

Embracing Industry 4.0 & Achieving Sustainable Development

Md. Asfaq Jamil *

SIMEC Bulletin
2025, Vol. 1(3), 6-8
ISSN: 3006-211X (online);
3006-2101 (print)



© This work is licensed under
[Attribution-NonCommercial-ShareAlike 4.0](https://creativecommons.org/licenses/by-nc-sa/4.0/)

SIMEC
Bulletin

How to cite: Jamil, M.A. (2025). Embracing Industry 4.0 & Achieving Sustainable Development. *SIMEC Bulletin*, 1(3), 6-8.

Bangladesh is soon to be advancing from Industry 4.0 to Industry 5.0, showcasing its rapid industrialization and impressive GDP growth of over 7% (Chang et al., 2022). This article delves into the nation's proactive measures in digital automation, manufacturing, and achieving Sustainable Development Goals (SDGs). By harnessing the power of Industry 4.0 technologies, Bangladesh aims to boost productivity, optimize resource management, and create agile supply chains. Moreover, the upcoming wave of next industrial revolution, with its focus on human-machine collaboration and environmental sustainability, is crucial for developing a modern industrial landscape that will create numerous job opportunities and fosters innovation. From the First Industrial Revolution's steam power, the Second's electricity and mass production, the Third's digital automation, to today's AI, IoT, and smart manufacturing, each phase has profoundly transformed our lives and work. The Fifth Industrial Revolution (5IR) represents the latest frontier, promoting seamless human-machine interaction and a renewed focus on environmental stewardship (Jamil et al., 2024).

Initiatives like smart health cards, Union Digital Centers, and a green revolution in manufacturing drive the vision of a "Digital Bangladesh."

Companies like Square Textiles, Envoy Textiles, iFarmer, and Golden Harvest are leveraging automation, smart technologies, IoT, and AI to revolutionize sectors like textiles and agriculture. According to Managing Director MA Jabbar, DBL's green production has significantly reduced water, dyes, power, and carbon emissions, saving \$4.67 million (Mirdha, 2017). Telecom giants Grameenphone and Banglalink enhance services through blockchain and big data. ACI Motors and Walton embrace robotics and automation in assembly processes, while Praava Health improves patient care with smart health technologies. The rise of digital payment services like Upay, Bkash, Nagad, and Rocket is pushing Bangladesh towards cashless transactions, positioning the country as a key player in the global digital landscape.

What are the Sustainable Development Goals (SDGs) we are achieving?

Bangladesh's embrace of Industry 4.0 is propelling its alignment with the UN's Sustainable Development Goals, enhancing SDG 9 by digitalizing manufacturing, SDG 8 through job-creating automation, and SDG 12 by optimizing resource use with digital tech. The forthcoming Industry 5.0, focusing on human-centric and

* Research Assistant, Department of Engineering Management, Arkansas State University, Arkansas. Email: jamil.kuet.ipe@gmail.com

sustainable approaches, aims to bolster SDG 11 by developing smart cities, SDG 13 through greener technologies, and SDG 14 by reducing industrial impact on marine life (Zengin et al., 2021).

Bangladesh is undeniably on a transformative journey. The nation's strategic embrace of Industry 4.0 is a testament to its ambition. While the nation is currently immersed in Industry 4.0, the seeds for Industry 5.0, prioritizing sustainability, are already being sown. The momentum gained from realizing the digital transformation of Bangladesh will undoubtedly propel us into the next industrial revolution sooner rather than later. Bangladesh's technological governance is mirrored in the Cisco Digital Readiness Index, ranking 126th out of 141 countries in the 2019 Ease of Doing Business Index (Nile, 2022). To align with global standards, a comprehensive policy should focus on developing digital infrastructure, enhancing STEM education, and workforce training, and investing in research and innovation. The country must improve its technological governance, attract investments from tech giants, and advance its 4IR infrastructure with R&D centers and tech hubs. Expanding high-speed connectivity, particularly in rural areas, and developing internationally standardized Tier 4 and Tier 3 data centers are crucial. Affordable 5G deployment is essential for advanced mobile data transport, driving progress in the Fourth and upcoming Fifth Industrial Revolutions (United News of Bangladesh, 2020). While challenges may lie ahead, Bangladesh's progress in digitalization and innovation positions it strategically to bridge the gap. The next decade promises to be a period of rapid transformation as the country integrates sustainability into its industrial core. Bangladesh's future is not just about keeping pace; it's about setting the benchmark for a harmonious blend of technology and nature. Perhaps it might take decades. Perhaps the fifth industrial revolution is closer than we think.

References

- Alam, Engr. S., Khatun, Mrs. S., Mimi, Engr. S. A., Hossain, Md. T., Hosen, J., Atahar, R., Joy, M. A. R., & Islam, Md. J. (2023, June). *Research Report on Industry 4.0 to Implement Vision 2041 of Bangladesh: Bangladesh Small and Cottage Industries Corporation's Role to Generate Employment and Reducing Poverty through Industrialization*. Small and Cottage Industries Training Institute (SKIT). <https://rb.gy/ndszms>
- Aspire to Innovate (a2i) (2023). *Smart bangladesh vision 2041*. a2i. <https://a2i.gov.bd/a2i-missions/smart-bangladesh-vision-2041/>
- Chang, V., Doumanidis, C. C., Chowdhury, A. M., & Dowland, D. (2022). Fourth Industrial Revolution: Shaping the New Bangladesh. In S. Hossain, Md. S. Hossain, M. S. Kaiser, S. P. Majumder, & K. Ray (Eds.), *Proceedings of International Conference on Fourth Industrial Revolution and Beyond 2021* (pp. 469–478). Springer Nature. https://doi.org/10.1007/978-981-19-2445-3_32
- Jamil, Md. A., Mustofa, R., Hossain, N. U. I., Rahman, S. M. A., & Chowdhury, S. (2024). A Theoretical Framework for Exploring the Industry 5.0 and Sustainable Supply Chain Determinants. *Supply Chain Analytics*, 100060. <https://doi.org/10.1016/j.sca.2024.100060>
- Mirdha, R. U. (2017, October 17). *DBL Group: Championing green production methods*. The Daily Star. <https://www.thedailystar.net/business/dbl-group-championing-green-production-methods-1477384>
- Nile, M. A.-U.-R. (2022, February 15). *Preparing Bangladesh for the Fourth Industrial Revolution (4IR)*. The Daily Star. <https://www.thedailystar.net/recovering-covid-reinventing-our-future/fourth-industrial-revolution-and-digital-transformation/news/preparing-bangladesh-the-fourth-industrial>
- United News of Bangladesh. (2020, September 3). *Long-term policy sought for 4IR, Technological Shift*. unb.com.bd.

<https://unb.com.bd/category/bangladesh/long-term-policy-sought-for-4ir-technological-shift/56907>

Zengin, Y., Naktiyok, S., Kaygın, E., Kavak, O., & Topçuoğlu, E. (2021). An Investigation upon Industry 4.0 and Society 5.0 within the Context of Sustainable Development Goals. *Sustainability*, 13(5), Article 5. <https://doi.org/10.3390/su13052682>