

# Effects of Climate Change on Human Behaviour: A People Perspective

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## ABSTRACT

**Aim:** Climate change effects are not limited to a single sector of life but it has far reaching effects on behaviour and attitudes of a person or community in a holistic manner. With passing time, climate change is showing its unpleasant consequences in one form or another. Human behaviour has a significant importance in altering and modifying the atrocities of climate change.

**Methodology:** In this research paper, Tehsil Gagra of District Buner Pakistan was selected to analyze the human behaviour as an independent variable and climate change effects on local people lives as a dependent variable. Out of 3 Union Councils (UC), 2 were randomly selected and from both the UCs 370 respondents were taken as a total sample size. Data was collected from the local respondents through interviews, & collected data was analyzed through medium of central dispersion, univariate and bivariate statistical techniques. Chi-Square test was used to find the association between the targeted dependent and independent variables.

**Findings:** Findings of the data collected showed that there was found a significant relationship ( $P < 0.05$ ) between increased apprehensions and community practical measures towards climate change, rural people settlement has increased pressure on natural resources, increased agro-forestry and awareness among the locals with the climate change effects on human lives. Moreover, there was also found a high negative significant relationship ( $P > 0.05$ ) between government has taken sufficient actions to avert the climate change, and government has the proper system to cope with hazardous situation, with climate change effects on human lives.

**Conclusion:** As regards to the findings, it is suggested that there is need of awareness among the local population about the climate change and a felt need of increase the coordination between the local and international community to give a framework to mitigate the losses in the aftermath of climate change by prioritizing the issue of climate change on urgent basis.

**KEYWORDS:** Climate Change, Behavioural Change, Change in community, Government response, Pakistan

## 1. INTRODUCTION

In the past, the role of man was ignored in the contribution to the climate change. Along with that, the climate change phenomenon was considered as vogue and having no belief on the processes related to climate change. With time, scientists' community presented their views and opinions and at later time, having the agreed consensus that anthropogenic activities and involvement of man in the natural balanced systems has added to the climate change and disrupted the natural stability of ecological processes respectively. Research shows that with change in natural processes, it is affecting the behaviour and especially health of the societies and communities. With advancement in social and psychological sciences, it is predicted that climate change has shown its effects on the human behaviour. Such effects are not limited to the shocks, severe weather events and epidemic diseases. But it has a range of impacts on the socio-economic conditions and demographic patterns (McMachiel et al., 2006).

Behaviour of the humans is correlated with climate change. The recent trends in global climate change is the through activities of human including the releasing of the harmful gases and pollutants from the industries, automobiles and furnaces. Such gases are depleting the protective layer of ozone which scan the ultra-violet rays coming from the sun. On the other side, because of the effects of climate change, human behaviour is also changing with respect to norms, attitudes and social customs. Cultural and psychological problems like tension and stress is also negatively affect the human behaviour (Swim et al., 2011). Climate change affects the social customs, attitudes and norms of a society. Human influence has been the dominant reason behind the observed warming of climate since the mid-20th century. Bondage of customs and traditions link the people with each other. Recent surge in the world temperature and the level of susceptibility to climate change is influencing the bonds of society which emerged in the early age of the human civilization and is considered the foundation stone for a strong relations among people. Study conducted in this regard shows that rise in temperature creates

emotional responses in the form of increase aggression which shape the behaviour of human. It is also worth mentioning that with temperature increase and other stresses, it is predicted that changes in the behaviour of the person's character is imminent and the waves of violence is also expected to increase with time. Increased aggression and violent behaviour leads to conflict and wars (Solanki, 2016).

Climate Change is affecting the society strong cultural bonds because of which people are living in different parts of the world having their own culture and traditions. Culture is the highest and an outstanding feature through which communities and societies are recognized in the international world and have the distinctive features from other systems of culture. Cultural values give people identity, cohesion and response mechanism in times of need. However, the current changes in climatic patterns are altering the cultural bonds threatening lives and livings of the communities. Studies suggest that culture plays an important role to mediate fluctuations in the setting and changes in societies, and explain the adaptation mechanism to climate change and clarify shortcomings in current policies adapted by authorities to every dimension of global climate change is facilitated by culture (Whitmarsh, 2009).

Cultural values have the capacity to transform the organizational structure within its limits the measures and policy recommendations to climate change, that are harmful to environmental and social values (Nilsson et al., 2004). Cultural values signify the climate change perceptions of the public in the shape of mitigative measures and policies. Studies suggest that measures adapted similar to the culture of the people can give fruitful results (Leiserowitz, 2006). In addition, slow and gradual but continuous change in climatic patterns have disrupted the cycle of human activities. On one side, it has contributed to the ecological imbalances of the natural ecosystem. But, on other side, behaviour of humans especially physical and mental health of the communities are also affecting due to negative outcomes of the climate change and global warming. Research conducted in this regard shows that there is direct relation between the human behaviour and the recent change in climate. Human behaviour is an indicator for the future climate change. All the contributions of the humans in releasing the Greenhouse gases (GHGs) and Chloro-Fluoro-Carbons (CFCs) to the environment clearly shows that behaviour is the main steering factor in climate change. The reason behind this is the human desire for more and more industrialization to dominate the society on the basis of earning more wealth and riches. Contrary to this reality, human behaviour can modify the harmful effects by adaptation strategies and techniques (Mirza, 2003). Some of the studies conducted in America in climate change context shows that climate change is a sensible risk and it has far reaching effects on the health causing an increase in diseases. Such effects are not limited to one continent but it will surpass the nations cause heavy damages (Leiserowitz, 2005).

Moreover, the relationship between the human behaviour and climate change is not limited only to the contribution of harmful gases and pollutants. But climate change is also showing its effects on the behaviour regarding physical and mental health. Increase in the incidences and extent of climate related hazards, severity in the diseases have also increased. Countries that are in the list of developing nations are more vulnerable to weather hazards, where the exposure is high to already exacerbated environmental and land degradation. Along with other factors, overpopulation and urbanization have added considerable stress on the developing countries. On one side, developing countries are in the vicious circle of under-development and poverty, but on other side diseases occurrences in severity and magnitude are doubling their miseries and efforts to impede the impacts of climate change. Recent changes in climatic patterns have compelled the health scientists and meteorologists to propose their recommendations for future considerations devising a relation between the weather and diseases. Planning plays an important role and planners are designing plans in modifying the adaptation mechanism and implementation of the projects to reduce the effects of climate change on the health of the people (Confalonieri et al., 2007).

Furthermore, humans evolved on the planet earth thousands of years ago. It means that there is a relation between the humans and the processes related with the balance of this environment. But as climate change occurring slowly and gradually, it has also affected this relation which persists since ages. In the past, mankind's source of income was subsistence agriculture and hunting and that was the only dependent source. As the world advanced, more and better opportunities came in hand to the humans. But the new trends emerged in the form of climate change and global warming which affected the stability of the relations among the farmers, labourers, industrialists and businessmen. Stresses in the form of inflation, tough competition to acquire more facilities disturbed the balance of the human behaviour. Studies show that increase of stresses and shocks increase the chances of internal conflicts, violence and revolt. Furthermore, climate change poses a threat to the traditional values and taboos which has a great role in strengthening the relations. Experts have of the opinion that the future wars would be fought on the natural resources distribution especially water rather than on nuclear assets (Environmental Protection Agency (EPA), 2003). Climate change has affected the nature of the theories that were presented in the past related to human behaviour. The two prominent theories are the Environmentalism, in which environment is the compelling force to modify the activities of human beings and Possibilism is the alternate in which man has the capacity to modify the influence of nature. Now on one side, climate change has disturbed the balance of nature regards to customs, traditions and demographic patterns. But on other side modifying nature of human to the environment has also changed regards to the productivity and

economy (Stern et al.,1999). Taking stock of the situation, as portrayed in the fore-mentioned review, the present study is designed to look into the behavioural alterations at community level under the review of government response with effects of climate change of human life.

## 2. MATERIALS AND METHODS

Research methodology comprised of various components and these included universe of the study, sampling, data collection, conceptual framework and data analysis respectively. Tehsil Gagra, one of the 6 Tehsils of the District Buner, was the universe of the study. Tehsil Gagra was selected because of its geographical location and the recent climatic changes faced by the local people. Tehsil Gagra, one of the six Tehsils of District Buner was purposely selected. Out of 3 Union Councils (UCs), only 2 UCs namely Shalbandi and Rega were randomly selected. Further, from each UC, one village was selected namely Amnawar from UC Shalbandi, and Takhtaband from UC Rega, on the basis of simple random sampling method. The total population of the village Amnawar and Takhtaband stand, al-(H.H) 7367 and 2775(H.H) respectively, and by adding both the total number of the household stood at 10,142 by using the Proportionate sample formula. A sample size of 370 determined as per criteria of Sekeran (2003), was selected. The total sample size was distributed through proportional villages' allocation method as shown below in Table 1.

$$n_i = \frac{n \times N}{N} \dots\dots\dots \text{Eq (1) (Chowdhury+Kamal, 1996)}$$

**Table 1: Sample Size (n) Showing Distribution of Population and Respective Sample Size**

Serial No.	Name of the Village	Population Size (N)	Sample Size (n)
1	Amnawar	7367	269
2	Takhtaband	2775	101
	<b>Grand Total</b>	<b>10,142</b>	<b>370</b>

Primary data was collected from the respondents through interview schedule involving the community members. Conceptual framework has given the idea about the variables used in the research and the data was collected about these variables in the field. In the current research, climate change effects on human life was declared as dependent variable and human behaviour as an independent variable as shown below in Table (2).

**Table 2: Conceptual Framework**

Independent Variable	Dependent Variable
Behavior	Climate Change Effects on Human Life

Statistical techniques such as chi-square test analysis was used to analyze the data. Descriptive statistics were used to concise the detailed information obtained from primary and secondary sources. Percentage and average was used for analysis of the data at the universal level. In addition, bivariate analysis was also be carried out to measure the level of association between independent and dependent variables through cross tabulation.  $\chi^2$ -test statistic was applied to adjudge the level of significance of the relationship,  $\chi^2$  test was determined through the application of the following formula.

$$(\chi^2) = \chi^2 = \sum_{j=1}^j \sum_{i=1}^k \frac{(o_{ij} - e_{ij})^2}{e_{ij}}$$

## 3. RESULTS AND DISCUSSIONS

### 3.1 Change in Community Behaviour and Government Response in Views of Local Respondents

Climate change effects are not limited to a single sector of life but it has far reaching effects on behaviour and attitudes of a person or community in a holistic manner. With passing time, climate change is showing its unpleasant consequences in the form of increased temperature, abrupt melting of glaciers and change in weather and seasonal shift, Similarly, as the impacts of climate change deteriorating our lives, so the local community perception is also undergoes modification in behavioural patterns. Government bodies have a significant role in averting and mitigating the impacts of climate change and raise the perception level by means of creating awareness among the people.

Table (3) shows that 98.9% of the respondents express their views that community apprehensions about climate change has increased, 0.1% of the respondent was in disagreement and 0.3% respondents were treating climate

change apprehension in a neutral way. It could be disclosed from these finding that people has a wider understanding of the variation of weather shifts and subsequent effects on human ways of life. Study carried out by (Farooqi et al., 2005) has also concluded that in Pakistan comparing the Southern and Northern part, provides an evidence that as the impacts of climate change have increased, Southern parts of the country will have to face the effects in the form of increased frequency of droughts due to less rainfall. On the other side, Northern part of the country will have to face more precipitation and melting of the glaciers. These findings have increased the perception level of people that climate change is a real threat to their lives with a distorting effects. An assessment has been conducted by the (Centre for Science & Policy, 2000), which also indicated that with increase in risks of climate people have also realized these risks which have threatened and changed the behaviour of communities. Local community are now taking practical actions to avert the negative impacts of climate change.

Almost 50.8% of the respondents were of the view that now local community has stood in response to the climate effects. 24.3% of the respondents were in contradiction with the statement and 24.9% of the respondents were recorded the local community action in a neutral manner. This could be ascertain from these results that people has respondend to climate change as a threat to the very extisance. Community people realizing the effects of climate change has taken action in diversifying their livelihoods and economies through a better methods of enhancing the capacity of local people. Sustained efforts in this regard need the support of government and private sector (Ministry of Finance, 2017).

Although majority i.e. 50.8% of the respondents considered that local community are taking action to prevent the adversities of climate change, however, 24.3% of the community responses also holds place. The reason may be lack of access to the resources, poverty and lack of awareness and sense to the calamities of recent climate change. The climate change, if taken in a holistic mode, could only be averted by an organized agency like government. Government role in mitigating the impacts of climate change by taking practical actions cannot be ignored. Governmnet has resources and capacities at the national, provincial and local level. Creating sustainability in ecosystem provides opportunity to lessen the impacts on natural processes and the relationship between the human and the environment (Centre for Science & Policy, 2000).

Table 3 has exhibited that 67.5% of the respondents were of the view that government did not take actions to prevent check on the climate in order to create harmony in the natural ecosystem. Majority of the responses showed that people had less satisfaction level from the government regards to actions to prevent climate effects on the ecosystem. Government role was found to be placed as a dynamic notion, if could not successfully avert the drastic ramifications of climate change. These findings were in conclusion to the study conducted by (Khan, 2016), who pointed out that local people have feelings of insecurity to climate change effects. Further, elaborating the government role in climate change mitigation, there is lack of planning and an agenda at the local level to prevent the effects of climate change on the ecosystem.

Some 30.3% of the respondents were in agreement with the statement that government has taken his role in adversing the impacts of climate change. It is apparent from these results that people had some level of information pertaining to certain recommendations over climate change initiatives. The reason behind in agreement with the statement is the formulation of national climate change policy by the government recently which indicates a high role of the government among the local community an ensuring the safety of the natural processes in the ecosystem (Global Facility for Disaster Risk Reduction, 2016).

Furthermore, government role in reducing effects of climate change through a proper system to cope with hazardous situation was also found. Majority of the respondents, i.e. 50.5% were of the opinion that there is no such proper system with government to cope with the situation. 41.1% of the respondnets said that government has the capacity to cope and 8.1% respondents were in neutral manner. Government role with amalgamation of institutional capacities could not be ruled out, as climate change has been declared a national calamity and its mitigation effects at the individual level is unwise to bring any useful results. Cameroon government role suggested that there is lack of capacity to cope with the adverse effects of climate change. Government institutional framework is an early stage to make decisions and planning towards climate change. Malfunctioning of the institutions is also a factor to cope with the hazardous situation (Brown & Bele, 2010). Lack of climate change adaptation measures in livelihoods sector and economy by the government has further worsen the situation. Preparedness level of the local community is very low on the behalf of the government. Lack of funds and coordination between the government and donors has created an atmosphere of distrust among the local people (Ashry, 2009).

Behaviour of the community people about the effects of climate change can be judged by migration of the people from settled to rural areas or from rural to settled areas. This fact has been analyzed by the current research in which 77.1% of the respondents were of the view that people have constantly settled in the rural area thus increasing pressure on the natural resources especially on limited agriculture practised in the study area. However, 18.6% of the respondents shared their opinions contrary to the statement and 4.3% of the respondents had neutral responses. It is emanated from these results that climate change has not only put pressure on the avilable resources but also triggered the process of internal migration. These changes have drastically affected

the available resources and the routine life pattern of people including their patterns of livelihood. Climate change and migration has a deep linkage with each other. According to (The Diplomat, 2017), Pakistan is one of the country which is facing the impacts of climate change, but the local people of the study area still not in position to leave the rural areas. The reason behind not leaving the rural areas may be strong social bonds and local community dependency on agriculture. According to (Thomas Reuters, 2017), rural areas provide a better chance for poor people to practise various livelihoods usually agriculture, livestock rearing, poultry farming and cutting of trees to earn their living. But the negative aspect of such practice is the deforestation by the inhabitants of the community. Economy of a country depends on the stability of the natural processes. However, climate change has affected the growth of economies and stability of the GDP in the developed and developing nations. Industries installation provides an opportunity for the developing nations to get an advantage from the raw material and processed in the industries to achieve development. Better economic output needs installation of huge industries to achieve the target of stable economy.

Table 3 further provides the description in which 49% of the respondents were in disagreement with the statement that government has enhanced the industrial growth to achieve better economic output. 43.2% of the respondents had of the opinions that government has enhanced the growth and the remaining 7.8% of the respondents had the neutral thinking. International community has started to working by focusing their energies on the policy formulation at the global, regional and local level to cut short the agents causing climate change. Industrial growth is responsible for the emission of pollutants and other chemicals causing global warming and climate change. The study revealed that majority i.e. 81.6% of the respondents were of the view that international community is playing its role to curb and put check on the sources. However, a negligible number i.e. 7.9% had their views in disagreement and 10.5% of the responses were found as uncertain (United Nations Organization, (2005). Reports have suggested that climate change is affecting everyone and each sector either in developed world or in less developed countries. Developed nations to achieve the development have installed industries in a huge number that has contributed to emissions of large amount of harmful substances. In this regard, international community came forward to formulate policies and implement such policies at the ground level in true sense. In Pakistan, acceptance of the National Climate Change Policy is a step in realizing that climate change is a real threat to our lives. Recent reports have pointed out that Pakistan is on the 7<sup>th</sup> position among the affected nations due to climate change (Dawn News, 2017).

Majority of the respondents i.e. 91.9% were of the opinion that government and international community is planning to implement strategies to reduce the population growth. The remaining respondents were in disagreement to the population policies. These findings suggested that the respondents had the knowledge of the negative effects of increase in population growth in terms of relations to climate change. More populations put more pressure on the resources and mitigating the chances of sustainability with regard to resource utilization. Population is one of the important factor for climate change effects. High population in an area means high exposure of that population to the effects of climate change. Various strategies have been adopted to combat the effects of climate change.

Agro forestry is one of the technique that involves the land utilization in a sustainable way to achieve diverse ecosystem. Out of 370 respondents, 55.4% were in agreement that government is trying to encourage farmers to develop agro-forestry mechanism to combat climate change. However, 22.2% of the respondents were in disagreement and neutral in their responses. Means of attaining any calamity is to be determined by an organized government agency. Maintainability of the ecosystem in the rural areas have different approaches of the rest of the country. Sustainability in rural areas could be addressed by planting more trees i.e. enhance the forest areas, stop deforestation and encourage the practice of agro-forestry. According to (Abbas & Hammad, 2017), agro forestry is a best alternative technique to reduce and absorb the carbon emissions. It helps in the sustainable utilization of the land with control use of the natural resources.

The study disclosed that majority i.e. 80.8% of the respondents were of the view that government has created awareness among the local people about climate change effects. Disagreement to the statement stood at 10.8 % and 8.4% as natural. Raising awareness level and climate change perception has a significant role in mitigating the effects of climate change. One of the major cause in developing countries is the lack of awareness among the population. International community supporting the governments to transfer the technology and funds to increase the level of awareness and change their behaviour towards climate resilient societies (Shahid & Paracha, 2016).

**Table 3: Frequency and Percentage Distribution of Local Respondents Regarding Change in Community Behaviour and Government Response**

S.No	Statement	Agree	Disagree	Neutral	Total
1	The climate change has increased the apprehensions of community.	366(98.9)	1(0.1)	3(0.3)	370(100.0)
2	Community members are taking practical steps to prevent changes in the climate.	188(50.8)	90(24.3)	92(24.9)	370(100.0)
3	Government has taken sufficient action to put check on the climate in order to keep the harmony in the eco-system.	112(30.3)	250(67.5)	8(2.2)	370(100.0)
4	Government has the proper system through which it can cope from the hazardous situation resulted from climate change.	153(41.4)	187(50.5)	30(8.1)	370(100.0)
5	People are constantly settling in the rural area which has decrease agriculture and forest land.	285(77.1)	69(18.6)	16(4.3)	370(100.0)
6	For better economic output, government enhancing industrial growth for stable economy.	160(43.2)	181(49.0)	29(7.8)	370(100.0)
7	International community has realized to put checks on sources of climate changes.	302(81.6)	29(7.9)	39(10.5)	370(100.0)
8	Governments and international community have implemented policies of family planning in order to reduce the population growth rate.	340(91.9)	3(0.8)	27(7.3)	370(100.0)
9	Government encourages farmers to develop Agro-Forestry to combat climate change.	205(55.4)	83(22.4)	82(22.2)	370(100.0)
10	Government and private sector has created awareness among the local people about climate change.	299(80.8)	40(10.8)	31(8.4)	370(100.0)
<b>Note: Number in the parenthesis shows percentage and number outside the parenthesis shows the frequency.</b>					

Source: Field Survey, 2017

### 3.2 Association between Community Behaviour and Government Response to the Climate Change Effects on the Human Life

Role of the community and government authorities holds an important place to reduce the impacts of climate change on the lives and the associated sectors through introduction of a number of intervention both short and long term. Behaviour is variation to character of an individual based on exposure to various situations within a community. However, sometimes it is necessary to bring change in the behaviour with the circumstances as well. Besides, community behaviour, the government role cannot be ignored in addressing to the threatening situation due to climate change, casting black shadows on the each corner of the life. Government has the resources and the capacities, by utilizing the resources in a better response to the climate change effects can be initialized.

In Table 4, an association was drawn between the independent variable i.e. community behaviour and Government response with the dependent variable i.e. climate change effects on the human lives, by studying the each statement correlated between the two. Increase in community apprehensions among the local people to the effects of climate change has shown a highly significant ( $P=0.000$ ) relationship. The reason behind this high association is the cognitive reasoning of the local individuals towards the climate change effects and a change in the attitude and behavioural patterns. These findings had similarities to Shove, (2010), that increase in the apprehensions among the communities arise due to the current trends and changes in the hydrological and ecosystem imbalances at the global and local level. Changes at the global level also have reflections on the local community. People are aware of the severities of climate change due to which they treat climate change as a real threat for their lives. As the apprehensions have increased in the local community towards the climate change, community members are taking some of the practical steps to avert the impacts on the basis of their available resources and capacities.

On this basis, a significant ( $P=0.000$ ) relationship was discovered in taking practical steps by local community with climate change effects on their lives by bringing change in their behavioural patterns to resist the adverse impacts of climate change. These result has the support of Grothmann & Patt, (2005), who carried out a study in Rural Germany and Zimbabwe to analyze the findings of their research on the basis of the local adaptation to the climate change. Findings from both the rural areas have shown that developed regions have more resources and capacities, so they can better manifest themselves in the stressed environment as compared to the less developed or developing countries where there is less availability of the resources and high backwardness.

Role of the government is of utmost importance in a crisis situation with a challenging mode in terms of climate change. Contrary to the above, a non-significant ( $P=0.165$ ) relationship was detected that Government has taken action to harmonize balance in the ecosystem with the climate change effects on the human life. Government is focusing on the adaptive and mitigative measures to reduce the impacts of climate change. More concentration is on the socio-economic problems and relief after when the climate disasters strike a community as pointed out by(Gore & Robinson, 2009), who has suggested that developed nations have reached to high

stage of development where there is no such issues of socio-economic nature. In developing nations including Pakistan, there is less concentration of government authorities towards the effects of climate change. One of the basic reason is the lack of funding on the part of donors and the resolve to utilize the community level resources in such a challenging environment is also missing. Poverty, unemployment along with the recent surge in the anthropogenic activities like terrorism has complicated the situation to focus on the climate issue. Malfunctioning of the local government institutions and agencies are also responsible to create a system of proper functioning to take actions by creating harmony among the local people to balance the ecosystem.

Like to the above, a non-significant ( $P=0.170$ ) relationship was observed that government has a proper system through which it can cope with the hazardous situation and climate change effects on the human life. Supporting the findings Gilley, (2012) conducted a research on this aspect says that governments having no proper system to work on the emerging and challenging issue of climate change is hit hard, because of the high exposure of the community to the increasing hazards and an improper functioning of government bodies. In this regard authoritarian environmentalism implemented in China, a public policy approach to achieve the goal of preventing the community and increasing the capacities of the government machinery by joining hands with the people and institutions.

However, a significant ( $P=0.000$ ) relationship was discovered that people constantly settling in the rural areas are decreasing the agriculture and forest cover with increasing climate change effects on their life. Agriculture and forest activities are practised in the rural areas of the local communities and such areas are the hub of high human population. As the population increases, a burden on the natural resources increases. Rural areas are normally backward lacking of modern facilities. In rural areas, there are less livelihoods means due to which people are restricted to the agriculture sector and forestry to meet their needs and get satisfaction. That's why the constantly residing of the local people increases the stress on the scarce resources. Agriculture is the back bone of the country and it enhances the industrial sector as it provides raw material (Bulkeley & Broto, 2013).

A significant ( $P=0.000$ ) association detected between stability of the economy to the climate change effects on the life of the humans. Stability of the economy needs industrial growth to increase the productivity and contribute towards the reduction of the impacts of climate change as pointed out by Bosello & Zhang, (2005), who were of the opinion that for stable economic growth is necessary which may reciprocate and subsequent economic development. Such industries are the source of climate change adaptation with the innovations of modern practices and techniques to reduce the effects of climate change on the human lives.

Similarly, a high significant ( $P=0.000$ ) association was found in the context to put checks on the sources of climate change by international community with the effects of climate change on the human life. As the global warming and climate change raises to occupy the top most issues, the global community facing. On other side the whole international community has realized to prevent and stop the long lasting impacts of climate change. Such rise in the perception about the climate change at the community level has compelled the international community to act against the harmful and disastrous impacts of climate change in the form of establishing the agencies, provided support to the local people in creating awareness and reduced the emission of CFCs and other poisonous gases (Helmer & Hilhorst, 2006).

Population increase and climate change is closely related with each other. In this perspective, a significant ( $P=0.000$ ) relationship was identified that governments and international community has implemented policies of family planning to reduce the population growth rate with effects of climate change on human lives. Population is increasing with a high ratio as compared to the availability of the natural resources. Malthusian theory stands right in this context that population is increasing in a geometric progression while the natural resources increasing in an arithmetic progression. Evidence is provided by Satterthwaite, (2009), that without family planning and other contraceptive methods the population growth has been reduced to a low level at the community and international level. Although, growth rate is high in the developing countries but efforts have been going on to limit the population.

High population increases the chances for high exposure and vulnerability to climate change effects. Besides, a high significant level of ( $P=0.000$ ) was disclosed between that Government encourage farmers to develop agro-forestry to combat effects of climate change. Agro-forestry is one of the important technique to overcome the exploitation of resources and cultivating crops and trees on the same plot of land to utilize the land in an efficient and sustainable way. According to Stavi & Lal, (2013), that agro-forestry plays an important role in combating the effects of climate change. Government has the mechanism to implement and support the agricultural practices and ensure the safety of the forestry. As these forests are the source to absorb huge amount of carbon dioxide released from the vehicles and industries. Awareness among the local people about such practices and techniques is essential to harmonize the energies between the local people and government and private sector.

Similarly, a significant ( $P=0.000$ ) association has been emerged between that government and private sector has created awareness among the local people and climate change effects on the human life. (Shahid & Paracha, 2010a) were of the opinion that Pakistan is a resource poor country with high growth rate of



population, high vulnerability to disasters and unfavourable socio-economic conditions. These all factors combined together form a complex system of various stresses and environmental shocks. In such a situation, creating awareness among the local residents is of utmost duty of the government and private sector to invest and bringing the situation of uncomfortability to a normal and standing position.

**Table 4: Association between Community Behaviour and Government Response to the Climate Change Effects on the Human Life**

Community Behaviour & Government Response			Climate Change affects on human life			
S. No	Attributes		Agree	Disagree	Total	Statistics
1	The climate change has increased the apprehensions of community	Agree	349(94.3)	17(4.6)	366(98.9)	$\chi^2 = 67.203$ P=0.000
		Disagree	0(0.0)	1(0.3)	1(0.3)	
		Neutral	0(0.0)	3(0.8)	3(0.8)	
		Total	349(94.3)	21(5.7)	370(100.0)	
2	Community members are taking practical steps to prevent changes in the climate	Agree	188(50.8)	0(0.0)	188(50.8)	$\chi^2 = 69.265$ P=0.000
		Disagree	69(18.6)	21(5.7)	90(24.3)	
		Neutral	92(24.9)	0(0.0)	92(24.9)	
		Total	349(94.3)	21(5.7)	370(100.0)	
3	Government has taken sufficient action to put check on the climate in order to keep the harmony in the eco-system	Agree	112(30.3)	0(0.0)	112(30.3)	$\chi^2 = 27.665$ P=0.165
		Disagree	237(64.0)	21(5.7)	258(69.7)	
		Neutral	0(0.0)	0(0.0)	0(0.0)	
		Total	349(94.3)	21(5.7)	370(100.0)	
4	Government has the proper system through which it can cope from the hazardous situation resulted from climate change	Agree	153(41.4)	0(0.0)	153(41.4)	$\chi^2 = 21.785$ P=0.170
		Disagree	166(44.9)	21(5.7)	187(50.5)	
		Neutral	30(8.1)	0(0.0)	30(8.1)	
		Total	349(94.3)	21(5.7)	370(100.0)	
5	People are constantly settling in the rural area which has decrease agriculture and forest land	Agree	285(77.1)	0(0.0)	285(77.1)	$\chi^2 = 97.121$ P=0.000
		Disagree	48(13.0)	21(5.7)	69(18.6)	
		Neutral	16(4.2)	0(0.0)	16(4.3)	
		Total	349(94.3)	21(5.7)	370(100.0)	
6	For better economic output, government enhancing industrial growth for stable economy	Agree	160(43.2)	0(0.0)	160(43.2)	$\chi^2 = 23.248$ P=0.000
		Disagree	160(43.2)	21(5.7)	181(48.9)	
		Neutral	29(7.9)	0(0.0)	29(7.9)	
		Total	349(94.3)	21(5.7)	370(100.0)	
	International community has realized to put checks on sources of climate changes	Agree	302(81.6)	0(0.0)	302(81.6)	$\chi^2 = 261.789$ P=0.000
7		Disagree	8(2.2)	21(5.7)	29(7.9)	
		Neutral	39(10.5)	0(0.0)	39(10.5)	
		Total	349(94.3)	21(5.7)	370(100.0)	
	Governments and international community have implemented policies of family planning in order to reduce the population growth rate	Agree	340(91.9)	0(0.0)	340(91.9)	$\chi^2 = 257.925$ P=0.000
8		Disagree	0(0.0)	3(0.8)	3(0.8)	
		Neutral	9(2.4)	18(4.9)	27(7.3)	
		Total	349(94.3)	21(5.7)	370(100.0)	
	Government encourage farmers to develop Agro-Forestry to combat climate change	Agree	205(55.4)	0(0.0)	205(55.4)	$\chi^2 = 76.984$ P=0.000
9		Disagree	62(16.8)	21(5.7)	83(22.4)	
		Neutral	82(22.2)	0(0.0)	82(22.2)	
		Total	349(94.3)	21(5.7)	370(100.0)	
	Government and private sector has created awareness among the local people about climate change	Agree	299(80.8)	0(0.0)	299(80.8)	$\chi^2 = 183.675$ P=0.000
10		Disagree	19(5.1)	21(5.7)	40(10.8)	
		Neutral	31(8.4)	0(0.0)	31(8.4)	
		Total	349(94.3)	21(5.7)	370(100.0)	
❖ Number in the table represent frequencies and number in the parenthesis represent percentage proportion of respondents and in the last columns $\chi^2$ represent value of Chi-Square and number in parenthesis represent P-value(Significance)						

Source: Field Survey, 2017



#### 4. Conclusion and Recommendation's

The study tried to explore the effects of climate change on behavioural outcomes, and disclosed that increase in population at the rural areas had put immense pressure on the local resources like agriculture, land and biodiversity, which was further eroded by the government initiatives to enhance industrial outputs and to provide jobs to local, as well. The study further explained and explored that government was well aware of the drastic effects of climate change and had taken some concrete steps like reducing population pressure through family planning, expediting the agro forestry, encouraging the private sector participation and awareness drives in order to mitigate the relative and collective social, economic and behavioural distress at the community level. The government need to avoid a policy of paradox nature of establishment of industrial zone, provide jobs and mitigating drives of effects reduction by giving a framework on climate change with precision and reliability by foreseeing into the future on long term basis.

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