

ENVIRONMENTAL AND GEOGRAPHICAL ASPECTS OF SLOVAK INDUSTRY

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Abstract: The quality and state of the environment reflects the state and orientation of Slovak economy, especially its production sphere. For a long time, environmental pollution was in different regions considered to be the tax to be paid for industrial development. Quantitative industrial development was stopped by transformation changes. It attends to the liquidation of many industrial plants, which were not able to face new economic changes, production programmes were re-structured to eliminate ineffective production. The most wanted are production programmes, which require less energy, material and transport costs. Step by step, the ratio of final production of products is increasing. New technologies have a minimum impact on the environment, which causes not only increase in production but also decrease in, for example, emissions released into the air.

Key words: industry, environment, air pollution

1. INTRODUCTION

Environmental pollution is a long-lasting and important problem, which our society combats. The quality and state of the environment reflects the state and orientation of Slovak economy, especially its production sphere. At present, during the period of Slovak economic transformation, economic restructuring also eliminates the negative effect of economy on the landscape, which was caused mainly by quantitative economic development after 1945.

Negative environmental changes cause the deterioration of population health state, the decrease in reproductive abilities of landscape systems and aggravation of its state, climatic changes, as well as economic damages and losses.

2. CHARACTERISTICS OF INDUSTRY REGARDING THE ENVIRONMENT

In transforming economy, it is industry that plays the decisive role. Its share in the structure of national economy is decreasing (Table 1). Industrial production represents 28.2% of the production of gross domestic product (GDP) (1997). 504,055 people work in industry, i.e. 34.6% employment in industry.

Table 1 Development of GDP regarding industrial brunches

Year	1993	1994	1995	1996	1997
Total Gross Domestic Product in it:	100	100	100	100	100
agricultural and forestry	6,6	7,4	5,6	5,2	4,8
industry	36,8	30,6	28,6	26,3	28,2
construction	6,7	5	4,6	4,7	5,3
market services	28	41,6	41	41,4	43,4
others	21,9	15,4	20,2	22,4	18,3

Source: Statistical Yearbook of the Slovak Republic 1998

The change in the political and economic system after 1989 influenced the development of economy by the rapid decrease in industrial production. The development in 1993-94 was typical for mild growth of economy as well as industrial production, which continued in the next period as well (Table 2). Industrial production evaluated by the coefficient of goods production for the surveyed period (1993-1997) increased nearly by half, i.e. by 49.6%. Inter-annual index of increase represented 110.4 - 103.2% (Table 3).

The production increase was achieved in all branches of the light industry, however, not proportionally. Changeable trend in development was in the branches of the textile and clothing industries, leather processing and the production liquidation of many industrial plants which were not able to face new economic changes, production programmes were restructured to eliminate ineffective production. The most wanted are production programmes, which require less energy, material and transport costs. Step by step, the ratio of final production of products is increasing. New technologies have a minimum impact on the environment, which causes not only increase in production but also decrease in, for example, emissions released into the air of leather products, wood processing and wood production. The biggest share in the increase was recorded in the production of machine equipment and transport means, where the value of industrial production doubled. A significant increase in production was recorded in four industrial branches - in the production of metal and metal products (by 50.6%), the production of cellulose, paper and paper products (by 57.4%), chemical and rubber production (by 61.1 %), the production of coke, refined oil products and nuclear fuel (by 52.2%). On the other hand, in some branches of industry the production decreased so much that it did not reach the 1993 production (Table 3). For example, it is case of wood processing and wooden products industry.

Table 2 Evolution of trade production (thousand Sk)

Year	1993		1994		1995		1996		1997	
	amount	%	amount	%	amount	%	amount	%	amount	%
Industry total	318 023	100	351 088	100	419 098	100	448 522	100	475 713	100
Mining and quarrying	9 175	2,9	9 294	2,6	10 181	2,4	10 480	2,3	11 478	2,4
Processing industry	267 290	84	296 589	84,5	362 865	86,6	390 097	86,9	413 672	87
Food - processing industry	47 697	15	52 722	15	57 186	15,6	67 547	14,2	66 918	14,1
Textile and fabric industry	14 032	4,4	15 340	4,4	15 558	3,7	15 379	3,4	14 600	3,1
Leather - processing industry	5 493	1,7	5 097	1,5	5 913	1,4	6 002	1,3	4 257	0,9
Wood - processing industry	9 983	3,1	5 492	1,6	6 811	1,6	6 923	1,5	7 308	1,5
Pulp / paper - making industry	16 636	5,2	18 183	5,2	23 917	5,7	24 705	5,5	26 188	5,5
Coke production, crude oil refining, nuclear fuels	24 589	7,7	27 074	7,7	29 682	7,1	34 510	7,6	37 538	7,9
Chemical industry - rubber production	34 932	11	40 444	11,5	52 523	12,5	56 062	12,5	56 266	11,8
Metal - processing	50 621	15,9	58 087	16,5	72 542	17,3	69 478	15,5	76 254	16
Machinery and vehicle production	34 974	11	38 367	10,9	56 687	13,5	66 247	14,8	71 568	15
Others	28 333	9	35 823	10,2	42 043	10,1	47 242	10,5	52 775	11,2
Electricity, gas and water production und supply	41 558	13,1	45 202	12,9	46 052	10,9	47 945	10,7	50 563	10,6

Table 4 Evolution and structure of emission ooze to atmosphere (thousand tons)

Pollution terial	1989	1990	1991	1992	1993	1994	1995	1996	1997
SO ₂	569,022	538,977	441,890	377,634	323,175	235,763	236,368	224,199	199,228
NO _x	226,622	226,739	211,980	191,709	183,863	173,015	180,950	139,551	123,123
TZL	320,991	299,368	229,608	177,481	143,318	87,301	88,978	66,977	60,290
CO	491,028	488,698	439,110	382,271	408,345	374,682	404,639	60,290	34,597
Total	1 607,663	1 553,782	1 322,588	1 129,095	1 058,710	870,761	910,935	491,017	417,238

Table 3 Index of increasing industry production (years 1993 - 1997)

Year	1994/93	1995/94	1996/95	1997/96	1997/93
Industry total	110,4	119,4	103,2	105,9	149,6
Mining and quarrying	101,3	109,5	106,4	109,9	125,1
Processing industry	111	122,4	102,9	106	154,8
Food - processing industry	110,5	109,5	105,7	105,4	140,2
Textile and fabric industry	109,3	101,4	96,9	95	104
Leather - processing industry	92,8	116,1	100,8	70,8	77,5
Wood - processing industry	54,7	124,7	97,3	105,6	73,2
Pulp / paper - making industry	109,3	131,6	104,9	106	157,4
Coke production, crude oil refining, nuclear fuels	110,3	109,7	96,1	108,8	152,7
Chemical industry - rubber production	115,8	129,9	103,1	100,1	161,1
Metal - processing	114,8	124,9	95,8	109,7	150,6
Machinery and vehicle production	109,7	147,8	116,9	108	204,6
Others	102,4	117,4	112,4	111,7	186,2
Production of electricity	108,8	101,9	104,1	104,4	121,7

What is important, regarding the influence on the country environment, is the increase in the production in the light industry (by 54.8%). In the mining industry, known for environmental pollution as well as the creation of anthropogenic relief forms, the production increased by 25%. The biggest polluter, however, is the power industry, where the production increased by 21.7% during the period of 1993-1997.

3. INDUSTRY AND THE ENVIRONMENT (THE EXAMPLE OF AIR POLLUTION)

Industry influences all components of the environment (industrial factories release emissions of polluting substances into the air, they deteriorate water, soil and rock environment via accidents, agricultural soil generation and the creation of anthropogenic relief forms).

One of the most affected elements of the environment is the air. The development of basic emissions in the period of economic transformation is closely connected with the economic development that is tied with industrial development as well. In Slovak conditions, it is industry, which is the main air polluter. Therefore, the amount of emissions released into the air during the period of 1989-1997 had a decreasing trend. While in 1989 there were 1,607,663 tonnes released into the air, in 1997 it was only 491,017 tonnes, i.e. 1,116,646 tonnes less (Table 4).

In the structure of basic air polluting substances, sulphur oxide is dominant. In 1997, 199,228 tonnes of sulphur oxide in total were released into the air. Compared with 1993 the amount decreased by 369,794 tonnes, i.e. by 64.99%. The amount of nitrogen oxides decreased by nearly a half in 1997 compared with 1993, i.e. from 226,622 tonnes

to 123,123 tonnes. A rapid decrease of amount was recorded in the emissions of solid polluting substances and carbon monoxide.

Emitted polluting substances are released especially from those big plants that have, as stationary sources, the heat output of more than 5 MW. In the present record REZZO there are 987 of them. Out of this number, 20 polluters have 84.49% share of the total pollution. The most significant sources of air pollution are shown in Table 5, which indicates the dominant role of industry.

4. CONCLUSION

For a long time, environmental pollution was in different regions considered to be the tax paid for industrial development. Quantitative industrial development was stopped by transformation changes. Resulting from the production decrement caused by the heavy industry conversion, the production decay in mining plants, the loss of markets in former COMECON states, the break up of Czechoslovakia, altogether with liquidation of many industrial plants, which were not able to face new economic changes, production programmes were restructured to eliminate ineffective production. The most wanted are production programmes, which require less energy, material and transport costs. Step by step, the ratio of final production of products is increasing. New technologies have a minimum impact on the environment, which causes not only increase in production but also decrease in, for example, emissions released into the air.

Last years, mainly due to reorientation towards western markets and foreign capital intake which has brought along new technologies, there have been significant changes in understanding the meaning and need for quality environment also on the level of companies' management. This is, for example, reflected when obtaining EMS international certificates, when a firm must prove that the whole production process, products, services and subject activities comply with requirements for environmental protection and that their goal is a continuous effort to eliminate environmental damage.

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Resume

Environmentálne a geografické aspekty priemyslu Slovenska

Kvalita a stav životného prostredia je odrazom stavu a orientácie hospodárstva, najmä výrobnjej sféry. Znečisťovanie životného prostredia bolo v jednotlivých regiónoch dlhodobo považované za daň rozvoja priemyslu. Kvantitatívny vývoj priemyslu bol transformačnými zmenami zastavený. Dochádza k reštrukturalizácii výrobných programov, ktoré smerujú k znižovaniu neefektívnych výrob. Do popredia sa dostávajú energeticky, materiálne a dopravne menej náročné výrobné programy, postupne sa zvyšuje podiel výrob zameraných na finalizáciu výrobkov. Nové technológie majú na prostredie minimálny dopad, čo sa odráža nielen v zvyšovaní výroby, ale i znižovaní napr. emisií vypúšťaných do ovzdušia.