

Chapter 5

Harnessing AI for Sustainability: Innovations, Policies, and Investment Paradigms

Kritika Pancholi

 <https://orcid.org/0009-0002-6564-6374>

Narayana Business School, India

Parag Shukla

 <https://orcid.org/0000-0002-7014-163X>

The Maharaja Sayajirao University, India

ABSTRACT

This chapter examines how AI and sustainability might operate together, focusing on novel approaches, policy consequences, and investment strategies. The report examines studies on theme investment in finance and sustainability aims. AI's role in cooperatively locating and assessing theme investment opportunities is examined using cognitive modelling, balancing various goals, intelligent data analysis, and problem-solving methods. The findings show that AI-driven thematic investing has enormous potential to help achieve sustainable development goals. By bringing together AI technologies, investors can spot and make the most of options that follow environmental, social, and governance (ESG) principles. It improves portfolios and makes them more sustainable over the long term. The integration of AI and thematic investing has profound social and practical implications. By leveraging AI technologies, investors can make more informed decisions that not only yield financial returns but also promote positive social and environmental outcomes. Additionally, the adoption of sustainable investment strategies can drive broader societal shifts towards a more equitable, resilient, and environmentally conscious future.

INTRODUCTION

Overview of Sustainability in AI and Thematic Investing

Technological advancement in the modern world with the arrival of innovations like artificial intelligence, sustainability has grown to be a major emphasis for both AI and theme investment. While AI may help to solve the sustainability issues of the modern high-tech society, it also carries fresh hazards

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like automatic prejudice and conflicts in terms of human ethical norms. AI applications can contribute to sustainable development in various sectors, including finance, healthcare, and urban services. However, adopting AI also brings new risks, such as automated bias and conflicts with human ethics, which must be addressed through proactive regulatory frameworks and corporate policies. The nick of time requires the development of a robust regulatory framework supported by rigorous corporate policies and reports for sustainable development.

Every sector intends to strategize its company for sustainable development as the Sustainable Development Goals become more critical. Particularly in sustainability-oriented funds, thematic investing—especially in comparison to other thematic funds—has improved risk-adjusted performance. AI applications and algorithms help theme investing—more significantly, ESG investing—to make the best judgments for long-term financial sustainability. Thematic investing is also supported by many asset managers, who increasingly focus on sustainable investment opportunities, prioritizing themes like climate change, renewable energy, waste reduction, energy consumption, and achieving social goals.

Sustainability in AI and thematic investment has drawn more attention from scholars, researchers, and policymakers, as it has been a growing area of research and practice. AI is increasingly used in various sectors, and its impact on sustainability is questioned in light of its challenges towards achieving sustainable goals.

Sustainable AI highly focuses on its compatibility with the sustenance of environmental resources, economic models, and societal values. Finance refers to the investment in sustainability-themed funds, generally compared with mutual funds.

AI's role in finance and sustainability has grown significantly, thus offering capabilities to process vast amounts of data, identify critical trends, and generate predictable analyses or insights that can address critical global challenges (Huang & Rust, 2018). In thematic investing, AI facilitates the evaluation of companies' environmental, social, and governance (ESG) performance, allowing investors to match their portfolios with Sustainable Development Goals (SDGs) (Pedersen et al., 2021; Chen et al., 2020). On the other hand, the excessive and frequent usage of AI in the context of AI-driven decision-making, the research conducted by Binns et al. (2018) and Hagendorff (2020) highlights the importance of openness and responsibility, particularly in situations where algorithmic bias may accidentally undermine environmental, social, and governance evaluations.

On the other hand, the excessive use of artificial intelligence incurs higher environmental costs. Artificial intelligence is closely tied to concerns as it requires computing power for complex models, leading to a significant carbon footprint that could hinder sustainability efforts (Taghizadeh-Hesary & Hyun). Address these issues by adopting AI practices to reduce impact and encourage responsible usage in sustainability projects. Investors and regulators are calling for transparency and ethical standards to regulate the involvement of intelligence in investing (Gasser & Almeida, 2017). Sustainable AI emphasizes a dual strategy focus. Using AI to drive investments while adhering to guidelines that ensure responsible and ethical practices, as outlined by Zhou (2023).

Importance of Integrating Sustainability into AI And Investment Strategies

AI sustainability is crucial for both investment strategies and AI. Shifting the focus of AI from being merely reliable to being sustainable is crucial in light of the impact of generative AI models. One way to make AI more eco-friendly is by implementing measures like co-plans and transparent processes (Taghizadeh-Hesary & Hyun, 2022). Additionally, its purpose lies beyond problem-solving and can

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