

- innovative projects with precise plans for development and a definite market outlet;
- an administrative and financial situation which may be restricted but must be sound;
- clear ideas on how to implement the innovative project.

Interested companies are invited to submit their projects to the Tecnoparco for assessment; the procedures will be completed with the minimum delay, in accordance with EC directives. No further bureaucratic processes will be required from the companies – Tecnoparco will take care of everything else.

The Tecnoparco provides the favourable conditions for the success of companies whose innovative development projects might be delayed or shelved due to funding requirements. For a minimum period of 5 years, the Tecnoparco offers companies the use of buildings, installations, experimental equipment, the Tecnolab laboratory, and facilities such as a multimedial conference hall and full Internet access. The buildings, laboratories, and offices are owned by Tecnoparco and are let to companies for an annual rent which is very competitive in view of the quality of the facilities and the services offered.

Equipment required for implementing projects is bought by Tecnoparco with a small initial contribution to the investment by the companies, and remain the property of the Park. They are let to companies on payment of an annual rent, which is fixed according to the size of the company and the total investment. Companies can buy off equipment at the end of an agreed term.

II.8.4 Cooperation and Connections between the Locations

II.8.4.1 Evaluation of Cooperation within and between the Chemical Parks

Question 10: What kinds of cooperation inside and between the chemical parks exist in the region or are planned? How would you assess these cooperation?

Field of cooperation	Existing	Planned	Assessment[86]				
			++	+	0	-	--
Raw material network / feedstock cooperation							
Product network		X			X		
Procurement cooperation							
Marketing cooperation		X			X		
Joint investor attraction	X			X			
Location network							
Financial cooperation							
Development of human resources	X			X			
Logistic cooperation							
Others							

[86] Evaluation of the present condition

II.8.4.2 Best Practice Solutions for Cooperation

Question 11: What are best practice solutions for cooperation? Describe perspectives for future developments!

There are some projects by which the Parks promote the innovation.

Discovery Enterprise is a selection promoted by the Bioindustry Park of Canavese (scientific Park focused on Life Sciences) to find innovative ideas in life science and biotechnology with high technological contents. The entrepreneurial ideas will be selected, that will gain the following advantages:

- Installation in a 30 sqm (average size) equipped laboratory with basic services and easy rent,
- Support to company constitution,
- Assignment of a budget for single initiative, that Bioindustry Park may use to acquire scientific instrumentation to provide to the new company,
- Managerial training course participation for the new biotech entrepreneur,
- Introduction to potential investors which could provide funds for the achievement of the activity program during the first 24 months (seed capital activity),
- Availability of management tutorial services up to a maximum of 24 months from constitution,
- Facilitation for the use of scientific instrumentation/competences from LIMA (Integrated Laboratory of Advanced Methodologies).

The Park may award a lower number of concurrents.

Commitments of selected companies

The individuals or groups that will be selected, as they will be notified they will have to sign an engagement letter with Bioindustry Park in which they will undertake to:

- To create the company for the selected idea, for which the main proposer will be responsible, within three months from the selection notification.
- To install at least the operative unit of that company inside the Bioincubator of Bioindustry Park.
- To ensure Bioindustry Park, with a proper clause contained in the contract that will discipline the localisation of the initiative inside the Bioincubator, that a 3% percentage of future proceeds deriving from the activity performed in the Bioincubator will be given to the Park.

Presentation to the network of business angels and financers of Bioindustry Park

The selected ideas will be presented the network of business angels and financers of Bioindustry Park, that will tutor the meetings.

EPORGEN VENTURE is offering to selected ideas seed capital. EPORGEN VENTURE is formed by non institutional investors and is offering to start-ups not only capital but also networking and expertises. Together with Bioindustry Park, Erpogen Venture would like to operate as a catalyst and a promoter of the new biotech sector which shall represent one of the strongest of development activity inside the Piedmont Region.

The advantages originated from this initiative connected with selected projects are many and precisely:

- Customized laboratories connected with the project located in the incubator of the Park,
- Utilisation of space and structures of the Park,
- Access to molecular biology and university's chemistry laboratories located in the Park (attracting collaboration contracts),
- Wide utilisation of the services offered in the Park,
- Erpogen use of managerial and administrative competences,
- Erpogen use the scientific support offered by an ad hoc committee,
- Erpogen seed capital sufficient to cover the expenses of the first 2-3 years of a new company,
- Erpogen business plan development,
- Erpogen aid in finding financial support from European, national and regional institution,
- Stimulating and scientific environment,
- Environment where science and enterpreunerial have the same objective to collect advantages and opportunities.

Another project is *DIADI 2000* (Diffusion of Innovation in Piedmont Areas with decreasing industrial activities). Objective is to stimulate the industry innovation taking into account the skills operating in the Research System.

DIADI represents the activation of the article 2.4 contained in the Unique Programming Document of the Piedmont Region 2000/2006. This document represents the continuation of the DOCUP organised in the years 1997 to 1999 and other passed bi-annual programs. DIADI is the meeting point between SMEs and R&D centres to promote the industrial grooving.

The DIADI initiatives comprehend 36 months from 2004 to 2006 for Piedmont Projects and are dedicated to SMEs inside of the objective 2. It includes R&D centres as well as territorial centres which have to be committed to make possible the DIADI application. The participation to DIADI means an immediate connection with Piedmont Accademies and Science Centres which offer to SMEs technological solutions, consultancy, strategic support, basic science to allow them innovative technologies, competitivity and better productivity. The DIADI services are financed (in Ob. 2 areas) with founds provided by the EU.

To further promote the activities and the image of the Parks as well as diffuse and transfer the technological achievements and high competence in IT, a *Technonet Consortium* has been settled in 2001. This Consortium includes Finpiemonte and the Scientific Parks founded by the Piedmont Region. Doing so Technonet include the activities of more than 200 companies located in the parks, the collaboration with more than 22 departments operating within the three universities in Piedmont, the link to 19 Italian universities and 9 National Parks. Moreover collaborations are going on with 26 universities and 11 research centers located in Europe and abroad. The know-how achieved allows the Piedmont Parks to act as "open opportunities" to interact with the surrounding areas as well as to participate in R&D programs within the EU Framework Research Program and OCSE R&D activities.

II.8.4.3 Presentation of Existing Material Flows

Question 12: Give an overview of the existing material flows! (feedstook cooperation, raw material networks, Produktverbünde)

In the chemical locations, the material flows (feedstock cooperation, row material and product networks) must be realised placing safety at first. Today many flows are still not very safe.

Too many movements of materials and products are still done by trucks. Railway and sea boats systems must be enhanced to again speed of movements with higher safety.

Implementing the transportation with containers and railway thanks to a real development of shunting centres, the transportation by trucks shall be substantially reduced with the achievement of a highly safety materials and products flows.

II.8.5 Importance of Chemical Parks for the Regional Development

II.8.5.1 Relevance of Chemical Parks for the Regional Development

Question 13: How important are the chemical parks for the region?

The Technonet in Piedmont is the focal point for the development of activities in the region. The Park's mission is to introduce innovation suitable for SMEs in the region, to attract new investment at the local level and to promote the start-up of innovative companies.

The Project

The Technonet project was organized by the Piedmont Region together with Finpiemonte (the finance entity of Piedmont) at the end of the last century. The initiative has put together know how and capabilities from public and private organisations.

This Piedmont inititive has consolidated the technological park model being able to make easier the transfer of the research results to industry, following the experience of similar action gained in Europe and the United States.

The Costs

The Technonet project required a total capital of more than 150 milion Euros granted by the European structural funds.

Today

Since the installation of the plants and the settlement of SMEs has been concluded, the Parks are now operating with improved capabilities, serving as research centres in collaboration with universities and politechniques. In this conditions they can offer better services as well as high tech and properly assist "incubator" activities to new entrepreneurs.

Besides these activities, all Parks are committed to set up new joint initiatives connected with the technology transfer, within the whole Piedmont territory acquiring companies operating inside traditional industrial activities as well as in high tech and advanced technologies.

Within this frame, Finpiemonte keeps a financial duty both on the coordinating side and on the control of the financial initiatives.

II.8.5.2 Integration of the Chemical Parks into the Regional Innovation Landscape

Question 14: How are the chemical parks integrated in the regional innovation environment? Which contacts are established between industry and science/research? What are the innovation potentials of the location? Which innovation activities are planned in the future?

Offering the regional innovation environment, the Piedmont Region plays an important role in relation to the Parks : the region has supported their foundation through Finpiemonte S.p.A., a regional financing institute oragnised as public-private-partnership with the major capital given by the Piedmont Region.

Private industry in Piedmont spends a total of 1.6% of its regional GDP in R&D, putting it in second place in Europe, preceded only by the region of Baden-Württemberg. With the Politecnico of Torino, the University of Torino and the University of Eastern Piedmont, the region can benefit from the presence of three internationally recognised universities with over 30,000 students. Additionally in Piedmont, education and research are also conducted outside the universities' environment, thanks to an exceptional network of research insitutions, both public and private, and of specialised institutes.

In Piedmont there are:

- 3 universities with chemistry-related departments,
- 25 private and public research centres (excluding the departments of the universities) with recognised specialisation in chemistry-related topics,
- 4 scientific & technological parks with chemistry-related competencies,
- 2 incubators,
- 2 Business Innovation Centres

During the year 2006, 4 regional incubators (in Colleretto Giacosa, Torino, Garessio and Borgo Vercelli) will be opend outlining an investment of 17 million Euro.

Today the Technonet consortium coordinates and manage the projects connected with technology transfer in the whole Piedmont Region, providing management to the model which is its first aim since its founding. The Technonet Consortium overcomes this role in the sense that today it is promoting technological parks. As a result, it can combine the service of gathering other structure with excellence in science and technology active in the Piedmont territory. In fact it can be used as regional source for innovation and support of the regional strategy towards the competitive development.

The Regional Innovation System: The Case of Piedmont

In regard to the innovation system in Piedmont, there are many positive aspects of the local innovation system, as well as some shadows. It represents a useful base that politicians can use to improve innovation policy fostering local competitiveness.

We surveyed the recent economic literature about the theory that supports the concept of Regional Innovation Systems, and its role in the local development. The model supports the idea that innovation is not only a strategic tool used by companies in order to achieve competitive advantage, but also a "public good" with respect to which the market forces are ineffective.

Within this contest, private companies can use public infrastructures to invest in innovation and in research and development (R&D). These infrastructures are composed of public R&D centres, such as the University of Turin, the University of Piedmont, the Polytechnic of Turin, local institutes from the Italian National Research Council, and local institutes from the Italian Ministry of Education, Research and University. In addition, we have counted five Science and Technology Parks (4 with chemistry-related competencies) and some Business Centres that support local investment in R&D and innovation. The R&D infrastructure provides information and know-how to the local companies that demand innovation. These firms are “innovative companies”, in the sense that they deal with several R&D strategies, such as to make R&D project (both internal or external in association with public R&D centres), to exploit know-how, apply for patents or acquire patents, to use the EU, regional or national R&D funds.

All these actors are belonging to the Regional Innovation System; which consists of actors and institutions; their relationships; and the local R&D infrastructures.

In Piedmont the R&D investments are very high: In 2001 there were 18,000 researchers, of whom 13,000 are operating within a company; the innovative companies invested 1.4 billion Euro, representing a leadership at the Italian and, sometimes, at the EU level. Private R&D investments represent approximately 80% of the regional R&D investments, making Piedmont respecting the "technological parameters", given by the 2000 Lisbon EU proposal (that proposal asks for a private research that represents at least two thirds of the total R&D effort).

As a matter of fact, the technological leadership of Piedmont has some uncertainties, considering the dynamics of the local data within some time. The national weight of the Piedmont R&D have decreased considerably: in 1994 it was 15.4% of the Italian R&D investments, whereas in 2001 it was only 13.5%.

This decrease is probably caused by the decline of the large companies in the reion: the closing of Olivetti, the decline of large R&D private centres, such as Instituto Donegani (Ferruzzi-Montedison), Cselt-TiLab (Telecom), R&D Fiat Centre. Maybe, this is why the R&D investment made by local companies have been reduced, compared to the Italian average (the share went down from 25% in 1994 to 22% in 2001).

On the contrary, the investment of the public R&D centres have stayed constant, although they are very low and weak: public R&D investments represents only 5% of the national ones, a share lower than the economic role of Piedmont, counting for 9% of the Italian GDP. Within the public R&D centres, low investments mean that they do not exploit R&D economies of scale and they do not reach the critical mass to overcome barriers of entry in the new technological fields.

The macroeconomic R&D statistics are the sum of activity of the single microeconomic investments made by each actor. The activity of each actor is described in the sections 3-5: the main characteristics of universities and public R&D centres, Science Parks and Business R&D centres, innovative firms.

As far as the universities and public R&D centres are concerned, the study counts 3,500 researchers in nearly all scientific categories, mainly in the Turin area. In addition, the dispersion of public centres according to scientific areas, dimensions and belonging Institutions should be considered. Some public R&D are specialised in a very narrow "scientific windows", others deal with a general technological progress. On the one hand, 31 public R&D centres employ less than 20 researchers, while on

the other one has more than 100. Some of the R&D centres are belonging to university or polytechnic departments, others to the Italian National Research Council, to the Enea or to Italian ministries, whereas there are several new R&D centres belonging to public-private joint-ventures, such as the five Science Parks, Istituto Boella, Torino Wireless, Labotatorio Materiali e Sistemi.

The actors engaged in the creations of new relationships between firms and R&D centres were examined as well: they are Science Parks and Business R&D centres.They provide the technology, bridging the gap between the demand coming from the innovative companies and the supply coming from the R&D centres.In the 5 Science Parks there are more than 100 enterprises (year 2004) and 1,000 employees; some R&D infrastructures, such as offices, warehouses, R&D laboratories, general technological services; some incubators of new technology based companies (25 enterprises in total).The 10 business R&D centres are a kind of specialised according to technology, local area, and companies' size.

In general, the study shows that these actors try to create R&D external economies, in favour to local innovative companies.

In order to verify the existence of such innovative companies, within the study a survey of that firms was conducted, using a definition of "innovation" that considers several criteria. Nearly 500 enterprises following an innovation strategy by using an internal R&D centre or an external one were identified. The outsourcing process of R&D is executed in relation to public R&D centres, subcontracting firms, customers.

A very interesting result is the fact that in Piedmont there are about a hundred small enterprises that run a small R&D centre: mainly laboratories trying to find new solutions to improve the competitive advantage of the companies.

The last section of the study is devoted to the proposal of a new local R&D policy. The role of the actors responsible for technology transfer and trading between demand and supply of know-how is strongly supported. Local policy should invest mainly in these actors, in order to improve the effectiveness of the production of know-how within the public R& centres.

II.8.5.3 Relevance of the Chemical Parks for Human Resources

Question 15: How relevant are the chemical parks for the development of human resources? (e.g. public acceptance, training, qualification)

The Bioindustry Park collaborates with universities, public and private training centres as well as orgaisations specialised in training courses on technical, scientific and managerial fields. Inside the Park there are some students, graduates and PhDs who are guest for training periods on focused topics. Visits of students from the high school level are also favoured.

Some meetings and workshops on analitical and diagnostic biotechnologies, and bioinformatics are organised.

The LIMA is a permanent training site for new graduates and researchers who intend to specialise in biotechnology and scientific methodologies oriented towards applied research in the chemical, pharmaceutical, diagnostics, biomedical and food industries.

The Environment Park organises multimedia training and managerial training courses.

The Parco Scientifico e Tecnologico della Valle Scrivia organises vocational training courses in ICT, communication, languages, quality, enterpreneurship, mechanic performance of materials, optics and laser industrial application and protection.

If the courses are financed in the FSE framework or in similar frameworks, the training is associated to a public qualification.

II.8.5.4 Importance of the Chemical Locations for the Development of SME

Question 16: Which role do chemical locations have for the development of SMEs? (e.g. outsourcing, industrial services, spin off and start-ups)

With the view of giving further support and assistance to the SMEs and make easier the diffusion and transfer of technology innovation towards the industries as well as to develop applied research and stimulate the build up of new companies through incubators, Finpiemonte, the financing side of the Piedmont Region, has given rise to six technological parks each of them specialised in advanced technological sectors: environment and ICT (Environment Park, Torino), biotechnology (Bioindustry Park, Ivrea), high tech (Tecnoparco, Verbania and PST, Tortona), Virtual Reality and Multimedia Park, Torino, Technology for senior and for unable persons (Torino). The first four named parks are connected with chemistry. From the description given above is can be understood that the importance of the sites is connected to the establishment of SMEs. These start-up, spin-off, incubators or simply companies located in one of the chemical location mentioned above can receive a vaste help through services which allow to reach important economic benefit. On the other side, these SMEs can be an outsourcing target for big companies, which consider the technological Park as a site, publicly recognised, for doing research and transfer of know-how.

II.8.5.5 Integration of the Chemical Locations in Economic Initiatives or Networks

Question 17: How are the chemical locations integrated in regional economic initiatives or networks for the promotion of the chemical cluster in your region?

The technological Parks located in Piedmont are linked together thanks to the “associazione Tecnorete Piemonte” which has been established on October 14, 1997 supported by the Piedmont Region and its financial subsidiary Finpiemonte. This structure has been establish also using the financial support of the EU available for locations suffering from industrial decline.

The main objectives of Tecnorete Piemonte are the following:

1. **Produce** plans suitable for funding by the public systems (national, international, European Community) or by big economical trusts. This has the aim of favouring development and innovation policies through the development of the Piedmont scientific Parks. In this regard, projects oriented to the formation of favourable conditions for the start-up of new companies (NEWCO) are playing a vital role.
2. **Diffusion** of information connected to the objectives, results, know how achieved inside each Park. Diffusion is also realised by the exchange of experience with international organisation in order to gain knowledge on initiatives oriented to cooperation and technological development.

II.8.6 Perspectives and Basic Conditions for Chemical Parks

II.8.6.1 Success Factors for the Efficiency of Chemical Parks

Question 18: What are success factors for the performance of chemical parks?

Success Factors	Assessment				
	++	+	0	-	- -
Attraction of new investors	X				
New business ideas	X				
Innovation development	X				
Low prices / costs	X				
Scope and quality of services	X				
Facility leasing		X			
Outsourcing			X		
Networks and partnerships		X			
Settlement of external research infrastructure on the location	X				
Joint marketing activities		X			
Location / chemical site network	X				
International cooperation and exchange of experiences	X				
State aid	X				
Licence acquisition		X			

II.8.6.2 Development Needs for Chemical Parks

Question 19a: What are the most important development needs for the future of chemical parks?

To assure the Chemical Park future there is the need to do the following:

1. A capability of active contacts outside the parks in order to enable diffusing the results and know how developed or under development. This can be realised by a unique office operating inside the technical network on behalf of each Park.
2. Continuous contacts with scientific sites (universities, polytechnics and national as well as international organisations, etc.)
3. An aggressive proposal of projects to SMEs outlining industrial opportunities, showing feasibility studies and patentability of the results.
4. Acquiring funds from various sources involving also the institutions or SMEs interested in the project.
5. Minimize bureaucracy to make the transfer of the results easier.
6. Availability of the access to data banks to be able to prepare proposals with up-dated content.

Question 19b: Which further requirements exist for the development of the chemical parks?

Question	Answer
(1) Is there enough free area available for new chemical investments?	Yes
(2) How large is the area available for settlements?	Several thousand hectares
(3) How do you assess the development in the future? Is there a need to build up new settlement areas outside the existing chemical parks?	There is the need of refurbishing several abandoned facilities. Others have to built.
(4) Number of newly planned chemical / industrial parks:	4 industrial parks
(5) Size of new settlement area to be developed in the next 5 years:	Data not available, but restructuring of wide areas could be carried out in a couple of years

II.8.6.3 Needs for Improvement of Competitiveness of Chemical Parks

Question 20: Which actions are needed to further improve the competitiveness of the chemical parks?

- The Chemical Region must debate and act as an efficient and cheap supporting and promoting system of the chemical Parks;
- The Parks' activity should never be submitted to stop and go actions;
- High competitiveness can be achieved operating inside of very challenging and demanding competences;
- Excellence in experimental planning and reporting (frequent reporting helps a lot in planning);
- High competitiveness can be achieved through meetings with experts worldwide, recognised with marketing organisation, to maintain the head and with interdisciplinary competence operating inside the R&D projects.
- Participation to scientific events is very fruitful for measuring the validity of the research projects.
- National or, even better, international recognitions of the most attractive activities carried out in each Park increase the trust of the interested organisations or companies.

II.8.6.4 Conclusions for Positions of the Chemical Locations in Relation to National Governments and the EU

Question 21: Which conclusions can be drawn for the development of joint positions of chemical locations towards the national government and the European Union?

- First of all, in Italy much more funds must be made available by the national government in order to achieve a comparable possibility of doing R&D in chemistry with respect to the other European Countries (the Lisbon parameters).
- More and more green and sustainable chemistry must be developed in order to have processes with affordable or no environment constrains. Doing so, more reputation will be given to this essential branch of industrial activity.
- National government and European Union must reduce substantially the bureaucracy in funding R&D projects. Too much time is involved in the preparation of proposals and in reporting the non-technical results. If the above does not happen SMEs will never be able to reach the financial benefits made available for R&D.
- Diffusion of results and information to gain consensus from the population must be given. Exchange of experiences obtained from the above are very helpful in disseminating the real benefits achievable in doing chemistry with safely goals.
- The development of joint position within the chemical location must come principally by the attitude versus safety chemistry developed inside of the European Union governments.

III Conclusions

III.1 Overview of Chemical Parks in Europe

Table: A. Chemical parks in Europe

.	Chemical location / park Industrial park	Region	Park operator Website	Organisation model	Structure	Total Area (ha)	Free Area (ha)	Employees	Number Enterprises
1	ChemiePark Bitterfeld Wolfen	Saxony-Anhalt	Preiss-Daimler Chemiepark Bitterfeld Wolfen GmbH www.chemiepark.de	Private park operator	Open mixed type	1,200	208	Approx. 11,000	360
2	Chemiestandort Leuna	Saxony - Anhalt	InfraLeuna Infrastruktur und Service GmbH www.infraleuna.de	Own park operator with shareholders	Closed	1,300	100	Approx. 9,000	>100
3	Dow Olefinverbund ValuePark®	Saxony – Anhalt Sachsen	Dow Olefinverbund GmbH ValuePark® www.dow.com/valuePark	Major-User	Closed	150	60	750	14
4	Chemie- und Industriepark Zeitz	Saxony - Anhalt	ZSG Zeitzer Standortgesellschaft mbH www.industriepark-zeitz.com	Private Park operator	Open / Mixed type	232	85	Approx. 1,000	40
5	BASF Schwarzheide	Branden-burg	BASF SchwarzheideGmbH www.basf-schwarzheide.de	Major-User	Closed	230	100	2,100	> 20
6	Agrochemistry Park SKW Piesteritz	Saxony - Anhalt	SKW Stickstoffwerke Piesteritz GmbH www.skwp.de	Major-User	Closed	389	40	660 SKW Piesteritz	25
7	Industriepark Solvay Bernburg	Saxony - Anhalt	Solvay Infra GmbH www.solvay.de/Bernburg	Major-User	Closed	43	12		24

.	Chemical location / park Industrial park	Region	Park operator Website	Organisation model	Structure	Total Area (ha)	Free Area (ha)	Employees	Number Enterprises
8	Bayer Chemical Park, Location Dormhagen	NRW	Bayer Industry Services GmbH & Co. OHG www.bayerindustry.de	Multi User, major independent park operator	Major open type	600	29	9,700	
9	Bayer Chemical Park, ocation Leverkusen	NRW	Bayer Industry Services GmbH & Co. OHG www.bayerindustry.de	Multi User, Major independent operator	Major open type	340	25	30,000	
10	Bayer Chemical Park, Location Krefeld-Uerdingen	NRW	Bayer Industry Services GmbH & Co. OHG www.bayerindustry.de	Multi User, Major independent operator	Major open type	300	24	7,000	
11	Chemical Park Marl	NRW	Infracor GmbH Marl www.chemsite.de	Multi User	Major open type	650	60	Appr 10,000	
12	Chemical Park Gelsenkirchen-Scholven	NRW	BP Refining & Petrochemicals GmbH www.bprp.de	Major User	Major open type	300	89		
13	Chemical Park Gelsenkirchen-Horst	NRW	BP Refining & Petrochemicals GmbH www.bprp.de	Major User	Major open type	160	11		
14	Chemical Park Castrop-Rauxel	NRW	Infracore GmbH Marl www.chemsite.de	Major User	Major open type	106	15		
15	Intermunicipal Industiral Park Doprsten / Marl	NRW	Projektgesellschaft Industriepark Dorsten / Marl mbH www.industriepark-dorsten-marl.de	Multi User	Major open type	136	65		
16	Chemical Park Knapsack	NRW	InfraServ GmbH & Co. Knapsack KG www.infraserv-knapsack.de	Multi User, Major independent park operator	Major open type	160	20	2,500	
17	ChemCoast Park Brunsbüttel	Schleswig Holstein	Egeb Entwicklungsgesellschaft Brunsbüttel mbH www.chemcoast.de	Multi User	Major open type	2000	501	4,000	17
18	Industrial Park Nienburg IPN	Lower Saxony	Industriepark Nienburg GmbH www.industriepark-nienburg.de	Major User	Major open type	20	5	400	9

.	Chemical location / park Industrial park	Region	Park operator Website	Organisation model	Structure	Total Area (ha)	Free Area (ha)	Employees	Number Enterprises
19	Industrial Park Walsrode IPW	Lower Saxony	Industriepark Walsrode IPW www.industriepark-walsrode.de	Multi User	Closed type	120	20	2,500	23
20	Chemelot	Limburg	Chemelot B.V. www.chemelot.com	Multi User	Open type	850	98	7,000	25
21	Plock Industrial and Technology Park (PPPT)	Masowia	Plock Industrial and Technology Park Joint Stock Company www.pppt.pl	Major independent park operator, Multi User	Mixed type	200	200	5*	3
22	Huelva Chemical Parks (Poligono de Celulosas; Poligono Industrial Punta del Sebo; Poligono Industrial Nuevo Puerto)	Huelva	AIQB www.aiqb.es	Multi User	Open type	2,375		6,333	16
23	BASF Ludwigshafen	Rhineland Palatinate	BASF Aktiengesellschaft www.basf-ag.de	Major User	Closed type	790	50	35,300	200
24	Bioindustry Park Canavese	Piedmont	Consortium of different organisations www.bioindustrypark,it	Multi User	Mixed type	15	13	18**	> 20
25	Environment Park	Piedmont	Spa with bigger partnership www.envipark.com	Multi User	Mixed type	3			75
26	Parco Scientifico e tecnologico della valle Scrivia	Piedmont	Public Private Company www.pst.it	Multi User	Mixed type	10	5	24	

* Employed by the park operator, investment activity started in 2005

** In the management of the Science Park

III.2 Evaluation of the Quantitative Indicators

III.2.1 Cooperation and Connection between the Locations

III.2.1.1 Evaluation of Cooperation within and between the Chemical Parks

Question 10: What kinds of cooperation inside and between the chemical parks exist in the region or are planned? How would you assess these cooperation?

		Assessment							Existing							Planned							
Rank	**Field of cooperation**	LSA	NIE	LIM	MAS	HUE	RPF	**AVE**	LSA	NIE	LIM	MAS	HUE	RPF	**EXIST**	LSA	NIE	LIM	MAS	HUE	RPF	**PLAN**	**E+P**
1	Raw material network	2	1	2	1	2	2	**1,67**	1	1	1		1	1	**5**		1	1	1			**3**	**8**
2	Product network	1	2	2	1	1	1	**1,33**	1	1	1		1	1	**5**				1		1	**2**	**7**
3	Location network	2	1		1	-1	2	**1,00**	1	1	1		1	1	**5**				1			**1**	**6**
4	Development of HR	1	0		2	1	0	**0,85**	1	1		1	1	1	**5**							**0**	**5**
5	Marketing Cooperation	1	2		2	-2		**0,68**	1	1		1			**3**							**0**	**3**
6	Joint investor attraction	1	1		2	-2		**0,50**	1	1	1	1			**4**		1					**1**	**5**
7	Logistic cooperation	0	2		1	-1		**0,42**	1	1			1		**3**		1		1			**2**	**5**
8	Procurement cooperation	-1	1		1	0	1	**0,40**		1					**1**	1			1	1	1	**4**	**5**
9	Financial cooperation	-2	-2		1	-2		**-1,25**				1			**1**	1						**1**	**2**
10	Others:														**0**							**0**	**0**
11	Innovation network	1		2		0		**1,00**	1		1				**2**					1		**1**	**3**
12	Cluster politics	2						**2,00**	1						**1**							**0**	**1**
13	Energy Steam			2				**2,00**		1					**1**							**0**	**1**
14	Maintainance			2				**2,00**		1					**1**							**0**	**1**
15	Environmental activities			2				**2,00**		1					**1**							**0**	**1**
16	Port Logistic			2				**2,00**		1					**1**							**0**	**1**

[2 = (++); 1 = (+); -1 = (-); -2 = (--)], LSA = Saxony-Anhalt, NIE = Lower Saxony; LIM = Limburg; MAS = Masovia; HUE = Huelva; RPF = Rhineland Palatinate

The cooperation inside and between chemical parks is an important element for the future development of chemical parks. The following conclusions can be drawn from the assessment:

The raw material network and feedstock cooperation are the basis and the starting point for the cooperation of chemical parks. Due to the specific production characteristics of the chemical industry the provision of raw materials and products in the value added chain is the first and most important precondition for a successful chemical industry. Therefore almost all locations have developed forms of this kind of cooperation or are planning to further extend this cooperation. The positive assessment of the items raw material network / feedstock cooperation (1,67) and product network (1,33) stress this fact.

The network between different chemical location plays also an important role (1,0). There are several best practice solutions in the different regions, such as CeChemNet in Central Germany, ChemSite and ChemCologne in NRW, ChemCoast in Northern Germany. Furthermore, the development of human resources is an important topic of cooperation. Taking into account the challenges of innovation and productivity, the education of the work force is a competitive advantage for the chemical locations, also considering the global dissemination of technology and the growing competition in the low cost chemistry by Asian enterprises. Furthermore, the demographic change will become a major challenge for the chemical industry. In some regions such as Eastern Germany the shortage of qualified employees will become a problem already in the near future. Therefore the coordination of research activities and university development and economic activities of the chemical enterprises should be further strengthened in the future.

Marketing cooperation and joint investor attraction receive a slight positive assessment. There are some successful examples of this cooperation in some regions. This form of cooperation requires a strong commitment and trust between the stakeholders as the cooperation partners are of course also competitors. A potential new investor could benefit one partner more than another. Therefore there must be a strong consensus about the joint activities. Nevertheless the importance of joint marketing will grow in the future due to the growing competition in the global market. A single location is not strong enough to attract the awareness of international investors. A strong joint representation of interest can improve this situation. Furthermore, the chemical sites could use their complementary strength for the attraction of new investors, which would benefit all partners of the network.

Logistic and purchase cooperation receive a rather slight positive assessment. Taking into account the fields of cooperation which have been mentioned under others (Energy, Maintenance, Environmental, port logistics) this area could receive a better evaluation. Several chemical parks plan to extend cooperation in this area, which could also support a better evaluation. The cooperation area cluster policy and cooperation with innovation are only established in few regions with a positive assessment. Taking into account the positive assessment of the success factors (see table below) these cooperation areas will become more important in the future.

III.2.2 Perspectives and Basic Conditions for Chemical Parks

III.2.2.1 Success Factors for the Performance of Chemical Parks

Question 18: What are the success factors for the performance of chemical parks?

Rank	Success factor	LSA	NIE	LIM	MAS	HUE	RPF	AVE
1	New business ideas	1	1,5	2	2	2	2	**1,8**
2	Attraction of new investors	2	2	2	1	1	2	**1,7**
3	Innovation development	1	1,5	1	2	2	2	**1,6**
4	Joint marketing activities	2	1	1	2	2	0	**1,3**
5	Low prices / costs	1	1	2	1	2	0	**1,2**
6	Networks and partnerships	1	1	0	2	1	2	**1,2**
7	Scope and quality of Services	2	1,5	0	1	1	1	**1,1**
8	Location / chemical site network	1	0,5	0	2	1	2	**1,1**
9	International cooperation and exchange of experiences	1	0,5	2	2	0	0	**0,9**
10	Settlement of external research infrastructure on the location	1	0	1	2	-1	1	**0,7**
11	State Aid	1	1	0			0	**0,5**
12	Outsourcing	1	0	0	1	0	0	**0,3**
13	Facility Leasing	0	0	0	0	1	1	**0,3**

[2 = (++); 1 = (+); -1 = (-); -2 = (--)], LSA = Saxony-Anhalt, NIE = Lower Saxony; LIM = Limburg; MAS = Masovia; HUE = Huelva; RPF = Rhineland Palatinate

The evaluation of the answers from six regions to the question about the success factors for the performance of chemical parks shows an interesting picture. The success factors can be grouped into three different areas:

Very important success factors

The first three items new business ideas (1,8), attraction of new investors (1,7) innovation development (1,6) show a strong positive assessment done by the chemical parks. This pictures states the need for the further development of the chemical parks by developing new and innovative businesses being successful in the international competition. Especially, focussing on innovative products serves as an important strategy to improve competitiveness. Most of the chemical parks offer large and well suited areas for new settlements in the chemical industry and there is a strong competition for the attraction of new investors.

Important success factors

The items Joint marketing activities (1,3), Low prices /costs (1,2), Network and partnerships (1,2), Scope and quality of services (1,1), Location and chemical site networks (1,1), International cooperation and exchange of experiences (0,9) and Settlement of external research infrastructure receive a positive assessment of the chemical parks. An important topic is the growing cooperation between chemical parks and their regional environment. An example is the successful development of networks between chemical sites that work on several topics and have a strong focus on the joint marketing of the chemical location (e.g. CeChemNet, ChemSite, ChemCologne, ChemCoast etc.). There is also growing cooperation within the regional innovation landscape. Some locations have recently attracted the settlement of high value research infrastructure on their sites (Fraunhofer pilot plant centre for polymer processing in the ValuePark or the Geleen Campus in Limburg). Again this states the importance of innovation for the future development of chemical parks. There is a strong networking at the regional level, but also at the international one. Several European Chemical Parks have started an initiative to develop a European Platform of Chemical Sites (European Chemical Site Promotion Platform ECSPP) in order to present the European chemical locations in a global environment. The Scope and quality of services and the relative cost position of the chemical parks are decisive factors for the settlement of new investors. Therefore these issues are constant topics of discussion and improvement. Especially the cost intensive infrastructure of chemical parks requires an efficient use.

Less important success factors

A surprising result of the evaluation is the fact that state aid receives only a slight positive assessment of the chemical parks. Two reasons could be used to explain this fact. On the one side, chemical parks could anticipate the decreasing amounts of state aid in the future and consider the economic factors of an investment or the shaping of basic conditions as more important than the direct public financial support. On the other side, the public support has been an important factor for the restructuring of the chemical industry in the transformation economies. Therefore there might be different opinions in the regions depending on their specific situation. The topic of state aid is also a very complex issue that needs a strategic and long term commitment of the enterprises in their region. Complaints about administrative burdens or also about unfair competition could also cause the negative evaluation of state aid in this respect. The topic of outsourcing and facility leasing is considered to be less important for chemical parks. Possibly most of the outsourcing activities have already taken place in the 1990s and today there is a more realistic picture about this topic.

III.3 Conclusions for Interregional Exchange of Experiences on the Basis of the Identified Best Practice Solutions

Chemical Site Initiatives

There are several best practice solutions regarding the cooperation of regional chemical sites in joint networks and initiatives. CeChemNet in Central Germany, ChemCoast in Northern Germany, ChemSite and ChemCologne in North Rhine Westphalia show interesting approaches to establish new forms of cooperation between chemical parks. Within these chemical site initiatives a broad knowledge of chemical park management is summarised, which is often also offered as a service to external investors. This extensive knowledge could serve as the basis for a future exchange of experience at the European level. In recent years, the German chemical site initiatives have started to cooperate and organise joint exihibition boothson chemical fairs. Furthermore, the German Chemical Association VCI has organised an expert working group on chemical parks that brings together the major stakeholders. In addition at European level, the European Chemical Site Promotion Platform (ECSPP) has started to intensify international cooperation to strengthen the marketing of the location “Europe” in the global competition with Asia and the Far East. The potential target group could be defined as the parks, not having developed intensive cooperation relations, or parks currently opening their location for new investors. The development of the Plock Chemical Park in Masovia is very interesting in this respect and future cooperation opportunities could be evaluated.

Innovation Development

The innovation development has been assessed as one of the most important factors for the chemical parks and the chemical industry. New and innovative products or improved processes are the precondition for the sustainability of competitiveness in the future. There are interesting examples for the settlement of research infrastructure directly on the chemical park, such as the Fraunhofer Pilot Plant Centre for Polymer Synthesis and Processing in the Value Park in Schkopau (Saxony-Anhalt), the DSM Research Campus in Geleen (Limburg) or the “chem2biz” initiative in Rhineland Palatinate. These research entities could also act as incubators for start-up companies that develop new technologies. The analysis of these best practice solutions could be an added value for other chemical parks in Europe as well, trying to strengthen their orientation on innovation. Furthermore, most of the chemical parks have developed cooperation with universities and research institutions in the regional environment to use the existing research and development potential. This cooperation is especially important for the adjustment of industry demand and research supply. Finally, the support of qualified human resources is a decisive factor for the innovation capacities of the chemical parks. Joint activities could help to keep and attract highly qualified employees in the region.

Raw Material Network and Logistic

The provision of adequate raw materials and products in chemical parks is on of the most important success factors. Therefore most of the chemical sites have developed sophisticated raw materials and product networks that strengthen the competitive advantage of the location. These networks determine the production and growth potential of the chemical park. Due to the extensive knowledge that exists in the chemical parks, such as the BASF “Verbund” model, there is a big potential for exchange of experience. Furthermore, the connection between chemical locations also at European level could be a topic for cooperation. The improvement of logistic conditions such as pipelines, rail, port or road could help to overcome the barriers between Eastern and Western Europe and contribute to the integration of chemical locations in Europe. Therefore the discussion about the development of Trans European Networks should be also examined in the view of the benefits for the chemical park development.

Cluster Development

The cooperation of the industry, administration, politics and science is especially well developed within the chemical industry. In some of the examined regions, efficient cluster structures and cluster processes have already been established such as the Cluster Chemie/Kunstoffe within the Regionenmarketing Mitteldeutschland (Saxony-Anhalt) and the “Chemie Limburg” initiative. Due to the importance of the chemical industry for the regional economy and employment, there is a tendency to discuss common problems and agree on joint positions and strategies for future activities. The chemical parks are often a strong stakeholder in this process, fulfilling an important function. The success ofcluster activities depends on the commitment of the participating stakeholders and the clear articulation of interest. Therefore, chemical parks expect advantages, offered by actively participating in those kinds of processes. The best practice examples might be interesting for other regions that have stated problems regarding cooperation and communication in their region. Huelva, for instance, has describe the present challenge of improving the cooperation between administration and industry.

Financing Opportunities

The attraction of new investments is crucial for the further development of chemical parks. Due to the high cost intensity of the chemical industry, high amounts of money is needed. Therefore, the provision of favourable financing opportunities represents an important factor for the attraction of new companies or the extension of existing productions. In the survey, the chemical parks have stated the need of improved access to venture capital. The exchange of experience about successful solutions in the different regions could help to contribute to this improvement. Furthermore, the new Basel II rules will especially challenge SMEs. The advantage of being located on a chemical park should be taken into account for the calculation of the risk rate. In Saxony-Anhalt, chemical parks have discussed this topic together with public and private banks to promote the specific advantages. This discussion should be extended in the future, possibly at the European level, too.

Chemical Park Monitor

The presented study contains a broad collection of information about various chemical locations in Europe. On this basis a European “Chemical Park Monitor” could be developed that contains relevant information about chemical parks and monitors the development of several topics such as innovation, human resources etc. The information could be grouped in thematic modules that is open to enlargement and should be updated regularly. The Chemical Park Monitor could also be a marketing tool to present the different locations. Furthermore, cooperation activities could be facilitated. The collected knowledge could also be published in an online database. Cefic, the ECRN and other interested stakeholders should be involved in the work to ensure high dissemination and up to date information. All together the Chemical Park Monitor could be a part of a larger Resource Centre of Chemical Regions that collects and disseminates information about the chemical sector in Europe (industry, research, environment etc.)

III.4 Final Evaluation and Recommendations

1. Chemical parks have a increasing importance in the global restructuring process of the chemical industry. On the one hand they represent a result of the global development trends such as concentration of enterprises on their core business and outsourcing of production and services. On the other hand they ensure competitive advantages for the enterprises by providing a modern infrastructure and an efficient park management.	**Global restructuring process of the chemical industry**
2. Chemical parks and industrial parks with a focus on chemistry concentrate different production and service companies on one location. This creates good conditions for the development of value added chains in the upstream and downstream fields of the chemical industry. The development of regional value chains builds the basis for growth and employment in chemical regions. In this function, many chemical parks are regional growth poles with high networking potential. The chemical locations often have a strong influence on the image of the economic region.	**Value added Chains** **Regional growth poles**
3. Due to the concentration of enterprises, chemical parks are especially useful for the development of synergy potentials between the enterprises on the location and in the regional environment. Especially the synergies between enterprises along the value chain and the industrial related service providers are important. The industrial related services are a growth area with stong employment perspectives.	**Synergy potentials** **More employment**
4. An international visible and consequent profile of the chemical parks is a decisive success factor in global competition. Product oriented specialisation, development of production and infrastructure networks as well as the image of global acting players influence the reputation of the different chemical locations as much as the proximity to big cities and their economic and innovation potentials. The locations are increasingly shaped by the innovation oriented focus of enterprises and the settlement of relevant infrastructure and research institutions.	**International Profile**

5. The costs for infrastructure are high in relation to other industrial and business locations, due to the specific production conditions of the chemical industry. This fact increases the need for the development of production and infrastructure networks with synergy effects for the optimisation of costs. On the other side, there must be an optimal balance between the existing infrastructure and the production. Especially locations in a transformation process, as in Eastern Germany and the new Member States of the EU, are characterised by this problem.	**Cost optimisation**
The development of modern infrastructure providers and the consequent settlement policy of the locations – often supported by the massive use of public subsidies – are adaptation strategies of strengthening the competitive position of the location in international competition.	**Public Support**
6. The concentration of a big number of enterprises in chemical parks increases the need for internal coordination and the external representation of joint interests. For instance in the framework of implementating statutory order on hazardous incidents, contacts to the administration can be coordinated and information activities in the environment of the location can be better organised (e.g. Joint information brochures). In general, competitive advantages can be created by joint activities for the implementation of legal regulations and the administration management as well as by the agreement to internal standards for the participating enterprises in the park. They are caused bysynergy effects, generated by implementing established norms and procedures, by stronger external effectiveness and the joint positioning of enterprises and by increased reaction security. Besides the provision of modern infrastructure, the use of a broad expert knowledge for the implementation of laws and especially easy authorisation procedures are factors that create cost advantages for enterprises on the location and increase the attractiveness of the location for new settlements.	**External representation of chemical parks**
7. Chemical parks in Europe have been developed in the restructuring process of big chemical enterprises and locations. At international level there is a tendency towards the growth of chemical parks on green fields. In the transformation process of the Central and Eastern European Countries, the chemical parks have developed in the framework of the restructuring of big locations and as a result of the privatisation of company structures towards competitive enterprises. Different models of chemical parks have emerged in this historic development. Starting from (1) one dominant big enterprise on the location; (2) the use of chemical parks by a big number of enterprises (chemical park in the property of one ore more enterprises) and (3) the development of chemical parks as independent entrepreneurial entity.	**Different chemical park models**

8. The assessment of the development process of chemical parks has shown their growing importance for the future. Different organisation models of chemical parks will be further developed and optimised. Objectives of this process are optimal utility costs supported by economies of scales, the minimisation of location related fixed costs and a further support of entrepreneurial freedom. The necessary flat structures in the organisation of chemical parks improve the competitive positions of the existing enterprises and the attractiveness for new settlements. Strong networking on the location connected with the use of synergy potentials provides a favourable cost development for the enterprises on the location.	**Development processes**