

THE INDIAN DIASPORA AND CLIMATE CHANGE: OPPORTUNITIES AND CHALLENGES FOR ENGAGEMENT IN MITIGATION AND ADAPTATION EFFORTS

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Abstract

The Indian diaspora is one of the largest in the world, with over 30 million people of Indian origin living outside of India. With climate change posing significant threats to countries around the world, including India, the Indian diaspora has the potential to play a crucial role in efforts to mitigate and adapt to climate change. This research article examines the opportunities and challenges for engagement of the Indian diaspora in climate change mitigation and adaptation efforts. The study provides an overview of the impacts of climate change on India, including rising temperatures, changing precipitation patterns, and increased frequency and intensity of extreme weather events. These impacts are expected to have significant social, economic, and environmental consequences for India and its people, particularly vulnerable populations such as farmers, coastal communities, and low-income households. Further the study discusses the potential contributions of the Indian diaspora to climate change mitigation and adaptation efforts. These contributions include financial investments in clean energy and climate resilience projects, knowledge and technology transfer, advocacy and awareness-raising, and capacity building of local communities. The study also examines the challenges to engaging the Indian diaspora in climate change efforts, including differences in cultural norms and values, varying levels of awareness and understanding of climate change, and limited opportunities for engagement in their host countries. Finally, the study provides recommendations for engaging the Indian diaspora in climate change efforts, including developing targeted outreach strategies and partnerships, promoting cultural exchange and dialogue, providing education and training opportunities, and leveraging existing social networks and organizations.

Overview of the impacts of climate change on India.

Climate change is having a significant impact on India, with the country's poorest people suffering the most. India is experiencing some of the most extreme impacts of the climate crisis, including heat waves that are devastating crop yields, torrential rains causing flooding that submerges entire communities, and more frequent episodes of extreme rainfall and longer dry spells (*How the Climate Crisis Is Impacting India | Climate Reality Project, 2022*). India's population is also vulnerable to sea level rise, with up to 310 million people inhabiting low-elevation coastal zones. In addition, climate change is expected to have major health impacts in India, increasing malnutrition

and related health disorders such as child stunting(Srinivasan, 2019). To mitigate these effects, India has implemented various measures such as improvements in irrigation systems, water harvesting techniques, and more-efficient agricultural water management(*India*, 2013). Prime Minister Narendra Modi has also called for "big steps" to be taken to save the world from climate change.

The country is already experiencing a wide range of impacts, including rising temperatures, changing precipitation patterns, sea-level rise, and increased frequency and intensity of extreme weather events such as droughts, floods, and cyclones. These impacts are expected to have significant social, economic, and environmental consequences for India and its people, particularly vulnerable populations such as farmers, coastal communities, and low-income households(Srinivasan, 2019)

One of the most significant impacts of climate change in India is rising temperatures.A study by the World Weather Attribution (WWA) initiative found that the deadly heatwave in India and Pakistan in March and April was made 30 times more likely because of human-caused climate change(Coleman, 2022).Another study from the United Kingdom's Met Office found that the heat wave was made over 100 times more likely due to climate change(Newburger, 2022). Average temperatures in India have risen by about 1 degree Celsius (1.8 degrees Fahrenheit) since the beginning of the industrial age, according to an analysis by Berkeley Earth. Climate scientist Roxy Mathew Koll has expressed concern about the failure to reduce greenhouse gas emissions, which are causing temperatures to rise. He also noted that India must pivot away from fossil fuels and towards renewable energy sources in order to mitigate the effects of climate change(Sengupta, 2022).Higher temperatures have a range of effects, including reduced crop yields, increased heat-related illnesses and deaths, and decreased access to water resources. In addition, higher temperatures also contribute to the melting of glaciers in the Himalayas, which provide crucial water resources for millions of people in India.

Another impact of climate patternschange in India is changing precipitation. Climate change is expected to have a significant impact on precipitation in India, leading to an increase in both the mean monsoon rainfall and the frequency of extreme precipitation events(Coleman, 2022). This could result in more unpredictable monsoon seasons, with dry years becoming drier and wet years becoming wetter(*India*, 2013). Additionally, there is evidence that climate change is causing an increase in localised extremely heavy rain events, which can lead to flooding and other weather-related disasters. These changes are already being observed, with temperatures rising by 1.3 degrees Fahrenheit between 1901 and 2018. A 5 degree centigrade increase in warming would lead to a 3% increase in precipitation(Deshpande, 2021). Therefore, climate change is likely to cause increased variability of monsoon precipitation as well as more localised extreme rain events in India.

Climate change is having a significant impact on sea level rise in India. According to the World Meteorological Organization's State of the Global Climate in 2021 report, sea levels along almost the entire Indian coast are rising faster than the global average. The rate of sea-level rise is particularly high in the south western part of the Indian Ocean, where it is 2.5 mm/year faster than the global average(*Climate Change, Displacement, and Managed Retreat in Coastal India - India / ReliefWeb*, 2020).

NASA has used projections from the Intergovernmental Panel on Climate Change (IPCC) to create a visualisation tool which will help coastal regions prepare for sea level rise and plan infrastructure accordingly. By 2050, Mumbai's sea level is projected to rise by 0.12m compared to 0.4m in 2020; at Hiron Point in Sundarbans sea level will rise to 0.17m compared to 0.6m in 2020; Chennai will see a 0.10m rise compared to 0.3m in 2020; Cochin will likely see a sea level rise of 0.15m compared to 0.4m in 2020(*Sea Levels along Indian Coast Rising at Faster Rate than Global Average*, 2022).

A report by RMSI has found that properties and road networks may be submerged in Mumbai, Kochi, Mangalore, Chennai, Visakhapatnam, and Thiruvananthapuram by 2050 due to sea-level rise. In Visakhapatnam alone, around 206 buildings and 9 km of road network are likely to be inundated due to potential coastline changes by 2050(*Effect of Climate Change on Sea Level Rise with Special Reference to Indian Coastline / SpringerLink*, 2022).

India is also experiencing an increase in the frequency and intensity of extreme weather events such as droughts, floods, and cyclones. These events have significant impacts on infrastructure, livelihoods, and human well-being, particularly in vulnerable communities. The impacts of climate change in India are already significant, and they are expected to worsen in the coming decades. Addressing these impacts will require concerted efforts at the local, national, and global levels to reduce greenhouse gas emissions and to support vulnerable communities in adapting to the changing climate.

Potential contributions of the Indian diaspora to climate change mitigation and adaptation efforts

The Indian diaspora, with its large and diverse population living outside of India, has significant potential to contribute to climate change mitigation and adaptation efforts both in India and globally. Mitigation efforts focus on reducing the impact of human-induced climate change, while adaptation measures are designed to reduce the vulnerability of communities to climate hazards. In India, there is an emerging cognizance of the need to simultaneously undertake mitigation and adaptation efforts (Hari et al., 2021). Cities in India have enormous potential for transformational adaptation, such as strategies for migrant communities that lack necessary resources when designing adaptation measures.

The Indian diaspora can also contribute to climate change mitigation by helping to reduce carbon emissions. This could be done through energy conservation initiatives, renewable energy projects, and other green initiatives. Additionally, they can help raise awareness about the impacts of climate change and encourage people to take action against it (Dubash et al., 2018). Further, the Indian diaspora can contribute to climate change adaptation by helping vulnerable populations prepare for extreme weather events and other impacts of climate change. This could include providing access to resources such as food, water, shelter, healthcare, and education. They can also help build resilience in communities by supporting local initiatives that promote sustainable development and environmental protection (Patra, 2016).

The potential contributions of the Indian diaspora include financial investments in clean energy and climate resilience projects, knowledge and technology transfer, advocacy and awareness-raising, and capacity building of local communities. One significant area where the Indian diaspora can contribute to climate change mitigation is through financial investments in clean energy projects.

The Indian government has set a target of 500 gigawatts of renewable energy installed capacity by 2030 and the diaspora can help achieve this target by investing in renewable energy projects such as solar, wind, and hydropower (*India's Clean Energy Transition Is Rapidly Underway, Benefiting the Entire World – Analysis*, 2022). The Indian diaspora can also invest in energy-efficient technologies and infrastructure, which can reduce greenhouse gas emissions and help mitigate the impacts of climate change.

Another area where the Indian diaspora can contribute to climate change mitigation is through knowledge and technology transfer. Many members of the Indian diaspora have expertise in fields such as engineering, science, and technology, which can be leveraged to develop and implement innovative solutions to address climate change. The diaspora can share knowledge and best practices with Indian organizations and communities to promote sustainable development and reduce greenhouse gas emissions.

In addition to mitigation efforts, the Indian diaspora can also contribute to climate change adaptation efforts. For example, the diaspora can invest in climate resilience projects such as water conservation, flood control, and disaster preparedness. The diaspora can also support capacity building of local communities, particularly in vulnerable regions such as coastal areas and drought-prone regions, by providing training and education on climate resilience.

The Indian diaspora can also play a critical role in advocacy and awareness-raising efforts related to climate change. The diaspora has a significant presence in many countries around the world and can leverage its networks and influence to raise awareness of the impacts of climate change and advocate for policy solutions to address the issue. The diaspora can also engage with policymakers

and stakeholders to promote sustainable development practices and encourage investment in clean energy and climate resilience projects.

Challenges to Engaging the Indian Diaspora in Climate Change Efforts.

Engaging the Indian diaspora in climate change efforts presents a number of challenges. India is one of the most vulnerable countries in the world to projected climate change, and its population is already experiencing changes in climate and the impacts of climate change. Low-income populations are particularly vulnerable to these impacts, making it difficult to promote sustainable development pathways that are resilient to climate change (*Communicating Climate Change Findings from IPCC Reports: Insights from Outreach Events in India* | SpringerLink, 2021).

Despite the potential for the Indian diaspora to contribute to climate change mitigation and adaptation efforts, there are several challenges that need to be addressed to engage them effectively. Some of the challenges include

- i. Cultural Differences,
- ii. Lack of Awareness,
- iii. Limited Engagement Opportunities,
- iv. Political and Economic Barriers

i. Cultural Differences

Cultural differences can be a significant challenge in engaging the Indian diaspora in climate change efforts. The diaspora is highly diverse, with members from different regions, religions, and socio-economic backgrounds, and this diversity can make it challenging to identify common values and priorities related to climate change. Moreover, the diaspora may have different perspectives on the role of technology, government, and individual actions in addressing climate change, which can make it difficult to find common ground and develop effective strategies for engagement.

ii. Lack of Awareness

Lack of awareness is another challenge to engaging the Indian diaspora in climate change efforts. Many members of the diaspora may not be aware of the impacts of climate change or the potential solutions to address the issue. Moreover, some members may not prioritize climate change as an issue, given other pressing concerns related to their personal and professional lives.

iii. Limited Engagement Opportunities

Limited engagement opportunities can also be a challenge to engaging the Indian diaspora in climate change efforts. Many diaspora members may not have access to relevant networks, organizations, or events related to climate change, which can limit their opportunities for engagement. Additionally, language barriers and limited representation of the diaspora in decision-making processes related to climate change can also make it difficult to engage effectively.

iv. Political and Economic Barriers.

Political and economic barriers can also pose challenges to engaging the Indian diaspora in climate change efforts. For example, some diaspora members may be hesitant to engage in climate change efforts due to concerns about political instability, corruption, or lack of trust in government institutions. Economic barriers such as limited financial resources or lack of access to investment opportunities in India can also limit the ability of the diaspora to contribute to climate change mitigation and adaptation efforts.

Addressing these challenges will require a multi-pronged approach that includes targeted outreach and awareness-raising efforts, creating opportunities for engagement, and building partnerships with organizations and stakeholders that represent the diversity of the diaspora. Additionally, it will be important to address structural barriers related to political and economic instability, corruption, and lack of trust in government institutions to build long-term engagement and investment in climate change efforts.

Recommendations for engaging the Indian diaspora in climate change efforts.

To effectively engage the Indian diaspora in climate change efforts, several recommendations can be considered. These recommendations include raising awareness, building partnerships, providing opportunities for engagement, and leveraging technology.

Raising awareness is critical to engaging the Indian diaspora in climate change efforts. This can involve targeted outreach and education efforts that address the impacts of climate change, the potential solutions to address the issue, and the opportunities for engagement. Awareness-raising efforts can be conducted through various channels, including social media, community events, and partnerships with diaspora organizations and media outlets.

Building partnerships with diaspora organizations and stakeholders can also help to engage the Indian diaspora in climate change efforts. This can involve working with organizations that represent the diversity of the diaspora and that have established networks and channels for engagement. Additionally, partnerships with academic institutions, businesses, and non-governmental organizations can help to leverage the expertise and resources of the diaspora to support climate change mitigation and adaptation efforts in India.

Providing opportunities for engagement is another critical recommendation for engaging the Indian diaspora in climate change efforts. This can involve creating platforms for dialogue, investment, and collaboration that allow the diaspora to actively participate in climate change efforts. For example, the Indian government can create investment funds or tax incentives that encourage the diaspora to invest in clean energy and climate resilience projects in India. Additionally, the government can establish channels for diaspora members to contribute their expertise and knowledge to support climate change efforts in India.

Leveraging technology can also be an effective way to engage the Indian diaspora in climate change efforts. This can involve creating digital platforms and tools that allow the diaspora to access information, resources, and engagement opportunities related to climate change. For example, the Indian government can create an online portal that provides information about climate change impacts, solutions, and investment opportunities. Additionally, social media can be used to connect the diaspora with climate change organizations, businesses, and other stakeholders. By taking these steps, it is possible to harness the expertise, resources, and influence of the Indian diaspora to support climate change mitigation and adaptation efforts in India and globally.

Conclusion

The Indian diaspora has significant potential to contribute to climate change mitigation and adaptation efforts in India. The diaspora is highly diverse and includes members who are experts in fields such as clean energy, sustainable agriculture, and water management, as well as those who have financial resources and influence that can be leveraged to support climate change efforts. Moreover, the diaspora has a strong connection to India and a deep commitment to its development, which can be harnessed to support climate change mitigation and adaptation efforts. However, engaging the Indian diaspora in climate change efforts requires addressing several challenges related to cultural differences, lack of awareness, limited engagement opportunities, and political and economic barriers. To overcome these challenges, it is essential to take a multi-pronged approach that includes raising awareness, building partnerships, providing opportunities for engagement, and leveraging technology. By doing so, it is possible to harness the expertise, resources, and influence of the Indian diaspora to support climate change mitigation and adaptation efforts in India and globally.

Moreover, engaging the Indian diaspora in climate change efforts can also help to build a more inclusive and equitable approach to addressing climate change. By recognizing the diversity and complexity of the diaspora, and working to address the barriers to engagement, it is possible to build a more inclusive and effective approach to climate change mitigation and adaptation that reflects the needs and priorities of all stakeholders, including marginalized communities and those most affected by climate change. Further engaging the Indian diaspora in climate change efforts is critical to achieving sustainable and equitable development in India and globally. By recognizing the potential of the diaspora and addressing the challenges to engagement, it is possible to build a more effective,

inclusive, and equitable approach to addressing climate change that reflects the needs and priorities of all stakeholders.

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