

Title – Youth, Technology and Environmental Movement: Transforming Climate and Environmental Governance in India.

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ABSTRACT

This research paper focuses on India's youth role in environmental diplomacy and climate justice advocacy, and also examines the youth-led movement that shifts India's policy from a model of development to a sustainable development model. This research paper also analyses India's approach to balancing economic development and sheds light on the comparative study of India and Germany's model of development and environmental sustainability, which also emphasises what India can learn from the German model that leads to more sustainable outcomes for India, and also helps India to achieve the Sustainable Development Goals (SDGs). India's policy for achieving sustainable development also emphasises the use of Artificial Intelligence and innovation to achieve the development, balancing the nature and environment, which makes the development of new startups and business are goes for a renewable energy approach, and the government is focusing on the transition from motors to electric vehicle which led to less emissions.

Among India's many environmental movements, which started in the 1970s when green theory landed across the globe, the first movement that caught global attention was the Chipko movement held in 1970, in which locals protected trees against government action. After this, a series of protest movements took place in India. Some movements were led by Indian youth, such as the Friday for Future worldwide movement, in which Indian youth took part, and there is a similar protest that took place in Telangana, led by youth for the protect Kancha Gachibowli, the 400 acres of forest area, against the government. Youth participation through digital protest and mobilisation led them to take part in policy reformulation and decision-making. Despite India's progress, youth faces barriers in environmental diplomacy due to unstructured movement and financial constraints.

KEYWORDS

Sustainable development, Environmental conservation, Innovation, Green technology, SDG-Sustainable Development Goal, Artificial Intelligence.

INTRODUCTION

Environmental conservation officially came into being in the 1970s, which led to the formation of green theory, and after the Stockholm conference, where emphasis was placed on the protection of natural resources for future generation also its basic right of humans to live in good climatic conditions. This conference also led to the formation of UNEP, the United Nations Environment Programme, but in India's stance, the value of environmental conservation was practised in ancient tradition and knowledge system in the Rigveda, the importance of plants and trees as medicinal work to protect individuals against disease was also origin of Ayurveda, which is also used as a soft power for India in contemporary time. Nature is a symbol in India as a religious and social tradition, even the festivals are celebrated according to climatic conditions in India and for many tribes and rural population, nature is god and livelihood. According to the Artha-shastra written by Kautilya, "State pose strict punishment against deforestation if done by any individual".

In medieval times, many forts and kingdoms were made with the help of natural resources. Forts were fortified with water bodies, forests and even mountains, but in the modern period, the colonial intervention, conquest, not only in material colonisation but also in the exploitation of the environment, they imposed their policies to gain profits, so they cut down the forests, and commercialised agriculture and monocultural plantations. Britisher planted 40 invasive and exotic trees in the Indian region during their rule because they wanted to meet the excessive demand for wood and fuel. There were many things which the British left unmanaged, like waste management, endangered wildlife and overexploitation of natural resources.

After the British left India, the environment was left unmonitored because the newly independent India was focusing on rapid industrialisation and agricultural development. 1970's marked a turning point As global environmental awareness rise along with domestic environmental challenges. After the Stockholm conference, several environmental laws were made in India. Also, many movements took place in India to protect nature by the community, social groups, young student and youth led foundation which led to the formation of laws like the Wildlife Protection Act (1972), control of water pollution (1974), Forest Conservation Act (1980) and Environmental Protection Act (1986) also the implementation of international law like Ramsar convention of wetland protection. (KUMAR, 2015).

This paper emphasize core ideas like the role of youth in climate justice advocacy, technology and in movements, which ultimately help youth to engage in active decision making, innovation, and startups related to nature protection. This article also emphasises on studies of the Indian youth-led protest, which is Friday For Future and the Kancha Gachibowli protest. Some startups and movements are mentioned in the article, which have led to the youth's active involvement in environmental protection in India through different channels, and the article also mentions a comparative study of the German and Indian models for conservation of the environment and sustainable development, from which India can learn a lot of things. The article talks about the problem which is faced by youth in diplomacy in India and its solution, which will lead to active youth participation in national and international politics related to environmental conservation.

Methodology

This research paper adopts a qualitative methodology and mainly relies on secondary sources. It uses the tool like - analysis of youth movements, analysis of digital tools in environmental management, and also uses the comparative tool to study Germany and the Indian model of conservation.

Data source – Research paper, academic literature, news articles and institutional initiatives.

Literature Review

This paper undertakes a major literature review across the topics, from research papers, articles and some news articles, etc. (KUMAR, 2015) Kumar's work provides the formation of India's environmental policy, institutional arrangement and regulatory framework of environmental protection policies and defines the different act which is framed by the Indian legislative framework. (Kashwan, 2024) Kashwan's mention about the justice procedure in India also examines procedural, distributive justice in India, and examines climate politics, examining local to global, also mentions ill-treatment based on caste and class, as well as climate justice and India's stand on the fight against the developed world's injustice with developing and under developing. (DUTTA, 2019) Scholar has a trace shift from technical climate change to justice-based framing. In their text, it mentions about the India's lack of interest in climate and inactive movement to active participation in movements and mention the movement. (Jyothsna, 2025) Jyothsna emphasises sustainable development and how economic growth with environmental protection took place, also India's act and framework protection, and the role of tribunals. (UNEP:how-artificial-intelligence-helping-tackle-environmental-challenges, n.d.).UNEP creates AI to understand methane through satellite AI applications to take data. The role of the ai helps in sustaining the environment and protection pregameing to understand the different data from the application. (Dhar, n.d.)this analysis maps the modalities of youth engagement through university student mobilisation, digital campaigns and etc are led to youth activism, aligning the politics with climate justice, and also emphasising youth political problems. (justice, n.d.) down-to-earth mentions about youth-led movements which talk about the issues localised around air pollution, heat, livelihood vulnerabilities and youth mobilisation in Indian cities. (The Hindu, n.d.) The coverage of the Kancha-Gachibowli protest provides a case study of a student protest aligned with an NGO protest against the government. This includes all the literature and article which mainly used in this research paper.

Research Question and Objectives

Research Question

Some of the major research question which led to this research.

- I. What role does youth movements play in shaping climate justice and policy reformulation in the Indian context?
- II. How does India's policy attempt to balance development and conservation with the help of technology?
- III. How can India learn from the German model of environmental conservation?
- IV. Why do youth from developing countries face limited representation?

Objectives

These are the objectives of this research to examine the role of youth, technology and environmental movement, which is transforming climate and environmental governance in India.

I. Role of youth in climate justice advocacy.

II. India's approach to balancing Environmental Conservation with development.

III. Comparative Study of India- Germany Model for Environmental Conservation.

IV. Youth Correlation with technology contribution for environment management.

V. India Youth-led movement for Environmental Protection.

VI. Problem faced by Youth in Diplomacy in India and its solution.

I. Role of youth in climate justice advocacy.

Global citizens, particularly the youth, have become far more aware and active in participation and mobilisation for the protection of the environment under the Paris Agreement. There is a huge mobilisation, but in the case of India, there is less participation and inactive environmental diplomacy. Indian youth are very aware of the challenges and problems. The role of India in climate justice advocacy is to protest against the developed nations for exploiting the climatic conditions, and also not paying shares to the developed and underdeveloped nations. Distributional justice refers to the fair distribution of the cost and burden of climate change and societal issues. In Western countries, the burden is put on third-world and developing countries and for third-world countries to promote environmental projects. (Kashwan, 2024).the Maharashtra UNICEF-led programmes, which led the youth-led action, trained the youth on climate change advocacy. They are working with MYCA "Maha Youth for Climate Action" on climate justice against the environmental movements climatic challenges. (UNICEF, n.d.).

II. India's approach towards balancing Environmental Conservation with development

India is currently focusing on rapid infrastructure development, and is also focusing on the manufacturing of semiconductors and innovative items but India is also focusing on the green hydrogen mission and renewable energy transition by promoting solar energy expression and promoting rural handicraft which ultimately symbolise sustainable development and green development. The Indian government is promoting digital education, the Ayushman scheme for health sector development, and promoting the transition of motor vehicles to electric vehicles. The Indian government promises to achieve net zero by 2070 and also satellite monitoring for the conservation of forest areas (Jyothsna, 2025). To manage and balance the development and conservation of the use of strategic initiatives such as community engagement, to effectively oversee the utilisation of resources, mitigate pollution level and conserve the diverse ecosystem. Adoption of environment friendly technologies for protecting the resources for future generations. The Indian legal framework ensures the conservation and protection of India's resources because of key legislation, such as the Environmental Protection Act 1986, water pollution control Act 1974 and air control of Pollution 1981 and multiple agencies to ensure the safeguarding of nature and the environment (Jyothsna, 2025).

III. Comparative Study of India- Germany Model for Environmental Conservation

Resource depletion and environmental degradation are the most important challenges of the contemporary era, and many environmental challenges led to structured governance. The concept of environmental governance has become an important factor in policy making concerning the formulation and adoption by social groups and norms of society, and the system does not stop at the environmental ministry, but also leads to vertical and horizontal institutions for governance. (James Goodman, 2016). The comparison of India and Germany through the legal method of governance, Germany's model is based on the institutional maturity and in affiliation with EU legal integration, which led to transparency assessed by stakeholders and power is split between the Federal Environment Agency (Umweltbundesamt) and local authorities. The Indian model has a strong legal foundation, and Uneven implementation of the Environment Protection Act, which holds the power, and the power is split between the state and centre, which has led to the problems between states of political influence and resource scarcity. However, a unique thing that leads to public action against uneven policy is that the people can use public interest litigation and so on. (Singh, Dr & Bagade, Dr & Yadav, Dr & Kaur, Harleen & V, Esther & Abraham.S, & sharma, Dr. , 2025).

IV. Youth Correlation with technology and contribution to environmental management.

India is having a golden era where its development journey has balanced growth and sustainability, where youth are participating in environmental safety and also working with NGOs to clean the nation and leading awareness programs for less emissions. Youth are taking the centre stage in participation for environmental protection and sustainable technology development. Bodies institution like UNICEF are leading initiatives where youth volunteers for the role

to lead the program and contribute to fulfilling the SDGs (UNEP:how-artificial-intelligence-helping-tackle-environmental-challenges, n.d.). Young people are at the forefront to lead the net zero transition in various field it includes renewable energy, waste, agriculture, etc. For example, some Indian startups like EKAM ECO, born out of IIT Delhi, sanitation research of 2015. It is a company transforming the way India treats water & waste, providing practical solutions for conserving water, reducing pollution, and enabling circular solutions (EKAMECO, n.d.).

V. India Youth-led movement for Environmental Protection.

India has seen many movements, but two major movements in India are led by youth, such as FFF India – Friday for future and another is the Kancha Gachibowli movement, Hyderabad.

India's Friday for Future movement was started by Greta Thunberg in 2018, and Indian youth were also inspired by this movement, which spread the agenda of the movement worldwide. In India, youth protesters are demanding urgent climate justice, accountability, and transformation. This movement is linked to many major cities across India, like FFF Delhi, Mumbai, & Bengaluru, etc., where youth mobilise and protest against climate injustice. (justice, n.d.).

Kancha Gachibowli movement, this whole movement is started against the government, which allocated the 400 acres of land for building the IT park but many students of university of Hyderabad mobilised a protest and were also backed by NGO and institution which gave a

strong support to movement and also the opposition party member came in support for movement and oppose the ruling government and supreme court in favour of land protection which led towards a successful movement (The Hindu, n.d.).

VI. Barriers in Youth in Diplomacy in India and its solution.

Youth mobilisation for climate action began in the USA & EU. But in today's era, the youth of the developing nations are rapidly emerging to take effective action for protecting the environment. The rise of social media led to the primary way of youth mobilisation. Social media enables the rapid transfer of information and in-depth awareness of climate change among youth. Even through digital tools, youth climate can generate an effective action voice from country to country. (Dhar, n.d.).

Conclusion

India needs a strong implementation at the ground level, in which AI impact is a good move, in which green innovation must be backed by the government, which creates a base for the green startups. India is working towards development, and this is where environmental conservation, youth participation and technology and climate justice all come together. Indian youth are not just watching from the side; they are actually doing something about it. They are shaping how the environment is taken care of through protests and using media to get the word out, running awareness campaigns, coming up with new ideas, and advocating for climate change. The Fridays for Future India movement and the Kancha Gachibowli protest show how young people can make a difference in what people talk about, how policies are made, and how environmental decisions are made. At the time, India is trying to balance growing the economy with protecting the environment by using renewable energy and green hydrogen, electric mobility, and artificial intelligence to monitor the environment. This shows that India is trying to create a plan for development for the future.

When we look at India and Germany, we can see that India has laws to protect the environment, but it needs to do a better job of putting these laws into action and being transparent and working together with different parts of the government. India can learn from having a decentralised system where people have a say in what happens, and everyone is held accountable. India is good at letting people participate and having a court system, so it should keep doing these things. Also, if we help people by giving them money and teaching them about the environment and letting them be part of international meetings, India can be a leader in taking care of the environment. India can be a leader in the world in coming up with green ideas and being a good partner in climate change talks. If India uses the energy of its people, new technology and good policies, it can create a future that is fair to the environment and where everyone has a say in what happens and where people can start new green businesses. This can help India achieve its goals and be a partner to the rest of the world in taking care of the environment, and this will make a better life for the people who come after us.