
AN EMPIRICAL STUDY OF THE EFFECTS OF MIGRATION ON FDI TOWARDS CLIMATE CHANGE IN INDIA

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ABSTRACT

Climate change has become a major concern for governments, and its effects on migration have been discussed. It is believed that increased migration can lead to increased foreign direct investment (FDI) in countries affected by climate change. This study aims to explore the effects of migration on foreign direct investment (FDI) toward climate change in India. The study will employ a quantitative empirical approach to analyze the relationships between migration, FDI, and climate change in India's context. India is particularly vulnerable to the impacts of climate change, with increases in average temperatures and extreme weather events, such as floods and droughts, already being observed. In response, India has implemented a range of policies to reduce its emissions and promote adaptation to climate change. One of the major strategies that India is pursuing to tackle climate change is to attract foreign direct investment (FDI) to support the development and deployment of clean energy technologies. However, there is still a lack of understanding of how migration and emigration are related to FDI toward climate change in India. This paper seeks to address this knowledge gap by looking at the relationship between migration and FDI toward climate change in India. The findings of the study will be used to provide policy advice to the Indian government and other relevant stakeholders to facilitate and promote FDI toward climate change in India. This study will be of great significance to policymakers and scholars in the field of migration, FDI, and climate change. This paper aims to provide useful insights into the potential implications of migration for India's economy and environment.

Keywords: Migration, FDI (Foreign Direct Investment), Climate Change, Economy and Environment.

INTRODUCTION:

The effects of migration on foreign direct investment (FDI)¹ and climate change in India have been a subject of growing interest in recent years. Migration is a key driver of economic development and is often considered an important factor in attracting and retaining foreign direct investment. However, it is also increasingly being recognized that migration can hurt the environment and contribute to climate change. This paper aims to analyze the effects of migration on FDI and climate change in India, focusing on how migration can both positively and negatively affect these two phenomena. The paper will begin by providing an overview of the current context and trends in migration, FDI, and climate change in India. It will then examine the potential positive and negative effects of migration on FDI and climate change in India. Finally, the paper will discuss potential policy recommendations and actions that can be taken to address the potential negative effects of migration on FDI and climate change in India. By providing an in-depth analysis of the effects of migration on FDI and climate change in India, this paper aims to provide useful insights into the potential implications of migration for India's economy and environment.

PURPOSE OF THIS STUDY:

The study of the effects of migration on FDI toward climate change in India is important because of the increasing frequency of natural disasters in India due to climate change, and the growing number of people migrating from rural to urban areas. Migration is one of the most important drivers of FDI in India as it helps to increase the labor force and bring in capital. This provides an opportunity to attract foreign investment from international companies. An understanding of the effects of migration on FDI toward climate change in India is essential to develop policies and strategies to support and manage the development of cities and regions in India. The study will provide a comprehensive view of the relationship between migration, FDI, and climate change in India, and the implications of this relationship on the economic and social development of India. It will also enable India to effectively respond to the challenges posed by climate change and to ensure that the benefits of FDI are shared among all stakeholders.

¹ The term "foreign direct investments" refers to net investments made to purchase a long-term management stake (10 percent or more of voting shares) in a company that operates in a country other than the investor's own.

FDI MIGRATION AND CLIMATE CHANGE:

FDI and migration can both be affected by climate change. Climate change can affect the availability of resources, such as water or food, and lead to increased migration as people seek out more favorable environments in which to live. This can lead to increased competition for resources, including investment capital, and make doing business in certain regions more difficult. At the same time, FDI can be used to help mitigate the effects of climate change. Foreign direct investment can be directed towards green projects, such as renewable energy production or energy efficiency measures, which can help reduce carbon emissions and mitigate the negative effects of climate change. FDI can also be used to help fund adaptation projects, such as infrastructure improvements or agricultural technology, which can help countries and communities better prepare for the effects of climate change.

LITERATURE REVIEW:

Migration and FDI flow are interrelated. On the one hand, FDI inflows support economic growth in host nations by bringing cash, new technology, and knowhow (provided some conditions are fulfilled, Alfaro et al. 2004). There were 38 million distinct occurrences of internal migration in 2021 worldwide, with 14.3 million (376%) originating from the East Asia and Pacific area, according to the 2022 Global Report of Internal Displacements (GRID) by the Internal

Displacement Monitoring Center (IDMC) in Geneva. No region is immune to the possibility of migration brought on by climate change, which is motivated by effects on populations' livelihoods and liability loss in places with high exposure: More than 216 million people may migrate inside their countries across six regions by 2050, according to the most current Groundswell analysis from the World Bank. In the fiscal year 2022, the World Bank Group pledged a record \$31.7 billion for climate-related projects. The goal for climate co-benefits in the Climate Change Action Plan, 2021–2025 has been exceeded by \$31.7 billion, or 36% of all lending: an average of 35% during the course of the plan. The influence of innovative activities and foreign direct investment (FDI) on increased green productivity (IGP) in developing nations is examined in this research from the perspective of productivity changes. The COP27 climate conference, which took place in late 2022, helped to draw attention to the measures that must be taken to prevent a disaster, especially an emphasis on the relationship between climate change and water. Feb 28, 2023, This study attempts to look into how rural-to-urban migratory

workers' physical health is impacted by foreign direct investment (FDI). FDI flows increased by 29.9% to \$837 billion, albeit at a slower rate than they did for developed countries. To reach a record high of US\$83 billion, FDI flows to Africa grew by more than twice from US\$39 billion in 2020."New Paths of Korea's Foreign Direct Investment Policy in the Multi-Track FTA Era: Inducement and Aftercare Services," by Choong Yong Ahn, published in March 2008 in the OECD Global Forum for International Investment. Determinants of FDI in China by Ali Shaukat and Wei Guo, Journal of Global Business and Technology, Volume 1, Number 2, Autumn 2005. International Companies, FDI Flows, and Imperfect Capital Markets, NBER Working Paper No. 12855, January, by Pol Antràs, Mihir A. Desai, and C. Fritz Foley. A Review of the Empirical Literature on FDI and Determinants by Bruce A. Blonigen, 2005 April NBER Working Paper No. 11299.

SIGNIFICANCE OF THIS STUDY:

The study of the effects of migration on FDI toward climate change in India is of great significance. As India is one of the most populous countries in the world, with a large migrant population, the impact of migration on FDI toward climate change in India is an important issue to consider. With the influx of migrants, increasing investments in the green energy sector, and the government's commitment to the Paris Agreement, India can become a leader in the fight against climate change. The study of the effects of migration on FDI toward climate change in India can help identify ways in which the government and private sector can work together to encourage more FDI and create greener investments. Such research could also help inform policies to help manage the flow of migrants and their impact on the environment. Moreover, it can also help identify potential opportunities for investment in green technology² that would benefit both India and the global community.

OBJECTIVE:

1. Analyze the impact of migration on foreign direct investment (FDI) flows in India and the role of climate change in shaping these flows.
2. Examine the relationship between migration and FDI and how it is affected by climate

² Green technology lowers costs by enhancing product design, reducing waste, reducing our carbon footprint, and boosting company efficiency. It also generates new employment.

change in India.

3. Investigate the short-term and long-term effects of migration on FDI and the implications for climate change in India.
4. Assess the potential socio-economic and environmental impacts of migration-induced FDI flows and their potential impact on climate change in India.
5. Evaluate the role of policy and institutional factors in mediating the relationship between migration and FDI, as well as their impacts on climate change in India.
6. Develop strategies and policies to maximize the positive impacts of migration on FDI and minimize the negative effects of climate change in India.

RESEARCH QUESTIONS:

1. What are the effects of migration on Foreign Direct Investment (FDI) in India?
2. How does migration affect climate change in India?
3. Does FDI in India lead to increased or decreased migration?
4. What are the economic, social, and environmental impacts of FDI associated with climate change in India?
5. What strategies can be employed to maximize the positive effects of migration and FDI in India?

METHODOLOGY:

This study uses the **quantitative approach** of empirical study to the effects of migration on FDI towards climate change in India and would focus on the economic and environmental impacts of foreign investment into India. This could include looking at the number of jobs created in India through FDI and the amount of energy used by foreign companies. It could also include analyzing the number of emissions created by foreign companies, and any changes in local or regional climate that have been attributed to FDI. Other factors such as changes in water availability, soil fertility, and air quality could also be considered. Finally, the effects of FDI on

the local economies of India should be taken into account, such as increased income, increased access to services, and increased access to capital.

DATA COLLECTIONS:

Data from the World Bank's World Development Indicators (WDI), OECD, and the International Monetary Fund's Balance of Payments Statistics (BOPS) were used for the analysis. The data included the following variables: 1) inward and outward migration flows, 2) inward and outward FDI, and 3) green investment as a percentage.

DATA ANALYSIS:

The study will analyze data from the World Bank, the Indian government, and other relevant sources to examine the impact of migration on FDI toward climate change in India.

FDI AND CLIMATE CHANGE IN INDIA

India has seen a rapid increase in foreign direct investment (FDI) over the past decade. This growth has been fueled by various factors, including the country's growing economy, its favorable investment climate, and its large consumer base. As India continues to develop, it is becoming increasingly important for the country to consider the potential impact of FDI on climate change. The FDI that flows into India has the potential to accelerate the country's transition to a lowcarbon and climate-resilient economy. The investments that come into India can be used to finance the development of renewable energy sources, increase energy efficiency, and promote sustainable transport options. Additionally, foreign companies can bring with them the know-how and technology needed to support the development of sustainable production and consumption patterns. At the same time, FDI can also bring with it certain risks. For example, foreign companies may invest in industries that are highly energy-intensive and polluting. Additionally, if the investments are not well-directed, they can lead to an overdependence on finite natural resources, such as fossil fuels, which contribute to climate change. It is therefore important for India to continue to promote FDI while also taking steps to ensure that investments are made responsibly and to reduce greenhouse gas emissions. This can be done through the implementation of clear regulations that incentivize investments that are aligned with the country's climate goals and ensure compliance with international standards. Additionally, the government should provide support for companies that are investing in green

technologies and sustainable development projects. Overall, the growth of FDI in India has the potential to make a positive contribution to the country's efforts to combat climate change. However, India needs to ensure that investments are made responsibly and to reduce greenhouse gas emissions. This will require the government to implement clear regulations and provide incentives for companies that are investing in green technologies and sustainable development³ projects.

FDI AND MIGRATION IN INDIA:

India can combat climate change with the help of foreign direct investment (FDI). India can transition to a low-carbon, the climate-resilient economy with the aid of FDI, which may give access to new technology and financing for green initiatives. India has already made strides in luring FDI for environmentally friendly initiatives like energy efficiency and renewable energy. India was the third-largest recipient of green FDI in the world in 2015 with approximately \$35 billion in FDI for green projects.

India is boosting its FDI while making efforts to lower its emissions. The Indian government is investing in other green programs, such as energy efficiency and green building, and it has set an ambitious target of generating 175 gigawatts of renewable energy capacity by 2022. The government is also creating laws to combat climate change, like the Paris Climate Accord. India has agreed to reduce its emissions intensity by 33–55% by 2030 compared to 2005 levels under the terms of this agreement.

Last but not least, India is funding climate resilience initiatives including building infrastructure that is weatherproof and creating early warning systems for floods and other natural calamities. India will be better able to deal with the repercussions of climate change thanks to these steps, which will also increase its appeal to international investors who are increasingly searching for nations that are doing something about the problem.

IMPACT OF MIGRATION ON FDI AND CLIMATE CHANGE:

Foreign Direct Investment (FDI) and climate change in India have both been significantly impacted by migration. Investors have recognized India's population's diversified abilities,

³ Development that satisfies current demands without compromising the capacity of future generations to satisfy their own needs is known as sustainable development.

expertise, and vitality, which has attracted Investment. Jobs and investment possibilities have been made available through FDI in sectors including manufacturing, technology, services, and infrastructure. Also, this has assisted in lowering India's poverty and inequality.

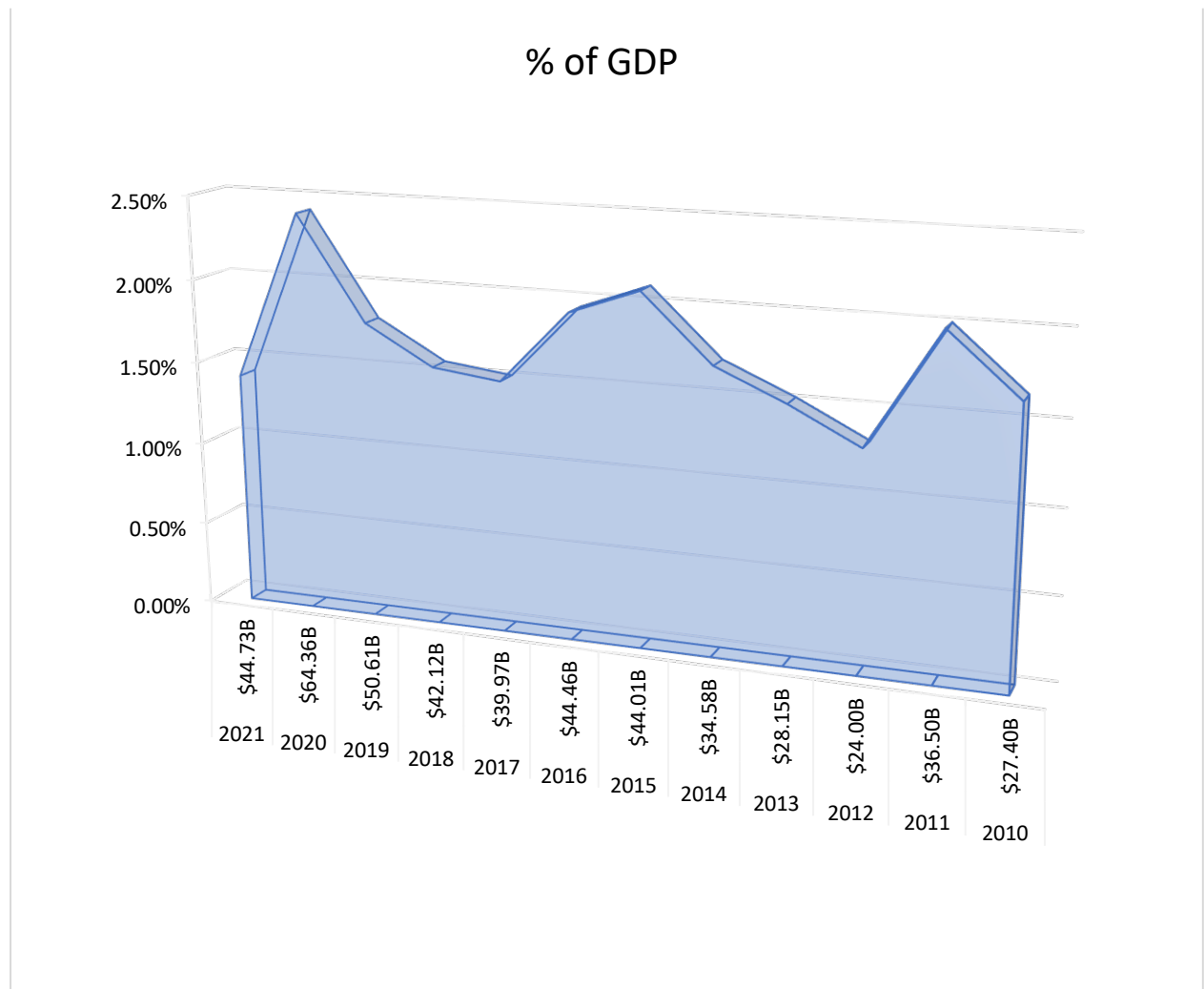
At the same time, climate change in India has benefited from migration. Due to increasing labor and resource availability brought about by migration, the nation is now moving towards more sustainable growth. India's dependency on fossil fuels and emissions of greenhouse gases⁴ have both decreased as a result of this. Also, migrant employees are frequently better at adapting to a changing environment. Overall, migration has had both positive and negative impacts on FDI and climate change in India. While it has opened up the country to greater investment, it has also had adverse effects on the environment.

India Foreign Direct Investment

Foreign direct investment is the term used to describe direct equity investment flows in the reporting economy. The total equity capital reinvested profits, and other capital makes up this amount. A direct investment occurs when a person from one economy has substantial control over or influence over the management of a company located in another. The ownership of 10% or more of the voting stock's common shares is necessary to prove that a direct investment link exists.

⁴ The primary gases that cause the greenhouse effect include fluorinated gases, carbon dioxide, methane, nitrous oxide, and water vapour, all of which are naturally occurring substances (which are synthetic or man-made)

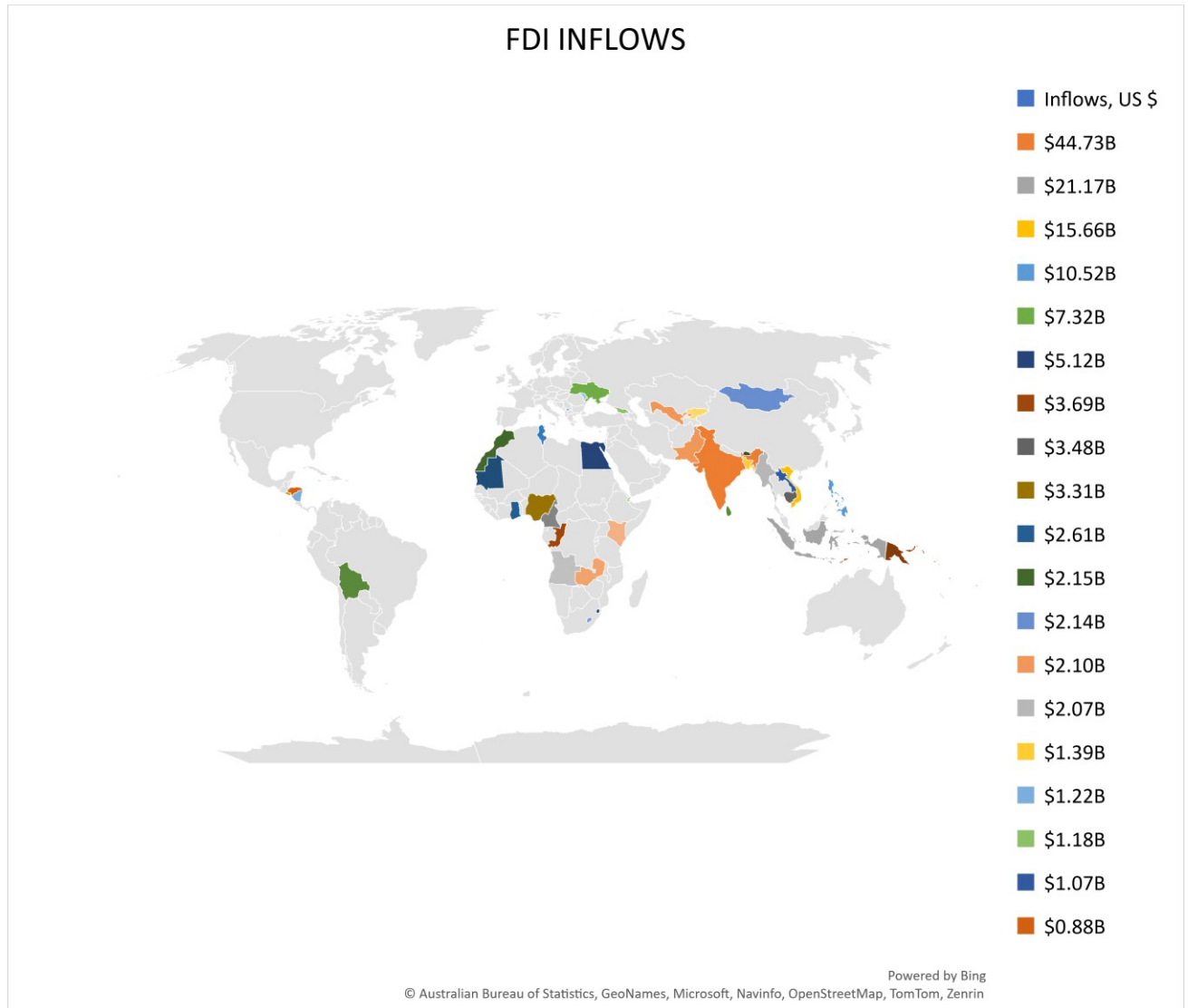
The data is displayed in modern US dollars.



Data Source: World Bank

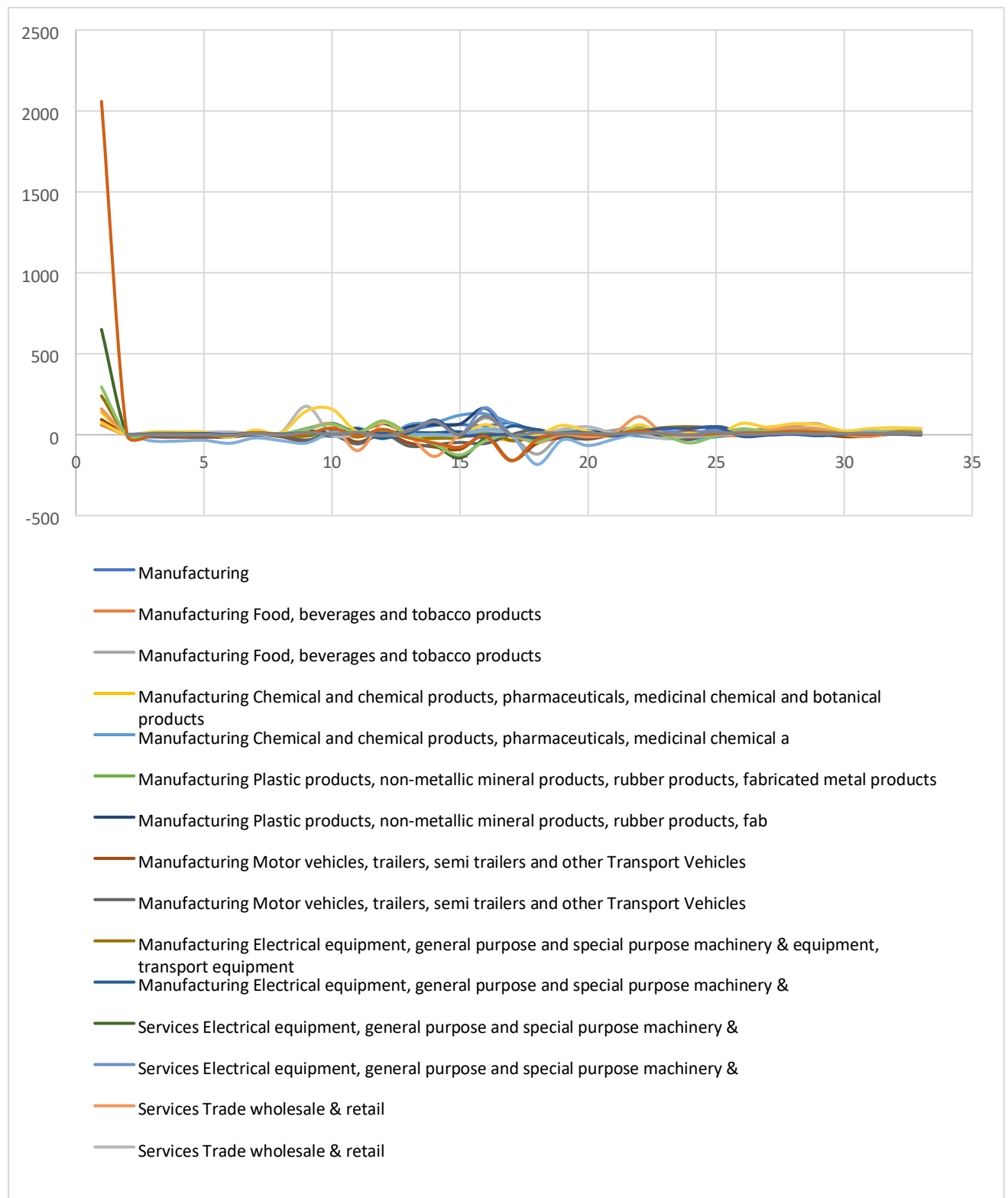
1. India received \$44.73 billion in FDI in 2021, a 30.51% decrease from 2020.
2. India received \$64.36 billion in foreign direct investment in 2020, a 27.17% increase over 2019.
3. India received \$50.61 billion in FDI in 2019, an increase of 20.17% over the previous year.
4. India received \$42.12 billion in FDI in 2018, up 5.38% from the previous year.

FDI NET INFLOWS:



Data Source: World Bank

Growth Rates of the Select Items of the Select 2,059 Foreign Direct Investment Companies, Industry Group-wise, 2019-20 and 2020-21⁵



⁵ <https://dbie.rbi.org.in/>

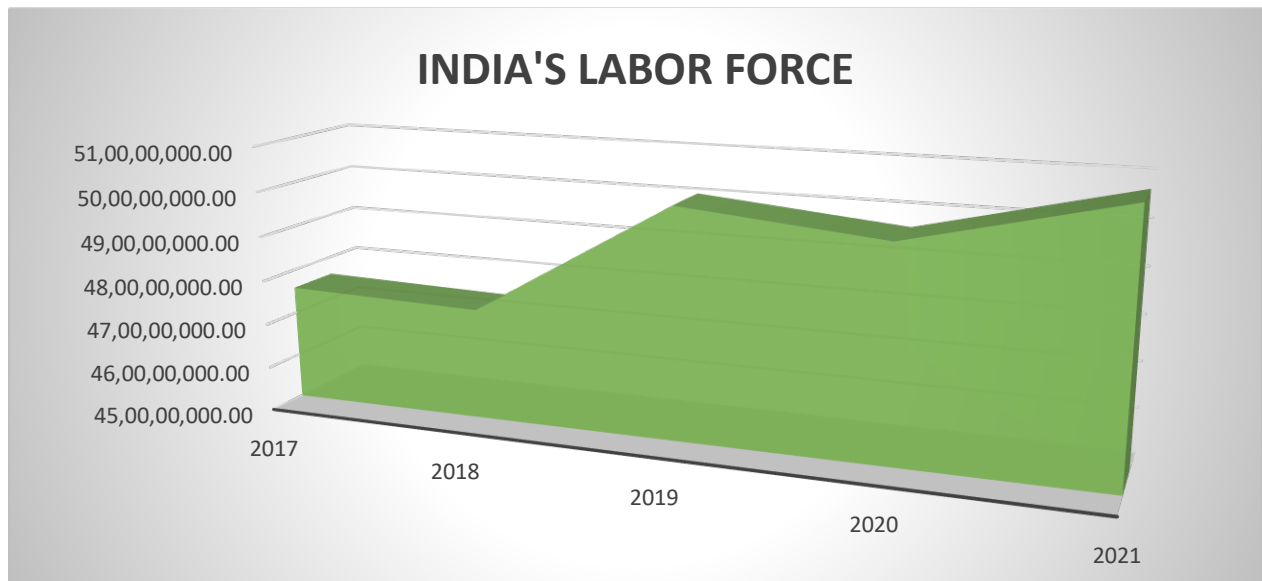
LABOR MIGRATION IN FDI:

A significant contributor to the flow of foreign direct investment is labor migration⁶ (FDI). Labor migration may lower labor expenses, draw in highly trained individuals, and expand a company's pool of prospective clients. In turn, this can encourage FDI by raising the possibility of larger earnings. The availability of labor for FDI projects may grow as a result of labor migration, increasing their appeal to investors. Moreover, migrant labor may result in a more varied workforce, which is advantageous for FDI projects. Moreover, migrant workers can contribute to lowering the costs of FDI projects, such as labor expenses. Last but not least, labor migration can encourage the exchange of technology and information across nations, which can be advantageous for FDI.

Labor migration is essential for attracting foreign direct investment (FDI), but its effects can be both favorable and unfavorable. On the one hand, it can give a host nation access to a bigger and more varied labor pool, but on the other, it can cause local employees' pay to drop and overpopulation and resource rivalry.

Nations should ensure that their immigration laws and policies protect both domestic and foreign employees, ensure that foreign workers are paid fairly, have access to the benefits and protections they require, and are permitted to travel back to their country of origin. They should also encourage the development of skills and credentials within their people, and make sure that foreign direct jobs.

⁶ The term "labor migration" refers to the movement of people seeking employment from their state of residence to another state. Over 86 million people are employed abroad now, compared to just 57 million in their nation of origin. International labor migration (ILM) and foreign direct investment (FDI) have contributed to some aspects of the global development process. The majority of Western industrialized nations had issues with FDI and ILM regulations at various periods of economic development. The issues became major and delicate subjects on both the local and global political agendas with the rise of FDI and ILM in the middle of the 1960s.



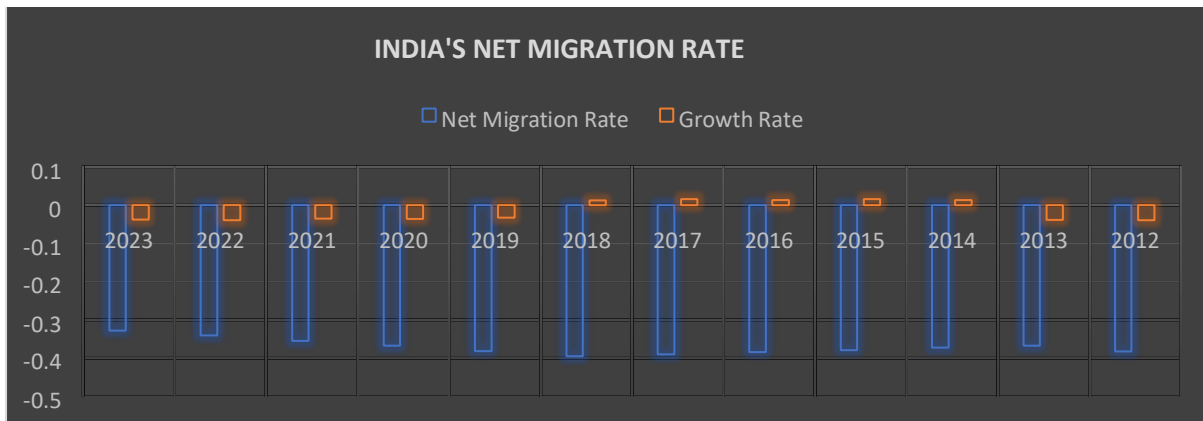
Source: world development indicators.

These statistics clearly show that the labor force in India is growing annually.

INDIA'S MIGRATION IN CLIMATE CHANGE:

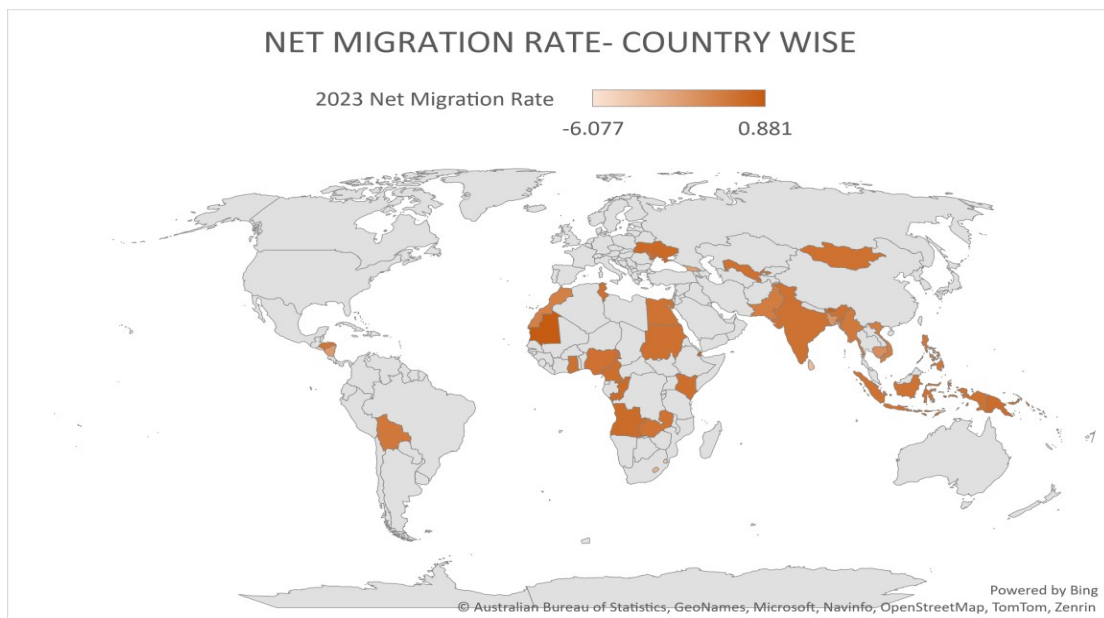
A significant rural-urban movement is taking place in India as a result of climate change. Rural communities are emigrating to cities in quest of safer and more lucrative futures as extreme weather disasters like floods, droughts, and heat waves grow increasingly common. Large slums have been developed as a result of this movement in metropolitan regions; these unplanned communities frequently lack basic amenities like sanitization and healthcare, which can hurt residents' health and living circumstances. With fewer work possibilities and crowded cities as a result of climate change-induced migration⁷, there have also been social and economic disturbances. The government must create policies and initiatives that address the social and economic effects of climate-induced migration and put adaption measures in place that lessen these effects.

⁷ Climate migrants are people who relocate mostly voluntarily as a result of rapid or gradual climatic change.



Data Source: United Nations - World Population Prospects

1. India's current net migration rate⁸ in 2023 is -0.329 per 1000 people, a decrease of 3.8% from 2022.
2. India's net migration rate fell by 3.93% from 2021 to 2022, to -0.342 per 1000 people.
3. India's net migration rate fell by 3.52% from 2020 to 2021, to -0.356 per 1000 people.



⁸ the number of immigrants less the number of emigrants throughout a period, divided by the number of personyears the population of the receiving nation lived during that time. The ratio is given as the net number of migrants per 1,000 people.

India is one of the nations most susceptible to the effects of climate change. By the year 2050, India's population is projected to increase by 400 million, placing a larger demand on its limited resource base. Temperatures are already rising, there are more frequent extreme weather events, glaciers are melting, the sea level is rising, and rainfall patterns are changing throughout India. Particularly in coastal regions, these changes are anticipated to result in displacement and increasing migration.

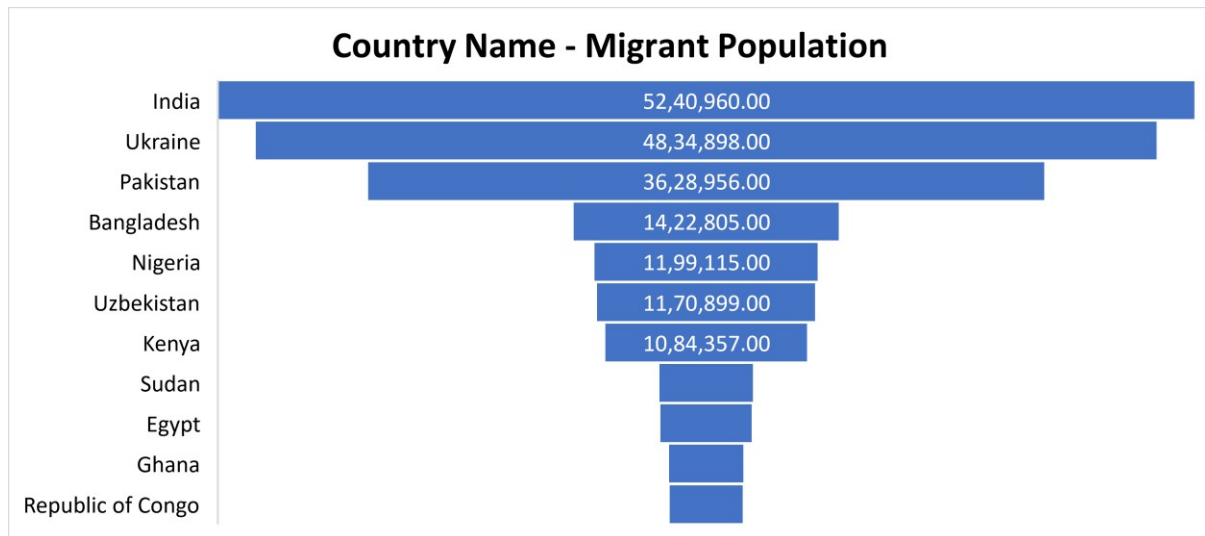
India already faces difficulties as a result of rising migration. Almost 4 million people are thought to be internally displaced in India at the moment as a result of climate change and other issues. In the upcoming years, climate-induced migration is anticipated to rise by up to 20 million people displaced by 2050.

The Indian government created a National Action Plan on Climate Change in 2008 as part of its efforts to foresee the effects of climate change. The establishment of early warning systems, capacity building, boosting community resilience, and granting access to climate funding are among the initiatives recommended in this strategy to address the problems of climate-induced migration.

In addition, India enacted a National Adaptation Plan in 2020⁹ that includes measures to deal with migration brought on by the climate. The strategy calls for actions to enhance livelihoods, improve readiness and response, and provide migrants with essential services.

In general, India is making preparations to deal with the effects of climate change, including the possibility of more migration. To guarantee that India can manage and respond to the problems presented by climate-induced migration, however, there is still considerable work to be done.

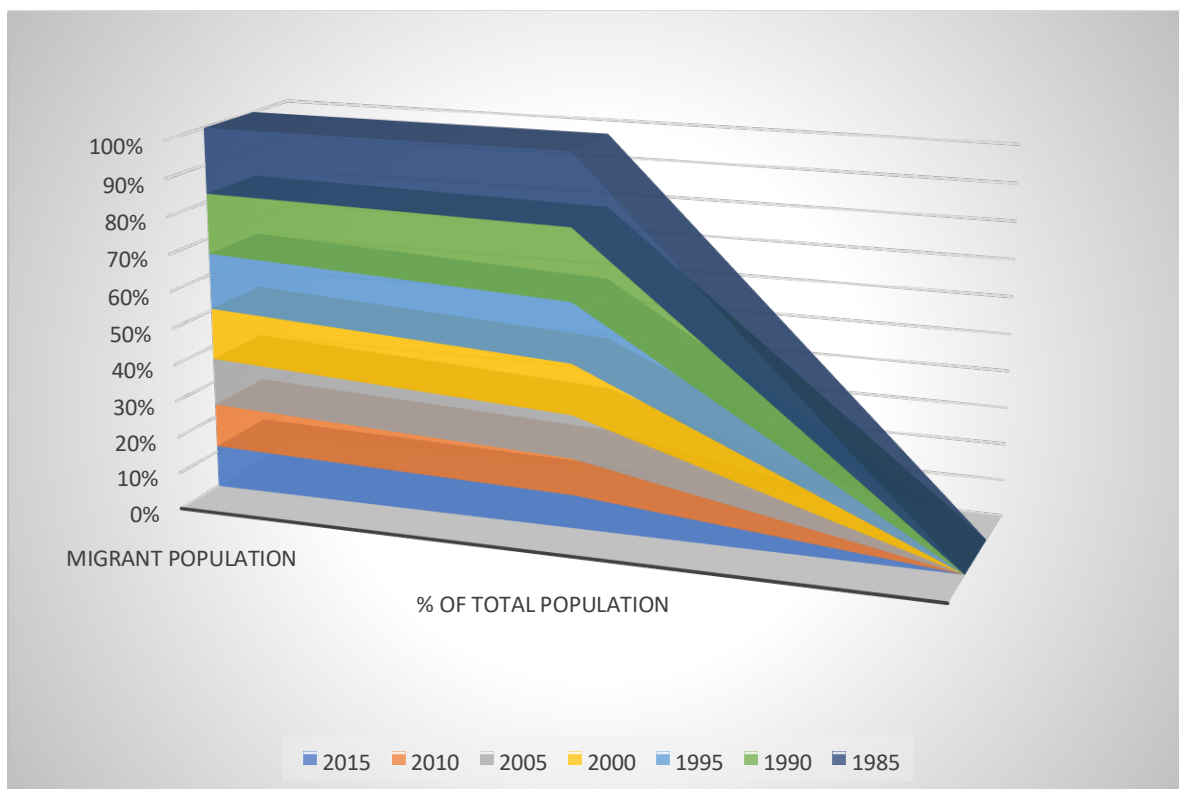
⁹ To aid with adaptation efforts in India's States and Union Territories (UTs) that are susceptible to the negative effects of climate change, the National Adaptation Fund for Climate Change (NAFCC) was formed. The NAFCC is being implemented in a project-based manner, and 30 projects have already been approved in 27 States and UTs .<https://pib.gov.in>.



Data Source: World Bank

India is undoubtedly in the top spot according to these figures.

India's Immigration Statistics:



Data Source: World Bank

- India immigration statistics for 2015 was **5,240,960.00**, a **3.59% decline** from 2010.

- India immigration statistics for 2010 was **5,436,012.00**, a **8.23% decline** from 2005.
- India immigration statistics for 2005 was **5,923,642.00**, a **7.61% decline** from 2000.
- India immigration statistics for 2000 was **6,411,272.00**, a **7.78% decline** from 1995.

THE EFFECTS OF FOREIGN DIRECT INVESTMENT (FDI) ON CLIMATE CHANGE IN INDIA CAN BE STUDIED FROM A QUANTITATIVE PERSPECTIVE BY LOOKING AT THE FOLLOWING INDICATORS:

1. Greenhouse Gas (GHG) Emissions:

FDI may contribute to an increase in GHG emissions in India due to the increased energy consumption associated with increased production and consumption. This can be measured by looking at the amount of GHG emissions per capita, as well as the total GHG emissions of the country as a whole.

INDIA'S GREENHOUSE GAS (GHG) EMISSIONS:

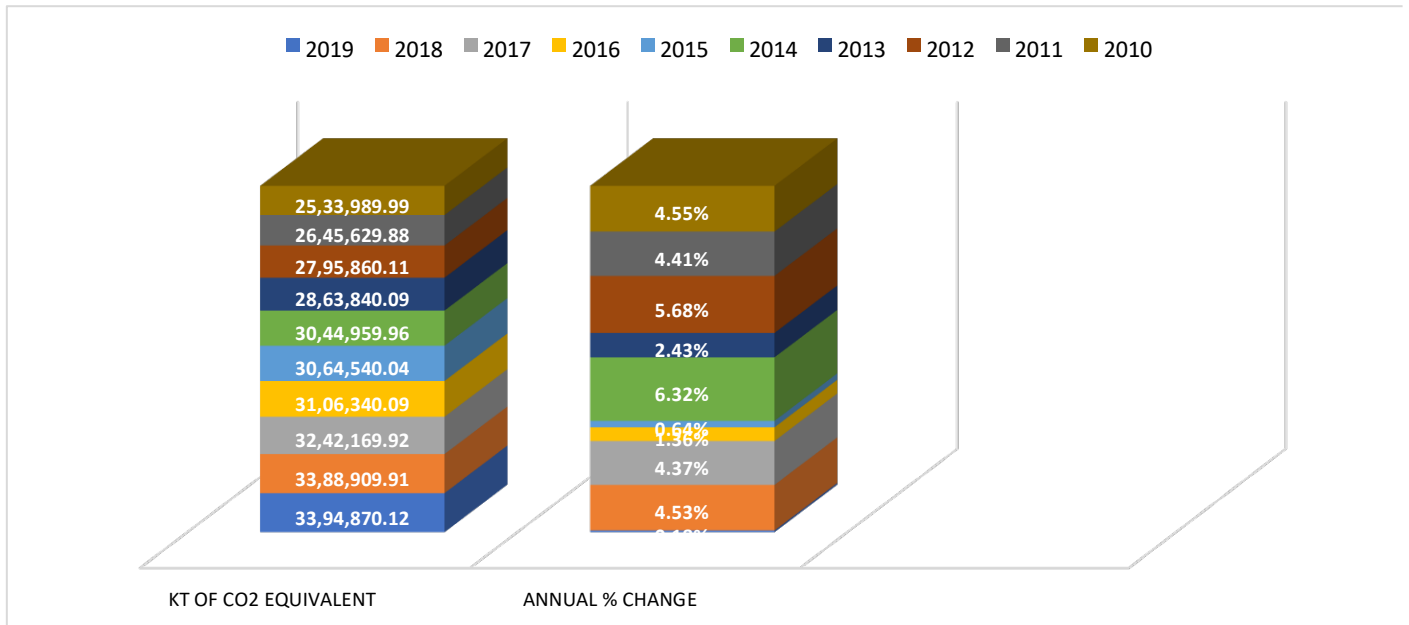
The overall amount of greenhouse gas emissions, measured tonnes of CO₂ equivalent, is made up of CO₂ totals, which exclude short-cycle biomass burning (such as burning agricultural waste and burning Savannah), as well all anthropic sources¹⁰ of CH₄, N₂O, and F-gases (HFCs, PFCs, and SF₆).

1. India's greenhouse gas emissions (GHG) for 2019 were 3,394,870.12, up 0.18% from 2018.
2. India's greenhouse gas emissions (GHG) during 2018 were 3,388,909.91, up 4.53% from 2017.
3. India's greenhouse gas emissions (GHG) during 2017 were 3,242,169.92, up 4.37% from 2016.

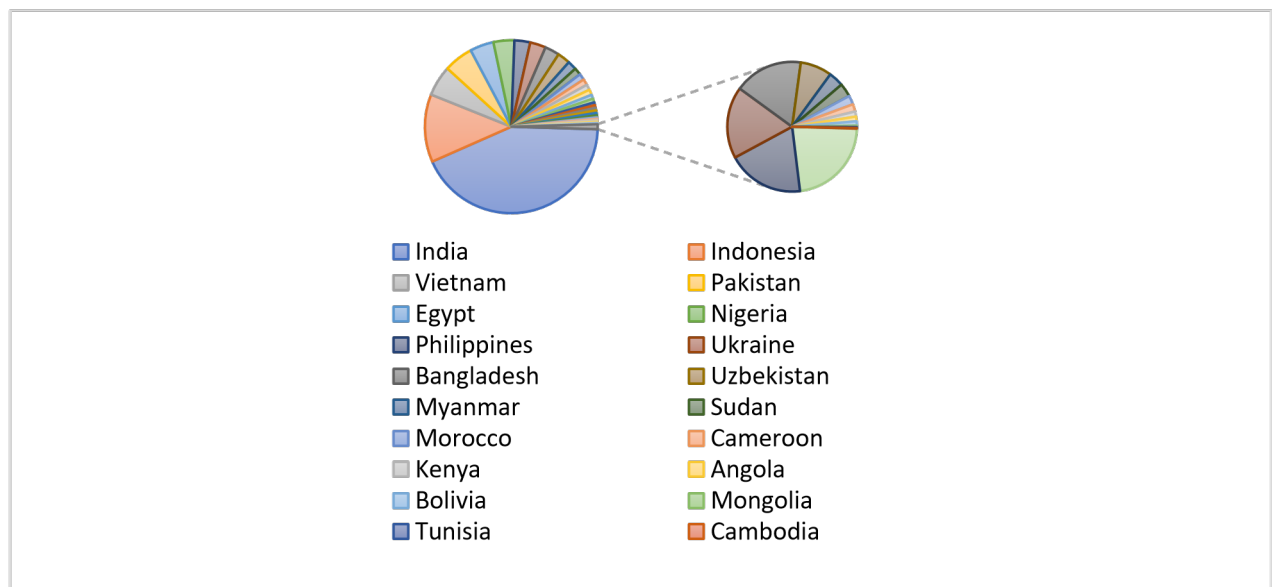
¹⁰ The main sources of pollution are thought to be anthropogenic activities such mining, oil drilling, dumping of industrial waste, sewage disposal, agricultural run-off, residential effluents, agricultural inputs, discarding of commercial items, and burning of fossil fuels.

4. India's greenhouse gas emissions (GHG) during 2016 were 3,106,340.09, up 1.36% from 2015.

Data Source: World Bank



GREENHOUSE GAS (GHG) EMISSIONS- COUNTRY RANKING



This information makes it quite evident that India ranks top in terms of greenhouse gas emissions.

FDI impacts on greenhouse gas emissions:

India's emissions have improved as a result of FDI. According to a study conducted by the World Bank, FDI has been associated with a reduction in emissions intensity in India. In particular, FDI has been associated with an increase in energy efficiency and a decrease in reliance on coal as a source of energy. FDI has also been associated with an increase in the use of renewable energy sources, such as wind and solar power, which help reduce emissions. Additionally, FDI has been associated with the adoption of cleaner technology and better environmental practices, which also help reduce emissions. Thus, FDI in India has had a positive impact on emissions in India.

FDI impacts on Carbon (CO₂) Emissions:

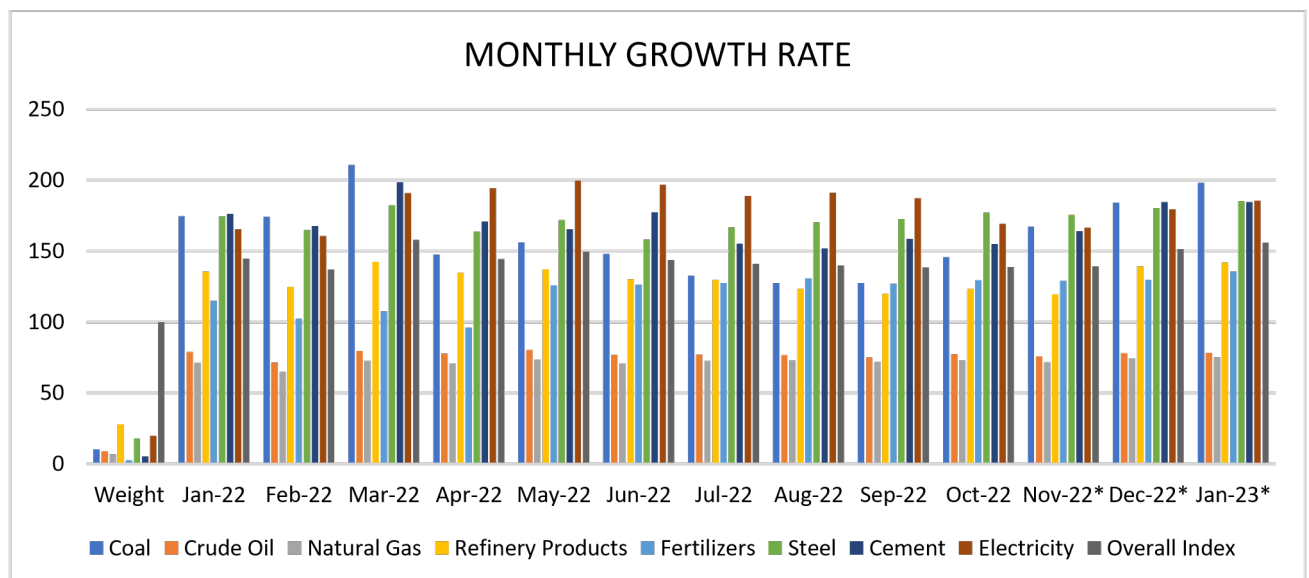
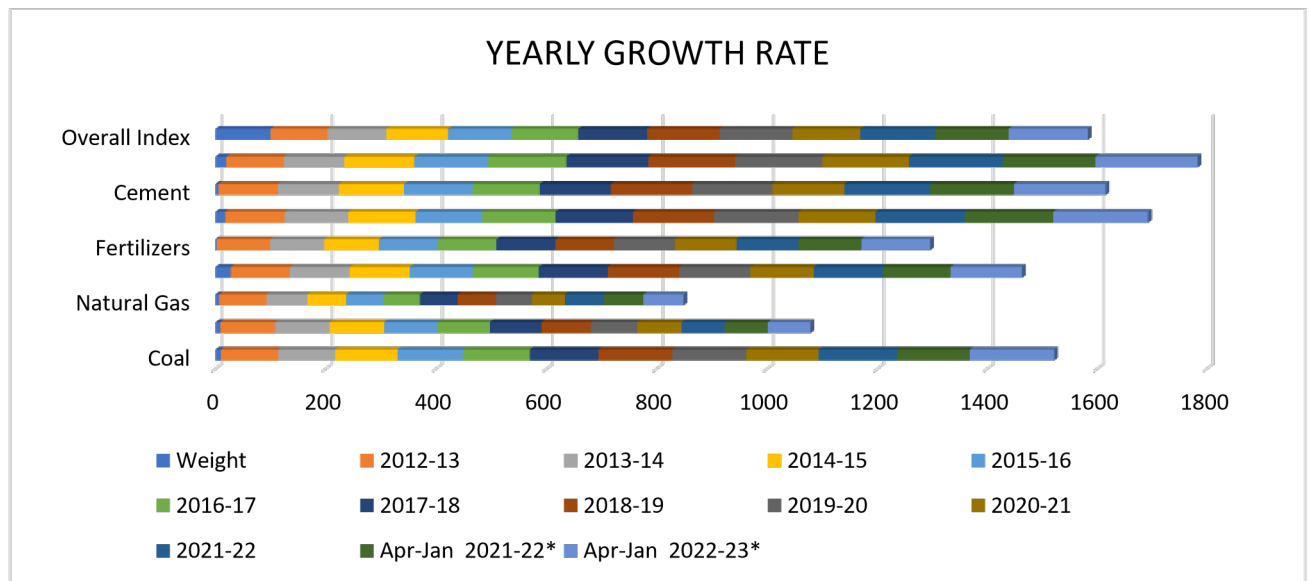
FDI can increase carbon emissions by introducing new technologies, production techniques, and industries, stimulating economic growth and reducing emissions by providing access to more efficient and cleaner technologies.

FDI has helped to reduce carbon emissions in India by introducing more efficient technologies and processes that use less energy and produce fewer emissions. FDI investments in India have led to an increase in the number of green energy projects, such as solar and wind energy. These renewable energy sources produce little or no carbon emissions and are important contributors to India's efforts to reduce its carbon footprint. Furthermore, FDI has enabled the adoption of energysaving initiatives, such as efficient lighting, energy-saving appliances, and energy-saving building materials. These measures have helped to reduce energy consumption and consequently, reduce the amount of carbon dioxide emissions. Finally, FDI has enabled the development of more efficient transportation systems in India that use less fuel, resulting in fewer emissions.

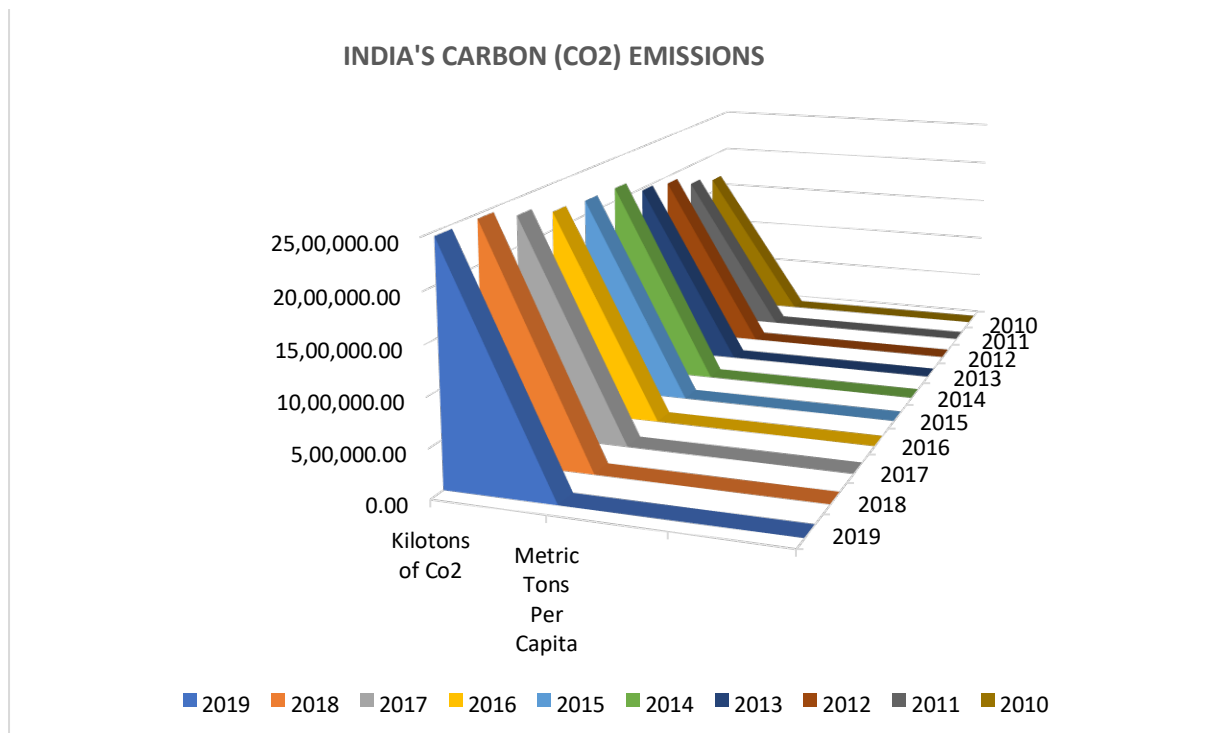
The production of cement and the combustion of fossil fuels both produce carbon dioxide emissions. These consist of gas flaring and carbon dioxide created through the consumption of solid, liquid, and gas fuels.

In comparison to the same month last year, the Index of Eight Core Industries (ICI) rose 7.8% in January 2023. Eight main sectors, including Coal, Crude Oil, Natural Gas, Refinery Products, Fertilizers, Steel, Cement, and Electricity are measured collectively and separately by ICI. ICI

saw total growth of 7.9% from April through January 2022–2023.

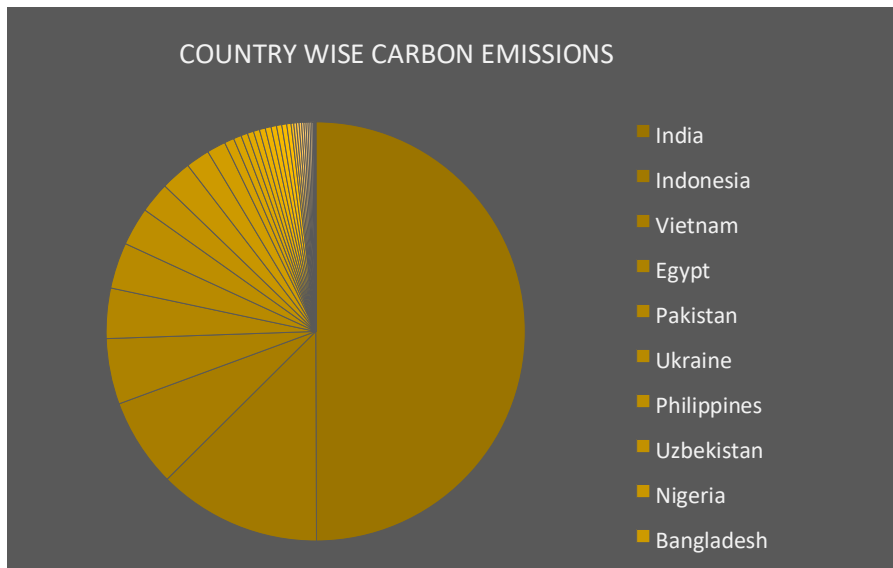


Data Source: OECD



Data Source: World Bank, OECD

1. India's carbon (co2) emissions in 2019 increased by 0.18% from the previous year to 2,456,300.05.
2. India's carbon (co2) emissions in 2018 increased by 5.67% from the previous year to 2,451,929.93.
3. India's carbon (co2) emissions during 2017 increased by 5.7% from 2016 to 2,320,409.91.
4. In recent years, both foreign direct investment (FDI) and carbon emissions have steadily increased in India. However, the relationship between FDI and carbon emissions in India is complex. But compared to other variables like population growth and economic development, FDI's influence on the rise in carbon emissions has been relatively minimal in particular industries like manufacturing and power generation. Some studies have shown that FDI has reduced carbon emissions because of the infusion of cash and technology from foreign investors in specific industries, such as renewable energy. It is difficult to generalize the link between FDI and carbon emissions in India, but it seems to be a mixed bag of good and bad effects.



Data Source: World Bank, OECD

2. Renewable Energy Capacity:

Foreign direct investment (FDI) can contribute to an increase in renewable energy capacity in India, as measured by the installed capacity overall and the percentage of energy coming from renewable sources. FDI can provide access to capital and technology, develop policies and regulations, create jobs, and stimulate economic activity in the renewable energy sector.

As of December 31, 2022, India had 174.53 GW of installed renewable energy capacity, placing it fourth globally. Up till November 30, 2022, 7.3 GW of RTS capacity has been reached, and the country now has 408.72 GW of installed energy capacity.

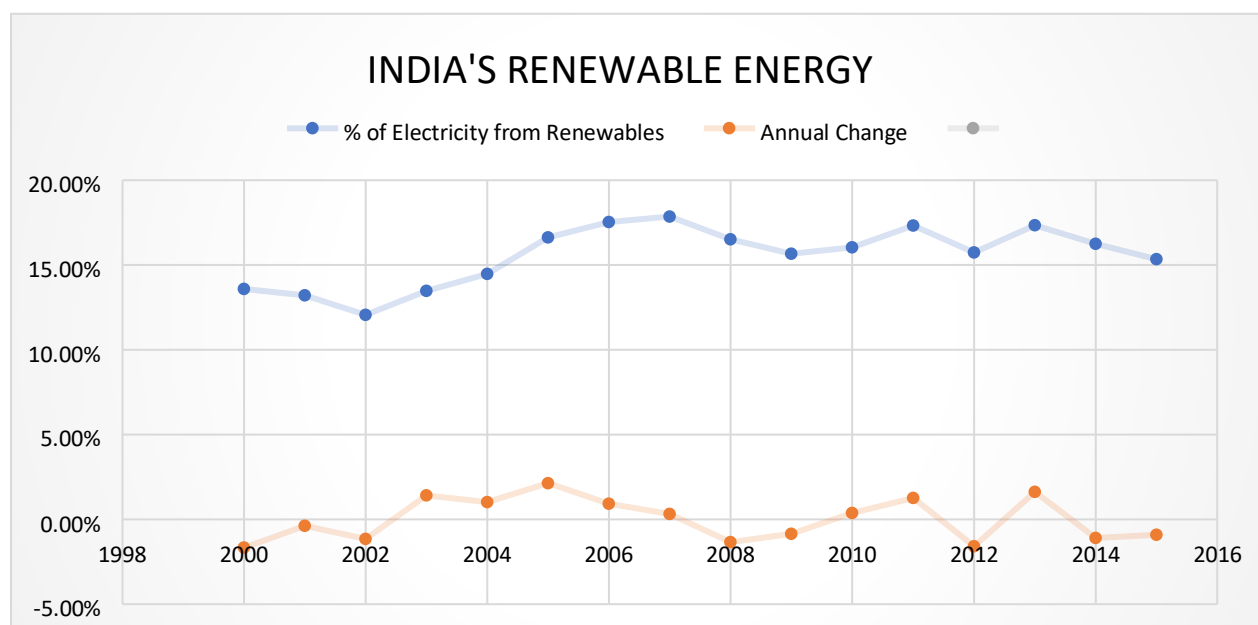
The Green Term Ahead Market includes contracts for the exchange of power generated by renewable energy sources (G-TAM). Throughout the period from August 2020 to January 2023, 8509.49 Million Units were traded in GTAM.

On the Green Day Ahead Market (GDAM), only renewable energy is traded.

Between October 2021 and January 2023, 4186.64 million units were exchanged in total. Compared to 18,000 MW from agricultural and agro-industrial waste, bagasse cogeneration in sugar mills has the potential to produce 8,000 MW more power in India. The potential for biomass power is also estimated to reach 26,000 MW altogether. Under the Green Energy

Corridor Scheme-Intra-State, 9700 ckm of transmission lines and 22600 MVA capacity of substations have been proposed in eight states to evacuate 24 GW of renewable energy projects. A deal between REC Limited and KfW Development Bank has been reached for REC to receive an ODA term loan in the amount of USD 169.5 million under the Indo-German Bilateral Partnership. Solar, wind, hydro, and biopower all contributed to a growth in the generation of renewable energy, which went from 193.5 billion units in 2013–14 to 306.3 billion units in 2020–21. Production of electricity increased by 12% in January 2023 compared to January 2022 (weight: 19.85%).

Its total index **increased by 10.1%** from April to January 2022-2023.



Data Source: World Bank.

This research makes it very clear that FDI can help India's capacity for renewable energy growth.

3. Energy Efficiency:

FDI can also contribute to an increase in energy efficiency in India, as a result of increased efficiency of production and consumption processes. This can be quantified by looking at the energy intensity of the country's economy, as well as the GDP-based energy consumption rate.

4. Investments in Climate Change Mitigation:

FDI can also contribute to increased investments in climate change mitigation in India, as a result of increased investments in clean energy sources, energy efficiency, and other climate change mitigation measures. This can be quantified by looking at the total investment in climate change mitigation measures in India, as well as the percentage of the country's GDP invested in such measures. By studying these indicators, it is possible to gain a quantitative understanding of the effects of FDI on climate change in India.

The amount of FDI invested in India to combat climate change has increased substantially in recent years. With approximately US\$3 billion in FDI for climate change mitigation in 2017, India is currently one of the top recipients.

The Indian government has actively promoted FDI investments in clean technologies¹¹, green construction, and projects including renewable energy and energy efficiency. To attract FDI investments in certain industries, the government has also put in place several incentives, including tax holidays.

India has also made several measures that have enhanced the environment for FDI investment. The FDI clearance process will be simplified, there will be more openness, and there will be fewer bureaucratic obstacles.

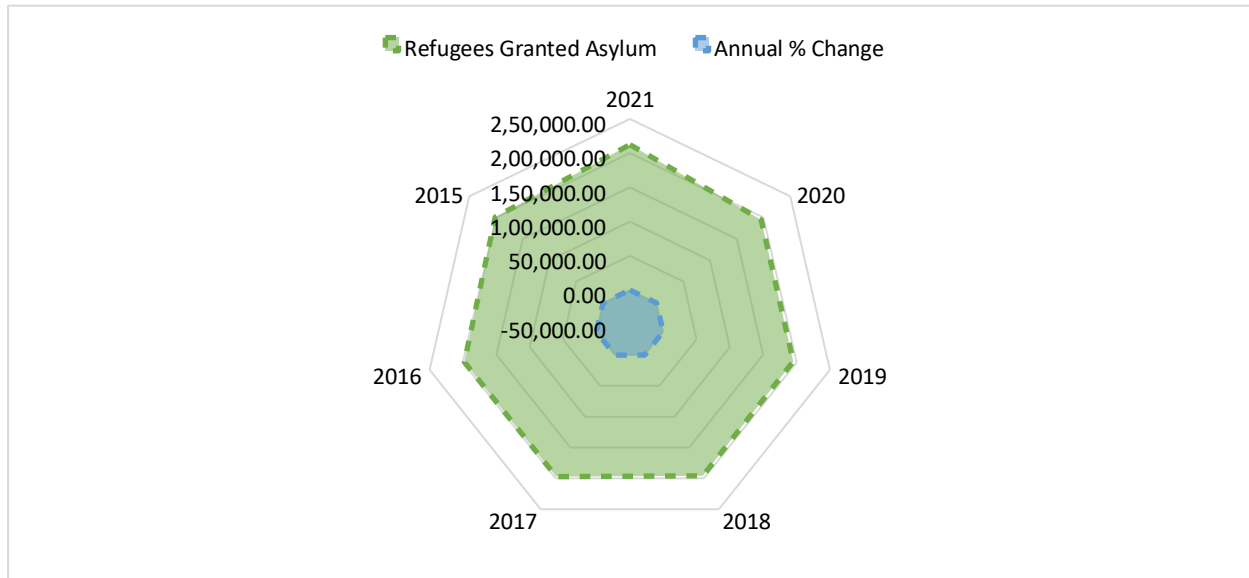
To encourage investment in green technology, the Indian government has also launched several programs, including the National Mission on Improved Energy Efficiency. The National Clean Air Plan¹², which will concentrate on lowering air pollution and enhancing air quality, was also recently unveiled by the government.

In general, FDI investments in India for combating climate change have increased over the past few years and are predicted to do so in the future.

¹¹ This technology produces energy from emission-free and renewable sources. Solar panels, wind turbines, and floating solar panels are a few examples of common sustainable energy sources. Many green energy sources, such as hydropower and renewable hydrogen, are available with competitive pricing and growth.

¹² The program is an effort to reduce pollution, and one of its main objectives is to lower the amount of coarse and fine particulate matter in the atmosphere by at least 20% by the year 2024. The program's objective is to strengthen the system for tracking national air quality.

INDIA’S REFUGEES RATE:



- India refugee statistics for 2021 was **212,413.00**, a **8.72% increase** from 2020.
- India refugee statistics for 2020 was **195,373.00**, a **0.14% increase** from 2019.
- India refugee statistics for 2019 was **195,103.00**, a **0.4% decline** from 2018.
- India refugee statistics for 2018 was **195,887.00**, a **0.64% decline** from 2017.

ENVIRONMENTAL, SOCIAL AND ECONOMIC IMPACTS OF FDI ON CLIMATE IN INDIA:

Environmental Impacts: Foreign Direct Investment (FDI) can have a positive impact on the environment in India. FDI can help improve India’s energy efficiency, promote renewable energy sources, and reduce air and water pollution. FDI can also help India reduce its reliance on coal, which is a major source of air pollution and climate change. Furthermore, FDI can help India develop infrastructure to reduce its reliance on fossil fuels and promote the use of renewable energy sources.

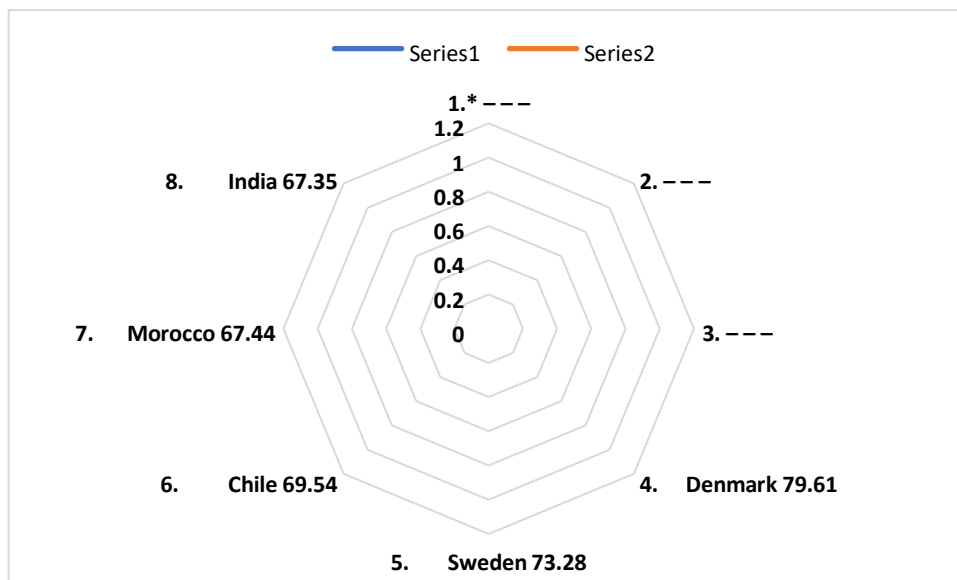
Social Impacts: FDI can have a positive impact on social development in India. FDI can help create jobs, increase incomes, and reduce poverty. FDI can also help improve access to healthcare, education, and other social services. Furthermore,

FDI can increase access to technology and help improve India’s overall quality of life.

Economic Impacts: FDI can have a positive impact on the economy in India. FDI can help increase foreign capital inflows, which can help spur economic growth and development. FDI can also help improve access to capital and technology, which can help boost productivity and create jobs. Furthermore, FDI can help increase exports and foreign exchange earnings, which can help improve India’s balance of payments.

CLIMATE CHANGE PERFORMANCE INDEX CCPI 2023¹³

Germany as a whole and India ranked eighth in the Climate Change Performance Index (CCPI, 2023) prepared by German Watch, New Climate Institute, and Climate Action Network International. The CCPI makes it feasible to compare national climate protection actions and developments and aims to promote transparency in international climate politics. India fared well in the categories of GHG Emissions and Energy Usage but received average marks for Climate Policy and Renewable Energy. According to the research, India is the only G-20 country to rank in the top 10. It would be a wonderful chance to highlight India's efforts to combat global warming through the use of renewable energy sources and other energy transition projects as it now holds the G-20 Presidency.



¹³ <https://www.pib.gov.in/PressReleasePage>

SUSTAINABLE DEVELOPMENT IN FDI TOWARD CLIMATE CHANGE IN INDIA:

Sustainable development in climate change is a comprehensive approach to addressing the environmental, social, and economic impacts of climate change. It involves a range of strategies and actions to reduce emissions, adapt to changes in weather patterns, and enhance resilience to the impacts of climate change. Sustainable development strategies emphasize the importance of reducing emissions of greenhouse gases, investing in renewable energy sources, and improving efficiency in the use of energy and natural resources. They also emphasize the need for adaptation measures to address the impacts of climate change, such as increasing the resilience of communities and ecosystems to the effects of extreme weather events. Additionally, sustainable development strategies aim to ensure that people can benefit from the economic opportunities created by climate change and to ensure that the most vulnerable populations are not disproportionately impacted.

For many investors looking to grow or relocate their businesses in the postpandemic age, the 13th Sustainable Development Goal (SDG13) of the UN, which calls for prompt action to address climate change and its consequences on the planet, is present of the utmost importance.

This is happening at a time when "man-induced climate change is already impacting multiple meteorological and climatic extremes in every place around the planet," according to research published by the Intergovernmental Panel on Climate Change (IPCC) in August 2021.

When it comes to the consequences of climate change, 16.2% of countries are viewed as "low risk," 48.6% of countries are at "mid risk," and 35.2% of countries are seen as "high risk," according to a report by Investment Monitor.

Many of the climatic changes the world is currently experiencing are unprecedented, and some of them—like the continued rises in sea levels—are irreversible, according to the IPCC assessment. Furthermore, underlined is the notion that there is still time to slow down climate change. This might be achieved by drastically and continually lowering carbon dioxide (CO₂) and other GHG emissions, which would improve air quality and moderate global temperatures over a 20–30 years period.

Foreign direct investment (FDI) can assist to decrease climate change by supporting green

programs that promote sustainable development and those that lower CO2 emissions.

India is committed to the Paris Agreement on Climate Change and has taken various steps to reduce emissions and promote sustainable development. The country is one of the most vulnerable to the impacts of climate change due to its large population and geographical diversity. The Ministry of Environment, Forest and Climate Change (MoEFCC) has implemented several initiatives to reduce emissions, promote renewable energy sources, and address the impacts of climate change. Foreign direct investment (FDI) can have a major role to play in India's efforts to mitigate and adapt to climate change. FDI can provide capital, technology, and expertise to help India transition to a low-carbon economy. It can also create jobs and boost the economy. The Government of India has taken several steps to create an enabling environment for FDI in the sector of clean energy. These include:

- Setting up the India Renewable Energy Development Agency (IREDA) in 1998 to provide financial assistance to renewable energy projects.
- Creating a dedicated fund to finance clean energy projects in 2010.
- Establishing the National Clean Energy Fund (NCEF) in 2012 to facilitate investments in clean energy projects.
- Allowing 100% FDI in renewable energy projects in 2012.
- Introducing the Solar Park Scheme in 2014 to promote solar energy.
- Launching the International Solar Alliance (ISA) in 2015 to promote solar energy.
- Launching the Ujwal DISCOM Assurance Yojana (UDAY) in 2015 to improve the financial health of electricity distribution companies.

FDI can also help India build resilience to climate change. By investing in climate-resilient infrastructure, businesses can reduce their risk of losses due to extreme weather events. They can also create jobs and boost economic growth in the long run. In addition, FDI can help India develop the capacity to monitor and manage climate change impacts, such as floods and droughts. Overall, FDI can be a powerful tool to support India's efforts to mitigate and adapt to climate change. To maximize its potential, the Government of India should take additional steps

to create an enabling environment for FDI in the sector of clean energy and climate-resilient infrastructure.

FINDINGS:

1. A significant factor in the rise of foreign direct investment (FDI) in India has been migration. A bigger labor pool and higher worker productivity have been produced by the influx of migrant workers, which has drawn more Investment to the nation.
2. India's climate change situation has benefited from migration as well. As a result of the increasing economic activity, energy efficiency has improved and carbon emissions have decreased, lowering the nation's carbon footprint.
3. The inflow of migrants has also improved sanitary facilities and expanded access to clean water, both of which have a good impact on the environment. Water-borne illnesses, air pollution, and other environmental dangers have decreased as a result of that.
4. The flood of migrants has improved living conditions and boosted economic activity, which has decreased poverty in India. This has helped ease the strain on natural resources and improved the situation about climate change.
5. Last but not least, migration has contributed to a rise in foreign investment in India, which has financed green energy programs and other efforts to lessen the nation's carbon impact. This has improved India's condition regarding climate change.

SUGGESTIONS:

1. Increase in the availability of capital for renewable energy projects: Migration can lead to an influx of FDI, which can be invested in renewable energy projects.
2. This could lead to a decrease in India's dependence on fossil fuels and a decrease in the country's carbon footprint.
3. Increased access to technology and resources: Migration can bring with it access to new technology and resources, which can help India become more efficient in its efforts to combat climate change.

4. Creation of green jobs: FDI can create new jobs in green sectors such as renewable energy, sustainable agriculture, and other eco-friendly initiatives. This could lead to a reduction in poverty and an increase in employment, which can help reduce emissions.
5. Increase in knowledge on climate change: Migrants bring with them knowledge and experience from other countries which can be used to inform policy-making and education in India on the effects of climate change. This can help to raise awareness and create more informed decision-making.
6. Improved infrastructure: FDI can help to improve India's infrastructure and energy efficiency, which can help the country become more resilient to the effects of climate change.

CONCLUSION:

The relationship between foreign direct investment (FDI) and migration in the context of climate change is complex and depends on a range of factors. In some cases, FDI may lead to increased migration, as people move to areas where investment is taking place, while in other cases, FDI may lead to decreased migration, as people have more employment opportunities in their home countries. In general, FDI has the potential to both increase and decrease migration, depending on the specifics of the situation.

The study has demonstrated that migration has a significant effect on FDI toward climate change in India. The influx of foreign capital has increased its capacity of India to invest in green energy technologies, while the increased labor force has enabled the country to expand its capabilities in renewable energy production. Furthermore, the increased availability of skilled labor has allowed India to develop its green energy technologies, which may lead to further foreign investment in the sector. Overall, it appears that migration has a positive effect on FDI toward climate change in India, and should be a key factor when considering policies to tackle the issue.

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