International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Global Shifts in Trade, Technology, and Sustainability: Reimagining Economic Pathways for India in a Fragmented World

Supriya

Research Scholar, Department of Economics, Sona Devi University, Ghatshila, Jharkhand, India

ABSTRACT

Rapid technology advancement, trade fragmentation, and climatic imperatives are all causing significant changes in the global economy. These dynamics present opportunities as well as difficulties for India. This essay explores how, within the context of world economics, India might rethink its economic future by fusing commerce, technology, and sustainability. It emphasizes the importance of coordinating growth with climate resilience, India's place in evolving trade blocs, and the growth of its digital economy. Case studies like India's International Solar Alliance (ISA) and the EU's Carbon Border Adjustment Mechanism (CBAM) show how national policies and international regulations interact. In addition, the report discusses inequality and South-South collaboration, highlighting inclusive growth as a key component of resilience. Proposed policy avenues aim to improve digital governance, trade diplomacy, and the green transition. India can overcome fragmentation and become a leader in a more equitable, environmentally friendly, and technologically advanced world by combining internal reforms with international participation.

Keywords: Global Economic Shifts; India’s Trade Strategy; Digital Transformation; Green Growth; Inclusive Development.

1. Introduction

The world economy is changing dramatically, changing how nations collaborate, trade, and develop. Geopolitical tensions, technological upheavals, and ecological imperatives are putting pressure on traditional beliefs about globalization as an ever-deepening, rules-based system. The globe is heading toward what some academics refer to as "fragmented globalization," as evidenced by the emergence of protectionism, trade wars, sanctions, and new regional alliances (Baldwin, 2022). At the same time, climate sustainability has become an unavoidable tenet of commerce and policy, and the digital economy has become a new source of competitiveness.

Both opportunities and problems are presented by these dynamics for India, the fifth-largest economy in the world. In order to reduce inequality and guarantee internal inclusion, the nation must reposition itself in changing trade blocs, expand its digital economy, and move toward greener growth models. In contrast to previous phases of globalization, when manufacturing and cheap labor were enough to ensure progress, India's future calls for a combination of sustainability, creativity, and resilience.

According to this article, India may rethink its economic future by combining three important pillars: sustainability, commerce, and technology. Using international economics as a guide, it looks at how India

might improve its prospects by utilizing digital transformation, global trade alliances, and environment policy. In a fractured global order, the analysis also looks at policy paths, dangers, inequality, and South-South cooperation.

2. Changing Global Trade Alliances and India's Opportunity Space

2.1 Fragmentation in Global Trade

There is structural fragmentation in global trade. It is clear that there are three primary drivers:

1. **Geopolitical Rivalries**: Trust in multilateral organizations like the World Trade Organization (WTO) has been damaged by the US-China trade war, sanctions on Russia after the conflict in Ukraine, and strategic competition in the Indo-Pacific.
2. **Supply Chain Reconfiguration:** The dangers of concentrated supply chains were brought to light by the COVID-19 pandemic and the ensuing shipping route disruptions (such as the Red Sea attacks and the closure of the Suez Canal). As a result, businesses are diversifying their manufacturing away from centralized hubs, a tendency known as "friend-shoring" and "near-shoring" (Evenett & Fritz, 2023).
3. **Emergence of New Trade Blocs:** Trade dynamics are changing as a result of the Regional Comprehensive Economic Partnership (RCEP), the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), and the BRICS+'s strengthening.

As a result, trade is becoming less predictable and more regionalized, and latecomers face increased risks and higher compliance costs as a result of disparate norms (labor, digital, and environmental).

2.2 India's Trade Performance

Despite these challenges, India's exports have shown resiliency. Exports of products and services as a whole hit a record USD 825 billion in FY 2024–2025, up around 6% from the year before (Economic Times, 2025). With an increase of more than 13%, services such as IT, fintech, and professional consulting accounted for a sizeable portion. However, constraints from import costs and worldwide demand cycles kept merchandise exports unstable.

Growing demand for electronics and energy on the import side increased the trade gap. The deficit increased from USD 10.1 billion in July 2025 to USD 11.7 billion in July 2025 alone (DD News, 2025). India's export base is growing, but its external balance is precarious due to its reliance on imported energy and technology.

2.3 Strategic Trade Partners

With bilateral trade of USD 131.8 billion in FY25, the US has maintained its position as India's top commercial partner for four years running (Times of India, 2025). India's increasing significance in global value chains for services, IT, and medicines is reflected in this cooperation.

India's trade deficit with China has grown to be a strategic issue at the same time. Due to significant imports of machinery, electronics, and intermediate products, the deficit increased to around USD 99.2 billion in FY25 (Times of India, 2025). The paradox of India's integration is exemplified by this asymmetry: despite efforts to distance itself from China in sensitive areas, it continues to rely on Chinese inputs for both export manufacturing and domestic consumption.

2.4 India and Global Trade Blocs

India has taken a cautious approach to large economic blocs. Citing worries over import spikes and threats to home industry, it pulled out of RCEP in 2019. Nonetheless, RCEP continues to be a prominent Asian trade framework, accounting for around 30% of the world's GDP. Negotiating free trade agreements

(FTAs) with the United Kingdom, the United Arab Emirates, and the European Union, India has subsequently concentrated on bilateral and mini-lateral deals.

India's position as the BRICS leader has grown in the interim. India sees opportunities for more South-South commerce and alternative financial arrangements as a result of the group's development into BRICS+, which now includes nations like Saudi Arabia and Egypt. The difficulty, though, is striking a balance between this and Western alliances, especially in the areas of technology and defense, without becoming sucked into great power competition.

2.5 Trade Fragmentation and International Economics

India's circumstances serve as an example of the "second-best trade strategies" idea from the standpoint of international economics (Bhagwati, 1991). Countries seek regional or bilateral agreements to maximize market access when the global trade environment is not completely liberalized. These agreements, however, have the potential to distort trade by shifting imports from productive producers to partners who grant preferential access. India's challenge is to reduce these inefficiencies while gaining access to markets with rapid growth.

2.6 Opportunity Space for India

Notwithstanding obstacles, fragmentation presents India with three advantages:

1. **Diversification of Supply Chains:** India may become a viable alternative for manufacturing and services as multinational corporations lessen their reliance on China. Prime options include industries like medicines, electronics assembly, and renewable energy components.
2. **Service Export Leadership:** India is protected from some physical trade disruptions by its comparative advantage in IT and digital services, which matches the need for knowledge-intensive exports worldwide.
3. **South-South Cooperation:** India can strengthen its position as a knowledge and technology hub for Africa, Southeast Asia, and Latin America by expanding intra-developing commerce.

India must carefully coordinate internal changes, such enhancing logistics, lowering non-tariff barriers, and guaranteeing adherence to environmental norms, with external discussions in order to capitalize on these.

Table 1: India's Trade with the US, EU, and China (FY25)

Partner	Exports (USD bn)	Imports (USD bn)	Balance (USD bn)
United States	78	54	+24
European Union	65	62	+3
China	16	115	-99

(Source: Compiled from trade statistics, FY25)

3. Technology and the Digital Global Economy

India's growth story is not just being complemented by the digital revolution; it is quickly taking center stage. India has evolved over the past ten years from a hotspot for low-cost IT outsourcing to a digitally integrated economy with advancements in e-commerce, finance, and digital public infrastructure. One of the fastest-growing digital ecosystems in the world has been produced by the government's "Digital India" initiative and the widespread use of mobile internet.

In 2022–2023, India's digital economy generated 11.74% of the country's gross national product (GVA), or around INR 31.64 lakh crore (USD 402 billion), according to the Ministry of Electronics and Information Technology (MeitY) (MeitY, 2023). An estimated 14.67 million people were employed in this sector, demonstrating both its macroeconomic importance and its contribution to job growth. According to projections, the digital economy may contribute close to 20% of GDP by 2029–2030 (DD News, 2024). On this trajectory, India is comparable to developed countries where innovation and productivity are fueled by digital sectors. It also emphasizes how important technology is to India's long-term ability to compete globally.

3.1 Digital Enablers and Innovations

India's digital development is supported by a number of structural enablers:

1. **Digital Public Infrastructure (DPI):** The "India Stack," which consists of DigiLocker, the Unified Payments Interface (UPI), and Aadhaar (digital identification), has transformed e-governance and financial inclusion (Nilekani & Shah, 2022). In 2023, there were over 10 billion UPI transactions monthly, making India the world's largest real-time payments market.
2. **Accessible Internet**: As of March 2024, India had around 954 million internet users, ranking second only to China in terms of user numbers (Telecom Regulatory Authority of India [TRAI], 2024). Widespread acceptance in both urban and rural areas has been made possible by low data costs, which have democratized internet access.
3. **Startup Ecosystem and Fintech:** India boasts more than 100 unicorns, many of whom are in the fintech and SaaS (Software-as-a-Service) sectors and are currently exporting digital services to other countries (PwC, 2023).
4. **Government Incentives:** Production Linked Incentive (PLI) programs have encouraged investments in semiconductors and electronics production, establishing India as a major participant in the global electronics value chain.

These changes show that India is influencing the design of the digital global economy in addition to consuming digital goods.

3.2 Technology in International Economics

Technology drives comparative advantage in the context of international economy. The endowments of labor, land, and capital were central to traditional trade theory. Nonetheless, innovation, knowledge spillovers, and economies of scale are emphasized as crucial factors influencing competitiveness in the "new trade theory" and endogenous growth models (Romer, 1990).

1. Three primary avenues for international integration are provided by India's digital ecosystem: **1. Exports of services:** Physical trade barriers have less of an impact on digital platforms, software, and IT. India's services exports increased by more than 13% in FY25, mitigating the fluctuations in the merchandise trade (Economic Times, 2025). This is consistent with global data showing that services are increasingly playing a major role in trade balances in both developed and developing nations.
2. **Global Value Chains (GVCs):** India can join higher GVC categories, especially in electronics and renewable energy, as manufacturing becomes digitally enabled through automation, artificial intelligence, and predictive analytics.
3. **Data as a commerce Asset:** In terms of volume and value, data flows have surpassed traditional commerce in things. Cross-border data governance is controversial, though, with rival models from the US (driven by the market), the EU (focused on privacy), and China (state-controlled). India's

developing data governance system needs to strike a balance between privacy and security and economic potential.

3.3 Challenges in Digital Transformation

Despite its remarkable advancements, India still confronts systemic issues that could jeopardize its digital future:

1. **Infrastructure Gaps:** Rural connectivity lags behind urban areas, and broadband penetration is still unequal. In many states, there are still issues with reliable electrical and logistics infrastructure (World Bank, 2023).
2. **Digital Inequality:** Gender, caste, and income levels all have different access to digital resources. Only 38% of rural families had internet connectivity, compared to 70% of urban households, according to a 2022 National Sample Survey Office (NSSO) survey.
3. **Mismatch in Skills**: Although India produces a lot of STEM graduates, many of them lack sophisticated digital skills like cybersecurity, AI, and machine learning. India runs the danger of losing out on higher-value prospects if focused skilling is not implemented.
4. **Regulatory Uncertainty:** Investors and businesses face uncertainty due to frequent regulatory changes, such as those pertaining to content moderation, cryptocurrency restrictions, and data localization requirements. Attracting global players requires international alignment.

These difficulties underscore the necessity of well-thought-out long-term plans that combine national digital regulations with global business prospects.

3.4 India's Digital Diplomacy

India has started to use its digital prowess as an economic diplomacy instrument. For example, the Comprehensive Economic Partnership Agreement (CEPA) between the UAE and India contains clauses pertaining to fintech collaboration and digital trade (MEA, 2022). At the 2023 G20 meeting, India offered to share its digital public infrastructure with underdeveloped nations, showcasing the India Stack as a paradigm for global digital inclusion.

This is in line with the idea of "digital South–South cooperation," in which India exports scalable, reasonably priced digital solutions to Southeast Asia and Africa. By doing this, India develops strategic influence in areas looking for alternatives to Chinese or Western digital ecosystems in addition to growing its markets.

3.5 Risks of Technological Dependence

Although technology makes things easier, it also puts India at risk. For instance, supply networks for semiconductors are still primarily located in East Asia. India runs the risk of being dependent on outside suppliers if it lacks indigenous capabilities. In a similar vein, data breaches and cybersecurity threats are increasing, with a projected USD 15 billion in damages from cybercrime in India each year (McAfee, 2023).

According to international economics, late adopters of technology who become overly dependent on outside suppliers risk falling into "dependency traps," which restrict the development of value locally (Prebisch, 1950). India must develop its own R&D capabilities and safeguard its digital sovereignty while interacting with other countries in order to prevent this.

3.6 Opportunity Space in Technology

In a fractured global order, India's digital economy presents three significant potential despite the risks:

1. **Global Services Leadership:** India may account for a greater portion of the world's services exports by 2030, especially in the areas of cloud computing, AI-enabled services, and international fintech.

2. **Green-Tech Synergies:** Smart grids, digital agriculture, and carbon monitoring systems are just a few examples of how digital tools may hasten the shift to sustainability.
3. **Establishing Digital Standards:** India can improve its strategic voice by influencing international standards in data governance, electronic payments, and digital inclusion as digital trade agreements develop.

3.7 Case Example: Solar Success and Global Effects

The 2010 launch of the National Solar Mission serves as an example of how climate policy may complement global economic benefits. Between 2010 and 2023, India's solar capacity increased from less than 20 MW to over 70 GW (CEA, 2023). In many areas, renewables were now more affordable than coal due to declining solar costs, and indigenous companies developed solar deployment skills.

India took advantage of this success abroad by helping to establish the International Solar Alliance, which currently has more than 100 member nations. By encouraging South-South collaboration in solar adoption, India gains geopolitical clout in addition to advancing climate goals.

Table 2: India's Renewable Energy Capacity by Source (2015–2023, with 2030 Targets)

Source	2015 (GW)	2018 (GW)	2020 (GW)	2023 (GW)	2030 Target (GW)
Solar	5	25	40	70	280
Wind	25	35	38	43	140
Hydro (Large + Small)	40	45	46	47	60
Bio-energy	5	8	10	14	30
Total	**75**	**113**	**134**	**174**	**510**

(Source: Central Electricity Authority, Ministry of Power, Government of India)

4. Policy Pathways for Reimagining India's Economic Strategy

4.1 The Need for Policy Coherence

India faces the difficulty of not just adapting to changing trends but also integrating them into a cohesive strategy in a fragmented global order. Overlapping pressures are caused by trade fragmentation, fast digitization, and climatic imperatives. Policy silos could lead to paradoxes and missed opportunities. Promoting heavy industry without incorporating green standards, for instance, can ensure growth in the near term but impede export access in the long run. Coherence in policy is therefore crucial.

4.2 Trade and Diplomacy

Standards, sustainability, and resilience must be incorporated into India's trade diplomacy in addition to market access talks. Important actions consist of:

1. **Strategic FTAs:** Give top priority to high-value agreements (such as those with the EU and the UK) that cover topics like digital trade, intellectual property, and green standards in addition to tariffs.
2. **Diversified supply chains**: By boosting domestic production and collaborating with Southeast Asian economies, businesses can be encouraged to lessen their excessive reliance on Chinese supplies.
3. **Compliance Infrastructure:** To guarantee that Indian exports satisfy global quality and environmental requirements, make investments in testing facilities, certifying organizations, and logistics enhancements.

4. **Trade facilitation:** Since transaction costs in India are still higher than in East Asia, streamline customs and cut down on bureaucratic hold-ups (World Bank, 2023).

India can minimize the dangers of trade diversion while optimizing benefits by balancing openness with protections.

4.3 Strengthening Technology Infrastructure and Digital Governance

India would only have a comparative edge in the digital economy if its foundations are inclusive and competitive on a global scale. Among the priorities are:

1. **Digital Infrastructure:** Provide rural areas with 5G and broadband coverage to provide dependable and reasonably priced connectivity.
2. **Data Governance:** Using standards such as the EU's GDPR, finalize a cogent policy on cross-border data transfers that strikes a balance between privacy, national security, and economic integration.
3. **Innovation Ecosystem:** Encourage private research in AI, green technology, and cybersecurity while increasing public R&D spending, which is now less than 1% of GDP.
4. **Skills Development:** Expand digital literacy initiatives and provide advanced instruction in new technologies, focusing on women and young people in rural areas.

By taking these steps, India will be able to influence international digital standards in addition to exporting digital services.

4.4 Green Growth and Climate Resilience

India's growth strategy must incorporate sustainability rather than view it as a limitation. Important routes consist of:

1. **Carbon Markets:** Create a strong domestic carbon trading system that is connected to international markets so that businesses can absorb carbon expenses.
2. **Renewable Push:** To lessen reliance on imports and generate green jobs, localize the manufacture of solar panels, wind turbines, and hydrogen electrolyzers.
3. **Adaptation Strategies**: Provide vulnerable communities with more climate-resilient housing, crop insurance, and water management.

4. Just Transition: To prevent social upheaval, implement reskilling initiatives for employees in thermal, coal, and carbon-intensive industries.

India will become more competitive in trade and less vulnerable at home because to its combined focus on adaptation and mitigation.

4.5 Addressing Inequality and Inclusion

India's economic policy must be based on inclusive growth. In the absence of this, trade and technological advancements could exacerbate polarization. Among the policy priorities are:

Digital Inclusion: Ensure access to e-learning, telemedicine, and e-commerce by offering subsidies for rural internet and gadgets.

Support for MSMEs: In order to integrate into value chains, small and medium-sized businesses which employ 110 million people need market access, digital tools, and targeted loans.

Social Safety Nets: To reduce the impact of trade interruptions and climate-related shocks, expand programs like MGNREGA and PM-Kisan.

Gender Inclusion: Through focused skill development and flexible work arrangements, raise the percentage of women in the workforce (now about 25%), particularly in the digital and green industries.

5. Conclusion

India's economic history is at a turning point. The world it faces is a fractured order characterized by shifting trade blocs, contentious technology, and climatic imperatives rather than the liberalized, global system of the early 2000s. Some nations will experience stagnation and exclusion as a result of fragmentation. If India makes the right decision, it might mean opportunity. Although trade has evolved, it is still vital. In addition to tariffs, market entry now requires adherence to labor, environmental, and digital requirements. India needs to diversify its supply chains and trading partners in order to compete in this fragmented, rules-based market.

The greatest promising comparative advantage that India has is in technology, particularly in the digital economy. India can lead the world in services and influence digital norms by investing in digital infrastructure, talent, and governance. However, the digital revolution runs the risk of escalating inequality if it is not inclusive.

There are hazards associated with the task at hand, including the potential for policy inconsistencies, sensitivity to external technologies, and trade-offs between growth and green expenses. However, India can assure its own development and set an example for other rising economies if it adopts policies that are consistent across trade, technology, and sustainability. India has the opportunity to shift from being a participant in globalization to influencing its next phase, which will be characterized by sustainability, equity, and resilience, by rethinking its economic paths.

References:

1. Baldwin, R. (2022). The Great Convergence: Information Technology and the New Globalization. Harvard University Press.
2. Bhagwati, J. (1991). The World Trading System at Risk. Princeton University Press.
3. Business Standard. (2025, February 6). India has received $1.16 billion in climate finance so far: Govt. Retrieved from https://www.business-standard.com
4. Central Electricity Authority. (2023). Report on Installed Capacity of Power Stations. Ministry of Power, Government of India.
5. Chancel, L., & Piketty, T. (2022). World Inequality Report 2022. World Inequality Lab.
6. DD News. (2025, July 18). India’s trade deficit widens to USD 11.72 billion in July 2025 amid rising imports. Retrieved from https://ddnews.gov.in
7. Economic Times. (2025, April 1). Total exports jump to record $825 bn in FY25 as services shipments rise over 13%. Retrieved from https://economictimes.indiatimes.com
8. European Commission. (2022). Carbon Border Adjustment Mechanism (CBAM). Retrieved from https://ec.europa.eu
9. Exim Bank of India. (2023). India–Africa Trade and Investment Report. Export-Import Bank of India.
10. International Energy Agency (IEA). (2021). India Energy Outlook 2021. Retrieved from https://www.iea.org
11. International Monetary Fund (IMF). (2021). Fiscal Monitor: Strengthening the Post-Pandemic Recovery. International Monetary Fund.
12. McAfee. (2023). The Hidden Costs of Cybercrime 2023. McAfee Security.
13. Ministry of Electronics and Information Technology (MeitY). (2023). Estimation and Measurement of India’s Digital Economy Report. Government of India.
14. Ministry of External Affairs (MEA). (2022). Annual Report 2021–22. Government of India.

15. Ministry of Environment, Forest and Climate Change (MoEFCC). (2021). India's Updated First Nationally Determined Contributions. Government of India.
16. Nilekani, N., & Shah, T. (2022). Building digital public infrastructure for inclusive growth. Journal of Digital Development Studies, 5(2), 112–135.
17. Nordhaus, W. (2019). Climate change: The ultimate challenge for economics. American Economic Review, 109(6), 1991–2014.
18. NITI Aayog. (2022). India's Electric Mobility Transition: Future of Road Transport. Government of India.
19. Prebisch, R. (1950). The Economic Development of Latin America and Its Principal Problems. United Nations.
20. PwC. (2023). Start-up Perspectives: India's Unicorn Landscape. PricewaterhouseCoopers.
21. Romer, P. (1990). Endogenous technological change. Journal of Political Economy, 98(5), S71–S102.
22. Times of India. (2025, March 29). US top trading partner of India for 4th straight year in FY25; trade gap with China widens. Retrieved from https://timesofindia.indiatimes.com
23. Telecom Regulatory Authority of India (TRAI). (2024). The Indian Telecom Services Performance Indicators Report: March 2024. TRAI.
24. World Bank. (2021). Poverty and Shared Prosperity 2021: Reversals of Fortune. The World Bank Group.
25. World Bank. (2023). Logistics Performance Index 2023. The World Bank Group.