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**IMPACT OF POPULATION GROWTH ON THE NATURAL
RESOURCES OF CHOLISTAN DESERT**

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ABSTRACT:

Population of the living planet is constantly growing the world population is now around 7.6 billion and it will be 8 billion in the future and reached to 9 billion in 2050. Growth of populations is the major and most dangerous cause of poverty and environmental degradation. The increase of human population in particular area is referred as population growth. The natural resource base of land, water and vegetation in arid and semi-arid areas is highly fragile and extremely vulnerable to degradation. Increasing population along with the demand for more food, fodder and fuel wood has given rise to a chain of interrelated economic, social and environmental issues associated with the land degradation. The growth of population causes great burden on production of natural resources. More people require more food for eating and more land for living. In developing countries, the main cause of poverty is an increase in population. Population growth in developing countries like Pakistan is very high. As a result, the world's population faces problems such as poverty, inequality,

resource production, and increased land-based settlement. The primary data has been collected with the help of questionnaires interviews Focus group discussions (FGDs), Field opinions based on this estimation. A method of stratified random sampling is used for the household questionnaire and field survey. The data is analyzed through the SPSS (statistical packages of social sciences software). The map of the study area and settlement is prepared with the help of GIS (Geographical information system software). The result shows that growing population of Cholistan Desert puts pressure on the available limited resources of this arid region. In result they destroyed their natural resources due to over utilization without to knowing their importance. Most natural resources are limited. This means they end up running out. A perpetual resource has an endless supply. The life of Cholistan people depend on these resources because they get food for themselves and also fodder for their livestock which is the main source of economy. There are numerous natural resources in the region. The local inhabitants are mainly pastoral nomads engaged primarily in livestock rearing activity. They depend on the resources for their livelihood whatever nature mother gives them. The natural resources of Cholistan Desert are included water resources including (tobba and kund), livestock, agriculture land, pasture land, natural vegetation, wildlife flora and fauna etc. The population of Cholistan Desert is scatterely distributed. The formation of population prevalent all over desert, spread in the form of small hamlet and semi settlement. They use their resources in ruthlessly way without knowing their importance and future sustainability.

INTRODUCTION:

Population growth is an increase in the number of individuals in a particular area during a specific period of time. Globally, the annual estimate of human population growth is 83 million or 1 Percent (Kremer, 1993). The global population has increased from one billion in 1800 to 7.6 billion in 2018 (UNWPP, 2018). Rapid expansion in human population is putting incredible pressure on our natural resources. With a growing population, the demand for resources is increasing. Since at the time of Malthus, the influence of population increase on agriculture and resource management have been debated. According to Malthus, the population increases by geometric sequence and the food resources increases by arithmetic progression. In such cases, the population will eventually move beyond food resources and the human being will face severe shortages (Malthus et al., 1992). The increase in population causes more stress on natural resources. More people need more food, more energy to use, more infrastructures in the form of road and transport networks, as well as more area for agricultural production. This growth of population and the negative impact on its natural resources threaten the future of sustainable life on earth (Neto, 1990).

Population growth in developed countries puts a lot of pressure on global resources and environment, and then development takes place in less developed countries (Nadvi and Schmitz, 1994). Lack of resources and the destruction of natural habitats are a clear and unacceptable consequence of population growth and its impact. The influence on natural resources are also debated (Tefera, 2006). Population growth can lead to a change in the collective process of natural resources at community or other levels. As population pressure and the intensity of land use increases, more demand will increase the reserve rights of particular pieces of land or other resources (Platteau, 1996). Local residents remove these resources unwisely for both useful and non-productive purposes without knowing their lack or even the risk of being extinction (Clark, 2010). The main purpose of the study is to find out the impact of population growth on the natural resources of Cholistan Desert. The increase population growth is cause of destroying the resources of Cholistan Desert. As the population the population increase it causes stress on the production of resources because

more people need more food to eat and more shelter to live. These resources are use in ruthless way and overexploited (Soharwardi et al., 2011).

Study Area

The desert Cholistan is situated in Eastern part of Pakistan and the Southern region of Punjab Province is an addition of the Great Indian Desert. Geographically it is located among latitudes $27^{\circ} 43'$ and 29° north, and longitudes $69^{\circ} 56' 30''$ and $72^{\circ} 51' 30''$ East. The sandy desert Cholistan is Spreading over an area of about to 2.6 million hectares (26,000 km²) (Ashraf et al., 2013). The Cholistan Desert is separated into two parts the first one is the greater Cholistan and second one is lesser Cholistan.. It is extended over the three districts of the division (Bahawalpur, Rahim yar khan and Bahawalnagar). It is not an isolated desert, but it is part of the great desert of the subcontinent. The area selected for this research was the desert of Cholistan, located in south Punjab. The Cholistan desert is a vast area of Sandy desert which is extent over two-thirds of the Bahawalpur division. The total area of Cholistan Desert is 26100 square kilometer. The Cholistan Desert is divided into two geomorphic region based on topography native material, soil and flora. In length it is separated about 480 km and its width is 192 km. The area of northern region is 7,770 square kilometer and it is known as Lesser Cholistan. The soil of Lesser Cholistan comprises of a series of salty alluvial flats, alternating with less sandy ridges (Farooq, 2009). Whereas the area of southern region is 18,130 square kilometer it is called Greater Cholistan with the soil composition of big sand dunes. Therefore, these two region lesser and great Cholistan are considered for explore and identified the increase in population of Cholistan Desert and its stress on the natural resources (Hameed et al., 2011). The population of Cholistan desert is distributed in scatter form. The people of greater Cholistan are poor and their living standard is low as compare to the inhabitants of lesser Cholistan. The total population of Cholistan Desert is 229908 in (2017) with annual growth rate of 3.48 %. The population of Lesser Cholistan is thickly distributed, while the Greater Cholistan has scattered population. The projected population in 2020 was 299071 persons and Area of Cholistan Desert contains on three district having inhabitants of their portions Bahawalpur district desert area 81383 persons (GOP 2017) with annual growth rate of 3.87% estimated population in 2020 is 155281 and population of Rahim Yar Khan district desert area 48944 persons (GOP 2017) with annual growth rate of 3.64 % and predicted population in 2020 is 71652 persons, and BahawalNagar district desert area 75534 persons (GOP 2017) annual average rate of change was -0.20 % and estimated population of 2020 is 74245 persons.

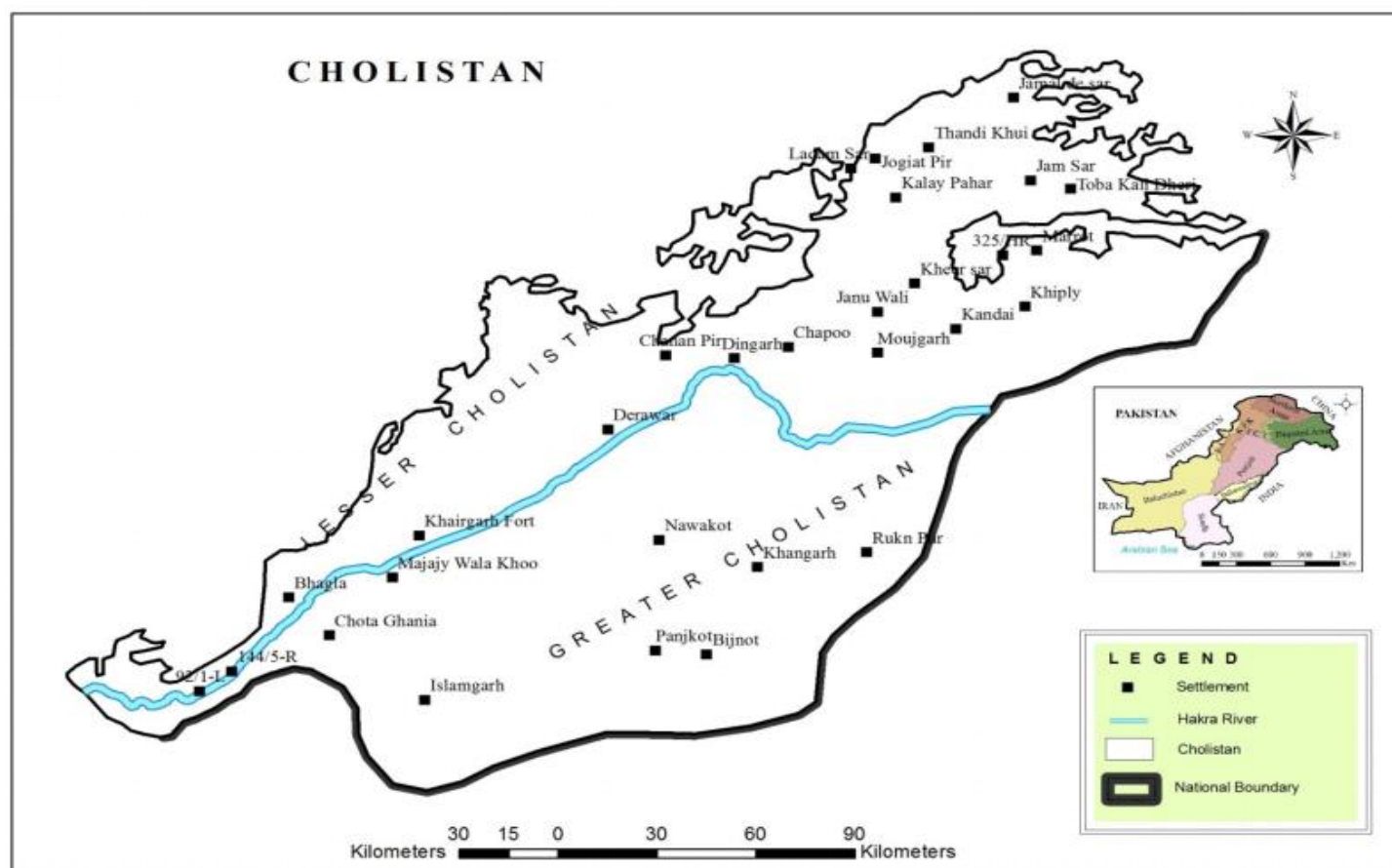


Figure 1: Map of Study Area

METHODOLOGY

As, the focus of this research is mainly on influence of population growth technology and disaster on the natural resources of Cholistan desert, hence all the sub methods designed accordingly. The methodological framework can be split up into following sequence of methods, which will be discussed in detailed. Traditionally data collection has been divided into two classes reliant on the nature of the data, i.e. primary data and secondary data. The primary data has been collected with the help of questionnaires interviews Focus group discussions (FGDs), Field opinions based on this estimation. A method of stratified sampling will be used for the household questionnaire and field survey. The secondary data has been collected through related books and articles Cholistan institute of desert studies including relevant concerned departments ,weather data will be obtained from Meteorological Department of Pakistan, and population related data will be acquired from Census Department Government of Pakistan, resources data will be collected from the office of Cholistan Development Authority (CDA) and water reserves data will be collected through Pakistan council of Research and water resources and Disaster severity data will be collected through the help of National Disaster Management Authority of Pakistan (NDMA)..Data acquisition software GIS (Geographic information system), Satellite imagery will be gathered from SRS (Satellite remote sensing).

DATA ANALYSIS

Data analysis refers to the methods and procedures used to produce results in the study area. Data analysis greatly effects the findings of any research, hence data analysis of this research

can be divided into GIS based analysis and statistical data analysis through SPSS (statistical packages for social sciences)

Table 1: Population of Sample settlements in Cholistan Desert

Sr. No	Settlement	2017 Population	Intercensal growth (1998-2017)	2020 estimated
1	Derawar	3920	3.30	4080
2	NawanKot	810	1.18	995
3	Moujgarh	1420	2.46	1502
4	Dingarh	598	-1.95	735
5	ChananPir	2860	4.63	2990

Source: Field survey data (2020)

Table 2: Population Growth and its impacts on Natural Resource in Cholistan

Variable	Greater Cholistan	Lesser Cholistan	Total
Highly impact	13	16	29
Slightly impact	25	41	66
No impact	0	1	1
Not' Know	1	3	4
Total	39	61	100

Source: Field survey data (2020)

Table 2 show that the increase in population causes great burden on the natural resources of Cholistan. Population growth causes to destroy the natural resources of Cholistan Desert and the beauty of nature. Out of the 100 respondents 29 respondents told that the population puts highly impact on the resources of Cholistan desert and 66 % respondents' response that the increase in population causes slightly impact on the natural resources of Cholistan Desert. About 5 respondents do not actually know the impact of population on the resources of Cholistan desert.

Table 3: Natural resources' damages

Variables		Greater Cholistan	Lesser Cholistan	Total
Nil	f	1	4	5
	%	1.0%	4.0%	5.0%
Partially	f	36	56	92
	%	36.0%	56.0%	92.0%
Completely	f	2	1	3
	%	2.0%	1.0%	3.0%
Total	f	39	61	100
	%	39.0%	61.0%	100.0%

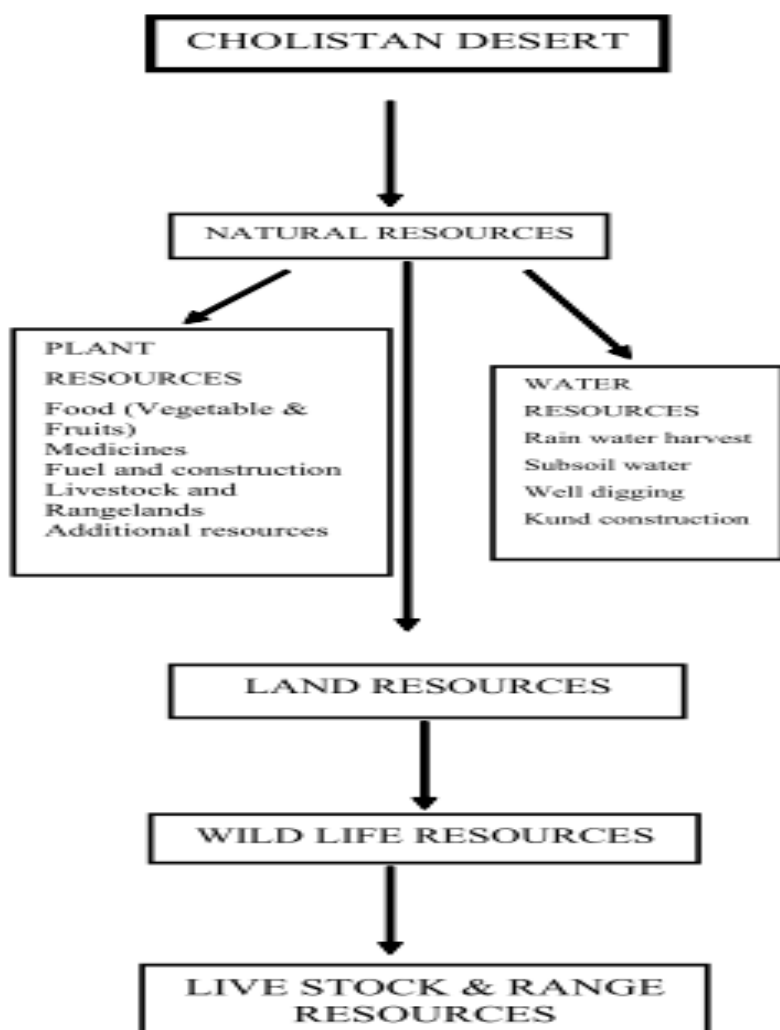
Source: Field survey data (2020)

Table 3: show that the Disaster and disaster not only threat to lives of Cholistani people but damage the natural resources as well as their property resources. Out of 100 respondents 56 from Lesser Cholistan and 36 from Greater Cholistan are said that their resources are partially destroyed by Disaster and disaster. Three percent respondents told that their resources are completely damaged. Whereas, 5 respondents out of 100 are not aware from natural resources and the damage of resources.

RESULTS AND DISCUSSIONS

It is clear that the patterns of resource loss and insecurity are related to population growth and human use of natural resources both in developed countries. In Cholistan desert the growth of population causes great stress on the resources of desert. The increase in population needs to more shelter to live, more food for eating and more pasture land for the grazing to their livestock. The increase in population more pressure on water resources that is already scarce in desert hot environment. The shortage of water for drinking purpose as well as livestock has increased which reason for uncertainty to the people of Cholistan. The natural resources are already threatened and destroyed during Disaster and disaster condition in Cholistan and this increase of population other major problem in Cholistan desert. The depletion of resources and the destruction of natural habitats is also evident of population growth in Cholistan desert. Environmental issues are typically a direct result of mistaken human activities and misuse of resources that is result of population increase. Resource depletion means resource consumption faster than it can be replenished. For more human numbers, the potential for irreversible changes of far-reaching nature often increases. Human attitude shows a strong will to endure, reproduce, and attain a certain level of success and excellence of life but in Cholistan it is poor due to lack of awareness. As the human population grows, opulence and quality of life can be projected to decrease as resources have to be distributed between more people. The resources of Cholistan desert are limited. The lives of people of Cholistan depend on the diversity of natural resources in many ways, which are often not appreciated. It focuses on the Cholistan desert's natural resource diversity, a wide area that is essentially used as a grazing ground. In extracting the profits from these natural resources, they escalate the diversity of these resources, but are not very concerned about the conservation of these resources for sustainable supply. The availability of water is already a constraint in Cholistan desert. These are warnings that the earth is a range, and natural systems are being pushed near their limits.

Figure 2: Resource of Cholistan Desert



Water Resources

Cholistan is one of Pakistan's four deserts, where there is no fresh water available for residents and their livestock due to the thriller of the earth's resources. Rain in Cholistan is the only source of drinking water for both humans and livestock. Rainwater is collected in natural flats or man-made small pools in the Cholistan Desert and is locally referred to as toba. Water from ponds persists for a maximum of three to four months.

The most of underground water is saline information. In the Cholistan Desert, groundwater is used when the toba water is drained. The Cholistan Desert annual mean rainfall is low, erratic and unreliable. Monsoon season in the desert of Cholistan brings plenty of rain during the months of July, August and September. The amount of water collected in each toba depends on different factors, but the ground nature and the range of the area, the soil nature and size of the tuba can be the most important. Rain water is collected not only in tobaas, but especially in underground structures called kund in Cholistan desert. They play an important role in storing drinking water particularly through hot dry years. The kund sare developed by Pakistan council of research and water resources (PCRWR) in Cholistan Desert. The increase in population of Cholistan desert causes stress on the water sources which are very care.

Wildlife resources

Desert of Cholistan has rich wildlife resources, but there has been little concern either for the registration or protection of the benchmarks. Nevertheless, some surveys of Houbara Bustard and Lizard were carried out in the WWF-Pakistan, the Punjab Wildlife research institute and the Pakistan National Museum Islamabad. No extensive wildlife studies are available, which could tell us the wildlife status of Cholistan and the total populations of different species in this region. In the past two decades, the number of major wildlife species has declined. The wild animals have been left precariously with little shelter in trees, harsh weather conditions and a great weight of grassy stocks in the Cholistan desert. Dry and overgrazing may be causing habitat loss, but the major threat to wildlife loss is now posed by irrigation in larger areas of the Cholistan Desert. Chinkara is still in isolated parts of Cholistan, but it is currently on the brink of extinction when blackbuck is once abundant. Along the Pak-Indian border, a small number of blue bulls are found or in parts of the desert no animal in the open wilderness can be seen. The key birds on the territory are gray perturbation, Indian shrike, Imperial sand and golden wood pacemakers, while peafowl can only be seen in small parts of Cholistan. The Bustard of Houbara is a frequent winter guest. The number of birds due to unnecessary hunting is decreased remarkably. The most famous species in the region include the Black Cobra, the Sand Boa and the Vipers, among reptiles and the Indian Monitor Lizard.

Range Land and Livestock Resources

The main source of livelihood of people of Cholistan is livestock keeping and rearing. The herds of Cholistan desert use the pasture land for grazing their animals. They get natural grass from the pasture land. The economy of Cholistan people belong to livestock sector. The main source of income in Cholistan desert is livestock. A farmer in Cholistan is gratified of his herd. Since the people of the desert of Cholistan are the nomads, it is their biggest occupation to feed livestock. In the desert ranges, animal parties respond to the opportunities and challenges available quickly. The nomadic lifestyle has been adopted for centuries and perhaps the domestic climate and the demand for the topographic features. These nomads own large flocks of camels, livestock, sheep and goats. They go into the desert with their large livestock flocks according to the availability of water and fodder. The live stock of cholistan Desert is using pasture land for grazing. The Cholistan ranges currently support approximately 2.0 million heads to full capacity, which is the country's main source of meat and wool. The problem becomes more serious when animal flocks from neighboring settlement also become part of the animal population in the Cholistan Desert. In this way, they put immense pressure on the land that is being stolen. The population growth is burden on the livestock resources in Cholistan because of more dairy products like more need of milk, meat, butter, wool, etc.

Natural Vegetation of Cholistan Desert

The natural plants of the Desert Cholistan have a dry drain and are mainly composed of sub-species. Plants are adapted to extreme weather and weather conditions. The real compatibility is governed by the availability of the salt. The Cholistan Desert is not much of a value to the diversity of flowers; however, there have been many plant diversity in the Cholistan, of which 129 are plant species. The majority of this flora (27.77 per cent) belongs to the Poaceae family. Grasses have adapted to almost every habitat and dominate the landscape, apart from bushes such as *Haloxylonrecurvum*, *Haloxylonsalicornicum*, *Salsolabaryosma*, *Suaedafruticosa*, and *Alhgiulmarorum* in the saline areas of Cholistan desert. Prominent species of endemic tree are *Solvidoraoleoides*, *Acadia nilotica*, *Prosopis cineraria* of Cholistan desert. As far as vegetation cover is concerned, 20% of the total area of the

Cholistan is covered by good plants, while 63 % is medium and complex in Cholistan desert. The remaining area (17 lbs) has a small number of plants. It is worth mentioning here that excessive rainfall may cause a slight change in the range of plant cover, but the twelve-year-old plant remains almost the same, since the Cholistan is the primary component of the diversity of plant resources, so it is used for different purposes such as food, medicine and other purposes. The increase in population creates stress on natural vegetation of Cholistan Desert which is use for food plants and medicine purpose. Other major problem of increase in population is cutting of trees for shelter of people because increase in population is need more space to live and more energy is required.

Land Resources and Agriculture

The largest cover of the earth is the barren land and sand soil, which is 83% of the total area of the cholistan. In Greater Cholistan, the barren land represents 16% of the region of the Cholistan Desert. The agricultural farming land is just 0.01 % compared to Lesser Cholistan, which is very small due to the harsh environment and lack of water availability for irrigation. Agricultural farming in Greater Cholistan is limited. Where they can get water from the river, otherwise agriculture is not a viable practice for people living in Greater Cholistan Desert. The agricultural crops are cultivated lesser in Cholistan because of scarcity of water. The ratio of cultivation of crop is less in greater Cholistan because the shortage of water and sandy soil. According to my result about 20 % total area of the Lesser Cholistan are under the cultivation out of which 8 % have drainage system, while the rest are under the rain. The wheat and cotton cultivated in this area are two important food and cash crops. The other major occupation of people of Cholistan is agriculture and it is important component of the economy of the Cholistan desert. Agriculture provides a significant part of the work force with job opportunities. There are two major season of cultivation of crops in Cholistan desert. First one is Rabi season and second one is kharif season. Wheat is the important crop of Rabi season and it is used for food purpose in Cholistan desert. On the other hand major crop of kharif season is cotton which is cash crop of lesser Cholistan. In the periphery of the Cholistan Desert farming is usually practiced, the common crops being of a general / local type, such as cotton, wheat, maize, and scarcely any other. Distribution of rainfall is unequal and causative, a constant threat to desert agriculture and crops. So the result is that the increase in population is stress on the limited agriculture crops of Lesser Cholistan desert. The increase in human population is required more grains and food for their survival in Cholistan desert.

CONCLUSION AND SUGGESTIONS

In arid areas of the world, particularly in Southern Punjab, Pakistan the effect of global environmental change is very obvious. These changes take place in various aspects of the management system of physical, social and natural resources and have a major impact on the livelihoods of the local people. The reduction in natural resource production capacity, reduction in the land of cultivation, and water scarcity for both the purpose of water and drinking, grazing of pastures, land development and reduction in natural resources are becoming a key thread of creative adjustment of people. In addition, the most important challenges are evolving patterns of rainfall and temperature, rising frequency and severity of natural Disaster and risky weather condition. The growth in population needs to more shelter to live, more food for eating and more pasture land for the grazing to their livestock. The increase in population more pressure on water resources that is already scarce in desert hot environment. The shortage of water for drinking purpose as well as livestock has increased which reason for uncertainty to the people of Cholistan. The natural resources are already

threaten and destroyed during Disaster and disaster condition in Cholistan and this increase of population other major problem in Cholistan desert. The depletion of resources and the destruction of natural habitats is also evident of population growth in Cholistan Desert. Environmental issues are typically a direct result of mistaken human activities and misuse of resources that is result of population increase. Resource depletion means resource consumption faster than it can be replenished. For more human numbers, the potential for irreversible changes of far-reaching nature often increases. Human behavior shows a strong will to endure, reproduce, and attain a certain level of affluence and quality of life but in Cholistan it is poor due to lack of awareness. As the human population grows, prosperity and quality of life can be expected to decrease as resources have to be distributed among more people. The resources of Cholistan desert are limited. The lives of people of Cholistan depend on the diversity of natural resources in many ways, which are often not appreciated. It concentrates on the abundance of natural resources in the Cholistan desert, an extensive region that primarily serves as a grassland. The availability of water is already a constraint in Cholistan Desert.

We live in an ever-changing environment in terms of people, need of resources and climate restrictions, and even political uncertainty. The changes in the way the economy has been treated over the past three decades have badly affected the livelihood of local inhabitants in terms of availability of natural resources, such as low crops output, soil and pastures land. As a consequence of the above listed changes, the conventional organization resource system has also undergone transformations. Agricultural pastoralism is an old human occupation and at this time pastoralists have brought forward a diverse culture, environmental harmony and management system that has been transformed with innovation. Similarly, the livestock sector has seen a significant change. Traditional herding practices have been modified by more diverse herds of livestock. Even in Cholistan Desert, food stalls and modern cattle farming become increasingly common. Cholistan Desert farmers adopted the natural reproductive process. The increase of human population in particular area is refers as population growth. The development of population causes great burden on production of these available resources. More people require more food for eating and more land for shelter. The population of Cholistan is scatterly distributed. The density of population is greater in lesser Cholistan and less in lesser Cholistan desert.

The realm of population growth is positive in lesser Cholistan and negative in greater Cholistan on the basis of facilities that are available in the study area. In reality, individuals and all living organisms rely for their existence on the essential resources found in the earth's environment. From this environment all life on earth gets its food and other requirements. Fertile land, fresh water, and biodiversity are among these tools. The condition of people is poor in great Cholistan due vulnerability and risky life as compare to lesser Cholistan. Vegetation, ground, water and wildlife are the most important and venerable tools of pastoral ecosystems. The most exploitative of these are plants and wildlife resources, hindering the earth's resources from water-consumption, while water shortage limits themselves from the production of Other Natural Resources in Cholistan desert. During the last few decades, the socioeconomic system has changed greatly, affecting the physical environment in a number of ways, increasing population activity, increasing environmental diversity, changing land utilization and traditional living standards. It can be regarded as one of the big shifts in the socio-economic climate. Service delivery has become much simpler and faster due to the growth of physical infrastructure. The local people of the desert of Cholistan often live in semi-permanent dwellings, which have been called gopas made of sludge, branches and leaves of trees. However, they have now learned to build permanent houses in bricks through

modern technology. As compared to Greater Cholistan Desert, Lesser Cholistan has better economic condition. Lesser Cholistan also has the most accessible water supply available to both people and cattle, and few additional resources are available. Rainfall in the Cholistan Desert is the only drinkable water source for both humans and animals. Rainwater is harvested in natural lowlands or in man-made small pools, like depression in Cholistan Desert that is locally known as Tobbas. It takes up to three to four months for waters from ponds to be processed. Usually salty is groundwater. Groundwater is used in Cholistan Desert when the Tobba water is depleted.

Suggestion to Overcome the Growth of Population

The following are the suggestions to overcome the growth of population

- The distribution of knowledge changes people's perspective. The educated men tend to postpone marriage and follow norms of small families. Educated women are health conscious and discourage recurrent pregnancies, thus helping to reduce the birth rate. It is easier for women who have access to reproductive health care to overcome poverty, while employers are more likely to use birth control, while working women are more likely to have birth control. Simply educating men and women about contraception can have a big impact. So to overcome the population it should be necessary to create family planning awareness among married couple.
- The government should give incentives to poor people and announced policy because majority of people think that if they have more children they have more earning. Governments urge that "responsible parenthood" be promoted and that subsidies should be restricted to the first two children unless the family lives in poverty.
- Self-control is one of the important strategies for managing the population according to some experts. This is an acceptable and safe solution that should be made accessible to people to adopt. This helps to slash birth levels.
- To control the birth rate, birth control devices need to be propagated, people trained, profitable job opportunities produced and people's living standards improved by this. So to overcome the population birth rate should be controlled.
- A marriage at a teen age clues to a lengthy birth-span. Young age marriage often denies people of the education and understanding required to be serious and consider the implications of raising too many children. To restrict the child marriage and raise the legal age which is minimum 18 years.
- People have to be told about and made to realize the implications of having so many kids. Government and non-governmental institutions can carry out awareness campaigns awakening people about how they will not be able to provide their children with good nutrition, education and medical facilities. Population is also a cause for analphabetism and sickness and malnutrition and the detrimental consequences of it must be conveyed to the general public in order to improve their thinking and understanding.

Conservation measure of natural resources

Following are some suggestion to conserve the natural resources of cholistan Desert

- Cholistan Desert's natural resources serve people as well as wildlife and household animals in order to sustain their lives. Although nature is sought out by humans as the top user for these services, in the arid and semiarid regions where lack of water and tough climatic conditions do not permit normal city or rural life. Resource conservation in such areas is necessary and the reasons for believing in resource diversity must be clearly

defined. One way to understand why we drive from natural capital is to look at it? Which threats do we pose? And what measures can be considered for their lasting use for generations to come.

- Continuous and increasing declines coupled with natural habitat depletion and degradation are causing the loss of multiple wildlife and plant species in the area. This destruction of the environment, including most significant deforestation, over pasture and the exploitation of plant resources, wildlife hunt, crop protection, increased livestock production and soil erosion, can be due to several direct and indirect causes.
- Including overgrazing and population growth, the major causes of land and local residents are droughts, wind erosion and moving sand dunes. This problem may be solved in some way, but the effectiveness of these projects requires local citizens to engage in the management of wind erosion and sand stabilization.
- The fundamental resource for supporting livestock vegetation is the soil, water and climate, and it is influenced mainly by human activity.
- In view of their grazing and available forage vegetation, choose appropriate livestock, consisting of either a species or a mixed herd. The uniform grassing of the area to prevent overgrazing of some areas and other areas. Select those plant species that can be residual for drilling year-round, i. eg. Both in the summer and winter seasons, to give the vegetative rest from grassing (i.e. intermittent grassing, rotational grassing).
- The primary occupation of the people of Cholistan is the animal husbandry. With animal husbandry initiatives, local herdsman will not only increase their profits, but also preserve local animal breeds' genetic diversity.
- The life of many animals who die or migrate during drought conditions can be saved by providing clean water and feed during harsh conditions at a safe walking distance. By using strategies of dehorning, shaving, marking, isolation and arrange transport to the market for rapid disposal for animals from the drought-stricken range. Even in the event of epidemics, specific plans should be made.
- Many plants in Cholistan desert bear medicinal value. Proper work is required to screen and mass cultivate most important plant species in order to exploit their full potential.
- With a view to the ecosystem of the desert, methods to collect ecologically suitable drilled trees, shrubs and grasses should be invented for saline agriculture with solar ground water. The PCRWR Regional Bureau of Bahawalpur has achieved very positive results in this respect with certain endemic grass and shrubs.
- The conservation of water is a significant component in the management of water supplies. The precipitation in Cholistan is wild, spatial and time-consuming. The annual average precipitation is approximately 166 mm. During regular precipitation events, significant quantities of water are available depending on specific physical characteristics of soil and topography. Water can be harvested using methods of water collection and appropriate measures taken to store and use this water. The PCRWR has made efforts to create tobba on scientific grounds which store a large quantity of water during long periods and are available at least for local residents and live stocks. In addition to altering the nature of the Cholistan landscape, systematic farming practices reduce the region's diversified wealth. Agricultural activities are recommended to be permitted to a restricted extent Otherwise the land will lose valuable cattle resources as well as numerous wildlife species, due to habitat loss.

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