

# **Achieving Carbon Neutrality in Intelligent Closed-Loop Supply Chains: A Case Study from The Chemical Sector**

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## **Abstract**

In response to concerns about the environmental impact of carbon footprint, several firms have implemented intelligent closed-loop supply chains, which use cutting-edge technologies to function as a self-regulating, constantly-improving system. In business today, the emergence of Industry 4.0 in firms and its related technologies led to two opposite views. Firstly, intelligent closed-loop supply chains have been proven to have good effects on the environment while scientists have studied the negative impact technologies have on the environment. For this reason, the purpose is to bridge the gap between these opposing viewpoints by conducting a case study in the chemical industries in a developing country. Therefore, we applied intelligent technologies such as AI, Blockchain, and IoT... in supply chain. Then, we compared the carbon footprint before and after implementing these intelligent technologies. This study proves an important reduction in carbon with a percentage of more than 60 % to achieve carbon neutrality.

**Keywords:** Carbon neutrality, Carbon footprint, Intelligent closed-loop supply chains, Chemical industry, Case-study