International Journal of Advances in Business and Management Research (IJABMR) https://doi.org/10.62674/ijabmr.2025.v3isupp1.008
https://ejournal.svgacademy.org/index.php/ijabmr/
OPEN ACCESS

DRIVING ENVIRONMENTAL PROGRESS: TRANSFORMING ENERGY SYSTEMS IN RESPONSE TO CLIMATE CHANGE

Kavya Gandikota Original Article

TKR Institute of Management and Science, 500097 Hyderabad, India

*Corresponding Author's Email: kavyagandikota11@gmail.com

Abstract

The study states that a JT encourages constructive technical innovation and suggests a comprehensive scientific approach that limits the distribution of materials, includes feasible energy solutions, and permits changes to the process. It brings attention to the ways temperature changes have an even greater impact on people. emphasizing the imperative for systematic incorporation of renewable energy resources, including solar, wind, and hydropower, into mainstream economic infrastructures while global momentum toward decarbonisation is accelerating critical barriers, including regulatory inefficiencies. Infrastructure deficits and economic disparities continue to obstruct large-scale implementation; furthermore, the study emphasises the pivotal role of individuals' interactions in strategies. Inclusive policy making fosters social and economic resilience, mitigating the exacerbation of actual disparities. Empirical findings substantiate that associating governance reinforced by targeted investments in sustainable infrastructure fortifies climate resilience and expedites energy transitions.

Keywords: Climate Adaptation; Economic Resilience; Just Transition (JT); Policy Frameworks; Renewable Energy; Sustainability

Introduction

In 1980, inclusive transition (IT) was utilised due to the wage workers affected by the formula concerning water and toxins in the air. It has evolved recently; this has regained popularity because of the intense air toxins and our careless actions towards the environment [1].

The influence on climate fluctuates, increasing yearly, and the opportunity to switch is diminishing slowly. Nations are enhancing their efforts to decarbonise and promote eco-friendly economic practices [2].

The climate emergency is not just an issue; it is a pressing challenge that affects our societies and economies deeply. Those who are vulnerable, often with the fewest resources, suffer the most from weather change [3]. To build a future that is safe and clean, it is essential to fundamentally transform economic systems rather than rely on superficial adjustments. At the core of this transformation lies the responsibility to prioritise individuals [4]. This requires engaging with people lived experiences, understanding the practical challenges they face, and ensuring that all members of society have a fair opportunity to participate in shaping solutions. By fostering inclusive and equitable dialogue, it becomes possible to develop genuine understanding of the diverse perspectives and needs of communities affected by climate adaptation [5].

Received 3rd June 2025; Revised 15th June 2025; Accepted 19th June 2025

The urgency of addressing climate change cannot be overstated. As environmental impacts intensify, swift and effective action is imperative. This demands a collective effort that centres on the specific needs and realities of individuals and communities, ensuring that the solutions implemented are both effective and just.

Literature Review

To make a transition Empowering teamwork and creativity and establishing rules that promote a fair and equal economy are crucial. Clarifying the varied viewpoints on the idea and knowledge together to offer a visual summary of recent deliberation in the literature along with its goals for the subject [2].

The need for eco-friendly solutions has become urgent due to rising temperatures, which are causing more extreme weather patterns and slow recovery of natural resources. Clean energy alternatives are widely used globally due to climate change [6]. Researchers and policymakers have to explore viable options to preserve the treasury given by nature. Significant studies emphasise the critical role of reusable energy sources in curbing carbon emissions and reducing dependence on fossil fuels, addressing climate challenges. Experts emphasise the necessity of incorporating these eco-friendly energy sources into broader environmental strategies [7].

Since it promotes activities that are both eco-friendly and accessible to business, financial innovation is mandatory for the advancement of resources [3]. However, the primary expenses for improving infrastructure may be higher than expected; advancements in technology, such as the installation of solar systems and hydro turbine facilities in underdeveloped or resource-constrained nations, can yield significant long-term benefits [8]. Innovative business strategies that can effectively reduce investment expenditures are essential. Increase national income and encourage the formation of innovative business models, including power purchase agreements. green securities reinvestments and funds; this would make it easier for the conversion of investments into assets in the future [9].

Methodology

Qualitative documentation includes an extensive literary inspection, a detailed review of past studies addressing possible connections through ownership, monetary systems, and worldwide warming cases. The study also includes a detailed examination of particularly fruitful community-led initiatives and policies that support seamless, profitable transitions in various circumstances.

Data Collection

Interviews: Face-to-face conversations with individuals to understand their experiences and perspectives. Focus Meetings: Group discussions aimed at developing an overall awareness of diverse viewpoints. Stakeholders or firm representatives likely participate in meetings and queries to collect data. Rating agencies provide valuable insights for evaluating long-term sustainability. This includes the utilisation of business reports and publicly available information.

Sample Design

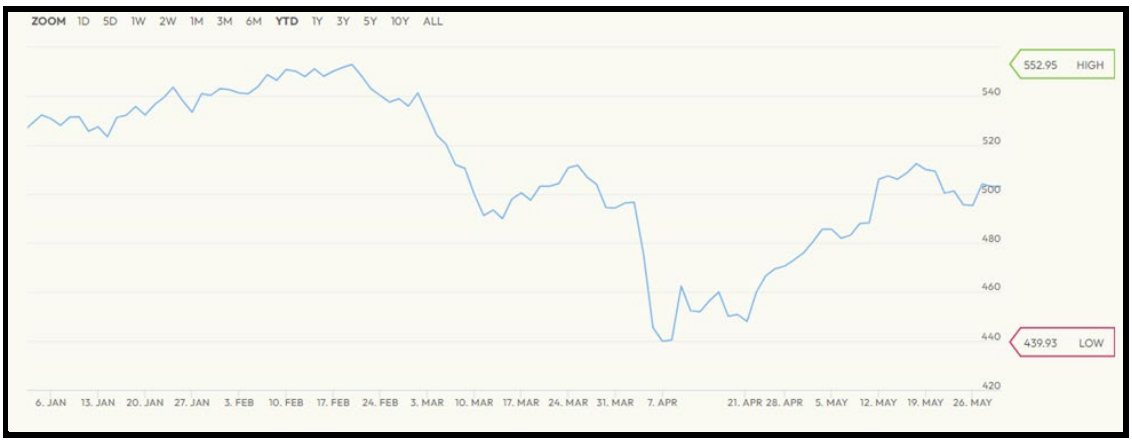
An exploratory study design shall be utilised in preference to suitable case examples, following metrics that reveal significant community-led changeover goals. Those who are directly afflicted by modifications in ecosystems are expected to make up the collection of survey and focus-session attendees. This careful selection process ensures rich qualitative data. Numerical Population Structure: the firms represented within the STOXX World Green Footprint form the population sample for this study. The sampling framework for this statistical investigation will rely on a predefined, widely available index.

Result and Discussion

The immediate action of decarbonisation for the current situation on the resolution and transformation scale is critical (IPCC, IEA). The greatest challenge facing humanity is harmful pollutant gases and climate change [10]. The CP study reinforces a global governance perspective, emphasising the need to develop climate policies specifically for growing countries [11]. Just transition has become a keystone of temperature control policy and an inclusive process to ensure the shift away from natural oil [12]. The vital framework for achieving and decoupling growth from resources is dependency [10, 13]. Focus on the technology aspects of energy, including RE energy generation, is necessary [14].

While exploring RE energy solutions and the authority of policymakers, it is crucial to recognise that high-level governance is essential for climate change mitigation [14] (refer to Figure 1).

Figure 1: STOXX Global Climate Change Leaders Index (SXGGCEP)



Source: STOXX [15]

The above study captures the STOXX worldwide zero-carbon environmental impact for 2025. The SXGGCEP is displayed in the graphic. Through preventive measures and the exploration of carbon-free possibilities, the study indicates that firms contributing to global warming are transitioning to emission-free practices. These enterprises usually invest in greener-friendly products and services and have destructive carbon compound targets. The index helps traders to reach responsible choices through studying the results and shifts in energy dioxide emissions [15].

Suggestions

A report study states that RE activity has risen to 22–24 per cent since the last several years in 2025; although, procedural boundaries do not align with this increase. At present, the assignment of variable RE continues to be scarce; the increased capacity results in higher rates for connectivity support and retrieval, which need cooperation to be sustained [16]. According to the MNRES April 2025 report, RE resources have significantly grown, reaching 47.6%, with hydro sources accounting for 23.0%. In order to improve accessibility and efficiency in the energy transition, the report also introduces important policy ideas such as the green open access rule and interstate transmission systems (ISTS). On the other hand, countries like Brazil see climate change as a business chance rather than a burden. MacArthur [17] divided the factors that will drive CE into three groups: (1) consumer preferences, which value service access more than product ownership; (2) new technology developments, which have led to the environmentally friendly practices adoption (such as advanced manufacturing, RFID, and IOT); and (3) governmental policies that help to encourage and reward the adoption of CE practices.

Their strategic efforts toward sustainable operations have helped boost the national economy, open new market opportunities, and create new pathways for transformation [18]. Brazil's finance chief sees climate change as an economic opportunity. (TIME). The UNFCCC limits carbon emissions as part of the agreements reached at Kyoto. A strategic combination involves both aim and means [19]. The UNFCCC's aim is to detach people from causing harm to the planet's weather. The Paris Agreement seeks to minimise climate warming to less than 2°C by the 21st century; the intention is to decrease to net zero (UNFCCC).

Conclusion

Although climate change presents a critical challenge, it also offers an opportunity to inspire innovative and creative solutions. For fostering cooperation and creating a future where nature is consistent with morality and stability, The path to a better carbon-free future not only requires addressing temperature concerns but also necessitates a transformation of our economic structures to make them fully robust and equitable. when people's knowledge about nature and communities actively participates in influencing and benefiting from economic improvements, then it is called real

development. Following technology is a simple advancement. An equitable restructuring strategy ensures that innovations improve economic balance and environmental preservation.

By incorporating eco-friendly methods and emphasizing inclusivity in policy development, communities can dismantle obstacles. Enhance resource availability and catalyse transformative initiatives. Realising this vision requires collaborative action from various sectors, policymakers, and local communities. As global temperatures continue to rise and climate-related challenges intensify, the need for prompt and decisive action has never been more critical. Through investments in innovation, education, and equitable solutions, a sustainable future can be forged.

Acknowledgement
No individual or organisation outside of the listed authors contributed to this research in a capacity that requires acknowledgement.

Conflict of Interest
The authors declare no conflicts of interest related to this research.

References

1. Citaristi I. United Nations Development Programme—UNDP. In The Europa Directory of International Organizations 2022 2022 Jul 28 (pp. 183-188). Routledge. https://doi.org/10.4324/9781003292548

2. Shrishti K, Chowdhury PR. A Look at How Climate Bonds Can Help Emerging Markets Grow Their Economy-An Analysis Based on Newly Industrialised Countries (NICs). International Journal of Advances in Business and Management Research (IJABMR). 2025 Jun 12;2(4):10-8. https://doi.org/10.62674/ijabmr.2025.v2i04.002

3. Islam MM, Shahbaz M, Sohag K. Financial innovation and clean energy technology development: Policy vs. geopolitics. Renewable Energy. 2025 Jun 15;246:122968. https://doi.org/10.1016/j.renene.2025.122968

4. Gielen D, Boshell F, Saygin D, Bazilian MD, Wagner N, Gorini R. The role of renewable energy in the global energy transformation. Energy strategy reviews. 2019 Apr 1;24:38-50. https://doi.org/10.1016/j.esr.2019.01.006

5. Soergel B, Kriegler E, Weindl I, Rauner S, Dirnaichner A, Ruhe C, Hofmann M, Bauer N, Bertram C, Bodirsky BL, Leimbach M. A sustainable development pathway for climate action within the UN 2030 Agenda. Nature Climate Change. 2021 Aug;11(8):656-64. https://doi.org/10.1038/s41558-021-01098-3

6. Stern N, Stiglitz J, Taylor C. The economics of immense risk, urgent action and radical change: towards new approaches to the economics of climate change. Journal of Economic Methodology. 2022 Jul 3;29(3):181-216. https://doi.org/10.1080/1350178X.2022.2040740

7. Xuelei Z, Bhaumik A. Development of Strategic, Transformative Innovation Strategies and Network in Chinese Manufacturing Small and Medium Sized Enterprise. International Journal of Advances in Business and Management Research (IJABMR). 2024 Sep 12;2(1):17-25. https://doi.org/10.62674/ijabmr.2024.v2i01.003

8. Hannan MA, Al-Shetwi AQ, Ker PJ, Begum RA, Mansor M, Rahman SA, Dong ZY, Tiong SK, Mahlia TI, Muttaqi KM. Impact of renewable energy utilization and artificial intelligence in achieving sustainable development goals. Energy Reports. 2021 Nov 1;7:5359-73. https://doi.org/10.1016/j.egyr.2021.08.172

9. Ng AW, Nathwani J, Fu J, Zhou H. Green financing for global energy sustainability: prospecting transformational adaptation beyond Industry 4.0. Sustainability: Science, Practice and Policy. 2021 Jan 1;17(1):377-90. https://doi.org/10.1080/15487733.2021.1999079

10. Papadis E, Tsatsaronis G. Challenges in the decarbonization of the energy sector. Energy. 2020 Aug 15;205:118025. http://dx.doi.org/10.1016/j.energy.2020.118025

11. Wang D, Fang Y. Global climate governance inequality unveiled through dynamic influence assessment. npj Climate Action. 2024 Sep 9;3(1):75. https://doi.org/10.1038/s44168-024-00159-5

12. Wang X. An Analysis of Temperature Control Management in the Pharmaceutical Supply Chain. Advances in Economics, Management and Political Sciences. 2025 Jan 3; 133(1):49-54. http://dx.doi.org/10.54254/2754-1169/2025.19637

13. Neacșa A, Panait M, Mureșan JD, Voica MC, Manta O. The energy transition between desideratum and challenge: are cogeneration and trigeneration the best solution?. International Journal of Environmental Research and Public Health. 2022 Mar 4;19(5):3039. https://doi.org/10.3390/ijerph19053039

14. Adewumi A, Olu-lawal KA, Okoli CE, Usman FO, Usiagu GS. Sustainable energy solutions and climate change: A policy review of emerging trends and global responses. World Journal of Advanced Research and Reviews. 2024;21(2):408-20. https://doi.org/10.30574/wjarr.2024.21.2.0474

15. STOXX Ltd. *ESG report: STOXX Global ... SXGGCEP* [Internet]. Zug (Switzerland): STOXX; 2024 Oct 30 [cited 2025 Jan 14]. Retrieved from: https://stoxx.com/index/sxggcep/

16. The Economic Times. Paradox of India's energy transition: Coal phase-out or renewables phase-in? [Internet]. 2025 [cited 2024 Jul 24]. Retrieved from: https://economictimes.indiatimes.com/industry/renewables/paradox-of-indias-energy-transition-coal-phase-out-or-renewables-phase-in/articleshow/121356341.cms?from=mdr

17. MacArthur E. Towards the circular economy. Journal of Industrial Ecology. 2013;2(1):23-44.

18. TIME. Brazil's Finance Chief Sees Climate Change as an Economic Opportunity [Internet]. 2025 May 23 [cited 2024 Dec 14]. Retrieved from: https://time.com/7288050/brazil-finance-minister-fernando-haddad-climate-change-interview/

19. Naser MM, Pearce P. Evolution of the international climate change policy and processes: UNFCCC to Paris agreement. InOxford Research Encyclopedia of Environmental Science 2022 Nov 22. https://doi.org/10.1146/annurev-environ-102017-030119