

SWOT Analysis and Benchmarking Study

Saxony-Anhalt

Part II

The development of the Chemical Industry in Saxony-Anhalt

Author: isw Gesellschaft für wissenschaftliche Beratung und Dienstleistung mbH

isw Gesellschaft für wissenschaftliche
Beratung und Dienstleistung mbH

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Structure

II. The development of the Chemical Industry in Saxony-Anhalt.....	3
II. 1 Employment.....	3
II. 2 Turnover	4
II. 3 Destination of chemical exports by region	5
II. 4 Number of Enterprises in size category	5
II. 5 Number of Employees in size category	7
II. 6 Distribution of Enterprises and Employees by sector of activity.....	8
II. 7 Development of Turnover related to the size of enterprises	9
II. 8 Energy Consumption and Energy Efficiency.....	10
II. 9 Core indicators for the Chemical industry	11
II. 10 Research and Development turnover and employment.....	11
II. 11 Overview of biggest chemical enterprises in Saxony-Anhalt	13
II. 12 Conclusions	14

II. The development of the Chemical Industry in Saxony-Anhalt

II. 1 Employment

In contrast to the general negative development of employment in Saxony-Anhalt which has been described in the first chapter, the chemical industry¹ could see a very positive development. The employment in the chemical industry in Saxony-Anhalt is also growing against the overall German trend, where the number of employees has declined by 4,7% in the past five years.

Especially the number of employees in the enterprises of the plastic and rubber industry (DH25) in Saxony-Anhalt have increased by 1818 or by more than 33% from 1998 to 2002 (enterprises of the chemical industry (DG24) +469, +3,6%). This means that the 2287 additional employees in the chemical/plastic industry are responsible for 42% of the employment growth in the whole processing industry in Saxony-Anhalt. This shows the growing importance of the chemical sector for the regional economy and employment. 17,7% of the employees in the processing industry work in the chemical industry.

Development of number of Employees in the Chemical Industry and the Processing Industry							
<i>Saxony-Anhalt</i>	1998	1999	2000	2001	2002	98-02	in %
1. Chemical Industry	12.858	12.359	12.265	12.623	13.327	469	3,6%
2. Plastic and Rubber	5.449	5.871	6.245	7.149	7.267	1.818	33,4%
1. + 2.	18.307	18.230	18.510	19.772	20.594	2.287	12,5%
Processing Industry	111.192	109.879	110.447	-	116.605	5.413	4,9%
<i>Germany</i>							
Chemical Industry	484.639	477.613	470.308	467.029	461.713	22.926	-4,7%

(Source: Statistisches Landesamt Sachsen-Anhalt, Statistisches Bundesamt, own calculations)

¹ The statistical data about the chemical industry follow the German categories of the WZ 1993 and WZ 2003 for the DG24 "Manufacture of chemicals, chemical products and man-made fibres" and DH25 "Manufacturing of Rubber and Plastic Products". These categories are now implemented into the European Regulation NACE Review 1.1 (Statistical Classification of Economic Activities in the European Community, Rev. 1.1) - <http://europa.eu.int/comm/eurostat/>

II. 2 Turnover

The development of the turnover is also above the average. The growth rates between 1998 and 2002 of 75,4% for the plastic/rubber enterprises (DH25) and of 51,4% for the chemical enterprises (DG24) are above the growth rate of 40,5% of the processing industry in Saxony-Anhalt and 13,4% of the German chemical industry. Therefore the chemical/plastic industry is responsible for 23,4% of the turnover of the processing industry, which shows the high productivity and added value of the chemical sector analogues to the situation of the employment. Furthermore, 43,2 % of the exports of the industry in Saxony-Anhalt are generated in the chemical industry. This shows the importance for the international competitiveness of the region.

In 2002 39,8% of the turnover in the chemical industry is generated in foreign countries (1998 24,5%). For the plastic and rubber enterprises this share is a bit lower (26,6% in 2002) but the amount of the foreign turnover has almost tripled in the past 5 years. These statistics show that the chemical enterprises in Saxony-Anhalt have improved substantially their international competitiveness. The overall German average of 51,5% for the foreign turnover generated by the chemical industry, shows that there is still room for improvement. The good location to the new Member States in Eastern Europe will intensify the competitive pressures, which will be a challenge to use this proximity for further expansion and growth.

Turnover of the Chemical industry (DG24 and DH25) and the processing industry (in Mio €)						
<i>Saxony-Anhalt</i>	1998	1999	2000	2001	2002	98-02
1. Chemical Industry	2.576	2.764	3.634	3.678	3.901	51,4%
Foreign turnover	632	714	1.177	1.426	1.552	145,6%
in %	24,5%	25,8%	32,4%	38,8%	39,8%	
2. Plastic and Rubber	614	713	879	1.047	1.077	75,4%
Foreign turnover	72	106	201	269	287	298,6%
in %	11,7%	14,9%	22,9%	25,7%	26,6%	
1. + 2.	3.190	3.477	4.513	4.725	4.978	56,1%
Foreign turnover	704	820	1.378	1.695	1.839	161,2%
in %	22,1%	23,6%	30,5%	35,9%	36,9%	
Processing Industry	15.165	16.306	19.552	20.583	21.301	40,5%
Foreign turnover	2.050	2.139	3.076	3.793	4.258	107,7%
in %	13,5%	13,1%	15,7%	18,4%	20,0%	
Germany						
Chemical Industry (bn €)	116,8	121,4	135,0	133,9	132,5	13,4%
Foreign turnover	54,0	57,2	67,7	68,4	68,3	26,5%
In %	46,2%	47,2%	50,2%	51,1%	51,5%	

(Source: Statistisches Landesamt Sachsen-Anhalt, Statistisches Bundesamt, own calculations)

II. 3 Destination of chemical exports by region

The destinations of the chemical exports show a clear preference to the states in the European Union with a share of 45,1%. In comparison to the overall German trend, the East German exports have grown faster and especially the exports to the growth markets in Central and Eastern Europe (+12,3%) but also China (+34,7) are above the average. The proximity to the new Member States of the European Union is a big advantage here and the trade relations will further develop in the near future.

		Export of chemical products					
2003 Jan. to June		Germany			Six Eastern German Länder		
Region	Export in Mio. EUR	Changes in relation to previous period	Share total chemical exports	Export in Mio. EUR	Changes in relation to previous period	Share total chemical exports	
EU15	21.452	+3,8%	53,2%	1.510	+9,8%	45,1%	
CEEC	4.182	+7,3%	10,4%	592	+12,3%	17,7%	
USA/Canada	4.553	+3,0%	11,3%	390	+40,4%	11,6%	
China	619	+20,4%	1,5%	29	+34,7%	0,9%	
Japan	1.201	+7,5%	3,0%	129	-26,0%	3,9%	
World	40.312	+4,1%		3.349	+10,0%		

(Source: VCI Nordost)

II. 4 Number of Enterprises in size category

The following tables show the structure of the chemical enterprises regarding their size. It is very clear that the chemical sector is dominated by SMEs. 88% of the enterprises in the chemical industry have less than 200 employees (96% of the plastic/rubber enterprises). In the chemical industry there are only 2 enterprises above 1000 employees and 3 between 500 and 999.

In the plastic and rubber sector there is only 1 enterprise with more than 500 employees. If we look at the total number of enterprises, we can see the positive development between 1998 and 2002 of additional 66 enterprises in the whole chemical sector, which is a growth of 28%.

The tables also show the successful formation of new enterprises. There are 15 additional enterprises with less than 20 employees and 14 new enterprises between 20 and 49 employees in the chemical industry and additional 23 enterprises with less than 20 employees in the plastic and rubber sector. This is mainly caused by the policy of outsourcing of the big enterprises. As consequence the cooperation between SMEs and big multinationals is becoming more and more important.

Chemical Industry DG/24							
Saxony-Anhalt		1998	1999	2000	2001	2002	98-02
		<i>no.</i>					
Enterprises		105	110	118	130	140	35
Enterprises in Employment Categories	< 20	42	45	48	53	57	15
	20...49	25	25	28	31	39	14
	50...99	16	17	16	23	22	6
	100...199	6	8	11	8	6	0
	200...499	11	10	10	10	11	0
	500...999	3	3	3	3	3	0
	> 1000	2	2	2	2	2	0
Plastic and Rubber DH25							
Saxony-Anhalt		1998	1999	2000	2001	2002	98-02
		<i>no.</i>					
Enterprises		132	133	133	148	163	31
Enterprises in Employment Categories	< 20	54	53	52	65	77	23
	20...49	51	48	48	42	47	-4
	50...99	18	21	22	27	25	7
	100...199	5	7	7	8	8	3
	200...499	3	3	3	5	5	2
	500...999	1	1	1	1	1	0
	> 1000	-	-	-	-	-	-

Chemical Industry and Plastic and Rubber							
Saxony-Anhalt		1998	1999	2000	2001	2002	98-02
		<i>Number</i>					
Enterprises		237	243	251	278	303	66
Processing Industry		1.865	1.901	1.948	-	2.336	471
Enterprises in Employment Categories	< 20	96	98	100	118	134	38
	20...49	76	73	76	73	86	10
	50...99	34	38	38	50	47	13
	100...199	11	15	18	16	14	3
	200...499	14	13	13	15	16	2
	500...999	4	4	4	4	4	0
	> 1000	2	2	2	2	2	0

(Source: Statistisches Landesamt Sachsen-Anhalt, own calculations)

II. 5 Number of Employees in size category

A detailed view to the development of employment shows that especially the SMEs are the creators of new jobs. In the enterprises of the chemical industry (DG24) especially the companies with less than 100 employees have hired new staff (From 1998 to 2002: <20: +111, 25,9%; 20-49: +456, +51%; 50-99: +470, +39,5%). In the contrary the big enterprises above 500 employees have lost a part of their working force (-500, -8,2%) This development represents the changing strategies to outsource activities and to concentrate on core competencies. The enterprises in the plastic and rubber sector (DH25) have seen a growth in employment in all size categories, with the exceptions of 20-49 -38. Also here the importance of the SME enterprises is growing with a focus on the medium size companies (<20 +200 +38,8%; 50-99: +588, +47,8%; 100-199: +433; +66,1%; >200 +625, +42,7%) The general positive development clearly states the lively growth of the chemical cluster and the employment opportunities for the future.

Chemical Industry							
Saxony-Anhalt		1998	1999	2000	2001	2002	98-02
		<i>Number</i>					
Employees		12.858	12.359	12.265	12.623	13.327	3,6%
Employees Employment Categories	< 20	429	457	434	490	540	25,9%
	20...49	885	806	890	976	1.341	51,5%
	50...99	1.189	1.325	1.181	1.663	1.659	39,5%
	100...199	786	1.086	1.310	1.035	794	1,0%
	200...499	3.379	3.153	3.123	3.019	3.313	-2,0%
	500...999	.	.	.	.	.
	> 1000	.	.	.	.	.
	> 500*	6.190	5.532	5.327	5.440	5.680	-8,2%

Plastic and Rubber							
Saxony-Anhalt		1998	1999	2000	2001	2002	98-02
		<i>Number</i>					
Employees		5.449	5.871	6.245	7.149	7.267	33,4%
Employees Employment Categories	< 20	516	508	509	602	716	38,8%
	20...49	1.585	1.445	1.513	1.374	1.547	-2,4%
	50...99	1.230	1.403	1.521	1.935	1.818	47,8%
	100...199	655	930	1.044	1.126	1.098	67,6%
	200...499	.	.	.	.	.
	500...999	.	.	.	.	.
	> 1000	-	-	-	-	.	
	>200*	1.463	1.585	1.658	2.112	2.088	42,7%

Chemical Industry and Plastic and Rubber							
Saxony-Anhalt		1998	1999	2000	2001	2002	98-02
		<i>Number</i>					
Employees		18.307	18.230	18.510	19.772	20.594	12,5%
Employees Employment Categories	< 20	945	965	943	1.092	1.256	32,9%
	20...49	2.470	2.251	2.403	2.350	2.888	16,9%
	50...99	2.419	2.728	2.702	3.598	3.477	43,7%
	100...199	1.441	2.016	2.354	2.161	1.892	31,3%
	200...499	.	.	.	.	.
	500...999	.	.	.	.	.
	> 1000	.	.	.	.	.
	> 200*	11.032	10.270	10.108	10.571	11.081	0,4%

(Source, Statistisches Landesamt Sachsen-Anhalt, own calculations)

II. 6 Distribution of Enterprises and Employees by sector of activity

The biggest part of the chemical enterprises in Saxony-Anhalt are working in the area of the basic chemicals with 66,5% of the chemical employment. Compared to the European average the basic chemicals are over represented (more than the double amount of employment). The second most important area is the production of pharmaceuticals with 15,3% of the employment. In the plastic and rubber sector the production of plastic is dominating the industry with 84% of the enterprises.

DG	Sector category	Enterprises		Employees		%	Europe %
		1998	2003	1998	2003	2003	
24	Chemical Industry	64	89	12.326	12.773		
24.1	Basic chemicals	35	38	9.467	8.495	66,5%	32,6%
24.2	Agro chemicals	-	-	-	-	-	1,5%
24.3	Varnishes / Adhesive	5	4	233	?	?	9,6%
24.4	Pharmaceuticals	10	14	1.382	1.957	15,3%	28,6%
24.5	Detergents / Cosmetics	5	9	558	919	7,2%	13,3%
24.6	Other chemical prod.	10	23	687	1.164	9,1%	11,3%
24.7	Man-made fibre		1		?	?	3,0%
25	Plastic & Rubber	75	95	4536	7514		
25.1	Rubber	4	15	?	?		
25.2	Plastic	71	80	?	?		

(? – Data are classified due to the small number of enterprises)

(Source: Statistisches Landesamt Sachsen-Anhalt)

II. 7 Development of Turnover related to the size of enterprises

The development of the turnover (here as an example for the month of September) shows that especially the medium-sized enterprises are growing above the average. In the chemical industry, the enterprises with 50-99 employees have increased their turnover from 1998 to 2002 by 77,6% and the enterprises with 100 to 199 employees by 140,2% (average 36,2%).

In the plastic and rubber sector the enterprises with more than 200 employees had a growth of 75,4% between 1998 and 2002 and the one with 100 to 199 employees 70,9% (average 58,5%)

Chemical Industry (September)							
Saxony-Anhalt		1998	1999	2000	2001	2002	98-02
<i>1.000 €</i>							
Turnover		230.428	234.065	329.295	304.995	313.777	36,2%
Turnover in Employment Categories	< 20	4.042	4.102	5.599	4.486	5.280	30,6%
	20...49	17.131	18.336	17.423	15.870	25.860	51,0%
	50...99	20.710	29.026	25.698	30.892	36.777	77,6%
	100...199	13.106	16.931	42.685	35.032	31.477	140,2%
	200...499	82.063	69.193	75.588	68.051	86.702	5,7%
	500...999	.	.	.	.	.
	> 1000	.	.	.	.	.
	> 500*	93.376	96.477	162.302	150.664	127.681	36,7%

Plastic and Rubber (September)							
Saxony-Anhalt		1998	1999	2000	2001	2002	98-02
<i>1.000 €</i>							
Turnover		68.469	75.902	84.319	95.280	108.494	58,5%
Turnover in Employment Categories	< 20	3.950	3.867	3.895	4.764	6.244	58,1%
	20...49	16.909	18.071	15.607	14.713	23.870	41,2%
	50...99	17.240	20.278	22.835	26.353	25.591	48,4%
	100...199	10.564	13.558	20.727	15.785	18.050	70,9%
	200...499	.	.	.	.	.
	500...999	.	.	.	.	.
	> 1000	-	-	-	-	.	
	> 200*	19.806	20.128	21.255	33.665	34.739	75,4%

(Source: Statistisches Landesamt Sachsen-Anhalt)

II. 8 Energy Consumption and Energy Efficiency

The consumption of energy in the chemical sector has generally increased by 15,4%. Additional 10,5 billion MJ were used in the chemical industry in 2002 compared to 1998 (+14,2%). About 1 billion MJ were consumed more in the plastic and rubber sector (+140%). These data reflect the different energy intensity of the production, where especially the chemical industry has a very high energy consumption. But also the high growth of the chemical enterprises has caused additional energy consumption.

If we compare the development of the energy consumption to the development of the turnover, we can see a strong improvement of the energy efficiency in the chemical industry. In 1998 29 MJ of energy were needed to produce a turnover of 1000 €. In 2002 this rate has fallen to 21,8 MJ/1000 € a minus of 24,6%. This shows the big progress in the area of energy efficiency.

In the plastic sector which is much less energy intensive the strong growth was also accompanied by a growth in energy consumption from 1,2 MJ/1000€ in 1998 to 1,7 MJ/1000€. This shows room for improvement but the general development for the whole chemical sector is still positive

Energy consumption and Energy Efficiency from 1998 to 2002							
Chemical Industry and Plastic and Rubber							
<i>Saxony-Anhalt</i>		1998	1999	2000	2001	2002	98-02
Energy consumption	1000MJ						
Chemical Industry		74.581.985	74.075.701	81.642.412	76.806.140	85.136.787	14,2%
Plastic and Rubber		756.618	895.193	1.242.248	1.779.020	1.818.031	140,3%
Total		75.338.603	74.970.894	82.884.660	78.585.160	86.954.818	15,4%
Energy Efficiency	MJ/1T€						
Chemical Industry		29,0	26,8	22,5	20,9	21,8	-24,6%
Plastic and Rubber		1,2	1,3	1,4	1,7	1,7	37,0%
Total		23,6	21,6	18,4	16,6	17,5	-26,0%

(Source: Statistisches Landesamt Sachsen-Anhalt, own calculations)

II. 9 Core indicators for the Chemical industry

The core indicators for the chemical cluster again stress the importance for the economy in Saxony-Anhalt. Especially the chemical industry has a particular situation. The wages in the chemical enterprises are much higher than the average of the rest of the industry and they have also grown much faster in the past.

The strong growth of the turnover per employee by almost 50% shows the immense improvement of the productivity which has been supported by the high amount of investments.

Due to the smaller size and capital intensity, the situation of the plastic and rubber sector is much more similar to the average of the processing industry. The enterprises pay a lower wage and are a bit less productive than the average industry. Nevertheless, the advantage of the plastic sector is the high employment intensity for the labour market. The strong growth in this sector is also accompanied by a growing number of employees, as it has been described in the previous chapters.

II. 10 Research and Development turnover and employment

The chemical industry in Germany has spent 8,17 billion € in Research and Development in 2002, which is a share of 6,2% related to the turnover. About 44.700 employees representing 9% of the total employment are working in the R&D sector. In East Germany the enterprises have spent around 315 million € or 4% of the turnover for research and development in 2002, which is below the German average.

In 1989 about 16.000 employees were working in the R&D sector of the chemical industry in Eastern Germany. Until 1993 this number has been falling to 1750 and is now constantly growing. In 2002, again 2450 employees were working on research and development, which is a share of 7% of the total employment. Furthermore 700 million € of investments have been completed in East Germany, which is a slight growth to the previous year. Regional data for Saxony-Anhalt are unfortunately not available.

Chemical industry							
DG/24							
<i>Saxony-Anhalt</i>		1998	1999	2000	2001	2002	98-02
Wage and Salary per employee	€	27.155	27.793	29.022	30.236	31.022	14,2%
Wage per wage earner	€	22.565	22.758	24.343	25.391	26.049	15,4%
Salary per salaried employee	€	33.590	35.062	36.062	37.474	38.560	14,8%
Manhours per wage earner	h	1.699	1.718	1.704	1.686	1.691	-0,5%
Wage per work hour	€	13	13	14	15	15	15,4%
Total turnover per employee	€	208.963	235.898	311.184	309.157	312.370	49,5%
Wages and Salaries in % of turnover	%	13	12	9	10	10	
Share foreign / total turnover	%	25	26	32	39	40	
Turnover per manhours worked	€	211	233	304	306	307	45,5%
<i>Germany</i>							
Turnover per employee	€	241.000	254.200	287.100	286.700	287.000	19,1%
Turnover per employee S.-A./Ger		86,7%	92,8%	108,4%	107,8%	108,8%	

Manufacturing of rubber and synthetic material							
DH/25							
<i>Saxony-Anhalt</i>		1998	1999	2000	2001	2002	98-02
Wage and Salary per employee	€	20.482	21.226	21.613	22.016	22.253	8,6%
Wage per wage earner	€	17.469	18.294	18.415	18.939	19.173	9,8%
Salary per salaried employee	€	28.737	29.873	31.711	31.496	32.706	13,8%
Manhours per wage earner	h	1.756	1.742	1.742	1.742	1.726	-1,7%
Wage per work hour	€	10	11	11	11	11	10,0%
Total turnover per employee	€	135.352	140.527	155.779	160.018	165.447	22,2%
Wages and Salaries in % of turnover	%	15	15	14	14	13	
Share foreign / total turnover	%	12	15	23	26	27	
Turnover per manhours worked	€	105	108	118	122	124	18,1%

Manufacturing of the processing industry							
<i>Saxony-Anhalt</i>		1998	1999	2000	2001	2002	98-02
Wage and Salary per employee	€	22.910	23.641	23.869	24.296	24.767	8,1%
Wage per wage earner	€	19.972	20.820	20.820	21.224	21.533	7,8%
Salary per salaried employee	€	29.290	31.522	31.354	32.189	33.117	13,1%
Manhours per wage earner	h	1.704	1.712	1.694	1.677	1.668	-2,1%
Wage per work hour	€	12	12	12	-	13	8,3%
Total turnover per employee	€	147.371	158.861	189.005	192.791	197.486	34,0%
Wages and Salaries in % of turnover	%	16	15	13	13	13	
Share foreign / total turnover	%	14	13	16	18	20	
Turnover per manhours worked	EUR	126	133	157	160	164	30,2%

II. 11 Overview of biggest chemical enterprises in Saxony-Anhalt

Enterprise	Employees		Turnover	
	2002	2003	2002	2003
			Mio €	Mio €
Dow Olefinverbund GmbH	2.300		1.334,0	
AKT Altmärker Kunststoff-Technik GmbH , Gardelegen	1.100		94,0	
Salutas Pharma GmbH , Barleben / Magdeburg (HEXAL AG)	877	880	350,0	
Bayer Bitterfeld GmbH	645	756	500,0	560,0
Domo Group am Standort Leuna: Domo Caproleuna GmbH / Domo Neuchem GmbH		700	360,0	400,0
SKW Stickstoffwerke Piesteritz GmbH	673		276,6	292,0
TOTAL Raffinerie Mitteldeutschland GmbH	654	611	2.243,6	2.655,0
ORBITA-FILM GmbH , Weißandt - Gölzau	533		120,4	
InfraLeuna Gruppe	520	520	195,0	208,0
Solvay Deutschland GmbH , Bernburg	473	428	105,0	104,0
Linde AG / Geschäftsbereich Linde Gas Leuna	384			
Sodawerk Staßfurt Verwaltungs GmbH	334			72,0
Henkel Genthin GmbH	292			
Impfstoffwerk Dessau-Tornau GmbH	270	250	41,6	39,0
Radici Chimica Deutschland GmbH , Zeitz / Tröglitz	261			
PTE Polymer Technik Elbe GmbH , Wittenberg	250		55,0	
EVC European Vinyls Corporation (Deutschland) GmbH, Schkopau	-	~ 120	-	-

Selected enterprises chemistry / plastic / pharmacy / chemical service provider

Source: NordLB: Die 100 größten Unternehmen in Sachsen-Anhalt, February 2004; Die Welt TOP 500, 02 July 2004; Websites of chemical sites and enterprises, July 2004; regional press – first half 2004

II. 12 Conclusions

The chemical cluster is one of the driving forces of the economy in Saxony-Anhalt. With growth rates above the average this importance is even growing in the future. The transformation and redevelopment process has been successfully completed. Today a new qualitative growth period has started.

Especially the chemical industry is competing successfully at international level with a high productivity and environmentally friendly. The dynamic growth of the plastic and rubber sector had a very positive impact on the employment.

SMEs have a growing importance in the chemical cluster. They are creating the most employment and especially the medium sized enterprises are growing fast. This development is strongly connected to the outsourcing strategy of the big multinationals, which are the driving force for the chemical cluster. Therefore the interaction between small and big enterprises will be a future challenge in this area.

In the following chapter the study will have a closer look to the specific topics related to the chemical industry: the chemical site development, the cluster strategies and human resources.