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# Logistics in the Metallurgical Industry

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**Summary.**The metallurgical industry is one of the most logistics-intensive sectors of heavy industry. Efficient management of material flows—from raw material procurement to final product distribution—directly affects production continuity, cost optimization, export performance, and international competitiveness. This paper analyzes the structural components of metallurgical logistics, identifies major infrastructural and operational challenges, and evaluates the role of digitalization, multimodal transportation, and quality management systems in improving logistics performance, with particular focus on Azerbaijan.

**Keywords:** metallurgical logistics, supply chain management, industrial transportation, multimodal transport, infrastructure, digitalization, quality management

**Introduction.** Logistics plays a decisive role in the metallurgical industry due to the large volume, weight, and strategic importance of raw materials and finished products. The transportation of iron ore, coking coal, flux, billets, slabs, and rolled steel requires coordinated planning and reliable transport infrastructure. Any disruption in logistics processes may lead to production downtime, financial losses, and reduced competitiveness in international markets.

Aim of the Study. The aim of this study is to examine how logistics systems influence the performance of the metallurgical industry, identify key challenges, and propose improvement strategies for increasing efficiency and sustainability.

Metallurgical logistics consists of inbound, intra-production, and outbound processes. Inbound logistics includes procurement and transportation of raw materials. Intra-production logistics involves internal material handling supported by automation and ERP systems. Outbound logistics ensures packaging, documentation, customs clearance, and delivery to domestic and international markets.

Major challenges include infrastructure limitations, imbalance between transport modes, customs delays, technological gaps, and shortage of qualified logistics professionals. Overreliance on road transport increases operational costs and environmental impact, while railway and maritime transport remain underutilized.

Quality management systems monitor delivery time, cost efficiency, cargo safety, and compliance with international standards such as ISO 9001. Digital

technologies including GPS tracking, RFID systems, and integrated supply chain platforms enhance transparency and decision-making accuracy.

Logistics significantly impacts the metallurgical industry by influencing cost structures, production continuity, and market competitiveness. Infrastructure modernization, digital supply chain integration, expansion of railway and maritime transport, and professional training programs are essential priorities for sustainable development, particularly in Azerbaijan.

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