Towards Quality Climate Change Education for All

A Critical Assessment
of Climate Education Policies
in India and the Philippines

RUCHIRA DAS & RANJANA DAS

Education International
Asia-Pacific Region
EIAP

Education International
Asia-Pacific Region
EIAP

Towards Quality Climate Change Education for All

A Critical Assessment of Climate Education Policies in India and the Philippines

Ruchira Das & Ranjana Das

Towards Quality Climate Change Education for All:
A Critical Assessment of Climate Education Policies in India and the Philippines

Authors: Ruchira Das & Ranjana Das

ISBN: 978-92-9276-030-4

Education International
Asia-Pacific Region
EIAP

Education International represents organisations of teachers and other education employees across the globe. It is the world's largest federation of unions and associations, representing thirty millioin education employees in about four hundred organisations in one hundred and sevent countries and territories, across the globe. Education International unites teachers and education employees.

Education International
Asia-Pacific Regional Office
No. 2556, 66 Tower,
Sukhumvit Rd, Bang Na Nue,
Bang Na, Bangkok 10260
Thailand

Email: eiap@ei-ie.org
Tel: +66 2 5660068
Website: www.ei-ie.org

Contents

Research Team

Project Investigators

Dr. Ruchira Das, Principal Investigator (PI),
Institute of Home Economics,University of Delhi

Dr. Ranjana Das, Principal Co-Investigator (Co-PI),
Ramjas College, University of Delhi

Research Assistants

Ms. Induja Aich Roy
Ms. Palak Jain

Acknowledgments

This cross-country research project would not have been possible without the generous funding and support from Education International Asia-Pacific (EIAP). We extend our deepest gratitude to Mr. Anand Singh, Chief Regional Director EIAP, for giving us the opportunity to work on such a significant research domain. His unwavering support at every stage was instrumental in the successful completion of the research.

We are thankful to Ms. Alanah Torralba, Climate Justice Advisor at EIAP for editing the draft reports. Her critical insights and valuable suggestions provided a direction in shaping the final report.

We are very grateful to Prof. Radhika Bakhshi, Director, Institute of Home Economics, University of Delhi, who willingly agreed for the research collaboration with EIAP. Her unimpeded support at every phase of the project helped in the successful completion of the project.

We are very thankful to Prof. Ajay Kumar Arora, Principal, Ramjas college, University of Delhi, India for his encouragement and constant support that facilitated the smooth completion of the research study.

Our sincere thanks to Mr. T. Ravi, Mr. Shahid and Mr. Manish of the accounts department of IHE without whose cooperation in logistical and financial matters, the completion of the research would not have been possible. We are thankful to the administrative staff of IHE for their assistance. We are thankful to Prof. Jyoti Dalal, Head, Dept. of Elementary Education for her constant support in

matters related to the project. We are grateful to the non-teaching staff of El.Ed dept for their cooperation.

We are also thankful to Dr. Amit Bhattacharya and Dr. Ojit Singh Mayanglamban, faculty, Ramjas College for their significant inputs and contributions in the project.

We are deeply indebted to all the schools, stakeholders (principals, teachers, students, parents and their communities, and textbook writers) of India and Philippines whose responses have meaningfully contributed to the study. We are grateful to Dr. Bikas Shapai and Dr. Santosh Suradkar for introducing us to the key informants who helped us access the field sites located the interiors of Sundarbans and Gadchiroli respectively. Our sincere thanks to the ACT and NATAOW teacher union officials for the immense support they have shown during the field engagement in the Philippines. It was with their help that we were able to access and study the two schools in Metro Manila. Union responses from the field was a valuable contribution to the research. We are also thankful to Krishanu for smoothly facilitating the cross country field travel to Philippines.

Finally, we appreciate the contributions of our research assistants, Ms. Induja Aich Roy, Ms. Palak Jain and our field investigator, Mr. Ravindra Chunarkar. Without the academic support of the research team and their conviction at every stage of the study, successful completion of the research and the final submission of the report would not have been possible.

Introduction

> *"And to imagine other forms of human existence is exactly the challenge that is posed by the climate crisis: for if there is one thing that global warming has made perfectly clear it is that to think about the world only as it amounts to a formula for collective suicide. We need, rather, to envision what it might be."*
>
> Amitav Ghosh,
> *The Great Derangement: Climate Change and the Unthinkable,* 2016

The rate of climate change since the mid-20th century is unrivalled in over a millennium. Climate change is the 'biggest modern threat that humans have ever faced' (Eckstein et al. 2021). Since 1850, there has been a 1.1°C increase in global average temperatures because of activities like burning fossil fuels, deforestation, and exploitation of natural resources, leaving permanent scars on Earth (IPCC, 2021). A mere 1.5°C temperature increase results in extreme weather conditions, contributing to biodiversity loss, food insecurity, and displacement of people (Heshmati, 2021). While these catastrophic impacts of extreme weather conditions are visible across the globe, vulnerability exacerbates in the developing and impoverished nations (Taconet et. al., 2020). In 2019, eight of the ten nations most impacted by climate change were low or lower-middle-income nations. Southeast and South Asian nations are more susceptible to these disasters

because of their distinct socio-economic, political, and geographic characteristics (IPCC, 2021).

Given this context, creating structures that could respond to the climate change crisis must include voices from the Global South. Although the Kyoto Protocol (1997) and Paris Agreement (2015) attempt to address power inequalities and knowledge asymmetries, the international policy-frameworks still prioritize the needs of the Global North (Uddin, 2017). For instance, the role of transnational corporations in exploiting human and natural resources down the equator remained absent from the Rio Summit (1992), even when it claimed to champion the historically disproportionate use of resources across the world. At COP29 in Azerbaijan, 1,773 fossil-fuel lobbyists were granted participation, outnumbering the 1,033 delegates representing the 10 most climate-vulnerable nations (Global Witness, 2024). The recent withdrawal of the United States from the Paris Agreement and its ripple effects that would overburden developing and underdeveloped nations with the financial cost of climate change mitigation prove that accountability remains a mere rhetoric (Pullins & Knijnenburg, 2025).

Amidst the exigencies of the climate emergency, the role of a citizenry sensitized to the political debates of this era and is ready to demand climate justice from their governments cannot be underscored enough. In this context, Climate Change Education (CCE) becomes a tool to collectivise and mobilize both state and civil society to create a sustainable future for all. (Education International Asia-Pacific Region, Forging the education- climate justice connection: A regional consultation and baseline assessment of Asia-Pacific educators' knowledge gaps and advocacy needs for advancing climate justice in education, 2013)

By democratising knowledge, CCE can significantly contribute to disaster preparedness and address certain vulnerabilities, ensuring that communities are prepared to make adaptive judgements with the help of a well-designed curriculum, climate sensitive pedagogy, and learning tools (Pan et. al., 2023). The UNFCCC's Article 6 lists six priority areas of action for climate empowerment: international collaboration, education, training, public awareness, public engagement, and public access to information (UNESCO and UNFCCC, 2016). Article 12 of the Paris Agreement states climate education as one of the effective ways to address vulnerabilities. Similarly, the SDG Target 13.3 focuses on 'enhancing education,

awareness-raising, and developing individual and institutional capacities towards climate change mitigation, adaptation, impact reduction, and early warning systems.' Additionally, there is notable attention to Target 4.7, which addresses 'education for sustainable development.' (UNESCO, 2023).

Although CCE has been part of academic curricula since the 1980s, there is a need to reconsider how it is pedagogically transacted in the classroom. This includes reassessing the 'agency' of teachers and change agents in implementing climate change policies effectively (Facer et al., 2020). A critical approach to CCE must center climate justice as a framework, recognizing that climate change is a question of equity, power, and historical responsibility. Education is not an isolated terrain limited to knowledge production and dissemination. It has the potential to bring together national unions, educators, policymakers, and students to bridge the gap between climate science, justice, and policy. With Quality Climate Change Education, teachers and students, together with the larger community, will be able to make their own decisions and take action to create a safer, livable planet.

An analysis of the execution of CCE reveals that there are significant gaps between policy visions and implementation on the ground. Even though national policy and curriculum frameworks include climate education, teachers and educational institutions often fail to prioritise it, owing to lack of funding, inadequate training of educators, and skewed teacher-student ratio (McKenzie, 2021). For instance, Ethiopia's Climate Change Education Strategy (2017–2030) received USD 2 million for training teachers, developing climate change related materials and monitoring and evaluating the strategy's implementation. However, the implementation was hindered by the absence of resource mobilisation and the environment ministry's failure to ensure budgetary availability for the program (Ibid, 2021). In a research study, it was found that only 30% of nations have publicly accessible funding for climate change education (UNESCO, 2023). Similarly, the midterm assessment of the 2015 Sendai Framework for Disaster Risk Reduction highlights that 'risk levels are increasing far more quickly than the resilience of the education system in the majority of nations.' (GADRRRES, 2023).

To make Climate Change Education (CCE) more effective, it must be integrated across all subjects. Studies found that connecting students' background, their culture and the local environment with

CCE enables them to connect with the broader social, economic, and political dimensions of climate change. This highlights the need for experiential and collaborative learning approaches, which have proven to be effective in translating knowledge into action (Hargis & McKenzie, 2020; Kagawa & Selby, 2022). A quasi-experimental study of community-based environmental education (CBEE) in 12 Nigerian primary schools utilised experiential learning strategies such as environmental clean-ups, tree planting, and waste management. This encouraged collaboration between students, teachers, and local communities, creating a deeper connection to regional issues. The student-participants demonstrated improved knowledge retention, critical thinking, and problem-solving skills related to climate change compared to those in traditional education settings. In South Africa, 300 secondary school teachers received training on how to work together and join professional learning communities (PCL) as part of the 'Keep it Cool project'. They shared best practices, developed interdisciplinary lesson plans, and provided mutual support to overcome challenges, resulting in professional development and ensuring a collaborative approach to CCE (Kabir et al., 2022). Moving towards interactive, community-driven, and interdisciplinary approaches will make climate education both relevant and actionable.

Education International's 'Manifesto on Quality Climate Change Education for All' underscores the need for robust educational systems that provide CCE-focused professional development opportunities, climate-resilient infrastructure, and well-funded programs. It calls for a Just Transition, which calls for measures ensuring that workers, including educators, are not left behind in the shift towards an ecological and sustainable economy (EI, 2023). It is critical to retrain teachers with the necessary skills, knowledge, and pedagogical tools to navigate new curriculum demands. This will help them in addressing potential job displacements in sectors affected by climate policies and ensuring that marginalized communities—who are disproportionately impacted by climate change—have access to quality climate education. Moreover, EI advocates for stronger collaboration between policymakers, educators, and trade unions to ensure that climate education is a priority in national education policies (Ibid, 2023).

Following the discussions on the relevance of CCE, this research project will attempt to explore and critically analyse CCE-related

policies and their execution in two South Asian nations that are pronouncedly susceptible to the impacts of climate change, the Philippines and India. Given the serious climate-related issues that the two countries are facing, it is imperative to understand the extent to which climate education is included in the national curriculum. The purpose of this study is to investigate how these national curriculum frameworks and educational policies have incorporated CCE and to what extent they are being implemented in schools. More importantly, this study seeks to map out the role that educational unions play in ensuring quality climate education that is rooted in the principles of climate justice and a just transition.

Research Objectives

1. To critically examine the education policies and curriculum frameworks on climate change education in the Philippines and India

2. To understand the roles and contributions of the education unions in for advocating climate change education at the school level

3. To capture the views and perspectives of the key stakeholders at the school level on the significance of teaching climate education

4. To examine representation of indigenous knowledge systems in the policy, curriculum and teaching transactions with reference to climate education

5. To recommend a roadmap for mainstreaming climate change education

Methodology

The research was conducted in two phases. The first phase involved analysing secondary literature on CCE in India and the Philippines. The second phase included in-depth case studies and field studies in three diverse sites in India (Sundarbans, Gadchiroli, and Delhi) and two in the Philippines (Metro Manila and Boracay). The study collected data from teachers, students, parents, community members, school administrators, textbook content writers, and education union officials The samples of the study include the key school stakeholders i.e. teachers, students, parents/community people, school administrators of both government as well as private school ranging from middle (grades VI-VIII) to secondary (grades IX-X) in the chosen sites of research.

The research employed qualitative methods including participant observations, focus group discussions, semi-structured interviews, and informal discussions to gather primary data. Ethical guidelines ensuring anonymity and confidentiality were strictly observed. While the samples are not numerically representative, the detailed discussions provided a comprehensive narrative of the studied issues. The upcoming section will discuss the first case study, focusing on India.

CASE STUDY 1

Locating the Discourse of Environment and Climate Education in India

India is one of the most vulnerable countries in the world to the adverse impacts of climate change, ranking 10th in the latest CCPI (India – Climate Performance Ranking 2024 | Climate Change Performance Index). Located between the Himalayas and the Indian Ocean, the country has a diverse topography consisting of northern mountainous terrain, northern plains, a peninsula plateau, deserts, southern coastal plains and islands. Its unique geographical features produce a wide range of climatic conditions, including extreme weather events and worsening hydro-meteorological hazards such as cyclones, erratic rainfalls leading to either floods or droughts, and melting of snow caps. Recent years have seen accelerated warming with temperatures rising above 48°C in some Indian cities (World Bank Group, 2023).

India is currently the most populous country in the world with a total population of 1.44 billion, surpassing China (UNFPA, 2024). High population density along with rapid urbanisation exerts tremendous pressure on the country's natural resources, infrastructures, waste management, causing intense air and water pollution. These conditions make the cities extremely vulnerable to climate change and consequently increasing the risk of climate change-induced displacement and migration in the country.

Another reason that contributes to worsening conditions is the reliance on coal for electricity generation and other industrial processes (The Diversity Blog, 2023). Due to the high demand for electricity and industrial production, 70% of electricity generation is coal-based thermal energy. However, low quality coal produces high ash content, posing serious ecological, radio-ecological and pollution concerns (Mishra, 2004). Meanwhile, investment in renewables is still low, as greater financial support and subsidies are required to decentralise solar power, an underutilised resource in the country (Op. cit., 2023). Hence, increasing the renewable energy capacity of India requires urgent attention.

Further, one of the most serious challenges that India faces is that of fragmented governance, making coordination across different agencies challenging (Sami et al., 2017). In cities, unplanned development creates vulnerability to food, energy, water fragility and consequent social and political unrest. Climate change hits underprivileged-marginalised communities differently due to their lack of capacity and resources to cope with and recover from recurring shocks. Owing to historical poverty, rural farming communities are particularly sensitive to climate shocks. (The Heat is On: Towards Climate Resilient Education Systems in South Asia, 2022).

Environmental education has been made mandatory by the Central Board of Secondary Education (CBSE) from grades I to XII (CBSE, 2005). However, there is no explicit focus on CCE. A few NGOs, NPOs and other private actors are filling this gap between environmental and climate education in schools by creating innovative programs and courses on climate change and climate action outside the formal curriculum. For example, Centre for Environmental Education's (CEE) Green School Programme aims to sensitise school students through hands-on and thought-provoking activities. However, this is miniscule compared to India's 1.5 million schools. (TESF, Background Paper, 2021: 18)

The interface of education with climate change in India needs to broaden such that it can engage multiple sectors, disciplines and approaches. Climate education, therefore, needs to be implemented not just as formal learning imparted in school providing scientific information from a 'western' perspective (e.g. model driven), it must also be about understanding other knowledge forms and ways of perceiving the world in relation to climate change (e.g.

local, tacit and indigenous knowledge and world views). CCE must have a broader set of activities and demands that engage multiple disciplines, sets of knowledge and sites of learning (Climate Change and Education: TESF Briefing Note Series, 2020: 2). In this context, the India section will examine the educational initiatives undertaken at the policy level and the extent and nature of its implementation in the different schools in the research sites of Sundarbans in West Bengal, Gadchiroli in Vidarbha-Maharashtra and Delhi. The section will also provide the perspective of the India education unions on climate change education.

The National Policies, Programmes and Curriculum Frameworks

India's domestic position and policy on climate change, until recently, rarely found relevance in the country's development imperatives (Dubash & Jogesh, 2014). However, since 2007, responding to international pressure for action, the country has moved towards a more focused domestic policy around climate change and its related concerns, including the creation of institutional structures at the national and state levels to prioritise and implement climate change action plans. While there has been a growing involvement of national and state governments and their agencies in climate change policy, local governments whose role is crucial for effective climate action, have been notably absent from this process and are seen only as a mere communicator of implementation plans that come from the national/state governments (Sami et.al., 2017: 6).

Climate justice policies in India have been framed to reconcile developmental priorities, economic growth with sustainable development pathways (Dubash & Joseph, 2015; Nair, 2015). The Ministry of Environment, Forest and Climate Change (MoEFCC) has adopted an overarching environmental policy (National Environmental Policy, 2006) to implement environmental quality standards in air, water and solid waste management and land degradation (Op. cit., 2017). Implementation of the climate change/ justice policies are therefore anchored on a co-benefits framework,

focusing on leveraging the synergies between development and climate action outcomes (Dubash, 2012; Revi, 2008).

The National Action Plan on Climate Change (NAPCC) from 2008 is anchored on the promotion of economic development while ensuring climate benefits. It outlines eight key national missions on climate change to reduce climate vulnerability and help the country adapt and augment ecological sustainability as it moves towards the developmental path (Sharma, 2023, Sami et.al., 2017). Further, a subset of the NAPCC, The National Mission on Strategic Knowledge for Climate Change (NMSKCC), acknowledges India's susceptibility to climate change and the need to create a holistic action plan that helps achieve ecological sustainability. In 2015, their mission statement emphasised the significance of scientific rigour in cultivating a knowledge system. Consequents, efforts to activate environmental education and advocacy programs are geared towards purely scientific research at higher levels (Ministry of Science and Technology, 2010). However, while the mission recognises the importance of ecological knowledge in driving climate action, it does not acknowledge the role of schools in imparting climate education to cultivate civic-mindedness and social responsibility to form an engaged citizenry that is pertinent for climate action and ecological justice (Sangomla, 2021).

A report by the National Institution for Transforming India (NITI) Ayog demonstrates that while remarkable developments are being made towards SDG 4: quality education and SDG 13 climate action (NITI AYOG, 2020), the interlinked synergies of the two goals are not being leveraged adequately. The third target for SDG 13 is to improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning. However, no action plan has been put into place to achieve this marker through transformations in schooling pedagogy (Sami et al., n.d.).

The crucial need for climate education was first articulated in the country through Environmental Education in the Kothari Commission (1964-66) and then in National Policies of Education (1986, 1992) with the aim of generating an informed concern among children to help them become active agents in resolving environmental issues that emerge in their daily lives, specifically for those living at the margins of the city in slums/lower class settlements/migrant colonies.

The recent National Education Policy (NEP) 2020 builds on the idea of interconnectedness between nature and humans, focusing on educating children to develop critical thinking and encourage a participatory learning process. It aims to provide a holistic and multidisciplinary education on issues related to climate justice through a bottom-up approach, emphasising the need for responding to the environmental concerns faced by local communities while also looking to global challenges. (National Education Policy, 2020: 15-23). Recognising the role of teachers, the NEP recommends integrating environmental concerns with sustainable development and highlights the transformative impact that teachers can have. (Ibid, 23). To make environmental education more relatable, the policy seeks to impart this knowledge in local languages, using folktales and local methods of environmental preservation with the aim of fostering action-oriented character among children for environmental justice (National Education Policy, 2020).

However, environmental education policies in India still lack provisions for integrating knowledge systems of historically marginalised groups such as Indigenous Peoples, tribal communities and lower caste societies. The curriculum is yet to include the struggles of the marginalised in relation to climate change, a threat multiplier contributing to rampant displacement, heightening food insecurity, and disrupting traditional/customary practices.

Located within a progressive and constructivist vision, the National Curriculum Framework (NCF), 2005 played a decisive role in establishing Environmental Studies (EVS) as a separate subject in school from the primary stages of learning. It aimed to instill the importance of valuing, preserving and protecting the environment at an early stage. The EVS was launched with the belief that education can provide the necessary perspective on how human life can be reconciled with the crisis of the environment so that survival, growth and development remain possible (National Curriculum Framework, 2005). NCF, 2005 promotes a pedagogy that is grounded in the ethos of environmental justice, bringing textual knowledge closer to the children's lived realities (Ibid, 2005), 'an approach that questions the sanctity of the epistemic status of the textbooks influenced by the colonial mindset (Dalal and Das, 2022).

Further, the recently framed NCF, 2023 explicitly connects climate change and environment conservation to value and ethics. Sustainability, restoration, and regeneration are emphasised as

Excerpts on Indigenous communities from the NCERT Grade 7 science textbooks

Traditionally Protected Forests: Sacred Groves

Sacred groves are undisturbed patches of forests. Their sizes may vary from quite small to very large. Sacred groves are found all over India. They are home to different kinds of plants and animals, including numerous medicinal plants. These are protected by the local community and no one is allowed to harm any animals and cut trees in these groves, or disturb the area. This way, sacred groves are a community protected treasure of biodiversity. Find out about the sacred groves in your region.

Sacred grove from the Western Ghats

More to know!

From ancient times, India had a tradition of respecting, protecting and preserving forests. You have already learnt about sacred groves in the chapter 'Diversity in the Living World'. Many efforts have been made by common people to prevent the cutting of trees, and thus, saving forests. One such effort is the famous Chipko movement. It started in the early 1970s in Uttarakhand (previously part of Uttar Pradesh). Local women actively participated in this movement. They encircled and hugged the trees to protect them from being felled.

Do you know?

Nature's Treasures

217

the key approaches towards ecological justice. It focuses not just on awareness, but also on creating compassion-driven action through a multidisciplinary approach in generating environmentally sustainable practices. Thus, by bridging concepts related to ecological, social, economic and political factors, NCF 2023 seeks to create a foundation for environmental education from the pre-primary to the senior secondary stages of schooling (National Curriculum Framework, 2023).

Recognising the significance of indigenous/traditional knowledge systems, NCF, 2023 highlights the rich tradition of environmentally sustainable practices from the ancient/pre-modern times. A grade VI science textbook shown below discusses the importance of sacred groves of the ethnic/tribal/indigenous communities and how it can be a rich treasure of biodiversity and therefore needs to be preserved and protected.

Incorporating indigenous/local knowledge in the National Curriculum Frameworks is a welcome step. However, the education policies and curriculum frameworks are yet to integrate these knowledge systems in the environmental education discourse and practice, primarily hindered by an epistemic bias towards structured and written knowledge that are taught in schools over the knowledge of the indigenous/ethnic/tribes emerging from their oral traditions (TESF, Background Paper, 2021: 19).

Emphasizing on a pedagogy of hope, NCF, 2023 states that "while it is important that students acquire a conceptual understanding of environmental issues and challenges as well as an appreciation of the magnitude of the problem, it is equally important to ensure they do not get discouraged or despair for their future." The NCF

acknowledges that learning about the ecological crisis can distress children and result in eco-anxiety. Therefore, it is equally important to help students convert despair into hope and action. Moreover, an emphasis on climate mitigation as a collective effort and national responsibility rather than individual initiative is also stated in the NCF 2023. (Ibid, 176).

To understand the perspectives of the textbook writers, a focused group discussion was conducted with senior members from the science textbook development team for middle-secondary grade. The writers stressed the importance of providing basic knowledge on how anthropogenic changes interact with the natural systems, in correlation to climate change. One writer cited an example from a middle-grade science textbook explaining that the decomposition of cattle dung is aided by dungbeetles, in turn helping mitigate climate change by reducing the impact of methane emissions. However, dung beetles are nearly extinct today, due to high levels of pesticides and chemicals in agriculture. Unless students are exposed to this process, they will not be able to draw a connection to climate change. Another senior writer spoke the possibility of the sections on environment getting deprioritized, as they are not considered part of the core of the disciplines. Additionally, due to a lack of professional development and training, teacher can be unresponsive to the sections on environment/climate change in the textbooks. The authors expressed that to improve the textbooks which are crucial for teaching CCE, teachers and content writers need joint professional development and training.

Teacher Organisations and Associations for Climate Change Education [1]

Teacher organisations in India precede trade unions, with the first association of schoolteachers established in 1840. These organisations have played an active role in determining education policies at various levels in the country. Currently, the largest national teacher associations in the country are the All India Primary Teachers Federation (AIPTF), All India Secondary Teachers Federation (AISTF), and the All India Federation of Teachers' Organizations (AIFTO).

According to an EI study in 2022, for both AIPTF and AIFTO, climate change is a pressing labour rights issue because climate impacts worsen working conditions of educators and society at large. Hence, a just transition for educators entails a plan to protect teachers and students from experiencing the worst consequences of climate change and adapting them into a an ecologically sustainable economy. The associations believe that the government needs to develop adaptation plans and climate-resilient education infrastructure for teaching-learning (Torralba, 2022). Further, AIPTF states that it is extremely important to act on climate change or else it will bring more pandemics in future, lead to loss of human lives due to flash floods and extreme weather conditions. According to the AIPTF General Secretary, Kamalakanta Tripathy it is a collective responsibility to make the planet safer for the future generations. Therefore, education can play a role in addressing climate change and preparing younger generation to adapt to the consequences

1 There are hundreds of unions for schoolteachers in India. While some are registered with the state government or central government, others are not. However, consequences of not being registered from the perspective of union power are unclear. For instance, in the state of Rajasthan, no teacher union is registered. Yet, the state government allows teachers to take leave for two days in the year to attend union meetings (Ramachandran et al, 2015). Not all teachers, however, are members of teachers' unions. In fact, across India's twenty-nine states and seven union territories, less than 50 percent of teachers are union members though, numbers vary by state. This is not surprising, given that union membership is not compulsory. Further, non-fee paying members can free ride on many of the benefits unions provide, such as lobbying for salary hikes. The majority of union members reported membership in a state-level union. Even though many teachers choose not to be members of unions, those who do, are often members of multiple unions regardless of political ideology" (Béteille et al., 2016: 11).

of the climate crisis. (India: educators urge governments to take urgent action to guarantee the health and safety of the education community, Education International report, 2021).

Another teachers' association called The Teachers Against the Climate Crisis (TACC), a non-funded, non-party collective of college, university and school teachers, was formed to deepen the understanding and engagement of teachers with the key aspects of climate change — the science, impacts, systemic roots, state policy, political economy, and ways forward. The organisation believes that by deepening the understanding of teachers, dialogues with the students will be enriched, helping them to become more politically engaged. In collaboration with eco clubs, ecology/environment society of different educational institutions, the organisation disseminates basic literature in the vernacular Hindi and English on the climate crisis. They also screen short films across the institutions they have collaborated with, develop awareness-raising materials through social media and created an open, accessible resources about the climate crisis. TACC promotes the vision that emission reductions must not adversely impact the poor and underprivileged sectors of society. TACC also seeks to push policy makers and political parties to display greater urgency in tackling the climate crisis (Teachers Against the Climate Crisis, 2020). In an interview, Nagraj Adve, founding member of TACC emphasised importance of education unions in India to become more engaged in the fight for climate justice and a just transition, particularly on the impacts of the energy transition in coal- affected communities.

Narratives from the Field

SUNDARBANS

The Sundarbans, located in the southeastern part of the state of West Bengal in eastern India, is home to the world's largest mangrove forest. Spanning 9,630 sq. kms, the forest is also the world's largest delta, with the rivers, Ganga, Brahmaputra and Meghna flowing through it, extending into Bangladesh. The area has a fragile yet dynamic ecosystem that serves as a natural barrier against climate change-induced disasters. However, it is also highly vulnerable to rising sea levels, cyclones, coastal erosion and increasing salinity (Datta et al., 2023).

People from some of the most socially disadvantaged communities in India and Bangladesh have settled in the Sundarbans, which includes the Scheduled Castes (untouchable castes), Scheduled Tribes and religious minorities. Given its topography, the catastrophes that hit these areas can result in massive deaths. When disasters hit, livelihoods of the communities that are dependent on the forest are threatened, especially with rising sea levels steadily swallowing habitable land and saline water intrusion jeopardizing traditional agriculture. Each climate disaster exacerbates poverty, forces displacement, and food insecurity, turning the Sundarbans into a climate refugee hotspot (Ibid, 2023).

Sundarbans is an important area of study because of its vulnerability, which means that CCE is particularly crucial in designing and implementing disaster-risk management practices and climate adaptation. Beyond a comprehensive understanding of the impact of changes in climatic cycles, CCE from elementary stages can also facilitate resilience. The study focusses on four villages in the Sundarbans: Chunakhali, Basanti, Gosaba and Hingalganj.

Chunakhali is a rural-agricultural area, where fish farming is predominantly. The average income of the villagers ranges from 4,000 to 5,000 rupees per month. It is highly sensitive to climate change, facing significant threats from rising sea levels, frequent cyclones, river erosion, and increasing salinity. These climatic changes have deeply impacted the livelihoods of the community, forcing many individuals to migrate to other villages in search of better work opportunities.

The Chunakhali landscape

The Chunakhali Primary School and the Chunakhali High School where 24 respondents comprising teachers, students and community members were interviewed, is located within a community that is grappling with severe poverty and significant livelihood challenges. There is also a noticeable lack of public awareness regarding climate change, alongside an deteriorating education system. High dropout rates, child labour, and early marriages exacerbate the situation. The average teacher-student ratio here is 3:600 in high school. In primary school, it is 3:300; meanwhile, student attendance remains irregular, with only 30 to 40% of students attending regularly.

Discussing the teacher shortage in the school, the headmaster stated that teaching CCE is simply not possible as teachers need to prioritise the primary courses. Nonetheless, the school observes awareness initiatives like Earth Day and Environment Day. The headmaster also boasted about the rainwater harvesting system in his school.

Owing to longstanding issues on teacher shortages and resource poverty, CCE is not considered part of the core subjects in the curriculum. It is still mostly seen as an addition or event-based topic, to be taught only during special days such as Earth Day, for example. While the curriculum includes Environmental Studies titled *Poribesh* or *Bigyan* (Surroundings and its Science), teachers are

The Chunakhali landscape

finding it difficult to make the subject matter interesting for their students. There appears to be a gap in promoting the relevance of studying the environment or having a purposeful engagement in these conservation practices for students and teachers alike.

At the Chunakhali High School, which has more students but faces similar challenges, dropout rates are alarmingly high. Boys leave to earn money, while girls are often pulled out of school for marriage. The headmaster says that climate change is discussed in classes, but students rarely retain this knowledge, as survival takes precedence over abstract environmental concerns. According to the headmaster, specialised training on teaching CCE is not available for teachers. However, he also questioned if extra training is even necessary for "*teaching an easy topic like climate change.*" This an interjection is symptomatic of the disconnect between climate change as a lived experience and climate change as a scientific conceptual phenomenon being taught in classrooms. This disconnect, in theory, could be addressed by a CCE curriculum that is grounded in local knowledge and traditional knowledge systems seeking to address place-based climate issues. For students, the disconnect is acute as they reported that the sections covering climate change do not provide examples of the Sundarbans region, rendering the topic far removed from their collective imagination and

The Chunakhali landscape

understanding. Moreover, hands-on learning and extracurricular activities have not been introduced to the students, which means that climate change is reduced into a scientific problem rather than the societally encompassing crisis that it is.

In a focused group discussion with the community members, many mentioned that they were not aware of the content taught in the schools, but they know that local knowledge about conservation practices is hardly taught or represented in the curriculum. A member said, "*schools only teach from books; they don't teach what is necessary for living and most importantly how to survive the calamities that hit us so often.*" This points to a significant gap between the curriculum and locally grounded realities. In fact, the communities have developed their own survival mechanisms through everyday practices and knowledge systems. Hence, it is crucial to address this gap between the students' and teachers' lived realities and the existing curriculum. Illustrating scientific phenomena related to climate through local-based practice-knowledge is crucial.

Basanti, the second village under this study, is predominantly dependent on rice cultivation. However, in recent years many of its residents have been working as migrant labourers in the cities. The average monthly income ranges between 7,000 to 9,000 rupees.

An environmental-awareness poster by students of Chunakhali High School

The challenges faced here are similar to those faced in Chunakhali. There is a significant burden on teachers due to an imbalanced teacher-student ratio. Although schools remain open, classes are often irregular. Many students also depend on private tuition, which adds an extra financial burden on families that are already struggling. Regarding CCE, topics related to climate change are in the textbooks but are not taught with currency nor relevance. Moreover, there are no nature visits and no ecological clubs that can foster sensitisation outside classroom spaces on matters concerning environmental and climatic challenges. For example, a student remarked that while dwindling water supplies are being taught in class, no solutions or actions were discussed. This topic that could have been a practical teaching moment. Thus, there is a disconnect between what is being taught in the classes and the students' everyday struggles with climate change.

In **Gosaba**, the third village, its residents largely depend on migrant labour in the cities. The average income is approximately

10,000 to 15,000 rupees per month, which often includes their added income from tourism activities in the area. Since Gosaba has frequent contacts with the city of Kolkata, their exposure in terms of environmental consciousness is higher.

Accessibility to the school is a major barrier as students who come from outside Gosaba have to change boats twice to reach the school. It becomes extremely challenging when a cyclone hits as most of the river embankments break. During these times, children who travel by boat are not able to attend school, unless the embankment gets repaired. This often results in higher dropout rates. Even then, with only one high school in the area, classrooms are often filled to the brim, overwhelming the already understaffed teachers.

Gosaba Ghat

Additionally, the region suffers from an acute crisis in regular water supply, as villagers must purchase water elsewhere for their daily consumption. This is a direct impact of climate change as stronger cyclones such as Amphan (2020) and Yaas (2021) have destroyed freshwater sources. (Ghosh, 2023). Thus, pursuing education can be challenging for young students, whose education is often seen as a low priority over the demands of everyday necessities such as earning livelihood or procuring drinking water.

In a focused group discussion with the village elders, most of them acknowledged the severity of environmental degradation in the area and yet do not seem to be threatened by it. Post calamity, the

community as a collective takes responsibility for fixing the broken river embankments using local materials like bamboo, tree barks and leaves which they find much more sustainable than cement. The community also mentioned displaying awareness-raising posters in their village. In the discussion, one of the senior villagers suggested involving the nearby schools to support the community in the damage repair works. In this way, both teachers and the student can gain practical experience in disaster risk prevention.

An elderly woman from the local Bhumij community, an indigenous group, expressed her disappointment on the younger generation's disconnect with nature and how schools are not able to bridge the disconnect. "*We are people of nature; today's children are completely detached from it. This is painful. School's role is to sensitise children. But where is that happening?*".

In school, the teachers are already overburdened with work. According to the teachers, topics related to climate change are introduced in class 6 and are taught in greater detail in classes 11 and 12. However, since there is not much focus on their immediate surroundings and the perilous impact of climate change in the Sundarbans, the students find it difficult to appreciate the relevance of these topics to their lives. However, a student from Class 7 mentioned that although there were hardly any climate-related activities or field visits, he has learnt ways to conserve the environment from his home. This is emblematic of the actual interest among students and their communities to learn about climate change but are prevented from learning it through formal education. There is a disjoint between curriculum taught in schools and the practice of local conservation knowledges, which has resulted in the failure to actively engage the students on matters concerning their immediate environment.

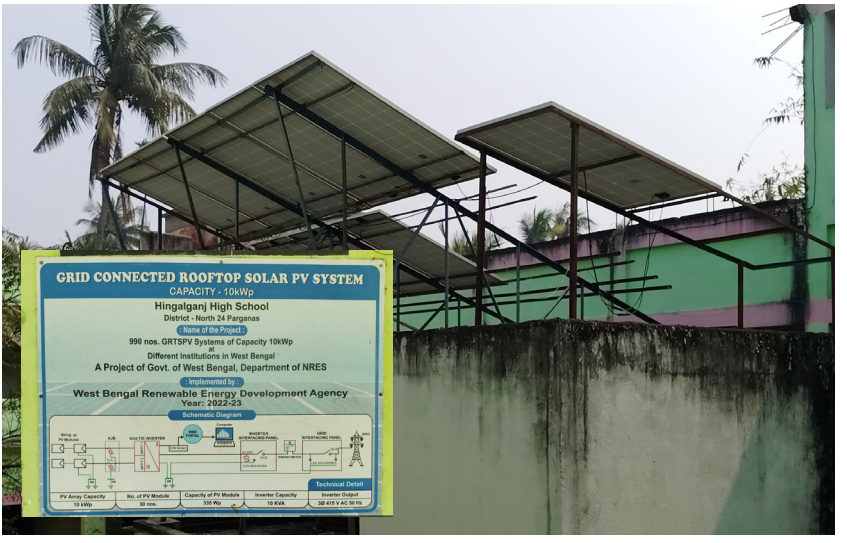
Hingalganj, the fourth area of study, is the most economically stable among the four villages, with an average monthly income of around 15,000 to 20,000 rupees. While most residents work as migrant labourers, better yields from agriculture as well as jobs in local tourism industry contribute to the financial stability in the region.

Two public schools were visited here, which demonstrated a comparatively favourable teacher-student ratio, of approximately 15-17 teachers for 400-500 students.

A public high school in Hingalganj

In Hingalganj, there were a few environmentally consciousness schools that had solar panels and rainwater harvesting systems that were installed by local NGOs.

Solar panels installed in a public school of Hingalganj



However, the residents highlighted that the local panchayat (local self-government) does not seem to be interested in engaging with climate change resolutions even though Hinganlganj is deeply impacted by cyclones and typhoons. Most of the community awareness campaigns are initiated by local NGOs.

Being a climate conscious region, there have been efforts on CCE and promoting consciousness to conserve the surrounding environment, with students engaging in tree-planting projects and community outreach programs. As part of their evaluation, they are given a tree to plant and care for. According to the teachers of Hingalganj High School collective anxiety about the impacts of climate change have led them to include CCE more rigorously in their classroom teachings.

Awareness-raising posters for Environment Day by the students of Hingalganj Public School

To quote one of the teachers, "*simply reading out the materials to the students won't help much. We need to include their lived experiences in the class to help them connect to the topics*".

However, teachers reiterated the lack of specific training programs focused on climate change that would be pedagogically helpful. Teachers who are part of the local teachers' association also pointed out that reforming the curriculum is not the priority of their local organisation as they are focused on demands around job security and wage hikes. Nonetheless, they acknowledged that the local teachers' association places the safety of teachers in these climate vulnerable schools as part of its priority. They are also fighting to ensure that Sundarbans have climate resilient schools.

Discussions with village members showed a type of resilience that could only have been developed through community cooperation while confronting climate change-related challenges.

"*We have faced several cyclones. It's part of our lives now. People who are not from Sundarbans might think what a precarious life we are leading but we do not share such a sentiment. Our strength lies in our collective consciousness to protect our land*," said a senior member. This facet of community resilience is embelematice of the Sundarbans' identity, which should be reflected in the local CCE curriculum to teach climate change more effectively. Hingalganj offers a more favourable narrative on how climate change should be prioritised and seamlessly integrated in schools, despite present barriers.

The case studies of the four villages of the Sundarbans offer a view of the pervading gap between how climate change is being taught as a scientific phenomenon in school and climate change as part of the lived experiences of the community. They also showed how longstanding issues in education such as teacher shortages, overburdened workloads and high dropout rates can affect the quality of CCE being received by students.

Gadchiroli is a district in the Vidarbha region, with 76% forested area (1133 thousand hectare) (NABARD Potential Link Plan, 2021-22). This hilly terrain, covered with dense forests fed by the river Godavari is positioned at the Tribal-tri junction of the states, Maharashtra, Telangana, and Chhattisgarh, the home of various, particularly Vulnerable Tribal Groups (PGTVs), a sub classification of the Scheduled Tribes. Rice is the primary crop of the district. The topographical features and social composition make the region extremely vulnerable to climate change. Since residents are heavily dependent on nature for their livelihood and also derive cultural meaning from it, their perspectives are crucial in understanding how CCE is promoted in the schools.

The study covers Dhanora, Wadsa and Kurkheda, where an ashram school (residential school for tribal children) in the Dhanora block, a zilla parishad school[2] located in Wadsa block, and a private school in the Kurkheda block are located.

2 Zilla Parishad is the highest body of the Panchayat at the district level.

A view of the Gadchiroli forest terrain

In Dhanora around 40 students, eight science and social science teachers and 15-20 community members/parents were part of the study. In Wadsa, 25 students, four teachers (from science and social science) and 15 community members/parents were the respondents for the research. In the third block, Kurkheda, 20 students, four teachers teaching science and social science and about 20 community members/parents were interacted with for the study.

The **Dhanora** block is a heavily forested area with a huge tribal population, where paddy cultivation is the main source of livelihood. To supplement their income, they also forage *tendu* leaves and *mahua* from the forests.

At the tribal ashram school in Karwafa, one of the largest tribal villages in Gadchiroli, students shared that there are specific chapters on themes like natural resources, disaster management, and ecosystems in the Maharashtra state curriculum that are being taught in class. However, there are no hands-on activities or any discussions of community knowledge. Students, however, mentioned that the school organises tree plantation drives and Van Bhojan (community worshipping and eating in the forest events), a tribal practice done in honour of the deities who, according to tribal legend, reside in the sacred grove surrounded by the trees.

For children from tribal communities, the forest remains the fulcrum of the community. A grade 8 student said in the discussion how their families share a cosmic and spiritual relation with the forest. Since each family is attached to a specific totem, they refrain

Local farmers practicing traditional paddy cultivation in Dhanora

from cutting trees and hunting animals. However, textbooks fail to reflect the long history and attachment of the tribal communities to nature. Another student said that they are not interested in the global concerns included in the curriculum. They would rather learn about how climate change impacts their lives and surroundings.

Students also expressed their interest in sharing their concerns at the village-level meetings regarding climate change, following the concept of child-friendly panchayat in the social science textbooks, which says that children should be able to express their ideas on matters related to their wellbeing.

In a focused group discussion, teachers said that while the curriculum in its current form provides a sound foundation on environmental education, it fails to reflect the distinct realities of children coming from isolated areas of the forests. Owing to the emphasis on making children learn the scientific terminologies of the environment, teachers expressed difficulty in relating environment-related themes to the everyday lives of children.

"*Displacement caused by activities like mining has drastically transformed the traditional ways of life of the tribes and their relationship with the environment. Outsiders will not bother to preserve our traditions. Hence, as teachers from tribal communities, it falls on us to ensure that the posterity does not lose its culture*," said a teacher.

Teachers also mentioned that since they lack teacher associations or unions in the region, they have no redress mechanisms. The teachers said they have not participated in trainings or capacity

Students at the Ashram School

building programmes on CCE, leaving them with limited capacities to teach climate change to children.

Community members and parents at Dhanora expressed their concern for preserving and disseminating indigenous knowledge to the youth. Parents said that they do not believe children will effectively learn about climate change and environmental degradation if the pedagogy is restricted to teaching scientific facts and not expanded into the lived realities of the students.

At the Zilla Parishad School in the Kondhwa village of **Wadsa**, the students shared that while there is no specific focus on climate change, environmental themes are spread across the syllabus. To promote environmental consciousness, the school organises programmes like 'One Student, One Tree' to celebrate days like Earth Day. However, students reported that indigenous knowledge was absent in the curriculum. This is primarily because only a few tribes live in Kondhwa, resulting in hardly any tribal child going to the school. Additionally, since most of the teachers do not come from tribal backgrounds, they do not see the relevance of teaching indigenous knowledge systems in the context of climate change. The principal of the school shared that, like any government school, they do not have sufficient teachers. The teachers are also overburdened with multiple administrative tasks assigned by higher authorities. Under such circumstances, it's a struggle for the teachers to complete their syllabus. Hence, sections on environment are taught but the pedagogy required to train students towards responsible action is missing.

Teachers during a discussion at the Ashram School

Teachers mentioned that, owing to a lack of training, they feel constrained with the pedagogies in their classrooms, especially since indigenous perspectives about climate change are difficult for them to teach. Teachers suggested that better training modules on the environment and climate change can aid them to develop skills and innovative pedagogical tools for CCE. They also mentioned that the absence of associations or unions hinder them from demanding professional development programs from the school administration.

"*In larger cities, teacher associations are very proactive in addressing the diverse concerns of teachers. Even if they are not able to solve it, there is a platform where they can be heard. In the interior where our region is located, such a support system is missing*," shared a teacher.

At the community level, parents and village members were concerned about extreme heat. They also hope to develop a sense of responsibility among students regarding preserving and protecting the environment. They also acknowledged that local self-governments, communities and schools must collaborate in addressing climate change. "*Kondhwa is situated near a forest. It has a vibrant wildlife. The school can adopt the forest cover close to the village and can come up with its own model of conserving the forest with the children, community and the local authorities*", said a parent.

The third block **Kurkheda** is the most developed block of Gadchiroli as it is well-connected to the urban centers. Private schools aided by the government in Deulgaon village of Kurkheda were chosen for this study.

Students shared that their curriculum includes modules on ecosystems, natural resources, and the living world. Teachers proactively engage with them on environmental and climate change themes in class. The schools also organise essay competitions, plantation drives, and *Van Bhojan* (eating in forest) as extracurricular awareness programmes. However, students raised concern about not being able to communicate climate change concerns with their community leaders. They are also concerned that their curriculum does not include an indigenous perspective. Apart from the *Van Bhojan*, no other traditional/local/tribal community practices are included in school activities. Students expressed a feeling of disconnect between school and their communities of origin. More importantly, activities that could foster positive behavioural changes towards environmental conservation are missing. Some students even expressed a willingness to organise rallies for community mobilisation and attend the Gram Sabha (Village Level) meetings to voice their concerns, suggesting a latent predilection towards civic participation among the students.

According to the teachers, climate change and the environment is weaved into the chapters on natural resources and ecosystem in the curriculum. The teachers have tried to teach these modules in a way that is relatable to the students but expressed that the textbooks do not sufficiently cover the breadth of issues related to the climate crisis in their area. Teachers said that since they belong to a forest region, they are already discussing deforestation in class. However, they lack the innovative pedagogical tools that can promote consciousness among the children to protect the forests as something integral to their existence. Furthermore, existing professional development programs do not include the component of environmental or climate education. If the vision is to prepare students as environmentally conscious citizens, then the modules for teachers must go beyond mere tree plantation drives, and forest eating events.

Community members consulted for this study expressed that schools should provide practical knowledge beyond textbooks and collaborate with the community in creating learning activities. The village headman also displayed interest in setting up goals and agenda together.

The village headman said "*the community wants students to be closer to their traditional practices. For instance, there are specific*

indigenous ways about the tree and animal produce that can be picked up from the forest. This ensures a sustainable use of the forest resources. Schools should therefore invite local people and elders having such rich knowledge, helping students to connect tradition with nature and the curriculum".

DELHI METROPOLIS

Nearly 17 million people live in the National Capital Territory of Delhi (Delhi hereafter), who experience increased temperatures and extremes in precipitation owing to climate change regularly (IITM 2005). Delhi already struggles to meet the water supply, sanitation, and water quality needs of its residents (Centre for Science and Environment, 2012) and climate change will only exacerbate these challenges. The city has also been undergoing significant changes as it aspires to become a world-class or global city (Dupont 2011). However, this growth in prominence and wealth has been limited to upper classes, leaving the urban poor and working classes in worse conditions (Fernandes, 2004; Ghertner, 2012). In addition, a huge section of the population lives at the margins of the city, which receive little to no urban services and are exposed to flooding hazards and air pollution. These groups, the poor and the informal, are the most vulnerable in the city and for whom equitable climate adaptation solutions in Delhi must be measured against. In 2008, the city released its climate change plan called the Climate Change Agenda for Delhi which focused on mitigation and adaptation. However, Delhi's efforts towards climate adaption are yet to benefit its residents.

For a stakeholders' perspective on how CCE is taught in the schools of Delhi, about 21 teachers from the science and social science disciplines, 25 students and 18 parents whose children are studying from middle to secondary grade across various public and private schools were invited for this research.

Students from the government schools mentioned that their school celebrates World Environment Day, Earth Day, Water Day with different hands-on activities as part of eco club initiatives. Most of the students expressed their interest in these events as they understand the value of conserving the environment. However, there were a few students who felt that these events are done merely to comply with government orders.

Private school students speak with the school gardener during a campus nature walk

Students coming from diverse social backgrounds who are experiencing the impacts of climate change are perceptive of environmental impacts. As residents in a city experiencing erratic weather conditions, increased air pollution and extreme heat, students recognise the need for CCE to be part of their scholastic assignments because activities related to climate change are treated as non-scholastic and co-curricular presently.

Meanwhile, in Delhi private schools, the pedagogical approach to CCE is different as technological devices are incorporated into the learning process. Students from private schools expressed their enthusiasm for learning about climate change as they are taught using various multimedia tools in their ICT-enabled classes. However, this does not guarantee better learning outcomes or a sensitivity towards climate justice issues.

For teachers in public schools, the biggest challenge for CCE is the lack of training opportunities. Teachers are already overworked, which means that their ability to innovate on their own regarding CCE is constrained. A teacher shared, "*even though our school is situated on the banks of river Yamuna, we have never managed to take our students there for a visit. Reason being, no safety mechanisms are in place and also because we have no time to take them*." Teachers further mentioned that an atmosphere of distrust from the school administration as well as a lack of transparency regarding extracurricular funds prevents them from initiating hands-on learning activities, which could benefit their efforts to teach CCE.

Environmental-awareness posters exhibition in a private school in Delhi

Public school teachers also said that their teacher organisations face multiple challenges in negotiating with the government, especially regarding hiring full-time teachers or non-payment and regularity in salaries. This leaves little room for the teachers' unions to advocate for anything else. However, during cases of extreme air pollution such as in January 2025, the teachers' associations raised their health and safety concerns with the government.

Meanwhile, private school teachers despite having access to better laboratories, scientific equipment, and resources to facilitate interactive ways to teach climate change, also felt ill-equipped to teach CCE effectively due to a lack of relevant training.

For parents belonging to vulnerable groups, living at the margins of the city and whose children go to the municipal corporation schools[3], instilling climate consciousness through CCE in schools is important, especially in sensitizing children to the environmental issues within their vicinity. They also recognise that the need for sustainable actions on climate change is the responsibility of the government.

3 Municipal schools, which come under the central government are ranked the lowest among government run schools in terms of facilitates provided. Children in these schools are largely from the economically and socially marginal sections of the society (migrants, refugees, slums, lower class ghettos).

Meanwhile, parents whose children attended schools run by the Delhi state government[4] had a different perspective. Most of them appreciated the efforts by the Delhi state to include environmental/ climate education in the curriculum. Parents shared that schools are pro-actively engaging children in awareness-raising activities, with children taking lessons of green practices back to their homes such as constantly reminding parents about waste segregation and discouraging littering. Parents also spoke about the noticeable impact of nature walks and plantation drive initiatives as children are increasingly planting local plants in their community gardens. Meanwhile, private school shared that while they recognise the importance of CCE, they still think that traditional scholastic subjects must take precedence over CCE.

Field interactions in Delhi reflect distinct differences in the stakeholders' responses to CCE. Social backgrounds and categories of schools play a role in shaping these perspectives. In government schools, eco-clubs and sustainability initiatives struggle due to limited resources. Meanwhile, private schools allow for a more interactive learning as they are better equipped with resources such as exposure to multimedia tools, field trips, and hands-on learning activities. However, interestingly, while parents of government school children are satisfied with the learnings of their children, the private school parents underestimate the value of these activities in promoting lasting behavioural change. Given the diverse demographics in Delhi, there is a need to develop a pedagogy that can examine the global climate crisis through the lens of local environmental concerns, differentiating examples and learning activities according to specific class and cultural backgrounds of students.

4 School run by Delhi state government has children coming with mixed profiles. While there are children largely from middle income group, there are also children coming from lower class category.

CASE STUDY 2

Mainstreaming Climate Education in Philippines

The Philippines is one of the most vulnerable countries to climate change (CNA, 2024). Situated in the Pacific Ring of Fire and the typhoon belt, the country regularly experiences natural hazards. The country experiences an average of 20 typhoons a year, causing devastating floods, loss of livelihoods and damages to life and property. According to the Asian Development Bank (2021), the country loses approximately $3.5 billion per year due to climate-related disasters. Agriculture, which contributes about 10% to its GDP, is continually disrupted due to erratic weather patterns, soil degradation, and prolonged droughts. Meanwhile, tourism, which accounts for 12.7% of the economy, is also at risk. Coastal erosion, rising sea levels and coral reef destruction threaten popular destinations like Boracay, Palawan and other islands, where vulnerable groups such as indigenous communities also reside. In 2023, El Niño-driven droughts exacerbated food insecurity, drove up inflation, increased the cost of living and health risks (ACAPS, 2023).

The education sector is also gravely impacted during times of natural emergencies. In November 2024 when cyclone Trami hit, some 40,000 schools across 16 regions were damaged, impacting 19.4 million school children and 808,000 teaching and non-teaching staff (CNA, 2024).

The Department of Education (DepEd), the country's governing body on education, has been directed to include CCE in school

textbooks and the curriculum at various stages of teaching-learning processes. The study on Philippines will critically analyse the state policies on CCE, its representation in school curriculum and textbooks and finally its implementation in school teaching through a qualitative study of a public and a private school in Metro Manila and a public school in Boracay Island in Aklan. The section also provides a perspective of Philippine education unions who are playing a significant role in making CCE an integral aspect of the curriculum and teaching transaction.

Policies on Climate Change Education

The Philippines has institutionalised climate change policies mainstreaming mitigation and adaptation solutions. In compliance with Agenda 21 (a plan of action that was adopted by the UN in 1992), the Climate Change Act of 2009, also known as Republic Act 9729, institutionalises, integrates and consolidates sector-based government actions on climate change. It also resulted in the development of the National Framework Strategy on Climate Change, which offers broad principles for the National Climate Change Action Plan (NCCAP), that directs climate action at all levels of government and serves as a roadmap for climate action. The Climate Change Commission, established as an independent body, oversees and coordinates the implementation of climate-related actions. Local and national government entities serve as frontline agencies in developing and executing climate change action plans within their jurisdiction. (USAID, 2019).

Section 15 of the Climate Change Act directs the DepEd not only to incorporate core climate change concepts and principles into primary and secondary education school curricula and integrate them to science and social science subjects, but also to ensure the inclusion of CCE in supporting texts, primers and instructional materials (DepEd, 2009). Other initiatives by DepEd include the establishment of the National Greening Programme (NGP), which comprises several extracurricular activities like the establishment of the Youth for Environment in Schools Organisation (YES-O), *Gulayan*

Sa Paaralan (*Vegetable Gardens in Schools*), solid waste management, and tree planting. In particular, the Handbook on Teaching Climate Change for Educators covers climate science, the impacts of climate change, and other aspects of the climate crisis. However, there are gaps between policy and action, largely emerging from lacunae in implementation practices that suffer from insufficient funding and poor organisational coordination. This results in an incomplete understanding of climate change among students and sustains their misconceptions (DepEd, 2019; USAID, 2019).

In 2013, the Philippine educational system was drastically reorganised through the Enhanced Basic Education Act (Republic Act No. 10533), which introduced the K–12 Curriculum (also known as Basic Education Curriculum) which covers kindergarten to junior high school. The four main goals of this act are to: (a) give all out-of-school adults and youth access to education; (b) end dropouts and repetition in the first three years of school; (c) encourage all Filipino children to complete a full cycle of basic schooling to a satisfactory level at every grade; and (d) commit to achieving basic education competencies for everyone (Bernido, 2021). The new basic education curriculum also sought to produce holistically developed students who can respond to national and global demands (DepEd, 2019). It also attempts to integrate CCE and environmental literacy into a variety of areas. To tackle climate change and promote SDG 13, DepEd weaved in CCE into the K-12 curriculum, from kindergarten to junior high school level. There is also a specialised course on Disaster Risk Reduction and Management (DRRM) which is part of the STEM strand of the senior high school curriculum. Globalisation and its impacts are emphasised in the middle grade curriculum. However, there is a gap on global inequities related to climate change or the climate justice lens.

Thus, even though a wide range of topics related to climate change are included in the middle to secondary grade curriculum, learning is still limited to conceptual explanations, where CCE topics are not related to children's social contexts. Simply put, the curriculum does not prepare students to discuss the local and global ramifications of climate change. (Barrot, 2021).

In 2023, with the goal of modernising the educational system and identifying the gaps in the K–12 Curriculum (like overloaded curricula, insufficient teacher training, chronic resource gaps, and lack of focus on local/indigenous knowledge systems) and exposing

students to skill-based learning to meet the demands of the times, the Department of Education (DepEd, 2024) launched the MATATAG curriculum. The new curriculum intends to empower learners and enhance their competitiveness on the global stage (Lagbao, 2024) through its four main pillars: boosting student well-being, accelerating the delivery of basic education facilities, improving teacher support and enhancing relevance for job preparedness and responsible citizenship. The central social issues taken up in the curriculum are: disaster risk reduction and management, education for sustainable development, environmental awareness, protection, and conservation and green economy. It places a high priority on streamlining coursework on fundamental knowledge and abilities, incorporating values and peace education, and encouraging pupils to have a lifelong learning mindset (Op. cit., 2024). As part of value education, it offers a forum for discussing the global climate situation.

Unlike the K-12 Curriculum, MATATAG claims to have localised and contexualised the concepts. Hence, indigenous knowledge systems and practices supposedly have found space in the curriculum through the science texts in the sections related to agriculture, conservation, and environmental practices. "*The science curriculum framework indicates that students should be aware of how local materials have been utilised for hundreds of years. They will have the opportunity to understand the relevance of natural objects in their local environments and how these objects affect their lives*" (MATATAG, 2023: 22). Additionally, there is a focus on using the mother tongue as the medium of instruction up to Grade 3, instead of English or Tagalog. This is done to break down language barriers that indigenous children may face in schools.

However, according to an official from the Alliance of Concerned Teachers, one of the largest education unions in the country, the MATATAG curriculum lacks conceptual depth and rigour, which has considerably reduced the time dedicated for each subject. Teachers are now ordered to teach seven to eight subjects in a span of just 45 minutes. This hurried manner of teaching leaves no room for in-depth discussions. The effective implementation of the MATATAG curriculum is further constrained by lack of resources, poor teacher preparation, poor infrastructure and teachers' opposition to change — issues the curriculum claims to be addressing. (Osias et al., 2024).

Education Unions for Climate Justice

The Alliance of Concerned Teachers (ACT), National Alliance of Teacher and Office Workers (NATOW), Teacher's Organisation of the Philippines Public Sector (TOPPS) are prominent education unions in the Philippines who believe that climate crisis is a union priority[\]. These unions are proactively working towards mainstreaming climate change adaption in the curriculum and improving the pedagogy across public and private schools. The education unions often collaborate with student organisations to make their advocacy campaigns against climate change more effective and appealing to the youth (Education International, 2024). The unions are urging the DepEd to address the existential challenges the schools are encountering amidst rising temperatures — such as overcrowded classrooms, lack of climate-resilient infrastructure and requisite teachers' training to conduct online classes when schools are forced to shut down — as such adverse conditions disrupt the teaching-learning processes (Ramos, 2024).

In the Philippines, ACT is the country's largest education union of public school teachers, with 80,000 members. As a progressive education union known for its strong advocacy of teachers' rights and academic freedom, ACT is fundamentally opposed to neoliberal state policy. One of its primary objectives is to advocate for professional growth and development of educators, including demanding wage hikes, professional development, and other economic benefits as necessary incentives for work as well as financial stability. ACT has also been engaged in various social justice programs such as land reform, environmental conservation, and human rights, especially upholding the rights of marginalised groups and indigenous communities. Through public advocacy and forming partnerships with local communities and other social movement actors, it works to address these concerns (EI Research, Union Renewal in the Education Sector, 2021).

For ACT union members, the role of education unions is crucial in buoying teachers to fight for climate justice. Despite their large membership and active political work, the government is yet to include them in the curriculum preparation processes on CCE. This has resulted in a centralised curriculum that does not accurately portray the grassroots struggles of students and their communities experiencing the climate crisis. However, according to an ACT

official, "*even if the government is not including our inputs, we can still spread our ideas through our members. Our efforts may be informal, but they can still be beneficial. In our interactions with teachers, we share what our organisation can do and how we can help address their problems, especially the pedagogical challenges faced by them teaching climate education*". As a member of EIAP and its 'E4SD: Educators for Sustainable Development', ACT is engaged on the political work towards achieving 'climate justice' as well as 'just transition' for all workers including educators.

Meanwhile, NATOW senior officials explained that their union engages in collaborative partnerships and campaigns for environmental protection and conservation, waste management, and recycling within the community. Climate justice is an integral part of their struggle for human rights and ecological sustainability. They empower teachers to advocate for climate justice.

At the recent EIAP Climate Justice Series #4 titled "Southeast Asian Educators Stand for Climate Justice and a Just Transition: E4SD 2024 Recap," members of NATOW laid emphasis on their *bottom-up* approach to promote climate consciousness in the community rather than depending exclusively on state-based initiatives (EIAP Webinar, March 2025).

The education unions emphasised the importance of the rights of the marginalised and the excluded such as the indigenous communities who are most vulnerable to the impacts of climate change. Through a holistic and communitarian approach, their experiences and knowledge are made valuable and appropriately recognised as integral to a sustainable future, which has been likewise acknowledged in the Paris Agreement and the UNFCCC.

However, while both unions have been negotiating with the government to engage with the indigenous communities, increase their representation and recognise their role in mitigating climate change, geographical accessibility and safety barriers limit their engagement with these groups. Union officials said that Indigenous Peoples who were forcibly displaced due to resource extraction businesses or extreme poverty are forced to live on the streets of Metro Manila. Unions are making efforts to find a safe space for them but are constrained by resource availability. These struggles, according to the union officials, are not reflected in the curriculum, which could raise better awareness among students on the socio-political factors driving climate change and environmental

degradation in the country. For education unions in the Philippines, it is crucial to support Indigenous Peoples in their fight for climate justice. In CCE, the unions expressed that the government does not have a specific design in the curriculum to incorporate indigenous knowledge, which makes it difficult for teachers to understand the significance of discussing indigenous knowledge systems in class.

Despite constant government suppression, education unions in the Philippines have been active in advocating for better climate adaptation. They are commitmed towards integrating climate justice in safeguarding the rights of workers and teacher-educators; and ensuring a just transition.

Voices from the Field: Perspectives on CCE Policy-Curriculum in Practice

METRO MANILA

Metro Manila is the country's political, economic, and cultural capital. It covers an area approximately 613.9 square kilometers, comprising 16 cities and municipality. Manila's low-lying topography, combined with rising urbanisation, makes it prone to flooding, land subsidence, and the urban heat island effect. It is also exposed to high seismic activity, increasing the risks of earthquakes where its dense population is highly vulnerable. (Esteban & Lindfield, 2021) Economically, Metro Manila contributes over 1/3 of the Philippines' GDP and has a lower poverty rate (11%) than the national average (33%). However, one in every 10 residents lives in slums and squatter communities (World Bank, 2018). Stark socio-economic disparities manifest in overcrowding, poor housing, and limited access to essential amenities for the urban poor. The urban heat island effect, created by the dense concentration of concrete structures and limited natural spaces, has resulted in significantly higher temperatures, raising heat-related health concerns, particularly among vulnerable groups living in the city. (Porio 2011; Loyzaga, 2019). In addition, the city's dependence on fossil fuels and high

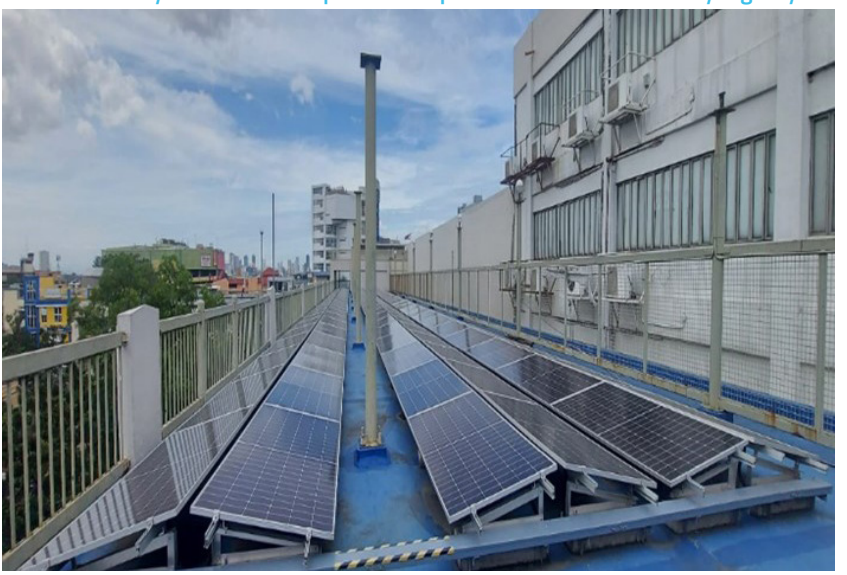
vehicle emissions contributes to long-term air pollution in the region. (Loyzaga, 2019).

Two schools were identified for the study in Metro Manila, one public and one private school. Around 25 respondents from a well-regarded public school in the Quezon City and 20 respondents from a reputed private school in Mandaluyong city were part of the research that included teachers, students, and parent representatives.

When asked about the relevance of climate change and environmental education in school curriculum, the teachers and students across both schools acknowledged its importance, especially in acquiring a general understanding of the impacts of climate change, greenhouse gas emissions and subsequent disruption in climatic cycles. The teachers highlighted that components of CCE are integrated in the elementary classes (grade 7 onwards) through science and social science subjects, while deeper and more complex topics are discussed in the upper classes (10-12 grades). Although CCE is not taught as a separate subject, its components are appropriately weaved into the science and social science curriculum, claiming to develop a more holistic, interdisciplinary, and contextual understanding amongst the students. In the upper classes, CCE is also taught as part of the Disaster Risk Reduction Management (DRRM) course, where students are required to undertake research projects on emergent issues and develop mitigation programs. "*One such project was on exploring the reduced number of rivers flowing through Metro Manila, which has decreased to only six, resulting in increased flooding of the National Capital Region*", as cited by one of the teachers teaching DRRM in the public school. "*We encourage students to take actionable steps from what they learn. Our emphasis is placed on advocacy for climate change and the importance of demonstrating practical outcomes rather than merely acquiring information about the topic*" said another teacher from the public school. These hands-on experiences are aimed to connect the students with their immediate surroundings and its relation to the climate crisis.

The students agreed that it was important for them to be socially aware of their surroundings to contribute better for its conservation and protection. Beyond classroom teaching-learning, they engage in several extra-curricular activities and community outreach programs through their ecological club/YES-O.

A view of newly-installed solar panels at a private school in Mandaluyong City



"*There are about 100 volunteers in the club currently who are involved in several conservation activities such as building green spaces within the school as well as undertaking community outreach programs like planting trees and clean-up drives. The purpose of these programs is to educate our youth and make them more responsible for their community*" said one of the student representatives from the public school. Another student representative added that CCE must recognize the social diversity of the Philippines or else the curriculum will fail to influence students coming from myriad social contexts. The students said that CCE needs deeper exploration of climate resilience and community adaptation strategies.

Meanwhile, private school students shared that apart from textbooks, they also refer to several reference books and actively use ICT tools along with social media platforms to gain a wider perspective about climate change and environmental consciousness. Students were able to draw connections between curriculum teaching and social awareness drives. One of the students said, "*Metro Manila suffers from periodic flooding that is largely caused by drainage problems; proper practice of waste management can certainly resolve this issue*." Students also appeared to be aware of the environmental hazards caused by greenhouse gas emissions and effects of using fossil fuels. Some of them even insisted reforming

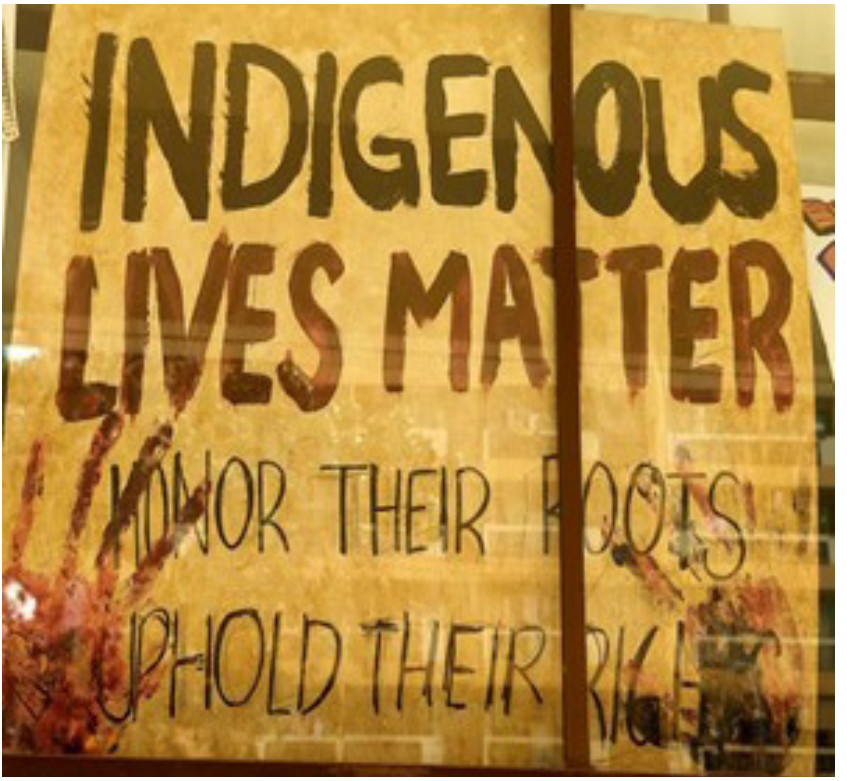
A poster about indigenous communities created by private school students

the public transportation so that more people can use it, thereby reducing the need for private cars and their emissions.

Moreover, the public school in Mandaluyong city proclaimed of the school's commitment to sustainability. Through the joint effort of the NATOW education union and school authorities, the school is the first in the Mandaluyong region to become a solar-powered institution. "T*he aim was not only to reduce the carbon footprint but to create a campus that cares for the planet and its people*," stated a NATOW union official.

However, it must be noted that when asked if indigenous knowledge systems can be useful in developing more resilient mechanisms to mitigate and combat environmental and climatic disasters, students from both public and private schools gave vague answers. This runs contrary to the supposed strong emphasis on indigenous knowledge in the recently introduced MATATAG curriculum. Students said that they learned about indigenous

A poster about indigenous communities created by private school students



communities, their distinctive cultures in social science textbooks but there was not knowledge systems on climate action practices. In any case, the MATATAG curriculum is not yet fully into practice.

Teaching climate change and the environment can certainly be challenging without a strategic pedagogical approach. While it is an interdisciplinary subject and components of CCE may be appropriately infused into other disciplines such as earth and physical sciences and social science subjects, it requires the teachers to be systematically oriented and updated through regular workshops or training programs. Teachers at private school said that there are seminars organised by the school or other schools that they attend on developing environmental consciousness, but places are limited and only a few can attend.

Meanwhile in public schools, teachers said that there were routine seminars and in-service training sessions, which they are required to attend during seasonal breaks on pedagogies and

teaching methodologies. However, these programs do not focus on teaching environment and climate change. In the absence of a specialised subject on climate change and environment and a lack of proper orientation programs, teachers exercise their own discretion and knowledge in ascribing weight to these components in their classroom teaching.

Beyond schools, the everyday practices at home, parental guidance and the general social milieu of the neighborhood also play fundamental roles in nurturing an early value system among young students. In an interview, one of the parent representatives said that she along with many others actively participate in the *gulayan* (*vegetable planting*) drives initiated by the local city administration that promote vegetable growing and farming practices in urban areas. Another parent expressed that they often participate and closely work with the schools in their waste collection and community cleaning programs. It is interesting to note that the community outreach programs that the schools organise for their students also inspire involvement from the parent representatives.

BORACAY ISLAND

In contrast to the metropolitan concerns of Metro Manila, Boracay Island, a popular tourist destination has differential environmental concerns owing to its status and geographical attributes. Boracay is in Aklan province, central Philippines, which covers around 10.32 square kilometers. It is known for its white sandy beaches, clean waters and tropical climate. The island's low elevation and nature along its coastline makes it particularly exposed to climate change-related distresses such as increasing sea levels, coastal erosion, and extreme weather patterns. (Takano, 2006) Unlike Metro Manila, Boracay's environmental degradation is mostly caused by its high economic dependence on tourism. This rapid tourism-driven urbanisation has led to excessive groundwater extraction, deforestation, and improper waste disposal, exacerbating environmental vulnerabilities. (Torri, et al. 2011)

Unequal distribution of wealth is also characteristic of the region. *Ati*, Aklan's indigenous people and Boracay Island's native population, face severe income disparities, with many of them being displaced by corporations on the pretext of development. Despite state policies attempting to address issues related to

overdevelopment, the excessive burden of tourism coupled with unbridled urbanisation has caused severe problems in the sewage system of the island. This has not only contaminated drinking water supply but also soiled the sea and its marine biodiversity. In 2018, the island was temporarily closed by the government to rehabilitate it. (Angan, 2013; Besguerra, 2013)

For the study, a public elementary school in the Bulabag area of Boracay was visited. The school offered interesting glimpses of environment friendly practices and conservation goals. Throughout the school, used and discarded plastic bottles and containers that were decorated by the students were used as plant or flowerpots. The school also practiced proper waste management techniques with separate disposal systems of recyclable and non-recyclable waste products.

A school garden sustaining locally endemic plants in a Boracay public school

Despite its limited resources as a small provincial public school, the teachers beamed with pride over the innovative methods that have adopted to teach young children and make them more informed and sensitive to their environment. "*We put small placards on the endangered plants that prevent soil erosion. We grow in our campus garden. The placards have the name of the species as well as its unique qualities that helps students to acquire knowledge about these plants*" said one of the teachers showing the gardening practices in the school.

In a focused group discussion, students said that they learnt about the importance of the coral reef and the mangrove ecosystem from their textbooks and why they need to be particularly conserved.

It was interesting to note the myriad conservation initiatives undertaken by the elementary public school to develop an early consciousness amongst its young students. However, the lack of resources, funds and requisite infrastructure limits the teachers' ability to teach and practice conservation in an island whose residents are overwhelmingly dependent on tourism for their daily livelihood. The teachers said that the school was also attended by children of the indigenous people from the island. Unfortunately, when asked if their knowledge and experiences as native inhabitants of the islands were included and engaged with in classroom teaching or in their awareness programs, they gave inconclusive responses.

Climate Change Education in the Philippines

The Philippines has integrated CCE into national education policies and the school curriculum to an extent. Apart from curriculum teaching, the DepEd emphasizes on organizing awareness programs and community activities. These initiatives are meant to instill a more comprehensive understanding amongst students facing adverse impacts of climate change and environmental degradation as well as to develop an empathetic consciousness to conserve natural biodiversity. However, despite considerable initiative at the level of policy, curriculum and transaction, there are challenges and lacunae that persist.

In the absence of an exclusive course or subject, topics related to climate change and the environment are suffused within various subjects, burdening a teacher's capacity to teach these topics effectively. While CCE is included in the different science subjects, it is less prominently featured in the social science courses, which must be revisited. Moreover, in a disaster-prone country like the Philippines, CCE must be introduced in the foundational years to foster an early awareness on disaster risk prevention and management.

Conclusion and Recommendations

In-depth case studies of India and the Philippines, two of the most vulnerable countries to climate change, show that both nations recognise the significance of preparing present and future generations for climate change by equipping them with the knowledge, skills and attitudes to proactively participate in climate action. Both countries have been making efforts to integrate CCE into their school curricula, with India infusing concepts concerning climate change through environmental education in the National Curriculum Frameworks (2005, 2023); and the Philippines strengthening the idea of CCE by incorporating the themes related to climate change in the K-12 curriculum followed by the recently launched MATATAG curriculum.

However, gaps in vision and practice remain in both countries. While the national policies sound promising, the ground realties are very different in terms of execution and implementation. Intensive field engagements in Sundarbans (West Bengal), Gadchiroli (Maharashtra) and Delhi in India; and Metro Manila and Boracay Island in the Philippines reflect the disconnect in some of the policy provisions related to CCE. The coordination mechanisms between the central, state governments and local governments regarding implementation of CCE in schools is weak and the challenges increase even more when political parties are feuding. Both countries are yet to have a specific CCE budget. Unless governments invest in CCE, developing mechanisms for building climate resilience through education will not progress. Additionally, both countries

are yet to adopt decolonial approaches and practices on CCE, which would ideally include a climate justice lens. In the curriculum, both countries are yet to recognise Indigenous Peoples for their long-standing traditions and knowledge systems addressing ecological conservation and sustainability. Some of these vision-practice gaps need to be addressed with urgency if the nations want CCE to play the pertinent role of 'regenerating culture in ways so that life can be led in balance with an ecosystem that respects social justice' (Climate Change and Education: TESF Briefing Note Series, 2020: 5). The final section provides recommendations in addressing the vision-practice divide for the effective implementation of quality climate education in India and the Philippines, that can be replicated in countries with similar contexts.

Recommendations

1. **There is an urgent need to provide academic and professional support to schoolteachers who are responsible for shaping the discourse of climate change education.** The critical role of establishing and mainstreaming CCE in school falls on teachers. However, with the infusion of CCE into different subjects and with teachers coming from diverse disciplinary backgrounds, CCE is becoming diluted or lost in the transactional practices. Teachers need academic support and direction through resource materials and capacity development programs to teach CCE meaningfully. Education unions can play a significant role in creating an open access digital repository of reliable, relevant and innovative resources, materials, pedagogical toolkits about climate change across the disciplines in English as well as regional and local languages. Unions, within their capacity, can also develop open access training modules on climate education and liaison with the schools to organise workshops for teachers to develop climate educational practices that look beyond adaptation and mitigation of climate change. They can also advocate for CCE that broadens the discourse into the intertwined economic, social, epistemological, historical and ecological conditions surrounding climate change.

2. **It is necessary to decentralise the discourse on climate change education.** A decentralised approach that deputizes local government units could allow for the execution of tailored climate education that resonates with local communities. A decentralised approach to CCE can also empower local communities to take ownership of effective climate action, thus fostering a sense of agency and responsibility among its members. Unions can act as conduits for local governments and communities in strenghtening the execution of climate change education in ways that respond to the struggles of the communities and spaces that are most vulnerable to climate change.

3. **There is a need for integrating decolonial approaches and practices in school systems**. Local communities, particularly the indigenous, have a deep understanding of sustainability issues. However, these communities are almost always excluded in consultation forums on these issues. Instead, students from these communities are exposed to notions of sustainability through policy, curriculum, textbooks and conservation activities in the teaching pedagogy, which often fails to connect with them. There is a clear disconnect between the scientific knowledge imparted in the schools and the subjective experiences and resilience stories shared among the local/indigenous communities. Even if indigenous communities are made part of the curriculum, it can come across as perfunctory, where their voices, their subjective experiences are not fully acknowledged. Indigenous knowledge must be included not just with the intent of exposing students to the lived realities of such communities but also with the aim of ensuring that indigenous experiences are discussed within the context of climate justice discourse. Teacher unions as pressure groups can play the role of foregrounding indigenous knowledge in the discourse of CCE so that their perspectives and narratives are brought to regional, national, and global platforms.

4. **Longstanding issues in the education sector such as teacher shortages, regularization of teachers and improvements in working conditions and oversized classrooms must be addressed in conjunction with the implementation of CCE.** It is essential to address the lack of regular teachers, struggles for stable employment and low or irregular pay disruption before any meaningful efforts to effectively implement CCE. Without meaningful reforms in the working conditions of educators, any policy that purports to champion quality climate education will only ring hollow as teachers are at the core of CCE. Hence, education unions are well placed to advocate for CCE alongside their demands for greater funding in public education, a traditional advocacy for many education unions.

References

ACAPS. (2023). *Thematic report*. https://www.acaps.org/fileadmin/Data_Product/Main_media/20230725_ACAPS_Thematic_report_El_Nino_overview_anticipated_humanitarian_impact_in_2023.pdf

ACAPS. (2024). ACAPS Briefing Note - Philippines: Impact of Tropical Cyclone Trami (Kristine) and Kong-rey (Leon). In *Reliefweb*. https://reliefweb.int/report/philippines/acaps-briefing-note-philippines-impact-tropical-cyclone-trami-kristine-and-kong-rey-leon-13-november-2024

ACT Alliance. (2016). *Climate Change Advocacy Framework Position*. https://actalliance.org/wp-content/uploads/2017/08/AA_Climate-Change-en-FINAL.pdf

All India Primary Teachers' Federation. (2008). Attainment of the goal – education for all. In *Shikshak Bhawan* (pp. 1–40). http://aiptfindia.org/wp-content/uploads/2022/04/Education-For-All.pdf

Angan, B. J. (2013, June 21). Beyond the beach: The untold story of Boracay's Ati tribe. *GMA News Online*. https://www.gmanetwork.com/news/lifestyle/artandculture/313920/beyond-the-beach-the-untold-story-of-boracay-s-ati-tribe/story/#goog_rewarded

Barrot, J. S. (2021). K to 12 curriculum reform in the Philippines: towards making students future ready. *Asia Pacific Journal of Education*, 43(4), 1193–1207. https://doi.org/10.1080/02188791.2021.1973959

Besguerra. (2013, April 8). Killing of indigenous leader bares ugly face of Boracay development. *Lifestyle.INQ*. https://lifestyle.inquirer.net/97881/killing-of-indigenous-%20leader-bares-ugly-face-of-boracay-development/

Béteille, T., Gandhi Kingdon, G., & Muzammil, M. (2016). *Teacher Unions in India: Diverse and Powerful*. https://discovery.ucl.ac.uk/id/eprint/10129159/1/Kingdon_India_teachers%20unions_January%2024,%202016%20-%20with%20final%20title.pdf

Béteille, T., Kingdon, G. G., & Muzammil, M. (2016). Teacher unions in India: diverse and powerful. In *Cambridge University Press eBooks* (pp. 239–268). https://doi.org/10.1017/9781316717653.009

Biswas, C. (2022, March). RESILIENCE IN POST-DISASTER RECONSTRUCTION: LOCAL KNOWLEDGE AND PRACTICE IN SUNDARBANS. ENVIROSOCIETY. https://www.researchgate.net/publication/359292395_RESILIENCE_IN_POST-DISASTER_RECONSTRUCTION_LOCAL_KNOWLEDGE_AND_PRACTICE_IN_SUNDARBANS

Carmona, R., Reed, G., Thorsell, S., Dorough, D. S., MacDonald, J. P., Rai, T. B., & Sanago, G. A. (2023). Analysing engagement with Indigenous Peoples in the Intergovernmental Panel on Climate Change's Sixth Assessment Report. *Npj Climate Action*, 2(1). https://doi.org/10.1038/s44168-023-00048-3

Central Board of Secondary Education. (2019). *Eco Clubs and Water Conservation: A Handbook for Schools*. https://cbseacademic.nic.in/web_material/Manuals/Ecoclub.pdf

Central Board of Secondary Education. (2020). *Experiential Learning: A Story by Padhkar Kumar and Karkar Kumari*. https://cbseacademic.nic.in/web_material/Manuals/ExperientialLearning.pdf

Central Board of Secondary Education. (2020). *Handbook of Inclusive Education*. https://cdnbbsr.s3waas.gov.in/s3kv011a846fe7a5fa4b4b6d1eca45b228/uploads/2024/02/2024020919.pdf

Central Board of Secondary Education. (2023). *Dister Risk Reduction in Schools: Classes 6 to 10*. https://cbseacademic.nic.in/drr_flipbook.html

Central Board of Secondary Education. (2020). *Teacher Energized Resource Manual: Class: 6th Subject: Science*. https://cbseacademic.nic.in/web_material/term/6science.pdf

Central Board of Secondary Education. (2020). *Teacher Energized Resource Manual: Class: 7th Subject: Science*. https://cbseacademic.nic.in/web_material/term/7science.pdf

Central Board of Secondary Education. (2024). *Knowledge Traditions and Practices of India Syllabus 2024-2025*. https://cbseacademic.nic.in/web_material/CurriculumMain25/SrSec/KTPI_SrSec_2024-25.pdf

Chandran, R., Gunawardena, C., & Castro, N. (2017). The National Environmental Education Action Plan 2018-2040 (VERSION 1). In *The National Environmental Education Action Plan 2018-2040 (Version 1)*. Department of Environment and Natural Resources, Philippines. https://eeid.emb.gov.ph/wp-content/uploads/2020/07/National_Environmental_Education_Action_Plan__NEEAP_.pdf

CHED. (2019). *Integration of Indigenous Peoples Studies into the Relevant Higher Education Curricula*. https://ched.gov.ph/wp-content/uploads/CMO-No.-02-Integration-of-Indigenous-peoples-studies-into-the-relevant-Higher-Education-Curricula.pdf

CNA. (2024, June 12). Hell or high water: Philippine schools lashed by climate extremes. *CNA*. https://www.channelnewsasia.com/asia/philippines-schools-climate-extremes-heatwave-el-nino-la-nina-4404266

Competente, R. J. T. (2019). Pre-service teachers' inclusion of climate change education. *International Journal of Evaluation and Research in Education (IJERE)*, 8(1), 119. https://doi.org/10.11591/ijere.v8i1.16923

Coon, B., Nolasco, D., & Walker, E. (2024). *Climate Education vs. The Climate Crisis* (pp. 3–8). https://www.earthday.org/wp-content/uploads/2024/04/Climate-Education-vs-The-Climate-Crisis.pdf

Crozier-Smith, D., & Dutta, M. (2009). *Evaluation of the professional development program of the All India Primary Teachers' Federation*. http://aiptfindia.org/wp-content/uploads/2022/04/final_rep.pdf

Curriculum Management Solutions, Inc. (2021, March 1). *The Power of Relationships in Equity Pedagogy*. https://curriculumsolutions.net/blog/2021/03/01/the-power-of-relationships-in-equity-pedagogy/

Das, R., & Dalal, J. (2022). CHILDREN'S MILIEU AND MODERN SCHOOLING: UNDERSTANDING THE LINKAGE. *Towards Excellence*. https://hrdc.gujaratuniversity.ac.in/Publication/article?id=6006

Datta, R. (2024). Relationality in Indigenous Climate Change Education Research: A Learning Journey from Indigenous Communities in Bangladesh. *Australian Journal of Environmental Education, 40(2)*, 128–142. https://doi.org/10.1017/aee.2024.13

Datta, P., Behera, B., & Rahut, D. B. (2023). Climate change and water-related threats in the Indian Sundarbans: food security and management implications. International Journal of Water Resources Development, 40(3), 323–344.https://doi.org/10.1080/07900627.2023.2224459

DEPARTMENT OF SCIENCE & TECHNOLOGY, MINISTRY OF SCIENCE & TECHNOLOGY, GOI. (2010). Mission Document of National Mission on Strategic Knowledge for Climate Change. In *National Mission on Strategic Knowledge for Climate Change*. https://dst.gov.in/sites/default/files/NMSKCC_mission%20document%201.pdf

DepEd. (2016, April 19). *Implementing Guidelines on the Allocation and Utilization of the Indigenous Peoples Education (IPEd)*. https://www.deped.gov.ph/2016/04/19/do-22-s-2016-implementing-guidelines-on-the-allocation-and-utilization-of-the-indigenous-peoples-education-iped-program-support-fund-for-fiscal-year-fy-2016/

DepEd. (2019). *Policy Guidelines on the K to 12 Basic Education Program*. https://www.deped.gov.ph/wp-content/uploads/2019/08/DO_s2019_021.pdf

DepEd. (2023a). *MATATAG Curriculum*. https://www.deped.gov.ph/matatag-curriculum/

DepEd. (2023b, January 30). *MATATAG: DepEd's new agenda to resolve basic education woes*. https://www.deped.gov.ph/2023/01/30/matatag-depeds-new-agenda-to-resolve-basic-education-woes/

Duenas, D. S.-L., Wapesa-Mays, C., Brewer, B., Hookano, S.-L., Bear, C., Ebert, E., Lydon, C., Nelson, N., Brotherton, P., & Fowler, K. (2024). Learning to design climate education that honors indigenous climate leadership and sovereignty. *Connected Science Learning, 6(4)*, 150–162. https://doi.org/10.1080/24758779.2024.2360533

Dupont, V. D. (2011). The dream of Delhi as a global city. *International Journal of Urban and Regional Research, 35(3)*, 533–554. https://doi.org/10.1111/j.1468-2427.2010.01027.x

Eckstein, D., Kunzel, V., & Schafer, L. (2021). GLOBAL CLIMATE RISK INDEX 2021. In *Germanwatch*. https://www.germanwatch.org/sites/default/files/Global%20Climate%20Risk%20Index%202021_2.pdf

EI. (2014, January 29). *Philippines: Trade unions act to rebuild education after tsunami*. Education International. https://asia-pacific.wixwebsitesbuilder.com/en/item/19106:philippines-trade-unions-act-to-rebuild-education-after-tsunami

EI. (2021a). *Appendix C: Philippines case study*. Issuu. Education International. https://issuu.com/educationinternational/docs/2020_eiresearchap_unionrenewal_eng_final/s/11962054

EI. (2021b). Education International Manifesto on Quality Climate Change Education for All. In *Education International*. https://www.ei-ie.org/en/item/24244:education-international-manifesto-on-quality-climate-change-education-for-al

EI. (2022a). Educators on a Heating Planet: Shaping education Unions' vision for a Just Transition. In *Education International*. https://www.ei-ie.org/en/item/26964:educators-on-a-heating-planet-shaping-education-unions-vision-for-a-just-transition

EI. (2022b). The Climate Change Education Ambition Report Card. In *Education International*. https://www.ei-ie.org/en/item/25344:the-climate-change-education-ambition-report-card

EI. (2024a). Forging the education–climate justice connection. In *Education International*. https://www.ei-ie.org/en/item/28260:forging-the-education-climate-justice-connection

EI. (2024b, May 27). Southeast Asian Educators build movement for climate justice and just transition. *Education International*. https://www.ei-ie.org/en/item/28651:southeast-asian-educators-build-movement-for-climate-justice-and-just-transition

EI. (2024c, June 20). Union renewal in the education sector: Prospects for the Asia-Pacific. *Education International*. https://www.ei-ie.org/en/item/25237:union-renewal-in-the-education-sector-prospects-for-the-asia-pacific

EI. (2024d). Empowering educators: Transformative initiatives in the Asia-Pacific region. In *Education International*. https://www.ei-ie.org/en/item/28729:empowering-educators-transformative-initiatives-in-the-asia-pacific-region

EI. (2024e, July 16). Philippines: State's terror campaign against teachers must stop. *Education International*. https://www.ei-ie.org/en/item/23442:philippines-states-terror-campaign-against-teachers-must-stop

EI. (2024f, August 2). Education unions redouble efforts to ensure quality climate education and a just transition for all. *Education International*. https://www.ei-ie.org/en/item/28908:education-unions-redouble-efforts-to-ensure-quality-climate-education-and-a-just-transition-for-all

EI. (2024g, December 16). The Philippines: Unions commit to go public, fund education, and counter teacher shortage. *Education International*. https://www.ei-ie.org/en/item/29335:the-philippines-unions-commit-to-go-public-fund-education-and-counter-teacher-shortage

EIAP. (2021). Teach for climate action. In *An Advocacy Toolkit on Climate Change Education for Educators and Their Unions*. Education International Asia-Pacific Regional Office. https://eiwebsite.blob.core.windows.net/uploads/20211012_035029_EIAP%20Teach%20for%20Climate%20Action_toolkit%2012-Oct-2021.pdf?sv=2019-10-10&ss=b&srt=o&sp=rdx&se=2030-05-26T22:00:00Z&st=2020-05-26T14:11:47Z&spr=https,http&sig=fqlBEId9cO6/PzqL9OFD54Ufvt33KDBvH/hM9wsIvLA%3D

Enora. (2024, December 19). *A brief history of colonialism, climate change and carbon markets*. SOMO. https://www.somo.nl/history-colonialism-climate-change-carbon-markets/

Espinosa, A., Gomez, A., Miranda, P. A., Serafico-Reyes, N. M. A., Faylona, M. G. P. G., David, A. P., Cortez, L. A. S., Lansangan, R. V., & Chan, J. R. (2024). Do educational initiatives impact climate change mitigation and adaptation? *Policy Brief Series, 2–2*, 1–5. https://www.pnuresearchportal.org/wp-content/uploads/2024/02/Policy-Brief-Vol-8-s.-2.pdf

Facer, K., Lotz-Sisitka, H., Ogbuigwe, A., Vogel, C., & Barrineau, S. (2020). TESF Briefing Paper: Climate Change and Education. In *Zenodo*. https://doi.org/10.5281/zenodo.3796142

Fernandes, L. (2004). The Politics of Forgetting: class politics, state power and the restructuring of urban space in India. *Urban Studies*, 41(12), 2415–2430. https://doi.org/10.1080/00420980412331297609

Finger, L., & Gindin, J. (2015). From proposal to policy: Social movements and teachers' unions in Latin America. *Prospects, 45*(3), 365–378. https://doi.org/10.1007/s11125-015-9355-0

GADRRRES. (2022). Comprehensive School Safety Framework 2022-2030 for Child Rights and Resilience in the Education sector. In *gadrrres.net*. https://gadrrres.net/files/cssf_2022-2030_en.pdf

Ghertner, D. A. (2011). Nuisance talk and the Propriety of Property: Middle Class Discourses of a Slum□Free Delhi. *Antipode, 44*(4), 1161–1187. https://doi.org/10.1111/j.1467-8330.2011.00956.x

Ghosh, A. (2016). *The Great Derangement: Climate Change and the Unthinkable*. Penguin Books. https://complit.utoronto.ca/wp-content/uploads/COL1000H_Jagoe_Ghosh-Stories-.pdf

Ghosh, S. (2023, December 18). *Cracks in the shield: How the Sundarbans is dying and making Bengal prone to cyclones*. Newslaundry. https://www.newslaundry.com/2023/12/18/cracks-in-the-shield-how-the-sundarbans-is-dying-and-making-bengal-prone-to-cyclones

Global Witness. (2024, November 15). *Fossil fuel lobbyists eclipse delegates from vulnerable nations at COP29*. https://globalwitness.org/en/press-releases/fossil-fuel-lobbyists-eclipse-delegations-from-most-climate-vulnerable-nations-at-cop29-climate-talks/

Gomez, J. (2024, September 2). *Storm sets off floods and landslides in Philippines, leaving at least 14 dead | AP News*. AP News. https://apnews.com/article/tropical-storm-yagi-philippines-floods-rain-0efd01c137f0d5dc0668761c6e1e3360

Government of India. (2022). India's updated first nationally determined contribution under Paris Agreement (2021-2030). In *Submission to UNFCCC* (pp. 1–3). https://unfccc.int/sites/default/files/NDC/2022-08/India%20Updated%20First%20Nationally%20Determined%20Contrib.pdf

Heshmati, H. M. (2021). Impact of climate change on life. *Environmental Issues and Sustainable Development*. https://ideas.repec.org/h/ito/pchaps/215429.html

Hoffmann, R., & Blecha, D. (2020). Education and disaster vulnerability in Southeast Asia: evidence and policy implications. *Sustainability, 12*(4), 1401. https://doi.org/10.3390/su12041401

Hoffmann, R., & Muttarak, R. (2019). Greening through schooling: understanding the link between education and pro-environmental behavior in the Philippines. *Environmental Research Letters, 15*(1), 014009. https://doi.org/10.1088/1748-9326/ab5ea0

Hughes, S. (2013). Justice in Urban Climate Change Adaptation: Criteria and application to Delhi. *Ecology and Society, 18*(4). https://doi.org/10.5751/es-05929-180448

Indian Institute of Tropical Meteorology. (2005). Climate change scenarios for India. In *Keysheet* (Vol. 2). http://www.indiaenvironmentportal.org.in/files/DEFRA-india-climate-Rainfall.pdf

IPCC. (2021, August 9). *Climate change widespread, rapid, and intensifying*. https://www.ipcc.ch/2021/08/09/ar6-wg1-20210809-pr/

Kabir, M., Habiba, U. E., Khan, W., Shah, A., Rahim, S., De Los Rios-Escalante, P. R., Farooqi, Z., Ali, L., & Shafiq, M. (2022). Climate change due to increasing concentration of carbon dioxide and its impacts on environment in 21st century; a mini review. *Journal of King Saud University - Science, 35*(5), 102693. https://doi.org/10.1016/j.jksus.2023.102693

Kagawa, F. (2022). *THE HEAT IS ON!: Towards Climate Resilient Education Systems in South Asia*. In *UNICEF*. https://www.unicef.org/rosa/media/17996/file/The%20Heat%20is%20On!%20.pdf

Kilag, O., Jesus, J., Sasan, J., Seblos, M., & Gier, A. (2024). Educational Transformation: Perspectives on the implementation of the Matatag Curriculum in the Philippines. *International Multidisciplinary Journal of Research for Innovation, Sustainability, and Excellence, 1*(5), 306. https://risejournals.org/index.php/imjrise/article/view/396

Kolenatý, M., Kroufek, R., & Činčera, J. (2022). What triggers climate action: the impact of a climate change education program on students' climate literacy and their willingness to act. *Sustainability, 14*(16), 10365. https://doi.org/10.3390/su141610365

Læssøe, J., & Mochizuki, Y. (2015). Recent trends in national Policy on Education for Sustainable Development and Climate Change education. *Journal of Education for Sustainable Development, 9*(1), 27–43. https://doi.org/10.1177/0973408215569112

Lagbao, N. J. C. U. (2024). INITIAL IMPLEMENTATION OF THE MATATAG CURRICULUM: VIEWS OF THE TEACHERS AND PRINCIPALS. EPRA *International Journal of Environmental Economics Commerce and Educational Management*, 10–17. https://doi.org/10.36713/epra17629

Ling, C. Y. (2012). *The Rio Declaration on Environment and Development: an assessment*. Third World Network. https://www.twn.my/title/end/pdf/end12.pdf

Loyzaga, M. a. Y. (2019). Metro Manila. *www.academia.edu*. https://www.academia.edu/122220051/Metro_Manila

Lumanog, & Jonathan. (2019). A Policy Analysis on "Enhanced Basic Education Act of 2013." *UNIVERSITY OF THE PHILIPPINES OPEN UNIVERSITY*. https://www.researchgate.net/publication/332864256_A_Policy_Analysis_on_Enhanced_Basic_Education_Act_of_2013

Maatubang, K. (2024, April 3). *26M Filipino Learners Suffer the Most from Climate Change, says Save The Children Philippines*. Reliefweb. https://reliefweb.int/report/philippines/26m-filipino-learners-suffer-most-climate-change-says-save-children-philippines

Marin, S. V., Schwarz, L., & Sabarwal, S. (2024). THE IMPACT OF CLIMATE CHANGE ON EDUCATION. In *World Bank Group*. https://openknowledge.worldbank.org/server/api/core/bitstreams/8dacb40a-cc6f-4fd8-97fe-96ab7e5793ae/content

Mbah, M. F., Shingruf, A., & Molthan-Hill, P. (2022). Policies and practices of climate change education in South Asia: towards a support framework for an impactful climate change adaptation. *Climate Action, 1*(1). https://doi.org/10.1007/s44168-022-00028-z

McKenzie, M. (2021). Climate change education and communication in global review: tracking progress through national submissions to the UNFCCC Secretariat. *Environmental Education Research, 27*(5), 631–651. https://doi.org/10.1080/13504622.2021.1903838

Mehta, A. (2024, December 5). Introduction to Block Resource Centre 2023: Role & Functions. *Education for All in India*. https://educationforallinindia.com/introduction-to-block-resource-centre-2023-role-functions/

Ministry of Environment, Forest and Climate Change. (2021). Frequently asked questions (FAQs) National Action Plan on Climate Change (NAPCC). In *Ministry of Environment, Forest and Climate Change*. https://static.pib.gov.in/WriteReadData/specificdocs/documents/2021/dec/doc202112101.pdf

Ministry of Human Resource Development. (1986). *National Policy on Education 1986: Programme of Action*. https://www.education.gov.in/sites/upload_files/mhrd/files/upload_document/npe.pdf

MINISTRY OF HUMAN RESOURCE DEVELOPMENT. (2004). *SARVA SHIKSHA ABHIYAN: A PROGRAMME FOR UNIVERSAL ELEMENTARY EDUCATION MANUAL FOR PLANNING AND APPRAISAL*. https://dsel.education.gov.in/sites/default/files/2019-

Ministry of Human Resource Development, Government of India. (2020). *National Education Policy 2020*. https://www.education.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf

Moile, G. (2019). Mainstreaming indigenous knowledge in higher education: The Philippines' 2019 policy change. *Graduate Journal of Asia-Pacific Studies, 43*, 67–83. https://www.researchgate.net/publication/359729767_Mainstreaming_indigenous_knowledge_in_higher_education_The_Philippines'_2019_policy_change

National Steering Committee for National Curriculum Frameworks. (2023). *National Curriculum Framework for School Education 2023*. https://dsel.education.gov.in/sites/default/files/guidelines/ncf_2023.pdf

National Council of Education Research and Training. (2024). *Curiosity: Textbook of Science for Class 6*. https://ncert.nic.in/textbook.php?fecu1=0-12

National Council of Education Research and Training. (2024b). *Exploring Society: India and Beyond India and Beyond: Social Science Textbook for Class 6*. https://ncert.nic.in/textbook.php?fees1=ps-14

National Council of Education Research and Training. (2024). *Kaushal Bodh: Vocational Education and Activity Book for Grade 6*. https://ncert.nic.in/textbook.php?fekb1=0-6

National Council of Education Research and Training. (2024). *Our Environment: Textbook in Geography for Class VII*. https://ncert.nic.in/textbook.php?gess2=ps-7

National Council of Education Research and Training. (2024e). *Science: Textbook for Class VII*. https://ncert.nic.in/textbook.php?gesc1=0-13

National Council of Education Research and Training. (2024f). *Science: Textbook for Class VIII*. https://ncert.nic.in/textbook.php?hesc1=0-13

National Council of Education Research and Training. (2024g). *Social Science: Resources and Development: Textbook in Geography for Class VIII*. https://ncert.nic.in/textbook.php?hess4=0-5

NCERT. (2005). *NATIONAL CURRICULUM FRAMEWORK 2005*. https://ncert.nic.in/pdf/nc-framework/nf 2005-english.pdf

NCERT. (2022a). *List of Rationalised Content in Textbooks for Class XI* [English]. https://ncert.nic.in/pdf/BookletClass11.pdf

NCERT. (2022b). *Rationalisation of NCERT textbooks*. https://ncert.nic.in/pdf/Rationalisation-of-textbook/Rationalisation_of_Textbooks-Brief_for_Press_Release-3.pdf

NIC. (2024). *Consultation process | Government of India, Ministry of Education*. https://www.education.gov.in/nep/consultation-process

NITI AAYOG. (2020). *India Voluntary National Review 2020: Decade of Action Taking SDGs from Global to Local*. https://sustainabledevelopment.un.org/content/documents/26281VNR_2020_India_Report.pdf

Pan, W., Fan, R., Pan, W., Ma, X., Hu, C., Fu, P., & Su, J. (2023). The role of climate literacy in individual response to climate change: evidence from China. *Journal of Cleaner Production, 405*, 136874. https://doi.org/10.1016/j.jclepro.2023.136874

Porio, E. (2011). Vulnerability, Adaptation, and Resilience to Floods and Climate Change-Related Risks among Marginal, Riverine Communities in Metro Manila. *Asian Journal of Social Science*, 39(4), 425–445. https://doi.org/10.1163/156853111x597260

Porio, E., Yulo□Loyzaga, A., & Uy, C. (2019). Metro Manila. *The Wiley Blackwell Encyclopedia of Urban and Regional Studies*, 1–7. https://doi.org/10.1002/9781118568446.eurs0197

Prime Minister's Council on Climate Change. (2008). *National Action Plan for Climate Change*. https://archivepmo.nic.in/drmanmohansingh/climate_change_english.pdf

Pullins, & Knijnenburg. (2025, January 21). *US Withdrawal from the Paris Agreement: Impact and Next Steps*. White & Case LLP International Law Firm, Global Law Practice. https://www.whitecase.com/insight-alert/us-withdrawal-paris-agreement-impact-and-next-steps

Revi, A. (2008). Climate change risk: an adaptation and mitigation agenda for Indian cities. *Environment and Urbanization, 20*(1), 207–229. https://doi.org/10.1177/0956247808089157

Sami, N., Singh, C., & Bazaz, A. (2017). Climate Change Policy in India and Goal 13. In *IIHS*. https://iihs.co.in/knowledge-gateway/wp-content/uploads/2017/10/Climate-Change-Policy-in-India-and-Goal-13.pdf

Sangomla, A. (2021, November 25). PM's climate change council has not met in almost 7 years. *Down to Earth*. https://www.downtoearth.org.in/climate-change/pm-s-climate-change-council-has-not-met-in-almost-7-years-80369

See, J., Cuaton, G. P., Placino, P., Vunibola, S., Thi, H. D., Dombroski, K., & McKinnon, K. (2023). From absences to emergences: Foregrounding traditional and Indigenous climate change adaptation knowledges and practices from Fiji, Vietnam and the Philippines. *World Development, 176*, 106503. https://doi.org/10.1016/j.worlddev.2023.106503

Sen, A. (1999). *Development as Freedom*. Oxford University Press. https://kuangaliablog.wordpress.com/wp-content/uploads/2017/07/amartya_kumar_sen_development_as_freedombookfi.pdf

Shohel, M., Ashrafuzzaman, M. M. C., Mahmud, A., & Alam, A. S. (2021). Education in Emergencies, Inequities, and the Digital Divide: Strategies for Supporting Teachers and Students in Higher Education in Bangladesh. *Handbook of Research on Inequities in Online Education During Global Crises*, 529–553. https://doi.org/10.4018/978-1-7998-6533-9.ch027

Taconet, N., Méjean, A., & Guivarch, C. (2020). Influence of climate change impacts and mitigation costs on inequality between countries. *Climatic Change, 160*(1), 15–34. https://doi.org/10.1007/s10584-019-02637-w

Takano, M. (2005). *Boracay Environmental Infrastructure Project*. https://www.jica.go.jp/Resource/english/our_work/evaluation/oda_loan/post/2006/pdf/project16_full.pdf

Textbook of Class 7, *Global Times Living History: Creative Response Through the Ages*, K-12 Curriculum Complain, Second Edition Sibs Publishing House

Textbook of Class 8, *Global Times Living History: Contemporary Issues*, K-12 Curriculum Complain, Second Edition Sibs Publishing House

Textbook of Class 7 (Saptam Sreni), *Poribesh o Bigyan*, Pashchimbanga Madhyamik Parjada (West Bengal Board of Secondary Education)

Theresa, A., Esteban, O., & Lindfield, M. (2021). *Metro Manila, Philippines*. https://www.apec.org/docs/default- source/publications/2017/6/partnerships-for-the-sustainable-development-of-cities-in- the-apec-region/toc/09-metro-manila-philippines.pdf? sfvrsn=938bd621_1

Rezane, L & Lena, P. (2018). Anthropocene: The Vital Challenges of a Scientific Debate. https://courier.unesco.org/en/articles/anthropocene-vital-challenges-scientific-debate

Toimil, A., Losada, I. J., Nicholls, R. J., Dalrymple, R. A., & Stive, M. J. (2020). Addressing the challenges of climate change risks and adaptation in coastal areas: A review. Coastal Engineering, 156, 103611. https://doi.org/10.1016/j.coastaleng.2019.103611

Torii, Takashi, Masaaki, Sano, Mizuho, Lizad, & Jokim. (2011). *Tourism Development in Boracay Island and its Impacts on the Local Communities*. https://www.researchgate.net/publication/279861756_Tourism_Development_in_Bor acay_Island_and_its_Impacts_on_the_Local_Communities

Uddin, M. K. (2017). Climate change and global environmental politics: North-South divide. *Environmental Policy and Law, 47*(3–4), 106–114. https://doi.org/10.3233/epl-170022

UN News. (2023, September 3). *Philippines: Indigenous knowledge takes on climate crisis*. https://news.un.org/en/story/2023/09/1140337

UNDP. (2024, August 1). *Indigenous knowledge is crucial in the fight against climate change – here's why*. UNDP Climate Promise. https://climatepromise.undp.org/news-and-stories/indigenous-knowledge-crucial-fight-against-climate-change-heres-why

UNESCO. (2016). *Getting Climate-Ready - A Guide for Schools on Climate Action*. https://unesdoc.unesco.org/ark:/48223/pf0000246740/PDF/246740eng.pdf.multi

UNESCO. (2023a). *Climate change communication and education country profiles: Approaches to greening education around the world*. https://unesdoc.unesco.org/ark:/48223/pf0000387867/PDF/387867eng.pdf.multi

UNESCO. (2023b). *What you need to know about the Comprehensive School Safety Framework 2022-2030*. https://www.unesco.org/en/articles/what-you-need-know-about-comprehensive-school-safety-framework-2022-2030

UNESCO. (2024). *Greening Education Partnership*. https://www.unesco.org/en/sustainable-development/education/greening-future

UNICEF. (2024). Humanitarian situation report: Severe Tropical Storm Trami (Kristine). In *UNICEF-Philippines*. https://www.unicef.org/philippines/reports/humanitarian-situation-report-severe-tropical-storm-trami-kristine

United Nations. (1973). *REPORT OF THE UNITED NATIONS CONFERENCE ON THE HUMAN ENVIRONMENT*. https://documents.un.org/doc/undoc/gen/nl7/300/05/pdf/nl730005.pdf

United Nations. (2015a). PARIS AGREEMENT. https://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf

United Nations. (2015b). SDG Youth Summer Camp – SDG Resource Document. https://sdgs.un.org/sites/default/files/2020-09/SDG%20Resource%20Document_Targets%20Overview.pdf

United Nations. (2015c). Sendai Framework for Disaster Risk Reduction 2015-2030. https://www.preventionweb.net/files/43291_sendaiframeworkfordrren.pdf

Vaughter, P. (2016). Climate Change Education: From critical thinking to Critical action. In University Nations University: Institute for Advance Study of Sustainability: Vol. No. 4. https://collections.unu.edu/eserv/UNU:3372/UNUIAS_PB_4.pdf

Verlie, B. (2019). Bearing worlds: learning to live-with climate change. Environmental Education Research, 25(5), 751–766. https://doi.org/10.1080/13504622.2019.1637823

Water Aid. (2019). Clean Green School Program launched in Islamabad. https://www.wateraid.org/pk/media/clean-green-school-programme-launched-in-islamabad

World Bank Group. (2023, March 31). India: Climate change impacts. World Bank. https://www.worldbank.org/en/news/feature/2013/06/19/india-climate-change-impacts

KLIMA

Education International
Asia-Pacific Region
EIAP

Towards Quality Climate Change Education for All

A Critical Assessment of Climate Education Policies in India and the Philippines

Ruchira Das & Ranjana Das

ISBN: 978-92-9276-030-4