Journal of Peace, Development and Communication

PEACE AND DEVELOPMENT

Volume 06, Issue 02, June 2022
pISSN: 2663-7898, eISSN: 2663-7901
Article DOI: https://doi.org/10.36968/JPDC-V06-I02-20
Homepage: https://pdfpk.net/pdf/
Email: se.jpdc@pdfpk.net

Article:	**Climate Change Perception: A Comparative Study of Urban-Rural Communities in District Peshawar, Khyber Pakhtunkhwa, Pakistan**
Author(s):	Shah Nawaz Khan Lecturer, Centre for Disaster Preparedness and Management, University of Peshawar
	Danish Mujahid Lecturer, Department of Sociology, Bacha Khan University, Charsadda
	Sardar Muzaffar Hussain Zahid PhD Scholar, Centre for Disaster Preparedness and Management, University of Peshawar
Published:	30th June 2022
Publisher Information:	Journal of Peace, Development and Communication (JPDC)
To Cite this Article:	Khan, N, Shah., Mujahid, Danish. & Zahid, H, M, Sardar. (2022). "Climate Change Perception: A Comparative Study of Urban-Rural Communities in District Peshawar, Khyber Pakhtunkhwa, Pakistan " *Journal of Peace, Development and Communication*, vol. 06, no. 02, 2022, pp. 291–304, https://doi.org/10.36968/JPDC-V06-I02-20
Author(s) Note:	Shah Nawaz Khan is serving as Lecturer at Centre for Disaster Preparedness and Management, University of Peshawar Email: nawazkhan@uop.edu.pk
	Danish Mujahid is serving as Lecturer at Department of Sociology, Bacha Khan University, Charsadda
	Sardar Muzaffar Hussain Zahid is a PhD Scholar at Centre for Disaster Preparedness and Management, University of Peshawar

ABSTRACT

The ecosystem plays a vital role in sustaining life on Earth, whereas, the atmosphere provides the required medium for growth and survival. Severe environmental, economic, and social impacts are expected due to Climate Change (CC) on South Asia in general and people whose livelihoods depend on the use of natural resources in particular. They are likely to bear the burden of adverse impacts of CC. Among the countries severely affected by CC, Pakistan is also to its high exposure to extreme events and low adaptive capacity. People perception and the knowledge on CC can impact the success of implemented adaptation and mitigation options. It is therefore, important for communities to make regular efforts to analyze this information. The study was conducted in district Peshawar to determine the level of knowledge of CC among respondents, their perceptions on CC impacts and measures that are undertaken for coping its effects. Data were collected through questionnaires and interviews. Respondents were divided into farmers, government employees and students. Knowledge was judged by the ability of the respondents to define the concept of CC. The study designated that the level of knowledge was high. Respondents had detected an increase in temperature along withdecrease in precipitation (rainfall) within the district over the last few years. The major impact of CC experienced by the respondents on their health is vector-borne diseases. Measures for adaptation of CC are such as planting drought-resistant crops, construction of wells, planting trees and sustainable energy through solar panels. Although, the results indicate that respondents were not aware of the government adaptation plans on CC. The lack of knowledge regarding adaptive measures, finance and technical resources is a hurdle for respondents to adopt measures to combat impacts of CC and its consequences. Based on findings, the mass media and the local communities should be involved by the government while designing policies for mitigating the impacts of CC.

Keywords: Climate Change, perception, vulnerability, adaptation, mitigation

1.1 INTRODUCTION

Climate Change (CC) means a change of climate which is caused either directly or indirectly by the human activities, which disturb the composition of the global atmosphere and cause variation in the atmospheric temperature and seasonal rainfall of the certain area. CC is one of the emerging challenges which are faced by human and their surroundings while affecting the entire world either it's a developed or developing country.

On a global scale, the decrease in the rainfall and rising of surface temperature is because of the deforestation at large scale, which is creating a threat to the eco-system and the bio-diversity of the world (Wajiha et al., 2017). Due to deforestation and massive use of fuels for combustion has caused an increase in CO2 concentration from 280ppm to 380ppm (Shakoor et al., 2011). Climate Change will create fluctuation in sea level, variations in rainfall orders and movement of climatic regions due to the rise in temperature which then ultimately will increase the intensities of floods, storms and droughts (Shakoor et al., 2011).Climate Change is marked as the ruling environmental concern and the center of current research (Joshia & Chaturvedi, 2013).The developing countries are suffering disasters due to the skeptic effects of the increasing temperature and severe weather conditions such as floods and droughts frequently(Mller-Kuckelberg, 2012) which are harming their livelihoods (Simatele et al., 2012; Muller-Kuckelberg, 2012; Dube & Phiri 2013; Oremo, 2013) and other natural resources as well (Barnett & Adberg, 2007).

Most of the progressing nations rely on agriculture-based economies and are experiencing hardship due to altering climatic conditions (Muller-Kuckelberg, 2012). The most eminent effects are decrease in water supply, crop production (Ashfaq et al., 2011), elevated temperature (Shakoor et al., 2011) and loss of rangeland (Enete et al., 2011).

The outcomes of the Inter-Governmental Panel on Climate Change (IPCC) recommend that during the era 1990 to 2100 the intensification of global temperature will be the most exceptional than any seen in the last 10,000 years. This displays that the global climate is under human influences, particularly, by the green-house gases (GHGs) (Gul, et al., 2019).

Evidences indicate that if immediate measures are not taken to control the impacts of CC, it will worsen the situation of the entire globe. If these measures will on the basis of society's perceptions, they will be effective then. Therefore, it is important to gather the attitudes of the public for effective formulation of the policies for Climate Change, especially in rural communities since their perceptions will likely power the strategies to resolve the problem (Barimah et al., 2015). Policy discussions and scientific information on CC can be improved through improving the public understanding of global warming. In order to plan policies that will be supported or at least withstand, decision-maker's requisite to recognize what the community wants. Both groups need to understand the extent to which people's responses will differ across regions (Bord et al., 1998).

Throughout the past few decades, public perception and the concern about CC have been the focus of many types of research. The meaning of weather and climate to the most of

people are the same thing and they believe that climate has already changed because of weather pattern. People think CC means hotter weather, due to the use of the term global warming as the synonyms with CC (Kempton, 1997). People suggested that humans are the cause of CC and also concerned about its impacts but they have misconceptions and understanding about its causes i.e. unwisely linking CC with ozone layer (Elshirbiny et al., 2018).

Pakistan, a country with specific physiography like mountains, arid and semi-arid lands etc. is among the list of 12 extremely exposed nations having high chances to address the impacts of CC (Maryam et al., 2014). It is forecasted that severe droughts, increase in temperature, intense rainfall and loss of agriculture production is expected in future and will lead to affect the 40% of Pakistan (Ullah et al., 2015). These changes will be high in the arid and semi-arid regions and may disturb the physical, biological environment and economic activities of the local communities. It can also swing arid land and crop growing seasons towards the north.

Pakistan is susceptible to disasters where 80% are associated with climate. Disasters disturb both human and physical resources and lead to a loss in GDP. For example, the prolonged span of drought of 1998–2001 resulted in decrease of GDP up to 50%, whereas, 10 billion dollars were lost in 2010 floods that made 5.7% of GDP. Flood 2010 affectedaround20 million people in Pakistan, while damaging their assets and infrastructure, destroyed two hundred thousand livestock and inundated 17 million acres of agricultural land (Gul et al., 2019). Taking into account the challenges of CC, the focus of scientists, decision-makers and researchers should be on the need to establish mitigation and adaptation measures that could be adopted to overcome the impact of Climate Change. For the effective outcomes of these measures, this process needs to be supported at the local level. (Maryam et al., 2014).

Pakistan, being an agriculture country most of its population is dependent upon its agricultural products, whereas, 24% of such production is been added to its Gross Domestic Product (GDP) (IUCN, 2009b; Government of Pakistan, 2012). Although the contribution of Pakistan in global warming is negligible (WHO & UN 2015; Mir et al; 2017) but still the country is not free of its adverse effects such as climatic changes resulting into water scarcity, floods, droughts and changing weather patterns (WHO & UN,2015; Government of Pakistan, 2010). The shifting schedules of climate in the country are the sufficient demonstration of the severe events in the current history (Murphy et al., 2013) which include severe droughts of 1999 to2002, 2007 storm surges of cyclone yemyin and floods of 2010(ABD, 2010; Atta-ur-rehman& Khan,2011). All these disasters have caused huge loss of human lives and economy in form of damages to property and agricultural lands. Furthermore, such incidents are suspected to occur in future also with variation in monsoon patterns which will increase in droughts and eventually will affect the food chain in Pakistan (Government of Pakistan 2013-14).

Assuming that the CC will have unexpected impacts on human health, livelihood activities, water resources, rainfall, temperature and crops in future, and therefore, need to take interventions for mitigating the impacts by different organizations from government level to private level are required. This study was undertaken in District Peshawar, Pakistan. The

objective of the study was to analyze the knowledge of CC in District Peshawar, identify the perception about CC impacts and to explore the adaptation strategies in the study area.

Peshawar is a great historic city and the capital of the province Khyber Pakhtunkhwa in Pakistan. It is located near the border with Afghanistan. Its latitude is 34.025917 and the longitude is 71.560135. Its elevation is about the height of 317 meters, which is equal to 1,040 feet. Peshawar District has a population of 4,269,079 (census 2017). Winter begins from the mid of November and ends in March, whereas, summer starts from May and ends in September. The summer means the extreme temperature is above 40 °C and the mean lowest temperature is 25 °C. The mean lowest temperature during winter is 4 °C and the maximum is 18.35 °C. Peshawar district is divided into four tehsils/towns (Peshawar I, II, III, and IV). These tehsils are composed of 93 union councils (GoP, 1998).

2. Materials and Methods

2.1: Data Collection

Simple random sampling was used for this research. A total of 60 respondents were interviewed in District Peshawar consisting of 10 in Palosi, 10 in Sufaid-sung, 10 in Chugulpura, 10 in Hayatabad, 10 in Gulberg and 10 females from Academia (University of Peshawar =05 and Agriculture University, Peshawar =05). Each respondent was selected randomly and entirely unintentionally. To analyze the perceptions of respondents towards Climate Change, close-ended questionnaires were used to collect information. The terms and characteristics of the questions were clarified to the respondents before they were able to give proper answers. Although all the questions were set in English, but local (Pashto) language was used as a communication medium for a better understanding of questions during the collection of data from the farmers.

3. Results and Discussions

3.1: Knowledge of Climate Change

It is evident from the survey findings given in figure-1, the majority (73.3%) of people of Peshawar are aware of the CC. While (26.7%) are didn't know about the CC. Hence this shows that the people of Peshawar have information and awareness regarding CC.Similar response also resulted from Jan and Anja that peoples'livelihoods depend upon natural resources that are directly affected by Climate Change.Awareness about Climate Change may reduce the impacts by adapting in-time strategies(Jan & Anja, 2007).Perceptions of climate, its variability and its potential change have now became an important and prominent challenge for better understandings to dealt with its severe impacts (Lindskog, 1994; Dahlberg & Blaikie, 1996; Rebetez 1996; Ovuka & Lindqvist, 2000).

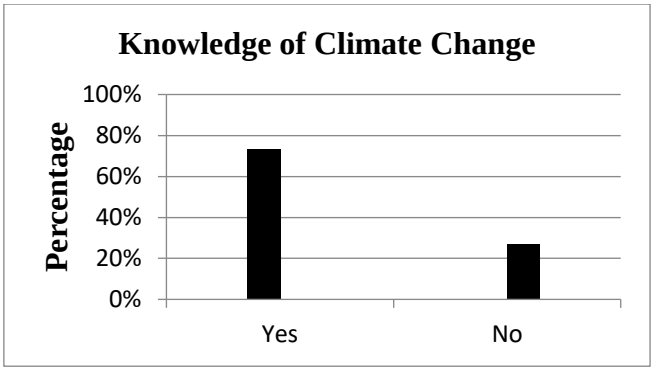

Figure 3.1

3.2: Responses on the Cause of Climate Change

The responses of the people about the causes of CC given in the questionnaire (natural, human and developed countries) revealed that, (65%) respondents attributed the cause to Natural processes, (26.7%) attributed it with Human activities while (8.3%) said it is because of the developed countries. Due to rapid increase in population, unplanned housing, deforestation and maximum release of Green House Gases has provoked the Climate Change phenomena (Millennium Ecosystem Assessment, 2005).

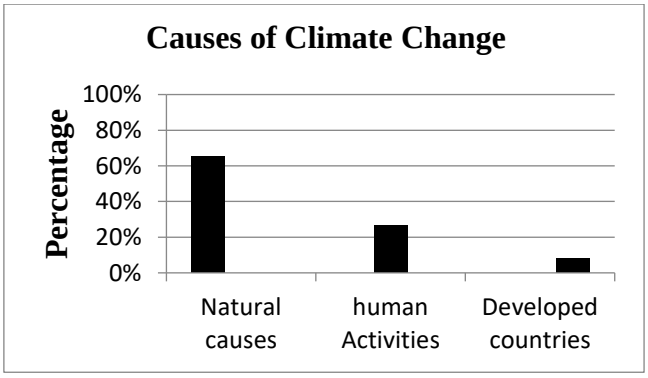

Figure 3.2

3.3: Impacts of CC on Food Production

The question asked from the farmers for the assessment, whether, the CC had impact on crop yield/food production. (18.7%) of the farmers indicated that food production is increasing, (68.7%) replied that food production is decreasing, while (12.6%) said that it has no effect on food. Similar result is from WWF that impact on agriculture and natural resources will directly affect the livelihoods of the local communities, whereas, the developing countries are the most vulnerable to natural disasters with serious economic impacts (WWF Nepal, 2005).

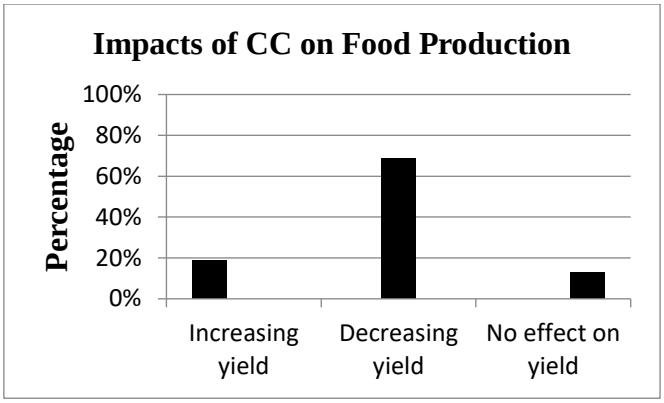

Figure 3.3

3.4: Perception about Human Health Impacts

People are worried about the negative impacts of the CC. Majority (40%) of respondents believed that due to rise in temperature more vector-borne diseases are spreading, (36.7%) indicated that Climate Change causes low air quality, (20%) respondents indicated that it has also mental/psychological impacts, while (3.3%) said that recently it caused increase in human and livestock deaths. In Nigeria, most of the marginalized people that are dependent upon their lands and livestock are more vulnerable to Climate Change due to their geographical location as they are located in a sub tropical region which directly affects their land productivity and decrease in their livestock (Barber, 2003).

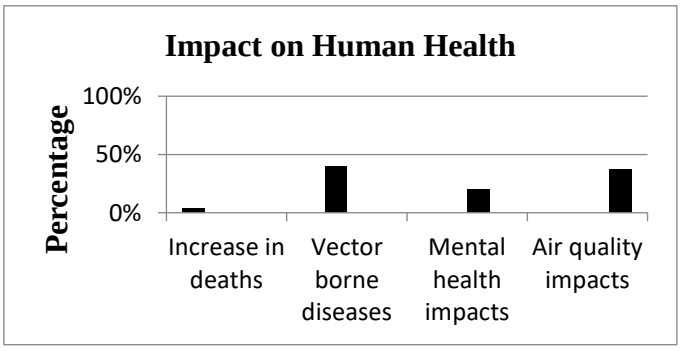

Figure 3.4

3.5: Perception about Impacts of CC on the Rainfall and Temperature

On the account of the impact of the CC on the temperature of their area/village within the district, figure-3.5.1 shows that majority (76.7%) of people believed that the temperature has increased over the last few year, (11.7%) indicated that the temperature is decreased, however, (05%) said that they have no idea, while (6.7%) indicated that CC has no effect on temperature.

Similarly, on the account of impact of CC on rainfall, figure 3.5.2 indicates that according to the majority (40%) of the respondents, the rainfall amount is decreasing and (30.7%) indicated that rainfall amount is increasing, while (21.7%) indicated that region has experience erratic pattern in rainfall during last few years. IPCC, (2007) has listed three key

sectors i.e. food and fiber, land degradation and biodiversity as the most vulnerable to Climate Change in the South Asian region. The most vulnerable population to Climate Change and variability are rural communities with few resources to cope with extreme weather events like landslides, erosion, and drought (IPCC, 2007).The monsoon rainfall is mainly of an orographic nature, resulting in distinct variations in rainfall with elevation between the southern slopes of the Himalayas and the rain shadow areas on the Tibetan Plateau (Mei'e, 1985). On the meso-scale, the impact of climate is mainly due to local topographic characteristics (Chalise, 2001)

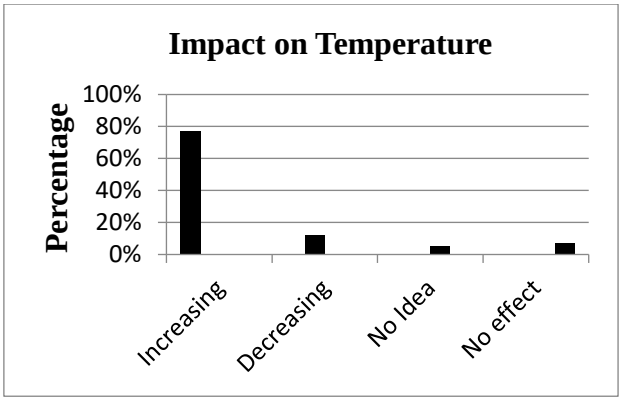

Figure 3.5.1

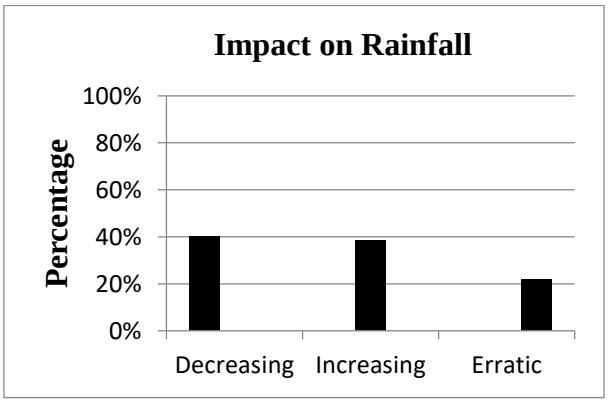

Figure 3.5.2

3.6: Opinions of Climate Change Impact on Water Resources

Questions were inquired in the questionnaire to find out the impact of CC on water resources. About (63.4%) respondents indicated that change in rainfall pattern and increase in temperature caused decrease in water table, while 19.2% indicated that it leads to increase in water table, about 7.7% said that these changes dried the water bodies in recent years, however, 9.7% said that they have no idea. Due to encroachments, the flow of water has now changed its characteristics and is unpreventable to control the impacts of floods brought forward through severe rainfall (ICIMOD, 2009).

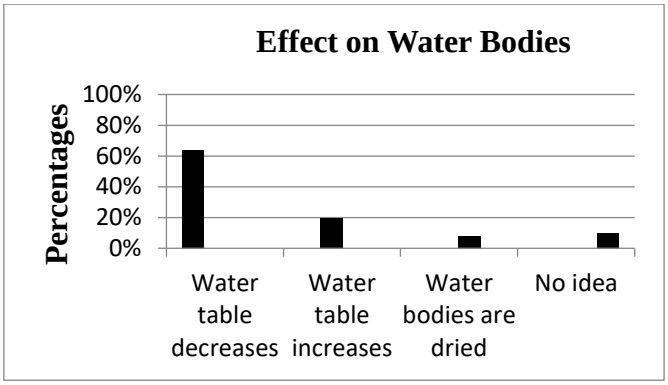

Figure 3.6

3.7: Adaptation Measures for Coping with Climate Change

To know the type of strategies that were used by people to cope with CC, the figure 3.7 shows the results that the majority (50%) of respondents indicated that they have planted trees, (36.3%) indicated that they use renewable energy like i.e. solar energy, while (13.7%) indicated that they are focusing on sustainable development. However, no respondent indicated either in sustainable agriculture and other type of measures to adapt Climate Change. Some local coping and adaptation strategies were adopted in response to observed risks and hazards related to climate and non-climatic factors. Ellis (2000) reported that through different line agencies and stakeholders, planning and implementation for strategic policies can easily be adapted to combat the impacts of CC (Smit et al., 2001; Barrett et al., 2001).

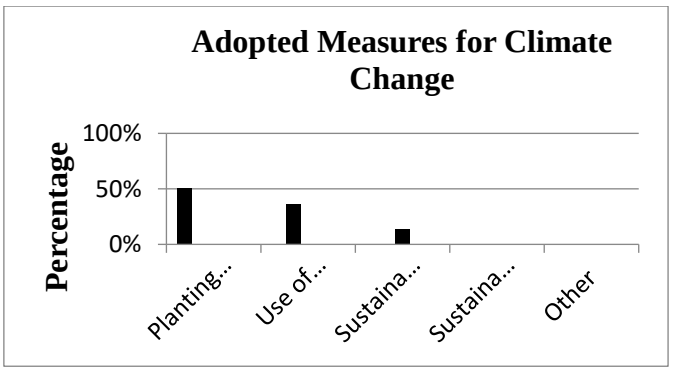

Figure 3.7

4. Conclusion

Climate Change is worldwide concern and in future it is thought to have potential and severe consequences on the people of the study area.The data revealed that people have sufficient knowledge of CC and its impact on their communities. According to the local people it was noticed that temperature of the study area has been changed with passage of time. The respondents mentioned that CC is caused due to both natural processes and the human activities. The impacts of CC were in the form of affecting human health, crop production, social attitudes and psychological impacts etc, which are still in progression. The present study

highlighted that people perception regarding CC is high and they also display comparatively good understanding of various dimensions that contribute to CC.

As to cope the impact of CC, majority of respondents have started different kind ofadaptation measures. These measures include construction of wells and the harvesting of rain water to minimize the decrease in water table, changing crop varieties and drought resistant plant species to minimize the effect of CC. Although there is Ministry of Climate Change in study area but the local people are unaware of the role of the governmental plans of actions towards the CC. Therefore, it is now an important issue to aware the local communities through specific mediums i.e. communication campaigns, awareness sessions and trainings to educate the people about Climate Change and adaptation strategies.

References

Abaje IB, Giwa PN (2007). Urban Flooding and Environmental Safety: A Case Study of Kafanchan Town in Kaduna State. A Paper Presented at the Golden Jubilee (50th Anniversary) and 49th Annual Conference of the Association of Nigerian Geographers (ANG) Scheduled for 15 th – 19 th October, 2007 at the Department of Geography, University of Abuja, Gwagwalada-Abuja.

Agrawal, A. and N. Perrin, (2008). Climate Adaptation, Local Institutions, and Rural Livelihood. IFRI, Michigan.

Ashfaq, M., Zulfiqar, F., Sarwar, I., Quddus, M. A., &Baig, I. A. (2011). Impact of climate change on wheat productivity in mixed cropping system of Punjab. Soil & Environment, 30(2).

Barber, J. S., Biddlecom, A. E., &Axinn, W. G. (2003). Neighborhood social change and perceptions of environmental degradation. Population and Environment, 25(2), 77-108.

Barimah, P. T., Kwadwo, S. O., & David, O. (2015). Assessment of people's knowledge and perception on climate change: A case study of Asunafo North District, Ghana. International Journal of Innovative Research in Science, Engineering and Technology, 4(1), 18417-18424.

Barnett, J. and W.N. Adger. 2007. Climatechange, human security and violent conflict. Pol. Geograph. 26(6): 639-655. https://doi.org/10.1016/j.polgeo.2007.03.003

Barrett, C. B., T. Reardon, and P. Webb (2001). Nonfarm income diversification and household livelihood strategies in rural Africa: concepts, dynamics, and policy implications. Food Policy 26:315-331.

Bord, R. J., Fisher, A., & Robert, E. O. (1998). Public perceptions of global warming: United States and international perspectives. Climate research, 11(1), 75-84.

Chalise, S. R. (2001). An introduction to climate, hydrology and landslide hazards in the hindukush-himalayan region. In Landslide Hazard Mitigation in the Hindu Kush-Himalayas (ed) Chalise, S. R., Tianchi, L. and Upreti, B. N. Kathmandu, ICIMOD, 51–62.

Dahlberg AC, Blaikie PM (1996) Changes in landscape or in interpretation? An environmental history from North East District, Botswana. In: Dahlberg AC (ed) Interpretations of environmental change and diversity: a study from North East District, Botswana. Dissertation No. 7. NaturgeografiskaInstitutionen, Stockholm University

Dube, T., &Phiri, K. (2013). Rural livelihoods under stress: The impact of climate change on livelihoods in South Western Zimbabwe. Dube, T. &Phiri, K. (2013), Rural livelihoods under stress: The impact of climate change on livelihoods in South Western Zimbabwe, American International Journal of Contemporary Research, 3(5), 11-25.

Ellis, F., (2000). Rural Livelihoods and Diversity in Developing Countries. Hurber.M., K.M., Bugmann, and Dordrecht, R.A. M., 2005, Global Change and Mountain Regions: An Overview of Current Knowledge. Springer, The Netherlands

Enete, A. A., Madu, I. I., Mojekwu, J. C., Onyekuru, A. N., Onwubuya, E. A., &Eze, F. (2011). Indigenous agricultural adaptation to climate change: Study of Southeast Nigeria.

FAO, (2007) Adaptation to climate change in agriculture, forestry and fisheries: Perspective, framework and priorities. Food and Agriculture Organization of the United Nations Rome.

Government of Pakistan. 2012. National Climate Change Policy. Government of Pakistan Ministry of Climate Change. www.lead.org.pk/cc/attachments/Resource_Center/NAP/pakistan.pdf Accessed January 21, 2018.

Government of Pakistan. 2013-14. Pakistan Bureau of Statistics, Agriculture Statistics Section, Islamabad.

Gul, F., Jan, D., &Ashfaq, M. (2019). Assessing the socio-economic impact of climate change on wheat production in Khyber Pakhtunkhwa, Pakistan. Environmental Science and Pollution Research, 26(7), 6576-6585.

ICIMOD. (2009). Local Responses to Too Much and Too Little Water in the Greater Himalayan Region. International Center for Integrated Mountain Development (ICIMOD), Kathmandu, Nepal, 76p.

IPCC. 2007. Climate Change (2007): Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri, R.K and Reisinger, A. (eds.)]. IPCC, Geneva, Switzerland, 104 p.

IUCN Pakistan. (2009a). Climate Change Disaster Management in Pakistan, IUCN Pakistan,Islamabad, Pakistan.

Jan S, Anja B (2007). Indigenous Peoples and Climate Change. University of Oxford and Missouri Botanical Garden.

Joshia, K., &Chaturvedib, P. (2013). Impact of climate change on agriculture. Octa Journal of Environmental Research, 1(1).

Lindskog P (1994) Land degradation, natural resources and local knowledge in the Zahel zone of Burkina Faso. GeoJournal 33:365–375

Maryam, A., Khan, S., Khan, K., Khan, M. A., Rabbi, F., & Ali, S. (2014). The perception of local community about the effects of climate change in Upper Swat, Khyber Pakhtunkhwa. Pakistan. J Earth SciClim Change, 5(183), 2.

Mei'e, R., Y. Renzhang, and B. Haoshend, (1985). An outline of China's Physical Geography. Beijing: Foreign Language Press.

Millennium Ecosystem Assessment (2005). URL:http://www.maweb.org/en/index.aspx

Miller-Kuckelberg, K. 2012. Climate change and its impact on the livelihood of farmersandagricultural workers in Ghana. Accra: FriedrichEbertStiftung. pp. 1-47. library.fes.de/pdffiles/bueros/ghana/10510.pdf. Accessed May20, 2016.

Mir, K.A., P. Purohit and S. Mehmood. 2017. 567- 581. https://doi.org/10.1007/s10113-012-0395-1

Oremo, F. O. (2013). Small-scale farmers' perceptions and adaptation measures to climate change in Kitui County, Kenya (Doctoral dissertation, University of Nairobi,).

Ovuka M, Lindqvist S (2000) Rainfall variability in Murang'a District, Kenya: meteorological data and farmers' perception. Geogr Ann SerAPhysGeogr 82:107–119

Rebetez M (1996) Public expectation as an element of human perception of climate change. Climate Change 32:495–509

Shakoor, U., A. Saboor, I. I. Ali, and A.Q. Mohsin. 2011. Impact of climate change on agriculture: empirical evidence from arid region. Pak. J. Agri. Sci. 48(4): 327-333.

Shakoor, U., Saboor, A., Ali, I., &Mohsin, A. Q. (2011). Impact of climate change on agriculture: empirical evidence from arid region. Pak. J. Agri. Sci, 48(4), 327-333.

Simatele, D., T. Binns and M. Simatele. 2012. Sustaining livelihoods under a changing climate: the case of urban agriculture in Lusaka, Zambia. J. Environ. Plan. Manag. 55(9): 1175-1191. https://doi.org/10.1080/09640568.2011.637688

Smit, B., O. Pilifosova, I. Burton, B. Challenger, S. Huq, R.J.T. Klein, and G. Yohe, (2001). Adaptation to climate change in the context of sustainable development and equity. In McCarthy, J.J., Canziani, O., Leary, N.A., Dokken, D.J. and White, K.S., eds, Climate change 2001: impacts, adaptation and vulnerability. IPCC Working Group II. Cambridge: Cambridge University Press, 877–912.

Ullah, S., Khan, T. M., Khan, U., Rahman, K., Ullah, N., & Ahmad, T. (2015). The Perception of Local Community About Climate Change and Its Impacts On Their Lives At Tehsil Timergara, District Dir (Lower), Khyber Pakhtunkhwa Pakistan. Asian J. Agric. Biol, 3, 7-14.

Wajiha, A. R., Afridi, H., & Saeed, K. Maaz (2017) Local perspectives towards climate change and its effect in Buner District of KPK, Pakistan. Asian J AgricBiol, 5, 70-76.

World Health Origination., and United Nations Organizations. 2015. Climate and health country profile 2015: Pakistan. Pp. 1-8. http://www.who.int/iris/handle/10665/246150. Accessed February 02, 2018.

WWF (2005) Glaciers, glacier retreat, and its subsequent impacts in Nepal, India and China (Kathmandu: WWF Nepal Program), 25 p.