

## EVALUATION OF DEVELOPMENT OF THE STEEL INDUSTRY IN POLAND

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### Abstract

The steel sector is one of the most important sectors of the processing industry in Poland. The article presents the changes in the development of the steel industry in Poland in the years 2010-2014. The main purpose of this article is to analyze and assess the development of the metallurgical industry in Poland in the years 2010-2014. Considerations were carried out at the level of general statistical changes in the development of the steel sector. In the paper, the steel production was analyzed from 2010 to 2014. Export and import of steel were examined too. The result of the analysis is structured view of changes in the development of the steel sector in Poland in the years 2010-2014. The statistical data of the Central Statistical Office and industry specific studies were used in the article.

**Keywords:** Steel industry, development, restructuring process

### 1. INTRODUCTION

In view of its economic potential and importance to an economy, the steel industry is seen as a sector of strategic significance and a driving force of economic growth. Its development is conditioned by economic standing of a country. Demand for steel and its products - steel consumption of an economy - are of paramount importance. Steel products are among basic materials used by most sectors of a national economy. The steel sector has played a key part in development of the Polish economy, although steel production has fluctuated depending on economic conditions in recent decades [1-2]. These fluctuations became apparent after restructuring of the steel industry (2006, though a monitoring report was signed in 2010).

Regional specialisations are a novel approach to development of the European Union regions [3]. These may be defined as regions having very distinct manufacturing profiles with intensely well-developed economic sectors or types of goods produced. Intelligent specialisation is envisaged as an instrument fostering development and competitiveness of regions. When selecting intelligent specialisations, regional innovation potential is evaluated on the basis of resources and capacities available to a region. They may be both specialisations within a sector and intersectoral actions providing for a specific competitive advantage [4]. The restructured steel industry in Poland has attained the European state of the art. It can be cited, therefore, as an intelligent specialisation at the national or regional level. Steel consuming sectors, e.g. construction, metal processing or automotive industry, indicated as intelligent specialisations in several Polish regions in their Regional Innovation Strategies, are of particular weight in this connection.

An evaluation of development of the steel industry in Poland in 2010-2014 was presented in this paper. The time-frame of the analysis has been determined by availability of the latest figures (2014), on the one hand, and the possibility of setting them side by side with comparable data for an earlier period, on the other hand. 2008 - the global economic crisis and a return of the steel sector to the path of development - was of special significance. The analysis has helped to identify changes in development of the Polish steel industry in the period under discussion.

### 2. RESTRUCTURING OF THE STEEL INDUSTRY IN POLAND - SELECTED ASPECTS

At the time of the economic transformations in Poland, the steel industry was characterised by overblown manufacturing capacities, inadequate product ranges not suited to market requirements, excessive

employment, high costs, excessive consumption of materials and energy, and adverse effects on the environment. A thorough restructuring was necessary to make steel products from Poland competitive, their manufacturing cost effective, and for Polish steel makers to adapt to conditions of the market economy.

Collapse of the communist system in Poland (1989), the process of European integration (in particular, signing of the Association Agreement in 1991), negotiations of the restructuring programme (1998-2003), and Poland's joining the European Union (2004) have been among the key events which have determined transformations of the Polish steel sector in the last several decades. The fundamental effort to restructure the steel industry in Poland did come to an end in 2006, as agreed prior to the accession, yet steel makers are still forced to take actions in order to maintain their competitive standing in the national and European markets. This is of particular importance in view of the global crisis that affected the world economy in 2008 and 2009 [5].

The economic system in Poland was reformed at the turn of 1989 and 1990. State enterprises were forced to change in all existing areas of their operation. The processes of industrial restructuring and business privatisation commenced in 1990. The largest Polish steel mills were privatised at the time. Foreign capital was involved in the privatisation processes of key companies. A consortium Polskie Huty Stali (PHS, Polish Steel Mills) arose from consolidation of four mills: Katowice, Sendzimira, Cedler and Florian, in 2002. In 2003, it was sold to the UK strategic investor, LNM, and its name changed, first to ISPAT, then Mittal Steel Company. It has operated as ArcelorMittal Poland S.A. since 2006. Beside the investor identified above, the following companies took part in the Polish steel industry privatisation: the Spanish Celsa, which acquired Huta Ostrowiec mill, the American CMC, which took over Huta Zawiercie, and the Ukrainian Donbas buying Huta Częstochowa [6].

Government steel and iron sector restructuring programmes were carried out beginning in 1992 in order to adjust the steel-making sector to market requirements. Restructuring of the steel plants was supervised by the European Commission starting in 1998. A number of loss-making mills had been liquidated, employment and steel output had been cut before Poland joined the European Union in 2004. A range of technological investments were conducted to improve competitiveness of Polish mills, with those subject to remedial programmes attaining financial liquidity in 2004. The Polish steelmaking sector had completed its restructuring by the end of 2006 - a final report was published in 2010.

The financial crisis of 2008 had considerable impact on standing of the steel sector in Poland and globally. That was a tough time for the industry. The economic slump reduced demand for steel products in Poland. Steel output reached its record low (ever in the history of the sector) of 7.1 M tonnes in 2009 [5-6].

In general, the restructuring of the steel industry in Poland has contributed to some positive developments in the sector, including in particular: reduction of ineffective production capacities, use of public aid instruments to improve financial standing of mills, redundancies to achieve European standards of productivity given the current output. Some technological investments have allowed for production of state-of-the-art, quality steel which is competitive in the national and European markets [7].

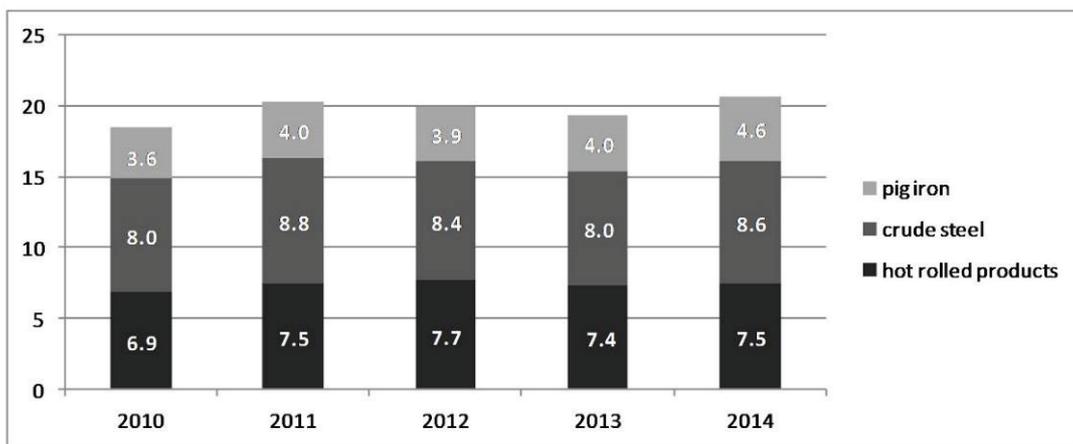
### **3. EVALUATION OF THE STEEL INDUSTRY DEVELOPMENT IN POLAND IN 2010-2014**

Analysis of steel output volumes and structure by manufacturing methods and product ranges, steel consumption and trade balance have been used to assess development of the steel industry in Poland. Indicators characterising the sector have been employed as well. 2014 brought many changes in the global steel market and proved highly beneficial to the Polish market. 8.6 M tonnes of crude steel were produced, i.e. 8 % more than in 2013. Steel output had grown by 0.6 M tonnes, that is, 7.5 %, since 2010. A 10 % increment could be noted in 2011 compared to 2010. A decline in steel production was apparent in two consecutive years, due to the 2008 crisis and a global slump (**Table 1** and **Figure 1**). The share of Poland in the European Union-wide steel output was 5.1 % in 2014, the same as in 2013. 5.1 M tonnes of converter steel (59 %) and 3.5 M tonnes of electrical steel (41 %) were manufactured in 2014. 2 % less of electrical steel and 15 % more

of converter steel were made than in 2013. The share of the integrated process steel had been rising slowly since 2010 [8-12].

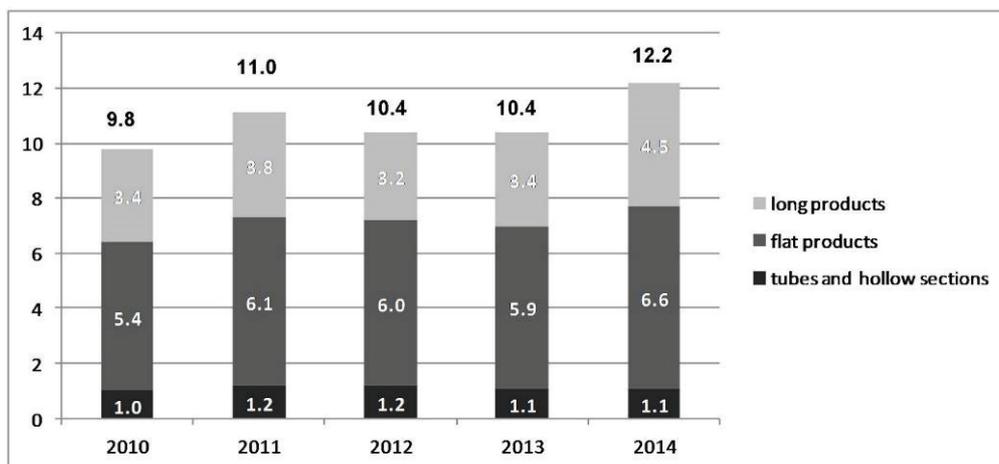
**Table 1** Manufacture of pig iron, crude steel and hot rolled products from 2010 to 2014 (M tonnes) [8-12]

Products	2010	2011	2012	2013	2014	Dynamics 2010 = 100 %
Pig iron	3.6	4.0	3.9	4.0	4.6	27.8
Crude steel	8.0	8.8	8.4	8.0	8.6	7.5
Hot rolled products	6.9	7.5	7.7	7.4	7.5	8.7



**Figure 1** Manufacture of pig iron, crude steel and hot rolled products from 2010 to 2014 [M tonnes]

7.5 M tonnes of hot rolled finished products were made in 2014, that is, 1.8 % more than in 2013 (**Table 1**). Flat products accounted for 37.4 % (2.8 M tonnes) and long products for 62.6 % (4.7 M tonnes) of the overall structure of the hot rolled range. In 2012, the rate of flat to long products was 38:62 in Poland and 61:39 in the European Union-27. 7.5 and 7.7 M tonnes of finished hot rolled products were manufactured in 2011 and 2012, respectively. Their output reached the minimum during the time reviewed in 2010 - 6.9 M tonnes. The growth dynamics of 2014 over the baseline year reached 8.7 % (**Table 1**).



**Figure 2** Apparent consumption of finished steel products from 2010 to 2014 (M tonnes)

Steel consumption is significant with regard to its manufacture. Construction, metal and machinery industry, automotive industry and white goods are prime steel consumers. Apparent consumption of finished steel products in Poland was 12.2 M tonnes in 2014, 17 % greater than in 2013 (**Figure 2**). The apparent consumption consists of production plus imports minus exports. It was higher than the levels attained in 2007 - 12 M tonnes - and 2008 - 11.5 M tonnes. It had risen by 2.4 M tonnes (24.5 %) since 2010. The mechanism of VAT reverse charging was responsible for the growth. Flat products, 54 % of the entire apparent consumption, prevailed in the structure of domestic consumption of finished steel products in 2014. Long products constituted 37 % of the total consumption, while tubes and cold-bent hollow sections accounted for the remaining 9 %. The structure of consumption was comparable in the remaining years under analysis, namely, flat products made up more than 50 %, long products more than 30 %, tubes and hollow sections more than 10 %. It should be noted that long and flat products are high added value ranges. The sector's condition can be represented with *per capita* steel consumption in kgs a head. It amounted to 287.7 kg/ person in Poland and 302.2 kg/ person in the EU-27 in 2012 [7-8].

Trade affects condition of the Polish steel industry. Exports of steel products from Poland totalled 4.8 M tonnes in 2014, 3 % less than in 2013. 90 % comprised exports to the EU, 0.7 % less than the year before, with Germany and the Czech Republic being the key buyers (a total of 53 %). Exports to third-party countries fell by 5 % in 2014, with Russia, Ukraine and Norway being the largest customers for Polish steel products. In 2012, the exports totalled 5.6 M tonnes, 14 % more than in 2014. Imports of steel products amounted to 9 M tonnes in 2014, i.e. 13 % greater than in 2013. The imports from the EU had risen by 12 %, accounting for 74 % of all the imports, just like in the preceding year. Imports from third-party countries had increased by as much as 17 % since 2013. The imports rocketed the most from Brazil, Moldova and Belarus and maximum quantities were purchased in Ukraine as far as the third-party countries are concerned. The foreign trade balance in 2014, in respect of both quantity and value, was negative and totalled - 4.2 M tonnes and € -3.4 B respectively. In 2012, the balance had been better: -2.5 M tonnes, and its value was -3.0 M tonnes in 2013 [8].

GNP steel consumption, measured by kgs of finished products consumption for US\$1 of GNP, is a metric essential to assessments of steel industries. It attained 0.0205 for Poland and 0.0086 for the EU-27 in 2012. The former is distinctly higher, proof of a dynamic development of infrastructure consuming steel products. The last metric, productivity of the Polish steel industry, amounted to 367 tonnes/person for Poland and 481 tonnes/person for the EU-27 in 2012. The sector's productivity had improved substantially since 1990 (93 tonnes/ person), evidence that employment had been suited to output. Forecasts (e.g. Metal Bulletin Research) anticipate steel production will grow by an annual average (referred to as CAGR - Compound Annual Growth Rate) of 3.5 % till 2025 to reach 2.3 B. tonnes [7].

The steel industry in Poland can be said to have grown in 2010-2014, most markedly in 2012, where the steel output achieved a maximum of 12.2 M tonnes. Reinvigoration of the prime steel consumers - construction, steel structures sector, machine, steel products and tube manufacturing industries - drove the rising demand for steel products. Realisation of major infrastructure projects from the previous budgeting perspective (2007-2013) using the European Union aid (road, rail, gas, energy investments) was a major growth factor. This influenced the rising apparent consumption of steel products.

Both Poland and the European Union returned to the path of growth after two years of falling output of crude steel and apparent consumption of steel products. This is demonstrated by the characteristics of the steel sector indicated above and the Steel Weighted Industrial Production Index - SWIP - linking production activities of the sectors consuming steel products and domestic consumption of steel [8-12]. This denotes sales in the sectors consuming steel products. It grew by 5.6 % (y-o-y) in 2014, compared to a 3.3 % drop in 2013. This dramatic rise of the SWIP was chiefly produced, as it has already been noted, by a boost in construction and steel structure sectors, customers for approximately 44 % of steel consumed in Poland, as well as higher activity in machinery industry, steel products and tubes production industry. The index increased by 1.2 % (y-o-y) in 2012, compared to a 14.3 % rise in 2011.

#### 4. CONCLUSION

The following conclusions can be drawn from the foregoing evaluation of development of the steel industry in Poland in 2010-2014, consequences of its restructuring and indicators characterising the sector:

- 1) At the time of the systemic transformation (1989), the steelmaking in Poland required thorough-going measures to „cure” it. It had to be restructured. The process of restructuring undertaken in 1990 resulted in the intended changes: the ineffective manufacturing capacities were trimmed, financial standing of the mills in recovery improved, excessive employment was cut, and state-of-the-art and good quality steel products began to be manufactured.
- 2) Some positive developments occurred in the steel industry upon restructuring in 2010-2012. The steel output reached a record high of 12.2 M tonnes in 2012. The rising demand for steel products was caused, above all, by a boost in the key steel consumers - construction, steel structures, machinery, steel products and tube sectors. Realisation of major infrastructure projects in the budgeting perspective 2007-2013 using the European Union aid (road, rail, gas, energy investments) was a major growth driver. This influenced the greater apparent consumption of steel products.
- 3) The steel industry is an important branch of economy in Poland, a country of long-standing mining and metallurgical traditions, since it drives development of other sectors (providing materials for construction, mechanical and electric machinery, shipbuilding industry, motoring, household appliances industries), while steel fulfils the role of a prime structural material. In effect, the condition of this industry affects development and competitiveness of the Polish economy. Intelligent specialisations identified at the national and regional levels may serve as development opportunities for the sector. Actions to enhance competitiveness and innovation of the sector in Poland need to be supported.

#### REFERENCES

- [1] ROKICKI, T., BARAN, J. Situation of the steel industry of Poland. In *METAL 2015: 24rd International Conference on Metallurgy and Materials*. Ostrava: TANGER, 2015, pp. 2044-2050.
- [2] WYSOKIŃSKI, M., GOŁASA P., BARAN, J. Efficiency of the metal production sector in Poland compared to other manufacturing industries. In *METAL 2015: 24rd International Conference on Metallurgy and Materials*. Ostrava: TANGER, 2015, pp. 2131-2138.
- [3] MIŁEK, D. Regional Specializations and Europe 2020 Strategy. *Journal of Management and Finance*, 2013, vol. 2, no 1, pp. 189-199 (in Polish).
- [4] MIŁEK, D., NOWAK, P. Regional Specialisation as an Endogenous Factor in the Development of Poland's Provinces. *Equilibrium. Quarterly Journal of Economics and Economic Policy*, 2015, vol. 10, no. 2, pp. 115-135.
- [5] KARDAS, M., SZULC, W. *Restructuring of the Polish steel industry*. Prace Instytutu Metalurgii Żelaza, 2010, no. 1, pp. 220-227 (in Polish).
- [6] GAJDZIK, B., SZYMSZAL, J. *Forecasting of changes in production of steel and employment in the Polish steel industry*, [in:] *Innovation in management and engineering*, Vol. 1, R. Knosala (red.), Oficyna Wydawnicza PTZP, Opole, 2016, pp. 571-578 (in Polish).
- [7] SZULC, W. Transformation of Polish iron industry to the free market economy (with supplements). Gliwice: Prace Instytutu Metalurgii Żelaza, Monografia no. 6, 2014. 268 p (in Polish).
- [8] POLISH STEEL INDUSTRY 2015, POLISH STEEL ASSOCIATION, Katowice, 2015, pp. 20 -28 and 42-46.
- [9] POLISH STEEL INDUSTRY 2014, POLISH STEEL ASSOCIATION, Katowice, 2014, pp. 20-30.
- [10] POLISH STEEL INDUSTRY 2013, POLISH STEEL ASSOCIATION, Katowice, 2013, pp. 17-25.
- [11] POLISH STEEL INDUSTRY 2012, POLISH STEEL ASSOCIATION, Katowice, 2012, pp. 20 -26.
- [12] POLISH STEEL INDUSTRY 2011, POLISH STEEL ASSOCIATION, Katowice, 2011, pp. 18-28.