



„Science & Industry”

Saxony-Anhalt (Central Germany)
North-Rhine Westphalia (GER)
Lower Saxony (GER)
Asturias (ESP)
Catalunya (ESP)
Lombardia (ITA)
Piemonte (ITA)
Limburg (NET)
Masovia (POL)
North-East of England (UK)
Humberside (UK)

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BY THE EUROPEAN UNION**

North East South West
INTERREG IIC

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 III C 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 III C projects. There are more than 250 INTERREG III C projects running, involving 2500 local and regional actors from 50 countries. 20 percent of these actors are from the new EU Member States. More information on INTERREG III C can be found on www.interreg3c.net.

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0 Introduction

The European Chemical Industry, still a world-leader among American and Japanese counterparts (30% share), has a strong scientific basis that constantly need to interact with Chemistry as a Science. The focus on innovation, research and knowledge are key elements to increase Industry's competitiveness.

This means that it is essential to obtain deeper collaboration between Industry and Science actors and find greater synergies between Universities and Research and Development Centres and companies, with specific attention to Small-Medium Enterprises ("SMEs"), as Chemical Industry has a relevant share on our economies and Chemical SMEs plays a vital role in the industry.

The project European Chemical Regions Network ("ECRN") was officially started in 2004 upon the approval of an INTERREG IIIC application by the EU. The network comprises 13 member regions from 7 countries. More and more regions have resolved since to participate so that now 20 regions are actively engaged in the network.

The ECRN has the intention to create a greater awareness for the regional dimension with those involved in the shaping of policies in Europe. The network project will give access to experiences made in local development in chemical regions between all relevant actors and will create synergies between "best practises" in dealing with the ongoing restructuring of chemical regions and the improvement of Structural Funds Programmes. ECRN is a cooperation of 13 chemical regions in which the chemical industry plays a leading role for economic performance, growth and employment:

In order to reach the main objective, that is to gain a substantial recognition as "European Stakeholder" for regional concerns of the chemical industry and chemical policy in Europe, the ECRN focused its efforts on the:

- exchange of experiences in compliance with and implementation of EU legislation
- exchange of information about new EU initiatives
- know-how transfer between regional administrations
- development of joint statements relating to major topics relevant for chemical policies (e.g. REACH, SCALE, emission right trading)
- networking initiatives of chemical companies
- development of joint cooperation projects, e.g. in the fields of R&D, innovation, etc.
- cooperation of chemical parks at the European level.

Among the activities envisaged in order to reach the objective of the Network, each partner on a voluntarily basis decided whether appropriate to participate at one or more of five topics elaborated by as much promoters-coordinator:

1. Topic 1: "Science and Industry" (Coordinator: Lombardy; Interested participants: North Rhine Westphalia, Lower Saxony, Saxony-Anhalt, North East of England, Piedmont, Huelva, Catalunya, Asturias, Limburg, Masowia);
2. Topic 2: "Skills" (Coordinator: North East of England; Interested participants: Lower Saxony, Lombardy, Asturias, North West of England);
3. Topic 3: "Chemical Park Management" (Coordinator: Saxony-Anhalt; Interested participants: North Rhine Westphalia, Limburg, Lower Saxony, Masowia, Huelva);

4. Topic 4: “Environment and Legislation” (Coordinator: Catalunya; Interested participants: Ida-Viru, Asturias);
5. Topic 5: “Land Improvement” (Coordinator: North West of England; Interested participants: North East of England, Lombardy, Ida Viru, Huelva).

Lombardy Region has proposed to develop a project on the topic “Science & Industry”, to stimulate European Chemical Regions Network (from now on “ECRN”) Members to an international comparison and sharing of Best Practices.

This proposed action aims at creating a trans-national “information system” tool which could increase ECRN operational capabilities on governing the Science-Industry relationship at a European level and at identifying possible initiatives that can be promoted inside the ECRN, giving the user a detailed picture of the situation in each participating Region.



1 Summary

The Topic 1, “Science & Industry”, is the study that has been proposed by Lombardy Region, Coordinator of the project.

Its large-base voluntarily adhesion from other participants of the network testify the importance and the centrality of the theme analysed.

The tool chosen and used is a Questionnaire made of two main parts:

- the first one dealt with data collection for the creation of the information system;
- the second one included suggestions to individuate Best Practices;

where their respective output is analysed in the following sections of the present report.

Some qualitative conclusion related to the Interregional exchange of experience, on the basis of the identified Best Practice proposed, are drawn at the end of the document.

The recommendations intends to suggests and propose further possible topic worth of future cooperation projects to be developed by Regional Members of ECRN.

In the annexes are attached the 11 filled Questionnaires, in order to give to any interested third party complete details of each regional contribution to the project, that for practical purpose have been synthetically presented in this document.

Participating Regions of the project, named for brevity with the following acronyms, have been:

- Lower Saxony (D) “LS (D)”
- North-Rhine Westphalia (D) “NRW (D)”
- Saxony-Anhalt (D) “SA (D)”
- Asturias (ES) “Ast (ES)”
- Catalunya (ES) “Cat (ES)”
- Lombardy (I) “Lom (I)”
- Piedmont (I) “Pie (I)”
- Limburg (NL) “Lim (NL)”
- Masowia (PL) “Mas (PL)”
- North-East of England (UK) “NEE (UK)”
- Humberside (UK) “H (UK)”

The obtained informations, gathered as previously illustrated from the answered filled questionnaires of participating ECRN Members and showed in detail in the next chapters, are summarized in the following tables.

Table 1 - Chemical Science system

ECRN Member	Universities			R&D Centres		S&T Parks
	Units	Students	Graduated per year	Units	Researchers	Units
LS (D)	8	3.130	159	5	>97	1
NRW (D)	7	10.628	1.231	4		
SA (D)	5	1.223	137	7	~294	3
Ast (ES)	1	1.746	237	7	>37	2
Cat (ES)	6	6.680	995	6		2
Lom (I)	6	4.440	1.095	16	>1.838	5
Pie (I)	3	2.117	425	17	>229	4
Lim (NL)	3	637		9	>753	3
Mas (PL)	4	2.740	536	4		2
NEE (UK)	5	250	195	5		3
H (UK)	1	5.235	1.450	2		

Table 2.a - Industry – General ¹

ECRN Member	Industry					Chemical sector				
	Ent	SMEs	Empl	Grad	Chem	Ent	SMEs	Empl	Grad	Chem
LS (D)	21.083	20.731	613.382	39.832	1.519	371	347	28.001	2.615	646
NRW (D)	~10.600	85%	~1.300.000			~720	~380	202.500		
SA (D)	1.375	1.294	124.503	10.236	2.948	199	182	22.480	24.7%	
Ast (ES)	4.392	4.363	62.326	21,8%		112	107	3.127	25,3%	14,1%
Cat (ES)	~35.000	33.300	~645.000			~1.200	1.170	~63.000		
Lom (I)	112.778	112.287	1.319.988	4,2%	0,6%	737	685	75.883	19,3%	9%
Pie (I)	~45.000	70%	~517.000	4,2%		~1.800	70%	~50.000		
Lim (NL)	103.158	~102.000	504.393		1.100	191	~180	14.950		
Mas (PL)	550.000					~1.200		~80.000		
NEE (UK)	66.634		>1.000.000	~18.000		350	60%	35.000		
H (UK)	~1.600	90%	~180.000	15%		>100	80%	~10.000	20-25%	5%

¹ Ent.: enterprises; Empl.: employees; Grad.: Graduates employed; Chem.: Chemistry graduates or Chmeists employed.

Table 2.b - Industry – Prevailing Chemical activities ²

ECRN Member	food	EI	plastics	paper	coatings	OCM	petroleum	pharma	Det	AC	OCS	O
LS (D)	15%	9%	5%	3%	2%	2%	1%	1%				
NRW (D)			19%			13%		11%	6%	4%		
SA (D)	X		4%		X	11% ³	X	3%	1%	2%		
Ast (ES)	X			X		X		X	X	X		
Cat (ES)	31%	3,5%	4,9%	8,9%		7,3		4,4%	2,1%			
Lom (I)		X	X	X	X			X	X	X	X	X
Pie (I)		X	X		X		X	X	X	X	X	X
Lim (NL)	X		X		X		X					
Mas (PL)			69%			6%	7%	7%	12%			
NEE (UK)	1,6%	1%	0,2%	0,4%	0,2%	0,6%		0,3%				
H (UK)	30%						20%				10%	

Table 3 - Tech-Transfer facilities

ECRN Member	Incubators		Business Innovation Centres		Venture Capital		
	Units	Companies	Units	Companies	Units	Funds (mln €)	Companies
LS (D)	12	~246	1	5	6	>380	>80
NRW (D)	4	>149	3		7	>303	>54
SA (D)	3	87	3	311	3	>65	28
Ast (ES)	10	244	1	577	4	72,7	130
Cat (ES)	28	>292			5	306,4	
Lom (I)	4	30	4	~160	6	333	26
Pie (I)	2	52	2	>25	2	45	8
Lim (NL)	5	>230			7	>150	>100
Mas (PL)	4	>5	6	6	20	3.000 ⁴	182
NEE (UK)	3		1		4		>20
H (UK)	1	>60	1	>60			

² EL: electronics; OCM other chemical manufacturing; Det.: detergents; AC: agricultural chemicals; OCS Other chemical services; O: others (fibers, etc.; textiles, machinery, furnitures and other chemical users; life science)

³ The percentage of OCM refers to the total of crossed sectors (food, coatings and petroleum)

⁴ The figure include Private Equity investments

Table 4 - Best Practices

ECRN Member	N° of items presented
LS (D)	3
NRW (D)	0
SA (D)	2
Ast (ES)	6
Cat (ES)	1
Lom (I)	3
Pie (I)	5
Lim (NL)	4
Mas (PL)	0
NEE (UK)	2
H (UK)	1

Data previously summarized have been used to build up the following graphs.

Table 5 – Chemical Science

Chemical Science

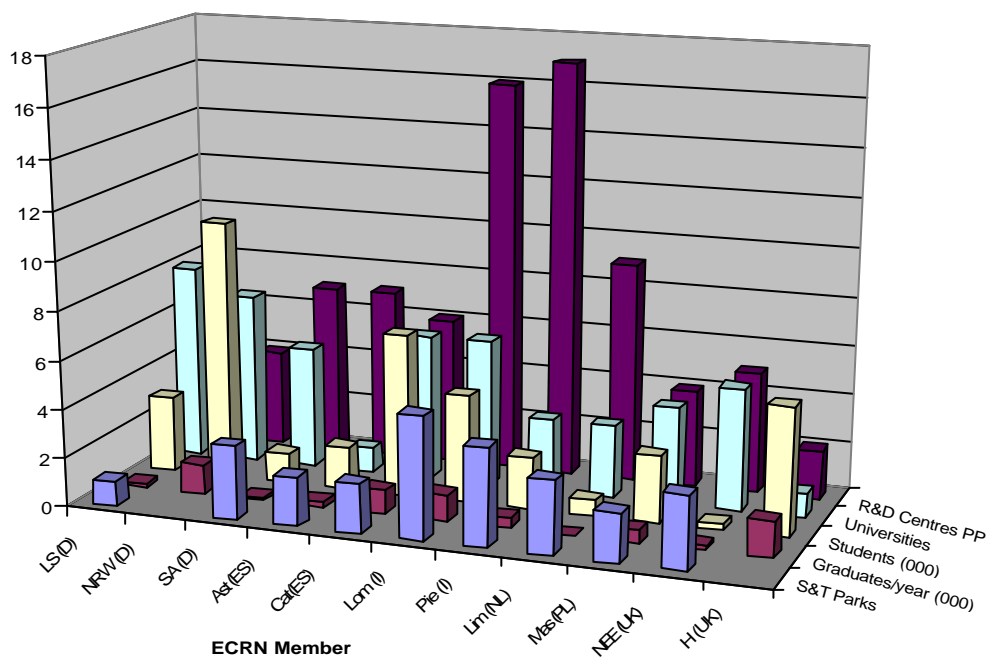


Table 6 – Chemical Industry

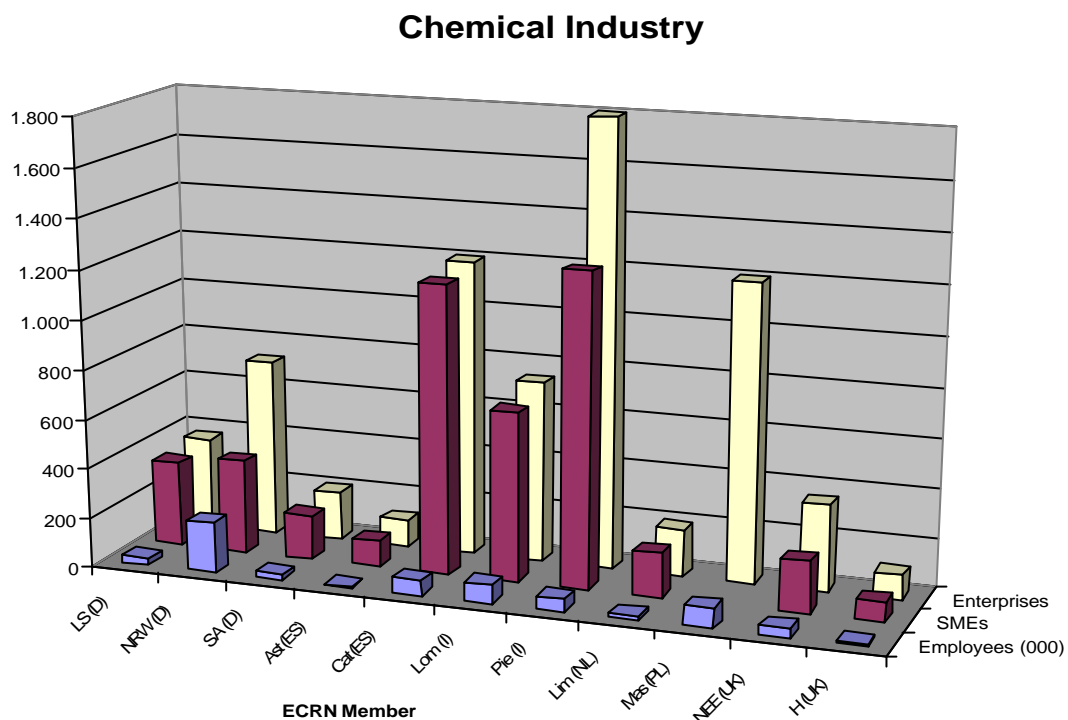
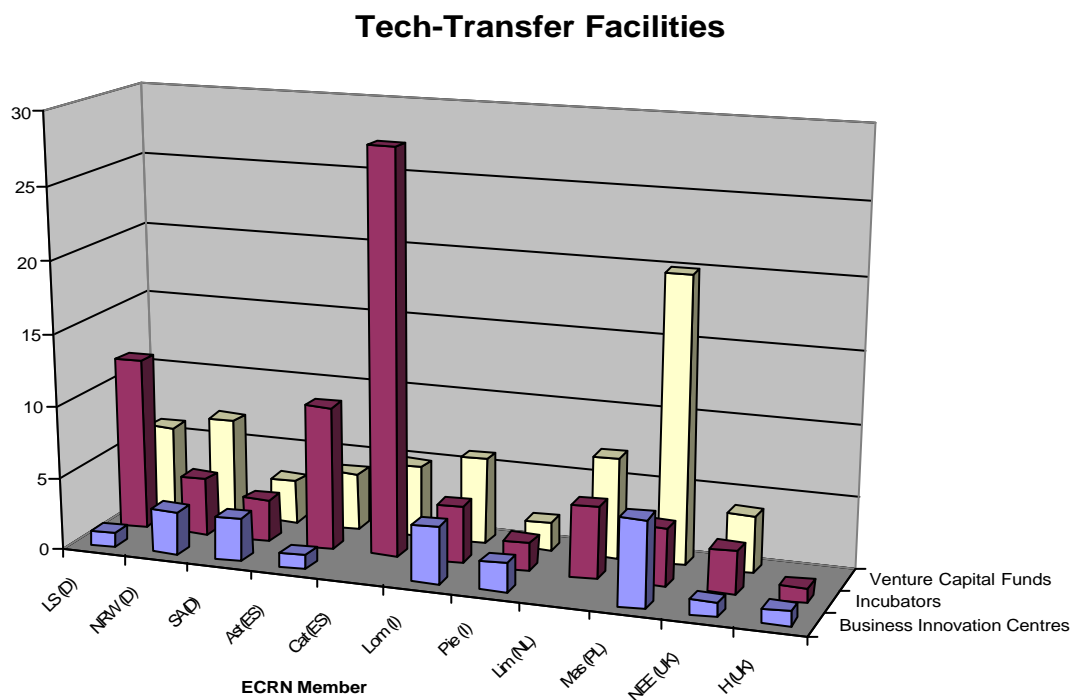


Table 6 – Tech-Transfer Facilities



2 Mapping ECRN existing infrastructures

The Questionnaire sent to the partners involved divided logically the data requested between:

- Offer (“Science”), where have been included data referring to:
 - Regional Universities;
 - Pure Public Research Centres, Experimental Stations and Private/Public R&D Centres;
- Demand (“Industry”), where questions have been focused over the regional industrial tissue with specific information about required qualified chemistry-staff, in order to straight-on a balance - where possible - confronting it with the offer.

Finally, in the third part of this section that has been called “Tech-Transfer”, are presented some other relevant territorial data about the presence of service-structures as Scientific & Technological Parks, Incubators and Business Innovation Centres and Financial actors active in chemistry.

2.A Science

This section of the Questionnaire list R&D capabilities of each regional system and requested partners for selected data and information over their research and technology infrastructures:

- Regional Universities offering courses in Chemistry (“University”): information requested regarded students, graduates (latest data available for both categories) and the eventual existence of an Industry-Liaison Office (“ILO”);
- R&D Public Centres and Private/Public Partnerships in the Region committed in Chemistry or Chemistry-related innovation activities (“Other R&D Centres”): information requested regards ownership regime (Private-Public Partnership, “PPP”) and researchers (“RES”);
- Regional Scientific Parks committed in Chemistry or characterized by technological proximity (“Tech-Parks”): competences and sponsors are among the information requested.

2.A.I Lower Saxony (D)

<u>University</u>	<u>City</u>	<u>Scientific area</u>	<u>Stud.</u>	<u>Grad.</u>	<u>ILO</u>
• Technical University "Carolo Wilhelmina"	Braunschweig	Analytical, Inorganic, Material, Bio-, Organic, Physical Chemistry	542	30	Yes
• Technical University of Clausthal	Clausthal	Analytical, Inorganic, Organic, Material, Physical & Polymer Chemistry; Chemical Engineer	230	9	Yes
• University of Göttingen	Göttingen	Inorganic, Organic & Physical Chemistry	641	34	Yes
• University of Hannover	Hannover	Analytical, Computational, Material, Physical, Inorg/Org & Bio- Chemistry	1.029	60	Yes
• “Carl von Ossietzky” University	Oldenburg	Inorganic, Organic, Physical & Bio-Chemistry	354	18	Yes
• University of Osnabrück	Osnabrück	Inorganic, Organic, Physical, Material & Bio-Chemistry	18	0	Yes
• University of Applied	Emden	Analytical, Inorganic, Organic, Material,	283	4	Yes

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Sciences • University of Applied Sciences	Holzminden	Bio-, Polymer and Physical Chemistry Analytical, Inorg/Org Chemistry (to be closed soon)	33	4
<u>Other R&D Centres</u>	<u>City</u>	<u>Scientific area</u>	<u>PPP</u>	<u>Res</u>
• Center of excellence for functional food	Hannover	Food & Analytical Chemistry/Spectroscopy/Chromatography/Electrophoresis	Yes	7
• Bioprofil	Hannover/ Brunswick/ Göttingen	Biochemistry	Yes	
• Center of excellence for science of nutrition	Vechta	Food Chemistry	Yes	
• Centre for solidchemistry and new materials (c/o Dep.Natural Science at University of Hannover)	Hannover	Electrochemistry/Physicalchemistry	Yes	70
• Cutec	Hannover	Analytical, Surface & Environmental Chemistry/Chemical Engineering/Spectroscopy/Chromatography	Yes	15-20
<u>Tech-Parks</u>	<u>City</u>	<u>Scientific area</u>	<u>Promoters</u>	
• Medical Parc, including amog others: ○ Medical University ○ Max Planck Institute ○ Fraunhofer Institute	Hannover	Medical Chemistry/Life Science/ Pharmaceutics	Niedersachsen/ Private Investors	

2.A.II North-Rhine Westphalia (D)

<u>University</u>	<u>City</u>	<u>Scientific area</u>	<u>Stud.</u>	<u>Grad.</u>	<u>ILO</u>
• University of applied sciences - Aachen	Aachen/ Juelich	Chemical & Bio-Engineering/ Chemical Engineering (IST)	637	77	Yes
• University of applied sciences - Bonn-Rhein-Sieg	Rheinbach	Biology/ Biomedicine/ Chemistry/ Material Science	556	60	Yes
• University of applied sciences Gelsenkirchen	Reckling-hausen	Chemistry, Material engineering, Molecular biology	315	34	Yes
• University of applied sciences Muenster	Muenster/ Steinfurt	Chemical engineer, Applied material science, Quality management & safety engineering	352	68	Yes
• University of applied sciences - Niederrhein	Krefeld	Chemical Engineering/ Chemistry & Biotechnology, Instrumental analysis & laboratory management	419	43	Yes
• Private University	Witten-Herdecke	Biochemistry	61	22	Yes
• Technical University	Aachen	Chemistry	694	100	Yes
• University of Bielefeld	Bielefeld	Biochemistry, Chemistry	465	59	Yes
• University of Bochum	Bochum	Biochemistry, Chemistry	868	153	Yes
• University of Bonn	Bonn	Biochemistry, Food-Chemistry	692	86	Yes
• University of Dortmund	Dortmund	Chemistry, Biochemistry	671	52	Yes
• University of Duisburg-Essen	Duisburg-Essen,	Chemistry, Chemical engineering	908	111	Yes

	Essen	Molecular materials, Biotechnology, Waterchemistry			
• University of Duesseldorf	Duesseldorf	Chemistry, Biochemistry, Chemistry & business	705	44	Yes
• University of Cologne	Cologne	Chemistry	1.007	63	Yes
• University of Muenster	Muenster	Chemistry, Food-Chemistry, Chemistry & business	1.396	157	Yes
• University of Paderborn	Paderborn	Chemistry	273	27	Yes
• University of Siegen	Siegen	Chemistry	248	43	Yes
• University of Wuppertal	Wuppertal	Chemistry, Food-Chemistry	361	32	Yes

Other R&D Centres

	<u>City</u>	<u>Scientific area</u>
• Fraunhofer Association FhGUmsicht	Oberhausen	Environment
• Max Planck Association (MPI)	Muelheim-Ruhr/ Dortmund/ Muenster/ Cologne	Bioinorganic Chemistry, Coal research, Molecular biomedicine Physical biochemistry, Chemical biology, Chemical genomic center, Plant breeding research
• Research centre Juelich - Helmholtz Association	Juelich	Biorganic chemistry, Chemical analysis, Nuclear chemistry, Chemistry & dynamics in geosphere, Biotechnologies, Biological information processing
• Institutes of: ○ Physical Biochemistry ○ Neurobiochemistry ○ Phytochemistry	Witten-Herdecke	Biochemistry, Bioinformatics, Physical biochemistry, Molecular biology, Applied chemistry, Medical chemistry

Tech-Parks

	<u>City</u>	<u>Promoters</u>
• Bayer Chemical Park	Dormagen/ Leverkusen/ Krefeld-Uerdingen	Bayer Industry Services GmbH
• Chemical Park	Marl	Infracor GmbH
• Chemical Park	Gelsenkirchen-Scholven	Veba Oil Refining & Petrochemicals GmbH
• Chemical Park	Gelsenkirchen-Horst	Ruettgers VFT AG
• Intermunicipal Industrial Park	Castrop-Rauxel	Municipalities of Dorsten and Marl
• Industrial Park	Dorsten/Marl	Initiative of STEAG AG
• Industrial Park	Troisdorf	HT Troplast
• Pharma- und Chemiepark	Marl	Bayer Healthcare AG
• Industrial Park Knapsack	Huerth	InfraServe Knapsack
• Industrial Park Oberbruch	Heinsberg/ Dueren	Nuon Energy and Services
• Industrial Park Solvay	Rheinberg	Solvay
• Industrial Park Cologne, North	Cologne	Municipality of Cologne Agency for Business Development

2.A. III Saxony-Anhalt (D)

<u>University</u>	<u>City</u>	<u>Scientific area</u>	<u>Stud.</u>	<u>Grad.</u>	<u>ILO</u>
• University of Applied Sciences Merseburg	Merseburg	Chemical Engineering/ Technical Chemistry	88	8	Yes
• University of Applied Sciences Anhalt	Köthen	Chemical Engineering/ Technical Chemistry	62	13	Yes
• University of Applied Sciences	Magdeburg	Chemical Engineering/	226	19	Yes

Magdeburg-Stendal		Technical Chemistry			
• Martin-Luther-University (MLU) Halle-Wittenberg	Halle	Biochemistry, Chemistry, Food Chemistry	834	89	Yes
• Otto-von-Guericke-(OvG) University Magdeburg	Magdeburg	Biochemistry, Chemistry	13	8	Yes

<u>Other R&D Centres</u>	<u>City</u>	<u>Scientific area</u>	<u>PPP</u>	<u>Res</u>
- IPW Institut für Polymerwerkstoffe e.V.	Merseburg	R&D, production, processing, testing & application of polymer	Yes	~20
- IWMH Fraunhofer Institut für Werkstoffmechanik Halle	Halle/S.	New application of materials (Business Unit "Polymer Applications")	Yes	~20
• Polymer Service GmbH	Merseburg	Polymer synthesis and -modification	Yes	~14
• CPI ChemiePark Institut GmbH	Bitterfeld	Pharmaceuticals/ Organic & Inorganic chemistry	Yes	~19
• Max Planck Institute of Microstructure Physics	Halle/S.	New/Improved functional or structural materials in application areas (sensorics, opto- & microelectronics).	Yes	~200
• PPM e.V.-Pilot Pflanzenöltechnologie Magdeburg e.V.	Magdeburg	Vegetable oil technology/ Biopolymers	Yes	~13
- IKTR-Institut für Kunststoff-technologie und recycling e.V.	Weißandt-Görlitz	R&D, production, testing & processing of polymer/rubber-based materials	Yes	~8

<u>Tech-Parks</u>	<u>City</u>	<u>Scientific area</u>	<u>Promoters</u>
• Wissenschafts- und Innovationspark Weinbergcampus	Halle/ Leuna/ Merseburg/ Schkopau	Polymer chemistry/ Biochemistry/ Combinatorial & Material chemistry	PA (local/ national, EU), Fraunhofer Inst.
• Chemiepark Bitterfeld-Wolfen	Bitterfeld/ Wolfen	Fine chemical analysis/ New materials/ Coating & Coating formation technologies/ Photophysics & photochemistry/ Environmental technologies/ Renewable resources	PA (local/ national, EU) R&D partners
• SKW Nitric Plant Piesteritz	Halle/ Piesteritz/ Wittenberg	Chemistry & Plants (nitrogenous fertilisers)	PA (local/ national, EU), SKW

2.A.IV Asturias (ES)

<u>University</u>	<u>City</u>	<u>Scientific area</u>	<u>Students</u>	<u>Graduates</u>	<u>ILO</u>
• University of Oviedo	Oviedo	Chemistry (Environmental, Organic, Physical, Analytical, Food and Organometallic Chemistry), Biochemistry & Chemical Engineering	1.716	207	Yes
• University of Oviedo	Gijón	Environmental Chemistry	30	30	Yes

<u>Other R&D Centres</u>	<u>City</u>	<u>Scientific area</u>	<u>PPP</u>	<u>Res</u>
• INCAR, National Coal Institute	Oviedo	Coal and derivatives		19
• IPLA, Institute of Dairy Products of Asturias	Villaviciosa	Dairy sector		6
• SERIDA, Regional Food Research Centre	Villaviciosa	Agroalimentary industry		10/12
• ITMA, Materials Technology Institute	Llanera	Non metallic materials	27	

• CEAMET, Steel and Metallic Materials Technology Centre	Avilés	Metallic materials	27
• PRODINTEC, Industrial Design and Production Technology Centre	Gijón	Technological design	7
• CTIC, Information & Communication Technologies Centre	Gijón	ICT	

<u>Tech-Parks</u>	<u>City</u>	<u>Scientific area</u>	<u>Promoters</u>
• Technological park of Asturias	Llanera	General	Public
• Scientific Technological park of Gijón	Gijón	General	Public

2.A. V Catalunya (ES)

<u>University</u>	<u>City</u>	<u>Scientific area</u>	<u>Students</u>	<u>Graduates</u>	<u>ILO</u>
• University of Barcelona	Barcelona	Chemistry	2.145	265	Yes
• Autonomous University of Barcelona	Cerdanyola del Vallès	Chemistry	1.250	155	Yes
• University of Girona	Girona	Chemistry	560	90	Yes
• University Rovira I Virgili	Terragona	Chemistry	1.305	200	Yes
• Polytechnic University of Catalunya	Barcelona, Igualada, Terrassa, Manresa, Vilanova i la Geltrú	Chemistry	1.000	110	Yes
• University Ramon Llull	Barcelona	Chemistry	420	175	Yes

<u>Other R&D Centres</u>	<u>City</u>	<u>Scientific area</u>
• Institut d'Investigacions Químiques i Ambientals de Barcelona	Barcelona	Environmental Chemistry
• Institut Català d'Investigació Química	Terragona	Chemical, Organic, Organometallic and Polymer Chemistry
• Institut Químic de Sarrià	Barcelona	All
• Institut de Química Computacional	Girona	Physical Chemistry
• Institut Universitari de Ciència i Tecnologia	Mollet del Vallès	Analytical and Environmental Chemistry
• Institut de Ciència de Materials de Barcelona	Bellaterra	Material Chemistry

<u>Tech-Parks</u>	<u>City</u>	<u>Scientific area</u>	<u>Promoters</u>
• Parc Científic de Barcelona	Barcelona	Biochemistry, Analytical and Nuclear Chemistry	University of Barcelona, Fundació Bosch i Gimpera and Caixa Catalunya
• Parc de Recerca de la Universitat Autònoma de Barcelona	Terragona		

2.A. VI Lombardy (I)

<u>University</u>	<u>City</u>	<u>Scientific area</u>	<u>Stud.</u>	<u>Grad.</u>	<u>ILO</u>
• Università di Milano	Milan	Material Science/Biotechnology	1.804	350	Yes
• Università Bicocca	Milan	Chemical Engineering	305	247	
• Politecnico di Milano	Milan	Chemistry	940	249	Yes

• Università di Pavia	Pavia	Chemistry	1.046	193	Yes
• Università dell'Insubria	Como-Varese	Material Engineering	255	47	Yes
• Università di Brescia	Brescia	Material Science/Biotechnology	90	9	

<u>Other R&D Centres</u>	<u>City</u>	<u>Scientific area</u>	<u>PPP</u>	<u>Res</u>
• CNR-ISTM	Milan	Molecular technology	No	37
• CNR-ISMAL	Milan	Macromolecular studies	No	34
• CNR-ICRM	Milan	Molecular recognizing chemistry	No	36
• CNR-IENI	Milan	Energetics & Interphases	No	35
• CNR-IENI	Pavia	Energetics & Interphases	No	38
• Stazione. Sperimentale Combustibile	Milan	Fuel	No	53
• Stazione. Sperimentale Oli e Grassi	Milan	Oils and fats	No	
• Stazione. Sperimentale Carta&Derivati	Milan	Cellulose, paper, textiles fibres	No	
• Stazione. Sperimentale della Seta	Milan	Silk	No	
• Istituto Nazionale Neurologia "Besta"	Milan	Neurology	No	~155
• Policlinico "San Matteo"	Pavia	Biotechnology	No	
• Istituto Europeo di Oncologia (IEO)	Milan	Oncology	Yes	~200
• FIRC Istituto di Oncologia Molecolare	Milan	Molecular oncology	Yes	~300
• Istituto Ricerca Farmacologica "Negri"	Milan	Pharmacology	Yes	
• Istituto Nazionale Tumori (INT)	Milan	Cancer diagnosis/ therapy	Yes	~250
• Nerviano Medical Sciences	Milan	Biotechnology	Yes	~700-empl.

<u>Tech-Parks</u>	<u>City</u>	<u>Scientific area</u>	<u>Promoters</u>
• PSTL - Polo Scientifico e Tecnologico Lombardo	Varese	Environment, Medicine & Biomedicine, ICT, Industrial automation, Biotech, Engineering	Local PA/ Financials
• POINT - Polo per l'Innovazione Tecnologica	Bergamo	Environment, Biotechnology, ICT, Chemistry, Energy and Engineering	Local PA/ Financials
• "San Raffaele" Scientific Park	Milano	Biotechnology and Biomedicine	Private investors
• PTP - Parco Tecnologico Padano	Lodi	Biotechnology, Agro industry	Local PA/ Institutions
• Kilometro Rosso - Parco Scientifico e tecnologico	Bergamo	Mechatronic, Sensoristic, Advanced materials (Ceramics and others), Robotic Biotechnology, ICT, Electronic, Automation	Industry & R&D Institutions

2.A. VII Piedmont (I)

<u>University</u>	<u>City</u>	<u>Scientific area</u>	<u>Stud.</u>	<u>Grad.</u>	<u>ILO</u>
• Politecnico di Torino	Turin-Biella-Alessandria	Chemical & Material Engineering; Polymer Chemistry	645	48	Yes
• Università Piemonte Orientale	Novara-Alessandria	General, Applied & Material Chemistry; Biochemistry & Biotechnology	630	166	Yes
• Università di Torino	Turin-Grugliasco	General, Applied, Material, Industrial and Medical Chemistry; Biochemistry & Biotech	842	211	Yes

<u>Other R&D Centres</u>	<u>City</u>	<u>Scientific area</u>	<u>PPP</u>	<u>Res</u>
• Nanostructured Interfaces and Surfaces Centre of Excellence	Turin/ Alessandria/ Novara	Nano-structured interfaces/films/oxidic surfaces; Molecular interactions with different interphases	No	11
• CNR-IMGC	Turin	Metrology and Metrology in Chemistry	No	
• CNR-ISE	Verbania/	Macro/micro environmental pollutants;	No	32

	Pallanza	Biological pests control & biomanipulation; Soil ecosystem, control & recovery		
• CNR-IVV	Turin-Grugliasco	Biology (basic research)	No	35
• CNR-ISMAL	Biella	Macromolecular studies	No	14
• CNR – ISPA	Turin	Microbiology (food/agro)	No	9
• CNR - ISTECC	Turin	Science & Technology for Ceramics	No	53
• Agroinnova	Turin-Grugliasco	Agro-environment		26
• ENEA-Ente Nuove Tecnologie Energia & Ambiente	Saluggia	Chemistry, Bio-diesel, pellets, biomasses, vegetable oils, waste treatments, energy		
• Istituto Sperimentale Cerealicoltura (ISC)	Vercelli	Chemical research on Rice		
• Istituto Sperimentale Viticoltura	Asti	Chemical research on Vine		
• Istituto Sperimentale per l'Enologia	Asti	Chemical research on Wine		26
• Laboratorio Chimico Cemere di Commercio	Turin	Chemical and bacteriological Analysis		
• I.R.C.C.: Istituto per la Ricerca sul Cancro	Candiolo	Oncology		
• Fondazione Biotecnologie	Turin	Biotechnologies		
• Associazione Sviluppo Piemonte	Turin	Nanotechnologies, bio-medicine, Environmental protection, materials		8
• Fondazione Novara Sviluppo	Novara	Chemical & Pharmaceutical research, Biotechnology, New Materials		15

<u>Tech-Parks</u>	<u>City</u>	<u>Scientific area</u>	<u>Promoters</u>
• Bioindustry Park Canavese S.p.A.	Ivrea (Turin)	Biotechnologies, Chemistry, ICT, Biology, Pharmacy, Agroindustry, Energy, Environment, Biomedical	Local PA/ Industry & R&D Institutions
• Environment Park	Turin	Environment and ICT	Local PA/ Industry/ Finance Institutions
• Parco Scientifico e Tecnologico - Valle Scrivia	Tortona (Alessandria)	High Tech	Local PA/ Public & private companies
• Tecnoparco del Lago Maggiore	Verbania	High Tech	Local Financials/SAIA

2.A. VIII Limburg (NL)

<u>University</u>	<u>City</u>	<u>Scientific area</u>	<u>Stud.</u>	<u>Grad.</u>	<u>ILO</u>
• Maastricht University	Maastricht	Molecular Life Science (health, medicine, bioinformatics, nanotechnology) – started in '02	93	0	Yes
• Open University	Heerlen	Natural sciences/ Sustainability/ Environment	500		Yes
• Hogeschool Zuyd	Heerlen	Chemical & Medical Technology/ Biometrics/ Chemistry/Chemical Engineering/ Life Sciences	>44		Yes

<u>Other R&D Centres</u>	<u>City</u>	<u>Scientific area</u>	<u>PPP</u>	<u>Res</u>
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• ACER - Academic Contacts & External Research	Geleen		DSM	
• Reseach Campus Geleen	Geleen	Life sciences (pharma, helath, nutritional)/ Performance materials/ Industrial chemicals	DSM/ Chemelot	15 Prof.
• CARIM - CARdiovascular Research Institute	Maastricht	Public health/ Vascular biology	ICIN/ BMT/ ICar-VU/ IFRCL (F)	
• GROW - Research Growth & Development	Maastricht	Oncology/Research early human development (normal and abnormal growth-differentiation)		
• NUTRIM - Nutrition and Toxicology Research Institute	Maastricht	Nutrition and (nutritional) toxicology	WCFS alliance of R&D food industries	210 (100 PhD)
• CAPHRI - Care and Public Health Research Institute	Maastricht	Health promotion, prevention and care	No (Institute divisions)	348 (133 PhD).
• ICIS - International Centre for Integrative Studies	Maastricht	Environment, economics, sustainable development, knowledge engineering, human health, tourism & water	No	20 PhD
• Biomat BV	Maastricht	New plastic materials for vascular surgery, orthopaedic surgery, cardiology, dentistry, ophthalmology, urology	Joint R&D projects with DSM, Medtronic, Becton Dickinson, Bayer, Pfizer, Belden W&C, M&S	
• BRC- Bakken Research Center	Maastricht	Life sciences (developing of new therapies and perfect existing therapies)	Medtronic	160

<u>Tech-Parks</u>	<u>City</u>	<u>Scientific area</u>	<u>Promoters</u>
• Chemelot business Park	Sittard-Geleen	Chemical Engineering / General- Analytical- Combinatorial- Computational- Environmental-Food- Inorganic- Material- Medical- Nuclear- Organic- Organometallic- Physical- Polymer- Quantum- Surface- Bio- Electro- Geo- Chemistry/ Crystallography/ Electrophoresis/ Chromatography/ Spectroscopy	DSM Research & Solutions
• Avantis European Science & business parks	Heerlen (40%) Aachen-D (60%)	High tech Center, ICT, Business servicing, Solar Energy	LIOF industriebank/ LEG Stadtentwicklung GmbH & Co. KG
• Randwijck	Maastricht	Medicine	University & Hospital of Maastricht/ BRC/ Boston Scientific/ Incubator Hospital

2.A. IX Masowia (PL)

<u>University</u>	<u>City</u>	<u>Scientific area</u>	<u>Stud.</u>	<u>Grad.</u>	<u>ILO</u>
• Warsaw University	Warsaw	Chemistry	641	80	NO

• Cardinal Stephen Wyszynski's University	Warsaw	Chemistry	300	110	NO
• The Faculty of Materials Science and Footwear Technology	Radom	Chemistry	383	65	NO
• Warsaw University of Technology	Warsaw/ Plock	Chemistry, Process and Chemical Engineering, Petrochemistry	1.416	281	NO

Other R&D Centres

	<u>City</u>	<u>Scientific area</u>
• Radioisotope Centre Polatom	Otwock–Swierk	Medical & Nuclear Chemistry
• Research and Development Centre of Refinery Industry	Plock	Chemical Engineering
• Institute of Organization and Management in Industry	Warsaw	Chemical Engineering/ Chromatography
• CNR-IENI	Milan	Energetics & Interphases

Tech-Parks

	<u>City</u>	<u>Scientific area</u>	<u>Promoters</u>
• Plock Industry and Technology Park	Plock	Chemical Engineering	Plock City Hall/ Pkn Orlen
• Science and Technology Park	Warsaw	-	Military Technical Academy

2.A.X North East of England (UK)

<u>University</u>	<u>City</u>	<u>Scientific area</u>	<u>Stud.</u>	<u>Grad.</u>
• University of Teesside	Middlesbrough	Chemistry		
• Durham University	Durham/ Stockton	Chemistry/ Biomedical Sciences		125
• Newcastle University	Newcastle	Science	250	70
• Sunderland University	Sunderland	Pharmacy, Chemistry & Biomedical Sciences		
• University of Northumberland	Newcastle	Applied Sciences		

Other R&D Centres

	<u>City</u>	<u>Scientific area</u>
• Centre for Process Innovation	Middlesbrough	Process Industries
• NaRec	Blyth	New & Renewable Energy
• Cels	Newcastle	Life Sciences
• Codeworks	Newcastle	Digital Technology & Media
• Cenamps		Nanotechnology, Micro & Photonic Systems

Tech-Parks

	<u>City</u>	<u>Scientific area</u>	<u>Promoters</u>
• PICME - Process Industries Centre for Manufacturing Excellence	Middlesbrough	Chemicals & Plastics	UK Government Department of Trade & Industry
• Sunderland Science Park	Sunderland	Ebusiness, Biotechnology incubator units	Sunderland Council/ North East BIC/ Local University
• NetPark	Durham	Research Centre & hi- tech incubator units	Durham County- Sedgefield Borough Councils/ Local

2.A.XI Humberside (UK)

<u>University</u>	<u>City</u>	<u>Scientific area</u>	<u>Stud.</u>	<u>Grad.</u>	<u>ILO</u>
• Hull University	Hull	Chemistry, Biosciences, Technology and engineering	5.235	1.450	Yes

<u>Other R&D Centres</u>	<u>City</u>	<u>Scientific area</u>	<u>PPP</u>
• Environmental Technologies Centre for Industrial Collaboration	Hull	Computational, analytical and environmental chemistry	Various
• Humber Chemical Focus	Grimsby	Chemistry for industry	30+ member companies

2.B Industry

This section of the Questionnaire has been directed to measure the industrial dimension of the regional economy and trying to find out the relative weight of the chemical sector
Focus has been posed over the skilled staff required by the industry and how many of this staff can be qualified as chemist.

2.B.I Lower Saxony (D)

<u>Regional Companies</u>					<u>Regional Chemical Companies</u>				
<u>Tot.</u>	<u>SMEs</u>	<u>Employees</u>	<u>Graduates</u>	<u>Chemists</u>	<u>Tot.</u>	<u>SMEs</u>	<u>Employees</u>	<u>Graduates</u>	<u>Chemists</u>
21.083	20.731	613.382	39.832	1.519	371	347	28.001	2.615	646
100%	98,3%	100%	6,49%	0,25%	1,76%	93,53%	4,57%	9,34%	2,31%

Economic activities with a significant role at regional level

• food	15,17%
• electronics	8,69%
• plastics	5,21%
• paper	2,56%
• coatings	2,01%
• other chemical manufacturing	1,60%
• petroleum	1,03%
• pharmaceuticals (drugs)	0,73%

2.B.II North-Rhine Westphalia (D)

<u>Regional Companies</u>					<u>Regional Chemical Companies</u>				
<u>Tot.</u>	<u>SMEs</u>	<u>Employees</u>	<u>Graduates</u>	<u>Chemists</u>	<u>Tot.</u>	<u>SMEs</u>	<u>Employees</u>	<u>Graduates</u>	<u>Chemists</u>
-10.600		~1.3 mln			-720	~380	202.500		
	~85%					~85%			

Economic activities with a significant role at regional level

• plastics	18,7%
• coatings	12,7%
• pharmaceuticals (drugs)	10,9%
• detergents	6,0%
• agricultural chemicals	3,6%
• electronics	€ 30,5 bln
• automotive industry	€ 30,4 bln
• food	€ 29,4 bln
• metal production & processing	€ 26,6 bln

2.B.III Saxony-Anhalt (D)

<u>Regional Companies</u>					<u>Regional Chemical Companies</u>				
<u>Tot.</u>	<u>SMEs</u>	<u>Employees</u>	<u>Graduates</u>	<u>Chemists</u>	<u>Tot.</u>	<u>SMEs</u>	<u>Employees</u>	<u>Graduates</u>	<u>Chemists</u>
1.375	1.294	124.503	10.236	2.948	199	182	22.480		
100%	94%	100%	12,2%	3,51%	14,5%	91,5%	20,3%	24,7%	

Economic activities with a significant role at regional level

• other chemical manufacturing	11%
• plastics	4%
• pharmaceuticals (drugs)	3%
• agricultural chemicals	2%
• detergents	1%

2.B.IV Asturias (ES)

<u>Regional Companies</u>					<u>Regional Chemical Companies</u>				
<u>Tot.</u>	<u>SMEs</u>	<u>Employees</u>	<u>Graduates</u>	<u>Chemists</u>	<u>Tot.</u>	<u>SMEs</u>	<u>Employees</u>	<u>Graduates</u>	<u>Chemists</u>
4.392	4.363	62.326			112	107	3.127		
	99%		21,8%			96%		25,3%	14,1%

Economic activities with a significant role at regional level

• food	
• paper	
• pharmaceuticals	
• agricultural chemicals	
• detergents	
• other chemical manufacturing	

2.B.V Catalunya (ES)

<u>Regional Companies</u>					<u>Regional Chemical Companies</u>				
<u>Tot.</u>	<u>SMEs</u>	<u>Employees</u>	<u>Graduates</u>	<u>Chemists</u>	<u>Tot.</u>	<u>SMEs</u>	<u>Employees</u>	<u>Graduates</u>	<u>Chemists</u>

35.000	33.300	645.000	1.200	1.170	63.000
	95%			98%	

Economic activities with a significant role at regional level

• food	31%
• paper	8,9%
• other chemical manufacturing and services	7,3%
• plastics	4,9%
• pharmaceuticals (drugs)	4,4%
• electronics	3,5%
• detergents	2,1%

2.B. VI Lombardy (I)

<u>Regional Companies</u>					<u>Regional Chemical Companies</u>				
<u>Tot.</u>	<u>SMEs</u>	<u>Employees</u>	<u>Graduates</u>	<u>Chemists</u>	<u>Tot.</u>	<u>SMEs</u>	<u>Employees</u>	<u>Graduates</u>	<u>Chemists</u>
112.778	112.287	1.319.988			737	685	75.883		
	99,6%		4,2%	0,6%	0,7%	93%	5,7%	19,3%	9%

Economic activities with a significant role at regional level

- coatings
- electronics
- detergents
- paper
- agricultural chemicals
- pharmaceuticals (drugs)
- plastics
- textiles
- furnitures
- machinery

2.B. VII Piedmont (I)

<u>Regional Companies</u>					<u>Regional Chemical Companies</u>				
<u>Tot.</u>	<u>SMEs</u>	<u>Employees</u>	<u>Graduates</u>	<u>Chemists</u>	<u>Tot.</u>	<u>SMEs</u>	<u>Employees</u>	<u>Graduates</u>	<u>Chemists</u>
-45.000		-517.000			-1.800		-50.000		
	70%		4,2%			70%			

Economic activities with a significant role at regional level

- coatings
- electronics
- detergents
- agricultural chemicals
- pharmaceuticals (drugs)
- plastics
- petroleum
- textiles

- furnitures
- machinery
- life science

2.B.VIII Limburg (NL)

<u>Regional Companies</u>					<u>Regional Chemical Companies</u>				
<u>Tot.</u>	<u>SMEs</u>	<u>Employees</u>	<u>Graduates</u>	<u>Chemists</u>	<u>Tot.</u>	<u>SMEs</u>	<u>Employees</u>	<u>Graduates</u>	<u>Chemists</u>
103.158	~102.000	504.393		1.100 ⁵	191	~180	14.950		
15,63%	~99%					~94%	~3%		

Economic activities with a significant role at regional level

- coatings
- food
- plastics
- petroleum

2.B.IX Masowia (PL)

<u>Regional Companies</u>					<u>Regional Chemical Companies</u>				
<u>Tot.</u>	<u>SMEs</u>	<u>Employees</u>	<u>Graduates</u>	<u>Chemists</u>	<u>Tot.</u>	<u>SMEs</u>	<u>Employees</u>	<u>Graduates</u>	<u>Chemists</u>
550.000					1.200		80.000		

Economic activities with a significant role at regional level

- plastics 68,5%
- detergents 11,5%
- pharmaceuticals (drugs) 7,0%
- petroleum 6,8%
- other chemical manufacturing 6,2%

2.B.X North East of England (UK)

<u>Regional Companies</u>					<u>Regional Chemical Companies</u>				
<u>Tot.</u>	<u>SMEs</u>	<u>Employees</u>	<u>Graduates</u>	<u>Chemists</u>	<u>Tot.</u>	<u>SMEs</u>	<u>Employees</u>	<u>Graduates</u>	<u>Chemists</u>
66.634		> 1 mln	-18.000		350		35.000		
						60%			

Economic activities with a significant role at regional level

- manufacture of food & Beverages 1,64%
- total electronics 1,03%
- other chemical manufacturing 0,60%
- manufacture of pulp, paper & paper products 0,44%
- manufacture of pharmaceuticals, medicinal chemicals etc 0,32%
- manufacture of paints, varnishes & similar coatings 0,18%

⁵ Researchers specialised in Chemistry

- plastics and rubber in primary forms 0,15%
- Manufacture of soap & detergents. Cleaning & polishing preparations, perfum 0,11%

2.B.XI Humberside (UK)

<u>Regional Companies</u>					<u>Regional Chemical Companies</u>				
<u>Tot.</u>	<u>SMEs</u>	<u>Employees</u>	<u>Graduates</u>	<u>Chemists</u>	<u>Tot.</u>	<u>SMEs</u>	<u>Employees</u>	<u>Graduates</u>	<u>Chemists</u>
1.600		180.000			>100		10.000		
	90%		15%			80%		20%-25%	5%

Economic activities with a significant role at regional level

- food 30%
- ALL chemical & petroleum manufacturing 20%
- other chemical services (transformation, engineering, etc.) 10%

2.C Tech-Transfers

This part of the questionnaire has coped with the assessment of existing regional operators active in supporting tech-transfer in very different aspects, ranging from providing risk-capital and financial support and even such general services as utilities.

They have been classified as follows:

- Incubators: the number of enterprises hosted and total/available space measured in m² have been considered as relevant information;
- Business Innovation Centres (“BICs”): the information required was the number of assisted companies per year and tech-transfer operated since start;
- Venture Capitalist: origin, sponsors, number of companies participated, fund raised and invested have all been considered as potentially useful information.

2.C.I Lower Saxony (D)

<u>Incubators</u>	<u>City</u>	<u>Hosted companies</u>	<u>Total space (Available)</u>
• Center of Technology Hannover	Hannover	44	6.604 m ² (792 m ²)
• Campmedia	Hannover	43	2.480 m ² (552 m ²)
• PZH Produktions-Technisches Zentrum Ltd.	Garbsen	19	22.000 m ² (200 m ²)
• Graftschafter TechnologyCentre Ltd.	Nordhorn	21	2.093 m ² (340 m ²)
• Centre of Technology Stade	Stade	13	4.500 m ² (0 m ²)
• Establishment and Innovationcentre Stade	Stade	19	500 m ² (60 m ²)
• Centre of floater	Emden	19	2.304 m ² (1.396 m ²)
• Centre for founder of a new business	Hannover	40	3.900 m ² (180 m ²)
• Technologyand floatercentre DTA	Helmstedt	4	~1.800 m ² (~800 m ²)
• Technology and BusinessCentre DTA	Helmstedt	3	~2.000 m ² (0 m ²)
• Technology and MessCentre DTA	Helmstedt	1	~260 m ² (~60 m ²)
• Medical Parc Ltd.	Hannover	~20	11.000 m ² (2.800 m ²)

<u>BICs</u>	<u>City</u>	<u>Companies assisted</u>	<u>Tech-Transfers</u>
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- PZH Produktions-Technisches Zentrum Ltd. Garbsen 5

<u>Venture Capitalist</u>	<u>Origin</u>	<u>Sponsors</u>	<u>Average inv</u>	<u>Fund raised/(inv)</u>	<u>Invested comp</u>
• Innovationscapital Göttingen Ltd.	D	Local PA, Banks, University & private partners	€ 0,5mln	€ 5.000.000/ (€ 2.500.000)	3
• ubg Göttingen, Hildesheim Ltd&Co	D	Local Banks	€ 0,5mln	€ 7.500.000/ (€ 6.500.000)	9
• Floater Fonds	D		€ 0,5mln	€ 7.000.000/ (€ 4.000.000)	7
• northwest Kapitalbeteiligungsa ssociation & Unternehmensbeteili gungsassociation by Sparkasse Bremen	D		€ 0,5mln	8 digit 7 digit	11
• Beteiligungskapital Hannover Ltd&CoLP	D	Local Banks	€ 0,5mln - €1,5 mln	€ ~75.000.000/ (~€ 31.000.000)	23
• "Earlybird" vehicles	D/USA	Local Banks		€ ~285.000.000/ (>60.000.000)	>27

2.C.II North-Rhine Westphalia (D)

<u>Incubators</u>	<u>City</u>	<u>Hosted companies</u>	<u>Total space (avail)</u>
• Technology Centre Ruhr - Chip GmbH	Bochum	78	16.500 m ³
• Technologiehof Muenster	Muenster	49	10.000 m ³
• TechnoMarl – Technology and Chemistry Centre	Marl	22	8.000 m ³
• CeNTech – Centre for Nanotechnologies	Muenster		2.400 m ³ (700 m ³)

BICs

	<u>City</u>
• Centre for Innovation and Technology in North Rhine Westfalia ZENIT GmbH	Muelheim/Ruhr
• CeNTech – Centre for Nanotechnologies	Muenster
• Incubator Centre Emscher-Lippe	Gelsenkirchen

<u>Venture Capitalist</u>	<u>City</u>	<u>Sponsors</u>	<u>Average inv</u>	<u>Fund raised</u>	<u>Companies</u>
• Stiftung Caesar	Bonn	Germany 90% NRW 10%		€ 300 mln	
• Bayer Innovation	D	Bayer AG			
• Emscher-Lippe Venture Fonds	D	Private investors	~€ 0,2 mln	€ 2,5 mln (in 1 year)	12 (€ 2,5 mln) since 2003
• Intelligent Venture Capital	Köln/ Aachen	Priv. investors/ Public coinvest.	< € 15 mln		> 30
• eCapital New Technologies Fonds	Münster		< € 1 mln		
• Henkel Venture Cap.	Düsseldorf	Henkel KGaA	€ 0,5-5 mln		12
• Creavis	D	Degussa AG			

2.C.III Saxony-Anhalt (D)

<u>Incubators</u>	<u>City</u>	<u>Hosted companies</u>	<u>Total (available)space</u>
• Technologie- und Gründer-zentrum Halle	Halle/S	57	13.360 m ² (3-5%)
• Merseburger Innovations- und Technologiezentrum (mitz I)	Merseburg	10	2.600 m ² (5%)
• Technologie und Gründer-zentrum Chemiepark Bitterfeld-Wolfen	Bitterfeld-Wolfen	20	9.092 m ² (35%)

<u>BICs</u>	<u>City</u>	<u>Companies assisted</u>	<u>Tech-Transfers</u>
• ATI Agentur für Technologietransfer und Innovationsförderung Anhalt GmbH	Dessau	54 (24 chemical)	875 (~33% chemical)
• Mitteldeutsche Informations-, Patent-, Online-Service GmbH mipo	Halle/S	400 (266 chemical)	1.000 (~66% chemical)
• tti – Technologietransfer und Innovationsförderung Magdeburg GmbH	Magdeburg	416 (21 chemical)	5.408 (208 chemical)

<u>Venture Capitalist</u>	<u>Sponsors</u>	<u>Average inv</u>	<u>Fund raised/(inv)</u>	<u>Comp.</u>
• Mittelständische Beteiligungsgesellschaft Sachsen-Anhalt mbH	Local PA & Banks	€ 0,025-1 mln	- (€ 9,595 mln)	16
• IBG –Beteiligungsgesellschaft Sachsen-Anhalt mbH	S.-A.	€ 3,0 mln	- (€ 34,855 mln)	11
• Sparkassen-beteiligungs-gesellschaft Sachsen-Anhalt GmbH	Local banks	€ 0,5 mln	€ 20 mln (€ 5 mln)	1

2.C.IV Asturias (ES)

<u>Incubators</u>	<u>City</u>	<u>Hosted companies</u>	<u>Total (available) space</u>
• Nalón Valley Industrial City (Valnalón)	La Felguera (Langreo)	42	3.753 m ² (0 m ²)
• “La Curtidora” Development Society	Avilés	71	4.274 m ² (750 m ²)
• European Centre for Companies and Innovation of the Principality of Asturias, CEEI	Llanera	24	868 m ² (75 m ²)
• Science and Technology Park of Gijón	Gijón	21	1.300 m ²
• Caudal Centre for Companies	Mieres	21	1.635 m ²
• Nalón Centre for Companies	El Entrego	21	1.660 m ²
• Tineo Business Promotion Centre	Tineo	7	1.000 m ²
• Municipal Centre for Companies of Gijón	Gijón	21	1.550 m ²
• Municipal Centre for Companies of Llanes	Llanes	6	210 m ²
• Obanca Companies Centre	Cangas del Narcea	10	835 m ²

<u>BICs</u>	<u>City</u>	<u>Companies assisted (2005)</u>
• European Centre for Companies and Innovation of the Principality of Asturias, CEEI	Llanera	577

<u>Venture Capitalist</u>	<u>Fund raised/(inv)</u>	<u>Invested comp</u>
• Promotion Regional Society of the Principality of Asturias, SRP	43.000	41 (chemical: 1)
• Society for Mining Region Development, SODECO	20/25.000	39 (chemical: 6)

- Asturian Society for Mining Diversification, SADIM
- INVERASTURIAS

4.700 42
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2.C. V Catalunya (ES)

<u>Incubators</u>	<u>City</u>	<u>Hosted companies</u>	<u>Total space</u>
• Bio-Incubadora CIDEM-PCB	Barcelona		600 m ²
• Barcelona Activa	Barcelona	41	6.000 m ²
• Impevic	Vic		
• Can Calderón	Viladecans		
• Oficina de Promoció Econòmica	Manlleu		100 m ²
• Centre de Serveis a les Empreses	Igualada		500 m ²
• Coressa	Sant Boi de Llobregat	27	
• Foment de Terrassa	Terrassa		
• Centre Àgora	Vilafranca del Penedès		
• Parc Tecnològic del Vallès	Cerdanyola del Vallès	150	
• Grameimpuls	Santa Coloma de Gramenet		800 m ²
• Impem	Mataró	7	400 m ²
• Precsa	Cornellà de Llobregat		4.185 m ²
• Promoció Econòmica de Sabadell	Sabadell		
• Nodus Barberà	Barberà del Vallès	3	
• Promoció Econòmica i Ocupació	Castellar del Vallès		600 m ²
• Centre d'Empreses	Sant Joan Despí		
• Centre Cal Gallifa	Sant Joan de Vilatorrada		230 m ²
• Consorci de Promoció Econòmica	Lleida		
• Àrea de Promoció Econòmica	Les Borges Blanques		
• Redessa	Reus	30	1.000 m ²
• Centre d'Iniciatives Empresariales	Valls	3	
• Emmde	Tarragona	4	695 m ²
• Baix Ebre Innova	Camarles	12	700 m ²
• Viver d'Empreses	Vandellòs i l'Hospitalet de l'Infant		95 m ²
• Consorci Ripollès Desenvolupament	Ripoll	10	1.000 m ²
• Consorci per la Promoció Econòmica	Les Preses	5	600 m ²
• Àrea de Promoció Econòmica	Banyoles		

<u>Venture Capitalist</u>	<u>Sponsors</u>	<u>Funds (mln €)</u>	<u>Strategy</u>
• Catalana d'Iniciatives		61	Development & growth
• Invercat	Banc de Sabadell, SCH, Catalana Occident, Agrupació Mútua, La Caixa, Invercartera de Caixa Catalunya, COPCA, CIDEM	192	International growth
• Innocat	Institut Català de Finances, Fons Europeu d'Inversions, EDF – Capital Investissement, Mútua de Propietaris, Col·legi d'Enginyers	30	SMEs innovation
• Invernova		20	High-tech

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- Invertec CIDEM, Generalitat de Catalunya, Universitat Autònoma de Barcelona, Universitat de Barcelona, de Girona, Universitat Politècnica de Catalunya (UPC), La Salle, IESE Business School 3,35

2.C. VI Lombardy (I)

<u>Incubators</u>	<u>City</u>	<u>Hosted companies</u>	<u>Total space</u>
• LIB - Laboratorio Innovazione Breda	Milan	10	4.500 m ²
• OMC Incubator	Milan	4	
• Parco Tecnologico Padano (PTP)	Lodi	12 (2 SMEs)	2.000 m ²
• Biocity	Bresso	4	15.000m ² +16.000m ² und.dev.

<u>BICs</u>	<u>City</u>	<u>Companies assisted</u>	<u>Tech-Transfers</u>
• Bic La Fucina	Milan	115/120	85/90
• Bic Altomilanese Euroimpresa	Milan	17	
• Bic Varese Polo Scientifico-Tecnologico Lombardo	Varese	17	
• BIC Agenzia Lumetel S.c.r.l.	Brescia	5	

<u>Venture Capitalist</u>	<u>City</u>	<u>Sponsors</u>	<u>Average inv</u>	<u>Fund raised/(inv)</u>	<u>Invested comp</u>
• NEXT	Milan	Local PA and private banks	€ 0,2-0,7 mln	€ 37.000.000	2
• EuroMed	Milan	Public (CNR)	€ 0,5-2,0 mln	€ 35.000.000	0
• Principia	Milan	Local PA/Banks	€ 0,1-1,0 mln	€ 40.000.000	8 (€ 663.000)
• Alpinvestimenti	Turin	R&D and private partners	€ 3,0 mln	€ 30.000.000	1
• Genextra	Milan			€ 166.000.000	15
• Alice Ventures	Milan				

2.C. VII Piedmont (I)

<u>Incubators</u>	<u>City</u>	<u>Hosted companies</u>	<u>Total / (Available) space</u>
• I3P (Politecnico di Torino)	Turin	30	
• Tecnoparco del Lago Maggiore	Verbania	22	180.000 m ² (150.000 m ²)
• 4 Incubators (under development-2006)	Colleretto Giocosa/ Turin/ Garessio/ Borgo Vercelli		(cost: € 17 mln)

<u>BICs</u>	<u>City</u>	<u>Companies assisted</u>
• Codex Scrl	Turin/Cuneo	
• Parco Scientifico e delle Telecomunicazioni in Valle Scrivia	Tortona	25

<u>Venture Capitalist</u>	<u>City</u>	<u>Sponsors</u>	<u>Average inv</u>	<u>Fund raised</u>	<u>Invested comp</u>
• Alpinvestimenti/ Piemontech	Turin	Local PA, Industry & Bank	€ 0,1-1,0 mln	€ 45mln	8 (€ 663.000)

2.C. VIII Limburg (NL)

<u>Incubators</u>	<u>City</u>	<u>Hosted companies</u>	<u>Total space</u>
• LIOF Bedrijven Centra	14 local cities	200	23.600 m ²
• Biopartner Centre	Maastricht		
• Euroregion Meuse-Rhine		30 technology centres	
• Business Park Trilandis	Heerlen		n.a.
• Coriopolis Business park	Heerlen		(> 5.000 sq.m. per company)

<u>Venture Capitalist</u>	<u>City</u>	<u>Sponsors</u>	<u>Average investment</u>	<u>Invested companies</u>
• DSM Venturing (Life Science/ Pharma/ High Performance Materials)	Heerlen	DSM	€ 0,25-€ 5,0 mln	~80% directly ~20% in funds
• Biomed Booster	Maastricht	Government Province, UM AZM, LIOF	< € 50.000	Just started
• LIOF starters fund	Maastricht	LIOF	< € 150.000	30
• LIOF Participations	Maastricht	LIOF	< € 4,0 mln	60
• BioPartner start-up ventures			< € 225.000	
• SBIC funding		Government	€ 0,2-€ 0,5 mln	
• Innovation loans	Maastricht	EU, LIOF Province	< € 300.000	2 (just started)

2.C. IX Masowia (PL)

<u>Incubators</u>	<u>City</u>	<u>Hosted companies</u>	<u>Total (available) space</u>
• Business Incubator - Agency of Kutno Region Development	Kutno	5	1.962 m ² (170,5 m ²)
• Business Incubator Ostroleka Movement for Supporting Business Initiatives	Ostroleka		
• Incubator of Innovative Enterprises - Regional Centre of Technology Development	Plock		
• Business Incubator - Association "Radom Business Centre"	Radom		

<u>BICs</u>	<u>City</u>
• Karol Marcinkowski's Business Foundation	Ciechanow
• Centre for Business Initiative Support - Ostroleka Movement for Supporting Business Initiatives	Ostroleka
• Centre for Supporting Business - "Free Enterprise" Association	Plock
• Regional Centre of Co-operative Services - Foundation of Rural Co-operatives	Plock
• Radom Business Centre - Association "Radom Business Centre"	Radom
• Centre of Youth Enterprise - Stephen Bathory Foundation	Warsaw

<u>Venture Capitalist</u>	<u>Origin</u>	<u>Average inv</u>	<u>Fund raised/(invest.)</u>	<u>Companies</u>
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• 3TS Venture Partners		€ 4mln	€ 66 mln (€ 2,2 mln)	1
• Advent International		€ 25 mln	€ 208 mln (€ 115 mln)	5
• AIB WBK Fund Management		€ 5,1 mln	€ 127 mln (€ 89 mln)	14
• AIG Global Investment (CEE) Ltd.		€ 25 mln	€ 460 mln (€ 23 mln)	
• ARGUS capital International Limited		€ 12,5 mln	€ 143 mln (€ 42 mln)	5
• Ballinger Capital		No limit	€ 187 mln (€ 172 mln)	7
• Baring Corilius Private Equity	UK	€ 8,5 mln	€ 86 mln (€ 25 mln)	2
• BMP - Poland		€ 2,5 mln	€ 20 mln (€ 5 mln)	2
• CARESBAC – Poland		€ 0,2 mln	€ 26 mln (€ 14 mln)	12
• Copernicus Capital Management		€ 1,4 mln	€ 54 mln (€ 28 mln)	10
• DBG Eastern Europe		€ 7,5 mln	€ 113 mln (€ 22 mln)	2
• Enterprise Investors		€ 24 mln	€ 910 mln (€ 565 mln)	30
• Innova Capital		€ 5-15 mln	€ 250 mln (€ 130 mln)	15
• Mezzanine management (Poland)		€ 10 mln	€ 115 mln (€ 7 mln)	1
• Pioneer Investment Poland - European Convergence Partners		€ 2,5-25 mln	(€ 512 mln)	38
• PKB Investment		€ 1,56 mln	€ 23 mln (€ 23 mln)	10
• Raiffeisen Private Equity Management		€ 9 mln	€ 83 mln (€ 10 mln)	2
• Renaissance Partners		€ 1,1 mln	€ 50 mln (€ 25 mln)	9
• Riverside Europe Partners		€ 8 mln	€ 22 mln (€ 13 mln)	3
• Trinity Management		€ 10 mln	€ 100 mln (€ 58 mln)	14

2.C.X North East of England (UK)

Incubators

	<u>City</u>
• Pioneer Process Park	Redcar
• International Centre for Life	Newcastle
• Netpark	Durham

BICs

	<u>City</u>
• North East BIC	Sunderland

Venture Capitalist

	<u>City</u>	<u>Sponsors</u>	<u>Average inv</u>	<u>Invested comp</u>
• Nstar	UK	NE RDA/ERDF	€ 90.000	
• BIG	UK	Private	€ 80.000	20+
• Entrust	UK			
• NEL/ Insight capital	UK	DTI with private match	€ 150 k - € 800 k > € 800.000	

2.C.XI Humberside (UK)

Incubators

	<u>City</u>	<u>Hosted companies</u>	<u>Total space (available)</u>
• Europarc Innovation centre	Grimsby	> 60	3500 m ² (< 5%)

BICs

	<u>City</u>	<u>Companies assisted</u>	<u>Tech-Transfers</u>
• Europarc Innovation centre	Grimsby	> 60	> 20 (estimate)

3 Best Practices

The last section of the Questionnaire had the target to identify Regional Best Practices developed and promoted by each one of the ECRN Members. Main reference area of the analysis has been the available Regional Support Schemes for Technological Transfers. Details can be found in the complete filled Questionnaire, attached as annexes.

3.I Lower Saxony (D)

<u>Best practice</u>	<u>Sponsor</u>	<u>Objective</u>	<u>Mechanism</u>	<u>Funds</u>
• PTR	IRES/ EFRD	Increasing SMEs ability to innovate funding graduates employment	Monthly grant of € 650-1.200 per tech-personnel	€ 0,4mln (2004)
• Innovations-Network (I.N.)	Lower-Saxhony	Increase and improve regional innovation activities	Intensify cooperation and provide information in the association (n.200)	
• State Initiatives (S.I.)	Lower-Saxhony	Support enterprise innovation process, creating and saving jobs and helping diffusion of sophisticated technologies	Sectors assisted: Biotech, Biophotonics, Telematics, Fuel cell, New materials, Micro system technology, nutrition science, logistics	€ 23,5 mln ('04-'07)

3.II North-Rhine Westphalia (D)

No information has been included in the Best Practice section of NRW's Questionnaire.

3.III Saxony-Anhalt (D)

<u>Best practice</u>	<u>Sponsor</u>	<u>Objective</u>	<u>Mechanism</u>
• ReaWeC - ReactiveWetCoating Bitterfeld-Wolfen	BMBF	Create a new coating technology using capillary casting technologies	Promoting cooperation among 23 partners (SMEs, R&D centres)
• Fh-PAZ at Value Park - Schopau	S.-A./ FHI/ EU	Increasing cooperation among SMEs and R&D centres	Promote innovation in the fields of new composite materials and polymerisation) offering modern equipment (€ 30mln)

3.IV Asturias (ES)

<u>Best practice</u>	<u>Sponsor</u>	<u>Objective</u>	<u>Mechanism</u>
• Fair of Employment (FoE)	FUO - Oviedo University Foundation/ Industries	Promote relationship among graduates & companies	Companies & graduates get in contact with each other in 2-days sessions

• Training Programmes (TP)	University-Company Foundation/Professional Association	Improve practical knowledge of newly graduated researchers	Coordinate and provide training courses to selected students
• R+D+I - Human resource training programme	Principality of Asturias (FiCYT)/ Public R&D/ Private companies	Aimed at supporting graduates employment	Create qualified personnel for R&D funding their training
• Promotion of Innovation (PoI)	FiCYT / Private companies	Support the innovation process in private companies	Subsidy companies' R&D projects, possibly with tech-centres
• EIBT Promotion Project	European Centre for Companies and Innovation of the Principality of Asturias, CEEI/Research Results Transfer Office of the University of Oviedo, CITE/Local Innovation Offices	Support Spin-Off birth from University's R&D	Identification & support of Spin Off; Training and Tutoring
• Tech-Transfer & Knowledge Programme (TT-KP)	Local Entrepreneurial and Innovators Association/ Univ. of Oviedo	Help matching R&D Technological Offer to Entrepreneurial Demand	Organization of meeting between University's staff and Technicians from Industry

3. V Catalunya (ES)

<u>Best practice</u>	<u>Sponsor</u>	<u>Objective</u>	<u>Mechanism</u>
• General Programme (G.P.)	State & Regional Government, University, Private partners, Tech-centres, Incubators	Promote competitiveness of Chemical sector	Subsidy & loans toward: <ul style="list-style-type: none"> • industrial R&D and innovation activities • tech-transfer from Universities to Industry • direct capitals to finance growth of SMEs

3. VI Lombardy (I)

<u>Best practice</u>	<u>Sponsor</u>	<u>Objective</u>	<u>Mechanism</u>	<u>Funds</u>
• NEXT - Closed Fund	Lombardy Region	Support local investment for tech-transfers	Partial guarantee (33%) for losses of private investors	€ 20mln
• Technological Voucher tool	Lombardy Region	Support innovation process (Biotech, Chemicals, New Materials)	Credit certificates financing R&D services outsourced	€ 2,5mln
• QuESTIO	Lombardy Region	Quality evaluation of local excellence centres for tech-transfer (Database)	Irer evaluate and monitor the identified centres	

3. VII Piedmont (I)

<u>Best practice</u>	<u>Sponsor</u>	<u>Objective</u>	<u>Mechanism</u>	<u>Funds</u>
• Piemontech/ Alpinvestimenti (P.A.)	Local PA, Bank&Industry	SMEs growth through seed & development capital financing	Management of a Closed-end Fund	€ 45mln

• PiemonteBionet (P.B.)	Arthur D. Little/ I-side	Promote interaction among high-tech SMEs and R&D Centres	Provide matching services within Canavese Bioindustry Park
• DIADI 2000 Project (ATS Diadi)	Piedmont Region/ UE Funds	Stimulate industrial innovation connecting SMEs with Piedmont Accademies and Science Centres	Offering SMEs all kind of technological solutions to enhance competitiveness and foster productivity
• Discovery Enterprise (D.E.)	Canavese Bio-industry Park	Support the entrepreneurial birth of ideas in Biotech to be installed in the Park	Identify, evaluate and select the innovative ideas to be installed
• Eporgen Venture S.p.A. (E.V.)	30 Private citizens	Play the role of a catalyst promoting the new biotech sector in Piedmont Region	Provide seed financing to researchers in biotechnology & pharma

3. VIII Limburg (NL)

<u>Best practice</u>	<u>Sponsor</u>	<u>Objective</u>	<u>Mechanism</u>
• Kenniswinkel (K)	DSM Research & Solutions	Preserve and develop expertise and knowledge in DSM	Know-how brokerage between Research Campus Geleen and outside world
• Innoveerpunt (Innovation Point, I.P.)	Province, LIOF Syntens	Innovation information	Call Centre
• Innovation Voucher (I.V.)	EU, Syntens, LIOF, Others	Transborder Technology Transfer	Voucher (funds available: € 800.000)
• Kennisbrug (Knowledge Bridge, K.B.)	Province, LIOF Syntens	Technology Transfer	Voucher (funds available: € 1.000.000)
• Kennisvoucher (Knowledge Voucher, K.V.)	Government	Technology Transfer	Voucher
• Kennisvoucher (Knowledge Voucher – Dutch scheme)	Government (Ministry of Economic Affairs)	As above	As above
• Triple In Stimulating funds (TiS)	EU, Province, LIOF	Stimulation of innovation	Grants (funds available: € 1.600.000)

3. IX Masowia (PL)

No information has been included in the Best Practice section of Masowia's Questionnaire.

3. X North East of England (UK)

<u>Best practice</u>	<u>Sponsor</u>	<u>Objective</u>	<u>Mechanism</u>	<u>Funds</u>
• CPI - Centre for Process Innovation	Regional Development Agency - One North East	Become the leading innovation resource for Process Industry in UK	Define R&D platforms/ Work closely & cooperate with Industrial Clusters	
• International Centre for Life (ICfL)		Create a new climate for regional technology investment	Encouraging entrepreneurial culture with early stage venture finance	£ 60 mln

3.XI Humberside (UK)

Best practice

- ETCIC – Environmental Technologies Centre for Industrial Collaboration

Sponsor

Government

Objective

Promote tech-transfer & build local competencies in Chemistry, Analytical chemistry and Environmental sciences

Mechanism

Develop an innovative liaison between Industry and Hull University to exploit intellectual property

4 Conclusions

Member Regions of the ECRN Network share the objective to improve framework operating conditions which affect performance of local chemical companies.

In order to do so the Study “Science & Industry” focused on one hand to the characterization of the Regions involved, providing general data over the relevant existing infrastructures and operators, aiming at quantify and qualify the offer and the demand of chemical science and industry with related services; on the other hand Member Regions have been asked to identify which support actions they perceive as Best Practices and therefore which policies they suggest to share with each other Region.

In the following we try to draw some insight among answers provided by the heterogeneous landscape constituted by the 11 participating Member Regions, with particular attention to the 25 Best Practices they presented. Its only practical purpose is to raise a discussion about future cooperation actions that the ECRN Network could be interested to propose and eventually embrace as follow-up projects.

Table 5 – Mapping Best Practices: where Regional efforts on innovation have been directed

ECRN Member	Scope of Best Practice								
	Selected innovation drivers/factors financed					Innovation services supplied			
	R&D staff	R&D projects	Tech-Transfers	Technical assets	VC industry	Info-service	Matching R&D staff & company	Matching services for Tech-Transfers	Training
LS (D)	PTR		S.I.			I.N.			
NRW (D)									
SA (D)			ReaWeC	Fh-PAZ					
Ast (ES)		Pol	Eibt/TT-KP				FoE		TP/R+D+I/Eibt
Cat (ES)		G.P.	G.P.	G.P.	G.P.			GP	
Lom (I)		Voucher			NEXT	Questio		Questio	
Pie (I)					P.A./E.V.	Diadi		P.B./D.E/Diadi	
Lim (NL)		I.V./TiS	I.V./K.B./K.V.			I.P.		K	
Mas (PL)									
NEE (UK)			CPI		ICfL			CPI	
H (UK)			ETCIC					ETCIC	

1. Direct funding of Tech-Transfer activities and operations constitutes the more targeted action of support mentioned by ECRN Members (10).
Limburg (NL) alone has cited 3 regional financing schemes (all involving the voucher's mechanism) that support Tech-Transfer in order to tackle the problem of bringing down to exploitation the knowledge developed in R&D Centres.
2. The importance of Tech-Transfer support in Regional policies is confirmed by the numerous matching services offered at regional level by most of the partners (8).
3. The less mentioned among innovation support measures are direct financing for the employment of R&D staff (only the German Lower Saxony), the offering of matching services for researchers and companies and the training of R&D personnel (both presented by the Spanish Asturias).
4. The only Regions that didn't provide any Best Practice's scheme have been North-Rhine Westphalia (D) and Mazowia (PL).
Risking to oversimplify a complex argument or even get a wrong direction, it could be tempting to argue that NRW, ranking 1st among European Regions referring to the number of employees in the chemical sector and having an industrial structure dominated by large chemical enterprises, doesn't have the priority (as other Regions have) to support R&D programmes specifically targeted for SMEs, considering that often, in a Large Enterprise executing R&D projects, the existence of public funding schemes plays a different role than that one in a SME.

5 Recommendations

In this chapter, while suggesting a few arguments that could inspire future cooperation projects targeting International exchange of experience on the basis of the identified shared Best Practice, we would provide some hopefully useful recommendation in order to properly conduct further analysis that eventually the ECRN Members will be willing to carry out jointly.

A series of analysis should be addressed to verify the possibility to export Best Practices presented by ECRN Members that have developed a recognised particular sensibility in some specific area to Regions that should candidate themselves as “potential receiver”.

In practice it is very difficult and risky to say which of the shared Best Practices would bestly fit or not for any ECRN Member, given the complexity of the argument and the superficial analysis that has been conducted until now.

Therefore we recommend ECRN Members to start a broad discussion about selected arguments and eventually propose further analyses on defined topics.

The following statements and questions intends to pave the way at the proposed dialogue:

1. Saxony-Anhalt (D) indicated a pair of strategies originated in their Chemical Parks, that looks extremely focused on the development of specific technologies and processes if compared with other Best Practices.
The same interesting proposition is offered by a shared initiative from North East of England (UK), which very precisely identify an industrial segment and gives it the role to guide the scientific programme of industrial R&D.
Are there available data showing the strengths of this approach? How this has been conceived? Eventual beneficial effects obtained?
2. the numerous training schemes proposed by Asturias (ES) suggests a particular attention directed to the local human resources. Is this because Asturias experiences a shortage of skilled personnel for the industry or it constitutes a traditional sensibility developed by the Region? Does the strategy prized the proposer?
3. the Italian (both Lombardy and Piedmont) schemes presented point out to a strong supporting strategy outlined to increase the provision of risk capital to their SMEs, extremely numerous both in absolute terms and in relation to the number of Large Enterprises, and notoriously undercapitalized if compared with their european peers. Is this aspect relevant for other ECRN Members too or is the validity of this approach limited to the Regions where it has been adopted?
4. an interesting approach to be deepened could be the Best Practice presented by Humberside (UK), which is intended to set an innovative liaison between local Industry and University

In this process it is strongly recommended to follow a “bottom-up” approach: each ECRN Region should identify which of the suggested measures shared by other participants could fit for them and therefore should be worth of further analysis.

After obtaining an informed judgement over the selected Best Practice it can be possible to eventually consider them valuable for spreading to interested partners of the ECRN network.

6 Annexes

As attachment have been copied the filled Questionnaires as received from each participating ECRN Member and containing the data used in this document.

Annex I Lower Saxony (D)

ECRN - Questionnaire "Science and Industry"

Science

Regional Universities

Name of the Institute/ Department	City	Scientific Area	Courses	Students (n°)	Graduates per year (n°) -2004	Existence of an I. L. O.
Technical University "Carolo Wilhelmina" Department 3 (Chemistry & Pharmac.)	Braunschweig	Analytical Chem., Biochem., Food Chem., Inorganic Chem., Material Chem., Organic Chem., Physical Chem.,	Graduate (x) Undergraduate (x)	542	30	Yes (x) No O
Technical University of Clausthal Department 1 (Natural and material sciences)	Clausthal	Analytical Chem., Chem. Engineering, Inorganic Chem., Material Chem., Organic Chem., Physical Chem., Polymer Chem.,	Graduate (x) Undergraduate (x)	230	9	Yes (x) No O
University of Göttingen Departement for Chemistry	Göttingen	Inorganic Chem., Organic Chem., Physical Chem.,	Graduate (x) Undergraduate O	641	34	Yes (x) No O
University of Hanover Department for natural sciences	Hannover	Analytical Chem., Biochemistry, Computational Chemistry, Food Chem., Inorganic Chem., Organic Chem., Physical Chem.	Graduate (x) Undergraduate (x)	1029	60	Yes (x) No O
Carl von Ossietzky-University Department 5 (Chemistry)	Oldenburg	Biochemistry, Inorganic Chem., Organic Chem., Physical Chem.,	Graduate (x) Undergraduate O	354	18	Yes (x) No O
University of Osnabrück Department 5 (Biology/ Chemistry)	Osnabrück	Biochemistry, Inorganic Chem., Material Chem., Organic Chem., Physical Chem.	Graduate (x) Undergraduate (x)	18	no data	Yes (x) No O
University of applied sciences Department for natural sciences	Emden	Analytical Chem., Biochemistry, Inorganic Chem., Organic Chem., Physical Chem., Polymer Chem.,	Graduate O Undergraduate (x)	283	20	Yes (x) No O
University of applied sciences Institute for Chemistry	Holzminden	Analytical Chem., Inorganic Chem., Organic Chem. Department will be closed	Graduate O Undergraduate O	33	4	Yes O No O

Source: Internet and GDCh, June 2005

R & D Public Centres

Name of the Institute	City	Scientific Area	Private partners (if existing)	Students (n°)
Center of excellence for functional food	Hannover	Food Chemistry Spectroscopy analytical Chem., Chromatography, Electrophoresis,	Amino GmbH Emslandstärke GmbH Chr. Hansen GmbH Sartorius AG Biolac GmbH & Co KG	7
BioProfil	Hannover Brunswick Göttingen	Biochemistry	ARTISS GmbH, Adnagen AG, Atlas Venture, BioMed Venture AG, BioRegion, BioVisioN Ltd. & Co KG, Cytonet Ltd. & Co KG, DeveloGen AG, Fresenius HemoCare Ltd., IBA Ltd., IBA Biologics, iOnGen AG, mosaiques diagnostic Ltd., Nord/LB PHARIS Biotec Ltd., Phenomiques, Sartorius AG	No Data
Center of excellence for science of nutrition	Vechta	Food Chemistry	Big Dutchman AG, Deutsche Frühstücksei GmbH, Heidemark GmbH, Nordmilch eG, Premium Fleisch AG, Rügenwalder Fleischwaren, Rothkötter and many more	0
University of Hanover Department of natural sciences Centre for solid chemistry and new materials	Hannover	Electrochemistry Physical chemistry	Continental AG	70
Cutec	Clausthal- Zellerfeld	analytical Chem., Chemical Engineering, Chromatography, Spectroscopy, Surface Chemi., Environmental Chem.	Johnson Matthey, Great Britain; Zeuna Stärker, Germany; Politecnico di Torino, Italy; ArvinMeritor, Germany; Avavon AG, Germany; Martin Ltd., Germany; Babcock Borsig Power GmbH, Germany and many more	15 - 20

Regional Scientific Parks

Name of the Park	City	Scientific Area	Private or Public financiers and promoter
Medical Parc including: - Medical University - Max Planck Institute - Fraunhofer Institute and other	Hannover	Medical Chemistry, Life Science, Pharmaceutics,	Niedersachsen and private financiers

Industry

	No.	%
1. How many companies are active in the Region?	21.083*	100
2. How many people work in these companies?	613.382*	100
3. How many of them are graduates?	39.832**	6,49
4. How many of them are Chemistry graduates or qualified Chemists?	1519*2 **	0,25
5. How many of the regional companies are SMEs?	20.731*	98,33
6. How many Chemical companies are active in the Region? (Special note: In Niedersachsen there are 371 individual chemical operating sites which are run by about 173 chemical enterprises.)	371*	1,76
7. How many people work in these companies?	28.001*	4,57
8. How many of them are graduates?	2.615**	9,34
9. How many of them are chemistry graduates or qualified Chemists?	646*2 **	2,31
10. How many of the regional chemical companies are SMEs?	347*	93,53
11. Indicate which of the following economic activities have a recognized important role over regional economy. If available, states related information (% relevance on overall local industry).		
(x) coatings		2,01%* ³
(x) electronics		8,69%* ³
(x) food		15,17%* ³
() detergents		0,09%* ³
(x) paper		2,56%* ³
() agricultural chemicals		0,01%* ³
(x) pharmaceuticals (drugs)		0,73%* ³
(x) plastics		5,21%* ³
(x) petroleum		1,03%* ³
(x) other chemical manufacturing		1,6%* ³
() other chemical services ⁶		no Data

* (employees subjected to social insurance contribution by) company register

** Employment statistics register

*² Chemists, Mathematicians, Physicists

*³ Proportion to engagement in industrial enterprises

Source: State office of Statistics of Niedersachsen

⁶ Transformation, engineering, etc.

Tech - Transfer and other supporting services

Regional Incubators

Name of the Incubator	City	N° of companies hosted	Total m ²	Available m ²
Centre of Technology - Hannover	Hannover	44	6604m ²	792m ²
CampMedia	Hannover	43	2480m ²	552m ²
PZH Produktions-technisches Zentrum Ltd.	Garbsen	19	22.000 (1.500 for start-ups)	200
Grafschafter - TechnologyCentre Ltd.	Nordhorn	21	2093	339,86
Centre of Technology - Stade	Stade	13	4500	0
Establishment and Innovationcentre - Stade	Stade	16	500	60
Centre of floater	Emden	16	2304	1396
Centre for founder of a new business	Hannover	40	3900	180
Technology and floatercentre DTA	Helmstedt	4	approx. 1800	approx. 800
Technology and BusinessCentre DTA	Helmstedt	3	approx. 2000	0
Technology and MessCentre DTA	Helmstedt	1	approx. 260	approx. 60
Medical Parc Ltd.	Hannover	approx. 20	11.000	2.800

Regional BIC

BIC	City	N° of assisted companies per year	N° of Tech-Transfer operated since start
PZH Produktionstechnisches Zentrum Ltd	Garbsen	5	

VC - Funds

(000€)

Name of the VC Fund	Origin (nation)	Sponsor	Strategy	Avg investm.	Fund raised	Already invested	Comp. invested
Innovationscapital Göttingen Ltd	D	Georg-August University Capiton AG, Göttingen, Sartorius AG, KWS SAAT AG, Sparkasse Göttingen	Early Stage	500	5.000	2.500	3
ubg Göttingen, Hildesheim Ltd. & Co.	D	Sparkasse Göttingen Sparkasse Hildesheim	Expansion	500	7.500	6.500	9
FloaterFONDS	D	n. s.	Seed	500	7.000	4.000	7
northwest Kapitalbeteiligungsassociation by northwest Unternehmensbeteiligungsassociation Sparkasse Bremen	D	Sparkasse Bremen	wide diversification	500- 1500	8- digit	7 - digit	11
Beteiligungskapital Hannover Ltd. & Co. LP	D	Sparkasse Hannover	Financing	500- 5000	approx. 75.000	approx. 31.000	23
Earlybird III Ltd. & Co. Beteiligungskommanditgesellschaft III Earlybird III L.P./Earlybird III Advisory L.P.	D/USA	n. s.	n. s.	n. s.	195.000	confidential	in total
Earlybird III Ltd. & Co. Parallel-Beteiligungskommanditgesellschaft III	D	n. s.	n. s.	n. s.	30.000	confidential	15
Earlybird Pre-Seed Beteiligungskommanditgesellschaft Nr. 1 der Earlybird Venture Capital Ltd. & Co. LP	D	n. s.	n. s.	n. s.	in total	in total	in total
Earlybird Pre-Seed Ltd. & Co. Beteiligungskommanditgesellschaft Nr. 2	D	n. s.	n. s.	n. s.	60.000	60.000	12

45

BEST PRACTICE

Name

Funding Employment of University Graduates as Junior Employees for Management and Innovation Assignments in Small and Medium-sized Enterprises (Transfer of personnel)

Subjects involved

This funding programme addresses small and medium-sized industry and manufacturing enterprises and small and medium-sized enterprises working predominantly in the fields of data processing, research and development work for the economy technical consulting. These enterprises can apply for funding from the NBank from the resources of the joint task "Improvement of the Regional Economic Structure" as well as from the European Fund for the Regional Development (EFRD), for the employment of male and female university graduates.

Objective

Funding is provided for the employment and practice-oriented employment of university graduates:

1. Junior Scientists
 - in engineering and natural sciences in the following divisions: research and development, planning and construction, production control and logistics, marketing and sales as well as quality assurance
 - in economics in the research and development divisions as well as in the marketing and sales divisions
2. Innovation Assistants (with professional experience)
in engineering, economics and natural sciences in the company's research and development division.

Rationale

Funding of reinforced employment of personnel for research and development will increase the innovative ability of the small and medium-sized enterprises in Lower Saxony and facilitate the employment of highly qualified manpower in the industrial enterprises.

Implementation

Grant in event of full employment for 12 months:

1. max. 650 Euro monthly for Junior Scientists
2. max. 1,000 Euro monthly for Innovation Assistants
(+20% in the event of the employment of women)

Applications can be submitted by small and medium-sized enterprises of the Lower Saxony target 2 and joint task funding areas.

Grant applications are to be submitted to the NBank.

Updating

Funding 2004:	42 acceptances of 0.4m Euro
Funding 2005 (1st half year):	14 acceptances of 0.1m Euro

Name

Lower Saxony Innovation Network -Info: www.innovationsnetzwerk-niedersachsen.de

Subjects involved

LSIN is an association of more than 200 LS institutions belonging to the fields of innovation funding, technology transfer and technology consulting. The members of the LSIN are composed of chambers, universities and non-university research institutions, technology centres, special technology transfer institutions and business promoters.

Objective

The LSIN's aim is to support and reinforce the work of the different actors in LS, such as innovation centres, technology transfer or information centres, through intensified cooperation and connection of information sources and communication systems.

Rationale

Contact persons for the enterprises in respect of questions concerning the field of innovation are numerous regional and professional actors in LS. Active participation in the IN allows network partners to contribute to the LS innovation landscape through active and constructive input and increases their range of consulting services.

Implementation

LSIN spread information (expert panels, working groups) on innovative technology fields and funding innovation. Offers members opportunity to shape innovation landscape.

Name

The Lower Saxony State Initiatives

Subjects involved

Lower Saxony state initiatives are supported financially by the Government of LS. Professionally competent institutions or enterprises are appointed as network manager.

Objective

The state initiatives are demand-oriented networks which support enterprises in innovation process and intensify the knowledge and technology transfer between economy and science respectively economy and economy. The economy networks constitute nucleus of these initiatives. The initiative targets conservation and creation of jobs in particular in existing enterprises through diffusion of sophisticated technologies.

Rationale

The funding of technology oriented network structured by Government of LS induces extensive mobilisation of innovation potential (already existing or new potential) and development of market potential in key technology fields. The aim is to transfer later on responsibility for individual activities to participating enterprises.

Updating

The LS Ministry for Economic Affairs, Employment and Transport provides the following funding to support projects on key technologies for the period '04-'07 (from the Economy Promotion Fund, the joint task "Improvement of the Regional Economic Structure" and EFRD): Biotechnology(€ 9m); Biophotonics(€ 3m); Telematics (€ 3m); Fuel cell (€ 4,5m); New materials (€ 2m); Micro system technology (€ 2m). Other interested area: nutrition science and logistics.

Annex II North-Rhine Westphalia (D)

Science

List Regional Universities offering courses in Chemistry.

Name of the Institute/ Department	City	Scientific area	Courses Graduates Undergraduate	Students	Graduates	I.L.O.
University of Applied Sciences Aachen	Aachen	Chemical Engineering	Diploma Bachelor Master	73	28	see Juelich
University of Applied Sciences Aachen	Juelich	Bio-Engineering	Diploma Bachelor Master	311	28	yes
		Chemical Engineering		228	17	
		Chemical Engineering (IST)		25	4	
University of Applied Sciences Bonn-Rhein-Sieg	Rheinbach	Biology	Bachelor Master	247	32	yes
		Biology with Biomedical Sciences		34		
		Chemistry (practical semester)	Diploma	77	8	
		Chemistry with Materials Science	Bachelor	138		
		Material Engineering	Diploma	60	20	
University of Applied Sciences Gelsenkirchen	Recklinghausen	Chemistry (practical semester)	Diploma Bachelor	138	16	yes
		Material Engineering	Diploma Bachelor	68	18	
		Moleculare Biology	Bachelor Master	109		
University of Applied Sciences Muenster	Muenster	Chemical Engineering (practical semester)	Diploma Bachelor Master		2	yes
University of Applied Sciences Muenster	Steinfurt	Applied Material Science	Diploma Bachelor Master	3	5	yes
		Chemical Engineering		78	19	
		Chemistry (practical semester)		4	1	
		Chemical Engineering (practical semester)		265	41	
		Quality Management and Safety Engineering		2		
University of Applied Sciences Niederrhein	Krefeld	Chemical Engineering	Diploma Bachelor Master	17	43	yes

		Chemical Engineering (practical semester)		384		
		Chemistry and Biotechnology	Diploma Bachelor	11		
		Instrumental Analysis and Laboratory Management	Diploma Master	7		
Private University	Witten- Herdecke	Bio-Chemistry	Diploma Master	61	22	no
Technical University	Aachen	Chemistry	Diploma	694	100	yes
University	Bielefeld	Bio-Chemistry Chemistry	Diploma Bachelor	166 299	13 46	yes
University	Bochum	Bio-Chemistry Chemistry	Diploma Bachelor Master	281 587	75 78	yes
University	Bonn	Chemistry Food-Chemistry	Diploma	571 121	76 10	yes
University	Dortmund	Chemistry Bio-Chemistry	Diploma Bachelor Master	461 210	52	yes
University Duisburg-Essen	Duisburg	Chemistry Chemistry/Molecular Material Water: Chemistry, Analytics, Mikro-Biology	Diploma Bachelor Master	117 33 234	35 3 28	yes
University Duisburg-Essen	Essen	Biotechnology Chemistry Chemical Engineering	Diploma Bachelor Master	32 486 6	44 1	yes
University	Duesseldorf	Bio-Chemistry Chemistry Chemistry and Business	Diploma Bachelor Master	61 471 173	42 2	yes
University	Cologne	Chemistry	Diploma Bachelor Master	1.007	63	yes
University	Muenster	Chemistry Graduate School of Chemistry Food-Chemistry Chemistry and Business	Diploma Ph.D.	1.033 49 172 142	129 26 2	yes
University	Paderborn	Chemistry	Bachelor Master	273	27	yes
University	Siegen	Chemistry	Diploma Bachelor Master	248	43	yes
University	Wuppertal	Chemistry Food-Chemistry	Diploma Bachelor Master	237 124	26 6	yes

All data: Audit year 2004

R&D Public Centres and Private/Public Partnerships in the Region

Name of the Institute	City	Scientific area¹
Fraunhofer Association-FhG Umsicht	Oberhausen	Environment
Max Planck Association (MPI)	Muelheim/Ruhr	Bioinorganic Chemistry, Cole Research
MPI Dortmund	Dortmund	Physical Bio-chemistry, Chemical Biology, Chemical Genomic Center
MPI	Münster	Molecular Biomedicine
MPI	Cologne	Plant Breeding Research
Research Centre Juelich – Helmholtz Association	Juelich	Bioorganic Chemistry, Chemical Analysis, Nuclear Chemistry, Chemistry and Dynamics in Geosphere, Biotechnologies, Biological Information Processing
Institute of Physical Biochemistry	Witten-Herdecke	Biochemistry, Bioinformatics, Physical Biochemistry
Institute for Neurobiochemistry	Witten-Herdecke	Biochemistry, Molecular Biology
Institute of Phytochemistry	Witten-Herdecke	Applied Chemistry, Medical chemistry, Biochemistry

Local Scientific Parks committed in Chemistry or characterized by technological proximity

Name of the Park	City	Private or Public financiers and promoters
Bayer Chemical Park, Location	Dormagen	Bayer Industry Services GmbH
Bayer Chemical Park, Location	Leverkusen	Bayer Industry Services GmbH
Bayer Chemical Park, Location	Krefeld-Uerdingen	Bayer Industry Services GmbH
Chemical Park	Marl	Infracor GmbH
Chemical Park	Gelsenkirchen-Scholven	Veba Oil Refining&Petrochemicals
Chemical Park	Gelsenkirchen-Horst	Veba Oil Refining&Petrochemicals
Chemical Park	Castrop-Rauxel	Ruettgers VFT AG
Intermunicipal Industrial Park	Dorsten/Marl	Cities of Dorsten and Marl, Initiative of STEAG AG
Industrial Park	Troisdorf	HT Troplast
Pharma- und Chemiepark	Wuppertal	Bayer Healthcare AG
Industrial Park Knapsack	Huerth	InfraServe Knapsack
Industrial Park Oberbruch	Heinsberg, Dueren	Nuon Energy and Services
Industrial Park Solvay	Rheinberg	Solvay
Industrial Park Cologne, North	Cologne	City of Cologne, Agency for Business Development

Industry

	No.	%
1. How many companies are active in the Region?	approx. 10,600	
2. How many people work in these companies?	approx. 1.3 mio.	
3. How many of them are graduates?	no data available	
4. How many of them are Chemistry graduates or qualified Chemists?	no data available	
5. How many of the regional companies are SMEs?	approx. 85%	
<hr/>		
6. How many Chemical companies are active in the Region?	approx. 500 (720 incl. plastics & rubber)	
7. How many people work in these companies?	approx. 130,000 (+ 72,500 plastics & rubber)	
8. How many of them are graduates?	– no statistic data available –	
9. How many of them are chemistry graduates or qualified Chemists?		
10. How many of the regional chemical companies are SMEs?	approx. 380	85%
<hr/>		
11. Indicate which of the following economic activities have a recognized important role over regional economy. If available, states related information (% relevance on overall local industry).		
<input type="checkbox"/> coatings	..	12.7%
<input type="checkbox"/> electronics	30.5 bn EUR%
<input type="checkbox"/> food	29,4 bn EUR%
<input type="checkbox"/> detergents	..	6.0%
<input type="checkbox"/> paper%
<input type="checkbox"/> agricultural chemicals	..	3.6%
<input type="checkbox"/> pharmaceuticals (drugs)	..	10.9%
<input type="checkbox"/> plastics	..	18.7%
<input type="checkbox"/> petroleum%
<input type="checkbox"/> other chemical manufacturing%
<input type="checkbox"/> other chemical services ⁷%
<input type="checkbox"/> automotive industry	30.4 bn EUR%
<input type="checkbox"/> metall production and processing	26.6 bn EUR%

⁷ Transformation, engineering, etc.

Tech-transfer services

List the existing regional Incubators.

<i>Name of the Incubator</i>	<i>City</i>	<i>N° of companies hosted</i>	<i>Total m³</i>	<i>Available m³</i>
Technology Centre Ruhr - Chip GmbH	Bochum	78	16,500	
Technologiehof Muenster	Muenster	49	10,000	units between 30 and 400 m ²
TechnoMarl – Technology and Chemistry Centre	Marl	22	8,000	
CeNTech – Centre for Nanotechnologies	Muenster		2,400	700

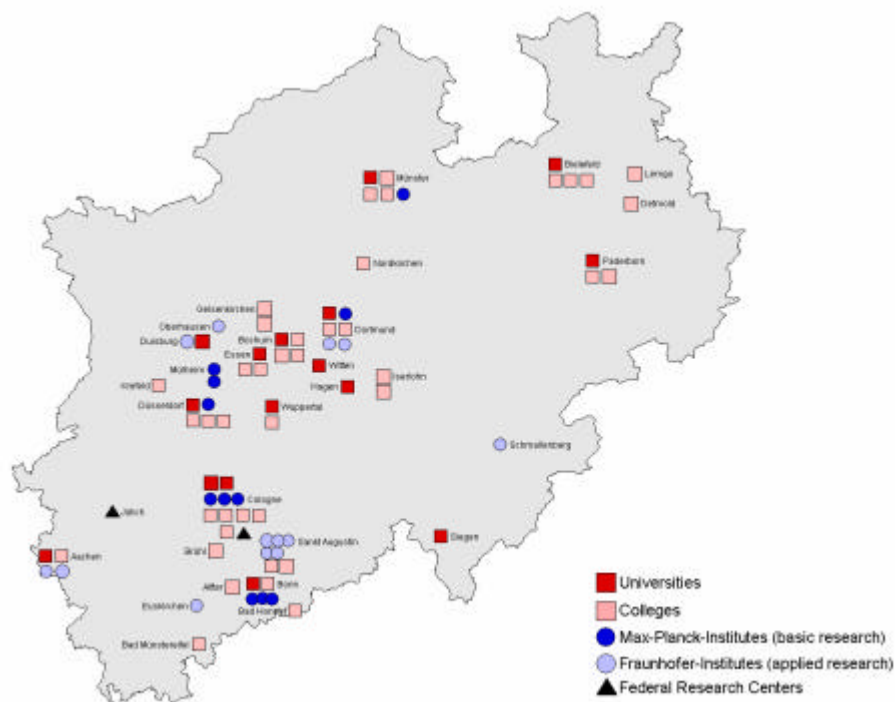
List the existing regional Business Innovation Centres (B.I.C.).

<i>BIC</i>	<i>City</i>
Centre for Innovation and Technology in North Rhine-Wesfalia ZENIT GmbH	Muelheim/Ruhr
CeNTech – Centre for Nanotechnologies	Muenster
Incubator Centre - Emscher-Lippe	Gelsenkirchen

List the existing international, national and regional Venture Capital funds operating in the Region either for statute or as a matter of fact

<i>Name of the VC fund</i>	<i>Origin (nation)</i>	<i>Sponsor</i>	<i>Strategy</i>	<i>Average size of investment (000 €)</i>	<i>Fund raised (000 €)</i>	<i>Already invested (000 €)</i>	<i>N° of companies participated</i>
Stiftung Caesar, Bonn	D	Germany: 90% NRW: 10%			300 mio. € (fondation capital)		
Bayer Innovation	D	Bayer AG	Majority shareholding in medical technologies, material devices, chemistry in activity areas of Bayer AG				
Emscher-Lippe Venture Fonds	D	Network of private investors	Sector focus on medical technics, chemistry, bio	200 k€ on average	More than 2.5 mio € in one year	2.5 mio € since 2003	12 since 2003

			chemicals				
Intelligent Venture Capital, Köln, Aachen	D	network of private investors co-investments with German public funds	No special focus on sectors. Specialised in IT, Engineering, life science, microstructure technics	Up to 15 mio €			More than 30
eCapital New Technologies Fonds AG, Münster	D		Invests in early stage and sme; sectors: new materials / chemical engineering, medical technics / analytics, industrial technologies	Up to 1 mio €			
Henkel Venture Capital, Düsseldorf	D	Henkel KGaA	Majority shareholding in the fields of chemistry, advanced materials, biotechnology, life science	0.5 – 5 mio. €			12
Creavis	D	Degussa AG					



Annex III Saxony-Anhalt (D)

SAXONY-ANHALT

In order to gain further information about the chemical and plastics industry in central Germany we suggest to read following recent published paper:

Wirtschaftsspiegel Special 2005 “Chemical and Plastics industry in central Germany” (2005)

You will find the document either at: www.wirtschaftsspiegel.com or request it by mail: info@wirtschaftsspiegel.com.

Science

Considering the Chemistry-related scientific areas of interest, list the:

Regional Universities offering courses in Chemistry.

Name of the Institute/ Department	City	Scientific area	Courses	Students (n°)	Graduates per year (n°)	I.L.O.
University of Applied Sciences Merseburg	Merseburg	Chemical Engineering/ Technical Chemistry	(x) Graduate (o) Undergraduate	88	8	Yes
University of Applied Sciences Anhalt	Köthen	Chemical Engineering/ Technical Chemistry	(x) Graduate (x) Undergraduate	41 21	13 0	Yes
University of Applied Sciences Magdeburg-Stendal	Magdeburg	Chemical Engineering/ Technical Chemistry	(x) Graduate (o) Undergraduate	226	19	Yes
Martin-Luther-University (MLU) Halle-Wittenberg	Halle	Biochemistry Chemistry Food Chemistry	(x) Graduate	425	72	Yes
			(o) Undergraduate	200	17	
			(x) Under-graduate	19	0	
			(x) Graduate (o) Undergraduate	190	0	
Otto-von-Guericke-(OvG) University Magdeburg	Magdeburg	Biochemistry Chemistry	(x) Graduate	2	5	Yes
			(o) Undergraduate	11		
			(x) Graduate		3	
			(o) Undergraduate			

Source: State Office of Statistics, Saxony-Anhalt, 2004.

R&D Public Centres and Private/Public Partnerships in the Region committed in Chemistry or Chemistry-related innovation activities¹.

Name of the Institute	City	Scientific area	Private partners (if existing)	Students (n°) '04-'05 in total/ starters
IPW Institut für Polymerwerkstoffe e.V. Prof. Dr. Michler	Merseburg	development, production, specification and testing, processing & application of polymer ? morphology and micromechanics ? plastics testing & diagnostics ? plastics processing & recycling ? synthesis and chemical modification	- Agrolinz Melamin International GmbH, Linz - Ashland Garbagnate - BASF AG Ludwigshafen - Basel Polyolefins GmbH, Frankfurt - BioService Halle GmbH - Biotronik Berlin - Borealis AG, Linz (A), Porvoo (FIN) - BSH Hausgeräte GmbH, Nauen - Cetex Textilmaschinen Chemi	~ 20 (4 prof., 12 postdoc. and doc., 4 tech-collaborators)

<p>IWMH Fraunhofer Institut für Werkstoffmechanik Halle</p> <p>Business Unit: Polymer Applications</p> <p>Dr. Lühe / Dr. Busch</p> <p>www.iwmh.fhg.de</p>	<p>Halle/S.</p>	<p>new application of materials ? security and availability of components ? simulation of manufacturing ? components with functional surfaces</p>	<p>Chemistry - DOW, Schkopau - RP Compounds, Schkopau - Kometra, Schkopau, Leuna - Miramid GmbH, Leuna - Deutsche Gumtec AG, Halle - NOVO-TECH GmbH & Co. KG, Gross-Schierstedt - Quinn Plastics Nischwitz GmbH, Thallwitz - Haase GFK-Technik GmbH, Großröhrsdorf - SLM Kunststofftechnik GmbH, Oebisfelde - CTC Composite Technology Center GmbH, Stade (100 % Airbus) Mechanical Engineering (plastics processing industry) - Krauss Maffei, München - Berstorff, Hannover Different Measuring instruments manufacturer - e.g.: Fiedler Optoelektronik GmbH, Lützen</p>	<p>~ 20 (2 senior research fellows, 4 scientists, 1 doc., 13 tech-collaborators)</p>
<p>MLU Halle-Wittenberg</p> <p>Engineering Department Institute of Material Science</p> <p>Professorship in Plastics Prof. Radosch</p> <p>http://matsci.iw.uni-halle.de/kunststofftechnik/index.html</p>	<p>Halle/S.</p>	<p>polymer blends ? reactive compounding ? machining of solids ? electrical isolation materials ? bio-polymer/ biomedical materials ? rubber and gum/ thermoplast-elastomer-compounds ? plastics recycling</p>	<p>Engineering Department: 509 / 119 students</p> <p>Institute of Material Science: 83 / 23 students</p>	
<p>MLU Halle-Wittenberg Engineering Department Institute of Material Science Professorship in material science Prof. Dr. Michler http://mlucom6.urz.uni-halle.de/werkstoff/aww/</p>	<p>Halle/S.</p>	<p>electron microscopy and atomic force microscopy in material research: ? micro-mechanical processes of deformation and breakage in polymers ? mechanism of tenacity in heterogenic polymers and their modelling ? structure-property-relations of polymer materials ? modification of polymer materials for property improvement</p>	<p>as mentioned before</p>	
<p>MLU Halle-Wittenberg, Engineering Department Institute of Material Science Professorship Material diagnostic and inspection Prof. Dr. Grellmann http://www.iw.uni-halle.de/ww/</p>	<p>Halle/S.</p>	<p>static and dynamic investigation of materials, ingredients diagnostics of plastics and compounds ? experimental methods of technical fracture mechanic ? morphology-tenacity correlations of plastics ? clarification of crack initiation and crack growth of plastics ? non-destructive plastics diagnostics ? improvement of circulation ability of polymer materials Composites</p>	<p>as mentioned before</p>	

<p>Polymer Service GmbH Merseburg</p> <p>Prof. Dr. W. Grellmann Prof. Dr. G.H. Michler</p> <p>http://www2.iw.uni-halle.de/ww/psm/</p>	<p>Merseburg</p>	<p>polymer synthesis and - modification ? plastics techniques ? characterisation, testing and diagnostics of plastics ? rubber and gum ? circulation ability of polymer material ? plastics testing and diagnostics ? morphology and micromechanics</p>	<p>Supraregional Partners</p> <ul style="list-style-type: none"> - Agrolinz Melamin International GmbH, Linz, (A) - Asahi Thermofil Ltd, Hampshire (GB) - Basell Polyolefins, Frankfurt/Main - BASF AG, Ludwigshafen - BSH Bosch und Siemens Hausgeräte GmbH, Berlin - Biotronik GmbH, Berlin und Bühlach, (CH) - Borealis GmbH, Linz (A) Porvoo (FIN) - Daimler Chrysler AG, Ulm - DMT Technology GmbH, Salzburg (A) - DMT S.A., Le Bourget-du Lac (F) - DOW Olefinverbund GmbH, Schkopau - EFA Entwicklungsgesellschaft Akustik, Witten - HP-Pelzer GmbH, Neutraubling - IDEAL Automotive Berlin GmbH, Berlin - Klöckner Pentaplat GmbH & Co. KG, Montabaur - Mannesmann-Sachs AG, Schweinfurt - EOS Electro Optical Systems GmbH, Krailling - Miele & Cie. KG, Gütersloh - Neumann & Esser GmbH & Co. KG, Übach-Palenberg - RECTICEL Automobilsysteme, Rheinbreitbach - Rehau AG & Co, Velen und Rehau - Rieter Automotive Heatshields AG, Sevelen (CH) - Siemens AG, Erlangen - Stiebel Eltron GmbH & Co. KG, Eschwege - Ticona GmbH, Oberhausen - Transnorm System GmbH, Harsum - Tratter Engineering, Bozen, Italien - Volkswagen AG, Wolfsburg - Woco Industrietechnik GmbH, Bad Soden-Salmünster <p>Regional Partners</p> <ul style="list-style-type: none"> - CETEX GmbH, Chemnitz - Clion GmbH, Tollwitz - CPI ChemiePark Institut GmbH, Bitterfeld - DOW BSL Olefinverbund GmbH, Schkopau - FROMM plastics GmbH, Kölleda - FVK GmbH, Dessau - Kometra GmbH, Schkopau - Leuna Harze GmbH, Leuna - LeunaSpan GmbH, Leuna - Orbita-Film GmbH, Weißandt-Göolzau - Stasskol GmbH, Staßfurt - TECNARO GmbH, Eisenach/Stedtfeld 	<p>~ 14 (5 prof., 5-6 doc. 3-4 tech-collaborators, + trainees)</p>
<p>FH Merseburg, Dep. of engineering and natural science Prof. Dr.-Ing. Heike Mrech - www.fh-merseburg.de</p>	<p>Merseburg</p>	<p>environmental protection and disposal ? statistics and consultancy ? chemistry und synthesis</p>	<p>/</p>	<p>218 / 87 students</p>
<p>CPI ChemiePark Institut GmbH Bernd Eilhardt www.cpi-bitterfeld.de/</p>	<p>Bitterfeld</p>	<p>Three applied research pillars: ? pharmaceuticals ? organic chemistry ? inorganic chemistry</p>	<ul style="list-style-type: none"> - Bayer Bitterfeld GmbH - P-D ChemiePark Bitterfeld-Wolfen GmbH - Q-Cells AG - Sensient Imaging Technologie GmbH - Tricat Management GmbH 	<p>~ 19 (1 prof., 6 doc., 4 engineers 4 tech-</p>

			- Organica Feinchemie GmbH Wolfen - FEW Chemicals GmbH Wolfen	collaborators, 2 technicians, 2 trainees)
Max Planck Institute of Microstructure Physics Dipl.-Phys. Detlef Hoehl www.mpi-halle.de/	Halle/S.	Research is done to provide necessary information for creating new and improved functional or structural materials in application areas such as sensorics, opto- and microelectronics. ? solid state phenomena that are determined by small dimensions, surfaces and interfaces are explored ? investigations concentrate on establishing relations between the magnetic, electronic, optical, and mechanical properties of solids and their microstructure ? thin films and surfaces nanocrystalline materials, phase boundaries and defects in bulk crystals are investigated	- Wacker Chemie AG, München - Osram AG, München - Schott AG, Mainz	- staff of 200 person (4 prof. 38 doc., 25 engineers, additionally tech-collaborators and technicians)
PPM e.V. Pilot Pflanzenöltechnologie Magdeburg e.V. Dr. Frank Pudel www.ppm-magdeburg.de	Magdeburg	? vegetable oil technology ? bio-polymers	- Brökelmann & Co. Oelmühle GmbH + Co., Hamm - Deutsche Saatveredlung Lippstadt-Bremen GmbH, Lippstadt - Flottweg GmbH & Co. KGaA, Vilsbiburg, - Kroppenstedter Ölmühle Walter Döpelheuer GmbH - Krupp Elastomertechnik GmbH, Hamburg - Norddeutsche Pflanzenzucht Hans-Georg Lembke KG, Holtsee - ÖHMI Aktiengesellschaft, Magdeburg - ÖHMI Analytik GmbH, Magdeburg - ÖHMI Engineering GmbH, Magdeburg - Oilseed Oil Producers Association Bulgaria - Stadtsparkasse Magdeburg - Süd-Chemie AG, Moosburg - C. Thywissen GmbH, Neuss - Union zur Förderung von Oel- und Proteinpflanzen e.V., Bonn - Westfalia Separator AG, Oelde - Riesaer Ölwerke GmbH, Riesa - Otto-von-Guericke-Universität, Magdeburg, Prof. Dr. Lothar Mörl - LipPro Consulting, Verden, Dr. Ernst-Wilhelm Münch - Alberdingk und Boley GmbH, Krefeld-Uerdingen, Robert Allmüller	13 (5 senior research fellows, 6 engineers, 2 tech-collaborators)
IKTR - Institut für Kunststofftechnologie	Weißandt-Gölsau	? R&D - services for manufacturing,	- ORBITA-FILM GmbH, Weißandt-Gölsau - P.O.F. Recycling GmbH, Weißandt-Gölsau	8 (1 prof., 1 doc, 4 tech

e und -recycling e.V. Prof. Dr. Marinow bzw. Frau Schadewald		modification, processing and application of polymer- and rubber- based materials ? services for characterisation and examination of plastics ? consultancy in the field of up scaling	- VTA GmbH, Weißandt-Görlau - EOS GmbH, Krailling/ München - Iso-Bouw GmbH, Micheln/Trebbichau - Sondermaschinenbau Köthen GmbH, Weißandt-Görlau - Sitec Meldetechnik GmbH, Neuruppin - Fachhochschule Anhalt, Köthen - AKT Altmärker Kunststoff-Technik GmbH, Gardelegen FEW GmbH, Industriepark Wolfen-Thalheim, Wolfen Sensient GmbH, Wolfen Ballis Chemicals S. A. – Ionia, Thessaloniki, (GR), Asahi Rubber co. Ltd – Saitama, (JAP)	collaborato rs, 2 technicians)
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List the Regional Scientific Parks committed in Chemistry or characterized by technological proximity

Name of the Park/Specialized Cluster*	City	Scientific area	Private or Public financiers and promoters
Wissenschafts - und Innovationspark Weinbergcampus Halle/S. http://www.wip.halle.de	Halle – Merseburg – Leuna – Schkopau	- polymer chemistry (synthesis, modification and processing) - biochemistry, combinatorial chemistry, material chemistry	EU, national, federal and local authorities, Fraunhofer Gesellschaft (IWM Halle, IAP Golm)
Chemiepark Bitterfeld-Wolfen www.tgz-chemie.de	Bitterfeld – Wolfen	- fine chemical analysis - coating and coating formation technologies - photophysics and photochemistry - environmental technologies - renewable resources /new materials	EU, national, federal and local authorities; CPI – Chemistry Park Institute, Regionaler Wachstums Kern “Reactive Wetcoating” (national innovation policy programme -), R&D Laboratory on Coating Technologies (wetcoating)
SKW Nitric Plant Piesteritz , common Agrochemical Institute of MLU Halle an SKW http://www.skwp.de	Halle – Wittenberg – Piesteritz	- chemistry and plants (nitrogenous fertilisers)	EU, national, federal and local authorities, SKW Nitric Plant Piesteritz

Source: Mr. Flohr, Ministry of Economy and Labour, dep. 341

* Since there is just one scientific park of relevance for chemistry in Saxony-Anhalt we listed here additionally two evolving clusters.

Industry⁸

		No.	%
- How many companies are active in the Region?		1.375	
- How many people work in these companies?		124.503	
- How many of them are graduates?	10.236	12,2%	
- How many of them are Chemistry graduates or qualified Chemists?	2.948	28,8%	
- How many of the regional companies are SMEs?	1.294	94,0 %	

Source: State Office of Statistics, Saxony-Anhalt, 2004.

- How many chemical companies ⁹ are active in the Region?	199	14,5%	
- How many people work in these companies?	22.480	20,3%	
- How many of them are graduates?	/	24,7% ¹⁰	
- How many of them are chemistry graduates or qualified Chemists?	/	/	/
- How many of the regional chemical companies are SMEs?	182	91,5%	

Source: State Office of Statistics, Saxony-Anhalt, 2004. / → Information those were not accessible for Saxony-Anhalt

- Indicate which of the following economic activities have a recognized important role over regional economy. If available, states related information (% relevance on overall local industry)¹¹.

(x) coatings	no figure, incl. in "other chemical manufact."
(x) electronics	no figure, incl. in "other chemical manufact."
(x) food	no figure, incl. in "other chemical manufact."
(x) detergents	1%
(x) paper	no figure, incl. in "other chemical manufact."
(x) agricultural chemicals	2%
(x) pharmaceuticals (drugs)	3%
(x) plastics	4%
(x) petroleum	no accessible data (top secret)
(x) other chemical manufacturing	11%
(x) other chemical services	no data available

Source: State Office of Statistics, Saxony-Anhalt, 2004.

⁸ German official statistic raises figures of enterprises with more than 20 employees. Hence enterprises with less than 20 employees are not included in the statistic.

⁹ Figures are based on three statistic branches, which are fixed partitions of overall manufacturing industries in official German statistic: WZ 23 (coking plant, petroleum processing etc); WZ 24 (production of chemical goods) and WZ 25 (production of rubber and plastics).

¹⁰ Arbeitgeberverband Nordostchemie e.V., survey: 7/2004

¹¹ Presented is the branch's percentage of the regional turnover (Saxony-Anhalt) of overall manufacturing industries.

Tech-transfer and other supporting services/infrastructure

List the existing regional Incubators¹².

<i>Name of the Incubator</i>	<i>City</i>	<i>N° of companies hosted</i>	<i>Total m²</i>	<i>Available m²</i>
Technologie- und Gründerzentrum Halle Technology and Innovation Centre Halle www.tgz-halle.de	Halle/S.	= 57 companies Industries biotechnology, lab equipment, research on active nanotechnologies, environmental technologies, automation engineering, special machine manufacturing, innovative engineering services, development of soft- und hardware	13.360	3-5%
Merseburger Innovations- und Technologiezentrum (mitz I) Technology and Innovation Centre Merseburg www.mitz-merseburg.de	Merseburg	= 10 companies Industries polymer synthesis, plastics, efficient application of energy, environmental technologies, process engineering, development of soft- und hardware	2600	5%
Technologie und Gründerzentrum Chemiepark Bitterfeld-Wolfen Technology and Innovation Centre Bitterfeld-Wolfen www.tgz-chemie.de	Bitterfeld-Wolfen	= 20 companies coating technologies, photochemistry, physics of photography, photovoltaics, environmental technologies, renewable resources, new materials	9092	35%

List the existing regional Business Innovation Centres (B.I.C.).

<i>BIC</i>	<i>City</i>	<i>Assisted-companies '04: total/chemical industries</i>	<i>N° of Tech-Transfer operated since start In total / chemical industries</i>
ATI Agentur für Technologietransfer und Innovationsförderung Anhalt GmbH (Innovation and Tech-transfer agency) www.ati-anhalt.de	Ackerstr. 3a, 06842 – Dessau / Dr. D'Angelo, Tel.: 03 40 / 88 21 116, Email: info@ati-anhalt.de	54 / 24	875 (in average 1/3 belong to chemical sector)
Mitteldeutsche Informations-, Patent-, Online-Service GmbH mipo (mipo – patents - trademarks - standards Information Centre Halle – Expert in Chemistry and Pharmaceutics) www.mipo.de	Rudolf-Ernst-Weise-Str. 18, 06112 – Halle/S. Dr. Andrick, Tel.: +49 345 293980, Fax: +49 345 2939840, Email: andrick@mipo.hal.uunet.de	400 companies, 300 person (in average 2/3 belong to chemical sector)	1000 companies, 4500 person (in average 2/3 belong to chemical sector)

¹² Data are based on telephone interviews with directors, figures of October 2005.

tti – Technologietransfer und Innovationsförderung Magdeburg GmbH (Innovation and Tech-transfer agency) - www.tti-md.de	Bruno - Wille - Straße 9, 39108 – Magdeburg Dr. Günter Ihlow, Tel.: 03 91 / 7 44 35 20, Email: ttipost@tti-md.de	416 / 21 (85 % with less than 20 employees)	5408 / 208
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List the existing international, national and regional Venture Capital funds operating in the Region either for statute or as a matter of fact

Name of the VC fund	Origin (nation)	Sponsor	Strategy	Average size of investment (000 €)	Fund raised (000 €)	Already invested (000 €)	N° of companies participated
Mittelständische Beteiligungsgesellschaft Sachsen-Anhalt mbH www.bb-sachsen-anhalt.de	Saxony-Anhalt	Commerzbank AG, Frankfurt/Main; DZ BANK AG Deutsche Zentralgenossenschaftsbank, Frankfurt/Main; NORD/LB Norddeutsche Landesbank, Hannover; KDV Kapitalbeteiligungsgesellschaft der Dt. Versicherungswirtschaft AG, Berlin; Deutsche Bank AG, Frankfurt/Main, Dresdner Bank AG, Frankfurt/Main; Federal state of Saxony-Anhalt, Magdeburg; Chamber of crafts Halle/S.; Chamber of crafts Magdeburg; chamber of commerce and industry Halle-Dessau; chamber of commerce and industry, Magdeburg; Bayerische Hypo- und Vereinsbank AG, München	Focus: investments SME Financing	25-1.000 /		9.595	16
IBG – Beteiligungsgesellschaft Sachsen-Anhalt mbH www.ibg-vc.de	Saxony-Anhalt	Federal state of Saxony-Anhalt	Financing and Seed (focus: innovative technological enterprises)	3.000	/	34.855	11
Sparkassenbeteiligungsgesellschaft Sachsen-Anhalt GmbH www.sbg-sachsen-anhalt.de	Saxony-Anhalt	12 Sparkassen Saxony-Anhalt	Financing (focus: innovative SME and Start-up's)	500	20.000	500	1

Clusterprocess

During the last few years an interregional cluster process has been started in central Germany (*Mitteldeutschland*) including the German *Länder*, Thuringia, Saxony and Saxony-Anhalt. By the *cluster initiative* Chemistry and Plastics, integrating leading actors of chemical industry, research institutes and local and regional politics, central Germany is supposed to become one of the European leading economic regions in the field of chemical industries. Specially it is focussed to become a European **region of competence in polymer synthesis and processing**. The *cluster initiative*, which is politically supported by the state government of Saxony-Anhalt, is based on following three established networks:

Established networks	Objectives
Strategiedialog Chemie	The strategic dialog in-between chemical industry and state government of Saxony-Anhalt is aiming to achieve a common understanding of needed framework conditions (acquisition of new enterprises, networking), on common positions concerning EU chemical policy, etc.
Mitteldeutsches Kunststoffnetzwerk (MKN) and Polykum e.V. www.polykum.de	Polykum e.V. is a non-profit organisation promoting polymer development and plastics technology in central Germany. Its mission is to assist small and medium-sized businesses in the plastics manufacturing and processing industry in central Germany in developing new products and/or improving existing products and technologies. To this end, Polykum e.V. works closely with the institutes and research units concentrated in the region, so that their competences can help small and medium-sized businesses make the best use of current research findings and knowledge. Shortly said, Polykum acts as “ network organizer ”
CeChemNet www.cechemnet.de	CeChemNet is a regional chemical park management network , including chemical companies, service providers, business associations, scientific and research organisations to the purpose of knowledge-transfer and interest representation

Activities of those three networks are combined by the *clusterboard chemistry*, that is organised by Regionenmarketing für Mitteldeutschland e.V.. Additional information can be found at: www.mitteldeutschland.com or www.cluster-chemie-kunststoffe.de

BEST PRACTICES

Name of project no. 1

Pilot plant centre for polymer synthesis and polymer processing Fh-PAZ at Value Park Schkopau (<http://www.polymer-pilotplants.com/>) as a joint project of Fraunhofer Institute of Applied Polymer Research IAP Potsdam/Golm (www.iap.fraunhofer.de) and Fraunhofer Institute for Mechanics of Materials IWM Halle (www.iwm.fraunhofer.de)

Subjects involved

Initiative

The pilot plant centre traces back to a common initiative of two Fraunhofer Institutes (FHI) IAP Potsdam/Golm and IWM Halle.

Funding

The project implementation was financed by EU, national and regional (*Land Saxony Anhalt*) means as well as own contributions from Fraunhofer Institute (FHI).

Support

- Technology and Innovation Centre Merseburg mitz GmbH
- Value Park Schkopau
- Martin Luther University Halle-Wittenberg
- University of Applied Sciences Merseburg

Objective

Following objectives are supposed to be achieved:

- capacity building of R&D in central Germany in the polymer and plastics sector
- networking and cooperation of research institutes and chemical enterprises (especially SMEs)
- improved basic research application and transformation of discoveries into product development

Rationale

By its modern and universal applicable equipment the pilot plant centre allows the development of new composite materials and innovative polymerisation procedures. R&D activities along the supply chain from monomer to polymer components are possible. The centre is supposed to fill the gap that existed between laboratory research and serial production.

The Fraunhofer Institute functions as responsible body of the pilot plant centre. The centre is integrated in the new Technology and Innovation centre Merseburg (mitz II) that is located in Value Park Schkopau. In order to improve the knowledge transfer, cooperation contracts were signed between Fraunhofer Institute, the University of Applied Science Merseburg and Martin Luther University Halle-Wittenberg. The pilot action plant will become part of the education system through it's attractive conditions for trainees, graduates and postgraduates. Furthermore a new professorship on polymerisation techniques is about to be established at Martin Luther University Halle. This professorship will complement already existing professorships (see question no. 1 and 2 at "science" section) SMEs are the main target group of the pilot plant centre.

Capacities:

The pilot plant centre is part of the new Technology and Innovation Centre Merseburg in Schkopau (mitz II). FHI is renting 1700 m² in the new Technology and Innovation Centre mitz II. There are technical facilities for synthesis (600 m²) and processing (400m²). Furthermore labs, offices and storage rooms are provided.

Implementation

Overall 30 million Euro has been invested. Funding is based on EU, national, regional and Fraunhofer Institute's expenditures.

The new Technology and Innovation Centre (mitz II) as precondition for the pilot plant centre was

financed with a donation from public funds (GA - Regionale Wirtschaftsförderung) for improvement of the regional economic structure and own contributions of mitz GmbH. The equipment of the pilot plant centre was paid by donations from the EU, the state of Saxony-Anhalt and the Federal Ministry of Research and Technology (BMBF). The pilot plant centre from its very beginning was embedded in the regional discourse between industries, politics, administration and associations and recently becomes a central issue in cluster management activities. The project is presented as Best Practice because the pilot action plant needs to be considered as essential element of a developing R&D network in the polymer and plastics industry. Polykum e.V. – also located in the pilot action plant (see question 15) – carries responsibility of acquisition and promotion activities regionally and internationally. On adequate occasions promotion activities by Polykum e.V. are supported by staff of the Technology and Innovation Centre.

Updating

The centre is operating since June 2005. User contracts were signed with synthetic and plastic producers like DOMO/Leuna and DOW Olefine, Equipolymers and the European Vinyl Corporation (EVC) as well as SMEs like RP Compounds and KOMETRA, those are located in Value Park Schkopau as well. Negotiations take place with companies like BASF, Bayer, Degussa as well as French enterprises.

Comments

Objective of Saxony-Anhalt' effort is to strengthen the chemical and plastic cluster in central Germany. The Fh-PAZ is considered as important infrastructural mean for this process. Existing networking structures of Polykum e.V. therefore shall be used. The pilot plant centre is to be considered as crucial mean for a strengthened profile that suits in the strategic concept of the government of Saxony-Anhalt.

Contact partner on further information

Mrs. Katja Okulla Fraunhofer Institute Applied Polymer Research IAP, Marketing and Communication Assistant of the Fraunhofer Materials and Components Group Wissenschaftspark Golm Geiselbergstr.69 14476 Potsdam Germany	Mr. Mathias Hahn Fraunhofer-Pilotanlagenzentrum für Polymersynthese und -verarbeitung Fh-PAZ Research Division Director ValuePark A74 06258 Schkopau Germany	Mrs. Kathrin Schaper-Thoma Merseburger Innovations- und Technologiezentrum mitz II Gebäude A74, B73 ValuePark Schkopau An der B91 06258 Schkopau Tel +49 (0) 3461 / 2599 100 or 2591 900 Fax +49 (0) 3461 / 2599 909
Tel +49 (0)331/ 568-1151 Fax +49 (0)331/ 568-2551	Tel +49 (0) 34 61 / 25 98 - 1 10 Fax +49 (0) 331 / 568 - 1320	

Name of project no. II

“Innovative Regional Growth Core” project: ReaWeC - ReactiveWetCoating Bitterfeld-Wolfen

Subjects involved

Initiative

By means of the Innovation Initiative for the New German *Länder* “Entrepreneurial Regions” and the subprogramme on “Innovative Regional Growth Cores”, the Federal Ministry of Education and Research (BMBF) gave impetus for regional business actors from Saxony-Anhalt to apply for the project. (→ further information can be found at: www.unternehmen-region.de/en/54.php)

Funding

The project is financed by the Federal Ministry of Education and Research (BMBF) and regional actor’s financial contributions.

Network

The regional growth core ReaWeC consists of 23 partners based in Central Germany, involving innovative SMEs, research institutes, qualification centres and decision makers:

Objective

Objective of the project is to create a worldwide new coating technology by using capillary casting technologies. It’s application allows three-dimensional wet coating of ultra thin strata with chemical / biological reactivity. Product and process requirements like uniformity on wider surfaces, efficient material usage, continuous production and variable substrate application can be realised, which is of strong interest for industry. Next to qualitative improvements of products, “ReactiveWetCoating” also can be applied where today still different technologies are used. By superimposing thin strata on different materials with “ReactiveWetCoating” technologies, characteristics of the materials can be changed. This results in new options to use the material that might have market potentials. ReactiveWetCoating technologies definitively have market potentials for flat screen display production, DVDs as well as newly foils and films. The partners organised in the network aim to achieve technological leadership in this field and a market share of 30% in the wet coating sector in Germany.

The project is presented as Best Practice example for two reasons. Firstly, technology transfer between research institutes and SMEs is improved by a wide range of innovative partner enterprises. Secondly, labour market effects are expected.

Rationale

A new universal applicable coating plant, called UBM-2 (mainly financed by the Ministry of Economy and Labour Saxony-Anhalt) was starting work in 2003. A long standing industrial tradition in functional strata in the region (the first colour film was developed here) as well as the modern pilot plant, located in the Technology and Innovation Centre Bitterfeld-Wolfen, can be seen as precondition for current innovation activities in the field of wet coating. Because of that BMBF decided to incorporate the project “ReaWeC - ReactiveWetCoating” into the development support programme “Innovative Regional Growth Cores”. The programme is part of the Innovation Initiative “Entrepreneurial Regions” that provides 500 million Euro in between 1999-2007 for relevant projects. “Innovative Regional Growth Cores” aim to support regional cooperation with platform technology and important features which make them unique in their field of competence. The alliance partners must focus on regional core competences with growth potential. They must orient their strategy to the market, implement it consistently and submit detailed business plans.

Implementation

From 2004 to 2007 the Innovative Regional Growth Core “ReaWeC – Reactive WetCoating” is financed by the Federal Ministry of Education and Research with 4.4 million Euro. Own financial contributions are guaranteed by regional actors. A steering committee, consisting of leaders of ten subprojects define the activities to be implemented. The steering committee carries responsibility on overall strategy development, promotes the research results and takes care of needs concerning specialised qualification of employees.

Updating

The project is on its way. Doubling of production capacity and creation of 90 new jobs is the expected outcome of the joint project of the partners.

Comments

East Germany because of its structural problems is still characterised by a weak performance in innovation developments. The “Entrepreneurial Regions” Innovation Initiative of BMBF therefore exclusively addresses the 5 New German Länder.

By financial means donated by the programme “Regional Growth Cores” to network projects aiming to bring SMEs and research institutes in competence fields together, this shortage is tried to be coped with. First positive results can be observed.

The programme „Regional Growth Cores“ suits as one programme element into the overall innovation initiative „Entrepreneurial Region“. Other elements are the “InnoRegio” programme as well as the programmes “Innovation Forums” and “Centres for Innovation Competence”.

Problems to run joint projects often occur if it comes to regional actor’s own financial contributions, which is also the case for this project. The financial basis of East German SMEs is still very weak. That is why they are often facing troubles to raise own financial contributions.

Therefore banks furthermore need to be appealed to offer special conditions.

Contact partner on further information

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Annex IV Asturias (ES)

Science

Considering the Chemistry-related scientific areas of interest, list the:

Regional Universities offering courses in Chemistry.

<i>Name of the Institute/ Department</i>	<i>City</i>	<i>Scientific area</i>	<i>Courses</i>	<i>Student s (n°)</i>	<i>Graduate s per year (n°)</i>	<i>I.L.O.</i>
University of Oviedo	Oviedo	Biochemistry	<input type="checkbox"/> Graduate <input checked="" type="checkbox"/> Undergraduate	65	16	Y
University of Oviedo	Oviedo	Chemical Engineering	<input type="checkbox"/> Graduate <input checked="" type="checkbox"/> Undergraduate	492	28	Y
University of Oviedo	Oviedo	Chemistry	<input type="checkbox"/> Graduate <input checked="" type="checkbox"/> Undergraduate	1039	104	Y
Department of chemical engineering and environmental technology (University of Oviedo)	Oviedo	Chemical Engineering / Environmen tal Chemistry	<input checked="" type="checkbox"/> Graduate <input type="checkbox"/> Undergraduat e	30	13	Y
Department of organic and organometallic chemistry (University of Oviedo)	Oviedo	Organic Chemistry / Organomet allic Chemistry	<input checked="" type="checkbox"/> Graduate <input type="checkbox"/> Undergraduat e	30	13	Y
Department of physical and analytical chemistry (University of Oviedo)	Oviedo	Physical Chemistry / Analytical Chemistry	<input checked="" type="checkbox"/> Graduate <input type="checkbox"/> Undergraduat e	30	5	Y
Department of chemical engineering and environmental technology (University of Oviedo)	Oviedo	Food Chemistry	<input checked="" type="checkbox"/> Graduate <input type="checkbox"/> Undergraduat e	30	28	Y
Department of chemical engineering and environmental technology (University of Oviedo)	Gijón	Environmen tal Chemistry	<input checked="" type="checkbox"/> Graduate <input type="checkbox"/> Undergraduat e	30	30	Y

Source: University Office of Statistics, figures of 2004.

R&D Public Centres and Private/Public Partnerships in the Region committed in Chemistry or Chemistry-related innovation activities.

<i>Name of the Institute</i>	<i>City</i>	<i>Scientific area</i>	<i>Private partners</i>	<i>Students (n°)</i>
INCAR (National Coal Institute)	Oviedo	Coal and derivatives	NA	19
IPLA (Institute of Dairy Products)	Villaviciosa	Dairy sector	NA	6

SERIDA (Regional Food Research Centre)	Villaviciosa	Agroalimentary industry	NA	10/12
ITMA (Technological Institute of Materials)	Llanera	Non metallic materials	27	1
CEAMET (Steel and Metallic Materials Research Centre)	Avilés	Metallic materials	27	NA
PRODINTEC (Technological Institute for Industrial Design and Production)	Gijón	Technological design	7	NA
CTIC (Centre for Information and Communication Technologies)	Gijón	Information and Communication Technology (ICT)	NA	NA

List the Regional Scientific Parks committed in Chemistry or characterized by technological proximity

Name of the Park	City	Scientific area	Private or Public financiers and promoters
Technological park of Asturias	Llanera	General	Public
Scientific Technological park of Gijón	Gijón	General	Public

Industry

	No.	%
1.How many companies are active in the Region?	4.392	
2.How many people work in these companies?	62.326	___
3.How many of them are graduates?	___	21.8
4.How many of them are Chemistry graduates or qualified Chemists?	___	NA
5.How many of the regional companies are SMEs?	4.363	99%

Source: SADEI, IDEPA

6.How many Chemical companies are active in the Region?	112	___
7.How many people work in these companies?	3.127	___
8.How many of them are graduates?	___	25,3
9.How many of them are chemistry graduates or qualified Chemists?	___	14,1
10.How many of the regional chemical companies are SMEs?	107	96%

Source: SADEI and Results from the Study "Science & Industry", AIQPA

11.Indicate which of the following economic activities have a recognized important role over regional economy. If available, states related information (% relevance on overall local industry).

- Food
- Paper
- Pharmaceuticals
- Agricultural chemicals
- Detergents
- other chemical manufacturing (fibers)

Source: Results from the Study "Science & Industry", AIQPA

Tech-transfer and other supporting services/infrastructure

12. List the existing regional Incubators.

<i>Name of the Incubator</i>	<i>City</i>	<i>Companies hosted (n°)</i>	<i>Total m³</i>	<i>Available m³</i>
Nalón Valley Industrial City (Valnalón)	La Felguera (Langreo)	42	3.753	0
“La Curtidora“ Development Society	Avilés	71*	4.274	750
European Centre for Companies and Innovation of the Principality of Asturias, CEEI	Llanera	24	868	75
Science & Technology Park of Gijón	Gijón	21	1.300	
Caudal Centre for Companies	Mieres	21	1.635	
Nalón Centre for Companies	El Entrego	21	1.660	
Tineo Business Promotion Centre	Tineo	7	1.000	
Municipal Centre for Companies of Gijón	Gijón	21	1.550	
Municipal Centre for Companies of Llanes	Llanes	6	210	
Obanca Companies Centre	Cangas del Narcea	10	835	

* 27 companies are registered in La Curtidora but without physical place

13. List the existing regional Business Innovation Centres (B.I.C.).

<i>BIC</i>	<i>City</i>	<i>N° of assisted-companies per year</i>	<i>N° of Tech-Transfer operated since start</i>
CEEI - European Centre for Companies and Innovation of the Principality of Asturias	Llanera	577	NA

14. List the existing international, national and regional Venture Capital funds operating in the Region either for statute or as a matter of fact:

<i>Name of the VC fund</i>	<i>Origin (nation)</i>	<i>Sponsor/Strategy</i>	<i>Avg size of investment (000 €)</i>	<i>Fund raised (000 €)</i>	<i>Already invested (000 €)</i>	<i>N° of companies participated</i>
SRP (Regional Society of Economical Promotion) www.srp.es			43.000			Total 41 Chemical 1
SODECO (Society for the Development of Miner Regions) www.sodeco.es			20/25.000			Total 39 Chemical 6
SADIM (Society for the Diversification of Miner Regions) www.facc.info/						Total 42
INVERASTURIAS www.idepa.es			4.700			Total 8

NAME
1. Employment Fair
INSTITUTIONS/ORGANISMS involved
Oviedo University Foundation (FUO) and private companies.
GOALS
Promote the relationship between graduates and private companies
BASICS
The FUO supplies the installations and the private companies present their stands, with their activities and job opportunities.
PROCEDURE
The FUO makes contact with the private companies to request their participation. For two day-long sessions the graduates are in contact with the companies compiling information and applying for work with the companies that are of most interest to them.

NAME
2. In-company training programme for chemistry students and graduates
INSTITUTIONS/ORGANISMS INVOLVED
University-Company foundation & association professional/final year students & chemistry graduates
GOALS
Improve graduates experience in companies Coordinate and control training programmes
BASICS
Attend to industry's demand for student experience
PROCEDURE
Contact companies to discover their demand for students and graduates Carry out personnel selection processes Students' insurance to be covered by the university or the Chemists College
RECENT DATA AVAILABLE
The University-Company Foundation provides training for approximately 300 students Approximately 25% of students find work immediately afterwards The Chemists Association of Asturias provides training for approximately 50 new graduates every year. Around 30% of graduates obtain work in the company The Chemistry faculty provides training in chemical companies for 50 students a year

NAME
3. R+D+i human resources training programme
INSTITUTIONS/ORGANISMS INVOLVED
Principality of Asturias (Ficyt), public research centres and private companies in the region
GOALS
Contribute to research & teacher training of young researchers. Skill improvement of research personnel. Aids to companies for incorporating university personnel in R+D+I activities
BASICS
The existence of qualified personnel to perform R+D tasks
PROCEDURE
Ficyt offers research training grants in R+D+I centres and private companies since 1985
RECENT DATA AVAILABLE
30 grants for young researchers – 90 research grants – 25 aid grants for short spells in research centres – 15 grants for skill improvement of research personnel - 9 aids to companies for incorporating graduates into the company

NAME
1. Subsidies for research projects in private companies
INSTITUTIONS/ORGANISMS INVOLVED
Principality of Asturias (Ficyt) and private companies in Asturias
GOALS
Encourage the development of R+D+i projects in companies
BASICS
The Education and Science Council of the Principality of Asturias provides capital to private companies for them to develop research projects
PROCEDURE
The companies apply either individually or in collaboration with technological centres

NAME
2. EIBT's Project (Promotion of technological innovation in Asturias)
INSTITUTIONS/ORGANISMS INVOLVED
The European Centre of Innovation Entreprises CEEI of Asturias, Innovation Asturian Club, Local Agency of economic development and employ of the Town Council of Gijón and The centre of entrepreneurs of the Nalón Region (ValNalón) and CITE (OTRI) of Oviedo University
GOALS
Creation of new spin-off related with Oviedo University R&D
BASICS
Create new companies based on the experience obtained from research and Oviedo University r R+D+i, to make the most of the results obtained and seek new markets. Incentivise the creation of new companies, speak to the students, and promote initiatives for new companies. Supply facilities to help the development of an innovative outlook in the region.
PROCEDURE
The CEEI of Asturias, Innovation Asturian Club, Local Agency of economic development 6 employ of Town Council of Gijón and ValNalón organise various activities (discussions, courses, management, financing etc) tending towards identification of projects of innovative activities with technological base
RECENT DATA AVAILABLE
Generation and creation of a significant number of directive initiatives based upon industrial and technological development, generated by the centres with technological potential and the researchers from the autonomous community: the technical departments of companies, universities & laboratories

NAME
3. Transfer of Technology and Knowledge work sessions of Oviedo University
INSTITUTIONS/ORGANISMS INVOLVED
Innovation Asturian Club and Asturian Business Federation (FADE) - Oviedo University
GOALS
The different research groups (over 100) each present a stand with their offer for industry, companies, and service organisms. The visitors are directors and company technical staff.
BASICS
The Innovation Asturian Club and the Asturias Business Federation supplies the funding and the research groups from the university prepare and run the stands. There are also a large number of round tables between the vendors (researchers) and the buyers (business personnel)
PROCEDURE
The Innovation Club and the Asturias Business Federation promotes the importance of these sessions to companies. Oviedo University coordinates the research groups and the stands.
UPDATING
Last sessions were in '02

Annex V Catalunya (ES)

Science

Considering the Chemistry-related scientific areas of interest, list the:

12. Regional Universities offering courses in Chemistry.

<i>Name of the Institute/ Department</i>	<i>City</i>	<i>Scientific area</i>	<i>Courses</i>	<i>Students 2004 (n°)</i>	<i>Graduates per year 2003 (n°)</i>	<i>I.L.O.</i>
Universitat de Barcelona	Barcelona	All	<input type="checkbox"/> Graduate 11 <input type="checkbox"/> Undergraduate 3	2.145	265	Yes
Universitat Autònoma de Barcelona	Cerdanyola del Vallès	All	<input type="checkbox"/> Graduate 5 <input type="checkbox"/> Undergraduate 3	1.250	155	Yes
Universitat de Girona	Girona	All	<input type="checkbox"/> Graduate 2 <input type="checkbox"/> Undergraduate 2	560	90	Yes
Universitat Rovira I Virgili	Tarragona	All	<input type="checkbox"/> Graduate 7 <input type="checkbox"/> Undergraduate 4	1.305	200	Yes
Universitat Politècnica de Catalunya	Barcelona, Igualada, Terrassa, Manresa and Vilanova i la Geltrú	All	<input type="checkbox"/> Graduate 20 <input type="checkbox"/> Undergraduate 2	1.000	110	Yes
Universitat Ramon Llull	Barcelona	All	<input type="checkbox"/> Graduate 4 <input type="checkbox"/> Undergraduate 2	420	175	Yes

13. R&D Public Centres and Private/Public Partnerships in the Region committed in Chemistry or Chemistry-related innovation activities.

<i>Name of the Institute</i>	<i>City</i>	<i>Scientific area¹</i>
Institut d'Investigacions Químiques i Ambientals de Barcelona	Barcelona	Environmental Chemistry
Institut Català d'Investigació Química	Tarragona	Chemical, Organic, Organometallic and Polymer Chemistry
Institut Químic de Sarrià	Barcelona	All
Institut de Química Computacional	Girona	Physical Chemistry
Institut Universitari de Ciència i Tecnologia	Mollet del Vallès	Analytical & Environmental Chemistry
Institut de Ciència de Materials de Barcelona	Bellaterra	Material Chemistry

14. List the Regional Scientific Parks committed in Chemistry or characterized by technological proximity¹

<i>Name of the Park</i>	<i>City</i>	<i>Scientific area¹</i>	<i>Private or Public financiers and promoters</i>
Parc Científic de Barcelona	Barcelona	Biochemistry, Analytical and Nuclear Chemistry,	Universitat de Barcelona, Fundació Bosch i Gimpera and

		etc.	Caixa Catalunya
Parc de Recerca de la Universitat Autònoma de Barcelona	Bellaterra		

Industry

	No.	%
15. How many companies are active in the Region?	35.000	
16. How many people work in these companies?	645.000	
17. How many of them are graduates?	_____	_____
18. How many of them are Chemistry graduates or qualified Chemists?	_____	_____
19. How many of the regional companies are SMEs?	33.300	95%
<hr/>		
20. How many Chemical companies are active in the Region?	1.200	_____
21. How many people work in these companies?	63.000	_____
22. How many of them are graduates?	_____	_____
23. How many of them are chemistry graduates or qualified Chemists?	_____	_____
24. How many of the regional chemical companies are SMEs?	1.170	98%
<hr/>		
25. Indicate which of the following economic activities have a recognized important role over regional economy. If available, states related information (% relevance on overall local industry).		
<input type="checkbox"/> coatings	0	
<input type="checkbox"/> electronics	3.5	
<input type="checkbox"/> food	31.0	
<input type="checkbox"/> detergents	2.1	
<input type="checkbox"/> paper	8.9	
<input type="checkbox"/> agricultural chemicals	0	
<input type="checkbox"/> pharmaceuticals (drugs)	4.4	
<input type="checkbox"/> plastics	4.9	
<input type="checkbox"/> petroleum		
<input type="checkbox"/> other chemical manufacturing and other chemical services	7.3	

Tech-transfer and other supporting services/infrastructure

26. List the existing regional Incubators.

<i>Name of the Incubator</i>	<i>City</i>	<i>N° of companies hosted</i>	<i>Total m³</i>
Bio-Incubadora CIDEM-PCB	Barcelona		600
Barcelona Activa	Barcelona	41	6.000
Impevic	Vic		
Can Calderón	Viladecans		
Oficina de Promoció Econòmica	Manlleu		100
Centre de Serveis a les Empreses	Igualada		500
Coessa	Sant Boi de Llobregat	27	
Foment de Terrassa	Terrassa		
Centre Àgora	Vilafranca del Penedès		
Parc Tecnològic del Vallès	Cerdanyola del Vallès	150	
Grameimpuls	Santa Coloma de Gramenet		800
Impem	Mataró	7	400
Precsa	Cornellà de Llobregat		4.185
Promoció Econòmica de Sabadell	Sabadell		
Nodus Barberà	Barberà del Vallès	3	
Promoció Econòmica i Ocupació	Castellar del Vallès		600
Centre d'Empreses	Sant Joan Despí		
Centre Cal Gallifa	Sant Joan de Vilatorrada		230
Consorci de Promoció Econòmica	Lleida		
Àrea de Promoció Econòmica	Les Borges Blanques		
Redessa	Reus	30	1.000
Centre d'Iniciatives Empresariales	Valls	3	
Emmde	Tarragona	4	695
Baix Ebre Innova	Camarles	12	700
Viver d'Empreses	Vandellòs i l'Hospitalet de l'Infant		95

Consorci Ripollès Desenvolupament	Ripoll	10	1.000
Consorci per a la Promoció Econòmica	Les Preses	5	600
Àrea de Promoció Econòmica	Banyoles		

27. List the existing international, national and regional Venture Capital funds operating in the Region either for statute or as a matter of fact

VC fund	Origin	Sponsor	Strategy	Fund raised
Catalana d'Iniciatives	Spain		Development and growth	61 million €
Invercat	Spain	Banc de Sabadell, SCH, Catalana Occident, Agrupació Mútua, CaixaHolding del grup La Caixa, Invercartera de Caixa Catalunya, COPCA, CIDEM	Internationalization	192 million €
Innocat	Spain	Institut Català de Finances Holding, Fons Europeu d'Inversions, EDF – Capital Investissement, Mútua de Propietaris, Col·legi d'Enginyers	SME innovation	30 million €
Invernova	Spain		Capital investment in tecnology	20 million €
Invertec	Spain	CIDEM, Generalitat de Catalunya, la Universitat Autònoma de Barcelona (UAB), la Universitat de Barcelona (UB), la Universitat de Girona (UdG), la Universitat Politècnica de Catalunya (UPC), La Salle i l'IESE Business School		3.35 million €

BEST PRACTICES

Name

- Promotion of industrial research development and innovation
- Promotion of technology transfer between industry and science;
- Attraction of capital to facilitate growth of sme's and star-up's

Subjects involved

State and Regional Government, University, Companies, Technological centres, Incubators.

Objective

Promote the competitiveness of chemical sector

Implementation

Subsidies, loans

Annex VI Lombardy (I)

Science

Regional Universities offering courses in Chemistry.

<i>Name of the Institute/ Department</i>	<i>City</i>	<i>Scientific area</i>	<i>Courses</i>	<i>Students '04/'05</i>	<i>Graduates in '04</i>	<i>I.L.O.</i>
Università di Milano (UNIMI)	Milan	Chemistry	Graduate	1.804	350	BDTT ¹³
Università di Milano-Bicocca (UNIMIB)	Milan	Material Science Biotechnology	Graduate	305	247	
Politecnico di Milano (POLIMI)	Milan	Chemical Engineering	Graduate	940	249	AIP/CPI ¹⁴
Università di Pavia (UNIPV)	Pavia	Chemistry	Graduate	1.046	193	Yes
Università dell'Insubria (UNINS)	Como-Varese	Chemistry	Graduate	255	47	SISRIT ¹⁵
Università di Brescia (UNIBS)	Brescia	Material Engineering	Graduate	90	9	

R&D Public Centres and Private/Public Partnerships in the Region committed in Chemistry or Chemistry-related innovation activities.

<i>Name of the Institute</i>	<i>City</i>	<i>Scientific area</i>	<i>Private partners (if existing)</i>	<i>Researchers (n°)</i>
CNR-ISTM	Milan	Molecular & Science Technologies	NO	37 (of which 2 postdoc.)
CNR-ISMAL	Milan	Macromolecular studies	NO	34 (20 tech-collaborator)
CNR-ICRM	Milan	Chemistry of the Molecular Recognizing	NO	36 (3 prof.; 13 postdoc.)
CNR-IENI	Milan	Energetics & Interphases	NO	35 (13 tech-collaborator)
CNR-IENI	Pavia	Energetics & Interphases	NO	38 (16 tech-collaborator)
Stazione. Sperimentale del Combustibile	Milan	Fuel	NO ¹⁶	53 (32 technicians)
Stazione. Sperimentale Oli e Grassi	Milan	Oils and fats		

¹³ Banca Dati Trasferimento Tecnologico (service provided: database for tech-transfer activities).

¹⁴ Consorzio Politecnico Innovazione (service: incubator and planning); Associazione Impresa Politecnico (service: fostering relationships among R&D and entrepreneurial subjects).

¹⁵ Service centre "Sistema di supporto alla ricerca, innovazione e trasferimento tecnologico".

¹⁶ Government body led by industry representatives.

Stazione. Sperimentale Carta e derivati della Carta	Milan	Cellulose, paper, textiles fibres		
Stazione. Sperimentale della Seta	Milan	Silk		50% of staff graduated
Istituto Nazionale di Neurologia (INN) "Carlo Besta"	Milan	Neurology	NO	~155
Policlinico "San Matteo"	Pavia	Biotechnology	NO	
Istituto Europeo di Oncologia (IEO)	Milan	Oncology	Major Italian banks, insurance & industrial groups	~200
FIRC Istituto di Oncologia Molecolare (IFOM)	Milan	Molecular oncology	FIRC, IEO, INT, UNIMI, Mario Negri, S. Raffaele	~300
Istituto di Ricerca Farmacologica "Mario Negri"	Milan	Pharmacology	No-profit privately funded Institute	
Istituto Nazionale Tumori (INT)	Milan	Cancer diagnosis/therapy	YES	~250
Nerviano Medical Sciences	Milan	Biotechnology	CFIC (100%) Spin off from Pfizer/Pharmacia	~700 employees

List Regional Scientific Parks committed in Chemistry or characterized by technological proximity

Name of the Park	City	Scientific area	Private or Public financiers and promoters
PSTL-Polo Scientifico e Tecnologico Lombardo	Varese (VA)	Environment, Industrial Automation, Biotechnology, ICT, Engineering, Medicine & Biomedicine	Province of Varese, Chambers of Commerce of Varese and Milano, Local Banks
POINT - lo per l'Innovazione Tecnologica della Provincia di Bergamo	Bergamo (BG)	Environment, Biotechnology, ICT, Chemistry, Energy and Engineering	Province of Bergamo, Chamber of Commerce of Bergamo, Local Industry Association, Local Banks
Scientific Biomedical Park "San Raffaele"	Milano (MI)	Biotechnology and Biomedicine	Private investors
Parco Tecnologico Padano (PTP)	Lodi (LO)	Biotechnology, Agro industry	Lodi's Province/ Municipality, local Chamber of Commerce, ASL of Lodi, Zootechnic Institute of Zorlesco
Kilometro Rosso - Parco Scientifico e tecnologico ¹⁷	Bergamo (BG)	Mechatronic, Sensoristic, Robotic, ICT, Composite and Base Ceramic Materials, Other advanced materials, Biotechnology, Electronic, Automation	Brembo, DaimlerChrysler, Italcementi, Institute "Mario Negri"

¹⁷ Under construction

Industry

	No.	%
1. How many companies are active in the Region?	112.778	
2. How many people work in these companies?	1.319.988	
3. How many of them are graduates?		4,2% ¹⁸
4. How many of them are Chemistry graduates?		0,6%
5. How many of the regional companies are SMEs?	112.287	99.6%
<hr/>		
6. How many Chemical companies are active in the Region? ¹⁹	737	0,7%
7. How many people work in these companies?	75.883	5.7%
8. How many of them are graduates?		19.3% ²
9. How many of them are chemistry graduates?		9% ²
10. How many of the regional chemical companies are SMEs?	685	92,9%
<hr/>		
11. Indicate which of the following economic activities have a recognized important role over regional economy. If available, states related information (% relevance on overall local industry).		
<input type="checkbox"/> coatings		X
<input type="checkbox"/> electronics		X
<input type="checkbox"/> food		
<input type="checkbox"/> detergents		X
<input type="checkbox"/> paper		X
<input type="checkbox"/> agricultural chemicals		X
<input type="checkbox"/> pharmaceuticals (drugs)		X
<input type="checkbox"/> plastics		X
<input type="checkbox"/> petroleum		
<input type="checkbox"/> other chemical manufacturing	textiles/furnitures/machinery	
<input type="checkbox"/> other chemical services		

¹⁸ National average.

¹⁹ Chemical companies with less than 10 employees are not included

Tech-transfer and other supporting services/infrastructure

List the existing regional Incubators.

<i>Name of the Incubator</i>	<i>City</i>	<i>N° of companies hosted</i>	<i>Total m²</i>	<i>Available m²</i>
LIB - Laboratorio Innovazione Breda	Milan	10	4.500 m ²	
OMC Incubator	Milan	4		
Parco Tecnologico Padano (PTP)	Lodi (LO)	12 (2 SMEs)	2.000 m ² +	
			15.000 m ² +	
Biocity	Bresso	4	16.000 m ²	(und. developm.)

List the existing regional Business Innovation Centres (B.I.C.).

<i>BIC</i>	<i>City</i>	<i>N° of assisted-companies per year</i>	<i>N° of Tech-Transfer operated since start</i>
Bic La Fucina	Milan	115/120	85/90
Bic Altomilanese Euroimpresa	Milan	17	
Bic Varese Polo Scientifico Tecnologico Lombardi	Varese	17	
BIC Agenzia Lumetel Scrl	Brescia	5	

List the existing international, national and regional Venture Capital funds operating locally

<i>Name of the VC fund</i>	<i>Origin (nation)</i>	<i>Sponsor</i>	<i>Strategy</i>	<i>Avg investment (000 €)</i>	<i>Fund raised (000 €)</i>	<i>Invested (000 €)</i>	<i>N° of companies participated</i>
NEXT (Finlombarda SGR)	Milan (Italy)	Lombardy Region Banks	Coinvestment VC/fund of funds	200-700	37.000	2.000	1
EuroMed (Finlombarda SGR)	Milan (Italy)			500-2.000	35.000 1 st closing- 60.000 target		
Principia (Quantica SGR)	Milan (Italy)	CNR etc.	Seed & start-up of public R&D	500-2.000	25.000		
Alpinvestimenti (Innogest SGR)	Piedmont (Italy)	Torino Wirless (PA, private firms)	VC	100-1.000	40.000		
Genextra	Milan (Italy)	R&D and private partners	VC		30.000		Congenia
Alice Ventures	Milan (Italy)	Private partnership	VC – Early stage	3.000	166.000		15 (2 in Italy: E*Maze, My-Tv)

Best Practices

Name

NEXT – Venture capital fund of funds

Subjects involved

The Lombardy Region controlled Company “Finlombarda Gestioni SGR” (Society of Save Management) is the management company authorized by Bank of Italy to set up, promote and manage closed-end funds.

Objective

NEXT purpose is to support technology transfer processes focusing on profitable economic sectors. The focus of the instrument are innovative applications in fields such as biotechnologies, electronics, chemistry, new materials and ICT, environmental technologies and robotic.

Rationale

NEXT is a closed-end fund of funds that focuses on the development of Lombard SMEs, it has been instituted to develop a Venture Capital Market in Lombardia, specifically dedicated to innovation, R&D and new technologies.

The recent evolution of fiscal rules makes of Italy one of the most favourable country for venture capital investors and the juridical structure of a closed-end fund not only allows the institutional investors (even foreigners) to avoid the constitution of permanent structures (i.e. LLP) but also avoids the VAT payment on fees and carried interest. The fund capital gains are taxed only at 12.5%, considerably less than the European average which is of 18.6%.

The peculiar characteristic of NEXT, first and unique in Italy in its gender, is a guarantee offered to its investors on the subscribed capital. The guarantee is accorded to Next subscribers to reduce eventual losses at the end of the fund’s life. The amount of losses will be calculated by an Advisory Board matching subscribers cash-flows in and out. If the Advisory Board verifies the existence of a loss, Finlombarda grants to subscribers 33% of this amount in one tranche.

Implementation

The guarantee system sum up to 20 Millions Euro is granted by Lombardy Region with a specific regional law (art. 6, comma 11 of Regional Law n. 25/2000). This tool is dedicated to institutional investors, with a target financial dimension of 60 Millions Euro.

Updating

Replication of that model also in other regional programmes

Comments

NEXT is both a fund of funds and co-investment fund; therefore it invests in other venture capital closed-end funds, subscribing their shares, or directly co-invests in companies (in partnership with at least another qualified operator)

Name

The Technological Voucher Tool

Subjects involved

The voucher represents the innovative financial tool chosen by Lombardy Region to support the enterprises innovation process and the new enterprise creation (start up and spin off) in interactions with the research and development centres.

Objective

Lombardy Region wishes to pursue the following objectives:

- ◆ elaborate innovative strategies between public and private sector;
- ◆ encouraging the development of new technologies in order to enhance the competitiveness of the Lombard productive system;
- ◆ promoting the innovative enterprises;
- ◆ strengthening the SMEs innovative impulse, through the support provided with the creation of new enterprises;
- ◆ promoting the interaction between the world of research and the business community, matching the demand for innovation with the supply;
- ◆ simplifying the administrative procedures for financing.

Rationale

The voucher is a certificate of credit, a grant nominative and non negotiable.

There are 4 type of voucher services: technological due diligence which is an advisory activity for the evaluation of the innovative character and competitiveness of the technologies exploited in an entrepreneurial project; the business evaluation which provides the economic and financial evaluation for projects focused on the creation of new enterprises or on innovation or technology transfer; the scientific and technological research through the recruitment of qualified researchers; and the patent assistance to obtain a national patent or international extension.

The procedure is extremely simplified: the final users have to submit the application form containing a short description of the project to the Lombardy Region Competent Departement after having chose the Center where to buy the service. The granted voucher can only be spent in qualified service centres, for that purpose there has been a call for tender to select centres: universities having legal office within the territory of Lombardy Region; Research Centers, public or private, whose legal office is located within the territory of Lombardy and companies providers of asset management products and finalcial services according to the definition of the Italian Law

Implementation

Lombardy Region has implemented “the technological voucher” tool, after considering the successful experience of the “Regional Programme Innovative Action-PRAI Minerva”.

The Regional government has promoted the modification of the ordinary regional legislation (the Law 35/96 “regional tools for promotion of the smes technological development”) in order to allow the “voucher” tool to enter into force in all the Lombardy territory.

Updating

The Regional government has provided 360 technological vouchers from February to August 2005, for the total amount of 2,5 mln €, moreover the voucher model has been replicated also in other sectors of the regional programme.

Comments

The voucher tool is applied in specific sectors considered particularly important for the regional economy, such as biotechnologies (food and not food), electronics, mechanics, electro-mechanics, textile, chemicals, industrial design, new materials, ICT, environmental technologies, robotics, artificial intelligence, low-zero emission industrial technologies.

Name

QuESTIO - Quality Evaluation in Science and Technology for Innovation Opportunity System

Subjects involved

Lombardy Region manages the Questio System through its Institute of Research (Irer) for the scientific contents.

Objective

Questio System aims at supporting Lombardy Region in the identification of excellences Centres for the technological transfer, qualified as regional recognised centres, certifying continuously their efficiency verifying the performance and the organisational and structural features.

Rationale

The system is constituted by two elements: the database, identifies "who is who" in the field of the scientific research and technological transfer in Lombardy; and the evaluation: to verify and give credit to the selected structures.

The Database aims at creating and making available the lombard CRTT record, in order to solve the problem of visibility for the CRTT (Research Centres and technological transfer) and the difficulties arising in the enterprises to have access to the facilities available and, for the CRTT, to develop new collaboration activities.

The main purpose of the section evaluation is to start an assessment and identification programme for the CRTT (Research Centres and technological transfer) analysing the selected and experimented index, calculated on the basis of the information provided by the CRTT.

Implementation

This tool provides a support to new regional investment policies in the field of research and innovation. Policies are based on target choice and on indirect financing processes to the enterprises and introduce part of a market procedure to promote the research.

Updating

Replication of the model.

Comments

The Questio System is visible, collecting a competencies record which considers besides the scientific capabilities also the technology transfer abilities using a wide range of indicators.

The added value of this product is the innovative approach, the Questio system is a tool of transparency and visibility for the regional system, key factors are flexibility and accessibility.

Annex VII Piedmont (I)

Science

Considering the Chemistry-related scientific areas of interest, list the:
Regional Universities offering courses in Chemistry.

Name of the Institute/ Department	City	Scientific area	Courses	Students 2005 (n°)	Graduates per year 2004 (n°)	I.L.O.
Politecnico di Torino	Torino Biella	Chemical Engineering	<input type="checkbox"/> Graduate	172	26	
			<input type="checkbox"/> Undergrad.	164		
Politecnico di Torino	Torino	Material Engineering	<input type="checkbox"/> Graduate	85	15	Yes
			<input type="checkbox"/> Undergrad.	96		
Politecnico di Torino	Alessandria	Plastic material Engin. (Polymer Chemistry)	<input type="checkbox"/> Graduate	0	7	
			<input type="checkbox"/> Undergrad.	128		
Università del Piemonte Orientale	Novara	Pharmaceutical Chemistry and Technology (Biochemistry)	<input type="checkbox"/> Graduate	216	112	Yes
			<input type="checkbox"/> Undergrad.	70		
Università del Piemonte Orientale	Alessandria	General Chemistry	<input type="checkbox"/> Graduate	1	13	Yes
			<input type="checkbox"/> Undergrad.	53		
Università del Piemonte Orientale	Alessandria	Applied Chemistry	<input type="checkbox"/> Graduate	11	3	Yes
			<input type="checkbox"/> Undergrad.			
Università del Piemonte Orientale	Novara	Material Chemistry	<input type="checkbox"/> Graduate	19	0	
			<input type="checkbox"/> Undergrad.	36		
Università del Piemonte Orientale	Novara	Biotechnology	<input type="checkbox"/> Graduate	30	38	
			<input type="checkbox"/> Undergrad.	194		
Università di Torino	Grugliasco (Torino)	Vegetables and Agricultural biotechnologies	<input type="checkbox"/> Graduate	19	0	
			<input type="checkbox"/> Undergrad.			
Università di Torino	Torino	Biotechnology	<input type="checkbox"/> Graduate	73	0	Yes
			<input type="checkbox"/> Undergrad.	286		
Università di Torino	Torino	Pharmaceutical Chemistry and Technology (Biochemistry)	<input type="checkbox"/> Graduate	391	0	Yes
			<input type="checkbox"/> Undergrad.	0		
Università di Torino	Torino	Medical biotechnologies	<input type="checkbox"/> Graduate	45	0	Yes
			<input type="checkbox"/> Undergrad.	0		
Università di Torino	Torino	Material Chemistry	<input type="checkbox"/> Graduate	26	11	Yes
			<input type="checkbox"/> Undergrad.	2		
Università di Torino	Torino	General Chemistry	<input type="checkbox"/> Graduate	15	95	Yes
			<input type="checkbox"/> Undergrad.	323		
Università di	Torino	Industrial chemistry	<input type="checkbox"/> Graduate	22	105	Yes

Torino			<input type="checkbox"/> Undergrad.	41		
Università di Torino	Torino	Industrial and Environmental Chemistry	<input type="checkbox"/> Graduate <input type="checkbox"/> Undergrad.	33 64	0	Yes
Università di Torino	Torino	Advanced chemical methodologies	<input type="checkbox"/> Graduate <input type="checkbox"/> Undergrad.	29 0	0	Yes
Università di Torino	Torino	Clinical Chemistry	<input type="checkbox"/> Graduate <input type="checkbox"/> Undergrad.	21 0	0	Yes
Università di Torino	Torino	Industrial biotechnologies	<input type="checkbox"/> Graduate <input type="checkbox"/> Undergrad.	20 0	0	Yes
Università di Torino	Grugliasco (Torino)	Biotechnologies applied to Human and Animal needs	<input type="checkbox"/> Graduate <input type="checkbox"/> Undergrad.	6 0	0	Yes

1. R&D Public Centres and Private/Public Partnerships in the Region committed in Chemistry or Chemistry-related innovation activities¹.

Name of the Institute	City	Scientific area¹	Private partners (if existing)	Professors, Researchers & Technicians
Università degli Studi di Torino – Dip. di Agronomia, Selvicoltura e Gestione del Territorio	Grugliasco (Torino)	AGRONOMY: Environmental agronomy, Mycotoxins, Forage crops, Turfgrass science, Grazing-land management, Weed science FLORICULTURE, GARDENS and LANDSCAPE VEGETABLE CROPS and MEDICINAL and AROMATIC PLANTS FORESTRY: Forest inventory, Forest fires, Forest management, Silviculture, Wood technology, Forest harvesting		26
Università degli Studi di Torino – Chimica Analitica	Torino	Chemistry, Industrial Chemistry, Biotechnology, Materials Science, Science and Technology for Cultural Heritage, and Biological Sciences, and of the courses (2nd level degree) in Advanced Chemical Methodologies, Environmental and Cultural Heritage Chemistry, Clinical, Forensic and Sport Chemistry, and Industrial Processes and Products Chemistry		48
Università degli Studi di Torino – Dip. di Chimica Inorganica, Chimica Fisica e Chimica dei Materiali (Chimica IFM)	Torino	Chemistry, Industrial Chemistry, Materials Science, Biology, Biotechnology		70
Università degli Studi di Torino – Dip. di Genetica, Biologia e Biochimica	Torino	Biochemistry, Cellular biotechnologies, Molecular biotechnologies		12
Università degli Studi di Torino – Dip. di Sanità Pubblica e di Microbiologia	Torino	Bacteriology, Epidemiology and statistics, Environmental and Territorial Hygiene, Microbiology applied, Virology, Molecular virology		33
Università degli Studi di Torino – Dip. di Scienza e Tecnologia del Farmaco	Torino	Biochemistry and Molecular Biology, Pharmaceutical Chemistry, Pharmaceutical Chemistry Applied, Organic Chemistry, Computer-Aided Strategies in MEDical CHEmistry, Fitochemistry		57
Nanostructured Interfaces and Surfaces Centre of Excellence	Torino Alessandria Novara	Nano-structured interfaces in the solid state, Nano-structured thin films for coatings and functional applications, Nano-structured oxidic surfaces and their interaction with gaseous phases, Molecular interactions in solid-liquid and liquid-membrane interphases, Molecular interactions in complex and nano-structured bio-interphases: solid-protein-cell		11

Università degli Studi del Piemonte Orientale "Amedeo Avogadro" – Dip. di Scienze Chimiche Alimentari Farmaceutiche e Farmacologiche	Novara	Chemistry and pharmaceutical technology, Pharmacology, biochemistry, microbiology		58
Università degli Studi del Piemonte Orientale "Amedeo Avogadro" – Dip. di Scienze dell'ambiente e della vita	Alessandria	Chemistry, Environmental problems		46
Università degli Studi del Piemonte Orientale "Amedeo Avogadro" – Dip. Scienze e Tecn. Avanzate	Alessandria	Biochemistry and Physics		27
Politecnico di Torino – Dip. di Energetica	Torino	Energetics		152
Politecnico di Torino – Dip. di Scienza dei Materiali ed Ingegneria Chimica	Torino	Material Chemistry and Engineering Chemistry		182
CNR – IMG C	Torino	Metrology and Metrology in Chemistry		
CNR – ISE	Verbania-Pallanza (VCO)	Limnology and ecophysiology of aquatic ecosystems. Populations ecology. Evolutionistic biology, biodiversity and nature conservancy. Macro and micro environmental pollutants. Biological pests control and biomanipulation. Soil ecosystem, control and recovery.		33
CNR – IVV	Torino Grugliasco	basic research work (identification, classification, biological and molecular characterization of the phytopathogenic agents, genome expression, synthesis and utilization of biologically active transcripts, expression of recombinant proteins, transformation of plants by Agrobacterium sp., etc.); epidemiological studies, biology of vectors, infection sources, natural cycles of the pathogens, elaboration of statistical models for infection forecasting, quarantine problems, etc. Production of both monoclonal and polyclonal antibodies. Production of diagnostic serological kits, to be used in both immuno-enzymatic and immuno-chromatographic tests, adapted to peculiar needs. Development of molecular diagnostic methods (nucleic acid hybridization, PCR, real-time PCR, Western blot analysis, etc.). Electron microscopy and immune-electron microscopy. Improvement of the sanitary status of the nursery material of cropping woody, shrub (fruit-trees and grapevine), and herbaceous species (vegetables, flower and ornamental plants), by using: clonal and sanitary selection; sanitation of infected clones by thermotherapy and meristem tip culture; sanitary testing of mother plant material by serological and molecular means, and biological assays. Evaluation and testing of sustainable means to control virus and phytoplasma infections. Searching for characters of resistance to virus infection and their introduction into agricultural species by conventional and non-conventional methodologies. Investigation on the suitability of pathogen-induced resistance by using genetic engineering for virus control.		35
CNR - ISMAC	Biella	Macromolecular studies. Research: Properties and physical-chemical characteristics of textile materials, Technological research into industrial processes, Development of new analytical techniques Standardisation: Production of textile technical standards, Participation in working commissions of Italian and Foreign Standardisation bodies (UNITEX, ISO, IWTO, CEN), Laboratory accredited by Interwoollabs and IMA and recognised by CCMI Training and technology transfer: degree thesis, monographic courses, specialisation courses, data banks, bibliographical documentation, seminars and conventions Services: Analytic tests on raw textile materials, semi-finished goods, finished products and on textile auxiliary products. Test reports in conformity with EN 45000 are issued, Consultancy, Research into specific subjects proposed by firms		14
CNR - ISPA	Torino	Toxigen fungi and biopesticides, Food microbiology and technology, Quality and processed food products, Mycotoxins and other contaminants, Plant production		9

CNR - ISTECC	Torino	Science and Tecnology for Ceramics		53
Agroinnova	Grugliasco (Torino)	agro-environmental field		26 (Scientific Council)
ENEA - Ente per le Nuove tecnologie l'Energia e l'Ambiente - Centro Ricerche Saluggia	Saluggia (Vercelli)	Chemistry, Bio-diesel, pellets, biomasses, vegetable oils, waste treatments, energy		
Istituto Sperimentale per la Cerealicoltura (ISC) - sezione di Vercelli	Vercelli	Chemical research on Rice		
Istituto Sperimentale per la Viticoltura - sezione periferica di Asti	Asti	Chemical research on Vine		
Istituto Sperimentale per l'Enologia	Asti	Chemical research on Wine		26
Laboratorio Chimico Cemere Di commercio	Torino	Chemical and batteriological Analysis		
I.R.C.C.: Istituto per la Ricerca sul Cancro	Candiolo (Torino)	Oncology		
Fondazione Biotecnologie	Torino	Biotechnologies		
Associazione Sviluppo Piemonte	Torino	Nanotechnologies, bio-medicine, Environmental protection, materials		8 (Scientific Council)
Fondazione Novara Sviluppo	Novara	Development in a Novara's quarter known such us a Scientific Site (Sant'Agabio) of the Chemical research, Pharmaceutical research, Biotechnologies, materials		5 employees. 10 managem.
Guido Donegani R&D Centre	Novara	Research organisation of Polimeri Europa SpA (ENI Group)		
Novamont R&D Centre	Novara	Research on bioplastic		
MEMC R&D Centre	Novara	Research on electronic materials		
Isagro R&D Centre	Novara	Research on pesticides		
Radici chimica R&D Centre	Novara	Research on polyamide polimers		
Sued Chemie R&D Centre	Novara	Eterogeneous Catalysis and Environment		
Novara Technology	Novara	Research on ceramics		
Donegani Anticorrosione	Novara	Research and Services on Industrial Petrochemical Plants		

List the Regional Scientific Parks committed in Chemistry or characterized by technological proximity

Name of the Park	City	Scientific competences	Private or Public financiers and promoters
BIOINDUSTRY PARK CANAVESE SpA	Ivrea (Torino)	Biotechnologies, Chemistry, Biology, Pharmacy, Agro Industry, Environment, Energy, Bio-medical, ICT	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
ENVIRONMENT PARK	Torino	Environment and ICT	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
Parco Scientifico e Tecnologico della Valle Scrivia	Tortona (Alessandria)	High Tech	Finpiemonte S.p.A. , Banks, University, Industrial Union, Public Administration, Chamber of Commerce
TECNOPARCO DEL LAGO MAGGIORE	Verbania (Verbano Cusio Ossola)	High Tech	Finpiemonte S.p.A. , SAIA

Industry

	No.	%
How many companies are active in the Region?	~45.000	
How many people work in these companies?	~517.000	
How many of them are graduates? ²⁰		4,2% ²¹
How many of them are Chemistry graduates or qualified Chemists? ⁶	_____	_____
How many of the regional companies are SMEs? ⁶		~70%

How many Chemical companies are active in the Region? ⁶	~1.800 (~3.300 Local Units)	
How many people work in these companies? ⁶	~50.000	
How many of them are graduates? ⁶	_____	_____
How many of them are chemistry graduates or qualified Chemists? ⁶	_____	_____
How many of the regional chemical companies are SMEs? ⁶		~70%

Indicate which of the following economic activities have a recognized important role over regional economy²². If available, states related information (% relevance on overall local industry).

<input type="checkbox"/> coatings	X
<input type="checkbox"/> electronics	X
<input type="checkbox"/> detergents	X
<input type="checkbox"/> agricultural chemicals	X
<input type="checkbox"/> pharmaceuticals (drugs)	X
<input type="checkbox"/> plastics	X
<input type="checkbox"/> petroleum	X
<input type="checkbox"/> other chemical manufacturing	textiles/furnitures/machinery
<input type="checkbox"/> life science	X

²⁰ If the information requested is not available in absolute terms, please state the actual percentage or an estimate over the sample as above referred in the question.

²¹ National average

²² If you don't have any information regarding local industrial districts or "specialization indexes" of local production, you could estimate the relative weight of each segment on the overall regional industry (measured as a contribution to total turnover) by comparing this variable with the weight of the same segment at national level (the weight should significantly exceed the resulting average national values).

Tech-transfer and other supporting services/infrastructure

List the existing regional Incubators.

<i>Name of the Incubator</i>	<i>City</i>	<i>N° of companies hosted</i>			<i>Total m²</i>	<i>Available m²</i>
		<i>SMEs</i>	<i>Start up</i>	<i>Tot.</i>		
I3P Incubatore delle imprese del Politecnico di Torino	Torino			30		
Tecnoparco del lago Maggiore	Verbania Fondotoce (Verbano Cusio Ossola)			22	180.000	150.000

Within the 2006 will be born 4 regional incubators (in Colletterto Giacosa, Torino, Garessio and Borgo Vercelli), with an investment of 17.000.000 euros.

List the existing regional Business Innovation Centres (B.I.C.).²³

<i>BIC</i>	<i>City</i>	<i>N° of assisted-companies per year</i>	<i>N° of Tech-Transfer operated since start</i>
Codex Scrl	Torino Cuneo		
Parco Scientifico e delle Telecomunicazioni in Valle Scrivia	Tortona (AL)	25	

List the existing international, national and regional Venture Capital funds operating in the Region either for statute or as a matter of fact

<i>Name of the VC fund</i>	<i>Origin (nation)</i>	<i>Sponsor</i>	<i>Strategy</i>	<i>Average size of investment (000 €)</i>	<i>Fund raised (000 €)</i>	<i>Already invested (000 €)</i>	<i>N° of companies participated</i>
Alpinvestimenti (Innogest SGR)	Torino (Italy)	Piemonte High Technology Srl(Torino Wireless, I3P, Eurofidi, Unione Industriale di Torino) and Ersel	VC	100-1.000	40.000	663	8

²³ A BIC is a business support organisation, public or private, for innovative small and medium sized enterprises (SMEs) and entrepreneurs, contributing to regional and local economic development through the creation of new innovative SMEs and innovative projects in existing SMEs. Officially recognised by the European Commission through a certification scheme and linking to the EBN (European BIC Network). Sometimes it can coincide with an Incubator (see previous question).

BEST PRACTICES - Name

Alpinvestimenti – Venture Capital

Subjects involved

Piemonte High Technology Srl (Torino Wireless, I3P, Eurofidi, Unione Industriale Torino) % Ersel Finanziaria
Current investors in the Torino Wireless Cluster include:

- the MIUR, in the amount of 26 million euro (Research, University and Instruction Ministry)
- the Piedmont Region, 10 million euro
- the Province of Turin, 8 million euro
- the City of Turin, 6 million euro
- the Turin Chamber of Commerce, 2.5 million euro
- Alenia, Fiat, Motorola, STMicroelectronics and Telecom Italia, 1.4 million euro each
- San Paolo IMI bank, Unicredit Bank, the Unione Industriale di Torino (Employers' Association of Turin) and the Mario Boella Institute, 400,000 euro each
- universities contribute to the Cluster development through research competencies and facilities

To these are added the commitments made by Compagnia di San Paolo and CRT Foundation in the Memorandum of Understanding (the founding agreement). I3P includes: Politecnico di Torino, Provincia di Torino, Camera di Commercio di Torino, Finpiemonte, Fondazione Torino Wireless e Città di Torino.

Eurofidi includes: Finpiemonte SpA, Unioncamere, Camera di Commercio di Torino, Banca Popolare di Novara SpA, San Paolo . IMI SpA, Unioncredito italiano SpA, Banca Regionale Europea SpA, Cassa di Risparmio di Biella e Vercelli SpA, Cassa di Risparmio di Asti SpA, Cassa di Risparmio di Alessandria SpA, Cassa di Risparmio di Tortona SpA, Unicredit Banca Mediocredito SpA, Cassa di Risparmio di Bra SpA, Cassa di Risparmio di Fossano SpA, Cassa di Risparmio di Saluzzo SpA, Cassa di Risparmio di Savigliano SpA, ASCOM, ANCE Piemonte, Confesercenti, Confindustria Piemonte, Unionfidi Piemonte Srl, Unione Industriale di Torino, API di Torino e Provincia, FEDERAPI della Regione Piemonte, Unione Industriali di Vercelli e della Valsesia, Unione Industriale della provincia di Cuneo, ACAI, CASA di Torino, CNA di Torino, CIESSEPI Confesercenti, Confartigianato Imprese Piemonte, 25.579 private enterprises. Unione Industriale Torino includes 2.500 private enterprises. The Ersel Group includes: Ersel SIM SpA, Ersel Asset Management SGR, Ersel Hedge Srl, Ersel Gestion Internationale S.A., FIDERSEL SpA, Ersel Finance S.A., Online SIM SpA

Objective

Closely related to enterprise acceleration, one of the most important activities of Piemonte High Technology Srl is to support the foundation of new enterprises through like angels investments, up to 200.000 euro.

The task is to become the promoter of the local innovation and development. Alpinvestimenti offers 40 million euros (in 10 years) to finance small and medium size industries located in Piedmont. These enterprises are characterized by high tech and knowledge.

Rationale

Closely related to enterprise acceleration, one of the most important activities of Torino Wireless is the **identification of possible sources of public or private funding.**

The Torino Wireless Foundation has two financial branches: Piemonte High Technology Srl (Piemontech since 2004) to sustain interpreneurial ideas and Alpinvestimenti, in partnership with a private investor ERSEL has the mission to finance Piedmont's SMEs in industrial activity as well as in services needs.

Implementation

The two financial branches allow to offer:

- Support SMEs (the SME Project) giving proactive and 360° support to selected highgrowth companies
- Support to create new enterprises (the Start-up project)
- Generation & Valorization of intellectual assets, such as IPR (ISM-Intellectual Asset Manag. Project)
- Venture Funding (unfrt Piemontech and Alpinvestimenti Funds)
- Networking (Torino Wireless Network): SME - Large companies - Public and Research agencies

Updating

Piemontech has 2 million euros with a growing to 5 million euros objective. Piemontech shall enter with 200.000 equity, as seed capital (angel investing) in spin off activities or in very industrial organization.

Name
PIEMONTEBIONET
Subjects involved
PIEMONTEBIONET is a platform for providing services with the Canadese Bioindustry Park. It has the support of Arthur D. Little and I-side
Objective
The aim of Piemontebionet is to promote meeting/aggregation opportunities among companies and R&D Centres of mutual interest.
Rationale
The Canavese Bioindustry Park is specialized in life science. Within the regional project DIADI coordinates the subproject LISTEN – Life Science Technology Network.
Implementation
PIEMONTEBIONET is structured to meet the need not only of SMEs located in Ob. 2 Piedmont's areas.

Name
DIADI 2000 Project (Diffusion of Innovation in Piedmont Areas with decreasing industrial activities)
Subjects involved
<p>The DIADI 2000 Project was presented by the "ATS DIADI", a temporary scope association. DIADI activities are monitored by a technical team guided by the Piedmont Region and constituted mainly by the competences of the academic and scientific research and of the enterprise's:</p> <ul style="list-style-type: none"> • Regione Piemonte http://www.regione.piemonte.it • Confartigianato - C.N.A. C.A.S.A. http://www.cna.to.it/CNA • Confindustria Piemonte http://www.confindustria.piemonte.it • COREP - Consorzio per la Ricerca e l'Educazione Permanente http://www.corep.it • CSP - Innovazione nelle ICT s.c. a r.l. http://www.csp.it • DTC - Consorzio per il Distretto Tecnologico del Canavese http://www.canavese.to.it • Federapi Piemonte http://www.federapi-piemonte.it • Finpiemonte S.p.A. http://www.finpiemonte.it • Politecnico di Torino http://www.polito.it • Tecnorete Piemonte s.c.r.l. http://www.tecnorete-piemonte.it • Unioncamere Piemonte http://www.unioncamere.it • Unione Province Piemontesi http://www.csi.it/upp/index.htm • Università degli Studi di Torino http://www.unito.it • Università degli Studi del Piemonte Orientale "A. Avogadro" http://www.unipmn.it <p>Research Centres. They are represented by the most important Research Institutes in Piedmont and offer to the enterprises the results of their research and their experts. They are:</p> <ul style="list-style-type: none"> • IEN – Istituto Elettrotecnico Nazionale Galileo Ferraris http://www.ien.it/index_i.shtml • INFN – Ist. Naz. Fisica Materia-Sez. TO http://www.infm.it/It/Struttura_new/Network/index.php3 • INFN – Istituto nazionale di Fisica Nucleare – Sezione di Torino http://www.to.infn.it/ • Istituti del C.N.R. http://www.cnr.it • LABORATORI DEI PARCHI SCIENTIFICI E TECNOLOGICI http://www.tecnorete-piemonte.it/ • POLITECNICO DI TORINO http://www.polito.it

- RTM
- UNIVERSITÀ DEGLI STUDI DI TORINO <http://www.unito.it>
- UNIVERSITÀ DEGLI STUDI DEL PIEMONTE ORIENTALE <http://www.unipmn.it/>
- Centri di Competenza di TS Canadese <http://www.canavese.to.it/>

Territorial centres. They are 7 (3 in Torino's province and 4 in the other Piemonte's provinces) reference points and they are the regional net of the DIADI 2000 project:

Torino e cintura	COREP di Torino http://www.corep.it
Canavese	Distretto Tecnologico Canadese http://www.canavese.to.it
Pinerolese	Sport.Imprese Pinerolo(COREP) www.comune.pinerolo.to.it/aziende/indir.htm
Verbano, Cusio e Ossola	Tecnoparco Lago Maggiore http://www.tecnoparco.it
Vercelli e Valsesia	Consorzio UN.I.VER. di Vercelli (COREP) http://www.univer.polito.it
Tortona	PST di Tortona http://www.pst.it
Cuneo	Centro Servizi LAMORO di Alba (COREP) Errore. Riferimento a collegamento ipertestuale non valido.

They are the regional counters to guarantee the DIADI action on the Piedmont region through some guidance meetings and events to transfer best practices between the research world and the enterprises.

Objective

Stimulate the industry innovation taking into account the skills operating in the Research System.

Rationale

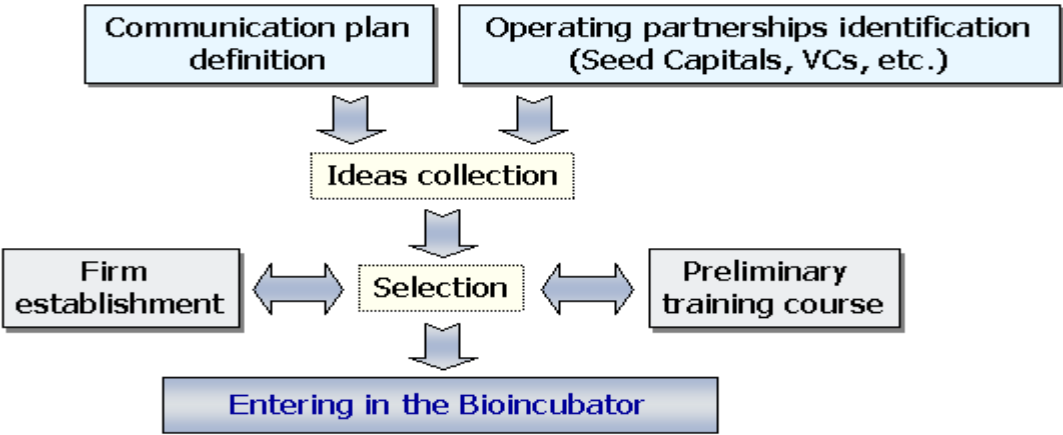
DIADI represents activation of the article 2.4 contained in the Unique Programming Document of the Piedmont '00/'06, that represents continuation of DOCUP organized in '97/'99 and other passed bi-annual programs. DIADI is the meeting point between SMEs and R&D centres to promote industrial growing.

Implementation

DIADI initiatives comprehend 36 months from 2004 and 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 commitment 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, competitiveness and better productivity. DIADI services are financed in Ob.2 areas with EU funds.

Updating

Increase n° of companies taking advantages from DIADI & extending best practices in other fields.

Name
Discovery
Subjects involved
Bioindustry Park
Objective
Discovery is a selection promoted by the Bioindustry Park of Canavese to find innovative ideas in life science and biotechnology with high technological contents.
Rationale
<p>Bioindustry Park Canavese is a scientific Park focused on Life Sciences. It has been created with the structural fund for regional development managed by Regione Piemonte. The Park has determined that:</p> <ul style="list-style-type: none"> • In biotech field the research phase and the business phase overlap in a synergistic way • Biotechnologies are a domain where also small groups may reach fundamental scientific results • The way for the exploitation of these results pass through their patent protection and new a company startup • In case of success, the value of the company increase very much in a small time • New biotech entrepreneurs have to be researchers • But it is necessary to prepare them to business management and help the become managers in a positive environment <p>In order to face these needs it has launched, thanks to Regione Piemonte support, the Discovery Enterprise, that is directed to identify innovative entrepreneurial ideas in Biotech field and to install them in the Bioindustry Park Bioincubator.</p>
Implementation
<p>The Discovery Enterprise is based on the collection and selection of potential entrepreneurial ideas. The candidates must send their project during the selection period, written according to the outline downloadable in this web site in the page modules, marked with an identification acronym, by ordinary mail or carrier to this address of the Bioindustry Park del Canavese SpA:</p>
 <pre> graph TD A[Communication plan definition] --> C[Ideas collection] B[Operating partnerships identification (Seed Capitals, VCs, etc.)] --> C C --> D[Selection] D <--> E[Firm establishment] D <--> F[Preliminary training course] D --> G[Entering in the Bioincubator] </pre>
In both cases experts and representatives of the world of industry, research and international finance will take

part in the selection process. The projects evaluation will be realized through a double selection. The project selection will be actuated under the bond of confidentiality.

The Selection Commission will do a first evaluation of the presented projects based on the following criteria:

1. innovation, originality, protection and market direction
2. compliance to the incubator installation criteria

The Selection Commission will draw up a first unquestionable proposal classification, that will be submitted to the Judging Commission. The Judging Commission will analyse the proposals, and, after listening the proponents in single presentatin meetings, will draw up a new unquestionable proposal classification based also on the following criteria:

1. engagement, motivations and professionalism of the propoent of the idea
2. economical & development perspective, risk degree & economical success chance of the initiative

During the presentation meetings, the proponent will have to present in detail the initiative, with particular care to the scientific and planning aspects, to the hypotesis the economical planning is based upon, to the motivations, supporting this with all the necessary information for a full and complete understanding, even if this is not included in the initial project.

The Commission may used in this phase the support of external scientifical competencies that will be linked to Bioindustry Park with a confidentiality agreement.

The final selected initiatives will be chosen according to the classification.

Updating

The entrepreneurial ideas will be selected, that will gain the following advantages:

- Installation in a 30 s.m. (average size) equiped 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 biotech neo-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 till 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 localization 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. It is formed by non institutional investors and is offering to start-ups not only capital but also networking and expertises.

The possibile negotiation between the entrepreneurial initiative ad the potential risk investor will be no more a Bioindustry Park direct responsibility.

Name

Eporgen Venture S.P.A.

Subjects involved

30 private citizens

Objective

Eporgen Venture is a company formed inside the Bioindustry Park on July 2004 with the purpose of generating entrepreneurial activities within the biotechnological sector.

Exporgen Venture SpA is committed to propose to research people (Italian and not) from university or from private institution contributing for 2-3 years in order to submit their results to Venture Capitalist or collaboration with partners operating in pharmaceutical or biotechnological areas.

Rationale

Exporgen was founded by private citizens from Canadese, Turin and Biella. The innovation of these linked to the wish of generating new enterprises focused on high tech of international importance. In this context Bioindustry Park and Eporgen Venture have collaborated in the "Discovery" initiative. This initiative had the task to attract Italian scientists (living in Italy or abroad) committed to evaluate & select R&D projects with high values for industrial initiatives.

Implementation

The "Discovery" initiative has the support of Arthur D Little and International Venture Capitalist (INDEX Venture – Geneva, Edmond de Rothschild Investment Partners – Paris, Merlin Bio Science – London). Six projects were evaluated. More information were collected with the aim of participating with assets within the new companies.

Eporgen together with the Bioindustry Park operates not only as a private financing partners but also as scientific and managerial instruments.

This allows to create a profitable "cluster" with innovative Biotech, competitive and with international value.

Eporgen Venture model is very simple:

- Found collection from private enterprises
- Project selection at an early stage, covered by patents, innovative and with international valence
- Business plan preparation based not only on economic values, but mainly on the scientific contents valid to collect opportunities which might rise from the project development itself
- New companies where Exporgen has the majority of shares
- Use of financial aids from EU, Italy and Piedmont
- Quarterly evaluation of the scientific achievements and budget evaluation
- Decision on projects by the Scientific Committee and the Administration Council of the new companies
- Financial network with outside companies, Venture Capitalists, Banks
- Possible scenarios after 2-3 years from the beginning of the project:
 1. Exporgen increases the cash
 2. entrance of new investors
 3. licence of patent and or project
 4. partnership with other companies
 5. collaboration agreements
 6. merging or acquisition with or by other companies

This model lies of four fundamental items

- the early stage research (Discovery) is the most creative step of the R&D process. Generally it comes from the contribution of a single person and it is based on his effort, willingness and capacity to identify possible opportunity of success. Few financial resources are therefore needed which, if successful, a high economic return might be foreseen
- The “Discovery” process inside medium and big chemical-pharmaceutical companies has low productivity. It is a consequence more than half of the projects come from outside of Italy, small biotech companies or from university departments. Therefore more attention is given to the advanced development, chemical trials, production, regulatory activity and marketing
- “Small and nice” is a slogan still true mainly if it is applied on the true innovation which has a global value even if generated with modest investments and in modest economical conditions
- At the university level the lack of proposing innovation is very high together with a lack of generating knowledge usable in generating values. This situation is particularly true in Italy. If properly oriented in the duty for each component doing R&D, Italy could give high level outputs.

and three fundamental options:

- Intelligent project selection with high risk, high potential and high innovation
- High commitment and motivation of the research scientist proposing a project
- Good capacity in running projects with true research content, where the basic principles the rational and the objectives are clear since the beginning

This does not mean that these meet with the real achievement of the project.

Updating

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.

Comments

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 Chemistry laboratories located in the Park (attracting collaboration contracts)
- Wide utilisation of the services offered in the Parc
- 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

The biotechnological environment within the Bioindustry Park is flourishing since many years in many fields such as biotechnology, pharmacy, diagnosis, biomedical, bioengineering, drug delivery, bioinformatics, nanobiotechnologies and environment.

The biotechnological sector has been chosen both for the scientific knowledge available in the Park and the recognised importance recently knoledged in Italy.

Annex VIII Limburg (NL)

SCIENCE: Regional Universities

Name of the Institute / DEPARTMENT	CITY	SCIENTIFIC AREA	COURSES	STUDENTS (N°)	GRADUATES (N°)	I.L.O.
Maastricht University www.unimaas.nl	Maastricht	<ul style="list-style-type: none"> Molecular Life science (The programme focuses on two main topics: health and illness.) 	MSc/PhD-level	93 (academic year 2005/2006)	Course started in '02, so there are no graduates as yet.	X Yes
Open University www.ou.nl http://www.ou.nl/Docs/Universiteit/Jaarverslag_2004.pdf	Heerlen	<ul style="list-style-type: none"> Natural sciences Nature & Sustainability Environment chemistry 	MsC	500 (2004)	Not available	X
Technical University http://w3.tue.nl/nl/d/e_universiteit/publicaties/gelegenheid	Eindhoven ²⁴	<ul style="list-style-type: none"> Biomedical engineering: <ol style="list-style-type: none"> 1. Biomechanics & tissue engineering 2. Molecular Bioengineering & molecular imaging 3. Biomedical imaging & modelling Chemical engineering & chemistry: 	MSc/PhD-level	2800 (2004 = the whole faculty of engineering) further information is not available	680 (2004)	X

²⁴ Eindhoven is not situated in the Province of Limburg but on a distance of appr. 20 km from the border.

suitgaven/jaarversagen/		<ol style="list-style-type: none"> 1. Molecular engineering 2. Materials Science engineering 3. Process engineering <ul style="list-style-type: none"> • Applied Physics 				
Hogeschool Zuyd www.hszuyd.nl http://www.hszuyd-opleidingen.nl/hszuydopleidingen03/ocms/webpage.asp	Heerlen	<ul style="list-style-type: none"> • Chemical and Medical Laboratory Technology (Bsc in Life Sciences) • Biometrics (started in 1999) • Chemistry (Bsc in Life Sciences) • Chemical Engineering (Bsc in Life Sciences) 	BSc-level	<ul style="list-style-type: none"> • Chemical and Medical Laboratory Technology (no information available) • Biometrics (up to date 44 students, no graduates) • Chemistry (no information available) • Chemical Engineering (no information available) 	<ul style="list-style-type: none"> • n.a. • no graduates yet • n.a. • n.a. 	X
Fontys University of applied sciences www.fontys.nl	Eindhoven	<ul style="list-style-type: none"> • Applied Science • Biology and Chemistry* • Chemical Technology* • Physics* <p>* these studies are being reduced</p>	BA- BSc/MSc - level	<p>2004/2005 (643)</p> <ul style="list-style-type: none"> • Applied Science (212) • Biology and Chemistry (102)* • Chemical Technology (62)* • Applied physics (227)* • Chemistry (40) 	<p>2004/2005 (117)</p> <ul style="list-style-type: none"> • Applied Science (0) • Biology and Chemistry (30) • Chemical Technology (31) • Applied physics (26) • Chemistry (30) 	X

SCIENCE: Relevant Universities for the Limburg Region

NAME OF THE INSTITUTE / DEPARTMENT	CITY	SCIENTIFIC AREA	COURSES	STUDENTS (N°)	GRADUATES (N°)	I.L.O.
University of Liège www.ulg.ac.be	Liège (B)	<ul style="list-style-type: none"> • Biological • Biomedical • Chemical sciences • (Veterinary) Medicine • Pharmaceutical • Genomic, proteomic, plant biotech • Civil engineering in chemistry 	BSc/BA-level	14,000 (total: no specification available)	2,500 (2003) (total: no specification available)	X
Hasselt University www.uhasselt.be	Hasselt / Diepenbeek (B)	<ul style="list-style-type: none"> • Life sciences • Biostatistics • Immunology • Organic & Polymer chemistry • Plantfysiology • Medicine 	T Graduate ²⁵	2,751 (total: no specification available)	324 (2003)	X
Catholic university Limburg www.khlim.be	Diepenbeek (B)	<ul style="list-style-type: none"> • Health & care • Technology engineering 	T Graduate ⁵	5,500 (total: no specification available)	1,350 (2003)	X
Limburg University www.phlimburg.be	Hasselt	<ul style="list-style-type: none"> • Biotechnics • Health care • Plastic art 	T Graduate ⁵	3,559 (total: no specification available)	1,085 (2003)	x
Aachen/Jülich	Aachen	<ul style="list-style-type: none"> • Chemical & Bio engineering 	T	8,293 students MSc/PhD-	739 (2003)	X

²⁵ Ph.D and Masters

University www.juelich.fh-aachen.de	(D)	<ul style="list-style-type: none"> • Electrical engineering • Energy, environment & nuclear • Mechanical engineering • Physical engineering 	Graduate ⁵	level (total: no specification available)		
University of Technology RWTH www.rwth-aachen.de	Aachen	<ul style="list-style-type: none"> • Natural sciences • Medicine • Clinical sciences, chemistry & radiology 	T Graduate ⁵	28,454 (total: no specification available)	1,965 (2003)	X
University Leuven www.kuleuven.ac.be	Leuven	<ul style="list-style-type: none"> • Biomedic sciences • Bioscience Engineering • Medicine • Pharmaceutical Sciences • Kinesiology and Rehabilitation Sciences • Science & Industry 	<ul style="list-style-type: none"> • Bachelor student • Masters students 	<ul style="list-style-type: none"> • 30,500 • 6,771 (total: no specification available)	90% 343 PhD (p/year)	

R&D Public Centres and Private/Public partnerships in the Region LIMBURG

NAME OF THE INSTITUTE	CITY	SCIENTIFIC AREA	PRIVATE PARTNERS (IF EXISTING)	VENTS (N°)
Academic Contacts and External Research (ACER)	Geleen		DSM www.dsm.com As a member of CEFIC, DSM supports and participates in various chemical industry initiatives and programs.	

Reseach Campus Geleen	Geleen	Life sciences products (nutritional, health and pharmaceutical products) Performance materials Industrial chemicals	http://www.dsm.com/nl_NL/html/campus/campus_community.htm DSM Venturing and Business Development Chemelot	May resident scientists (including 15 university professors)
CARIM: Cardiovascular Research Institute Maastricht	Maastricht (University of Maastricht)	Public health Vascular biology	National cooperations: CARIM has close ties with the Interuniversity Cardiology Institute of the Netherlands, ICIN). BMT (Eindhoven University of Technology) Institute for Cardiovascular Research (ICaR-VU); Internationale cooperations: Institut Féderative de Recherche Cardiovasculaire Lariboisière in Paris. Carim participates in several Welcome Trust funded British genomic research consortia;	
GROW: Research Growth & Development	Maastricht (University of Maastricht)	Research early human development (normal and abnormal growth and differentiation) Research in the field of oncology	No private partners (conform the annual report 2003)	
NUTRIM: Nutrition and Toxicology Research Institute Maastricht	Maastricht	To carry out scientific research in the field of nutrition and (nutritional) toxicology, and to create an infrastructure and training facilities for scientists and Ph.D. students.	www.nutrim.unimaas.nl Wageningen Centre for Food Sciences (WCFS) WCFS is an alliance of research and food industry partners to carry out strategic and non-competitive fundamental research	NUTRIM is approx. 210 including some 100 PhD students.

<p>NutriScience BV: Nutrition, novel foods and nutraceuticals</p>	<p>Maastricht NutriScience BV, a subsidiary company of Maastricht University Holding</p>	<p>NutriScience has been established to assist the food industry in developing and testing functional and novel foods and nutrients by providing the expertise of the nutritional sciences to perform clinical research, consultancy and other related services.</p> <p>NutriScience has extensive experience in observational and intervention studies, covering almost all aspects of human nutrition and food safety. In addition, specialized knowledge is available with respect to regulatory and legislative aspects of novel and functional nutrients, foods and drinks.</p>	<p>NutriScience is an independent contract research and consultancy organization.</p>	<p>No information available</p>
<p>CAPHRI: Care and Public Health Research Institute</p>	<p>Maastricht</p>	<p>Within Caphri 21 departments cooperate in 5 divisions in over 300 scientific projects in the fields of health promotion, prevention and care. The research institute Caphri is divided into five divisions: Division 1: Prevention and Health Promotion; Division 2: Autonomy and Participation; Division 3: Effectiveness of Cure and Care; Division 4: Quality of Health Care Delivery; Division 5: Health, disease and care in a societal perspective.</p>	<p>Institute divisions participate in the Graduate School CaRe (Primary Care Research) and the Graduate School WTMC (Science, Technology and Modern Culture). Both Schools are officially acknowledged by the KNAW (Royal Netherlands Academy of Arts and Sciences).</p>	<p>Caphri has 133 Ph.D. students. In all, the research of approximately 430 people (348 scientific staff and 80 non scientific staff) is conducted in affiliation with Caphri.</p>

<p>ICIS: International Centre for Integrative Studies</p>	<p>Maastricht (ICIS is an interdisciplinar y research centre at the Maastricht University, and is part of the Faculty of General Sciences) www.icis.unimaas.nl</p>	<p>ICIS addresses the increasing need for integrated analyses of environments (such as cities and regions) and complex issues (e.g. sustainable development, human health, tourism and water). ICIS offers various opportunities to improve your knowledge and skills in IA methodologies. Education is offered on diverse levels and in various fields: Various departments: from knowledge engineering and environmental sciences, to economics and cultural sciences.</p>	<p>No private partners</p>	<p>20 PhD students</p>
<p>DSM Research & solutions</p>	<p>Geleen</p>	<ul style="list-style-type: none"> • Performance materials • Industrial chemicals • Life sciences products (nutritional, health and pharmaceutical products) 	<p>No information available</p>	<p>No information available</p>
<p>Biomat</p>	<p>Maastricht (Maastricht University)</p>	<ul style="list-style-type: none"> • Research and development of new plastic materials, with an emphasis on their application within the fields of vascular surgery, orthopaedic surgery, cardiology, dentistry, ophthalmology, and urology; • Biomedical researchers from the Faculty of Medicine, clinicians from the University Hospital of Maastricht and technicians from the Technical University of Eindhoven work closely together. 	<p>BIOMAT BV is involved in joint research projects and the production of polymer biomaterials for companies such as DSM, Medtronic (in the Netherlands and the US), Becton Dickinson (US), Bayer AG (Germany), Pfizer (Switzerland, US), Belden Wire & Cable (the Netherlands and the US), and Marks & Spencer (UK).</p>	<p>No information available</p>

Boston Scientific	Maastricht	<ul style="list-style-type: none"> • Electro physiology • Oncology • Endoscopies • Urology • Interventional Cardiology • Neurovascular • Peripheral Interventions • Vascular Surgery 	No information available	15000 employees (worldwide)
Corporation Medrad	Maastricht	<ul style="list-style-type: none"> • Life sciences, 	No information available	No information available
Minntech Corporation is a leader in developing, manufacturing and marketing medical devices, sterilants, and water purification products	Heerlen	<ul style="list-style-type: none"> • Life sciences • Electronically parts 	Minntech Corporation	No information available

Rhein Biotech	Maastricht, Dusseldorf	<ul style="list-style-type: none"> Life sciences <p>Rhein Biotech produces and sells a variety of high-quality vaccines and</p> <ul style="list-style-type: none"> Biopharmaceuticals; <p>a globally active biotech company and the world's third largest hepatitis B vaccine manufacturer</p>	Berna Biotech Group	800 employees in Europe and Korea today
Datascope Corporation	Maastricht	<ul style="list-style-type: none"> Life sciences Intervascular en cardiac 	No information available	No information available
Medtronic Bakken Research Center BRC	Maastricht Kerkrade	<ul style="list-style-type: none"> Life sciences 	<p>Medtronic has two other major operations in the Netherlands. The Bakken Research Center (BRC) in Maastricht employs about 160 scientists, researchers and technical experts, who work in close cooperation with medical specialists to develop new therapies and perfect existing therapies.</p> <p>www.medtronic.com</p> <p>Medtronic first came to the Netherlands 34 years ago when the Minneapolis-based medical device company was looking for a European base. The company grew steadily there and recently opened its largest distribution center in Heerlen, in Limburg.</p>	160 scientist
MuBIO Research	Maastricht	<ul style="list-style-type: none"> Development, production and sale of diagnostics in the field of cancer control (biotechnology) 	MUbio Products BV (Maastricht) and Rhein Biotech GmbH (Düsseldorf) have concluded an agreement to combine their respective know how and proprietary technologies to develop a prophylactic vaccine against human Cytomegalovirus (CMV) in a Maastricht based joint venture named NovoVacs BV.	

R&D Public Centres and Private/Public Partnerships outside the region

International Institutions (Germany & Belgium)

<p>JÜLICH RESEARCH CENTRE (HELMHOLTZ)</p> <p>WWW.FZ-JUELICH.DE</p>	<p>AACHEN-JÜLICH</p> <p>Research Centre Jülich: At Research Centre Jülich, scientists specialise in physics, chemistry, biology, medicine and engineering. Fundamental research takes place into subjects including matter, energy, information, life sciences and the environment.</p>	<ul style="list-style-type: none"> ▪ life sciences ▪ environment ▪ energy ▪ matter ▪ institute of analytical chemistry (zch) ▪ institute of medicine (ime) ▪ institute of nuclear chemistry (inc) ▪ institute of biological info processing (ibi) ▪ institute of biotechnology (ibt) ▪ institute of thin films & interfaces (isg) ▪ institute of production technology (ipt) ▪ institute of chemistry and dynamics of the geosphere (icg) 	<p>no information available</p>	<p>employees 4500, trainees 356 scientists: 1320 (incl. phd students and scholarships 371)</p>
<p>Fraunhofer Institute (www.ipt.fraunhofer.de) (Phone +49 (0) 7 11 / 9 70 - 21 24 Fax +49 (0) 7 11 / 9 70 - 22 99)</p>	<p>Aachen</p>	<ul style="list-style-type: none"> ▪ Fraunhofer IAO brings in the latest findings of its research as a start-up capital through the strategically research projects ordered by the EC, by the Federal Government and the Federal State of Baden-Württemberg. Molecular Biology & applied ecology 	<p>No information available</p>	<p>No information available</p>

Institutes RWTH	Aachen (www.rwth-aachen.de www.mc.rwth-aachen.de)	<ul style="list-style-type: none"> ▪ Technical, textile & Macromolecular Chemistry ▪ Plastics Processing ▪ Inorganic chemistry ▪ Physical chemistry ▪ Petrol chemistry 	Technological University (RWTH)	No information available
Aachen University	Aachen (www.fh-aachen.de)	<ul style="list-style-type: none"> ▪ Polymer science ▪ Plastics Technology ▪ Chemical engineering ▪ Organic chemistry 	No information available	No information available
University clinic Aachen	Aachen (www.ukaachen.de)	<ul style="list-style-type: none"> ▪ Biomedical engineering ▪ Medical informatics ▪ Aerospace & Nuclear medicine 	No information available	No information available
Innovation centre for plastics	Aachen (www.ikv-aachen.de)	No information available	No information available	No information available
BIOMED	Diepenbeek (B)	<ul style="list-style-type: none"> ▪ Biomedical research ▪ Immunology ▪ Biology 	Limburg University Hasselt www.luc.ac.be/biomed	

Name of the Park	City	Scientific area¹	Private partners (if existing)
Chemelot business Park	Sittard-Geleen	Analytical Chemistry, Biochemistry, Chemical Engineering, Chromatography, Combinatorial Chemistry, Computational Chemistry, Crystallography, Electrochemistry, Electrophoresis, Environmental Chemistry, Food Chemistry, General Chemistry, Geochemistry, Inorganic Chemistry, Material Chemistry, Medical Chemistry, Nuclear Chemistry, Organic Chemistry, Organometallic Chemistry, Physical Chemistry Polymer Chemistry, Quantum Chemistry, Spectroscopy, Surface Chemistry	DSM Research & Solutions www.dsm.kenniswinkel.nl
Avantis European Science & business parks	AVANTIS is located on the border between Germany and the Netherlands (Aachen & Heerlen): 60 % is on the German side and 40% on the Dutch side	Avantis is a business park near the city-centre of Heerlen for businesses in R&D, high tech, ICT, callcenters and related businesses. Solar Energy	LIOF industriebank LEG Stadtentwicklung GmbH & Co. KG
Randwijck http://www-np.unimaas.nl/randwyck.html	Maastricht	University of Maastricht University hospital of Maastricht Bakken Research (Medtronic) Boston Scientific Incubator Hospital	
Business Park Trilandis ww.trilandis.nl	Heerlen	Business Park Trilandis is aimed at large-scale international companies and relocating regional companies in, specifically, the industrial, transport and distribution sectors, with site requirements in excess of 5,000 m2. / Medtronic	
Coriopolis Business park www.coriopolis.nl	Heerlen	Coriopolis is a business park near the city-center of Heerlen for businesses in R&D, high tech, ICT, callcenters and related businesses.	

¹ See ANNEX for the interested scientific areas

Questions 4 – 13

Nr	Question	N°.	%
4.	How many companies are active in the Region (number of establishments)? ²⁶ <i>Explanation:</i> Amount of companies in the Netherlands = 660.000 103158/660000* 100%= 15.6%	103.158 total amount of companies	15.63% of national
5.	How many people work in these companies (jobs)? <i>source: Limburg in cijfers 2005</i>	504.393	
6.	How many of them are graduates?	No info available	No info available
7.	How many of them are Chemistry graduates or qualified Chemists?	No info available 1,100 researchers in chemistry	No info available
8.	How many of the regional companies are SMEs? ^b <i>Explanation:</i> Based on the national percentage (99%)	Approx. 102.000	Approx. 99% of regional
9.	How many Chemical companies are active in the Region?	191*	
10.	How many people work in these companies? This is 27,5 % of the total industrial employment and 3 % of the total employment in the Limburg region	14,950	
11.	How many of them are graduates?	No info available	No info available
12.	How many of them are chemistry graduates or qualified Chemists?	No info available 1,100 researchers in chemistry	No info available
13.	How many of the regional chemical companies are SMEs? <i>Explanation:</i> See definitions below.	200	94.8%

Sources: 1) [www.limburg.mkb.nl/Het Midden-en KleinBedrijf](http://www.limburg.mkb.nl/Het_Midden-en_KleinBedrijf), 2) The Province of Limburg, 3) E,til

²⁶ All organizations excluding: public administration, education, health care, culture & recreation,
* DSM subsidiaries are regarded as one company

Definitions:

- SMEs (Small Medium sized Enterprises) are enterprises with a maximum of 250 working people.
- Small Business sized enterprises are enterprises with a maximum of 50 working people

Explanation to question nr: 10

Category: **Chemical Industry (24/25) & others**

Employee	Enterprises
0	3
1	31
2 > 4	41
5 > 9	26
10 > 19	27
20 > 49	32
50 > 99	22
100 > 199	15
200 > 499	11
500 > 1000	1
> 1000	2
Total	211*

Source: E'til

*DSM subsidiaries are regarded as separate companies

Indicate which of the following economic activities have a recognized important role over regional economy. If available, states related information (% relevance on overall local industry). Estimation (no further information available):

- coatings
- food
- plastics
- petroleum

The Chemelot site has an important role over regional economy. The main companies settled here are DSM and Sabic. The product chain petroleum to plastic features largely in the products of Sabic.

Tech-transfer and other supporting service/infrastructure

List of the existing regional incubators.

<i>Name of the Incubator</i>	<i>City</i>	<i>N° of companies hosted</i>	<i>Total m³</i>	<i>Available m³</i>
LIOF Bedrijven Centra	14 city's in Limburg	200	see below	see below
Biopartner Centre	Maastricht			
Euroregion Meuse-Rhine		30 technology centres,		

Development company LIOF (LIOF bedrijventrum BV) runs 14 business accommodation complexes "bedrijfsverzamelgebouwen". They accommodate 200 companies by means of 13.000 m² working accommodation en 23.600 m² office space.

One of them "Eurode" at Kerkrade is a cross border complex (with Germany) and a second; Technohouse at Heerlen is especially mentioned for its relation with Hogeschool Zuyd (High school).

Biopartner Centre at Maatricht is a life science incubater. It facilitates 20 companies.

List of the existing regional Business Innovation Centers (B.I.C.)

<i>BIC</i>	<i>City</i>	<i>N° of assisted-companies per year</i>	<i>N° of Tech-Transfer operated since start</i>
No existence	--	--	--

List of the existing international, national and regional Venture Capital funds operating in the Region.

<i>Name of the fund</i>	<i>Origin</i>	<i>Sponsor</i>	<i>Strategy</i>	<i>Other info</i>
DSM Venturing: - Life Science Food & Feed - Pharmaceuticals - High Performance Materials	DSM is active worldwide	1. Life Science Food & Feed 2. Life Science Pharmaceuticals 3. High Performance Materials	Participate as a value added partner Investment range: 250,000 euro to 5 million euro. Share target range: 5% to 20% share in companies DSM Venturing, invests in promising start-ups to gain access to new technologies and innovative products in DSM's strategic growth fields. Besides financial support, DSM Venturing facilitates admission to DSM's knowledge, resources and networks in order to contribute to the development of the start-up. DSM Venturing's portfolio further includes a number of venture funds. These funds provide broad access to deal flow and open windows to technical & commercial developments in relevant industries	80% invested directly in start-ups and 20% in funds.

- Ampersand & Ventures
- Burrill & Company
- LSP II
- Millennium Materials Technologies Funds
- NGEN

In addition to the DSM Venture Capital fund the following regional Venture Capital funds are at hand:

Agency	Specification	Industry & driving service providers	Life Science companies
PRE-START FINANCING			
Biomed Booster	Financial aid focusing on start ups mainly originating from knowledge institutions, combined with business development. Investment maximum is € 50.000,- per company / initiative.	-	+
START-FINANCING			
LIOF starters fund	Meant for start-ups in industry and driving service providers. Investment maximum is € 150.000	+	+
BioPartner start-up ventures	Meant for start-ups in Life Sciences focusing on biotechnology. Investment maximum is € 225.000,- per company. Co-financing for a similar amount by a private investor is a condition.	-	+
SBIC funding	Meant for true “technostart-ups”. Part of the “Technopartner policy” of the ministry of Economic Affairs. Main focus is on financing technostarters by private investors in collaboration with the ministry of Economic Affairs. Meant to bring together start-ups and mature companies (Investment range € 200.000 to € 500.000).	+	+
Informals organized by: EuBan	Meant for start-ups in industry and driving commercial service providers. Euban is an intermediary that brings together informals en starting enterprises in need of funding.	+	0
Informals (not organized)	Cannot be described in terms of industry focus and investment range. Depending on individual preference and capacity of the investor.	+	0
<u>MATURITY-RESTART-GROWTH</u>			
LIOF-participations	Meant for companies in industry and commercial service providers with a good track record and a good perspective. Maximum investment is € 4 mln per company for MBO/MBI, mergers, acquisitions, growth funding.	+	+
Venture Capital, in general	Meant for existing companies with a good track record. Investment-decisions are driven by return on investment. Exit by selling of companie or IPO. Investment from € 2-3 million.	+	+
Innovation loans	A revolving fund for loans in innovation meant for developing and marketing new products.	+	+
Informals	Cannot be described in terms of industry focus and investment range. Depending on individual preference and capacity of the investor. Probably not or in a small way represented in the capital-intensive Life-science sector.	+	0

Source: LIOF

Best practices

Name
DSM Research DSM Solutions 'Kenniswinkel'
Subjects involved
DSM Research & Solutions
Objective
The objective is (on a commercial base) to preserve en develop expertise en knowledge in the DSM organization. DSM Research acts like a Know-how broker. This is consideres as a powerful tool to support R&D activities, private investments in training and innovation
Rationale
For outside organizations, DSM Solutions serves as a window onto Research Campus Geleen, and for R&D units or companies on the Campus, provides a window onto the outside world. DSM Solutions is where DSM makes its know-how available to third parties. These may be small, medium or large companies, (government) organizations, etc. DSM offers a very broad range of expertise.
Implementation
DSM Solutions helps in: -Locate and buy in suitable chemical and technological expertise -Market your own chemical and technological expertise -Use TRIZpertise to identify and analyse problems -Innovation support
Updating
http://www.dsm.com/en_US/html/kenniswinkel/faq.htm

Name
Innovation point (Innoveerpunt)
Subjects involved
Kamer van Koophandel, Limburgse Werkgeversvereniging, MKB-Limburg, Industriebank LIOF, Provincie Limburg, Syntens. Innovation point is part of a total innovation program which is financed by Interreg, Provincie Limburg, Syntens and LIOF
Objective
Innovation point offers one entrance for all questions about innovation for the SME. They offer a free Innovation Quick Scan for SME's by the SIPS method (Systematic Innovation an Problem Solving). This is a public financing schemes deployed at Regional level by Regional and European agencies and other public institutions and is considered as powerful tools to support R&D activities, private investments in training and innovation.
Rationale
The Province of Limburg stimulates development of knowledge en innovations and has established an Innovation Program focused on the SME. Innovation Point is the one stop contactpoint for "SIP: Samenhangend Innovatie Programma" (coherence innovation program) which provides innovation subsidies.
Implementation
Innovation Program 2005-2007. Total public investments in Program is €5.750.000
Updating
www.innoveerpunt.nl

Name
Knowledge Voucher (Kennisvoucher) - http://www.liof.nl/page.php?id=4
Subjects involved
Kamer van Koophandel, Limburgse Werkgeversvereniging, MKB-Limburg, Industriebank LIOF, Provincie Limburg, Syntens. The Knowledge Voucher is part of a total innovation program which is financed by Interreg, Provincie Limburg, Syntens and LIOF
Objective
<p>The voucher is a financial instrument to promote the research/innovation of the SME in Limburg. There are 2 types of vouchers systems operation in Limburg: a Limburg voucher system and a national one (see below).</p> <p>There are two types of Limburg voucher systems: one which aims at cross border innovation; the other at bridging knowledge</p> <p>ad 1. By using the cross border innovation voucher, problems (research, production) of the SME can be solved by University/Research institutes. The voucher also stimulates cooperation across regional en national borders. This is a public financing schemes deployed at Regional level by Regional and European agencies and other public institutions and is considered as powerful tools to support R&D activities, private investments in training and innovation. These are financed by Intereg IIIA.</p> <p>ad 2. There are 100 “knowledge bridge vouchers” à €6.500 available for transferring knowledge to Limburgs SME's from institutes in Limburg and surrounding countries (eg. Nordrhein Westfalen). This is an initiative of Province of Limburg, Liof and Syntens.</p>
Rationale
The Limburg Province stimulates development of knowledge & innovations; has established an Innovation Program focused on SMEs
Implementation
Innovation Program 2005-2007 - total public investments in Program is €5.750.000
On national scale the voucher is copied by the Ministry (Economical affairs). Also the voucher is introduced in the Nordrhein Westphalia Region to improve cooperation between German companies en Dutch knowledge institutes.

Name
Triple-In Stimulating fund - http://www.liof.nl/page.php?id=4
Subjects onvolved
Industriebank LIOF, Provincie Limburg, Syntens. The Triple –In Stimulating fund is part of a total innovation prg which is financed by Interreg, Provincie Limburg, Syntens and LIOF
Objective
The Triple In Stimulating fund is a financial instrument to promote the research/innovation of the SME in Limburg. Triple In stands for; Innovation, Investment, Integration. The fund represents financial subsidies for consultancy, innovation projects and tenders. The fund is a public financing schemes deployed at Regional level by Regional and European agencies and other public institutions and is considered as powerful tools to support R&D activities, private investments in training and innovation.
Rationale
The Province of Limburg stimulates development of knowledge en innovations en has established an Innovation Program focused on the SME.
Implementation
Innovation Program 2005-2007. Total investment in program is €5.750.000

Annex IX Masowia (PL)

Science

Regional Universities offering courses in Chemistry.

Name of the Institute/ Department	City	Scientific area¹	Courses	Student s (n°)	Graduate s per year (n°)	ILO
Warsaw University	Warsaw	Chemistry	<input type="checkbox"/> Graduate <input type="checkbox"/> Undergraduate	641 -	80 -	No
Cardinal Stephen Wyszynski's University Faculty of Mathematics and Naturalistic Sciences	Warsaw	Chemistry	<input type="checkbox"/> Graduate <input type="checkbox"/> Undergraduate	120 180	80 30	No
The Faculty of Materials Science and Footwear Technology Department of Chemistry	Radom	Chemistry	<input type="checkbox"/> Graduate <input type="checkbox"/> Undergraduate	383 -	65 -	No
Warsaw University of Technology Faculty of Chemistry	Warsaw	Chemia	<input type="checkbox"/> Graduate <input type="checkbox"/> Undergraduate	695 -	100 -	No
Warsaw University of Technology Faculty of Process and Chemical Engineering	Warsaw	Chemical Engineering	<input type="checkbox"/> Graduate <input type="checkbox"/> Undergraduate	498 -	80 -	No
Warsaw University of Technology Faculty of Civil Engineering, Mechanics and Petrochemistry, Institute of Chemistry	Plock	Chemistry	<input type="checkbox"/> Graduate <input type="checkbox"/> Undergraduate	37 186	60 41	No

Regional R&D Public Centres and Private/Public Partnerships

Name of the Institute	City	Scientific area	Private partners	Students (n°)
Radioisotope Centre - Polatom	Otwock – Swierk	Medical & Nuclear Chemistry	-	-
Research and Development Centre of Refinery Industry	Plock	Chemical Engineering	-	-
Institute of Organization and Management in Industry	Warsaw	Chemical Engineering Chromatography	-	-
Industrial Chemistry Research Institute	Warsaw	Chemistry Chemical Engineering	-	-

List the Regional Scientific Parks

Name of the Park	City	Scientific area¹	Private/Public financiers
Plock Industry and Technology Park	Plock	Chemical Engineering	Plock City Hall PKN ORLEN
Science and Technology Park	Warsaw	-	Military Technical Academy

Industry

	No.	%
How many companies are active in the Region?	0.55 mln	
How many people work in these companies?	_____	
How many of them are graduates? ²⁷	_____	_____
How many of them are Chemistry graduates or qualified Chemists? ⁶	_____	_____
How many of the regional companies are SMEs? ⁶	_____	_____
<hr/>		
How many Chemical companies are active in the Region? ⁶	1 200	_____
How many people work in these companies? ⁶	80 000	_____
How many of them are graduates? ⁶	_____	_____
How many of them are chemistry graduates or qualified Chemists? ⁶	_____	_____
How many of the regional chemical companies are SMEs? ⁶	_____	_____

Indicate which of the following economic activities have a recognized important role over regional economy²⁸. If available, states related information (% relevance on overall local industry).

<input type="checkbox"/> detergents	11,5%
<input type="checkbox"/> pharmaceuticals (drugs)	7,0%
<input type="checkbox"/> plastics	68,5%
<input type="checkbox"/> petroleum	6,8%
<input type="checkbox"/> other chemical manufacturing	6,2%
<input type="checkbox"/> other chemical services ²⁹	_____

²⁷ If the information requested is not available in absolute terms, please state the actual percentage or an estimate over the sample as above referred in the question.

²⁸ If you don't have any information regarding local industrial districts or "specialization indexes" of local production, you could estimate the relative weight of each segment on the overall regional industry (measured as a contribution to total turnover) by comparing this variable with the weight of the same segment at national level (the weight should significantly exceed the resulting average national values).

²⁹ Transformation, engineering, etc.

Tech-transfer and other supporting services/infrastructure

List the existing regional Incubators.

<i>Name of the Incubator</i>	<i>City</i>	<i>Hosted comp.</i>	<i>Total m²</i>	<i>Available m²</i>
Business Incubator - Agency of Kutno Region Development	Kutno	5	1962,6	170,5
Business Incubator - Ostroleka Movement for Supporting Business Initiatives	Ostroleka	-	-	-
Incubator of Innovative Enterprises - Regional Centre of Technology Development	Plock	-	-	-
Business Incubator - Association "Radom Business Centre"	Radom	-	-	-
Centre of Initiative Development - Warsaw University of Technology	Warsaw	-	-	-
Incubator of Agriculture and Food Industry - Masovian Association for Business Development	Zabki, Warsaw	-	-	-

List the existing regional Business Innovation Centres (B.I.C.).

<i>BIC</i>	<i>City</i>	<i>Assisted-companies /year</i>	<i>Tech-Transfer operated since start</i>
Karol Marcinkowski's Business Foundation	Ciechanow	-	-
Centre for Business Initiative Support - Ostroleka Movement for Supporting Business Initiatives	Ostroleka	-	-
Centre for Supporting Business – "Free Enterprise" Association	Plock	-	-
Regional Centre of Co-operative Services - Foundation of Rural Co-operatives	Plock	-	-
Radom Business Centre - Association "Radom Business Centre"	Radom	-	-
Centre of Youth Enterprise - Stephen Bathory Foundation	Warsaw	-	-
Institute of Economical Studies - Association	Warsaw	-	-
Centre for Enterprise Support – "Cooperation-Science-Culture" Foundation	Warsaw	-	-

List the existing international, national and regional Venture Capital funds operating in the Region either for statute or as a matter of fact

Name of the VC fund	Origin (nation)	Average size of investment (000 €)	Fund raised (000 €)	Already invested (000 €)	N° of companies participated
3TS Venture Partners	-	4 000	66 000	2 200	1
Advent International	-	25 000	208 000	115 000	5
AIB WBK Fund Management	-	5 100	127 000	89 000	14
AIG Global Investment (CEE) Ltd.	-	25 000	460 000	23 000	-
ARGUS capital International Limited	-	12 500	143 000	42 000	5
Ballinger Capital	-	No Limit	187 000	172 000	7
Baring Corilius Private Equity	United Kingdom	8 500	86 000	25 000	2
BMP - Poland	-	2 500	20 000	5 000	2
CARESbac – Poland	-	200	26 000	14 000	12
Copernicus Capital Management	-	1 400	54 000	28 000	10
DBG Eastern Europe	-	7 500	113 000	22 000	2
Enterprise Investors	-	24 000	910 000	565 000	30
Innova Capital	-	5 000 - 15 000	250 000	130 000	15
Mezzanine management (Poland)	-	10 000	115 000	7 000	1
Pioneer Investment Poland European Convergence Partners	-	2 500 - 25 000	-	512 000	38
PKB Investment	-	1 560	23 400	23 400	10
Raiffeisen Private Equity Management	-	9 000	83 000	10 000	2
Renaissance Partners	-	1 100	50 000	25 000	9
Riverside Europe Partners	-	8 000	22 000	13 000	3
Trinity Management	-	10 000	58 000	100 000	14

Annex X North East of England (UK)

Science

List the Regional Universities offering courses in Chemistry.

Name of the Institute/ Department	City	Scientific area	Courses	Students (n°)	Graduates per year (n°)	Existence of a I.L.O.
University of Teesside	Middlesbrough	Chemistry	<input type="checkbox"/> Graduate <input type="checkbox"/> Undergraduate			<input type="checkbox"/> Yes <input type="checkbox"/> No
Durham University	Durham+ Stockton	Chemistry *	<input type="checkbox"/> Graduate <input type="checkbox"/> Undergraduate		30 95	<input type="checkbox"/> Yes <input type="checkbox"/> No
Newcastle University	Newcastle	Science	<input type="checkbox"/> Graduate <input type="checkbox"/> Undergraduate	250	70	<input type="checkbox"/> Yes <input type="checkbox"/> No
Sunderland University	Sunderland	Pharmacy, Chemistry and Biomedical Sciences	<input type="checkbox"/> Graduate <input type="checkbox"/> Undergraduate			<input type="checkbox"/> Yes <input type="checkbox"/> No
University of Northumberland	Newcastle	Applied Sciences	<input type="checkbox"/> Graduate <input type="checkbox"/> Undergraduate			<input type="checkbox"/> Yes <input type="checkbox"/> No

* Also offer courses in Bioscience

R&D Public and Private/Public Centres in the Region committed in Chemistry or Chemistry-related

* Name of the Institute	City	Scientific area	Private partners (if existing)	Students (n°)
Centre for Process Innovation	Middlesbrough	Process Industries	http://www.uk-cpi.com	
NaRec	Blyth	Centre for New & Renewable Energy	http://www.narec.co.uk/	
Cels	Newcastle	Centre for Life Sciences	http://www.celsatlife.com/	
Codeworks	Newcastle	Centre for Digital Technology & Digital Media	http://www.codeworks.net/content/80000/codeworks/home/home.asp	
Cenamaps		Centre for Nanotechnology, Micro & Photonic Systems	http://www.cenamaps.com/	

*These are the North East's Five Centres of Excellence

List the Regional Scientific Parks committed in Chemistry or related by technological proximity

Name of the Park	City	Scientific area¹	Private/Public financiers
Process Industries Centre for Manufacturing Excellence (PICME)	Middlesbrough	Chemicals & Plastics www.picme.org	Set up by UK Government Department of Trade & Industry to improve manufacturing & process efficiency
Sunderland Science Park	Sunderland	Ebusiness & biotechnology incubator units	Sunderland Council, North East BIC University of Sunderland
NetPark	Durham	Research Centre & hi-tech incubator units	Durham County Council Sedgefield Borough Council/ OneNorthEast/ University of Durham

Industry

	No.	%
1. How many companies are active in the Region? (VAT Registered companies active in region in 2003)	66,634	
2. How many people work in these companies?	>1 million	
3. How many of them are graduates?	Approx 16000___	
4. How many of them are Chemistry graduates or qualified Chemists? ⁶	___	___
5. How many of the regional companies are SMEs? ⁶	___	___
<hr/>		
6. How many Chemical companies are active in the Region? ⁶	_350_	___
7. How many people work in these companies indirect throughout the economy	35000 direct with a further 270,000	
8. How many of them are graduates? ⁶	___	___
9. How many of them are chemistry graduates or qualified Chemists? ⁶	___	___
10. How many of the regional chemical companies are SMEs? ⁶	_60%_	

Indicate the economic activities that have a recognized important role over regional economy. If available, states related information (% relevance on overall local industry).

<input type="checkbox"/> Manufacture of paints, varnishes & similar coatings	0.18
<input type="checkbox"/> Total electronics	_1.03_
<input type="checkbox"/> Manufacture of food & Beverages	_1.64_
<input type="checkbox"/> Manufacture of soap & detergents. Cleaning & polishing preparations, perfum	_ 0.11_
<input type="checkbox"/> Manufacture of pulp, paper & paper products	_ 0.44_
<input type="checkbox"/> Agricultural chemicals	_ 0.04_
<input type="checkbox"/> Manufacture of pharmaceuticals, medicinal chemicals etc	_ 0.32_
<input type="checkbox"/> Plastics and Rubber in Primary Forms	_0.15_
<input type="checkbox"/> Manufacture of refined petroleum products	_0.02_
<input type="checkbox"/> Other chemical manufacturing	_0.60_
<input type="checkbox"/> Other chemical services	_____

Tech-transfer and other supporting services/infrastructure

List the existing regional Incubators.

<i>Name of the Incubator</i>	<i>City</i>	<i>N° of companies hosted</i>	<i>Total m³</i>	<i>Available m³</i>
Pioneer Process Park †	Redcar			
International Centre for Life*	Newcastle			
Netpark	Durham			

† Designed to meet the needs of small and medium scale chemical manufacture and processing of fine and speciality chemical formulation. Offers full infrastructure connection to minimise construction and start up

* <http://www.life.org.uk/>

List the existing regional Business Innovation Centres (B.I.C.).

<i>BIC</i>	<i>City</i>	<i>N° of assisted-companies per year</i>	<i>N° of Tech-Transfer operated since start</i>
North East BIC	Sunderland		

List the existing international, national and regional Venture Capital funds operating in the Region either for statute or as a matter of fact

<i>Name of the VC fund</i>	<i>Origin (nation)</i>	<i>Sponsor</i>	<i>Strategy</i>	<i>Average size of investment (000 €)</i>	<i>Fund raised (000 €)</i>	<i>Already invested (000 €)</i>	<i>N° of companies participated</i>
Nstar	UK	NE RDA ERDF	* Innovation & Growth	90			
BIG	UK	Private	Growth	80	Not disclosed	Not disclosed	20+
Entrust	UK						
NEL/Insight capital	UK	DTI with private match	Growth and return	Two bands 150-800 800+	Not disclosed	New Not disclosed	

• * Strategy\Mission is to create a new climate for technology investment in the North East encouraging early stage venture finance and deal creation. It works to encourage an entrepreneurial culture and develop the networks and skill base through a range of deal generation activities. The aim is to ensure that funds are available to create new science and technology start-ups and spin-outs. It was created to manage two funds totally £60m, The Proof of Concept Fund and the Co-investment fund. The funds are designed to provide early stage finance of science and technology that will create new jobs and businesses.

BEST PRACTICES- Name

The Centre for Process Innovation

Wilton Centre / Wilton / Redcar - TS10 4RF <http://www.uk-cpi.com/main.asp?>

Subjects involved

The Centre for Process Innovation was set up by the Regional Development Agency One North East and is funded by them, with some additional European funded projects. It is a not for profit organisation, but is expected to become self-financing within 5 years.

Objective

CPI Objectives

- Define and target research opportunities in areas that match the future needs of Industry.
- Direct development programmes towards these opportunities creating partnerships between Industry and leading-edge universities.
- Work with the Industry Cluster to support the existing businesses to improve competitiveness, innovation and productivity

CPI Vision

Over the next 5 years, we will create CPI as the pre-eminent innovation resource and partner for the Process Industry in the UK

Rationale

The UK Chemicals sector is the country's largest manufacturing sector. As a result of the globalisation of the industry and restructuring over recent years the sector has become highly fragmented. Whilst many large international companies manufacture in the UK, many of them are subsidiary organisations.

To address the concerns of globalisation and its impact on competitiveness, Lord Sainsbury the Parliamentary Under-Secretary of State for Science formed the Chemicals Innovation and Growth Team (CIGT) in January 2002. The 1st report from this group recommended the formation of the Chemistry Leadership Council (CLC) who in turn established an Innovation Task Force (ITF)³⁰

Government Research was undertaken in 2002 by the Department of Trade and Industry (DTI) to identify "The Five Drivers of Productivity" (Productivity & Competitiveness Indicators)³¹. Innovation was identified as one of these Drivers. The others were Investment, Skills, Enterprise and Competition. Some of the comments made about Innovation are as follows:-

The UK has a long-standing strength in the generation of new ideas and its science base is among the most productive & highest quality in the world. However, it has not been effective in turning those ideas into products, services and processes that consumers want to buy.

The chemical and process industry is the highest investor in R&D in UK and extensive work has been undertaken, Nationally and at a Regional level, to determine its strengths and priorities.

The Regional Strategy wants to gain particular competitive advantage through innovation, design and functionality and identified three potentially high performance sectors in the NE.

- Energy and the Environment
- Healthcare and Health Sciences
- Processing Technologies

These three sectors are now referred to as the "Three Pillars" (see Annex 2) and provide three ingredients - Leadership - innovation and business opportunity.

Given the importance of the industry to the North East of England, a regional North East Chemistry Leadership Council was formed. The North East Chemistry Leadership Council's strategy for the chemical sector was prepared for the region by consultants Arthur D. Little in 2003. The report followed on from a previous report by Arthur D. Little, commissioned by the Regional Development Agency, One North East – "Realising the Potential of the North East's Research Base". Part of these reports

³⁰ <http://www.dti.gov.uk/cigt/competitiveness.htm>

³¹ <http://www.dtistats.net/competitiveness5old/Pch4/index.htm>

highlighted features of industry in North East that it recommended should be used as a guide to new intervention. Below find some of these features:

- Although the industry as a whole has formidable R&D strengths, there are divides between the pharmaceutical and bioscience sector, where performance is exceptional, and the remainder of the sector that is lagging behind due to a combination of restructuring, mergers and acquisitions.
- The UK industry needs to have access to research and technology developments from other countries. It is important that foreign owned companies should be fully engaged in support for UK chemical science and collaboration with UK universities, suppliers and other organisations. There is concern that whilst UK Universities excel in research performance they are less strong in knowledge transfer.
- Further intervention should aim to join-up some of the many organisations and schemes working to improve technology and innovation.
- The issue of innovation is inseparable from that of skills.

These reports led directly to the formation of the Centre for Process Innovation³² that was established to stimulate and drive innovation within the process industry. It subsumed the activities of its predecessor the European Process Industries Competitiveness Centre (EPICC). It was one of five centres of excellence established in 2004. Other Centres of Excellence are:-

- Nanotechnology, Photonics and Microsystems (CENAMPS) - <http://www.cenamaps.com/>
- Life Sciences (CELS) - <http://www.celsatlife.com/>
- New and Renewable Energy (NaREC) - <http://www.narec.co.uk/>
- Digital Technology & Media (Codeworks) - <http://www.codeworks.net/content/80000/codeworks/home/home.asp>

Implementation

The Centre for Process Innovation (CPI) was established by One North East, as a UK wide resource, to stimulate and drive innovation within the Process Industry. Its predecessor, The European Process Industries Competitiveness Centre (EPICC), was established by the University of Teesside in 1995 and was funded through ERDF and the UK's Single Regeneration Budget. It was an industry led organisation set up to improve manufacturing performance through the successful exploitation of knowledge and expertise within industry and academe. Core staff were originally seconded from large chemical companies in the North East and were often personnel nearing retirement age, with many years experience. Restructuring of the large companies that formally supplied staff reduced the availability of experienced personnel that could be seconded to EPICC.

Since its establishment in 2004, the CPI has established three core technology development platforms that are based on its links with Universities and industry. These are, Advanced Process & Manufacturing; Functional Materials, and Fuel Cell Applications.

Advanced Processing & Manufacturing

This involves the development of demonstration units to pilot feasibility of advanced processing and manufacturing systems, prior to development of full-scale plant. Included in this is the application of supercritical fluids, batch to continuous processing and bio-processing.

A local company has significant expertise in noble metals and membrane technology.

Functional Materials

These are high performance films, fibres or honeycomb type solids that have an in-built chemistry that improves the performance possible from existing materials. Working with DuPont Tujin Films, CPI's first objective is to develop very fine coatings onto plastic substrates that will have the consistency of performance for application in the display and electronics sectors.

Fuel Cell Applications Facility

A facility to develop fuel-cell capability in the Tees Valley. A number of hydrogen and fuel-cell demonstrator units are operational. These include a hydrogen-powered lighthouse and a traffic information sign. CPI are working with Renew Tees Valley and Fuel Cells UK and a set of local companies on a Hydrogen Fuels Cells based economy. In addition to these Platforms, CPI provides

³² <http://www.uk-cpi.com/main.asp?>

Business Support to SMEs through best practice consultancy, training and advice. A contract has been awarded to CPI for them to work with the University of Teesside's Clean Environmental Management Centre (CLEMANCE) to deliver a National Industrial Symbiosis Programme. The aim of the project is to facilitate links between industries from different sectors to create sustainable development. It involves creating linkages between companies to find uses for current waste products as raw materials in different processes.

Updating

New Products & Processes

CPI is in the process of creating a nano-manufacturing centre that will bring together the UK's advanced materials companies in a non-competitive collaborative environment. An open access facility is also being developed to assist in accelerating the development of a polymer electronics supply chain. They're working collaboratively to improve the competitive position already established in the area by Durham University and companies such as DuPonts Teijin films.

Technological solutions are also being developed to assist in the development of products and processes using new media such as supercritical water.

As part of the UK Centres of Excellence in bio-transformation, catalysis and manufacture, CPI is in the process of establishing an industrial bio-processing facility. It has important links with the Universities of Manchester and York.

The Northern Regions Strategy

The Northern Areas of Britain are collaborating to reduce the GDP gap between the Northern and Southern areas of the United Kingdom in a project called The Northern Way. The project will assist development of the manufacture of new and existing products by new and improved processes. As part of this work the North East's Regional Development Agency, One North East, is leading the development of a Northern Regions Chemicals Strategy, working with North West Chemicals and Yorkshire Forward.

Northern centre of excellence link project

This is a major new initiative to support the Northern Process Industries by linking research facilities in Manchester, York and elsewhere to the Centre for Process Innovation to develop new routes to commercialisation. It is supported by the DTI's Chemistry Leadership Council. The Growth Fund investment is aimed at, in the longer term, enhancing the productivity of Northern companies and in the short term (> 2 years) exposing over 100 companies to the potential of the technology through a pilot plant facility in a centre of excellence available for business use.

A new research facility to be based at Manchester University, with satellite laboratories in York and Scotland, will develop technology based in emerging biosciences for the use of biological molecules or processes to manufacture chemicals. CPI will contribute pilot scale facilities so laboratory work can be demonstrated at industrially relevant scales. The Centre's team will comprise over one hundred scientists working at a key interface of chemistry and biology. This is a unique organisation with world-class capability and supported by a consortium of 24 companies from the UK and overseas. It is quite distinct from the Bio-manufacturing Centre at Speke, which focuses on biomedical activity.

Chemical Innovation Network

This is a project that has been developed by industry. The Network aims to support, Responsive Manufacturing and Sustainable Technologies. This will include development of a Productivity Improvement Toolbox. It is to be delivered by four not-for-profit organisations, CPI, PICME, Crystal Faraday and Britest. They will use their combined expertise to develop techniques to develop a Toolbox that will assist companies to maximise productivity. Technologies will be developed for short, medium and long term in sustainable technological improvements.

Comments

The following Annex 1 provides details of the Strengths of Applied Science in the North of England taken from recent research.

ANNEX 1

FOCUS ON GROWTH OPPORTUNITIES			
Imaging and Displays	Synthesise and formulate high purity organic and inorganic materials	Strong	Many colour / fine chemicals suppliers, but innovative potential may be limited by small size
	Design, characterise and test materials	Strong	E.g. CPI and partner companies
	Conduct patterning and microfabrication on thin films	Favourable	Strengths in inkjet materials. Continued drive to smaller scales requires materials expertise in which the North is strong
	Apply emerging nanotechnologies to displays	Tenable	Potential rather than proven capability.
Micropatterning	Synthesise and characterise materials to deliver novel functionality	Strong	Closely linked to imaging and displays. Good materials capability remains e.g. in speciality chemicals firms,
	Design microscale devices and products	Tenable	Mixed capability. Some strong materials and substrate capability, but lack of major electronics players
	Develop processes to render designs into a manufacturing environment	Favourable	Lack of major electronics firms
Fuel Cells	Design and build fuel cell components	Favourable	Systems assembly capability (CPI), but not basic component manufacture. CPI an orchestrator of capability.
Materials Chemistry	Tailor the micro structure, porosity and functionality of materials	Strong	Various speciality chemical / materials companies
	Conduct high throughput materials synthesis, characterisation and testing	Tenable	Synthesis and characterisation strengths but limited high throughput capability.

	Use renewable/sustainable raw materials	Tenable	Little distinctive capability
	Design new processes (inc. continuous polymerisation & intensification)	Strong	Formerly a lead position, but some loss of capability through industry restructuring
	Assemble multicomponent products	Strong	Consumer and formulated product companies
	Control adsorption and separation	Strong	Draws on engineering process technology skills. Vital in catalysis, environmental cleanup
	Model materials properties and performance	Tenable	Strong capability on Teesside, etc. Industry capability probably lags academia
	Use biocatalysis	Strong	Speciality / pharma companies
	Control particle size and shape	Strong	Catalysis, speciality, personal care companies, small powder processors. Probably leadership in some niches
	Use supercritical fluids and ionic liquids for processing	Favourable	Some capability (speciality firms, CPI)
Surface Coatings	Develop and manufacture 'smart coatings'	Tenable	Some expertise but not many firms
	Design coatings for recyclability	Tenable	Need for 'switchable' coatings
	Control the properties of colloids and particles	Strong	Catalysis, personal care companies, small powder processors.
	Apply nanoparticle technologies to coatings	Favourable	
	Develop solvent free UV, IR and electron beam curable coatings	Favourable	Catalysts to deliver curing effects are a specific strength

Novel Surface Effects	Control adsorption, adhesion, wettability and targeted deposition	Strong	Wide strengths including speciality suppliers and consumer products firms; leadership in some areas Speciality firms, consumer products companies Consumer goods companies and speciality firms well placed Specific strengths e.g. biodegradable esters Some SME interest; specific strengths at e.g. medical technology / device firms Essential for consumer products. Clear leadership in some segments
	Develop and apply surfactants; develop dispersants for manufacture and stabilisation of small particles.	Strong	
	Design self assembling colloidal particles to give surface or bulk effects.	Strong	
	Apply nanoparticles to achieve novel / intense surface effects	Favourable	
	Develop more “eco friendly chemistry” for fuels and oil lubrication	Favourable	
	Use biosynthesis and bio-materials to manipulate surfaces for medical / healthcare use	Favourable	
	Utilise biological processes at surfaces to achieve commercially valuable effects on substrates	Strong	
Adhesives and Sealants	Control adhesion e.g. through surface design and polymer design	Favourable	Various speciality chemical and consumer products firms Polymer synthesis capabilities good, but limited R&D investment is a problem Strong synthetic capabilities should be a sound foundation provided smaller firms invest in necessary R&D Leading edge firms in Humber area and NE. Clear leadership in some segments e.g. synthesis gas catalysis, possibly hydrogenation.
	Develop recyclable or biodegradable polymers	Tenable	
	Emulate the chemistry employed in nature	Tenable	
	Design, manufacture and application of catalysis	Strong	
	Apply nanomaterials technologies to catalysis	Favourable	
Catalysts			
Creative Synthesis	Exploit mixing characteristics & reaction kinetics in heterogeneous systems	Strong	Creative synthesis strong in NW. Speciality, pharma companies, catalyst firms (leader in some niches)

	Develop novel reactor technologies, solvent and separation methods	Strong	Catalysis and process development firms
	Apply microfluidics and nanodevices to synthesis	Tenable	
	Develop and apply highly selective catalysts,	Strong	Leadership in some areas – see under Catalysts
	Develop novel processing technologies.	Favourable	
Sustainable Technologies	Apply novel reaction chemistries and solvents	Strong	Large players and many smaller firms
	Intensify chemical processes	Tenable	Some capability but little evidence of uptake although long discussed
	Develop benign, energy efficient lubricants and fuel additives.	Tenable	Some specific strengths but weaker than e.g. BP Castrol in SE
	Apply novel catalysis	Strong	
	Modelling product life cycles and to macro (e.g. atmospheric) processes	Favourable	
	Develop efficient reaction devices and manufacturing systems engineering	Strong	Process technology strengths remain e.g, in Teesside, Humberside, NW
	Substitute materials and components with alternatives of lower impact, including substitution of less oil-based actives	Favourable	Materials strengths remain, but limited R&D investment will reduce potential gains
	Develop 'greener' methods for producing chemicals and energy sources	Strong	Novel chemistry expertise - but limited R&D investment will reduce potential gains
Microfluids		Strong	Process understanding remains strong

	Apply process Intensification technologies, systems and methodologies	Favourable	Once process intensification is proven, process technology expertise should enable scale-up. Will be important to pharma manufacturers
Bioprocessing	Characterise complex biological molecules	Strong	Pharma companies
	Separate and purify large biological molecules	Strong	Pharma companies, speciality chemical companies
	Control chemical modification and assembly of biologicals	Strong	Pharma companies
	Scale up bioprocessing, improve separation and enhance yields	Strong	Speciality chemical and pharma companies
	Apply biological methods to synthesis of organics	Favourable	Could be a disruptive set of technologies for smaller fine/speciality chemical firms?
Device enabled chemistry	Design and develop low cost devices to facilitate and control chemical delivery / activity	Strong	Device design and development to control chemical delivery and optimise effect
	Apply electronics and novel power sources to sustain chemical delivery over time or apply in 'bursts' as required	Tenable	Lack of major electronics players is a handicap
Responsive Manufacturing	Develop and implement novel process technologies	Strong	Leadership in some areas. Process expertise e.g. Teesside, Humberside, Merseyside.
	Increase manufacturing velocity and material efficiency & reduce inventory	Strong	Process expertise e.g. Teesside, Humberside, Merseyside. Industry organisations - PICME, BRITEST, CPI - and others should make valuable contributions
Product design and formulation	Translate customer preferences / requirements into scientifically addressable questions	Strong	Leadership in some areas. Consumer goods companies and suppliers represent real excellence in interpreting consumer preferences into scientifically addressable questions and developing technological solutions
	Develop technology solutions to meet customer preferences	Strong	As above
	Design and control the structure and properties of multiphase fluids and solids (e.g. polymer mixes, gels, soft solids)	Strong	Fundamental to many consumer products
	Combine chemical and biological / enzyme technology to create commercially valuable effects	Strong	Fundamental to many consumer products
Analytical Science	Develop and apply leading edge analytical methods	Favourable	Outsourced routine analysis well established; larger firms have leading edge expertise in more novel or challenging analysis, but some concerns exist about sustainability of this position

ANNEX 2

Notes on The Three Pillars

The opportunities for the region to gain particular competitive advantage through innovation, design and functionality, by applying scientific and technological research outcomes has revealed three potentially high performance sectors in the NE.

- Energy and the Environment
- Healthcare and Health Sciences
- Processing Technologies

These are now referred to as the Three Pillars – see below

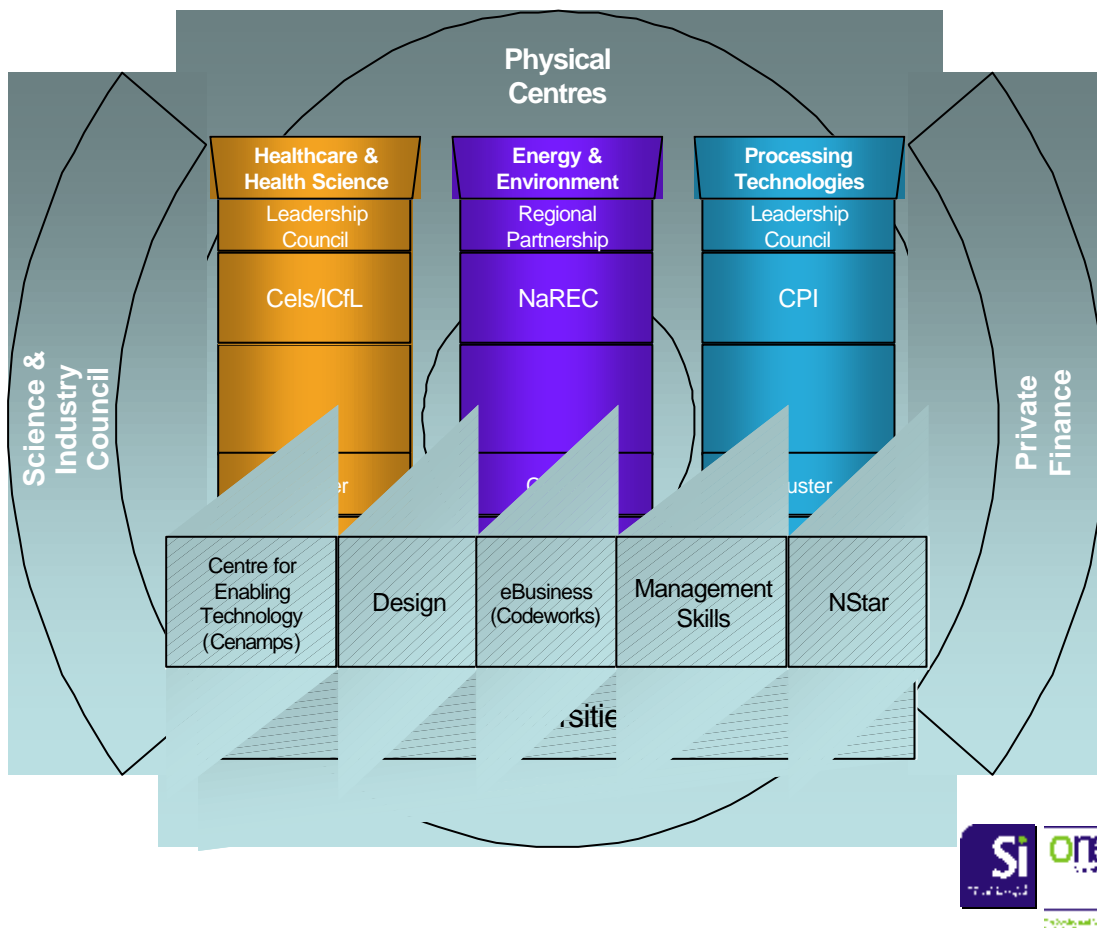


Fig. 1 The Three Pillars

These sectors provide particular opportunities for CPI, NAREC and CELS to facilitate the application of technologies to meet immediate and short-term needs and opportunities in specific businesses and markets, and the availability of these opportunities is apparent in the projects which are being developed, or could be developed, by these Centres.

The process pillar is the first established and already has economic influence in the region and beyond. CPI is seen nationally as an example of best practice and the NE is the first region to establish a comprehensive Science and Industry Council supported by the first national leadership council.

While it is proposed that the three pillars will be the primary focus for activities relating to the application of technology to specific opportunities and needs, it is clear that activities are also required to ensure that research is pulled through from the Universities to meet the needs of future applications, which may be out with the three pillars identified above.

Key to the achievement of regional economic development goals is the development of capacity to enable the activities to be undertaken by regional organisations to be developed for a wider economic purpose by commercialisation and utilisation. Such activities are likely to include the operation of translational research facilities. Primary role includes facilitate commercialisation by others e.g. relevant owners of IP, businesses and investors, and not necessarily to undertake commercialisation directly.

A further area of specific activity will be in respect of the development of new management skills and competences in respect of technology and innovation management, including business leadership. We propose to examine novel ways whereby we can establish capacity to develop these skills, potentially through the proposed Enterprise and Innovation Academy

Clearly, cluster related activity is of key importance in enabling the development and growth of those activities being enabled by application of these technologies, be they in new and existing businesses or other domains. In this context, focussed activity relating to investment, enterprise, skills and business support measures will need to be examined.

Key elements of the delivery phase of the strategy will be the physical and spatial dimensions. These will encompass the development of specialist facilities for undertaking research and technology transfer, including public engagement and incubation.

Annex XI Humberside (UK)

Science

Considering the Chemistry-related scientific areas of interest, list the:
Regional Universities offering courses in Chemistry.

<i>Name of the Institute/ Department</i>	<i>City</i>	<i>Scientific area</i>	<i>Courses</i>	<i>Students (n°)</i>	<i>Graduates per year (n°)</i>	<i>I.L.O.</i>
Hull University	Hull	All Chemistry	<input type="checkbox"/> Graduate & Undergraduate	390	85	<input type="checkbox"/> Yes
Hull University	Hull	All biosciences	<input type="checkbox"/> Graduate & Undergraduate	1365	315	<input type="checkbox"/> Yes <input type="checkbox"/> No
Hull University	Hull	All science, technology and engineering	<input type="checkbox"/> Graduate and Undergraduate	3480	1050	<input type="checkbox"/> Yes

R&D Public Centres and Private/Public Partnerships in the Region committed in Chemistry or Chemistry-related innovation activities.

<i>Name of the Institute</i>	<i>City</i>	<i>Scientific area</i>	<i>Private partners (if existing)</i>	<i>Students (n°)</i>
Environmental Technologies Centre for Industrial Collaboration	Hull	Computational, analytical and environmental chemistry	Various	N/a
Humber Chemical Focus	Grimsby	Chemical industry liaison and sharing of best practice	30+ member companies	N/a

Industry

No.	%
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12. How many companies are active in the Region? 1600 Chamber of Commerce best estimate	
13. How many people work in these companies? 180,000	
14. How many of them are graduates? ³³ estimate	15 %
15. How many of them are Chemistry graduates or qualified Chemists? ⁶	
16. How many of the regional companies are SMEs? ⁶	90%
<hr/>	
17. How many Chemical companies are active in the Region? ⁶	100+
18. How many people work in these companies? ⁶	10,000
19. How many of them are graduates? ⁶ estimate	20-25%
20. How many of them are chemistry graduates or qualified Chemists? ⁶ 5% estimate	
21. How many of the regional chemical companies are SMEs? ⁶	80%
<hr/>	
22. Indicate which of the following economic activities have a recognized important role over regional economy ³⁴ . If available, states related information (% relevance on overall local industry).	
<input type="checkbox"/> food	30%
<input type="checkbox"/> ALL chemical & petroleum manufacturing	20%
<input type="checkbox"/> other chemical services (transformation, engineering)	10%

³³ If the information requested is not available in absolute terms, please state the actual percentage or an estimate over the sample as above referred in the question.

³⁴ If you don't have any information regarding local industrial districts or "specialization indexes" of local production, you could estimate the relative weight of each segment on the overall regional industry (measured as a contribution to total turnover) by comparing this variable with the weight of the same segment at national level (the weight should significantly exceed the resulting average national values).

Tech-transfer and other supporting services/infrastructure

23. List the existing regional Incubators.

<i>Name of the Incubator</i>	<i>City</i>	<i>N° of companies hosted</i>	<i>Total m³</i>	<i>Available m³</i>
Europarc Innovation centre	Grimsby	60+	3500m ²	Less than 5%

24. List the existing regional Business Innovation Centres (B.I.C.).

<i>BIC</i>	<i>City</i>	<i>N° of assisted-companies per year</i>	<i>N° of Tech-Transfer operated since start</i>
Europarc Innovation Centre	Grimsby	60+	20+ estimate

BEST PRACTICE - Name

Environmental Technologies Centre for Industrial Collaboration (based at Hull University) ETCIC

Subjects involved

Environmental sciences, chemistry and analytical chemistry.

Objective

1 Commercialise to industry partners leading edge research products and services,
2 Build a regional competency in sciences to support the emerging environmental technologies cluster.

Rationale

Recognition of emerging size and scale of the environmental technology industry which is growing to meet the needs of industry and new regulatory and sustainability demands.

Implementation

ETCIC established in 2004 with initial public funding support for first 3 years.

Comments

This is a new and innovative approach to develop a university – industry partnership to exploit intellectual property created by the region's leading university.