Available online at https://sextante-ensb.com

Revista Sextante

ISSN : 2665-3923

Volume: 34 Issue: 01 (2026)

Climate Change Challenges in Pakistan: Policy Response and Future Repercussions in the Climate Changing Scenario

Muhammad Ijaz Awan[a], Dr. Mujahid Hussain[b]

[a]*PhD Scholar, International Relations, Muslim Youth University, Islamabad*
[b] *Assistant Professor, Department of International Relations, Muslim Youth University, Islamabad*

Article History
Received July 26th, 2026
Accepted October 11th , 2026
Published October 20th, 2026

© 2026 The Authors. This article is an Open Access article distributed under the terms and conditions of the Creative Commons Attribution(CC-BY)license https://creativecommons.org/licenses/by/4.0

Abstract
Climate Change term has been extensively used in the research publications for the last few decades which has been relatively had less concern at the global level. There are various factors which have made climate change phenomenon most researched aspect in the global research domains including different knowledge fields. The Climate Change as global phenomenon has been frequently investigated by climatologists, geographers, anthropologists, sociologists, economists, global organizations including UNO, regional forums to study the level of changes occurred to the climate, to determine the root causes responsible in bringing the changes in climate and major threats to the human life at global level through various catastrophes eminent to be developed due to climate change phenomenon. Although Pakistan has not played any major role in de-stabilizing the global climate change however she is placed at the highest risk level countries due to climate change. Pakistan has suffered at massive scale in heavy flooding in 2010 and in subsequent years as well, along with other climate change-based calamities like droughts in Baluchistan and Sindh, heat waves and excessive temperature rise in summer, un-usual rainfall patterns which has affected the crops yields and cultivation patterns in Pakistan. There are various policies adopted by the government of Pakistan to develop the adaptation and mitigation strategies to reduce the effects of climate change in Pakistan. Tis research is n effort to identify the climate change challenges to Pakistan and investigate the adaptation and mitigation efforts to reduce the implications of climate change in Pakistan.

Keywords: Climate Change, Disaster management, Environmental attitude, Adaptation, Mitigation, Carbon Budget, Carbon Credit, Climate Finance, Global Warming, NDCs, Paris Agreement, UNFCCC, NEP Scale, Value Belief Norm (VBN) Theory, Ministry of Climate Change, Climate Change Act of Pakistan, Climate Change Policy.

1. Introduction

© 2026 The Authors. This article is an Open Access article distributed under the terms and conditions of the Creative Commons Attribution(CC-BY)license
https://creativecommons.org/licenses/by/4.0

Pakistan has been suffering the worst repercussions due to global climate change phenomenon without much of her own contributions. Climate change has become now globally agreed upon definition without any controversy in it. Before the emergence of climate change as global challenge climate itself as geographical component was considered as the domain of geographers and climatologists only to study the climate as long-term record of weather. Weather and climate are atmospheric conditions not only determine the spatial variations of human dwellings and economic activities rather are felt and experienced by every human being and living things. The concepts to understand weather and climate on earth are as old as human being. Researchers like Mc Bean et al., 1992; Stehr and von Storch, 1998; Easterling et al., 1999; von Storch, 2004; Molua and Lambi, 2007; Roe and O'Neal, 2009; Heymann, 2010; Farmer, 2014; and Barnes,1921 have defined climate by using colloquial sayings by identifying different aspects of climate.

However, in the recent yeas climate has become a topic of policy rather just an academic or philosophic topic. The climate and climate change have become a serious challenge to the human life globally. Climate change as challenge has shifted its definition from individualistic experiences to global collective organizational and institutional settings; like the International Panel on Climate Change (IPCC) in its fifth assessment report (IPCC, 2013) defined it as the average weather, or more rigorously, as the statistical description in terms of the mean and variability of relevant quantities over a period of time ranging from few months to thousands of years. There are number of factors involved in further multiplying the climate change implications including rapid population increase, massive deforestation, larger scale construction projects and housing societies to fulfill the need of housing units and decreasing water resources. Pakistan has been continuously falling in the list of higher-ranking high-risk countries due to rising temperatures, where Pakistan ranks 150th at climate vulnerability index ranking with 0.93% Green House Gases emission with intentions to reduce her GHG emissions 50% reduction by 1930 is facing climate change challenge to develop comprehensive an integrated policy to address climate challenge. Although Pakistan has started her efforts to adapt and mitigate climate change challenge in the form of developing climate change act in 2021 and commissioning the ministry of climate change and environment coordination in 2017 with two sub-cideries including Pakistan Environmental Protection Agency and Zoological Survey Department. Ministry of Climate Change has 173 employees and independent decision making for the betterment of climate change challenge to Pakistan. However, it is being recognized globally that Pakistan is unable to develop the robust mitigation plan and adaptation strategies in isolation and seriously needs the global assistance and cooperation to face this challenge. There are various climate change challenges the present world is facing at global level including Pakistan; human interference with climate system through increasing greenhouse gas emissions and excessive changed land use which is resulting rising temperature with rapid speed and likely to convert planet unlivable for mankind which has allied ramifications like rise in sea level, fast melting of glaciers, change in rainfall patterns, floods and heat waves etc. required a renewed agreement at global level for mitigation and adaptation to address the climate change challenge. Climate change has ethical dimensions too where contribution to it is very less by poorest countries and they are more sufferers like Pakistan.

2. Literature Review

The destructions and damages to environment, resources, human life and future prospects across the globe are catastrophic and vulnerabilities to the climate change of the residents of South Asia are comparatively very high in comparison to the awareness and knowledge which is extremely low towards the adaptation and mitigation. In this regards Pakistan becomes further vulnerable due to her high poverty level to tackle financially driven adaptation efforts to address the challenges like flooding, droughts, melting glaciers, shortage of drinking water, storms, avalanches, hurricanes, earthquake, rising temperatures, pest diseases and human health issues threatening to bio-diversity, eco-system and human society. Climate Change has become an important perspective to study, evaluate in terms of its effects on human life and vice versa. However, 21st century has witnessed unprecedented climatic change with global implications. 75% of the Earth surface is covered with the Oceans and Global warming with increased temperatures of surface of oceans in increasing the temperature of atmosphere with global implications . Climate change got close link with security of states as argued by in his research exploring link between climate change and resources scarcity to violent conflicts in future. declares contemporary time "Anthropocene" the age made by Man in comparison to previous 10000 years as "Holocene" as the era of climatic stability in comparison to previous one identifies Holocene era more stable in terms of capability of balancing temperature, freshwater, biogeochemical flows naturally. Human activities haves transgressed the "three boundaries (climate change, the rate of biodiversity loss, and the rate of interference with the nitrogen cycle) identified in quantitative analysis conducted for exploring safe operating space for humanity. Carbon cycle has got momentum in

© 2026 The Authors. This article is an Open Access article distributed under the terms and conditions of the Creative Commons Attribution(CC-BY)license
https://creativecommons.org/licenses/by/4.0

the last 200 years due to human efforts to move carbon from naturally stored reservoirs to atmosphere. Researchers have identified nine planetary boundaries and their limits where human interaction has really disturbed them and global level including "CO2 concentration in the atmosphere, ocean acidification, stratospheric ozone, biogeochemical nitrogen cycle, global freshwater use, land system change, rate of biological diversity lost, chemical pollution and atmospheric aerosol loading" have created opportunity for climate change researchers to explore new dimensions of climate change implications. Researchers evaluated the scarcity of green and blue waters in the world as identified rising population with scarcity of green water availability for crops cultivation as existential threat to Pakistan. Studies on climate change and adaptation strategies reveal that in Pakistan farmers have developed various practices of adaptation to cope up with climate change challenges like change in cultivation timings, change in fertilizers, change in crop variety, change in use of pesticide, seeds variety and quality, water management systems and water storages, farm diversifications, trees plantations systems and shade management, switching over modernized irrigation techniques, migration patterns due to climate change, bringing new barren lands to cultivations has sufficient literature regarding agricultural activities related to climate change in Pakistan. Pakistan which ranks 135th in the world for emission of greenhouse gases is ranked in top ten for being at risk due to climate change has yet to incorporate sufficient curriculum for awareness at school level and for better adaptation and mitigation. Pakistan is most impacted country of the world due to climate change and its effects. Although Pakistan has taken measures at national level to resolve the climate change challenge but efforts at national level are confronting various problems. Pakistan has adopted many legislative acts and policies on account of climate change like; Pakistan Energy Efficiency and Conservation Act 2011, National Climate Change Policy 2012, Global Change Impact Studies Centre Act 2013, Climate Change Act 2017, Global Change Impact Study Center (Amendment) Bill 2019, Pakistan Environmental Protection (Amendment) Bill 2019 and National EV Policy 2019. All these policies and acts are vulnerable due to many factors like inability of the parliament to make laws on climate change, ignoring the role of local governments by provincial governments, lack of collaboration among various departments to share data for better planning and mitigation, controlling deforestation and effective involvement of College and university students to take responsibility to address the issue.

3. Theoretical Framework

Environmental issues have emerged as existential warning indicators threatening to human life and economy specifically for Pakistan and many other countries of the world. Considerable attempts have been made to clarify the factors involved in individual' assignation particularly pro-environmental attitude and behavior by paying attention to socio-psychological theories. Pro Environmental behavior studies have traveled through theoretical transformations from simplistic linear modeling to study pro-environmental behaviors; Reasoned Action Theories and Theories of Planned Behaviors to overcome measurement issues. Theory of Planned Behaviour (TPB) presented the basic model postulates that human behaviour is result of three beliefs constructs responsible for consequent behaviour. Theory takes various variables into account as basic factors like demography, personality traits, available information and general attitudes which are responsible to develop the beliefs. Theory categorized beliefs into three categories; Behavioral Beliefs, Normative Beliefs and Control Beliefs playing their role in their respective domain. Behavioral beliefs translate into attitudes towards behaviour, normative beliefs relate to perceived attitudes of peers and respected figures towards the behaviour and subjective norms and control beliefs to perform the behaviour. Theory of Planed Behaviour (TPB) was developed from Theory of Reasoned Action more focus has been on attitudinal aspects of behaviour. The contrary to PTB is Value Beliefs Norm (VBN) Theory grew out of values theory. Value-Beliefs-Norm Theory take values as central pillar as guiding action and development of attitudes. Value theory, The New Environmental Paradigm (NEP) and Norm Activation Model (NAM) provided the base to Value-Belief-Norm theory to determine the pro-environmental behaviour. In this research the postulates of Value-Beliefs- Norm theory will be used for research to assess individual's willingness to take active role in environmental protection in Pakistan. Specifically, in the domains as identified in VBN theory model at figure 1, including biospheric, altruistic and egoistic values of environmental concern which are associated with valued object which are oriented around self, other people, non-human species and bio-sphere. In egoistic value orientation individuals concerns about the environment for the sake of self and society will be studied. In social altruistic value orientation domain, the concerns about environmental problems and climate change affects with adverse effects on people and society will be studied. In biospheric orientation the study will focus on non-human species including plants and vegetation. This research will consider the value orientations in the contextual clusters on universal human values as proposed by VBN theory. This research will determine to investigate the role of value orientation to predict pro-environmental behaviour pointing out that individuals with more favorable biospheric and altruistic value orientations

© 2026 The Authors. This article is an Open Access article distributed under the terms and conditions of the Creative Commons Attribution(CC-BY)license
https://creativecommons.org/licenses/by/4.0

with their higher tendency to demonstrate such behaviors. To prove the theoretical considerations new ecological paradigm (NEP) developed by Dunlap will be used as instrument to determine environmentally responsible behaviour as result from beliefs on interactions between human and nature. NEP will help to determine the human ability to adapt the climate change amongst the respondents the university students in Pakistan. The reason to adopt NEP as instrument is that, in the context of VBN theory it is interpreted as main representative agent of pro-environmental attitude and more supportive to demonstrate some pro-environmental behaviors for the conservation of nature. NEP has been used in various researches and validated in terms of validity, reliability and standardization.

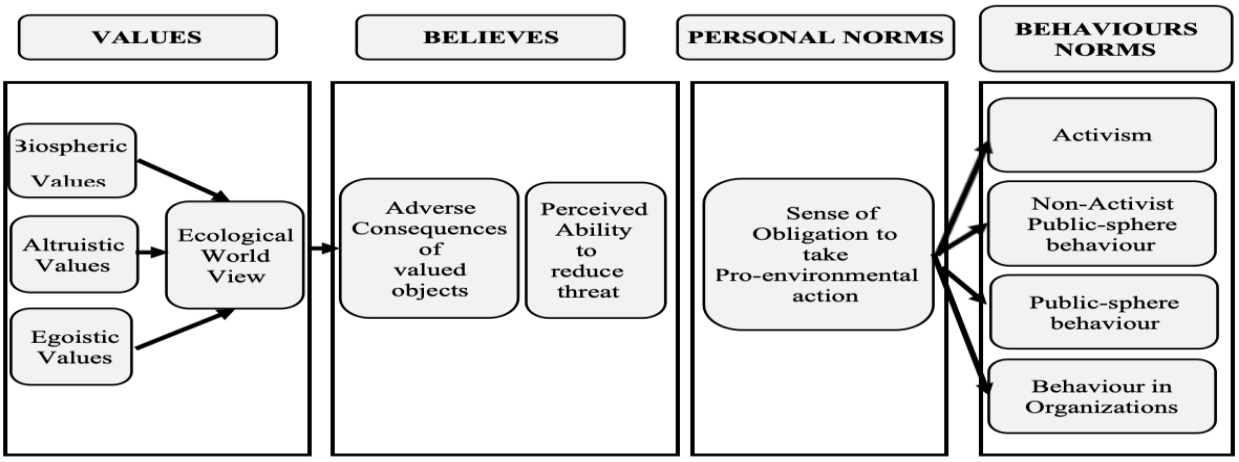


***Figure 1**: Value-Belief-Norm (VBN) Theory Model*

4. Research Methodology

This research has been conducted to evaluate the existing climate change challenges in Pakistan and world view of university level students about the climate change phenomenon in Pakistan. Mix methods of research has been used to conduct this study. Qualitative data has been collected and evaluated to explore the climate change challenges in Pakistan and in quantitative part of research data has been collected from 360 respondents; 181 male and 179 female BS, MS and PhD level students, researchers and teachers of 10 selected universities and institutions in KPK, Gilgit Baltistan, Islamabad and Punjab by using the NEP scale. The data has been assessed by using various statistical techniques. The data has been collected from the respondents by using NEP scale developed by Riley E. Dunlap and adopted with the permission of the author. The instrument has been extensively used by various researchers and validated for its internal consistency in Cronbach's alpha test. This study has been completed by using an extensive and quantitative structured questionaries' from previously validated researches in variety of contexts by Stern et al 1999, Stern et al 2000, Groot and Steg 2008, Markowitz et al 2012 and Han 2015 by using deductive reasoning to test the theoretical frame work of Value-Belief-Norm (VBN) theory. The study is completed by using NEP Scale within the ambit of VBN theory, with hypothesize that every presumed intervening variable in the causal chain mediates the relationship between distal variable and outcome variable. A Causal chain relation has been studied where Personal Norm (PN) mediated the relationship between AR Beliefs and behavior, AR beliefs mediate the relationship between Ac beliefs and PN. AC beliefs mediate relations between NEP and AR beliefs and NEP mediates the relationship between value and AC beliefs.

4.1. Sampling and Data Collection

- **Sampling Method**: Purposive and convenience sampling technique has been used in study targeting educated respondents BS, MS and PhD level students, researchers and teachers belonging different regions and areas both from urban and rural populations from ten selected universities and institutions.
- **Sample Size**: In this research study first time conducted by using NEP scale in Pakistan sample of 360 students was used which is approximately 25 % of the targeted population to ensure accuracy and internal consistency of the data.
- **Survey Method**: Data of this research has been collected physically by using the structured questionnaires of

© 2026 The Authors. This article is an Open Access article distributed under the terms and conditions of the Creative Commons Attribution(CC-BY)license
https://creativecommons.org/licenses/by/4.0

NEP scale 15 items on Likert scale from ten universities and institutions in Gilgit Baltistan, KPK, Islamabad Federal Capital Territory and Punjab.

4.2. Qualitative Analysis

While studying the research topic challenge of climate change and its linkage with the knowledge, awareness and policy response in Pakistan has revealed a tri-angular relationship required to be studied as research gap in this research project. The first part of the triangular relationship is to evaluate the level of climate change implications in Pakistan which has shown a significance scientific undeniable details of climate change like rising temperatures, increased level of flooding, unprecedented magnitude of rainfalls and changed patterns of rainfall in the monsoon region like Pakistan where rainfall patterns have been accurate and set for centuries to determine the agricultural and farming behavior of the society, never heard cloud bursting which not only caused flash floods rather killed substantial number of people and livestock in Pakistan. The fast speed of melting the glaciers and glaciated lakes in the northern areas where Pakistan is the host of more than 7000 high altitude glaciers are being threatened by the climate change. Droughts are also knocking at the doors of Pakistan and farmers have suffered at a massive scale for the last few decades. The second corner of the research is the level of awareness and knowledge of young population especially enrolled in different universities of Pakistan and how they think about the climate change in Pakistan. To explore the second aspect of the research carefully selected ten different universities and institutions offering the degree programmes at graduation and post-graduation level especially focusing the environmental studies, environmental engineering, forest and range management, agriculture and agronomy, climate change and climate management studies and disaster engineering and disaster management studies.

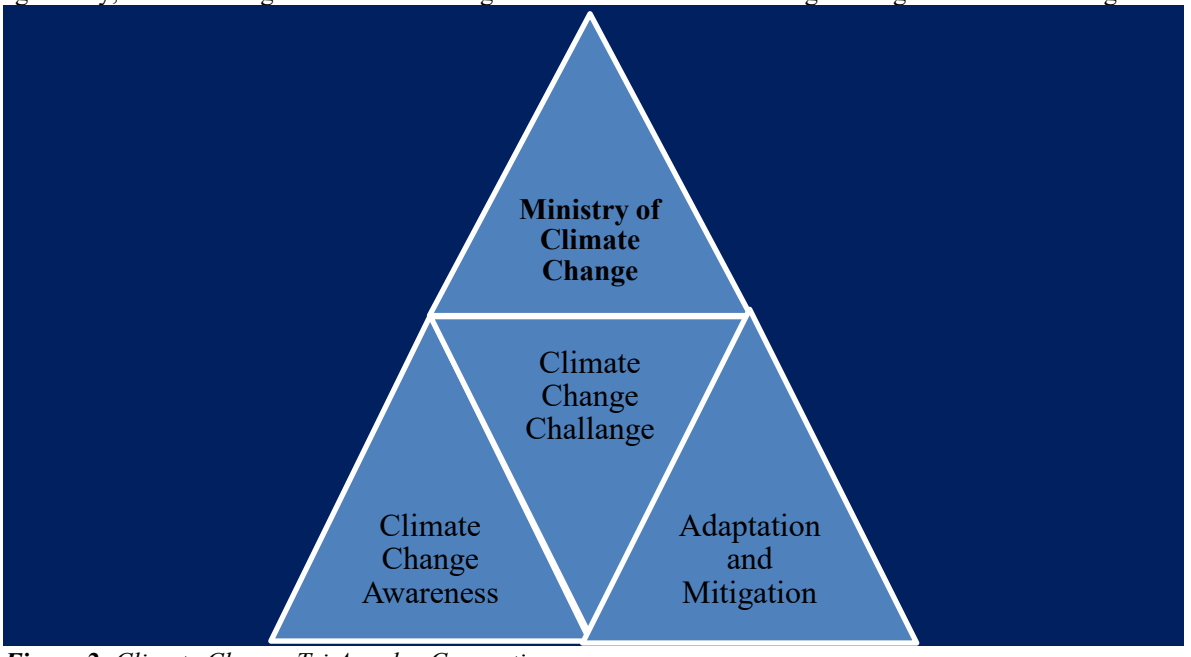


Figure 2: *Climate Change Tri Angular Connections*

This study has been completed by extensively evaluating and analyzing the policies, acts and laws have been passed and implemented in the domains of climate change in Pakistan over a period of two decades and developed a qualitative discourse for further investigation and research. Pakistan has adopted a three-tier mechanism to fix the climate change challenges however, the third pillar of understanding regarding adaptation and mitigation has been identified insufficiently proportionating the level of climate challenges due to lean funding and underfunding to mitigate the challenges. Although green initiatives launched recently has developed a hope to recharge Pakistan and replace the traditional old grey engineering. Enhanced local awareness can be helpful in developing the feedback loop between on-ground adaptation and systematic mitigation and adaptation. Ministry of Climate Change has developed ambitious policies without incorporation of youth especially students along with facing acute financial issues and allocation of funds and lacks long term plans especially population management. The second tier comes the Climate Change Awareness

© 2026 The Authors. This article is an Open Access article distributed under the terms and conditions of the Creative Commons Attribution(CC-BY)license
https://creativecommons.org/licenses/by/4.0

which is restricted to the higher-level education institutions. The third tier constitutes adaptation and mitigation, which reflects poor adaptation level at both public and private domains and most of the time depending upon the foreign funding. The third tier has also excluded the educational institutions especially schools from the adaptation process.

4.3. Quantitative Analysis

This study adopted the convenient random sampling purposively due to resources constraints and time limitation. The sample size of 360 respondents were selected who showed their willing to fill in the questionnaire from ten selected universities and institutions of Pakistan. The inclusion criteria of respondents were both male and female aging between 18 to 45 years from all parts of Pakistan were selected enrolled as BS science and humanities students, MS and MPhil and PhD enrolled students, researchers and faculty members. The sample was out of the total enrolled students in ten universities an institution in the academic programmes directly related to climate change, environmental engineering, environmental sciences and disaster management of the targeted universities and institutions.

4.4. Data Collection

The data of this research project has been collected by physically traveling to all the selected universities and directly approaching the respondents for collection of their response which was administered through a structured questionnaire by adopting the instrument of NEP scale.

5. Data Analysis

Date collected from 360 respondents from ten different selected universities and institutions has been analyzed statistically by using the SPSS. The data has been analyzed to calculate reliability and item quality. In frequency and percentage distribution analysis revised New Ecological Paradigm (NEP) responses of all 15 Items comprising 360 respondents with total 5,400 recorded responses have been analyzed. In construct structure analysis Sampling adequacy was analyzed and found at acceptable level of KMO = 0.755 and proved Bartlett's test at significant level. The five three-item facet alphas of the research proved the ranged from 0.178 to 0.319; which justify the research as exploratory. The institutional differences were statistically significant under conventional ANOVA, Welch ANOVA, and Kruskal-Wallis testing. The conventional effect size was substantial (eta-squared = 0.257), and the institution-only robust regression explained 25.7% of total-score variance. The Frequency distribution is calculated and analyzed comparatively with a research already published under the title of measuring the new ecological paradigm scale. Confirmatory factor analysis of the data has been calculated and analyzed comparatively with a research publication published under the title of Validating the Scale of the New Ecological Paradigm (NEP) in Brazilian University Students published in 2021.

5.1. Ethical considerations

The ethical consideration has been taken into the consideration while using the research instrument. All the participants took part the research response willingly and in Part I of the instrument name and identity was kept optional deliberately for the respondents because 59.7 % of respondents were female with due consideration of cultural values of remote regions.

5.2. Collective Responses Summary

The response of the questionnaire gathered of 260 respondents is plotted collectively as under for Analysis.

Table 1: Summary of the Data

Item	Statement	1 SA	2 MA	3 U	4 MD	5 SD	Total

© 2026 The Authors. This article is an Open Access article distributed under the terms and conditions of the Creative Commons Attribution(CC-BY)license
https://creativecommons.org/licenses/by/4.0

NEP1	We are approaching the limit of the number of people the earth can support	91	132	68	50	19	360
NEP2	Humans have the right to modify the natural environment to suit their needs	85	102	35	90	48	360
NEP3	When humans interfere with nature it often produces disastrous consequences	150	111	48	31	20	360
NEP4	Human ingenuity will insure that we do NOT make the earth unlivable	75	115	92	59	19	360
NEP5	Humans are severely abusing the environment	145	133	35	32	15	360
NEP6	The earth has plenty of natural resources if we just learn how to develop them	171	111	37	30	11	360
NEP7	Plants and animals have as much right as humans to exist	185	90	38	35	12	360
NEP8	The balance of nature is strong enough to cope with the impacts of modern industrial nations	62	103	49	105	41	360
NEP9	Despite our special abilities' humans are still subject to the laws of nature	123	149	49	30	9	360
NEP10	The so-called "ecological crisis" facing humankind has been greatly exaggerated	52	91	51	119	47	360
NEP11	The earth is like a spaceship with very limited room and resources	75	122	58	70	35	360
NEP12	Humans were meant to rule over the rest of nature	65	80	59	86	70	360
NEP13	The balance of nature is very delicate and easily upset	74	151	61	51	23	360
NEP14	Humans will eventually learn enough about how nature works to be able to control it	83	155	71	35	16	360
NEP15	If things continue on their present course, we will soon experience a major ecological catastrophe	160	110	39	38	13	360

5.3. Cronbach Alpha Results and Analysis

Cronbach Alpha test was conducted by using the SPSS at separate institution level and as combined complete sample of 360 respondents from ten different universities and institutions across Pakistan. Institution wise alpha calculation presented a significance variation in the consistency from lowest level to significant acceptable level. All the institutions can be clearly categorized into three group, Lowest consistency .305 KIU Gilgit, .307 NUST Islamabad and .423 MY Islamabad, with mild acceptable consistency level group including .493 HU Mansehra and .552 PMAS Agriculture University Rawalpindi and third group with higher and acceptable level of consistency including .614 JSPS&C Rawalpindi, .670 CUST Islamabad, .760 Agriculture University Peshawar, .775 MCM Murree and .793 QAU Islamabad have shown the highest consistency level in their results. Aggregate consistency remained .698 and .712 based on standardized items which is reliable and acceptable.

Table 2: University wise Cronbach Alpha

Ser	Institution/ University	N	Cronbach Alpha	Cronbach Alpha based on Standardized Items
1	KIU Gilgit Baltistan Province	50	.305	.295
2	Hazara University Mansehra KPK	40	.493	.528
3	JSPS&C Rawalpindi	20	.614	.665
4	Agriculture University Peshawar	25	.760	.759
5	QAU Islamabad	45	.793	.802
6	Muslim Youth University Islamabad	30	.423	.446
7	NUST Islamabad	30	.307	.377
8	CUST Islamabad	65	.670	.683
9	PMAS Agriculture University Rawalpindi	35	.552	.544
10	MCM Murree	20	.775	.769
11	Cronbach alpha value of all Universities/ Institutions	360	.698	.712

5.4. Major Conclusions and Results

The reliability test of data shows the internal consistency with acceptable alpha value .698 and Omega value 0.692 of the total 360 items.

Table 3: Internal-consistency estimates for Dataset

© 2026 The Authors. This article is an Open Access article distributed under the terms and conditions of the Creative Commons Attribution(CC-BY)license
https://creativecommons.org/licenses/by/4.0

Analytical dataset	N	k	Alpha	Bootstrap 95% CI	Std. alpha	Omega
Dataset of latest PhD workbook 2026	360	15	0.698	[0.632, 0.747]	0.712	0.692

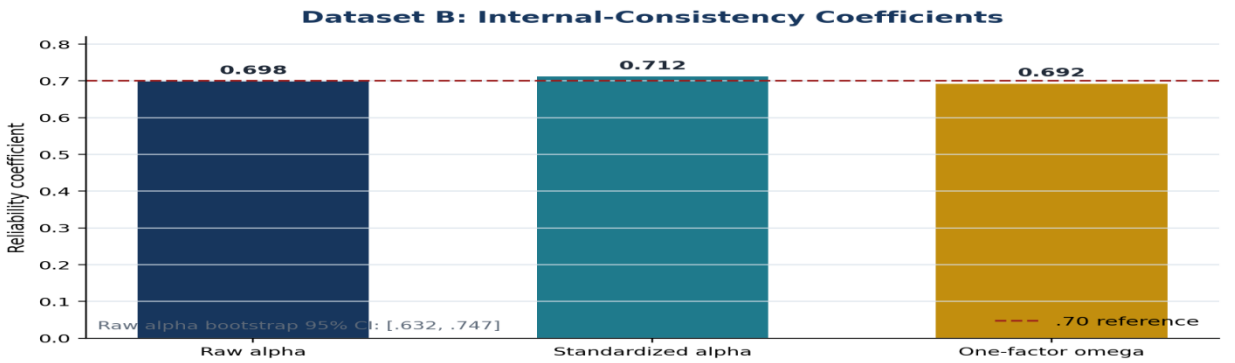


Figure 3: *Raw alpha, standardized alpha, and one-factor omega in Dataset B; the dashed line marks .70.*

6. Smmary of Major Findings

The research has helped to conclude various findings based on the review of literature, identification of policy deficiencies by reviewing the policies of government of Pakistan on climate change, shortage of contents in academic literature relevant to climate change and role in developing the awareness of university students about the climate change. The major findings of the research are that Pakistan is facing genuinely a credible threat of climate change in the form of heat waves, rising temperatures, un-precedence rainfall patterns, droughts, flooding and rapidly receding green cover. The second finding is that at government level there are issues of capacity and financial allocation of funds for the mitigation and strategies to be built against the climate change challenges around the country. The third finding is that although government of Pakistan has taken certain initiatives to deal with the menace of climate change by commissioning the ministry of climate change at federal level which is responsible for law making and developing the policies against the environmental challenges and climate change. The fourth finding is that Pakistan has de-centralized different sectors of governance and delegated to the provinces previously working under the jurisdiction of federation including, health, education, environment, infrastructural development and many others which has directly affected the performance of federal government to develop robust strategy against the climate change challenge. The fifth finding reveals that so far governments at federal level and at provincial level did not incorporated appropriately the relevant syllabus and curriculum required as per age specific for the students which can help the future leaders to design and implement appropriate strategies to mitigate and adapt to the climate change. The sixth findings is the major global concern for Pakistan and is rapid population growth which has increased Pakistan's population to 250 million and making the country most populous in the world where a huge number of population is living below the poverty line and have no resources to adapt to the climate change challenges. The seventh finding is the world view of university level students about the climate change and environmental challenges which has been obtained through a survey by collecting the data through distributing the structured questionnaire across Pakistan by the researcher. For collection of response of 360 university students both male and female ten different universities and institutions were selected first time in Pakistan. The results of EP scale used as instrument and has been vastly used in research globally has shown significantly acceptable and encouraging results especially in some university the concerns are found very high towards the environmental challenges. The lastly it has been identified that there is a dire need to carry out researches in Pakistan related to climate change and bridging the gap between intelligentsia, society, government and students especially youth is highly required to develop a robust strategy for adaptation and mitigation against the climate change challenge which is eminent and continuous.

7. Recommendations

It has been observed that very few universities are offering practical based and scientific knowledge base academic programs regarding climate change in comparison to the other countries of the world which are offering exclusive academic programmes. HEC can further assist the government to incorporate more research grants to bring new indigenously developed technologies as solutions to the problems arising due to climate change. It is suggested for the

© 2026 The Authors. This article is an Open Access article distributed under the terms and conditions of the Creative Commons Attribution(CC-BY)license
https://creativecommons.org/licenses/by/4.0

universities to develop the robust and relevant curriculum for most appropriate academic programmes related to climate change and there is a need to develop a collective strategy by all public and private universities to introduce a way forward and job placement programmes for the future graduates and experts in climate change and environmental science discipline so that more genius students can be attracted to join this field of knowledge. Ministry of climate change has a long way to come through to be able to play a vital role in mitigation and adaptation. It has been observed that most of the population in Pakistan especially youth and students do not exactly know about the existence of Ministry of Climate Change. Ministry of Climate change may work side by side with education and academia so that all the policies are developed in consultation to the ministry of education, education institutions and universities so that better adaptation strategies can be developed. Youth, school children and future of the country can play vital role in implementation of adaptation and mitigation strategies in any nation. In case of Pakistan majority of population is young and below the age of 18 years who are either students or young one or entering into the professions. There is a need to incorporate the youth into the climate change mitigation and adaptation policies. Pakistan has developed institutions and organizational mechanisms to develop the international cooperation with the international forums and organization available, however, there is a need to develop more comprehensive mechanism and dialogue for future cooperation and better understanding to resolve the climate change issues. On the basis of tis research it is recommended that NEP scale may also be applied for assessing and judging the environmental world view of other segments of society like businessmen, house wives and ladies, drivers especially truck drivers, communities living in dangerous zones and low-lying areas especially coastal areas.

Bibliography

[1] Dunlap, Riley E, Kent D Van Liere, Angela G Mertig, and Robert E Jones. “Measuring Endorsement of the New Ecological Paradigm: A Revised NEP Scale–Statistical Data Included.” *Journal of Social Issues* 56, no. 3 (2000): 425–42.

[2] Edenhofer, Ottmar. *Climate Change 2014 : Mitigation of Climate Change : Working Group III Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press, 2015.

[3] Fahad, Shah, and Jianling Wang. “Climate Change, Vulnerability, and Its Impacts in Rural Pakistan: A Review.” *Environmental Science and Pollution Research* 27, no. 2 (2020): 1334–38.

[4] Falkenmark, Malin, and Johan Rockström. *Balancing Water for Humans and Nature: The New Approach in Ecohydrology*. Earthscan, 2004.

[5] Fletcher, Chip. *Climate Change: What the Science Tells Us*. John Wiley & Sons, 2018.

[6] Khan, Mohammad Aslam, Jawed Ali Khan, Zulfiqar Ali, Imran Ahmad, and Muhammad Nauman Ahmad. “The Challenge of Climate Change and Policy Response in Pakistan.” *Environmental Earth Sciences* 75, no. 5 (2016): 1–16. https://doi.org/10.1007/s12665-015-5127-7.

[7] Malik, Muhammad Noman, Huma Hayat Khan, Abdoulmohammad Gholamzadeh Chofreh, Feybi Ariani Goni, Jiří Jaromír Klemeš, and Youseef Alotaibi. “Investigating Students’ Sustainability Awareness and the Curriculum of Technology Education in Pakistan.” *Sustainability (Switzerland)* 11, no. 9 (May 1, 2019). https://doi.org/10.3390/su11092651.

[8] “Paradigms Models & Scenario on Sustainibility,” n.d.

[9] Pauw, W. P., U. Moslener, L. H. Zamarioli, N. Amerasinghe, J. Atela, J. P.B. Affana, B. Buchner, et al. “Post-2025 Climate Finance Target: How Much More and How Much Better?” *Climate Policy* 22, no. 9–10 (2022): 1241–51. https://doi.org/10.1080/14693062.2022.2114985.

[10] Reis Neto, José Francisco dos, Celso Correia de Souza, Taner Douglas Alves Bitencourt, Cristiano Miranda Cupertino, Patrício Lauro de Melo Neto, Davi Guimarães Soares, and Iara de Oliveira Rodrigues. “Validating the Scale of the New Ecological Paradigm (NEP) in Brazilian University Students.” *Research, Society and Development* 10, no. 4 (2021): e16410413947–e16410413947.

[11] Rockström, Johan, Malin Falkenmark, Louise Karlberg, Holger Hoff, Stefanie Rost, and Dieter Gerten. “Future Water Availability for Global Food Production: The Potential of Green Water for Increasing Resilience to Global Change.” *Water Resources Research* 45, no. 7 (2009).

[12] Roser-Renouf, Connie, and Matthew C Nisbet. “The Measurement of Key Behavioral Science Constructs in Climate Change Research.” *International Journal of Sustainability Communication* 3 (2008): 37–95.

[13] Siddique, Muhammad Taimur, and Jorge García Molinos. “Risk from Future Climate Change to Pakistan’s Protected Area Network: A Composite Analysis for Hotspot Identification.” *Science of The Total Environment* 916 (2024): 169948.

[14] Waheed, Abdul, Thomas Bernward Fischer, and Muhammad Irfan Khan. “Climate Change Policy Coherence across Policies, Plans, and Strategies in Pakistan—Implications for the China–Pakistan Economic Corridor Plan.” *Environmental Management* 67, no. 5 (2021): 793–810.

© 2026 The Authors. This article is an Open Access article distributed under the terms and conditions of the Creative Commons Attribution(CC-BY)license
https://creativecommons.org/licenses/by/4.0