

POLICY BRIEF

Gender-transformative climate literacy

A policy framework for a more green and resilient Bhutan

ECHIDNA GLOBAL SCHOLARS PROGRAM



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Executive summary

Globally, climate change disproportionately affects women and girls, intensifying and heightening their vulnerability to natural disasters, food insecurity, caregiving responsibilities, displacement, and related challenges as well as hindering opportunities for their social and economic empowerment (UN Women 2022). In Bhutan, as temperatures rise, the country has become increasingly vulnerable to a multitude of climate-related threats and disasters like glacial lake outburst floods (GLOFs), with implications for the well-being of all and with heightened risk for girls and women (NCWC and UNDP 2020).

In the face of these challenges, Bhutan has taken on ambitious climate goals through its climate leadership and environmental stewardship. Though Bhutan also has a strong track record in achieving gender-focused educational milestones—with over 90% school enrollment at gender parity and a largely matrilineal society—patriarchy is strong and ingrained, and there is much to be done to achieve gender equality. Furthermore, efforts within the three areas of climate, gender, and education still mostly operate in silos, with little intersectoral work.

This policy brief presents results of the research conducted through two focus group discussions with 16 girls (ages 13–18); an online survey of 52 district education officers; and interviews with eight organizations from the government, civil society, and international partners from June to August 2023 in Thimphu and Paro. The study explored girls' understanding of climate change and its impacts on them (individual level), what and how climate education is taught in the education system (systems level), and who and what the different actors are doing and could potentially do collaboratively (ecosystem level).





The findings of this study clearly indicate that there is a need to rethink and reframe climate literacy in Bhutan in ways that recognize the gendered impacts of climate change and promote learning spaces and pedagogical approaches for supporting Bhutan's green growth and climate strategies. Gender-invisible approaches to climate, climate education, and climate literacy have neither effectively addressed the gendered impacts of climate change nor promoted the learning and participation of girls and women in climate action.

Therefore, this policy brief proposes gender-transformative climate literacy (GTCL) as a novel solution path for a green and gender-equal future. GTCL would be an interdisciplinary approach that challenges underlying gender inequalities within the context of climate change while endeavoring to reshape societal gender norms and attitudes. At the nexus of climate, gender, and education, GTCL would empower individuals to actively engage in climate action and decisionmaking processes while promoting gender equity to achieve a reality where climate and gender are embedded within the teaching and skills training functions of the education system. The education system is an untapped space to advance climate action by developing skills for a climate-informed, climate-resilient individual. Incorporating GTCL within education would present a window of opportunity to strengthen climate literacy while highlighting and reshaping gender dynamics and norms.

I. Introduction

When Bhutan, currently a carbon-negative country, graduated from a least developed country to a lower-middle-income country on December 13, 2023 (UNCTAD 2022),¹ the government made a resolute commitment to maintaining its carbon-neutral status. However, the nation is susceptible to climate change impacts owing to its geography and reliance on climate-sensitive sectors such as agriculture, water resources, and hydropower (RGoB, GCF, and UNDP 2020, 1–4).

In light of this, Bhutan is currently experiencing a heightened focus on climate action and transformative initiatives across the government and public sectors. Yet women and girls, who bear a disproportionate share of the burden of climate change, are often left out of decisionmaking and action to address its impacts (NCWC and UNDP 2020). It is timely to recognize and incorporate the role of women and girls in every stage of the process in shaping the nation's green growth while leveraging the education system to build climate-informed, climate-resilient individuals to take forward the green growth strategy. While much has been achieved in the sectors of climate, gender, and education—as elaborated in the following sections—deeper and more meaningful intersectoral work between these three sectors is urgently needed.

This policy brief builds the case for GTCL as a solution pathway for a green and gender-equal future. GTCL builds upon the progress achieved in climate (and environmental) action, education, and gender, but it transcends basic climate knowledge and teaching by addressing and challenging gender inequalities within the context of climate change while endeavoring to reshape societal gender norms and attitudes.

INTERSECTIONS AND IMPACTS OF CLIMATE CHANGE, GENDER, AND EDUCATION

Globally, climate change disproportionately affects women and girls, worsening existing gender inequalities. It heightens their vulnerability to natural disasters, food insecurity, caregiving responsibilities, displacement, and related challenges, hindering opportunities for their social and economic empowerment (UN Women 2022). In Bhutan, as temperatures rise, the nation becomes increasingly vulnerable to a multitude of climate-related threats and disasters with implications for the well-being of everyone, with heightened risk for girls and women (NCWC and UNDP 2020).

1. Also see “Bhutan Graduation Status,” United Nations LDC Portal—International Support Measures for Least Developed Countries 2023: <https://www.un.org/ldcportal/content/bhutan-graduation-status>.

Despite these gender disparities in the impacts of climate change, gender considerations remain largely absent in public climate change mitigation and adaptation strategies, and women and girls have little say and engagement in climate-related training and decisionmaking.

Climate disasters like GLOFs, shifts in weather cycles, and changing monsoon patterns can lead to increased flooding and landslides. These erratic weather events pose risks to agriculture infrastructure and water resources, with dire implications for the well-being of Bhutanese farms—given largely subsistence farming and monsoon-dependent growing seasons—that leave farmers vulnerable and pose higher risks for women and girls to bounce back and adapt (CIAT and World Bank 2017).

Women and girls constitute 47.9% of the population and play a significant role in climate-sensitive sectors like agriculture—where women’s participation is at 63.2%, compared with 46.4% for men (NSB 2023a). Furthermore, women own 47.3% of land versus 48% owned by men (the remaining 4.7% is state owned), but they often receive only limited economic benefits (like improved crop yields and market access) owing to stereotypical gender norms and limited access to information, knowledge, and skills related to improved land use and climate-smart agriculture (UNDP 2021). This, coupled with women’s dominant role in unpaid caregiving—making up 71% of a day’s work for women, which is 2.5 times more than for men (NCWC 2019)—means that when climate-related events like droughts or extreme weather conditions reduce crop yields, women face more barriers and challenges to adapt (UNFCC 2022, 4–10).

Moreover, girls are often the first to suffer and the last to benefit when climate change disrupts education, leading to school closures, learning interruptions, and restricted access to educational resources. The field of climate education and gender is an emerging one, but early research reveals a critical direct correlation between the detrimental effects of climate change and its impact on initiatives and policies designed to enhance the well-being of girls. The Malala Fund, for example, estimates that by 2025 climate change will prevent 12.5 million girls from completing school because of damaged infrastructure, economic conditions that push school fees out of reach, and adverse health effects (Malala Fund 2021).

Despite these gender disparities in the impacts of climate change, gender considerations remain largely absent in public climate change mitigation and adaptation strategies, and women and girls have little say and engagement in climate-related training and decisionmaking (NCWC and UNDP 2020). Failing to recognize the role that girls and women can play in combating climate change can undermine progress toward achieving the Sustainable Development Goals (SDGs), in particular SDG 4 (quality education), SDG 5 (gender equality), and SDG 13 (climate action), which have far-reaching objectives (Kwauk and Casey 2022).

BOX 1 TERMS DEFINED

- **Climate education** is aimed at understanding the “what” of climate science topics—like the greenhouse effect, food systems, the water cycle, and more—as subjects taught in schools.
- **Climate literacy** focuses on “how” climate-related topics are taught and applied (skills, knowledge, attitudes, and inquiry for decisionmaking). In other words, it is the outcome or level of understanding attained through climate education and its application to real-life situations and ecosystems.

A climate-literate individual should be able to grasp the basic science behind climate change, recognize its impacts on ecosystems and society, and be informed about potential mitigation and adaptation strategies. Such skills empower individuals and communities to make informed decisions, take action to reduce their carbon footprint, and advocate

for climate policies and solutions (Azevedo and Marques 2017; Cantell et al. 2019).

- **Climate action** combats climate change by mitigating emissions and adapting to environmental changes with the goal of limiting global temperature rise and building resilience to the impacts of climate change. It encompasses initiatives such as transitioning to renewable energy, sustainable practices, implementing climate-friendly policies, fostering public awareness, and more.

Collaboration among governments, businesses, non-governmental organizations, and individuals is crucial, with international agreements like the Paris Agreement providing frameworks for collective action. Climate education can help facilitate learning from an early age (UNFCCC 2022).

The lack of data collection and analysis renders the problem—gender inequality in climate change impacts and actions—invisible, impeding real progress in the pursuit of Bhutan’s vision for a Gross National Happiness (GNH) society.

EDUCATION AS A CONDUIT FOR GTCL

With over 90% school enrollment and 97% secondary completion at gender parity (MoE 2022a, 4), the education system stands as a crucial conduit for climate literacy and action (Box 1) and has the potential to become a platform for GTCL. Various studies support the positive correlation between climate education and climate literacy. The Yale Program on Climate Change Communication conducts ongoing surveys to assess public opinions and knowledge about climate change in the United States. These surveys often include questions about respondents’ educational backgrounds. The results consistently show that individuals with higher levels of education tend to have greater climate change awareness and support for climate-related policies and actions (Marlon et al. 2023).

The current revision of the education policy by the Ministry of Education and Skills Development (MoESD)² presents a window of opportunity to promote and raise awareness for GTCL and its incorporation into policy. By instilling GTCL, schools could empower children and young adults with the right information, skills, attitudes of inquiry, and decision-making approaches, which not only potentially strengthen individual resilience but also have broader implications for community resilience, policy influence, sustainability, and gender equity. Such an initiative could reinforce Bhutan’s standing as a global leader in line with its commitments to international climate agreements.

Amid overall progress in climate action and education, there remains a critical need to untangle the narrative surrounding girls’ climate literacy from broader achievements. This entails recognizing and addressing the nuanced gap in, and unmet need for, gender-focused and gender-transformative climate literacy.

2. Bhutan’s Ministry of Education was renamed the Ministry of Education and Skills Development (MoESD) with the enactment of the Civil Service Reform Act of Bhutan 2022.

II. Status quo: Climate, education, and gender

The proposed approach of GTCL builds upon the progress achieved in the three sector areas of climate, gender, and education—providing a stronger baseline from which to start. This section reviews the current context of climate, gender, and education in Bhutan.

BHUTAN'S CLIMATE JOURNEY: SUCCESSES AND VULNERABILITIES

Bhutan has achieved notable success in its climate and environment endeavors. The country's commitment to environmental conservation is exemplified by its constitution, which mandates a minimum of 60% forest cover and is currently at 70% (Bhutan Const., art 5). Bhutan is carbon negative primarily because of its forest cover, significant hydropower production, and low-carbon-emitting industries. The government's conservation initiatives, such as establishing protected areas, have contributed to the preservation of its unique biodiversity.

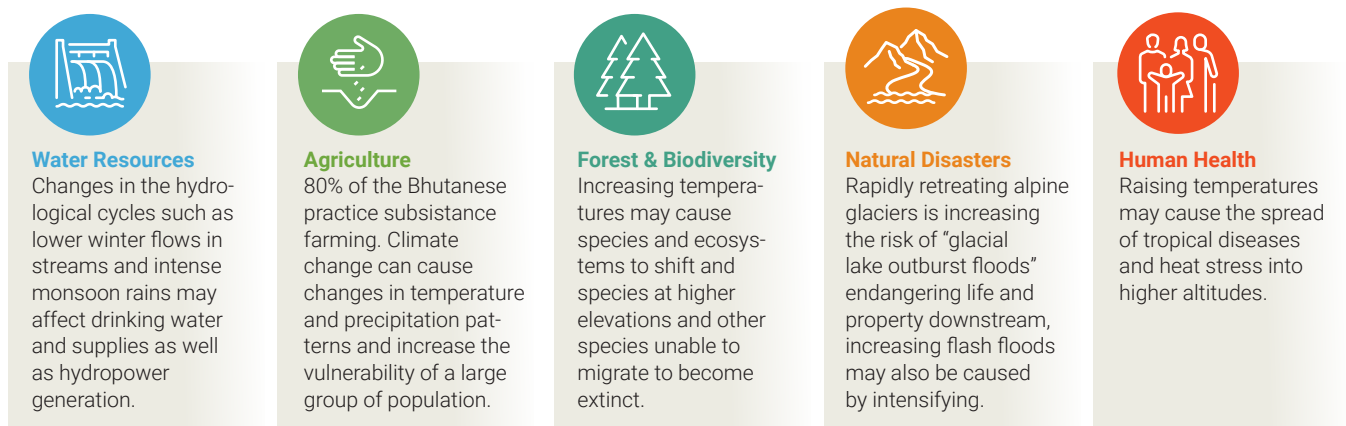
Bhutan is also renowned for its GNH development philosophy, which places well-being and environmental sustainability at the core of its policies. However, as mentioned earlier, the country is not spared from the impacts of climate change, which will further deepen gender disparity if policies and actions are not climate smart and also gender sensitive (Figure 1).

BHUTAN'S GENDER STORY: GOING BEYOND THE SURFACE

Bhutan's intricate gender landscape is characterized by a unique blend of matrilineal and matrilineal traditions (mainly in north and western Bhutan) and patriarchy (in eastern and southern Bhutan, such as the Lhotsampa communities). However, gender stereotypes and norms are deeply entrenched to varying degrees across the country. Although matrilineal tradition gives women decisionmaking power, it is largely confined to the household space; women and girls often cannot exercise their agency in public spaces, as demonstrated by low public leadership and representation in the parliament at 15.5% (NCWC and UNDP 2020). This is also evident in the labor force participation rate, which is higher among men (72.4%) than women (56.8%), with a difference of 15.6 percentage points (NSB 2023b).

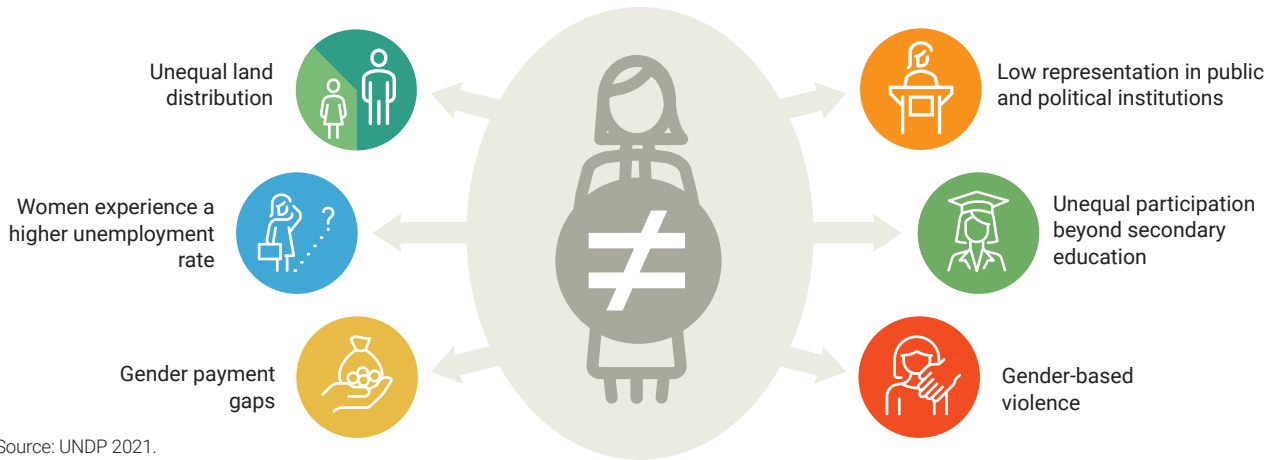
Girls' and women's experiences are shaped by socio-cultural gender norms and practices affecting access to and control over assets (including natural resources, technologies, and financial resources); mobility; education and training; and relevant information (Figure 2).

FIGURE 1. Bhutan climate threats and vulnerabilities



Source: ©National Environment Commission, Bhutan.

FIGURE 2. Areas of gender inequality in Bhutan



Vulnerability is also shaped by economic empowerment and decisionmaking power—which, for women in Bhutan, is not always guaranteed (UNDP 2021). With GTCL, individuals are well informed about the climate impacts and gender dynamics, and they are more likely to support policies and initiatives aimed at mitigating climate change; to adopt sustainable, gender-informed behaviors; and to advocate for positive change in their communities and workplaces. The people are Bhutan’s most dynamic asset, and it is most sensible to be not only gender inclusive but also gender transformative within the context of climate mitigation and adaptation works

**BHUTAN’S EDUCATION STORY:
AN UNTAPPED ASSET FOR CLIMATE ACTION**

Bhutan’s education system has undergone remarkable transformation and progress over the years. Historically reliant on monastic education, the nation initiated a significant shift toward modernization in the 1960s with the establishment of formal schools, development of structured curricula, and a concerted focus on improving literacy rates. Today the country has achieved a notable milestone with over 90% enrollment in schools, accompanied by gender parity.

First drafted in 1976, the national education policy went through few revisions over the years to keep up with Bhutan’s changing needs, landscape, and teaching pedagogy. The current policy has farsighted goals of creating a knowledge-based

GNH society by providing equitable, inclusive education for productive citizens that also equips learners with skills, values, and attitudes relevant to the 21st century and beyond (MoE 2021). The latest revision, still a draft version as of June 2022, seeks to align with science, technology, engineering, and mathematics (STEM) education.

With progressive milestones achieved over decades, the education system has transitioned from focusing on coverage and scale to prioritizing learning outcomes and skills development. The national curriculum teaches climate change across different grade levels, with subject areas such as geography and food systems in grades 11 and 12. However, the education system remains an untapped opportunity for climate action, especially to educate the Bhutanese population and make it skill resilient for a green future. GTCL could help in convergence and alignment toward Bhutan’s green growth and resilient future

In conclusion, having acknowledged the largely siloed efforts toward climate action, educational progress, and gender equality, it is imperative now to cultivate interdisciplinary and innovative approaches that capitalize on the strengths inherent in each sector. Embracing collaboration not only enhances the efficiency and effectiveness of initiatives but could also foster a holistic and sustainable development framework, like GTCL, essential for navigating the challenges and opportunities in the evolving global landscape.

III. Findings

The research for this policy brief sought to understand girls' understanding of climate change and its impacts on them (individual level), what and how climate education is taught in the education system (systems level), and who and what the different actors are doing and could potentially do (ecosystem level). This was guided by three specific research questions:

- **What is the status of girls' climate literacy?** To understand how what girls learn in schools is translated into how they see themselves and their role in a climate-impacted world.
- **How does the national education curriculum include teaching of climate change?** To understand what is taught and learned about climate change in Bhutanese schools.
- **What are the feasible pathways for GTCL with the right skills and resources that are globally informed and locally relevant?** To understand what some of the ecosystem actors are doing in this field and how approaches could be co-created.

The study employed a mixed-methods approach to gather data, using various techniques including an online survey tailored for district education officers. These officers, responsible for overseeing education in a district or group of schools, typically have a background in teaching and have progressed through roles from teachers to principals to education officers. Additionally, the research involved conducting focus group discussions with schoolgirls of ages 13–18. A total of 16 girls from seven different schools participated in these discussions. Furthermore, the study incorporated interviews with pertinent partner organizations spanning the government sector, local and international civil society organizations (CSOs), and international partners. These interviews aimed to gather insights and perspectives from diverse stakeholders (for details, refer to Appendix A).

The research findings are organized and presented through three overarching perspectives:

- **Insights gathered from the perspectives of girls.** The report provides a comprehensive understanding of the experiences, opinions, and viewpoints of the female participants.
- **Implications of the research findings on policy and curriculum.** This perspective explores how the identified insights and data can inform and shape education policies and curricular decisions.
- **Insights from the perspectives of ecosystem actors and partners.** The report also delves into the viewpoints and roles of various stakeholders, including organizations and individuals within the broader education ecosystem, shedding light on their contributions and challenges.

FROM GIRLS' PERSPECTIVES: THE CURRENT STATUS OF GTCL

The perspectives of the girls provide a rough indication of the current status of GTCL in Bhutan. From the focus group discussions, the four themes discussed below emerged as an indication of the status of GTCL—indicating that there is much room for growth. More importantly, they also indicate that the learning spaces and systems are not conducive to a gender-informed climate knowledge application in a way that informs and equips girls (and boys) to be climate literate.

Regarding the views captured below—in instances where there is “lack of self-awareness” or “agency”—it is important to understand that it should not be the girls' responsibility to be self-aware or feel a sense of agency; rather such instances reflect

The perspective of girls reported here explores how the identified insights and data can inform and shape education policies and curricular decisions.

how systems and learning spaces are not meeting the *girls'* needs or are not fit for purpose for the context and future that girls live in and head toward.

Girls have good general knowledge of climate change but limited awareness of climate action

The girls who participated in the focus group discussions demonstrated a commendable grasp of environmental concepts, including statistics like Bhutan's 70% forest cover and the importance of biodiversity. They also exhibited a reasonable level of general knowledge regarding climate change, acknowledging the escalating temperatures and the potential consequences, like floods and droughts. They primarily attributed this knowledge to their education (100%), information from the news and social media (100%), and sometimes their parents and family (50%).

However, there was a noticeable confusion about, maybe a conflation of, environmental conservation and climate actions. The girls struggled to articulate a clear distinction between environmental and climate change. Whereas they had a relatively sound understanding of the individual terms, they faced challenges when asked to differentiate between the two. For instance, forest cover, tree planting, and biodiversity were all seen as climate actions (one and the same as environmental conservation), but the girls could not articulate climate-friendly approaches and choices (like energy saving) or humans' role in either exacerbating or mitigating climate change. This could be indicative of unconscious biases potentially ingrained by a curriculum that fails to differentiate between "environment" and "climate." They eventually realized that the environment encompasses elements like forests and biodiversity, whereas climate change involves complex factors including the environment and human actions.

Another noteworthy aspect was the girls' tendency to externalize responsibility for environmental conservation, with almost 80% attributing it to the government. Even though girls participated in climate actions such as tree planting, plastic recycling, and waste management, they did not recognize these as being part of climate action and hence did not recognize their own agency as climate actors. This suggested a general lack of self-awareness regarding their capacity to influence change or engage more deeply with environmental and climate issues. This being said, it is indicative of a deficiency in the systemic instruction of climate literacy, which is related to learning outcomes, as well as a possible disconnection of knowledge transmission and dissemination of activities from real-life applications to help make climate action concrete for the girls.

Girls were unaware of the gendered impacts of climate change

If girls do not recognize their pivotal role in climate action, it is not surprising that they do not perceive themselves as disproportionately more affected than boys by climate change. When asked whether they believed they were more adversely affected than boys by climate change disasters, the unanimous response was a resounding "no," with the belief that both genders faced equal impacts.

However, a significant shift in perspective occurred when they were presented with straightforward examples related to gender roles in caregiving, household chores, and the nuances of flood and drought scenarios. It was as though a collective realization dawned on them, illuminating the fact that as sisters and daughters, they might be the last or the least capable of reaching safety in a flood, and their responsibilities would likely intensify in the event of a drought. This realization extended to their academic performance, with all in agreement that it would be negatively affected. This transformation in their understanding underscores the imperative need to bridge the gap between climate change awareness and gender-specific impacts, particularly as it pertains to girls and their well-being.

Girls aspire to green growth careers but have little guidance

Although climate change subjects are part of the school curriculum, the girls expressed a notable absence of exposure to climate literacy and the acquisition of skills that could lead to potential climate-focused careers in the future. Their career aspirations leaned toward fields like engineering, law, space exploration, and teaching, with limited awareness of how these professions

The girls who participated in the focus group discussions demonstrated a commendable grasp of environmental concepts, including statistics like Bhutan's 70% forest cover and the importance of biodiversity.

could intersect with climate-related concerns. However, upon further exploration into how these careers can indeed be climate oriented, their curiosity was piqued, and they expressed a strong desire to delve deeper.

Both within and outside the school environment, the girls do not hear of such discourse and, more importantly, do not see real-life examples or role models who they can relate to and emulate. In the girls' perception, climate careers were confined to roles like environmentalists or climate scientists. They are keen to learn how their studies can directly relate to their daily lives and how they can position themselves on a pathway that integrates gender-informed climate perspectives into their learning, skills development, and, ultimately, their career aspirations.

Girls felt powerless in the face of threats of climate change

When asked to envision the world in 10–20 years, the girls provided a rather cautious and less optimistic outlook. They expressed concerns about the increasing influence of technology, robots, and artificial intelligence (AI), suggesting a future where technology might dominate our lives, making us both reliant and vulnerable. One girl candidly remarked that this technological surge might make people "lazier." Interestingly, none of them brought up how climate change could alter our way of life and well-being.

When questioned about the absence of climate-related considerations in their future projections, they explained that the issue felt overwhelming, abstract, and elusive. They struggled to see where to begin, because climate change lacks the immediacy and tangibility of technology. Despite encountering distressing news about climate disasters like flash floods, they felt powerless and insignificant in the face of such a colossal problem, which could indicate climate-related anxiety and stress. This overwhelming sense of magnitude could often lead to decision and action paralysis, prompting them to focus on more tangible pursuits like technology and AI. It seems girls do not see themselves as having agency in relation to climate action (mainly because they do not know), and they also do not see themselves as agents for impactful climate actions.

Although this study worked with only a small group of girls, it is worth noting that climate change was not at the forefront of their concerns about the future. This prompts the question of whether the low concern indicates poor implementation of climate education or something else? This also further reinforces the need to gender- and climate-mainstream STEM education for digital and green skills so that Bhutan's green growth goals are gender equal.

POLICY AND CURRICULUM

The draft revision of the national education policy is silent on GTCL

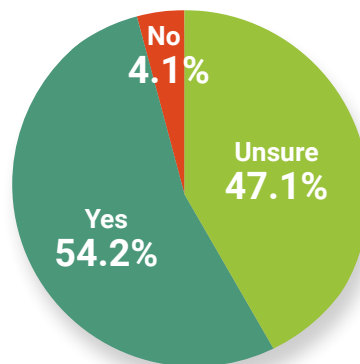
The draft policy mandates the importance of environmental conservation and climate change education, as articulated in the following clauses (MoE 2022b):

- **General Policy Statement 7.4:** All educational institutions shall protect, conserve, and promote their pristine environment and safeguard the biodiversity of the country. It shall also educate and mitigate the impact of climate change.
- **General Policy Statement 7.13:** All educational institutions shall develop, maintain, and periodically review the inclusive disaster management plan.

While this is a great starting point, the draft revision of the policy is silent on the issue of gender and climate change education. Education administrators surveyed for this study agreed on the policy's lack of emphasis on climate literacy and gender, and most also suggested that a gender focus in the policy could improve climate literacy (Figure 3).

Although the draft revision of the education policy has a strong shift toward and focus on STEM, it falls short on incorporating climate- and gender-informed skills and application. This is another intervention where the policy could take a proactive stance on GTCL. Centering gender and climate while prioritizing STEM subjects not only makes the subjects relevant to the children for application, problem solving, and solution building in a climate-impacted world but also prepares them with green STEM skills for the future.

FIGURE 3. District education officers: Could a gender focus in education policy improve climate literacy?



Source: Online survey of Bhutanese district education officers, conducted June–July 2023.

The MoESD’s national curriculum repository is comprehensive and impressive, with multiple climate change topics included in science and social studies subjects such as geography, food systems, environmental education, and biodiversity.

The national education policy provides direction on budgeting, curriculum development, teacher training, pedagogical design, and learning outcomes. The policy’s lack of clear articulation on the need for gender-informed climate education and literacy not only leaves pathways for implementation unclear but may also render the issue invisible and less urgent, contrary to the situation and challenges we face.

The policy is the starting point for designing interventions and allocating budgets. By excluding gender in climate education, one may argue the policy is not doing due justice and service to the constitution’s mandates on climate and inclusivity.

The shift to competency-based education remains largely theoretical and is not gender or climate informed

Key informant interviews were conducted with a variety of stakeholders in addition to the MoESD to further examine the supply side and how the government can increase the demand for climate literacy, information, and relevant skills. The interviews also focused on understanding how the government can improve the curriculum, delivery, methods, and training.

In March 2022, the ministry adopted a new curriculum framework that proposed a shift from knowledge-based to competency-based teaching pedagogy. The new approach embodies interdisciplinary, experiential, and project-based learning—approaches that lead to critical thinking and problem-solving skills that are foundational to climate literacy because these skills improve students’ ability to develop innovative ideas on how to solve problems and build solutions. Accompanying the shift, competency-based assessment guidelines have also been developed (BCSEA 2022).

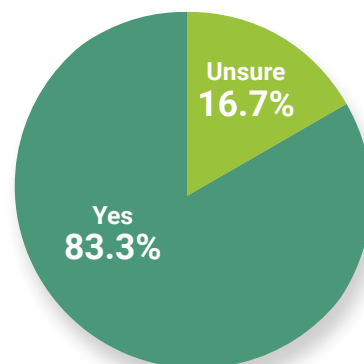
However, based on the reviews of these documents and interviews with the MoESD’s Department of School Education, the change at this point seems to be more in theory than in practice, with varied progress on implementation in the face of COVID-19 disruptions, teacher shortages, and lack of the required capacity training resources and support. In practice, it still seems the approaches are siloed and gender blind alongside the lack of climate literacy infusion. This could be a manifestation of lack of clarity on gender and climate literacy in the education policy.

The MoESD’s national curriculum repository is comprehensive and impressive, with multiple climate change topics included in science and social studies subjects such as geography, food systems, environmental education, and biodiversity, to name a few. Without clear inclusion and articulation of gender dynamics, these subjects are not gender informed. Most of the education professionals surveyed (83%) maintained that climate literacy is important to improve girls’ life outcomes (Figure 4), yet they reported that the school curriculum lacks a gender perspective on many of these subjects, and it should be done with the right kind of policy, capacity training of teachers, and resources.

No gender-disaggregated climate literacy data exist

Public data on climate education and literacy in Bhutan are non-existent, let alone disaggregated by gender. Lack of such data means that one cannot evaluate the progress and direction of impact. This would be important not only for creating a baseline and tracking progress but also to provide evidence for targeted policy or program interventions.

FIGURE 4. District education officers: Is climate literacy important for girls?



Source: Online survey of Bhutanese district education officers, conducted June–July 2023.

Although consensus exists alongside active implementation of programs and activities with a gender lens, aimed at increasing women's participation, there is a general lack of recognition of GTCL as a vital intervention and approach for resilient futures.



Author/Thinley Choden

FROM THE PERSPECTIVES OF ECOSYSTEM ACTORS AND PARTNERS

A diverse array of relevant stakeholders—encompassing organizations engaged in climate change, gender, and youth initiatives—were interviewed (or their views gleaned from desktop research when interviews were not feasible). These partners included government departments, international collaborators, and local CSOs (refer to Appendix B for a comprehensive list).

Although consensus exists alongside active implementation of programs and activities with a gender lens, aimed at increasing women's participation, there is a general lack of recognition of GTCL as a vital intervention and approach for resilient futures. For instance, the Royal Society for Protection of Nature (RSPN) and World Wildlife Fund (WWF) both have gender-lens requirements for any assessment and implementation of climate and environment projects.

IV. Recommendations: GTCL for Bhutan's resilient and sustainable growth

Findings from this study clearly indicate a need to rethink and reframe climate literacy in Bhutan in ways that recognize the gendered impacts of climate change and promote learning spaces and pedagogical approaches for GTCL that could add value to Bhutan's green growth and climate strategies.

Gender-invisible approaches to climate, climate education, and climate literacy have neither effectively addressed the gendered impacts of climate change nor promoted the learning and participation of girls and women in climate action. GTCL could help change that because while it is intended to help empower girls and women, it would benefit every learner, irrespective of their gender, by building climate literacy that advances gender equality.

GTCL for Bhutan could serve as a first step toward deeper and wider multistakeholder systemic work to achieve the desired goal of gender-equal, climate-smart learning approaches for a well-rounded GNH citizen, both for today and for a resilient future.

WHAT IS GENDER-TRANSFORMATIVE CLIMATE LITERACY?

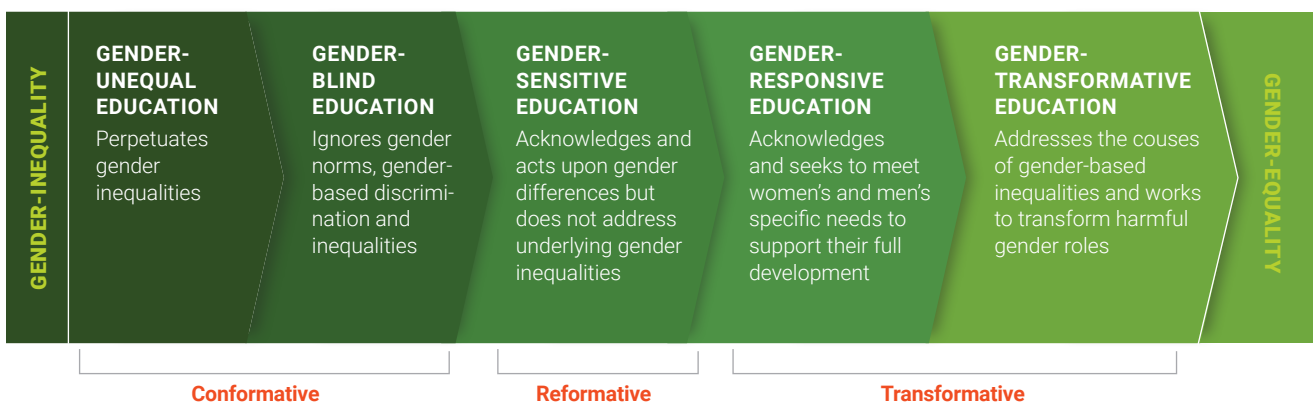
GTCL is an interdisciplinary approach that transcends basic climate knowledge and teaching by challenging and addressing the underlying gender inequalities within the context of climate

change while endeavoring to reshape societal gender norms and attitudes. It seeks to empower individuals to actively engage in climate action and decisionmaking processes while promoting gender equity. GTCL seeks to especially empower girls and women in the context of green growth, because achieving such literacy enables the necessary conditions (the policies, the programs, and the practices) for girls and women to play the role that they can play in green growth. This approach could leverage the existing climate education in Bhutan's schools to equip present and future generations with essential knowledge and skills.

While GTCL applies a gender-transformative lens to achieve climate literacy, it builds upon a continuum of education approaches to address gender inequalities (Figure 5), which may not necessarily be a linear progression and may take on versions of gender-sensitive or gender-responsive approaches depending on context.

For a small, landlocked, climate-vulnerable, and natural-resource-constrained country like Bhutan, investing in people becomes even more crucial because the population is the most valuable dynamic resource the country can rely upon. Investment in GTCL could be an investment in smart strategic learning and skills training for Bhutan's journey toward resilient and climate-adapted growth and solution building.

FIGURE 5. Education approaches to gender equality encompass a continuum from conformative to transformative



Source: Kwauk 2022.

The following are some key components of GTCL:



Understanding gender dynamics: teaching about the ways in which climate change affects men and women differently because of their distinct roles, responsibilities, and vulnerabilities in various societies.



Challenging gender stereotypes: dismantling traditional gender norms, particularly within the care economy, where gender bias prevails, and advocating for an equitable sharing of responsibilities and decisionmaking in climate initiatives.



Empowering girls and women: achieving gender parity for balanced contributions, hence centering girls and women to actively engage in climate solutions, assume leadership roles, and contribute to policymaking processes.



Promoting inclusivity: promoting approaches that acknowledge diverse gender identities and experiences, ensuring that all individuals are considered in climate change discussions and actions.

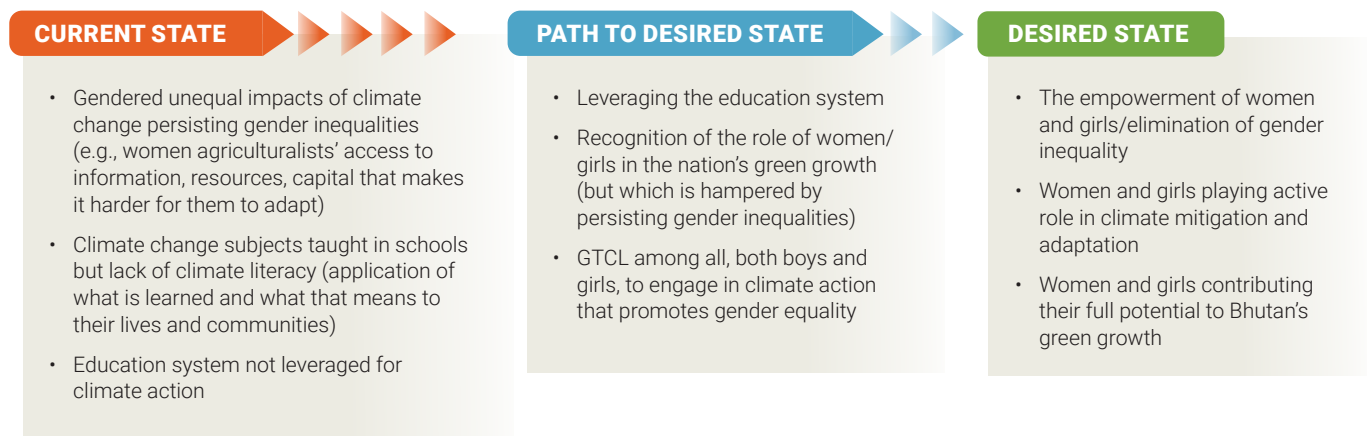


Recognizing intersectionality: identifying how gender intersects with other factors like race, class, and age to take a holistic view of how climate change affects different groups.



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FIGURE 6. Concept flow for GTCL theory of change



Bhutan has a strong starting baseline in gender, climate, and education, and GTCL sits at the nexus. Therefore, an intersectional GTCL strategy could create the right learning framework and ecosystem for inclusive growth and progress.

Bhutan has never shied away from challenging itself and raising the bar, such as by following a GNH growth model versus gross national product and committing to carbon-neutral development, while it is presently carbon negative. So achieving GTCL should not be an untenable goal. It would complement and leverage the earlier goals in climate education and training of all citizens to ensure that those goals are at least sustained if not improved upon.

HOW TO PROMOTE GTCL IN BHUTAN

This section outlines the steps to promote, develop, design, and implement GTCL in Bhutan.

Incorporate GTCL in education policy, with a clear budget and implementation plan

The MoESD Office of the Secretary should create a task force with representation from relevant MoESD departments and the Department of Energy and Climate Change to consider incorporating GTCL in the current revision of the education policy. The task force would play an important and pivotal role in the rollout of the recommendations and therefore be empowered with decisionmaking and implementation powers.

By explicitly integrating GTCL, the policy could lead Bhutan in preparing its youth for a resilient future marked by full gender inclusivity. This inclusion should shape curriculum development, resource allocation, and teacher training, ensuring comprehensive and pertinent climate skills for all students, with a particular focus on girls. This aligns seamlessly with the policy's emphasis on STEM subjects in the current draft revision of the national education policy, equipping students with the knowledge and skills to navigate real-world challenges in an increasingly climate-impacted world while being gender inclusive.

A gender lens on STEM would also ensure gender equality in a field that has traditionally been dominated by boys and men. This could also further promote an intersectional policy that puts Bhutan at the forefront globally when it comes to policy coordination for gender, climate, and educational outcomes.

Create an ecosystem of partners to align curriculum with GTCL strategies

Led by the MoESD's Department of School Education, a coalition of partners should be established for a comprehensive overview and stocktaking to confidently understand and acknowledge where Bhutan's education system stands in relation to GTCL. It should also consider how GTCL might be integrated in age-appropriate ways from early on—starting with primary education, then secondary to tertiary, and finally technical and vocational education and training. This coalition would be pivotal and important to the vision, design, and implementation of GTCL. The motivation of the stocktaking is to begin the co-creation and design learning approaches and modules that impart and inculcate GTCL.

This coalition should comprise diverse and multiple stakeholders from adjacent government departments (for example, the Department of Energy and Climate Change); school administrators and teachers of both public and private schools (primary through higher secondary); local and international CSOs and multilateral partners (like the ones interviewed for this study); the private sector (for example, social enterprises); education, gender, and climate practitioners; and thought leaders.

Teacher shortages and capacity present a crucial challenge that would require a much more thoughtful analysis and strategy, but a short- to medium-term solution could be to bring in practitioners or others periodically to conduct specific modules

or classes where teachers may not have received training. This would require onboarding and facilitating a network of individuals who would meet the required criteria and maintaining and sustaining the relationship and planning.

The coalition could possibly use the suggestions presented Table 1 to guide their ideation on the content, design, and implementation of collective and collaborative GTCL in and out of school systems. The table also identifies alignment with the MoESD's three overarching competencies corresponding to nine desired student attributes (see Appendix C) and potential partners. (See Appendix B for some examples of past programs that could be adapted and adopted.)

TABLE 1. Framework and strategies for gender-transformative climate literacy

CORE CONCEPT	MOESD COMPETENCY ALIGNMENT	WHAT	HOW (examples)	WHEN (in the education journey)	WHO (potential partners)
Understanding gender dynamics	"Knowledge" corresponding to the desired student attribute of "knowledge and understanding"	Teaching about the ways in which climate change affects men and women differently because of their distinct roles, responsibilities, and vulnerabilities in various societies	Interventions could include multimedia storytelling that evokes empathy, or role playing by opposite genders in a scenario setting.	Primary, secondary, and tertiary or TVET	Experienced facilitators like BCMD with the right tools, frameworks, and exercises
Challenging gender stereotypes	"Values and attitudes" corresponding to the desired student attributes of "family, community, and national values" and "spirituality and character"	Dismantling traditional gender norms (particularly within a care economy, where gender bias prevails) and advocating for an equitable sharing of responsibilities and decisionmaking in climate initiatives	A suggested "homework" exercise could be to encourage boys and girls to step across gender roles at home for a period of time and keeping daily self-reflective notes. Students are then brought back together to debrief and share their experiences as well as layering upon what different gender roles could mean in a climate context or example. This approach would also require that parents' participation be part of the child's learning.	Secondary and tertiary or TVET	Parents and family
Empowering girls and women	"Skills" and "values and attitudes" corresponding to these desired student attributes: <ul style="list-style-type: none"> • "Intellectual competence" • "Communicative competence" • "Leadership competence" • "Enduring habit of lifelong learning" • "World readiness" • "Spirituality and character" • "Family, community, and national values" 	Achieving gender parity for balanced contributions, centering and empowering women and girls to actively engage in climate solutions, assume leadership roles, and contribute to policymaking processes	An intervention could be a leadership and self-awareness workshop with focus on agency, communication, confidence building, and public speaking skills for the girls.	Primary, secondary, and tertiary or TVET	Experienced facilitators like BCMD and or other leadership programs with the right tools and frameworks and exercises

TABLE 1, continued

CORE CONCEPT	MOESD COMPETENCY ALIGNMENT	WHAT	HOW (examples)	WHEN (in the education journey)	WHO (potential partners)
Climate applications	<p>"Knowledge" and "skills" corresponding to these desired student attributes:</p> <ul style="list-style-type: none"> • "Intellectual competence" • "Communicative competence" • "Leadership competence" • "Enduring habit of lifelong learning" • "World readiness" 	<p>Taking what students learn in their climate subjects and applying it to a real-life case or situation</p> <p>Expanding environmental science to climate education with an intersectional lens on science, economy, and society</p>	<p>This could be done through project-based learning where the students not only do fieldwork and meet and speak with stakeholders of the situation but also go on learning trips to visit various organizations and offices doing climate-related work and research. They can then relate content and apply content to what it means to us humans and what can we do.</p> <p>Another exercise would be to facilitate policy dialogue and forums on climate change and its impact on gender, including speakers from different fields.</p>	Secondary and tertiary or TVET	UN agencies; BES; WWF; RSPN; various departments like agriculture, forest, and climate change; and more
Innovation labs or projects	<p>"Knowledge" and "skills" corresponding to these desired student attributes:</p> <ul style="list-style-type: none"> • "Intellectual competence" • "Communicative competence" • "Leadership competence" • "Enduring habit of lifelong learning" • "World readiness" 	Hands-on solution building or creating	Students could replicate an ideation and innovation hub with a focus on climate and gender. Schools or student groups could be paired with either a college, social enterprise, or organization to lend expertise and mentoring.	Secondary and tertiary or TVET	UN agencies, social enterprises, CSOs, colleges and more Bhutan Climate Futures Lab

Note: BCMD = Bhutan Centre for Media and Democracy; BES = Bhutan Ecological Society; CSO = civil society organization; MoESD = Ministry of Education and Skills Development; RSPN = Royal Society for Protection of Nature; TVET = technical and vocational education and training; UN = United Nations; WWF = World Wildlife Fund.

Publish a gender-disaggregated climate literacy database

No data currently track gender, climate, and education indicators of interest. As a result, limited knowledge can be gleaned to diagnose problems and identify solutions. To ensure that learning outcomes are achieved, there must be a monitoring mechanism to measure progress and the intended impact of GTCL.

The MoESD, with collaboration and guidance from the National Statistics Bureau, must include variables related to GTCL in school learning evaluations to facilitate evidence-driven decisionmaking in the policy sphere. The Bhutan Council for School Examinations and Assessment's Competency Based Assess-

ment Guidelines (BCSEA 2022) may be used as a starting framework (see Appendix C).

A couple of examples of GTCL outcomes to be achieved could be as follows:

- Increased sense of climate agency among students (and girls); and
- Ability to articulate and analyze climate application and its implications to given scenarios based on what students studied in climate science subjects.

V. Conclusion

This report highlights the importance of recognizing—and harnessing—the intersections of climate, gender, and education to promote climate-adapted and gender-equal learning environments in schools with the ultimate goal of achieving an inclusive and resilient future for all Bhutanese and Bhutan as a whole. While much has been achieved in all three fields, I propose GTCL—gender-transformative climate literacy—as a new framework and approach to achieve the aforementioned goal while also meeting Bhutan’s commitments of carbon neutrality and upholding the constitutional mandate of 60% forest cover while affording sustainable lifestyles and growth.

I have proposed actionable recommendations that are timely given the dynamic transformation initiatives the government is undertaking by reviewing and assessing systems and plans fit for purpose now that Bhutan has become a lower-middle-income country.



Author/Thinley Choden

APPENDIX A

Research methodology and participants

The research was guided by the following three questions:

- What is the status of girls' climate literacy?
- How does the national education curriculum include teaching of climate change?
- What are the feasible pathways for GTCL with the right skills and resources that are globally informed and locally relevant?

The study employed a mixed-methods approach to gather data, using various techniques, and the following data were collected in June and July 2023 (further detailed in Table 2):

- *Online survey of district education officers. Out of the 54 surveys sent, 24 were received.*
- *Focus group discussions with schoolgirls of ages 13–18.* A total of 16 girls from seven different schools participated in these discussions.
- *Interviews with pertinent partner organizations.* Interviews spanned the government sector, local and international CSOs, and international partners. These interviews aimed to gather insights and perspectives from diverse stakeholders

TABLE 2. List of participants for respective research methodology

DATA COLLECTION INSTRUMENTS	TARGET AUDIENCE	MODE	NOTES
Focus group discussion (FGD)	Adolescent girls in grades 8–12 (ages 13 to 18 or 19)	In person	Conducted two FGDs: <ol style="list-style-type: none"> 1. Private school in Thimphu <ul style="list-style-type: none"> • Grades 8–10, ages 12–16 • Eight girls: three from Thimphu, one from Tashigang (far eastern Bhutan), one from Wangdi (western Bhutan), one from Punakha (western Bhutan), and two from outside Bhutan (United States) • Two teachers (side interviews) 2. Mixed schools from different districts <ul style="list-style-type: none"> • Grades 8–12 • Seven girls • Thimphu: two urban schools • Paro: two urban schools • Ha: two semiurban schools
Survey questionnaires (mix of multiple choice and open-ended narrative questions)	District education officers: 52 officers from 20 districts	Online	Received responses from 24 district education officers
Key informant interviews: national government	<ul style="list-style-type: none"> • Department of School Education, Ministry of Education and Skills Development • Department of Energy and Climate Change, Ministry of Energy and Natural Resources 	In-person meeting Online	Met with the director general, Department of School Education Met with the head of the Division of Curriculum and the program officer of science curriculum Director general and program assistant
Key informant interviews: UN agencies	<ul style="list-style-type: none"> • UNICEF Bhutan • UNDP Bhutan • WFP Bhutan • UNESCO Dehi • UNFPA Bhutan 	Phone meeting Online No response No response No response	Chief of education program and three-person team Environment lead
Key informant interviews: international development partners	<ul style="list-style-type: none"> • World Wildlife Fund Bhutan • Save the Children 	In-person meeting No response	
Key informant interviews: local registered CSOs or NGOs	<ul style="list-style-type: none"> • Royal Society for the Protection of Nature • Bhutan Ecological Society • Bhutan Centre for Media and Democracy 	In-person In-person Online	Education lead Climate strategist Program officer

Note: CSO = civil society organization; NGO = nongovernmental organization; UN = United Nations; UNICEF = United Nations Children's Fund; UNDP = United Nations Development Programme; UNESCO = United Nations Educational, Scientific and Cultural Organization; UNFPA = United Nations Population Fund; WFP = World Food Programme; WWF = World Wildlife Fund.

APPENDIX B

Examples of ecosystem partners' projects

Two overarching themes emerged with a primary focus on achieving gender equality and enhancing girls' involvement: (a) experiential and project-based learning; and (b) exposure, fostering confidence, and communication skills. These themes represent a blend of both aspirational and past programs that exhibited effectiveness but had to be discontinued because of funding constraints.

EXPERIENTIAL AND PROJECT-BASED LEARNING

The following examples of projects could be adapted for GTCL in future programming but have not been GTCL-focused:

- *Experiential and project-based learning*—such as Bhutan Centre for Media and Democracy's Youth Initiatives in civic education, media literacy, and topics like food systems and the environment—complements traditional classroom learning. It enhances critical thinking, problem solving, and creativity while promoting practical skills and adaptability.
- *The incorporation of spiritual ecology*, as advocated by WWF Bhutan, recognizes the profound connection between culture, environment, and spirituality, a vital facet of Bhutanese identity. It deepens students' understanding of the interdependence between humans and the natural world, nurturing responsibility for environmental stewardship and sustainable living while enriching their appreciation of Bhutan's cultural heritage.
- *Climate change clubs*, already present in schools, offer dynamic and climate-focused platforms for students to explore their passions, engage in group activities, and develop skills in col-

laboration and leadership. These clubs have the potential to not only broaden students' horizons but also foster a sense of community and belonging, contributing to their holistic development. The United Nations Children's Fund is actively considering the potential of this avenue within schools.

EXPOSURE, CONFIDENCE, AND SKILLS

GTCL is a transformative approach that requires innovative ways of learning. The following are some of the initiatives with methodologies that can be used for GTCL and skills:

- The RSPN used to conduct field trips to provide students with practical, real-world experiences that reinforce theoretical knowledge and ignite curiosity.
- The United Nations Development Programme's accelerator labs—as of now mostly focused on promoting social entrepreneurship targeted at young people—can be leveraged for schools within the GTCL framework. One such project is Promotion of Green Jobs in Agriculture sector in Bhutan, whereby more than 10 youth enterprises were established and which additionally benefited more than 500 youths during the project period. The accelerator lab facilitates youth engagement by calling on innovative ideas and solutions.
- Youth public forums on climate change (both local and international), such as those sponsored by the WWF and Bhutan Ecological Society, leverage youth engagement to encourage students to engage in civic discourse where they can voice their opinions, debate issues, and actively participate in public discourse. The more they do, the better they get at it.

APPENDIX C

Competencies identified from the “Competency Based Assessment Guidelines” of the Bhutan Council for School Examinations and Assessment (BCSEA)

The competencies for the assessment are built on knowledge, skills, values, and attitudes incorporated within the nine student attributes and the five extraordinary qualities of Bhutanese as defined by BCSEA.

TABLE 3. Student competencies identified by the BCSEA

COMPONENTS OF COMPETENCIES	STRANDS	STUDENT ATTRIBUTES
Knowledge	Knowledge (factual, conceptual, procedural, metacognitive, and epistemic)	Knowledge and understanding
Skills	Cognitive skill (critical thinking, problem solving and creativity, and innovation)	Intellectual competence
	Social and emotional skills (collaboration and communication)	Communicative competence
		Leadership competence
Physical and practical skills (health, arts, information and communication technology, tools, neuromuscular coordination, operations, and functions)	World readiness	
	Physical well-being	
Values and attitudes	Five core values (compassion, integrity, respect, responsibility, and loyalty)	Spirituality and character
		Family, community, and national values

Source: BCSEA 2022.

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The Echidna Global Scholars Program at the Center for Universal Education (CUE) at Brookings seeks to catalyze and amplify the impact of local leaders working to advance gender equality in and through education across the Global South.

During a six-month fellowship, Echidna Global Scholars conduct individual research focused on improving learning opportunities and life outcomes for girls, young women, and gender non-conforming people, develop their leadership and evidence-based policy skills, build substantive knowledge on gender and global education issues, and expand their pathways for impact. Upon completion of the fellowship, scholars transition to the Echidna Alumni Network, a growing community of practice aimed at promoting their significant, sustained, and collective influence on gender-transformative education globally and locally.

