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Evolution of domestic market of dimension and road stone since 1990

Key words

Dimension stone, road stone, sources, domestic production, market developments

Abstract

The paper presents sources and production of dimension and road stone in Poland in recent years, as well as characterise developments of their domestic market in the 1990s. Development of foreign trade of dimension and road stone is also widely characterised. As a summary, future outlook of domestic market of dimension and road stone is anticipated.

Introduction

Domestic market of dimension and road stone changed considerably in the 1990-ties. The most important features of this transformation were: variability in quantities of stone products manufactured and used in Poland, as well as diversification of sources for dimension stone products manufacture, with the rising importance of imports. Value of this market was gradually increasing with growing share of imported raw materials. The number of domestic companies active on this market was also quickly increasing, though terms of economic activity of mining companies in this branch were in general still worsening. Such trends will be maintained in the coming years, but not so intensively as in the last decade.

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1. Domestic sources of dimension and road stone

The majority of deposits of rocks suitable for dimension and road stone products manufacture is located in Lower Silesia (granite, syenite, marble, sandstone). Numerous decorative limestone and sandstone deposits in the Świętokrzyskie Mountains and in the Carpathians, as well as single deposits of dolomite and travertine, are of minor importance.

Dimension granite deposits, which have commercial value, occur in three massifs in Lower Silesia: Strzegom-Sobótka, Strzelin-Żulowa and Karkonosze. The total recognised reserves of granite (in majority suitable for the production of dimension stone) amount to ca. 1,330 million t. Other rocks suitable for dimension stone production in Lower Silesia are: syenite in the Niemcza area (total reserves of nearly 50 million t) and marbles in the Kaczawa Mountains, Kłodzko area and Eastern Sudetes (total reserves of ca. 35 million t).

Sandstone of numerous varieties is the second important rock suitable for dimension stone production in Poland. Regarding the amount of reserves, the main varieties are: 1. White "joint" sandstone of Stołowe Mountains (6 deposits, ca. 30 million t) and North Sudetic Depression (over a dozen deposits, over 40 million t); 2. White Szydłowiec sandstone in the northern part of Świętokrzyskie Mountains in the central Poland (16 deposits, over 80 million t); 3. Green Godula sandstone from Brenna area in the western part of the Carpathians (7 deposits, 60 million t). Minor importance have such varieties as: 4. Red Permian sandstone of Intrasudetic Depression (3 deposits, 10 million t); 5. Red Suchedniów and Tumlin sandstone in the northern part of Świętokrzyskie Mountains; 6. Other varieties of Carpathian sandstone: Magura, Krosno and Ciężkowice ones.

2. Quantity and structure of domestic dimension and road stone supply

The mining output of crushed and dimension stone in Poland amounted to ca. 24 million tpy in recent years. Most of the exploited rock material is crushed and various fractions of breakstone, key aggregate, and grits are the main products of numerous mines. Only a small portion of the rock — i.e. 3—5% — is extracted and dressed into dimension blocks suitable for the production of slabs, pitcher, curbs, etc. (Table 1). This proportion is variable for various types of rocks.

The most important dimension stone in Poland is traditionally granite. Currently, ca. 30% of total domestic mining output of granite is used for the production of blocks, slabs, pitcher etc. Sandstone is the second significant dimension stone in Poland. Various types of sandstone are used for this purpose in three regions: Lower Silesia, Świętokrzyskie Mts. and the Carpathians. However, only ca. 10% of total mining output of sandstone is used as dimension stone, while ca. 90% for crushed aggregates. Syenite and marble have minor importance as dimension stones. Pitcher, curbs and other road building stones are manufactured in Poland mainly on the basis of granite, rarely syenite and basalt.

Dimension granite production in Poland is concentrated in Lower Silesia, mainly in Strzegom and Strzelin areas. Total mining output of granite in Poland currently amounts to ca. 2.5 million tpy, but production of dimension granite amounts to ca. 800,000 tpy. Granite is extracted from almost 40 quarries: ca. 20 of them deliver only dimension stone and/or road stone

TABLE 1

Management of dimension and road stone in Poland ('000 t)

TABELA 1

Gospodarka kamieniami budowlanymi i drogowymi w Polsce [tys. t]

Year	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Production[1]	600	470[e]	360[e]	337	442	304	251	347	469	498	601	972	1 079
Imports	9	5	5	45	63	87	103	138	189	223	254	292	319
Exports	32	26	31	246	324	261	268	307	343	298	325	327	332
Consumption[a]	577	449	334	136	181	130	86	178	315	423	530	937	1 071

[1] Sold, until 2000 only production of large companies (>50 employees), since 2000 also medium companies (10—50 employees); sold production of large companies: 652,000 t in 2000 and 756,000 t in 2001

(pitcher etc.), ca. 10 of them — both dimension and road stone, as well as crushed aggregates, while the remaining 10 plants — only crushed aggregates. In the Strzegom area, production is based on granite of Strzegom type in over 30 quarries (Table 2 and 3). Quarries of Strzelin granite have minor importance as producers of dimension and road stone. Moreover, one quarry of dimension granite of Karkonosze type is extracted in Szklarska Poręba.

Syenite is another magmatic rock traditionally used for dimension stone production. It is currently mined from the Kośmin and Przedborowa deposits, where ca. 30,000 tpy of extracted syenite is used as dimension stone or for the production of road stone.

Marbles are important as dimension stones, as well as for marble grits production. They are currently extracted in Stronie Śląskie by "Kambud" Dimension Stone Plant of Stronie Śląskie, and from the Sławniowice deposit near Nysa by "Marmur-Sławniowice". Total mining output amounts to ca. 10,000 tpy. Production of large marble blocks amounts only to ca. 1,000—2,000 tpy, while the rest is used for small tiles and grits for terazzo.

TABLE 2

Structure of dimension and road stone production in Poland in 2000 and 2001 ('000 t)

TABELA 2

. Struktura produkcji kamieni budowlanych i drogowych w Polsce w latach 2000 i 2001 [tys. t]

Type of product and rock	2000	2001
Blocks and raw slabs	636.7	690.4
— Marbles and other carbonate rocks	6.2	10.1
— Granite	407.8	446.3
— Sandstone	165.4	135.8
— Other rocks	57.3	98.2
Pitcher and other road stone	400.3	388.2
— Pitcher	309.5	318.0

TABLE 3

The main producers of dimension and road stone in Poland ('000 t)

TABELA 3

Główni producenci kamieni budowlanych i drogowych w Polsce [tys. t]

Producer	Type of rock	Deposit	Mining output 2000	Yield of blocks[c.] [%]
1	2	3	4	5
PPU "Czernica-Granit" Ltd., Czernica	*Strzegom* granite	Czernica	127	55
PGO "Granit" S.A. Strzegom	Do.	Strzegom, Żółkiewka I	98	50
"Gniewków" Granite Mine Ltd., Gniewków	Do.	Gniewków	87	20
"Skalimex-Borów" S.A., Kostrza	Do.	Borów 17	85	60
"Skalimex" Granite Mine, Sobótka	Do.	Strzeblów I i II	66	45
Borowskie Kopalnie Granitu Ltd., Borów	Do.	Borów	59	>95
"Zimnik" Granite Mine Ltd., Mściwojów	Do.	Zimnik I	57	80
"M & F International Trading" Ltd., Kostrza	Do.	Kostrza-Piekiełko	46	>95
"Euro-Granit" Ltd., Strzegom	Do.	Żółkiewka-Wiatrak	41	>95
PUH "Wekom II" Ltd., Kostrza	Do.	Kostrza	33	>90
"Grabinex" Ltd., Strzegom	Do.	Grabina Śląska	31	>95
PWPiSKB "Kwarc" Ltd., Kostrza	Do.	Borów I — kam. 49	28	>95
"Braun-Granit" Ltd., Nowa Sól	Do.	Czernica-Wieś	27	>95
"Morstone" Ltd., Strzegom	Do.	Morów II	25	>95
PPHiU "Piramida" Ltd., Strzegom	Do.	Borów I — kam. 49A	15	>95
"Fer-Granit" Ltd., Rogoźnica	Do.	Rogoźnica-Las	14	>95
"Pokutnik" Granite Mine Co., Paszowice	Do.	Pokutnik	13	>95
PPHU "Ted-Rob" Co., Strzegom	Do.	Barcz I	10	>95
"Granitex" Co., Strzegom	Do.	Graniczna II	6	>95
"Gilde" Ltd., Strzegom	Do.	Goczałków, Wieśnica	4	>95
"Granitex" Ltd., Strzelin	*Strzelin* granite	Strzelin	70	50

cont. table 3

cd. tabeli 3

1	2	3	4	5
PRID "Makadam" S.A., Busko Zdrój	Do.	Kamienna Góra	51	<10
"Mikoszów Wieś" Granite Mine, Mikoszów	Do.	Mikoszów-Wieś	6	>95
"Sjenit Piława Górna" S.A., Piława Górna	Syenite	Kośmin	301	<20
"Przedborowa" Syenite Mine Ltd., Piława Górna	Do.	Przedborowa	12	>90
SZKB "Kambud" Ltd.., Stronie Śląskie	Marble	Biała i Zielona Marianna	7	>95
PWiOM "Marmur-Sławniowice", Sławniowice	Do.	Sławniowice	5	>95
"Dolomit" Ltd., Libiąż	Dolomite	Libiąż	83	<10
Pińczów Dimension Stone Works S.A., Pińczów	Decorative limestone	Pińczów, Bolechowice, Wola Morawicka	7	>95
PPH "Trawertyn J&J", Raciszyn	Trawertine	Raciszyn II	47	>50
"Kamieniarz" Ltd., Kielce	*Joint* sandstone	Nowa Wieś Grodziska II-III	69	>70
"Gruszecki" Co., Bielany Wrocławskie	Do.	Skała, Bedlno	33	>70
"Kopalnie Piaskowca" S.A., Bolesławiec	Do.	Rakowiczki, Żerkowice	26	>70
"Hofmann Polska" Ltd., Kraków	Do.	Wartowice	19	>70
"Grupa Trapo-PKB Radków" Ltd., Radków[2]	Do.	Radków, Szczytna-Zamek	10	>70
"Bober" Ltd. j.v.	Do.	Wartowice II	9	>70
Waldemar Tomczyk, Szydłowiec	*Szydłowiec* sandstone	Broniów IV, V	11	>80
"Kamex" Ltd. Zabierzów	Do.	Śmiłów	—[3]	>80
ZKN "Petra" Ltd. , Zakopane	*Carpathian* sandstone	Głębiec, Górka-Mucharz, Skawce	69	<30
ZKB "Skalnik" Sp. z o.o., Barcice	Do.	Barcice	8	>50

[1] Blocks and smaller dimension stone.
[2] Bankrapted in 2001.
[3] Production temporarily stopped in 2000.

Among sedimentary rocks, sandstone of various types is currently the most important dimension stone in Poland. A few different types are used for this purpose: Lower Silesian "joint" sandstone from Lwówek Śląski and Radków areas, sandstone of Szydłowiec type (Świętokrzyskie Mts.), various types of Carpathian sandstone. "Joint" sandstone from Lwówek Śląski is currently the most important of them. Eight mines belonging to four companies are active there, while their total output amounts to over 100,000 tpy (Table 2 and 3). Traditional production of "joint" sandstone in the Radków area was stopped in 2001 due to bankruptcy of their producer. Extraction of Szydłowiec sandstone is carried on at the level of 10,000—20,000 tpy, by two large and a few small producers. In the Carpathians, "Petra" Co. is the main producer of dimension sandstone, but these are mainly split tiles. Such tiles are produced also by other quarries, e.g. in Barcice and Wierchomla. Small quantities of blocks and smaller dimension stone are extracted in Brenna area.

Limestone dimension elements (blocks, slabs) are produced for centuries from various types of "marble" (decorative limestone) in the Świętokrzyskie Mountains near Kielce. In recent years, a few deposits of such limestone has been extracted there, but only in one — Bolechowice — production has been carried on continuously. In the 1990s, their total production was under 10,000 tpy, while the Pińczów Dimension Stone Works was their dominant producer. Travertine from Raciszyn–Zalesiaki area in central Poland is another variety of decorative limestone used as dimension stone (20,000—30,000 tpy in recent years). Triassic dolomite from Libiąż is the only dolomite in Poland partly dressed into dimension blocks and smaller dimension stones (a few thousand tpy).

Until 2000, precise data on total production of dimension stone and road stone in Poland, as well as their assortment structure, were not available. Total production of dimension and road stone in large companies (over 50 employees) was only reported (Table 1). Volume of this production was reduced threefold in the early 1990s to only 251,000 t in 1995. However, production of dimension and road stone in large companies in the second half of the 1990s came back to the level of the late 1980s, i.e. ca. 600,000 tpy. Since 2000, the Central Statistical Office introduced a new nomenclature of products and services (PKWiU), and — as a consequence — data on production of dimension and road stone are much more detailed. Data coming from smaller companies (10—50 employees) are also included, so the total reported domestic production of dimension and road stone amounted to 1,037,000 t in 2000 and 1,078,600 t in 2001 (Table 1 and Fig. 1). Of these total amount, dimension stone comprise ca. 65% (690,400 t in 2001), while road stone ca. 35% (388,200 t in 2001). Data on assortment structure of dimension stone show (Table 3) that granite constitutes ca. 65% of their total supply, sandstone — 20—25%, with marginal share of other types of rocks (marble, decorative limestone and dolomite, syenite). Regarding structure of road stone production (pitcher and curbs), share of granite is much more dominant (probably over 95%), with marginal importance of syenite and basalt pitcher and curbs.

Ownership of the Polish dimension stone industry dramatically changed in the last twelve years. Before 1990, the majority of quarries was in the structure of "Kambud" Dimension Stone Combine, or operated as Rock Minerals Quarries supervised by Ministry of the Transportation. In the 1990s, practically all companies delivering dimension stone were privatised. Larger companies, operating a few quarries, were often divided into a few separate companies. Some of

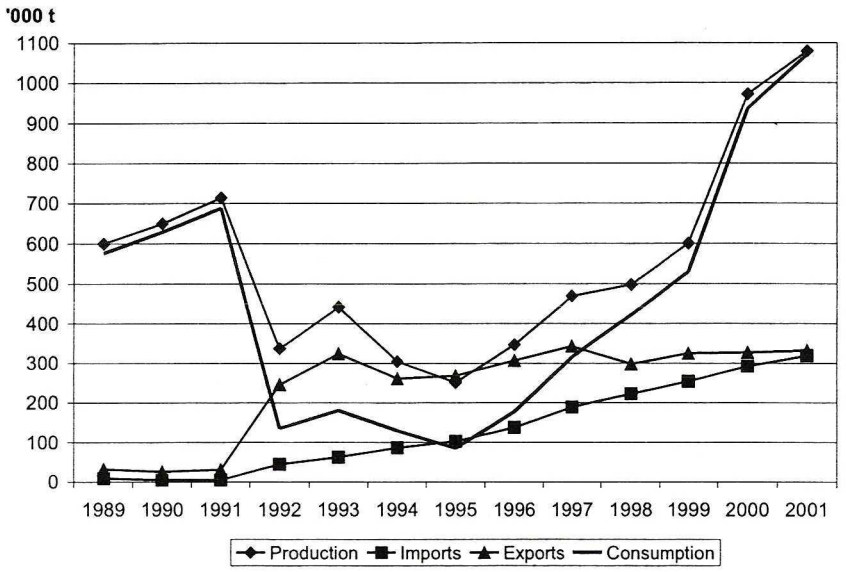

Fig. 1. Management of dimension and road stone in Poland

Rys. 1. Gospodarka kamieniami budowlanymi i drogowymi w Polsce

them later on declared bankruptcy, while the majority survived. On the other hand, a lot of old post-German granite and sandstone quarries in Lower Silesia has been reopened. It is also worth to mention that a significant portion of dimension stone producers in the Lower Silesia region is currently owned by German investors. All these phenomena are well illustrated by the figure of companies active in production of dimension granite: before 1990 there were only a few such companies (operating ca. 20 quarries), now the number is over 40.

3. Development of dimension and road stone trade in Poland

In the last ten years both the volume and structure of dimension and road stone trade have changed considerably. Until 1992, only 10,000—30,000 tpy of pitcher and curbs, as well as 5,000—10,000 tpy of blocks and slabs were exported. Imports of road stone were marginal, while imports of blocks and slabs — mainly marble ones — were under 10,000 tpy.

Since 1992 dimension and road stone trade from/to Poland was intensively rising. Imports of blocks and slabs — raw and processed — in 2001 were sixty times higher than in 1992, amounting to over 300,000 t (Fig. 2). Raw blocks and slabs consist a majority of these imports — 262,100 t in 2001. Assortment structure of these imports also changed considerably. Imports of marble and relative rocks are still under 10,000 tpy (only direction of their imports slightly changed). However, imports of granite blocks and raw slabs rose from marginal amounts in 1992 to 251,000 t in 2001. In the beginning, granite blocks and slabs were imported mainly from Sweden and Ukraine, but currently geographic structure of imports is substantially diversified,

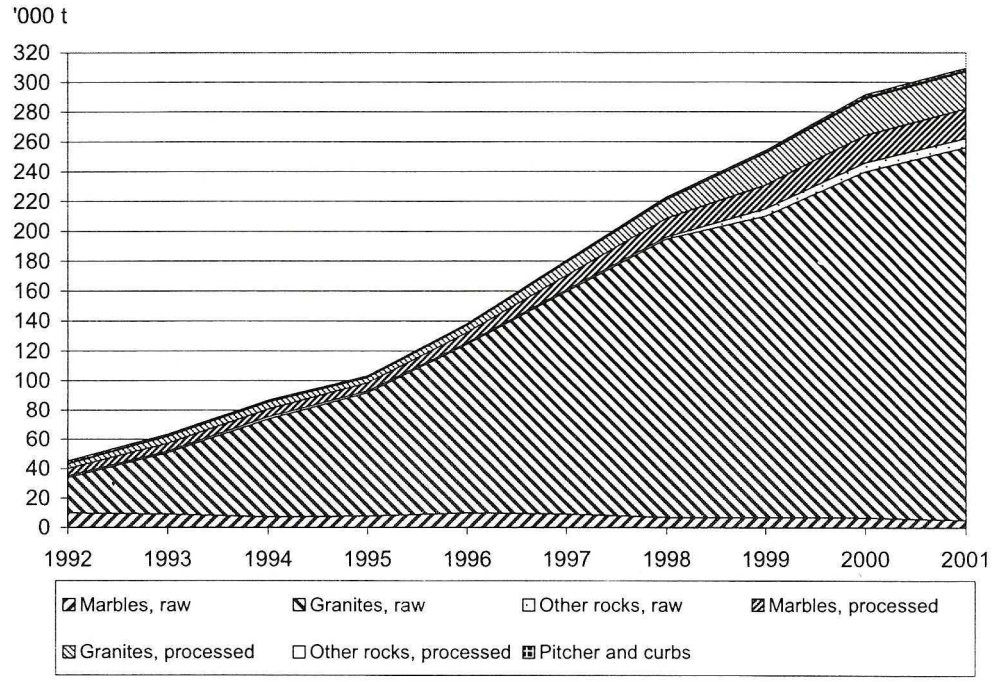

Fig. 2. Structure of dimension and road stone imports to Poland

Rys. 2. Struktura importu kamieni budowlanych i drogowych do Polski

with South Africa, Finland, Spain, India, Zimbabwe, Brazil, Germany and Norway as other important suppliers. Imports of sandstone blocks and slabs are still marginal, while imports of other rocks notably rose, especially from Finland (probably norite).

Increase of processed slabs was not so spectacular, achieving 55,900 t in 2001. Growth of marble slabs from Italy, as well as granite slabs from Italy, Belgium, and Spain is especially reported here. Imports of road stone is still marginal — under 2,000 tpy.

Exports of dimension stone (mainly granite and sandstone, with marginal amounts of marble and decorative limestone) was rather stable at 80,000—100,000 tpy, including 40,000—80,000 tpy of raw blocks and slabs, and 20,000—40,000 tpy of processed stone (Fig. 3). Slight increase of these exports is observed in recent years. They are sold predominantly to Germany.Exports of pitcher and curbs have increased from under 20,000 tpy in the beginning of the 1990s to 238,600 t in 1999, with slight decrease to 213,800 t in 2001. Pitcher and curbs were sold almost exclusively to Germany.

The traditional deficit in crude or roughly worked dimension stone continued to deepen very quickly to 147 million PLN in 2000, with some improvement in 2001 (Fig. 4). The trade balance in worked dimension stone has also been negative since 1997, deepening to almost 70 million PLN in 2001 (Fig. 4). By contrast, the positive trade balance in pitcher and curbs is reported year by year, but it visibly lowered to 44.4 million PLN in 2001 (Fig. 4). The combined

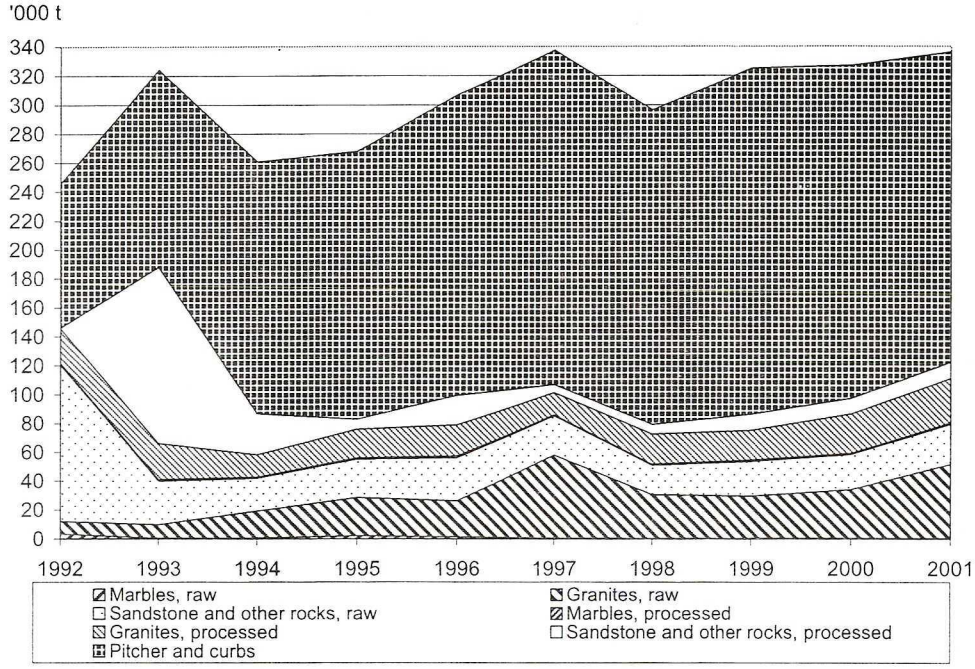

Fig. 3. Structure of dimension and road stone exports from Poland

Rys. 3. Struktura eksportu kamieni budowlanych i drogowych z Polski

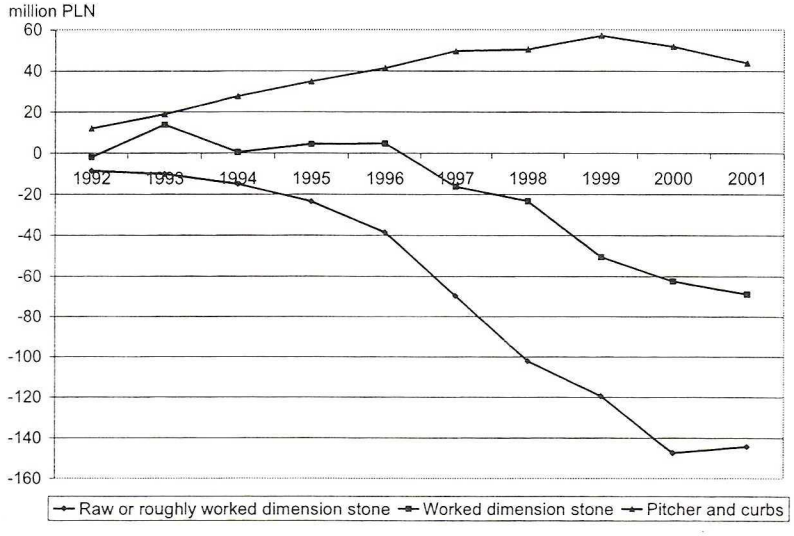

Fig. 4. Balance of trade of dimension and road stone in Poland

Rys. 4. Saldo obrotów kamieniami budowlanymi i drogowymi w Polsce

trade balance in dimension and road stone in Poland became negative in 1997 for the first time. In the last five years it is still deepening to almost 170 million PLN in 2001.

4. Changes on domestic market of dimension and road stone

Domestic market of dimension stone considerably changed, regarding all its features: quantity, type of rock used, sources, as well as value of the market. Total domestic consumption of dimension stone dropped to ca. 100,000 tpy in the first half of the 1990s (Table 1 and Fig. 1). However, in the second half of this decade domestic demand for dimension stone rose about ten times up to nearly 1,100,000 t in 2001. Polish dimension stone market ten years ago was dominated by domestic suppliers: dimension granite producers from Strzegom, Sobótka and Strzelin area, dimension syenite producer in Piława Górna, dimension marble producers in Stronie Śląskie and Sławniowice (all in Lower Silesia region), decorative limestone producers in the Świętokrzyskie Mountains, dimension sandstone manufacturers in Lower Silesia, Szydłowiec area (central Poland) and the Carpathians. However, since the beginning of the 1990s, Polish dimension stone market was opened for imported products. It resulted in growing share of foreign suppliers on domestic market of blocks and raw slabs, up to over 30% in volume terms and over 60% in value terms in 2001 (Table 4 and 5). In dimension sandstone branch domestic producers still dominate (over 99%), but in case of dimension granite branch this share dropped to 60%, while in dimension marble branch — to under 30% (Table 5).

Dimension stone elements (wall sidings, floor slabs, tombstones, etc.) manufactured mainly from domestic granite, syenite, and marble, as well as from decorative "marble" and sandstone, are used for monuments and public buildings, and — on a smaller scale — for private dwellings. Smaller stone elements (window sills, stairs, etc.) made of the same rock materials are also in common use. They are dressed mainly in Lower Silesia, at plants close to the deposits. Imported dimension stone blocks are used for the same purposes as domestic products. They are dressed

TABELA 4

Value structure of domestic market of dimension and road stone (million PLN)

TABELA 4

Struktura wartościowa krajowego rynku kamieni budowlanych i drogowych [mln zł]

Type of stone product	Year	Total sales of domestic producers[1]	Exports	Imports	Total sales on domestic market
Blocks and raw slabs	2000	124.4	22.7	170.0	271.7
	2001	118.0	23.9	168.1	262.2
Pitcher and other road stone	2000	85.9	52.5	0.6	34.0
	2001	81.3	44.4	0.6	37.5

[1] Export sales included.

TABLE 5

Volume structure of domestic market of dimension and road stone ('000 t)

TABELA 5

Struktura ilościowa krajowego rynku kamieni budowlanych i drogowych [tys. t]

Type of stone product	Year	Total sales of domestic producers[1]	Exports	Imports	Total sales on domestic market
Blocks and raw slabs	2000	591,6	58,4	245,8	779,0
	2001	681,0	79,7	262,1	863,4
Marbles and other carbonate rocks	*2000*	*2,7*	*0,3*	*6,8*	*9,2*
	2001	*7,8*	*0,3*	*5,1*	*12,6*
Granite	*2000*	*366,1*	*33,9*	*233,1*	*565,3*
	2001	*442,4*	*51,4*	*251,0*	*642,0*
Sandstone	*2000*	*165,7*	*19,5*	*1,2*	*147,4*
	2001	*135,8*	*23,0*	*1,0*	*113,8*
Other rocks	*2000*	*57,1*	*4,7*	*4,7*	*57,1*
	2001	*95,0*	*5,0*	*5,0*	*95,0*
Pitcher and other road stone	2000	380,1	229,6	1,8	152,3
	2001	383,1	213,8	1,5	170,8

[1] Export sales included.

in numerous private stone workshops spread all over the country, but mostly in the vicinity of large cities. However, large stone plants in Lower Silesia also use increasing amount of imported stone to diversify their market offer.

Use of road stone in Poland does not show increasing tendency. Pitcher and other road stones are undoubtedly not as common in Poland as they used to be in other countries, e.g. Germany. Domestic market of road stone — 150,000—170,000 tpy — is dominated (in over 97%) by domestic producers of granite pitcher and curbs from Strzegom and Strzelin area, with minor importance of domestic manufacturers of syenite and basalt pitcher, as well as foreign suppliers (combined share 2—3%). It is worth mention here that many domestic producers of granite pitcher and curbs concentrates on exports (55—60% of Polish pitcher and curbs production is exported).

Value of domestic market of raw dimension stone and road stone increased since 1993 ten times to ca. 300 million PLN in 2000, with some stagnation in 2001 (Fig. 5). Share of domestic stone dropped from over 90% to under 45% in recent years. In dimension stone branch, share of imported stone is above 60%, while in road stone branch is still marginal — ca. 1—2% (Table 4). Share of imported material is differentiated depending on the variety of rock: from over 70% in case of marble, to ca. 40% for granite and only 1% for sandstone.

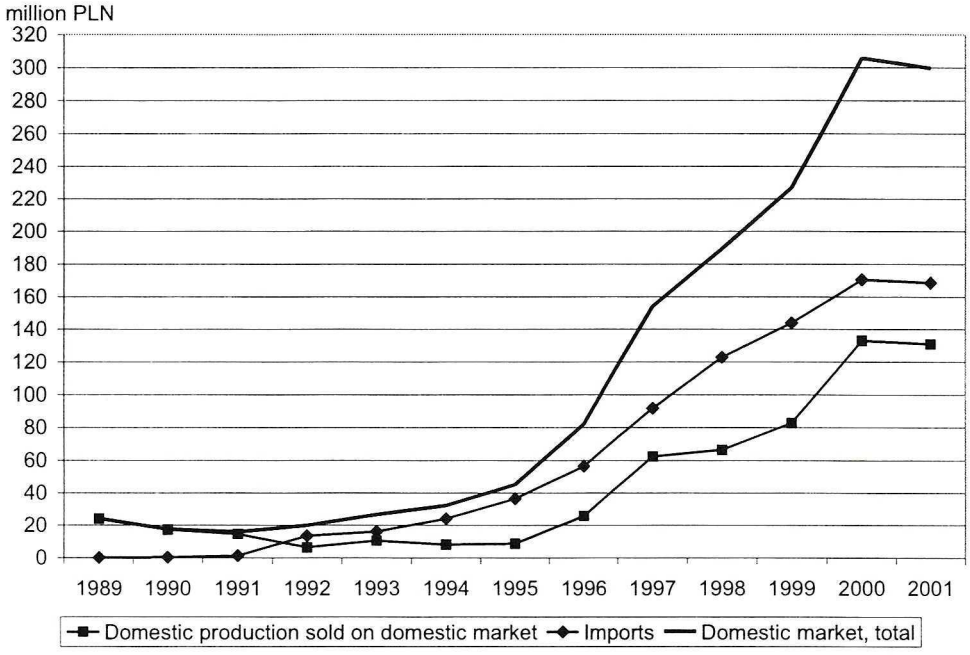

Fig. 5. Value of domestic market of dimension and road stone

Rys. 5. Wartość krajowego rynku kamieni budowlanych i drogowych

Conclusions

Analysis of domestic market of dimension and road stone shows that there is still increasing importance of imported stone on dimension stone market, while domestic sources are dominant on road stone market. In the near future, development of domestic demand for dimension stone will probably be not so dynamic as it was in the second half of the 1990s. It should stabilise at 800,000—900,000 tpy or even be slightly reduced due to expected slower development of public buildings construction in the coming years. Significant increase of dimension stone use for private dwellings is not expected because these materials are still too expensive for private investors.

There is a lack of real perspectives for the diversification of dimension stone production in Poland. Domestic offer will still be limited to a few varieties of granite, two types of syenite, two varieties of marble, a few types of decorative limestone and single types of dimension dolomite and travertine. Sandstone branch is the most perspective, because some new domestic varieties can be introduced, but it will not be substantial regarding quantities of stone used. Market offer of dimension stone is expected to be still diversified, so as a consequence share of imported materials will be increasing. Their share in domestic dimension stone market can grow up to 70% (in terms of value). In granite branch, share of imported rocks should increase to over 50%.

In marble branch imported materials will still dominate due to a lack of sufficient domestic deposits. Only in sandstone branch, significance of domestic varieties will remain dominant. On the opposite, this branch has a difficult time now due to reduction of export sales (mainly to Germany).

The domestic market of road stone — pitcher, curbs, etc. — does not show significant developing trends, what is a result of — among others — competition with cheaper concrete pitcher. So, it can be expected that domestic demand for these goods should remain at the current level of ca. 150,000—170,000 tpy. On the other hand, importance of foreign suppliers (especially Ukrainian producers) can grow slightly, but their share will not probably achieve 5%. Further reduction of pitcher exports to Germany will be much more negative phenomenon on this market.

Competition between domestic and foreign suppliers on Polish dimension market is expected to increase. Moreover, possibilities of development of dimension and road stone exports are very limited. As a result, economic and market situation of Polish dimension and road stone producers is expected to worsen in the coming years and some of them can declare bankruptcy.

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KRZYSZTOF GALOS

EWOLUCJA KRAJOWEGO RYNKU KAMIENI BUDOWLANYCH I DROGOWYCH PO ROKU 1990

Słowa kluczowe

Kamień budowlany, kamień drogowy, źródła, produkcja krajowa, rozwój rynku

Streszczenie

Artykuł prezentuje źródła i produkcję kamieni budowlanych i drogowych w Polsce w ostatnich latach, jak również charakteryzuje rozwój ich krajowego rynku w latach dziewięćdziesiątych. Szeroko scharakteryzowane jest znaczenie obrotów międzynarodowych tą grupą surowców. W podsumowaniu przedstawiono przewidywany rozwój krajowego rynku kamieni budowlanych i drogowych w najbliższych latach.