Chapter 8
Climate Change Mitigation and Adaptation Strategies Enhanced by Intelligent Systems in Industry 6.0

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ABSTRACT

Climate change is currently one of the most significant global concerns that we are confronting.Extreme weather events, rising sea levels, and global warming are already having an effect, are expected to worsen in the years to come. AI has emerged as a useful tool for climate change adaptation due to its wide range of capabilities that can help with identifying vulnerable places, modelling future climatic scenarios,assessing risks possibilities for businesses, infrastructure. Climate change, which is caused by an increase in greenhouse gas concentrations in the atmosphere, will have an impact on agriculture, one of the main human activities.The world's food supply might be able to support growing populations in the upcoming decades, but predictions suggest that climate change could worsen regional imbalances already in place by reducing crop yields. This is so that local agricultural methods intended to

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maintain production. Land managers, farmers will confront challenges in selecting mitigation, adaptation strategies that satisfy food, fibre.

1. INTRODUCTION

This entails making an attempt to cut down on or stop the release of greenhouse gases into the atmosphere as well as other actions that fuel climate change (Kılkış, et al.,2022). By lowering emission sources or improving carbon sequestration techniques, mitigation strategies seek to lessen the effects of climate change. These actions are responses to the effects of climate change, which include increased frequency of extreme weather events, rising temperatures, and altered precipitation patterns. The goals of adaptation strategies are to reduce vulnerabilities and boost resistance to risks associated with climate change. This is a reference to highly developed technical systems that require little human participation to gather, process, analyse, and act upon massive volumes of data. Artificial intelligence (AI), machine learning (ML), automation technologies, and data analytics are frequently included in the framework of Industry 6.0 as intelligent systems. The integration of cutting-edge technologies into industrial processes is represented by this word, which builds upon earlier industrial revolutions (Pathak, H.,et al.,2023). The goal of Industry 6.0 is to develop smarter, more sustainable industrial processes through the convergence of digital technologies, physical systems, and human resources. "Climate Change Mitigation and Adaptation Strategies Enhanced by Intelligent Systems in Industry 6.0" presents a way to increase the efficacy and efficiency of efforts to mitigate the effects of climate change and adapt to them by utilising cutting edge technologies like artificial intelligence (AI), data analytics, and automation in industrial settings. By monitoring environmental performance, optimising resource utilisation, enhancing resilience to changing climate conditions, and making more informed decisions, these intelligent systems aid industries. According to (Hua et al., 2022), food, energy, and water are the three main essential resources required by human society in order to survive and support itself as well as other species on the planet. Economic and population growth are the two main factors driving the rising demand for these resources (Borge-Diez et al., 2022). The survival of living things and vegetation is threatened by a worldwide catastrophe brought on by an inadequate, dangerous, and unstable supply of food, energy, and water (de Amorim et al., 2022). Water, energy, and food are all related since they are essential to maintaining environmental sustainability, economic activity, and human life. Significant energy inputs are needed for both the production of food and water. Water resources are frequently used in the energy production process for steam generation and cooling. Energy-intensive procedures like water distribution and treatment are necessary to provide clean and