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We are pleased to present you with the full version of our analytical report. As the first issue in 2019, this report will provide preliminary data for 2018 and expert forecasts for 2019.

The key findings of our research will be published by leading Russian media outlets.

We have published this report every year since 2015 with the aim of providing a comprehensive study on the metals industry.

Please feel free to contact us if you have any questions regarding this report.

Key topics of this project are:

- Overview of the global iron and steel market;
- Overview of the Russian iron and steel market;
- Digitalization in Russian metals companies.
### Key findings

In 2018:

- Global steel production rose 4.9 percent to 1.803 billion tonnes;
- Global steel consumption increased 4.0 percent to 1.792 billion tonnes.

The increase in output was driven by China, where production rose by 7.8 percent (compared to 1.9 percent for the rest of the world).

According to forecasts, steel prices will drop in 2019, leading to a decline in production growth rates from 4.9 to 1.3 percent.

At the same time, demand for steel will increase this year, although at a more modest rate of 1 percent.

Prices for raw materials reached their multi-year highs in 2018. This was fueled by a number of factors, including trade disputes, the reduction in steel capacity in China and various environmental disasters that occurred during the year.

Russia produced 71.3 million tonnes of steel in 2018. EVRAZ, NLMK, Severstal, MMK, Metallinvest and Mechel had combined output of 64.1 million tonnes of steel or 89 percent of Russian steel production in 2018.

EVRAZ posted the highest EBITDA among Russia’s leading metals companies.

In monetary terms, Russian imports of rolled steel were up 2 percent while imports of pipe products in 2018 compared to 2017 did not change. In physical terms imports of rolled steel and pipe products fell by 4 percent and 22 percent respectively.

Exports of rolled steel rose 10 percent in monetary terms despite falling 3 percent in physical terms.

The value of pipe product exports were up 26 percent and volumes rose 15 percent.
Overview of the global iron and steel market
Production trends

According to preliminary data from the World Steel Association (WSA), global production rose 4.9 percent to 1.803 billion tonnes in 2018. This growth was mainly due to a 7.8 percent increase in Chinese output (compared to 1.9 percent growth for the rest of the world).

Global production rose 3.8% in the first two months of 2019, also principally driven by rising Chinese output, which has been fueled by a government program to stimulate domestic demand. Production in the US also grew – by 6.9 percent – while in the rest of the world it fell 2 percent in the first two months of 2019. Experts from the Economist Intelligence Unit (EIU) are expecting a decline in steel prices in 2019, which it believes will lead to production growth slowing to 1.3 percent. The EIU is forecasting a 0.9% fall in global production in 2020.

Asia
High prices fueled a 7.8 percent increase in Chinese steel production in 2018. Preliminary forecasts for 2019 suggest that output growth in China will slow to 1.5 percent in 2019, reflecting decreasing demand for steel from the construction industry and a reduction in inventories amid lower prices.

Steel production in Asia (excluding China) rose 2.1 percent in 2018, boosted by reduced Chinese exports, allowing other producers such as Vietnam and Malaysia (both of which launched new capacity in 2018) to capture market share. Steel output in India increased by 5 percent in 2018 and replaced Japan as the world’s second largest steel producer. Japanese production fell 0.3 percent.

Steel output in Asia (excluding China) is expected to grow 2.5 percent in 2019 amid a regional slowdown in economic growth and fall 1.5 percent in 2020 as Chinese exports pick up again, putting pressure on local production.

Figure 1. Global steel output

Source: EIU and WSA data
Production trends

Figure 2. Steel output growth*, by month (mln tonnes)

<table>
<thead>
<tr>
<th>Month</th>
<th>2017</th>
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<td>152</td>
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<tr>
<td>December</td>
<td>145</td>
<td>147</td>
</tr>
</tbody>
</table>

North America
Regional output rose 3.9 percent in 2018, with growth of 6.2 percent in the US offsetting a decline in Canada and stable production in Mexico.

Steel producers in the US ramped up capacity utilization as prices and margins improved for US metals companies. This may lead to an increase in inventories by mid-2019, which alongside limited capacity and the weakening effect of rising interest rates, could result in reduced demand. Nonetheless, experts are forecasting that output will continue to grow in North America: by 3 percent in 2019 and 1 percent in 2020.

In the longer term, American steelmakers are potentially considering expanding investment in new capacity, as the tariffs imposed by the US administration in March 2018 look increasingly likely to remain in place.

European Union
In July 2018, the European Commission announced the introduction of tariff quotas on 26 types of steel goods to protect the domestic market. In January 2019, these restrictions were extended until July 2021. The quota has been set at the average level of imports over the past three years, plus 5 percent. A 25 percent tariff applies on anything above this. However, this move does not represent an abrupt tightening of supply and demand in Europe, as the annual quota for most products is set at the 2017 import level, plus/minus 10 percent.

Output in the EU declined 0.3 percent year-on-year in the second half of 2018 against the backdrop of low production volumes over the summer month and a weakening economy. Despite minor consumption growth, falling rolled steel exports to Algeria and North America was a blow to production. Amid this weakening demand, the EU forecasts that steel production in the EU will decline 1 percent in 2019, falling a further 1.5 percent in 2020.

Figure 3. Steel output by region (% 2018)

- China (51%)
- Other Asian countries (19%)
- EU (9%)
- North America (7%)
- CIS (6%)
- South America (2%)
- Other European countries (2%)
- Middle East (2%)
- Africa (1%)
- Australia & New Zealand (<1%)

* WSA compiles data for 64 steel-producing countries
Source: World Steel Association, EIU
Consumption trends

EIU figures show that global steel consumption rose 4% to 1.792 billion tonnes in 2018.

There is stable consumption growth in North America and emerging markets in Asia. Despite the economic slowdown, Chinese demand for steel demonstrated significant growth, up 5.5 percent.

After two years of rising steel consumption, faltering global economic growth, rising interest rates, lending restrictions in China, trade disputes and a cyclical slowdown in the automobile sector in developed markets are set to slow down global consumption in 2019.

However, steel consumption is still forecast to increase in 2019, although at a slower rate of 1 percent. Flagging global trade and debt problems in emerging markets will cause a 0.4 percent decline in steel demand in 2020.

Asia

China accounts for 48 percent of global steel consumption while Asia as a whole is responsible for 68%, meaning that the region plays a pivotal role for the entire steel market. Chinese demand for crude steel is estimated to have risen 5.5 percent in 2018 although consumption tailed off in the second half of the year as construction activity declined. Macroeconomic trends in the Chinese economy have also had negative impact on consumption and will continue to for some time. Even though China’s economic growth remains relatively stable, fixed capital investments in China dropped 5.3 percent in August 5.8%, compared to 7.2% and 8.1% in August 2016 and 2017 respectively. The trade standoff between the US and China is stifling manufacturing exports and poses a further problem for consumption. To make matters worse, Chinese industrial production fell 5.3 percent year-on-year. An overall tightening of lending to the residential and infrastructure construction sector will further suppress Chinese demand for steel in 2019–2020. Given the above mentioned challenges, the EIU believes that steel consumption will increase by just 1 percent in 2019, followed by a slight decline in 2020 due to weakening trade in manufactured goods and domestic restrictions on capital investments.

In Asia (excluding China), steel demand rose by around 4 percent in 2018. Forecasts expect demand in the region to rise by an average of 1.5 percent in 2019–2020. Regional demand may also be dampened by the trade dispute between the US and China, although this will be offset by the ongoing expansion of production capacity in the region.

Steel consumption in India increased by around 7.5 percent in 2018, resulting in declining exports and rising imports. India has one of the fastest growing steel markets in the world. High steel consumption will likely be maintained over the next two years, sustained by lower interest rates, which will in turn stimulate capital investment and consumer spending. Infrastructure projects such as the Bharatmala road and highways initiative, the Sagalmala logistics improvement program, the electrification of railway lines, dedicated freight corridors and the production of metro rails will also boost demand.
Consumption trends

Middle East and Turkey
The partial recovery of world oil prices in 2018, despite declines towards the end of the year, has enabled increased spending by governments and private oil companies in oil-exporting countries. Demand for steel in Persian Gulf countries such as Saudi Arabia, which plummeted 30 percent following the sharp decline in commodity prices, should recover in 2019–2020, but this recovery may be constrained by internal problems in specific countries. Oil prices have not recovered sufficiently to allow countries such as Oman and Saudi Arabia to balance their budgets, resulting in comparatively low spending on infrastructure.

Steel consumption in Turkey totaled over 30 million tonnes in 2018. The country is a major steel producer, accounting for over 20 percent of interregional trade of ferrous scrap. The sharp rise in interest rates in the second half of 2018 was a major blow to the construction industry and will depress demand in 2019–2020. Turkish steel output dropped 16 percent year-on-year in January–February 2019 as a number of steel mills shut down production due to lack of demand. The situation is likely to get worse as the government has halted new capital projects and shut projects that have already started on hold, which will hurt steel demand. The situation in Turkey is exacerbated by the loss of key export markets in the US and Europe as a consequence of trade protectionism.

North America
According to preliminary estimates, North American steel consumption increased 4 percent in 2018. Rising consumption was buoyed by a boom in the energy sector, an increase in capital investment and high consumer spending. However, these factors are likely to have a more muted impact in 2019. Car sales are expected to drop while higher interest rates will stunt activity in both residential and non-residential construction. Higher prices will push down US steel demand from the manufacturing industry, which (where possible), will look to switch to foreign steel goods, as tariffs push US prices above those on the global market. EIU experts are therefore forecasting a rise in consumption of around 2 percent in 2019, and a small decline in 2020 due to falling trade and weak figures from the manufacturing sector.

European Union
European carmakers scaled down production in the last quarter of 2018 and reduced their steel orders. There are other factors stifling steel consumption. The trade dispute between the US and China has already had an impact on German industrial production as demand for high-cost goods has fallen. There is a risk that if the EU-US trade conflict goes on to affect the auto trade, this could have an additional adverse impact on steel consumption in the EU. The fastest growing demand in the EU is concentrated in Central Europe, where spending on infrastructure and the relocation of production are bolstering demand for steel. However, a revision of the EU budget (excluding the UK), could reduce spending on infrastructure projects. A hard Brexit could aggravate this. Experts are therefore forecasting a 20 percent drop in consumption in the EU in 2019 followed by a small increase of 1 percent in 2020.

Figure 5. Global steel consumption by region (% of total, 2018)

- China (47%)
- Other Asian countries (21%)
- EU (10%)
- North America (8%)
- Middle East (4%)
- South America (3%)
- CIS (2%)
- Africa (3%)
- Other European countries (2%)
- Australia & New Zealand (<1%)

Source: World Steel Association, EIU
Raw material price trends

Prices for raw materials reached their multi-year highs in 2018. This was fueled by a number of factors, including trade disputes, the reduction in steel capacity in China and various environmental disasters that occurred during the year. At the start of 2019 the majority of experts were forecasting a decline in prices for steel, iron ore and coal. However, in late January, a dam collapsed at Vale’s Córrego do Feijão mine in Southern Brazil, killing over 200 people and triggering the closure of all upstream dams. Regulators also temporarily halted the operation of Brucutu mine in South-Eastern Brazil, with annual capacity of 30 million tonnes, to conduct inspections. Due to the fact that other mines may be closed for safety reasons, iron ore production is expected to decline by about 50 million tonnes in 2019. The price of iron ore rose to USD 90 per tonne after Vale declared a force majeure event. However, other producers are expected to increase supply in 2019. For example, Anglo American (UK/South Africa) is reopening its mine in Brazil with capacity of 26 million tonnes per year that had been mothballed for the majority of 2018 due to leaks in a pipeline. Spot deliveries from suppliers in Eastern Canada, North and West Africa, Iran, South East Asia and the West coast of South America may also increase. Any price increase to over USD 100 per tonne will likely lead to a wide-ranging restart of vacant capacity in China, which would quickly drive down prices.

The EIU’s initial forecast said that iron ore will trade between USD 45–70 per tonne in 2019–2020. However, the loss of a significant part of iron ore supply will keep the market on edge, especially in the first half of 2019, and as a result, the forecast has been changed to over USD 80 per tonne. Prices will return to the initial forecast range by late 2019–early 2020.

Source: EIU, The Steel Index S&P Platts
Prices for coking coal traded at around USD 200 per tonne in 2018. This is significantly above marginal costs; even though prices have periodically dropped to USD 175 per tonne, they have then risen again due to multiple operational failures.

For example, a dispute between the Queensland coal regulator and the railway freight hauler Aurizon disrupted rail deliveries from mines to Australian ports in the second and third quarters of 2018. A fire at the Peabody mine in North Goonyella forced Australia to declare a force majeure event and a fire at a mine in Shandong Province, China, triggered safety inspections. The interruptions are continuing into 2019: Port Dalian restricted imports of Australian coal, supposedly for ecological reasons, but more likely in a politically-motivated move.

Barring further shocks in supply (which cannot be completely ruled out), prices are forecast to return to the long-term forecast of USD 125–160 per tonne; however, the deficit, consistently very strong Chinese production volumes and the spectre of future weather-related disruptions could keep prices at USD 200 per tonne FOB for the first half of 2019.
Prices for ferrous scrap changed in line with global trends and depended on the market situation.

Prices for steel and steel products grew following the Vale disaster in Brazil in early 2019. This also affected prices for scrap metal; however, they began declining in late February–early March.

The situation on the ferrous scrap market is largely dependent on trade relations between the US and Turkey, which are the world’s largest exporters and importers of iron and steel scrap.

Turkish scrap imports fell 1.5% to 20.7 million tonnes. The value of imports reached USD 7.1 billion, up 16.3 percent year-on-year. A total of 3.7 million tonnes of scrap was imported from the US, a 2.45 percent decline on the previous year. Scrap imports from the UK dropped 16.72 percent and totaled 2.6 million tonnes.

The US is also a major consumer of scrap, and in contrast to Turkey, has ramped up imports to over 5 million tonnes, an all-time record for the country. This was mainly due to the 25% duty slapped on steel. The US exported 17.33 million tonnes of scrap, a 15.7 percent increase on the previous year. These exports were worth around USD 5.9 billion, up 21.2 percent year-on-year. Turkey exported 3.43 million tonnes of scrap, down 5.6 percent year-on-year. The US exported 1.97 million tonnes to Taiwan, 1.83 million tonnes to Mexico, 1.41 million tonnes to Canada and 1.02 million tonnes to Vietnam.

Price volatility for metals is expected on the US market over the coming year as potential price declines in Turkey could lead scrap consumers to switch to Turkish goods, in turn lowering prices in the US.
Steel prices trends

Figure 10. Prices for hot-rolled steel, USD per tonne, 2018–2019 (CIS exports, FOB Black Sea)

574 586 615 598 568 553 566 564 538 526 487 466 452 496 518 499

Production of hot-rolled steel remained high in China in the last two months of 2018, driving prices down by an average of USD 50 per tonne in the last six weeks of the year. After trading within a narrow range of around USD 570 per tonne for most of 2018, prices slumped to a low of USD 450 per tonne by January 2019. The replenishment of inventories after the Chinese New Year pushed prices up by more than USD 50 to USD 525 per tonne. However, prices will started dipped again at the end of the second quarter amid faltering demand in China, and is expected to hit new lows in the second half of 2019.

A number of suppliers from the emerging markets – the CIS countries, India and Brazil – were able to gain a market share in 2018 due to rising prices in China. When prices in China fell, these exporters were forced to cut their prices in order to hold onto their market share as domestic demand in these countries is very weak.

Forecast prices are under pressure from US trade policy and changes in Chinese policy (including a reduction in the number of working days at coal mines in 2016 and the closure of induction furnaces in 2017). These factors will continue to have an impact on steel prices in 2019–2020.

Source: EIU, MetalBulletin
Overview of the Russian iron and steel market
Overview of the steel and iron ore market | Overview of the Russian iron and steel market

Production trends

According to preliminary figures published by the World Steel Association, Russia produced 71.7 million tonnes of steel in 2018.

According to a Russian Economic Development Ministry estimate, Russian GDP increased 2.3 percent in 2018, following growth of 1.5 percent in 2017. The Russian Federal Statistics Service’s revision of construction activity in 2017–2018, conducted in January, had a major impact on the GDP growth estimate. The figures for 2018 changed most dramatically: construction activity rose 5.3 percent in the amended data for last year, while the previous estimate for 11 months had been just 0.5 percent year-on-year growth. Construction sector growth in 2017 was revised up by 0.2 percentage points to 1.2 percent.

The metals and machine building sectors also increased output slightly in 2018, rising 1.6 percent and 1.2 percent respectively. However, growth in these sectors, as in previous years, is highly volatile: the standard deviation of annual growth was 7.9 percent and 6.8 percent respectively. Growth slowed for the metals and machine building industries in the second half of the year, mainly driven by the overall sluggishness of the manufacturing sector.

The slowdown in manufacturing is reflected in its median growth rate, which iron out the influence of the most volatile components. Growth was 1.9 percent year-on-year in H2 2018, down from 3.0 percent year-on-year in January–June, and slowing to 0.2 percent by December (average manufacturing growth was zero in the last two months of 2018).

Figure 11. Metal products shipped (RUB billion)

Source: Rosstat, the Russian Ministry of Economic Development

Figure 12. Steel production in Russia, 2018–2019

Source: Rosstat, the Russian Ministry of Economic Development
Production trends

Table 1. Financial performance of leading Russian steelmakers

<table>
<thead>
<tr>
<th></th>
<th>Revenue, USD million</th>
<th>EBITDA, USD million</th>
<th>Margin (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EVRAZ</td>
<td>12,836</td>
<td>3,777</td>
<td>29%</td>
</tr>
<tr>
<td>NLMK</td>
<td>12,046</td>
<td>3,589</td>
<td>30%</td>
</tr>
<tr>
<td>Severstal</td>
<td>8,580</td>
<td>3,042</td>
<td>37%</td>
</tr>
<tr>
<td>MMK</td>
<td>8,214</td>
<td>2,418</td>
<td>29%</td>
</tr>
<tr>
<td>Metalloinvest</td>
<td>7,187</td>
<td>2,934</td>
<td>34%</td>
</tr>
<tr>
<td>Mechel</td>
<td>4,970</td>
<td>1,203</td>
<td>24%</td>
</tr>
</tbody>
</table>

In 1H 2018, EVRAZ, NLMK, Severstal, MMK, Metalloinvest, and Mechel produced a combined total of 64.1 million tonnes of steel, or 89 percent of Russian steel production in 2018. The margins of leading Russian metals companies ranged between 24 percent and 37 percent in H1 2018, all up 2-5 percentage points on the previous year with the exception of Mechel, which saw EBITDA margin drop 3 percentage points, and Metalloinvest whose margin was unchanged.

Figure 13. Steel output by leading steelmakers, (’000 tonnes)

Severstal, Rosnano and Windar Renovables opens Bashni VRC, Russia’s first plant to manufacture wind turbine towers.

The opening ceremony took place on 13 December in Taganrog, Rostov Oblast. The Bashni VRC plant was built as part of a government program to develop renewable energy, specifying the localization of renewable equipment and the creation of a new sector of high-tech machine building. The joint venture (JV) is the first Russian producer of wind turbine towers. Investment in the first phase is over RUB 750 million. Windar Renouvables’ share in the JV is 51 percent with Rosnano and Severstal holding 24.5 percent each. Severstal can deliver the steel sheet required for production on competitive terms.

EVRAZ to expand production of railway wheels.

EVRAZ has launched an investment project to expand the production capacity of its wheel shop at its Nizhny Tagil Steel Plant. The project will optimize the forging, inspection and machining lines. This will boost output by 78,000 wheels per year and meet the most stringent customer requirements. The project includes the launch of two automated full section wheel machining lines and the construction of a third inspection line, which is to include a wheel geometry laser measurement plant, nondestructive testing stations for surface and internal defects, a shot peening plant and a cold marking (embossing) station. The company is investing around USD 60 million in the project. Launch is scheduled for 2021.

Mechel prolongs coal supply contract with China’s Jidong Cement and expands cooperation with Japan’s Itochu Corporation.

Mechel is planning to ship up to 2 million tonnes of thermal coal to Jidong Cement in 2019. Monthly deliveries will vary between 100,000 tonnes and 150,000 tonnes of coal products. Mechel shipped 1.9 million tonnes to Jidong Cement in 2017 and 1.4 million tonnes in 2018. Mechel will also deliver up to 800,000 tonnes of coking and thermal coal to Itochu Corporation from December 2018 to March 2020.

Source: company data
Consumption trends

Pipe industry
According to preliminary data for 2018, Russian pipe output rose 2 percent compared to 2017. Production of large diameter pipes soared 18 percent while all other sectors of the market declined in the range of 2 percent. Forecasts for 2019 expect a 5 percent increase in demand for oil country tubular goods (OCTG) pipes and 2 percent for industrial pipes. The overall 2019 growth forecast for pipe consumption is 1%.

Gazprom is the main consumer of large diameter pipes, accounting for more than half of the entire market (58 percent).

Automotive industry
Car production rose 15.9 percent in 2018. Output of Russian car brands increased by 18.1 percent to 414,900 units in 2018, up from 351,400 units in 2017. Foreign car brands increased production in Russia by 15.1 percent to 1,149 million units, up from 997,700 units in 2017. The share of foreign brands in total Russian car production was 73.5 percent in 2018, down slightly from 74 percent the previous year. Sales of light commercial vehicles (LCV) fell 6 percent in December 2018 and were down 0.7 percent for the year. This year could see a small growth in sales of 3–5 percent. Sales of trucks dropped 9.7 percent in December 2018 and were down 3 percent for the year. Truck sales are also expected to show a slight sales growth in the range of 5 percent in 2019.

Construction
Preliminary Rosstat data shows that 75.66 million square meters of housing supply was commissioned in 2018. This is around 5 percent less than in 2017. Apartment blocks accounted for 43.24 million square meters and individual housing construction totaled 32.42 million square meters. As of 1 January 2019, around 127.5 million square meters of apartment blocks were under construction. The Construction Ministry has not ruled out a minor drop in construction in 2019 due to housing developers’ mandatory transition to escrow accounts from 1 July this year. Given the importance of the construction industry, the Russian President has set the objective of reaching annual housing commissioning of 120 million square meters over the next five years (until 2024).
Exports of ferrous metals

Exports of rolled steel rose 10 percent to USD 5.034 billion in monetary terms in 2018, despite falling 3 percent to 8.351 million tonnes in physical terms.

The value of pipe product exports were up 26 percent to USD 2.625 billion and volumes rose 15 percent to 2.478 million tonnes.

Table 2. Rolled steel exports

<table>
<thead>
<tr>
<th>Country</th>
<th>Value (USD million) 2018</th>
<th>Value (USD million) 2017</th>
<th>Weight ('000 tonnes) 2018</th>
<th>Weight ('000 tonnes) 2017</th>
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</thead>
<tbody>
<tr>
<td>Turkey</td>
<td>1,249</td>
<td>1,288</td>
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<td>Belarus</td>
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<td>Germany</td>
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<td>183</td>
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Source: Russian Federal Customs Service

Table 3. Pipe product exports

<table>
<thead>
<tr>
<th>Country</th>
<th>Value (USD million) 2018</th>
<th>Value (USD million) 2017</th>
<th>Weight ('000 tonnes) 2018</th>
<th>Weight ('000 tonnes) 2017</th>
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<tr>
<td>Finland</td>
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<td>Bulgaria</td>
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<td>India</td>
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</tbody>
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Source: Russian Federal Customs Service

Flat-rolled products: TNVED 7208; 7209; 7210; 7211; 7212; pipe products: TNVED 7303,7304,7305 and 7306
Imports of ferrous metals

Imports of rolled steel rose 2 percent to USD 2.039 billion in monetary terms in 2018 despite falling 4 percent to 2.852 million tonnes in physical terms.

Table 4: Imports of flat-rolled products

<table>
<thead>
<tr>
<th>Country</th>
<th>2018 Value (USD million)</th>
<th>2017 Value (USD million)</th>
<th>2018 Weight ('000 tonnes)</th>
<th>2017 Weight ('000 tonnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kazakhstan</td>
<td>881</td>
<td>797</td>
<td>1,414</td>
<td>1,352</td>
</tr>
<tr>
<td>Ukraine</td>
<td>370</td>
<td>338</td>
<td>649</td>
<td>644</td>
</tr>
<tr>
<td>China</td>
<td>317</td>
<td>414</td>
<td>380</td>
<td>556</td>
</tr>
<tr>
<td>South Korea</td>
<td>172</td>
<td>150</td>
<td>160</td>
<td>147</td>
</tr>
<tr>
<td>Germany</td>
<td>81</td>
<td>72</td>
<td>65</td>
<td>62</td>
</tr>
<tr>
<td>Belgium</td>
<td>52</td>
<td>57</td>
<td>46</td>
<td>54</td>
</tr>
<tr>
<td>Hungary</td>
<td>23</td>
<td>14</td>
<td>16</td>
<td>11</td>
</tr>
<tr>
<td>France</td>
<td>22</td>
<td>25</td>
<td>18</td>
<td>24</td>
</tr>
<tr>
<td>Finland</td>
<td>21</td>
<td>29</td>
<td>18</td>
<td>26</td>
</tr>
<tr>
<td>Turkey</td>
<td>18</td>
<td>14</td>
<td>17</td>
<td>15</td>
</tr>
</tbody>
</table>

Imports of pipe products in monetary terms in 2018 compared to 2017 did not change and amounted to USD 1.062 billion, while declining 22 percent to 574 thousand tonnes in physical terms.

Table 5: Imports of pipe products

<table>
<thead>
<tr>
<th>Country</th>
<th>2018 Value (USD million)</th>
<th>2017 Value (USD million)</th>
<th>2018 Weight ('000 tonnes)</th>
<th>2017 Weight ('000 tonnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>247</td>
<td>203</td>
<td>107</td>
<td>115</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>163</td>
<td>123</td>
<td>160</td>
<td>135</td>
</tr>
<tr>
<td>Ukraine</td>
<td>108</td>
<td>125</td>
<td>83</td>
<td>150</td>
</tr>
<tr>
<td>Italy</td>
<td>75</td>
<td>70</td>
<td>19</td>
<td>18</td>
</tr>
<tr>
<td>Belarus</td>
<td>63</td>
<td>73</td>
<td>72</td>
<td>89</td>
</tr>
<tr>
<td>Japan</td>
<td>58</td>
<td>37</td>
<td>21</td>
<td>12</td>
</tr>
<tr>
<td>Germany</td>
<td>54</td>
<td>193</td>
<td>12</td>
<td>135</td>
</tr>
<tr>
<td>South Korea</td>
<td>43</td>
<td>9</td>
<td>16</td>
<td>3</td>
</tr>
<tr>
<td>Austria</td>
<td>40</td>
<td>15</td>
<td>22</td>
<td>9</td>
</tr>
<tr>
<td>US</td>
<td>33</td>
<td>38</td>
<td>3</td>
<td>5</td>
</tr>
</tbody>
</table>

Source: Russian Federal Customs Service

Flat-rolled products: TNVED 7208; 7209; 7210; 7211; 7212; pipe products: TNVED 7303, 7304, 7305 and 7306.
Digitalization in metals companies

The use of various IT tools and solutions is helping metals companies optimize production process management, industrial safety, labor resources and financial flows, and the adoption of e-commerce services is enabling them to sell metals goods online. Severstal launched its online store in 2017, closely followed by NLMK, Mechel and others.

Severstal

Computer modeling

Severstal is launching computer modeling services for external clients. The computer modeling center uses mathematical and machine analysis to calculate the characteristics of products and equipment, work out strength and define the special properties of materials. This technology can also be used to simulate the processing and testing of materials, and be employed on rolling and straightening, hydro-and gas dynamics, pipe production and stamping projects. In the two and a half years since its launch, the computer modeling center has conducted 19 projects, generating total savings of RUB 70 million. Now, having developed modeling skills in various fields, the computer modeling center is ready to actively expand its portfolio of projects, offering its services to external as well as internal clients.

Smart power distribution system

Severstal and SAP have created a prototype solution for smart power distribution, developed on SAP Cloud Platform. The use of this new machine learning application will enable Severstal to quickly detect deviations from the normal electricity consumption rate, which can help reduce power costs. The project, which took four months to create, was the result of joint innovation by Severstal specialists and SAP Digital Business Services. The solution uses mathematical algorithms and machine learning tools to recognize anomalous situations, and sends notifications to the users responsible. This product will ensure the reliability of accounting data, improve energy consumption forecasts and enhance production and repair plans. The system will be able to quickly identify and eliminate power supply problems. The Analytic Monitor submodule makes it possible to analyze electricity consumption, purchases and generation for by the half-hour, day and month.

Metalloinvest

Automated warehouse management system

Metalloinvest has introduced an automated warehouse management system (WMS). The basic version of the project has been implemented in most of the company’s regional warehouses and logistics centers. The project aims to drive a transition to a new modern accounting system for warehouse operations, to improve their speed and accuracy, and thus significantly improve customer service. The implementation process comprises several stages and is set to comprehensively automate all warehouse processes. The system cuts customer service times and simplifies the search and accounting of rolled products. All product movements are recorded by warehouse workers with the help of special portable data terminals (PDT) to automate operations. The storage area has been divided into cells and barcoded to make product search easier. All products have been assigned stock keeping units and labeled with special identification tags. The selection of rolled products and processing of paperwork have been optimized and a separate accounting for surplus inventory has been introduced.

Source: Corporate press-releases, metalinfo
Digitalization in metals companies

MMK Corporate Information System
Magnitogorsk Iron and Steel Works (MMK) successfully commissioned a new version of its corporate information system (CIS) based on Oracle e-Business Suite v.12 technology on 1 April 2019. Work to optimize and standardize MMK Group’s business processes on the basis of a single CIS was completed in 2018–2019.

The new CIS will improve the management of production (both continuous and discrete), inventories, repairs and purchases (including the e-trading platform), finances, personnel (including payroll), projects, orders and sales. Information streams have also been set up to provide data for modeling the enterprise’s processes and predicting the results of its activities. The steelmaker has successfully reduced the number of old customizations and introduced numerous enhancements, significantly increasing its efficiency.

The company expects to complete the second stage of the project in July, when MMK Metiz and USC will start using the CIS, supported by the new version of Oracle e-Business Suite. The company also has plans to introduce this CIS into its machine-building division, Mekhanoremontny Kompleks, as well as into a number of its other enterprises.

The corporate information system will not only record MMK’s business-related activities, but will also monitor the entire chain of production processes, the condition of all large mills and units, and equipment idleness and repairs. The system presents real-time data on the activities of the enterprise in question, allowing company management to make informed decisions based on a single source of information.

Program-controlled RPA robot
MMK Group has developed its first program-controlled robot capable of executing an employee’s functions on a computer.

The robot was created by MMK Infoservice’s Center for RPA and Innovation based on innovative RPA (Robotic Process Automation) technology.

The robot, which has already been commissioned, was developed to promote efficient cooperation between MMK’s commercial department and suppliers of metal scrap. It processes incoming emails from suppliers, searches Russian Railways databases to check the status of freight cars being dispatched to MMK, updates the commercial department on the results of these checks, and drafts reports about specialized services at MMK. The program carries out these operations quickly and accurately, avoiding problems associated with human error.

The key task for MMK Infoservice’s Center for RPA and Innovation is to design and launch program-controlled robots capable of performing routine business operations. This will give MMK’s specialists more time to solve complex tasks requiring creativity and experience.

Source: Corporate press-releases
Digitalization in metals companies

NLMK Personnel positioning system
NLMK has launched a pilot project to implement a personnel positioning system at the Stoilensky open pit mine, Russia's second largest producer of iron ore concentrate. The system will improve safety as it will enable a rapid response to emergencies by monitoring and analyzing the actions of employees and equipment. The system can locate workers in the mine in real time, automatically sets shift targets and monitors results. It also warns the operator if workers stray into hazardous areas or use equipment incorrectly.

Automated human resources management system
NLMK Group has installed a human resources management system based on SAP Human Capital Management (SAP HCM) and the SAP SuccessFactors cloud solution. A centralized human resources management system was created, covering the 52,000 users of the company's Russian sites. The remuneration system was unified, an integrated recruitment process was launched, as well as a platform for evaluating employees and calculating remuneration based on performance. This has significantly reduced the time required to create analytical reports and streamlined the process of hiring employees and moving them to new positions within the company. The introduction of advanced technological solutions has improved the quality and efficiency of management decisions.

Source: Corporate press-releases, metalinfo
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