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# SUSTAINABLE DEVELOPMENT GOALS

# OPPORTUNITIES AND CHALLENGES IN INDUSTRY 5.0”

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Dr. R. Umamaheswari

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# Globalization and SDG's: Opportunities and Challenges in Industry 5.0

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Dr. A. Prasath kumar

&

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# A STUDY ON HUMAN- CENTRIIC AND SUSTAINABLE PRODUCTION

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**ABSTRACT**

Industry 5.0 is a new phase of industrial development that aims to enhance sustainability, resilience, and human well-being by integrating advanced technologies and human skills in manufacturing processes. This paper provides a comprehensive overview of the concept, characteristics, and challenges of Industry 5.0, and discusses its implications for industrial practice and policy. We review the literature on Industry 5.0 and its relation to the previous industrial revolutions, and identify the main drivers, enablers, and barriers for its implementation. We also analysed the potential benefits and risks of Industry 5.0 for the environment, society, and economy, and propose some recommendations for fostering a human-centric and sustainable industrial transition. We conclude that Industry 5.0 represents a promising opportunity for achieving the United Nations Sustainable Development Goals and enhancing the quality of life of industrial workers and consumers, but it also requires careful management and regulation to avoid negative impacts and ensure ethical and responsible use of technology.

**Keywords**: Human-centrism; Industry 4.0; Industry 5.0; Resilience; Smart supply chain management; Social sustainability.

## 1. INTRODUCTION:

Industry 5.0 brings with it a promising shift toward sustainability by placing humans back at the heart of manufacturing processes. This human-centered approach encourages more thoughtful and responsible decision-making, especially when it comes to environmental impact and social responsibility. When people are actively involved in complex tasks, they bring ethical insight and critical judgment that machines alone cannot replicate.

Looking back, we can draw parallels with the early days of the Industrial Revolution, where mechanization overshadowed human needs. It wasn't until the human relations era in management that the importance of workers was acknowledged alongside machines. Similarly, during the era of Industry 4.0—dominated by automation and artificial intelligence—human capabilities often took a backseat. Now, Industry 5.0 aims to restore that balance, fostering a meaningful collaboration between humans and intelligent systems.

It calls for thoughtful design of systems that prioritize worker well-being while balancing the efficiencies of automation. Equally important is ensuring that the environmental footprint of technological advancements is kept in check. While Industry 4.0 focused heavily on