

Analysis of Socio-Economic Well-Being of Population in Khirthar National Park, Sindh: A Geographical Study

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Abstract: Pakistan's two-third population lives in rural areas where the dependence on natural resources is foremost. National parks are protected areas where the natural environment is preserved for the future generations. The purpose of this study is to investigate the socio-economic aspects of the people living in such areas. For this a comparative study has been designed by selecting two areas of Kirthar National Park (KNP), Sindh, one within the boundary of park; Core and the other at the transition zone of the park. The data have been collected through extensive field survey and analyzed using correlation technique. The study can be helpful in assessing the interaction that exists between humans and dry natural environment. The results indicate a clear difference in the standard of living of the people living in these two selected areas. Such studies are very important from the point of view of rural development of local communities.

Keywords: Kirthar National Park, natural environment, socio-economic conditions.

INTRODUCTION

Since past centuries people are utilizing environmental resources to earn their living. Nature has a great resilience power. It is being accepted globally that environmental resources should be respected and utilized wisely to maintain their quality. Harmony with the environment is needed for the sustainable use of resources. An understanding of the protected areas reserved as national parks is an interesting and useful one. The national parks have been created for the purpose of conservation and are composed of natural, semi-natural or a developed piece of land and are symbol of pride for a nation [1].

The contribution of national parks to rural socio-economic developments has been increasingly recognized. Conservation of the environment and heritage remains the key objective of the national park designation, planning and management. But socio-economic benefits to locals have always been important to justify park designation. In many countries national park designation is seeing as a good way to encourage rural sustainable development and management. National parks have positive effects on a local economies and social infrastructure as well as helping to conserve their valuable landscapes and habitat. Khirthar National Park (KNP), Pakistan's second largest national park has an estimated

population of 100,000 [2], located in western Sindh, a semi-arid area. Such areas are ecologically fragile and need better management [3]. Land-use impacts in this area include alienation of lowlands for ground water irrigated and rain-fed crop production, possible depletion of ground water resources, timber cutting for domestic purpose and grazing of plants by cattle [2]. The KNP has sparse population unevenly distributed over the area depending on water availability. Most of the population is sedentary but some keeps on migrating inside or outside the park seasonally. Most of the people in the area have few living opportunities. Thus a study to access poverty levels of these people is interesting.

A lot of economic activities could have been established like tourism, sporting facilities etc. it can help to generate many opportunities to support the population and communities in such remote rural areas like Kirthar National Park. The socio-economic status of the population can provide a clear indication about the interaction that exists between the population and natural environment [4]. It is a dire need to investigate the socio-economic pattern in this fragile and protected region of KNP. To investigate the socio-economic structure, different demographic and economic variables that are responsible for the poverty and backwardness of the park's population have been chosen. The location of park in the north of Karachi, largest urban and economic hub of Pakistan increases its importance. This region has immense potential as a future resource region for Karachi if managed properly. It has been noticed that agricultural activity is changing

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in the region. Most of the population is dependent on agriculture. Therefore it is needed to investigate and compare the factors affecting the standard of living of the people living in the park and outside the park.

STUDY AREA

The KNP is located in the lower end of Kirthar Range that have north-south trend. The park consists of numerous small non-perennial streams, locally known as nadis [5]. The park was established in 1972 and lies 80 km north of Karachi division, in the south west of Sindh province, at 67° 06' 25" to 67° 56' 01"E and 25° 06' 17" to 26° 07' 293" N (Figure 1). It is one of

the largest wildlife reserves in the province and the second largest national park of the country. The park is located in Jamshoro and Malir district (Karachi division) of Sindh province. Jamshoro district comprises 4 talukas, of which taluka Thano Bola Khan covers the northern part of the park. The southern part of the park lies in Gadap Town of Malir district (Karachi). The park spreads over an area of 302,675 hectares [6], situated at the foot hills of Kirthar Range. The altitude ranges from 200 meters at the valley floor to more than 1,000 meters on at the northern boundary, the lowest altitude found at Hub Dam (70 meters). The park is bounded by Balochistan province in the west, Hothino-Eri-Sumbok-

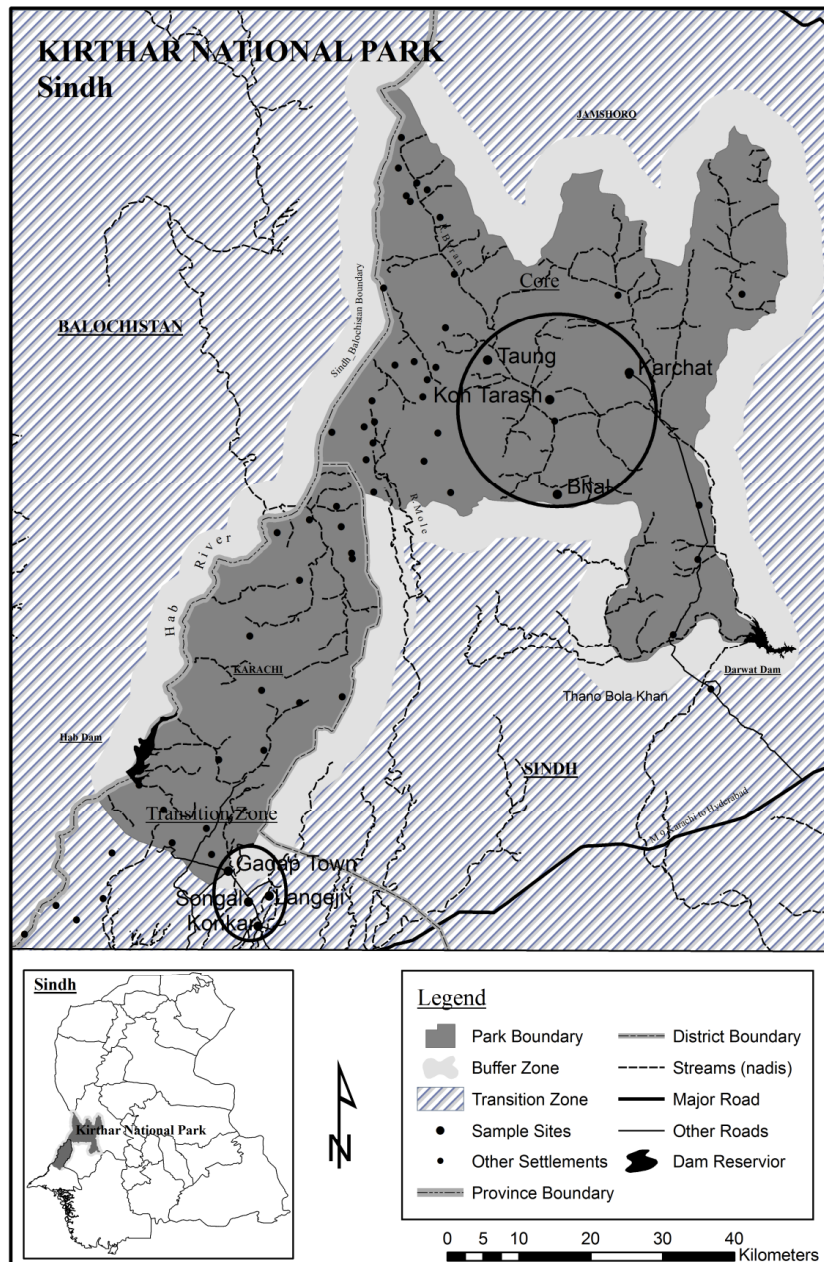


Figure 1:

Surjan Game Reserve (30,103 hectares) in east, Mahal Kohistan Wild Life Sanctuary (71,866 hectares) in the south and Hub Dam Wild Life Sanctuary (28,978 hectares) in the southwest. In general the study area is characterized by low rocky mountain ranges separating undulating valleys extending from north to south.

METHODOLOGY

Methodology adopted for this comparative study is based on primary and secondary data. The extensive field survey was conducted to determine the living standards and economic setup of the population of KNP. The predesigned questionnaire was used for the collection of data from eight locations of two selected zones, in order to have understanding of the variation in the socio-economic aspects. Detail of selected zones of the study area is described as:

- Core; includes Karchat, Bhal, Koh Trash and Taung, located within the boundary of the park
- Transition Zone; includes Konkar, Songal, Langeji, and Gadap Town, located outside the boundary of the park (Figure 1)

To fulfill the need of the study, 11 variables were selected that are listed below.

I Demographic

- i. Age group
- ii. Family size

II Social

- i. Literacy
- ii. House type

III Economic

- i. Occupation
- ii. Farms size
- iii. Use of fertilizer
- iv. Availability of forage for animal

IV Utilities provision

- i. Water availability
- ii. Provision of electricity
- iii. Sewerage

To assess the relative socio-economic status of the selected locations, different social, demographic and economic variables are taken into account. A

quantitative classification scheme with values range 1-2 has been applied through the analysis for individual variable. The value 1 was assigned to the least count and value 2 was assigned to the high count [7].

To find the effectiveness of different variables, Pearson's correlation method has been employed using SPSS 17.

Analysis of the Socio-Economic Conditions of the Study Area

According to the baseline report of KNP, population was One Hundred Thousand in 2000, it declined by 25-30 percent whenever there is drought in area. According to our research estimate the population has increased to two hundred eighty three thousand by 2015. A large cluster of population resides on the boundaries of the park. They can cross the boundary easily whenever the environmental conditions are suitable.

Demographic Analysis

The demography of the study area reveals a contrast between the exterior and interior area. Each family is divided into two age groups. Up to 15 years of age are counted as children where as above 15 are taken as adults. In Transition Zone average number of adults in each family is 6 and number of children 3 whereas in the core region average number of adults is 18 and children 27.

Demographic analysis of sample households revealed that in exterior area, average family size is 9 members. Average adults in the family are 6 while 3 are children. While in Core region average family size is 45 persons per family (Figure 2). The difference in family size of Transition Zone reveals nearness to city and awareness about the meaning of family as Transition Zone is more near to Karachi, respondent considered only immediate family members. In Core several extended family relations were also included in one family (source, author).

Social Analysis

The Transition Zone possesses 27% of respondents that received secondary level education and 27% received intermediate level education. But the ratio of higher education was found very low (0.09%). In the Core 25% heads received secondary level of education, 25% have education up to intermediate level. The situation of literacy of the interior reveals the fact that about half of the respondents were

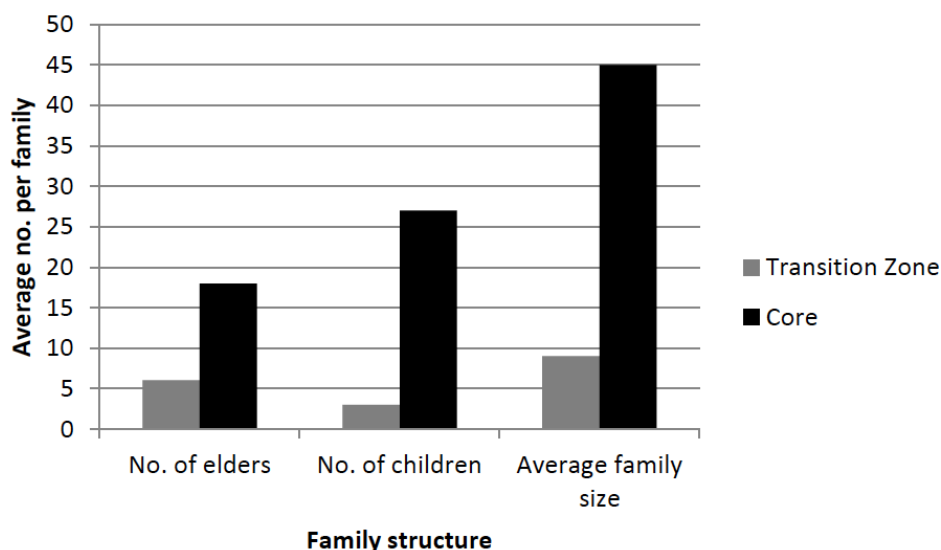


Figure 2: Family structure of the study area.

uneducated. This shows lack of inclination and awareness of people towards education. Hence, comparatively the standard of education is better in Transition Zone.

About 84% of population lived in pacca houses (baked bricks) in Transition Zone. While in the Core more than half of the population lives in small pacca houses (baked bricks), 35% in kaccha houses (unbaked bricks) and 10% of the population has straw huts (Figure 3). During the survey 100% of population of Transition Zone reported as permanent residents. In Core 10 to 20% population keeps on migrating in and out of the park depending on the seasonal rainfall, the majority of the population is sedentary.

Economic Analysis

It is revealed from the field survey that 67% of the families were involved in farming and animal rearing. About 29% of the families have one or more members working in government or other jobs (usually, basic services). The percentage of jobs other than farming is higher in Transition Zone. However women, if middle pass or matriculate, are engaged in teaching in the government owned primary schools. Most of the government employees belong to Sind Wild Life Department. Due to prolonged dry period, people of the Transition Zone have started to establish poultry farms on one side of their agricultural fields. It requires less effort and gives good returns and consumes comparatively small labor force. The nearness of

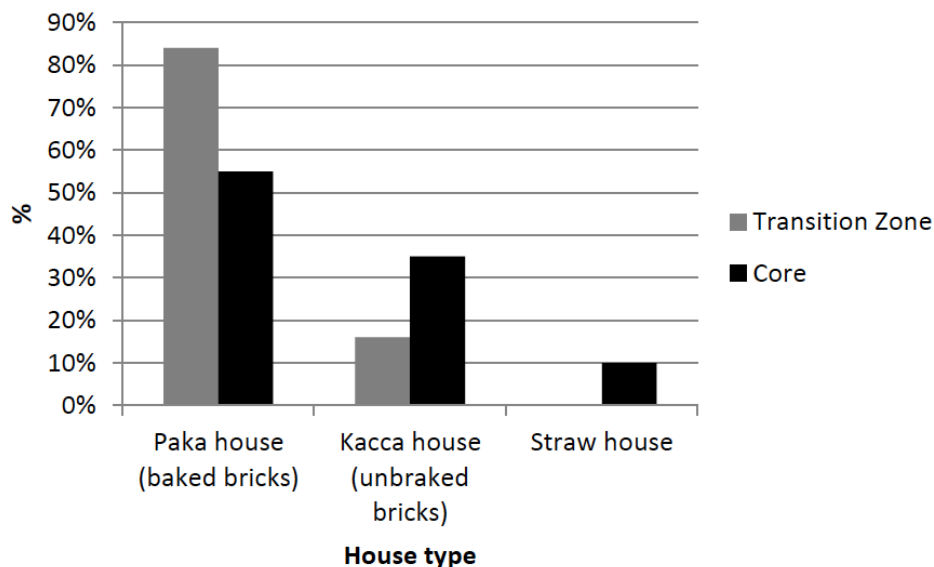


Figure 3: House type in the study area.

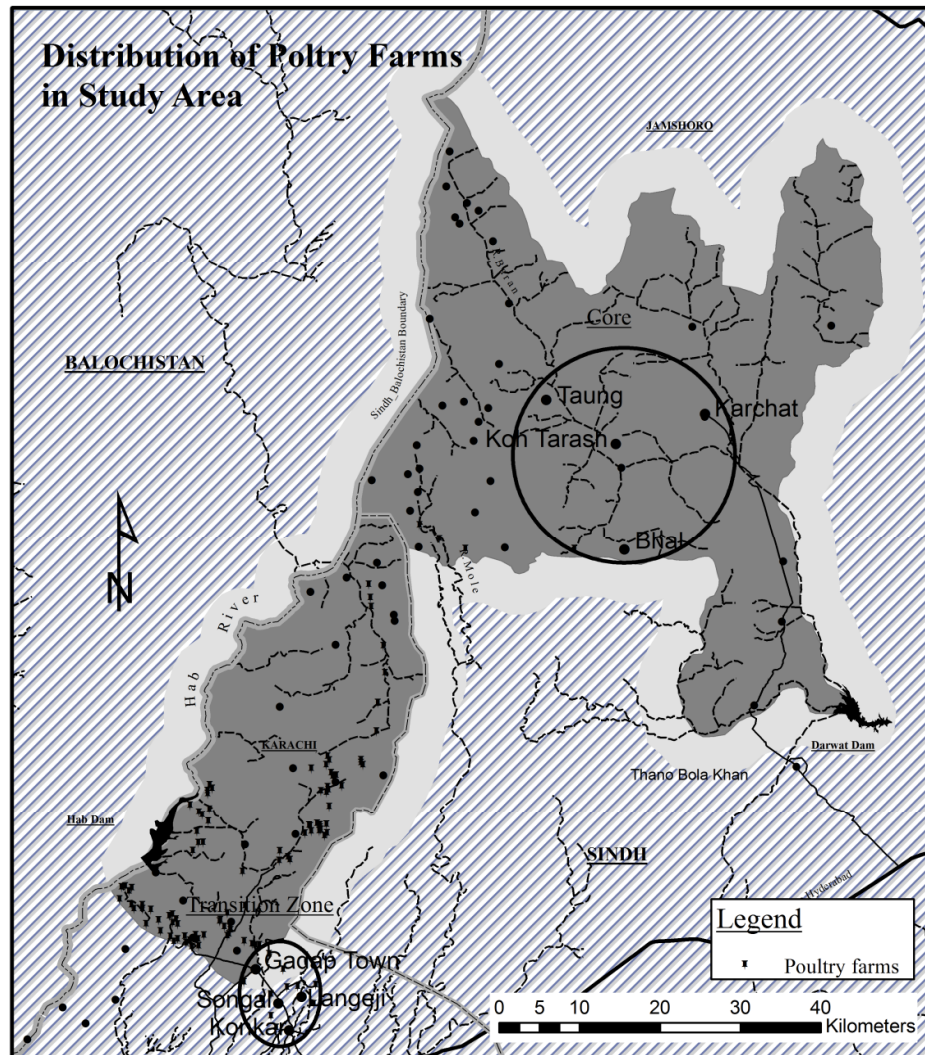


Figure 4:

Transition Zone to the market of Karachi has given a boost to this business hence the conversion of agricultural farms into poultry farms is increasing rapidly (Figure 4).

The average farm size in the Core is 20 acre as compared to 47 acre in Transition Zone. About 60% of the farmers have farm ownership whereas 40% are either workers or working on profit sharing basis in interior area. In the Transition Zone farm ownership has increased up to 72%. That again shows a better standard of living here. Around 16% farms of Core area produce wheat, millet, and cotton whereas on 36% farms vegetables like onions, tomato, chilies, potato and sesame are grown. A few other seasonal vegetables that can grow in short time and can give good returns are also in practice. As the amount of rainfall is declining a large area has been converted into drought-resistant cereals.

In Koh Trash (Core area) major crops are onion, millet, sesame, and pulses, the vegetables are not preferable as it is difficult to market in time. In Karchat onion, tomato, castor oil seed, pearl millet (bajra) and chilies are produced. Though the wheat and cotton have been the major crops of the area, due to water scarcity now these major crops have been restricted to only few fields. Sapodilla (chikoo) is a main fruit that is being grown here.

In Transition Zone, many crops and vegetables such as cotton, wheat, carrot, raspberry and coriander were grown but due to the scarcity of water the farmers have restricted only to tree plantations like lemon and berry (bari) and few drought-resistant crops. Now the vegetables that can be harvested in three or four months are mostly preferred. It has been observed a shifting of crop pattern in this area that gives good profit to the farmers. Due to water scarcity, drip irrigation is widely practiced in Transition Zone. The

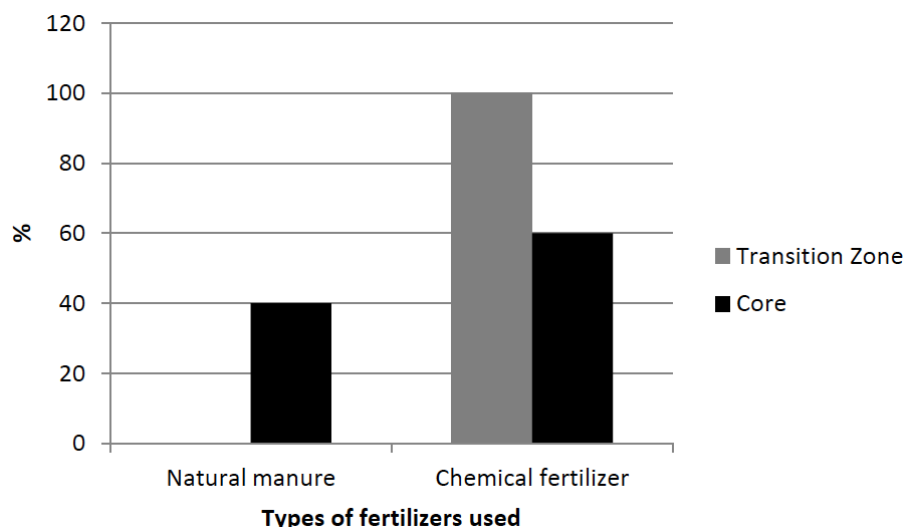


Figure 5: Use of fertilizer in study area.

agricultural performance in Pakistan is closely associated with the effective irrigation system due to large variation in seasonal and annual rainfall [8].

Fertilizer is an important input in farming system and widely used in both the areas as soil has acute deficiency of fertility. This is more serious issue in Transition Zone, almost 100% of the respondents claim the use of chemical fertilizer for better output. The situation of the Core is quite different where the primitive farming system is still in practice. Almost 42% of farmers show the dependency on natural manure only, while 57% used chemical fertilizers for soil fertility (Figure 5).

Animal husbandry is also an important economic activity in the interior part of the study area. The number of herds may reach from 10, 20 to 250, 400, on higher altitudes (author's estimation). Cows are also kept for fulfilling the need of dairy for subsistence. Cattle are reared to be sold in city for good returns. In Transition Zone animal rearing is uncommon and are kept only for domestic purpose.

Utility Provision

The study area consists of rural settlements of Karachi and Jamshoro districts, is far behind in the basic utilities provision such as drinking water, electricity, gas and sewerage. Only 30% population of Transition Zone get piped water, the rest of 70% gets water through wells and tube wells. The underground water table in this area has extremely gone down and reached at the depth of 350 to 600 feet. In Core the depth of water is quite better and available at 100 to 150 feet. Since government water supply is totally

absent tube wells are the main source for drinking water.

In the Transition Zone 95% population has the provision of electricity which is very irregular rest of the small population claims no excess to electricity. The supply of electricity in the Core is restricted to large villages only for few hours in a day. The small villages have no facility of electricity that is why diesel generators are widely in use. In such a peaceful environment, the sound of generators and diesel odor is very disturbing. The sewerage system in the study area is found very poor. The Core has no sewerage system. Only 36% area of the Transition Zone has the facility of sewerage disposal.

CORRELATION COEFFICIENT

To find the significance of the selected variables on the socio-economic status of people Person's correlation test has been applied to both the areas for a comparative study. To calculate the standard of living of the study area income variable was used. The monthly income of Rs. 25,000 or less is considered as a category of poor, denoted by 1 while above Rs. 25,000 is categorized as prosperous, taken as 2 [9]. It is revealed from the survey that two-thirds of the population is found extremely poor.

Correlation coefficient of Transition Zone shows a good correlation between farm size and standard of living (0.69), family size and water availability (0.654), and farm size and family size (0.625). These results indicate that his region is comparatively more prosperous regarding agriculture as large families are very important in agricultural activities having more

Table 1: Correlation Coefficient of Transition Zone

	Family size	Occupation	Literacy	House type	Water availability	Sewerage	Provision of Electricity	Farm size	Standard of Living
Family size	1								
Occupation	-0.295	1							
Literacy	-0.006	-0.379	1						
House type	0.201	0.214	0.346	1					
Water availability	0.654	-0.212	-0.261	0.194	1				
Sewerage	0.342	0.333	-0.069	0.239	0.386	1			
Provision of Electricity	0.004	-0.141	0.018	-0.064	-0.104	-0.164	1		
Farm size	0.625	-0.239	0.069	0.418	0.463	0.571	-0.048	1	
Standard of Living	0.56	-0.256	0.1	0.289	0.261	0.449	0.084	0.69	1

number of work force. Moderate correlation is found between house type with sewerage, standard of living with sewerage, house type with farm size, house type with literacy (Table 1), reveals the impact of education on social status and awareness of living condition of the people.

The high correlation coefficient of the Core is found between standard of living with house type and utility provision such as water availability, electricity and sewerage system (Table 2), whereas the total number of family members, education and occupation have no significant correlation with the standard of living. The family size and occupation have strong negative correlation (-.510). There is weak correlation between

literacy and standard of living reveals the absence of economic opportunities other than agriculture.

CONCLUSION AND RECOMMENDATIONS

Humans in dry lands have to develop a system to manage the available resources, specially water and land properly. Reckless exploitation of such limited resources can cause serious issues. The study area, Kirther National Park is located in semi arid plateau. The environment has its natural resources and ecosystem. The negligence and mismanagement of the park is badly affecting the natural habitat. The socio-economic status is presenting a clear alarming condition. The temperature of the study area is

Table 2: Correlation Coefficient of the Core

	Family size	Occupation	Literacy	House type	Water availability	Sewerage	Provision of Electricity	Farm size	Standard of Living
Family size	1								
Occupation	-0.51	1							
Literacy	0.062	-0.32	1						
House type	-0.207	-0.289	0.258	1					
Water availability	0.235	0.179	-0.16	0.372	1				
Sewerage	-0.142	0.092	0	0.447	0.462	1			
Provision of Electricity	-0.294	-0.194	0.134	0.87	0.324	0.389	1		
Farm size	-0.006	-0.101	0.125	0.683	0.545	0.655	0.595	1	
Standard of Living	0.068	-0.151	0.134	0.522	0.367	0.545	0.455	0.764	1

increasing and the amount of rainfall is declining consequently the crop pattern is showing a shift to more drought-resistant crops. Even some agricultural fields are replaced by poultry farms. The vulnerability of this region is evident, especially the newly founded housing schemes like Bahria Town, a sprawling up-market gated community is causing pressure on the contiguous area's water and other natural resources and land.

This study reveals that the people living within the park boundary have a low standard of living in comparison with the people living at the periphery. The people living in the Transition Zone have better houses and facilities. Nearness with a large urban center certainly affects their standard of living because people have an access to various jobs easily in Karachi on rural quota. In this study socio-economic factors are found to be effective in the Core, causing the backwardness of the people. The research indicates that overall 66% population of the study area is very poor or living below poverty level.

Form the analysis relating to the findings of the study it is concluded that the study area is not fulfilling the functions of reserved-area requirements of human development which is socio-culturally and ecologically sustainable. To foster the economic and human development some important steps are necessary for the conservation of this area.

- Permanent population should be provided with required education to use the resources in a sustainable way.
- People-government partnership technique should be employed for the improvement of environment.
- Standard procedure should be followed to preserve and improve the resource system in the park that is natural vegetation, water and animal.
- Laws regarding farming and cutting of forest for fuel should be made and implemented. The

residents should be provided with an alternative source of fuel.

- This region needs proper planning and development in a way that it should not disturb its natural heritage.
- Four sectors of economy most directly could fetch income to the nation and jobs to the local from the facilities if developed by the KNP management authority are lodging, restaurant, retail trade and recreation.

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