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Climate Resilient Education System in Pakistan: Challenges and Solutions

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Abstract

This study examines the challenges and potential solutions for developing a climate-resilient education system in Balochistan, the most vulnerable province of Pakistan. A mixed-method approach, incorporating both qualitative and quantitative techniques, is used to gather statistical insights and in-depth qualitative data for a deep understanding of the issue. The stratified sampling technique is used to select a sample of school administrators, teachers, and students and the purposive sampling technique is utilized to choose a sample of government officials, NGO representatives, and community members. Structured questionnaires are used to get statistical insights from school administrators, teachers, and students. At the same time, interviews and focus group discussions are held to gather in-depth qualitative data from government officials, NGO representatives, and community members. Quantitative data is analyzed using frequency distribution, percentage, and T-test. Thematic analysis is used to analyze qualitative data. Content analysis also is used to examine official reports and other documents. The study's findings revealed the education system in Balochistan faces multiple challenges in fostering climate resilience. The challenges include insufficient integration of climate change into national education policies and plans, limited coverage of topics on climate change and its impacts in curricula, absence of disaster-resistant school infrastructure, inadequate water, sanitation, and hygiene facilities in schools, lack of Disaster Risk Reduction plans, inadequate community engagement and participation, and the lack of adequate financial resources. Based on findings, recommendations are proposed to enhance resilience in the education system, including the integration of climate

change into national education policies and plans, comprehensive inclusion of climate change topics in national curricula, development of plans to retrofit and upgrade existing school infrastructure, and allocation of sufficient financial resources for the development and implementation of disaster risk reduction plans.

Keywords: Climate resilience, education system, challenges

Introduction

Climate change affects the world's economy, environment, and society. As a result of its high vulnerability to climate-related disasters, Pakistan ranks among the top ten nations affected severely by droughts, heat waves, floods, and other weather events (Germanwatch, 2021). The lives and livelihoods of individuals, as well as critical sectors such as education, are significantly impacted by climate-induced disasters. Balochistan, Pakistan's most important and the least developed province, experiences severe consequences. The province is susceptible to catastrophic weather events due to its poor infrastructure and inadequate resources for managing climatic disturbances, including floods and droughts. Educational institutions face numerous issues in rural areas prone to frequent floods. These issues, including high dropout rates, disruption in learning, and infrastructure damage, impact marginalized communities and increase education inequalities (GCISC, 2019). Therefore, in the presence of disastrous environmental challenges, it is imperative to develop a climate-resilient education system in Balochistan to ensure that students may have uninterrupted learning and access to quality education.

A climate-resilient education system responds to and decreases climate change effects by incorporating climate awareness into curricula, developing climate-resilient infrastructure, and promoting community involvement in organized disaster response (Kagawa, 2022). Balochistan faces challenges of different nature due to frequent climatic disasters, including the lack of climate-proof school buildings, insufficient provisions in national educational policies and plans related to climate adaptation, and inadequate financial resources to mitigate the impacts of climate-induced disruption. The vulnerabilities in the education system were revealed during the floods in 2022 when thousands of schools in the province were severely impacted, and students' education was

disrupted. This disruption emphasized that the province must develop climate-resilient education system. (UNOCHA, 2023).

Although the need to address climate change has been recognized, Pakistan's education policy has only recently initiated relevant measures to deal with climate change impacts. The educational system in Balochistan has yet to benefit fully from these initiatives. The Ministry of Climate Change (2012) recognizes the importance of education in promoting climate resilience, as evidenced by national frameworks such as the Pakistan Climate Change Policy (2012). However, it is challenging to incorporate climate resilience into the education system, particularly in the most underdeveloped regions like Balochistan, as there is a lack of clear guidance on how to do so. Consequently, the education system in the province is prone to vulnerability as the curriculum provides little information about climate change. Moreover, teachers in rural and impoverished areas of Balochistan lack adequate training in climate adaptation (GCISC, 2019). In Balochistan, most schools remain permanently closed due to in absence of the disaster preparedness and recovery strategies, increasing marginalized students' vulnerability and disrupting educational continuity (Yousif & Brech, 2022).

The study examines the issues and potential solutions to enhance resilience within the educational system in Balochistan. It investigates flaws in policies, vulnerabilities in school infrastructure, and the availability of disaster risk reduction (DRR) plans in schools to identify barriers to establishing a resilient education system in the province. The study also proposes evidence-based resilience solutions, such as the development of disaster preparedness and response plans, the improvement of teacher capacity, the establishment of climate-resilient schools, and the revision of curricula. The findings of the study will contribute to the development of a more sustainable education model that ensures educational continuity in the presence of climatic uncertainty by focusing on the unique context of Balochistan.

Pakistan, especially Balochistan, is vulnerable to climate-induced events, so the province must have a climate-resilient education system. This system will ensure uninterrupted student learning and will play a vital role in achieving Sustainable Development Goals (SDGs), particularly SDG 4 (Quality Education) (UNESCO,2019). This study also helps different stakeholders understand

the impacts of climate change on students' learning and develop climate resilience in the region's education system to address climatic challenges.

Objectives

1. To evaluate the immediate and long-term impacts of climate change on the education system in Balochistan

2. To identify infrastructure requirements and policy gaps to develop a climate-resilient education framework

3. To investigate the role of communities and other stakeholders in enhancing climate resilience in education

4. To suggest workable initiatives for establishing a climate-resilient education system in the region

Significance of the Study

This study will play a vital role in developing an inclusive and adaptive school infrastructure that can withstand climatic disruption in highly vulnerable areas. Balochistan faces frequent climate-induced events such as floods, droughts, and heatwaves, which disrupt learning and school operations. This study suggests workable initiatives to strengthen the existing infrastructure to ensure that schools are prepared to address climate-induced disruption and that learning continues without disruption.

The study findings will help policymakers design Balochistan-specific policies to integrate climate resilience into the province's educational framework. The recommendations will inform the Government of Balochistan, especially the Ministry of Education, to allocate more resources to train teachers and establish climate-proof infrastructure, considering the regional climate conditions. This strategy will enable decision-makers to make research-based decisions to improve the stability of the education system to manage climate-induced disruption, particularly in areas most affected by climate change.

Community empowerment needs resilience in education. A climate-aware generation is better equipped to confront and adjust to environmental challenges because of a robust educational system that enables students and families to pursue learning opportunities without disruption. Consequently, resilient institutions foster more informed and capable communities, thereby establishing long-term social and economic stability within the most vulnerable populations of Balochistan.

Pakistan is committed to achieving Sustainable Development Goals (SDGs), particularly SDG4 (Quality Education) and SDG 13 (Climate Action), by fostering resilience in education. This study provides valuable insights for international discussion on developing a climate-resilient education system, particularly for high-risk regions with limited resources.

Lastly, the study provides an effective plan for other regions in Pakistan and the world to foster resilience in their educational framework and respond more sustainably and inclusively to climate threats.

Literature Review

It has been recognized globally that resilience in education is essential to provide access to education, especially in vulnerable regions of the world. Fostering resilience in education requires multiple measures, including developing climate resilience infrastructure, providing teacher training, and embedding climate change education into curricula to enable students and communities to respond adequately to climate threats (Marin et al., 2024). A climate-resilient education system minimizes disruptions caused by climate-induced events and allows schools to offer continued education to children in the presence of environmental challenges (Nusche et al., 2024). Climate-resilient educational institutions play a crucial role in achieving sustainable development goals and equip students with skills and tools to effectively address climate issues (Elizabeth et al., 2024).

Balochistan, the most vulnerable region in Pakistan, faces challenges of different nature in developing a climate-resilient educational framework due to limited access to financial resources, unique geographical location, and exposure to extreme climatic conditions. Frequent floods in

monsoon season, droughts, and increasing temperatures often result in school closure and student learning disruption. Moreover, poor economic conditions make it challenging to develop climate-resilient infrastructure in the province (GCISC, 2019). Therefore, education is disrupted, which leads to a high dropout rate and poor academic performance of students.

Balochistan's education system is susceptible to climate change challenges due to inadequate financial resources and a lack of policy emphasis on effective climate disruption response. According to UNICEF (2021), Pakistan's national education policies are ineffective in developing resilience in education in the most vulnerable regions, such as Balochistan. Yoisif and Barech (2022) observed that most schools in Balochistan are highly susceptible to environmental stresses due to the absence of climate-resilient infrastructure, including flood-proof buildings and cooling and heating facilities.

To minimize the effects of climate-induced events on education, the United Nations has proposed several frameworks emphasizing initiatives regarding policy, curriculum, and infrastructure. The significance of a resilient educational system in climate adaptation is recognized in the Paris Agreement and the Sendai Framework for Disaster Risk Reduction 2015–2030 (Laila et al., 2019). These frameworks highlight how it is crucial to incorporate climate resilience in educational planning, emergency plans, and infrastructural development to ensure undisruptive learning during and after climate disasters.

Research Methodology

The study used a mixed-methods approach, combining both qualitative and quantitative methods to have a deep understanding of climate-resilience challenges and opportunities with the education system in Balochistan, considering both statistical insights and in-depth qualitative data. A sample of 300 participants was surveyed and interviewed, including 100 teachers, 100 students, 50 school administrators, 10 government officials, 20 community members, and 20 representatives from NGOs. To select a representative sample, stratified and purposive sampling techniques were used.

Quantitative Methods of Data Collection

Teachers, school administrators, and students were surveyed using semi-structured questionnaires to gain deep statistical insights on school infrastructure resilience, awareness about the impact of climate change on education, and attendance rate during climate disasters.

Qualitative Methods of Data Collection

Focus Group Discussions (FGDs) and in-depth interviews were done with different stakeholders to gather qualitative data. Interviews with school administrators and government officials assessed their opinions on infrastructure resilience, teacher training needs, policy implementation challenges, and climate adaptation programs. Focus Group Discussions with local leaders, parents, and NGO representatives were also conducted to assess their knowledge of climate resilience in education and community-level initiatives addressing climate challenges.

Data Analysis

The quantitative data collected using questionnaires was analyzed through frequency distribution, percentage, and T-test. Moreover, the data collected through interviews and Focus Group Discussions was analyzed using thematic analysis. Content analysis was also used to examine official documents, curricula, and other texts to evaluate how well Balochistan's educational system incorporates climate change knowledge and preparedness.

Table 1: Demographic Distribution of Sample

S. No	Category	Frequency	Percentage
1.	School Administrators	50	16.66%
2.	Teachers	100	33.33%
3.	Students	100	33.33%
4.	Government Official	10	3.33%
5.	NGO Representatives	20	6.66%
6.	Community Members	20	6.66%
7.	**Total**	**300**	**100%**

The total number of respondents is 300, ensuring a comprehensive mix of insights from stakeholders belonging to various fields of life. The balanced distribution helped study to comprehend various dimensions of climate resilience including, institutional, policy and grassroots levels,

Table 2: School Administrators' Perspectives on Climate-Resilient Education System

S. No.	Statement	SDA	DA	UN	SA	A	T-Test Value	P-Value
1.	The school's infrastructure is resilient to climate-related disasters, such as extreme heat and floods.	30	10	0	7	3	2.04	0.03
2.	Disaster Risk Reduction (DRR) plans are implemented to ensure the safety of students and other staff during climate-related emergencies.	35	10	1	3	1	2.15	0.01
3.	Teachers receive regular training to integrate climate change information into their instructional strategies.	38	9	1	1	1	2.06	0.04
4.	The curricula have sufficient coverage of topics to develop awareness and understanding of climate change effects.	25	12	5	5	3	2.26	0.02
5.	The school collaborates strongly with the community to effectively address climate change impacts on education.	20	15	4	4	7	2.41	0.04
6.	Students are encouraged to participate in climate resilience programs or initiatives like waste management and tree plantation.	22	10	4	10	4	2.46	0.03
7.	Sufficient financial resources are available to enhance the effectiveness of climate-resilience operations in schools.	30	9	2	4	5	2.04	0.02
8.	The school has a close collaboration with local government to handle issues effectively during climate disasters.	32	8	2	5	3	2.37	0.01
9.	Our school faces challenges to ensure students' attendance during climate-disruption.	25	15	1	4	5	2.19	0.04
10.	The school has the support of governmental and Non-governmental organizations to enhance climate resilience effectively.	31	10	2	3	4	2.38	0.02

Most respondents (60%) disagreed that schools have climate-resilient infrastructure. The T-test value (2.04) and significance level (p - 0.03) indicate that the overall perception of teachers is significantly negative. Similarly, 70% of respondents strongly disagreed that their schools have implemented a Disaster Risk Reduction (DRR) plan to safeguard students and teachers during climate emergencies. The T-test value (2.15) and p-value (0.01) support their point of view.

Moreover, most respondents (76%) strongly disagreed that teachers are provided regular training on climate resilience. The T-Test value of 2.06 at a high significance level (0.04) reinforces their

concern. Most respondents (50% SDA and 10% DA) disagreed that the current curriculum covers climate change topics sufficiently. The T-test value 2.26 at 0.02 indicates that teachers' viewpoints are correct. Moreover, most respondents (40% SDA and 30 DA) disagreed that there is a close collaboration between school and community to address climate-change disasters effectively. The T-test value of 2.41 at 0.04 indicates room for improvement in this area.

In addition, most respondents (44% SDA and 20% DA) disagreed with students' participation in climate resilience programs. The T-test value of 2.46 and p-value of 0.03 suggest adequate students' engagement in climate resilience activities. Similarly, 60% of school administrators strongly disagree that schools have sufficient resources for climate resilience. The T-test value of 2.04 at 0.02 indicates funding challenges. 64% of respondents disagreed on schools' collaboration with district administration. The T-test value of 2.37 at 0.01 further emphasizes the need for better collaboration.

Moreover, most respondents (50% SA and 30 A) agreed that climate disruptions affect students' attendance. The T-test value of 2.19 and p-value of 0.04 further emphasize this issue. Similarly, 62% of respondents strongly disagreed that schools receive any support from the government and NGOs during climate disasters. The T-test value of 2.38 at 0.02 further strengthens their perceptions.

Table 3: Teachers' Perspectives on Climate-Resilient Education System

S. No.	Statement	SDA	DA	UN	A	SA	T-Test Value	P-Value
1.	I have sufficient training to integrate climate change into my teaching methods.	52	23	10	10	5	2.45	0.01
2.	Information about climate change and its impacts is sufficiently covered in the current curriculum.	61	28	5	4	2	2.15	0.04
3.	I make a concerted effort to integrate topics concerning resilience and climate change into my lesson preparations.	45	20	12	13	10	2.24	0.03
4.	I encourage students to participate in activities promoting climate awareness, like projects, presentations and debates.	52	15	10	11	12	2.45	0.02
5.	Programs and workshops are organized regularly to make students aware of the impacts of climate change.	65	12	9	8	6	2.21	0.04
6.	Teachers are encouraged to participate in programs promoting climate change education actively.	62	15	6	7	10	2.18	0.01
7.	I have enough tools and resources to impart knowledge about climate change adequately.	48	21	5	10	16	1.98	0.02

8.	Working with the community has improved my ability to teach students topics on climate resilience.	45	37	10	4	4	2.31	0.01
9.	I have observed that students' learning and attendance are much affected by climate-related problems such as floods and extreme heat.	5	8	5	52	30	2.47	0.03
10.	I think more help—such as resources and training—is needed to better integrate climate resilience education into schools.	3	5	5	25	62	2.40	0.04

Most teachers (52% SDA and 23% DA) reported needing sufficient training to incorporate climate resilience topics in their teaching strategies. The T-test value of 2.45 at 0.01 indicates this concern is statistically significant. Similarly, many respondents (61% SDA and 28% DA) believed the current curriculum needs more climate resilience topics. This concern is statistically significant, as indicated by a T-test value 2.15 at 0.04. In addition, most teachers (45% SDA and 20% DA) disagreed with integrating resilience and climate change topics into lesson plans. This may be the result of a lack of training and resources. The T-test value of 2.24 with a p-value of 0.03 indicates the need to equip teachers with training and resources to integrate climate change topics into their lesson plans.

Moreover, a few teachers (12% SA and 11% A) encouraged students to participate in activities promoting climate change awareness while most teachers (52% SDA and 15 DA) did not. The t-test value of 2.45 at 0.02 further emphasizes the need to encourage students' involvement in climate awareness activities. Similarly, a vast majority (65% SDA and 12% DA) disagreed that seminars and workshops are organized to educate students about climate change impacts on education. The T-test value of 2.21 with a p-value of 0.04 indicates that the concern is statistically significant. In addition, most teachers (62% SDA and 12% DA) reported that they were not encouraged and supported to participate in climate-resilience programs. The T-test value (2.18) and P-value (0.01) further confirm the significance of teachers' participation in such programs.

Moreover, Teachers (48% SDA and 21& DA) reported that they had no access to teaching materials and resources to impart climate education. The T-test value of 1.98 at 0.02 reinforces their concerns. Similarly, most teachers (45% SDA and 37% DA) felt that there needs to be closer collaboration between the community and school that could help teachers enhance their ability to teach climate resilience topics effectively. The T-test value of 2.31 with a p-value of 0.01

highlights a dire need for school-community relationships. In addition, a significant proportion of teachers (52% A and 30% SA) agreed that climatic-induced disasters like floods and extreme heat significantly affect students' learning and attendance. The T-value of 2.47 at 0.03 indicates a pressing need to address this issue. Moreover, teachers (25%A and 62% SA) believed sufficient training and financial resources are required to develop a climate resilience education system. The T-test value of 2.40 and p-value of 0.04 highlight the need for adequate resources for developing resilience in the education system.

Table 4: Students' Perspectives on Climate Resilient Education System

S. No.	Statement	SDA	DA	UN	A	SA	T-Test Value	P-Value
1.	I know about the impacts of climate change on our environment and daily life.	42	17	10	11	20	2.47	0.01
2.	The current curriculum contains sufficient topics about climate change and its impacts on education.	56	14	10	8	12	2.21	0.03
3.	I am motivated to get involved in initiatives that promote sustainability, such as planting trees, managing trash, and raising awareness about climate change.	61	21	4	10	4	2.48	0.02
4.	My school has plans to ensure our safety in the event of natural calamities like floods or extreme heat.	52	23	8	10	7	2.11	0.04
5.	Despite extreme weather conditions like heat waves or floods, my classroom environment is functional and comfortable.	62	18	5	9	6	2.25	0.02
6.	I take an active role in addressing climate-related issues in my community or school.	48	27	4	10	11	2.19	0.01
7.	Climate-induced problems like floods, extreme heat and water scarcity all negatively affect my learning.	5	4	7	62	22	2.18	0.01
8.	Topics like climate change and its impacts are actively discussed in class to help students understand how to respond to climate disasters effectively.	54	27	4	9	6	2.26	0.02
9.	Necessary resources like learning materials and clean drinking water are provided to help students to address climate challenges.	51	19	5	13	12	2.24	0.04
10.	There is a close collaboration between school and community to address the impact of climate change on education.	45	25	7	10	8	2.27	0.01

Most respondents (42 % SDA and 17% DA) disagreed that they were aware of the impacts of climate change on education. The T-test value of 2.47 with a p-value of 0.01 substantiates their viewpoints. Similarly, a significant proportion of students (56% SDA and 14% DA) believed that the current curriculum lacks enough information about climate change. The T-test value of 2.21 at

0.03 indicates that this issue is statistically significant and needs improvement. In addition, many students (61% SDA and 21% DA) reported not being encouraged to participate in activities promoting climate change awareness. This statement is statistically significant, as indicated by a T-test value 2.48 at 0.02.

Moreover, students (52% SDA and 23 DA) reported that schools are unprepared to address climate-induced disasters. The T-test value of 2.11 with a p-value of 0.04 further reinforces their concern. Most students (62% SDA and 18% DA) viewed class environment as uncomfortable and non-functional during climate-related events like floods or extreme heat. The T-test value of 2.25 at 0.03 indicates that this issue is statistically significant and needs more intervention. In addition, many students (48% SDA and 27% DA) reported not being actively involved in addressing climate change issues in school or community. The T-test value of 2.19 with a p-value of 0.01 indicates a dire need for students' engagement in addressing climate change issues.

Moreover, most students (62%A and 22%SA) reported that climate-induced events like floods and extreme heat negatively affect their class attendance. The T-test value of 2.18 at a significance level of 0.01 highlights that this issue is statistically significant. Similarly, many students (54% SDA and 27%DA) reported that teachers fail to facilitate regular class discussions regarding climate change. The issue is statistically significant, as indicated by the T-test value 2.26 at 0.02. Furthermore, a considerable proportion (51% SDA and 19% DA) reported that schools lack essential resources such as learning materials and clean drinking water to address climate change challenges. The T-test value of 2.24 with a p-value of 0.04 indicates a dire need for urgent resource allocation. Likewise, most respondents (45% SDA and 25% DA) observed there is no close collaboration between schools and communities to tackle climate change issues effectively. The T-test value 2021 at 0.01 manifests the significance of developing strong partnerships between schools and communities.

Discussion

A climate-resilient education system is essential to address climatic challenges. Pakistan is severely affected by climate-induced disasters. The country must adopt a multifaceted approach to enhance resilience in the education system, including revising national education policies and

plans, developing climate-proof school infrastructure, adding sufficient climate change topics in curricula, preparing emergency response plans, establishing effective monitoring plans, allocating adequate financial resources and encouraging more community participation in school-based disaster response strategies.

1. Policy and Planning

In order to build a resilient education system, we need well-thought-out policies and plans that outline goals and assign roles at the federal, provincial, and local levels. Initiatives to foster resilience in school are useless in the absence of effective policies. Despite this, climate change has not been integrated into Pakistan's national education policies. Balochistan, the most vulnerable region in Pakistan, suffers a lot due to the absence of clear guidelines to build a resilient education system. The matter has been further complicated as no robust system exists to assess how well the initiatives taken to reduce the impacts of climate change are working

2. Infrastructure and Facilities

Resilient School infrastructure withstands climatic- disasters. They can recover after disruption caused by climatic- catastrophes like floods and hurricanes. The availability of clean drinking water and sanitation ensures the uninterrupted learning process during disasters. However, most school buildings in Balochistan are not resilient enough to withstand climatic- disasters, and the lack of essential facilities like clean drinking water and sanitation further deteriorates the situation. However, the most serious concern is that in Balochistan, no program exists to retrofit or build climate-proof school infrastructure.

3. Curriculum and Learning

A well-developed curriculum with sufficient coverage of climate change topics equips students with the knowledge and skills to mitigate climate change impacts. Teachers trained to impart climate change education can create a well-informed generation of individuals prepared to address climate-induced issues effectively. Nevertheless, there is a notable deficiency in including critical topics about climate change and its impacts on Pakistan's school curricula. As a result, the younger

generation lacks awareness of the strategies necessary to mitigate the effects of climate change. The most serious concern is that teachers lack access to the essential instructional materials and resources required to deliver climate change education effectively. They are not even provided with training on how to develop effective teaching plans regarding climate change.

4. Emergency Preparedness and Response

The students' and teachers' safety and security during climatic disasters can only be ensured if the schools have emergency response plans. The Disaster Risk Reduction (DRR) plans in schools minimize the vulnerabilities of disaster risks throughout the education sector to prevent and mitigate the impacts of climate-induced events. However, most schools in Balochistan lack emergency preparedness and disaster risk reduction plans to minimize risk before, during and after disaster events.

5. Community Participation and Engagement

Strong collaboration between school and community is essential to foster shared responsibilities to address climate change and to develop community-based initiatives needed to enhance climate change awareness and resilience at both local and school levels. However, most schools in Pakistan lack a workable collaboration with parents and community members to address climate-related challenges.

6. Funding and Resource Allocation

Funding is required to retrofit and construct climate-adaptive schools, provide teaching materials and resources on climate change, and develop and implement emergency response plans. However, Pakistan, especially Balochistan, lacks adequate financial resources to foster resilience in the education system by developing resilient infrastructure and providing WASH facilities required to provide uninterrupted learning during and after disasters.

7. Monitoring and Evaluation

Regular monitoring of policies and initiatives taken to address climate change challenges is required to build a climate-resilient education system. For this purpose, it is essential to establish a system responsible for monitoring and evaluating the effectiveness of measures taken to mitigate the impacts of climate-induced disasters. In Pakistan, the Environmental Protection Agency and the Global Change Impacts Studies Center are renowned units responsible for formulating research-based policies and effectively implementing them. Pakistan needs to enhance the performance of these units by providing more expertise and financial resources to empower them to mitigate climate change impacts on education.

Conclusion

Pakistan needs a well-coordinated approach across several domains to develop resilience in the education system and address climate-induced challenges. For this purpose, there is a dire need to allocate more financial resources, integrate climate change in national education policies and plans, build climate-resilient school infrastructure, encourage community engagement and participation, develop disaster risk reduction plans, and establish effective monitoring and evaluation plans. By putting these strategies into practice, especially in the most vulnerable regions like Balochistan, learning will continue uninterrupted, and students will be better prepared to deal with and mitigate the effects of climate change.

Recommendations

Given the challenges Balochistan faces, climate-resilient education must be integrated into national curricula. It is necessary to build a strong monitoring unit responsible for developing, monitoring, and assessing the effectiveness of efforts made to mitigate the effects of climate change. Additionally, the district education offices need to be given the authority to adopt school-based initiatives to tackle the challenges posed by climate change.

The governments also develop a plan to retrofit and upgrade school infrastructure to withstand climate-induced events like floods, extreme heat, droughts, and hurricanes. Providing Water, Sanitation, and Hygiene (WASH) facilities will also ensure uninterrupted learning during and after

climate disasters. Moreover, new school buildings with solar energy systems, natural ventilation, and rainwater harvesting systems will be more resilient to climate change.

Similarly, the current curricula need to be revised to integrate topics regarding climate change, its impacts, and solutions. Teachers need access to teaching materials and resources on climate change, and they require more training to impart climate change into their lesson plans to make a new generation aware of the severe impacts of climate-induced events on the environment and their lives.

The government needs to allocate more resources to develop and implement Disaster Risk Reduction (DRR) plans at the school level for the safety and security of students, teachers, and other staff. The school also needs to have easy access to first-aid kits, basic survival tools, and water supplies. Establishing a committee comprising teachers, parents, and community members will also help address climate change challenges.

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