POLITICAL ECONOMY OF MARKHOR TROPHY HUNTING IN CHITRAL

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PIDE2019FMPHILENV08

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2022

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CERTIFICATE

This is to certify that this thesis entitled: **"Political Economy of Markhor Trophy Hunting in Chitral".** submitted by **Mr. Zakir Ahmad** is accepted in its present form by the School of Economics, Pakistan Institute of Development Economics (PIDE), Islamabad as satisfying the requirements for partial fulfillment of the degree in Master of Philosophy in Environmental Economics.

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Author's Declaration

I, Zakir Ahmad, hereby state that my MPhil thesis titled "The Political Economy of Markhor Trophy Hunting in Chitral" is my work and has not been submitted previously for taking any degree from the Pakistan Institute of Development Economics or anywhere else in the country/world.

If my statement is found to be incorrect even after my Graduation, the university has the right to withdraw my MPhil degree.

Date: 31/12/2022

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Dedication

Dedicated to My Parents

Acknowledgments

I am grateful to my supervisor Dr. Junaid Alam Memon, who has been so kind and helpful during my research work. He has been continuously guiding me despite his busy schedule, and he was always present to address my issues and questions and share the relevant research papers and other material. It was an honor to work under his supervision, as his guidance has increased my capacity and knowledge about research.

I am also thankful to my family, who always supported me morally and financially; I will be forever grateful for their support.

I want to thank PIDE and its faculties for arranging different webinars and workshops, which were very helpful for me during my research. I am grateful to the communities of my study area for their hospitality and support during data collection. Most importantly, I am thankful to Mr. Adur Raheem for being a great host during the data collection and also thankful to other community people for hosting me.

The research would not happen without the support of the District wildlife department, lower Chitral, so thank you to all the department staff for their immense support, especially Deputy Ranger Mr. Ijaz, for being there every time.

Finally, I am thankful to all my friends Mr. Muzaffar Ali Baig, Mr. Qaisar Iqbal, Mr. Javeed Ahmad, Mr. Saif Uddin, Mr. Amir Azam, Mr. Zeeshan Noor, and Mr. Ajmal Kakar, for their support and sharing of academic knowledge

Abstract

Trophy hunting is one of the contemporary institutions for conserving large fauna. It has been established with varying levels of success in terms of wildlife conservation and community development. Established in 1998, trophy hunting economy exists in Chitral, Khyber Pakhtunkhwa (KP), and Pakistan. Every year, three hunts are carried out for a hefty fee, each on average bringing US$3642000 to the local communities from 1998 to 2021 revealed by Wild Department KP. While this has been discussed at the scholarly, huge economic stakes involved in trophy hunting make it the subject of political influence and rent-seeking, and tragedy of the commons. The situation demands a thorough institutional analysis of trophy hunting.

Mix method Research strategy has been used in this study. Further this study has been looked through the lens of Socio Ecological system framework developed by Elinor Ostrom for sustainable management of natural resource system. The thematic analysis is used to evaluate the qualitative data. However, ANOVA test is run to know the variation in opinions of the communities living in the protected areas about trophy hunting. The results show that trophy hunting has positive impact on the population of the Markhor species. Whereas, the study reveals that trophy hunting has a minimal impact on the livelihood of local communities. Furthermore, study recommends that the economic impact can be maximized through eliminations of rent seeking and by structurally empowering local communities to increase benefits from trophy hunting.

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CHAPTER 1

INTRODUCTION

Trophy hunting usually involves a hunter who hunts down the largest animal in the geographic area in lieu of a hefty amount paid to the conservators – an individual, a community, or a public entity (Frisina, 2000)

Trophy hunting is practiced around the world. The vast economy of trophy hunting exists in twenty-three African countries. Extensive trophy hunting is practiced in both Southern and Eastern African Nations, moreover small scale industries in central and western African are linked with trophy hunting.

Trophy hunting contributes around US $ 100 million to the economy of Republic of South Africa per year. While Namibia's trophy hunting share is around US $ 25.5 million per year in the economy (H. Ali et al., 2015). If initiated based on dogmatism and with a human-centric approach, Trophy hunting is not ethical. Still, if based on a strict monitoring and evaluation system, it can be a beneficial conservation strategy in places of high land demand (Angula et al., 2018). It is not a matter of great concern considering that the resulting profit can be reinvested for many other conservation purposes(Crosmary et al., 2015).

Unregulated hunting results in negative ecological consequences, like in East Africa, where the lion population was locally destroyed. Similarly, such practices resulted in about 72% of lions being killed in Hwange National Park, Zimbabwe (Loveridge et al., 2007).

In Pakistan, community-based trophy hunting of Markhors was started in 1983 by Dr. Mumtaz Malik (Ex-Chief Conservator Wildlife, Khyber Pakhtunkhwa and also Advisor to the Dept. of Forestry Wildlife Management) in cooperation with a hunting organization, Shikar Safari Club with a name of "Chitral Conservation Hunting Program".

This program was not community-based, as all the proceedings were going to the governments. This program continued for eight years, from 1983 to 1991, and then it was banned by a government with a ban on exports of trophies. In 1998 with federal government approval, trophy hunting again started to conserve and protect endangered animals. The latest trophies of Markhor sold at US $ 450950 worth, with the highest bid of $ 163850. (Khyber Pakhtunkhwa Wildlife Department 2021).

The primary goal of trophy hunting is the Community based conservation of the markhor population, and to achieve the primary goal community plays an important role. In other words, to achieve the primary goal (preservation), completing the secondary objective is necessary (community benefits). Therefore, the revenue generated through trophy hunting is divided among the KP wildlife department and community stakeholders with a ratio of 20:80. The share of the community is used in infrastructure development, zero-interest loans to community people, awarding a scholarship to the needy students in the community and in other community development projects.

Community-based conservation is the essential feature of biodiversity conservation efforts. Its primary purpose is to line up local communities and resource users for the goals of biodiversity conservation and human well-being (Salerno et al., 2021).

Community-based conservation generally has both policy change and on-ground intervention; however, the design and implementation may change with the shifting of conservation priorities (McKinnon et al., 2016). For example, trophy hunting policy may change in corporation with governments or NGOs to redefine the hunting permit or increase the number of hunts each year, increase community share, or increase the well-being of involved parties.

In this sector, ground-level intervention may include increasing the number of community guards or work, building capacity, demarcating boundaries, and developing the tourism sector.

Despite these interventions in Community based conservation, if outcomes are mixed and uncertain(Salerno et al., 2021). With this variation in outcomes, there is a need to examine the process of Community based conservation and the procedure through which results are achieved. Researchers have acknowledged the lack or absence of theories of change for Community based conservation program design implementation and evaluation (Salerno et al., 2021)

Initiated in 1998-99, the trophy hunting of Markhor in Khyber Pakhtunkhwa has contributed to the conservation of the species and been an instrumental factor in the socio-economic uplift of the local communities.

So far, 65 permits have been issued for trophy hunting of Markhor with a total of USD3642000 as a share of the concerned community while USD910,500 as a share remitted in the Government treasury.

Annually, the permits are issued for the Toshi Conservancy, and Gehrait Conservancy district Chitral. The Toshi Conservancy comprises Toshi I and Toshi II.

The below shows the conservancies where the Markhor trophy hunting has been conducted with the revenue realized from Markhor trophy hunting in USD4552500 for 23 years (1998 to 2021).

In 2021 trophy hunting permits of Markhor in Chitral were sold for a record-high payment of USD$450,950 as compared to the previous years. The record highest single Markhor permit was sold in 2021 for USD$163850.

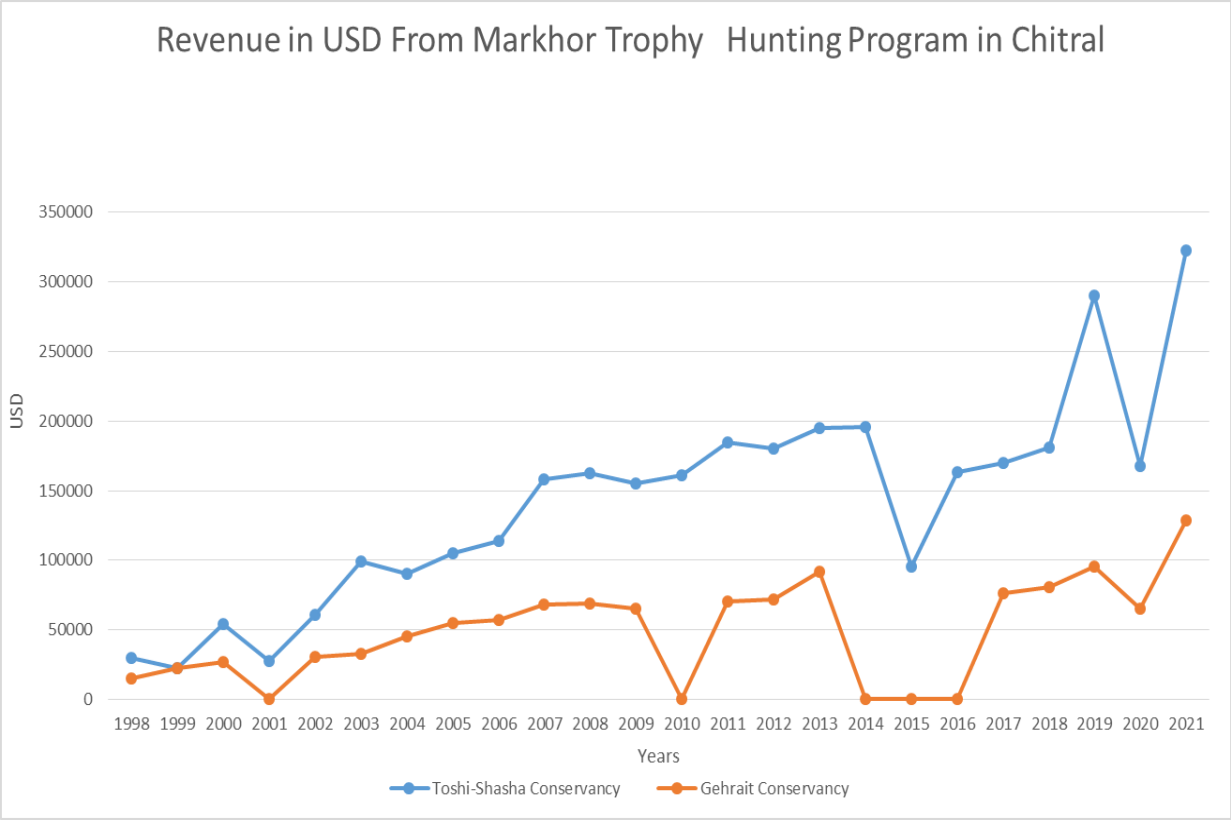

Figure 1 Revenue in USD from Markhor Trophy Hunting Program in Chitral

Due to financial constraints, conservation activities are often limited in developing countries. Along with this, prioritizing the needs of local communities in the formulation and enactment of conservation policies is missing (McKinnon et al., 2016). Additionally, there are some other problems as well; such as ineffective institutional arrangements in the management of conservation. Lack of trust among stakeholders, and the failure of local people living in or near protection to obtain the benefit of trophy hunting. These issues result in the degeneration of the ecosystem and the swift loss of wildlife and their habitats (S. Ali, 2008). Trophy hunting and its significance have been discussed in many excellent papers.

This study will evaluate the institutional arrangements in the conservancy and how they are working to improve the livelihood of the communities living in the conservancy. The institutional arrangements will be looked at through a socio-ecological framework developed by

Nobel Prize winner Elinor Ostrom. The study further evaluates the benefits people are receiving from trophy hunting. The comparative analysis of this conservancy with other community-based conservation programs was not possible due to time and financial constraints. Most importantly the view of the women living in the conservancy was not collected due to social and cultural norms which do not permit the women to interact with other unknown people.

In the following, we shall look at three questions: What had been the impact of trophy hunting on three crucial indicators: the living standard of local communities, the Markhor population, and the local economy? However, for successful wildlife conservation through trophy hunting in developing countries, people living in or near the conservation areas must receive the benefits of trophy hunting. Failure of people living in or near protected areas to gain an advantage will offset their cost for wildlife conservation. It may account for ineffectiveness of parks in conserving wildlife (Alpert, 1996). Secondly, the institutional arrangements in conservation management play essential roles in obtaining the outcomes as they play a crucial role in stabilizing extensive scale cooperation in common-pool resources. So important question arises: How has trophy hunting as institutions evolved? Informal institutions formulated by the community to manage natural resources play a crucial part in the sustainable management of natural resources. These formal institutions are also in place, so formal institutions working with informal institutions have a significant role in natural resources management. The question arises here: How formal and informal institutions are working together? The study follows a logical sequence according to the following steps: Chapter 1 Introduction, Chapter 2 Literature Review, Chapter 3 Research Methodology, Chapter 4 Data analysis and Results, Chapter 5 Discussions and Chapter 6 Conclusion and Recommendations.

1.1 BACKGROUND

1.1.1 Biodiversity of Pakistan

Pakistan, spreading over 881,913 km2, has an abundant variety of flora and fauna owing to its expanded landscape. Pakistan contains three bio-geographic lands out of the world's eight (Indo-Malayan, Palearctic, and Afro-Tropical) with their biotas and four biomes out of Earth's ten (desert, temperate grassland, tropical seasonal forest, and mountain) (Baig & Al-Subaiee, 2009). Two-thirds of the country is covered with mountains, which vary in variation and homes for different species. The numbers of recorded species in Pakistan are as follow species of plants are 5,910, species of mammals are 182, species of birds are 662, reptiles species are 174, and species of invertebrates are approximately 5000 (Lashari et al., 2019).

A significant percent of the birds in Pakistan are migratory birds. They are winter visitors (Roberts, 1967). Pakistan being semi-arid and arid country, the following number of species are found: 22 amphibians, 29 fish species, and 8 species of butterflies (Lashari et al., 2019).

Three thousand taxa of cultivated plants have been estimated. The principal crops of Pakistan are wheat, rice, maize, barley, pulses, oil seeds, cotton, sugarcane, tobacco, vegetables, and tropical and temperate fruits (Lashari et al., 2019).

1.1.2 Biodiversity of Khyber Pakhtunkhwa

Khyber Pakhtunkhwa has rich biodiversity compared to other provinces; it is the home of 50 species of mammals, approximately 530 species of birds, 45 reptiles, and many amphibians. Due to its unique geographical zones, it is also home to some endangered mammal species. Chitral Gol National Park and two community-based conservancies, Toshi-Shasha Conservancy and Gahirate Conservancy, along with Palas valley in Kohistan, have the largest population of Markhor (*Capra falconer*). Along with two species of leopards and two bird species, this

province is home to hundreds of other birds and animal species. A significant portion of the mountainous area provides perfect habitats for wild species (Arshad et al., 2013).

1.1.3 Community-based conservation

The Realization of including communities in the conservation by government and Donors began in 1980 as this was the only better solution for the allocation, use, and management of biodiversity (S. Ali, 2008). (S. Ali, 2008) also encouraged the concept of empowering the local people living near or in the area where the game is managed, and it is the most effective approach in developing countries for biodiversity conservation. When it comes to shared resources, conflict exists in these areas; however, that can be solved by developing sound approaches to planning and management of game areas. When it comes to local communities' participation, it means empowering and capacity-building the people for active involvement in sustainable resources management, deciding, and controlling adverse activities such as the "tragedy of commons" (Ostrom et al., 2006).

Elinor Ostrom, which has made significant contributions to resource management and a noble price winner, has given a framework Socio-ecological system for managing, sustainable use, and allocation of natural resources. In her framework, she insists on taking society and ecology together. Conservation is impossible without community involvement, and conservations often fail because communities are not involved in the preservation. Culture and ecology go together, according to Elinor Ostrom. Community-based conservation has a vital role in resource economics because CBC arises from within the community. Community-based conservation includes buffer-zone protection of parks and animals' wild habitats. It includes involving the communities of these protected areas in the preservation by incentivizing them with the development of community infrastructure and other development projects. Community-based

conservation protects the protected or game management areas by, for, and with the local communities living near or in the protected areas.

For building an integrated and sustainable ecosystem, community involvement is necessary as the people living near or in protected areas have full knowledge of those resources. When it comes to managing the commons, the term community-based means the governance practices of natural resources will evolve at the community level for sustainable use, allocation, and management of common-pool resources, which will avoid the "tragedy of commons" (Ostrom et al., 2006). These community-based conservations governance system avoids overuse of this resource, private ownership, and state ownership (Sekhar, 2003).

Communities living near or in protected areas have their norms and informal institutions to protect those resources, which are being implemented independently by residents or in cooperation with other stakeholders. However, researchers and scholars have identified some critical variables influencing common-pool resources management and effectiveness. Common-pool resource characteristic includes user characteristics, community decision-making process, Management practices, the effect and behavior of external forces, and how they interact at different levels (Balint, 2006).

Community-based conservation has two primary outcomes: the preservation of species and maintenance and spending on people living standards by improving their social and economics (Gibson et al., 2000). Most developing countries are now giving attention to local people for the user management of resources. An economic incentive increases the interest of community people in conservation.

1.1.4 Trophy hunting as a tool of Conservation

Trophy hunting is a sports game in which a hunter hunts a massive animal in-game management areas by paying a hefty fee. In the late 1990's trophy hunting was a publicized problem that was ethical, biological, or social. Involving communities in the sustainable use of natural resources is acceptable if their involvement economically and socially benefits the communities directly involved in managing those natural resources (Infield & Namara, 2001).

These problems were limiting the effectiveness of the industry in contributing to conservation (Lindsey et al., 2007). Well-monitored trophy hunting plays a vital role in preserving endangered species. Much such evidence exists worldwide where trophy hunting has increased the endangered species population, and now, they are no longer endangered.

A massive economy of trophy hunting exists in South Africa, generating revenues for the locals and conserving endangered species, and recovering the population of some of the endangered populations such as Bontebok (Damaliscus Dorcas), black wildebeest (Connochaetes gnu), and Cape mountain zebra (Equus zebra) by incentivizing financially (Lindsey et al., 2007). The white rhinoceros population increased from trophy hunting (Lindsey et al., 2007). Trophy hunting plays an essential role in recovering wildlife populations and areas without compromising species' population growth (Palazy et al., 2012). Trophy hunting generates more income than tourism (Balint, 2006). Lands used for trophy hunting generate high income that might otherwise be used for cattle grazing (Lindsey et al., 2007).

Trophy hunting gives lifetime employment to the areas where it is carried out and generates income for diversified land tenures, which can be stated as private or communal lands; in Tanzania, 92% of revenue is generated from the 48,000 km2 Selous Game Area (Lindsey et al., 2007) South Africa uses a lot of trophy hunting revenue to develop the game-ranching industry (Palazy et al., 2012).

The most profitable form of wildlife utilization is trophy hunting, a large and growing sector in some parts of the world, especially in several parts of Africa(Lindsey et al., 2006). Trophy hunting generates a considerable economy in most African countries, and that economy is reinvested in conservation and the upward mobility of communities. For example, US$65.6-137 million each year is generated by trophy hunting in South Africa (Lindsey et al., 2006); similarly, US$27.6-36.1 million in Tanzania each year, US$18.5 Million in Botswana.

1.1.5 Description of Markhor

(Bhatnagar et al., 2009) In essence, the Capra species, Markhor, is a wild goat that inhabits the altitudes of Hindu Kush, Himalayas, and the southern terrains of Pakistan and Baluchistan, Known as the screw-horned goat. More like goats, Markhor is thick with sturdy legs, big feet, and a heavy body. Markhors have convex foreheads; however, wild sheep have concave foreheads (Roberts, 1967). This distinguishes Markhor from wild sheep-like, another member of the genus Capra. Markhor is much different from the indigenous breed of domestic goats. The horns of Markhor are massive as compared to a domestic goat. Male horns can reach up to 160 cm (63 in) long, and females' horns can reach up to 25 cm (10 in) long (Roberts, 1967).

With their two distant types, the Markhor in the north and the Himalayan, regions are much more prominent in size with high heads and thick chest ruff in winter. Males are twice as weight as females. A Male's weight ranges from 100-120 kg, and that of a female is 32-50 kg (Bhatnagar et al., 2009)

The figures below represent diverse inhabitation of Markhor horns in different regions of Pakistan and Afghanistan taken from Biodiversity Heritage Library *(http://www.biodiversitylibrary.org).* The figure 2 represents horns of Markhor species found in the region of Chitral. Whereas figure 3 shows horns of Markhor found in the mountains of

Afghanistan. In addition to this, fourth figure represents Astori Markhor's horns. Moreover, the fifth figure shows Markhor horns found in Baluchistan. The sixth figure displays horns of Chiltan Markhor found in Koh-i-Chiltan Baluchistan. Last figure in line, shows Markhor horns Sofed-Koh Kurram Agency.

Figure 2 C. f Cashmiriensis – Chitral

Figure 3 C f. heptneri – Afghanistan

Figure 4 C. f. falconeir - Astore, Gilgit

Figure 5 C. f jerdoni - Koliphat – Baluchistan

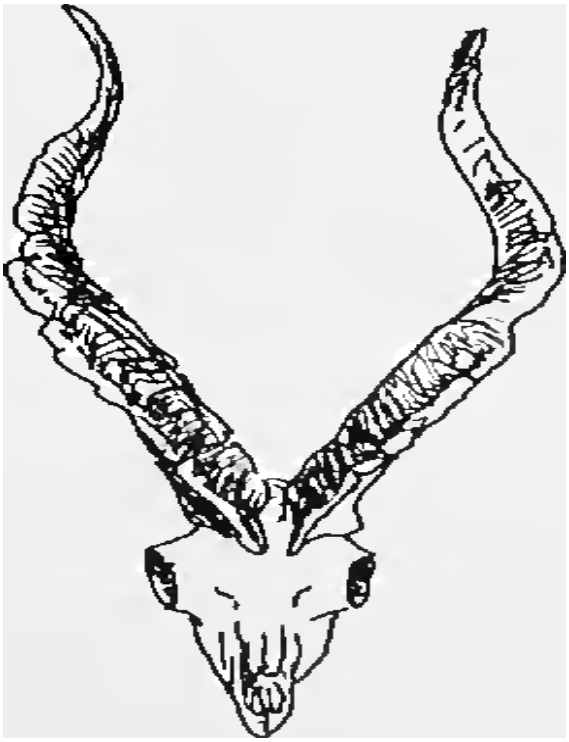

Figure 6 C. f. chiaitanensis - Chiltan Hills – Quetta

Figure 7 C. f. megaceros - Sofed-Koh- Kurrom Agency

1.1.6 Habitat of Markhor

Markhor habitat plays a vital role in the effective conservation of Markhor. The habitat elevation of Markhor varies from 600 m to 3600 meters (B. Khan et al., 2016). The Markhor usually lives in dry terrain on or near cliffs and does not stay in snow or cold weather for a long time. They restrict themselves below 2200 m in winter and 3600 m in summer (S. Ali, 2008). The preferable area for markhor is slopes and cliffs, which receive little precipitation. They eat grasses, leaves, and other vegetation they find by taking down with the help of their hind legs or reaching to the top however, markhors food changes with the season and food availability (S. Ali, 2008). Markhor commonly consumes Forbes and grasses in summer and spring. In winter, it mainly feeds by reaching upward to browse bushes (Bhatnagar et al., 2009). Oak *(Quercusilex).* Sagebrush *(Artemisia spp.), Indigofera* spp., and *Ephedra sp.* are the plant species found in the habitat of markhor also Almond (Amygdalus spp.), pistachio (Pistacio spp.), spruce (Picea smithiana), and fir (Abies pindrow) found in low and high elevations (S. Ali, 2008).

1.1.7 Distribution of Markhor

For effective conservation and management, assessing anthropogenic impact, understanding and having in-depth knowledge of species distribution and its immediate relation with the environment is vital (Arshad et al., 2013). Due to the geometric increase in human population and limited resources, land use has limited the distribution of markhor (Arshad et al., 2013).

Around the world, markhor is found in six countries, three countries in South Asia: Pakistan, India, and Afghanistan, and the Central Asia countries of Turkmenistan, Tajikistan, and Uzbekistan. The habitat of markhor in Chitral is the desert hills of northern areas of Pakistan and some of the mountains of Baluchistan, southwestern Sindh. However, the subspecies also live in different parts of Pakistan, such as Astor Markhor is found in the Gilgit region, Kashmiri

Markhor inhabits Chitral, Dir Swat Kohistan. Indus Kohistan and in the slopes of Ladakh Sar. Kabuli markhor occupies the Chitral border area and in Murghazar hills of the Swat region. Suleiman Markhor is mainly found in the mountain ranges north and east of Quetta. Chiltan Markhor is located southwest of Quetta (S. Ali, 2008).

1.1.8 Status of Markhor

Pakistan is the home of the five sub-species of Markhor; all the sub-species of Markhor were on the IUCN's red list of 2008 as endangered species (B. Khan et al., 2016). Most of the populations of two sub-species, straight-horned and flared-horned, are found in Pakistan (M. Khan et al., 2018). A total of 500-600 markhor were estimated by (M. Khan et al., 2018) in Chitral. However, 1500 flare-horned markhor were roughly estimated in the western portion of Swat.

According to secondary data of (North West Frontier Province) wildlife department 2005a), 1400 markhor were indicated in Chitral, Dir Kohistan, and Swat region. These numbers were estimated by sighting animals and counting by watchers; the number may exceed the actual estimated ones. An increasing trend in the markhor population was recorded (Kakakhel, 2020) from 2016 to 2019 in the four conservancies Gehriat Goleen conservancy, Chitral Gol National Park, Toshi-shah conservancy and Kaigah conservancy. The population growth was 250 individuals in Toshi conservancy, 152 in Gehrait Golen and 552 in Chitral Gol National Park (Kakakhel, 2020).

1.1.9 Trophy Hunting in Pakistan

Trophy hunting usually involves killing the largest individual animal in the game management area or geographic area (Lindsey et al., 2006). This conservation tool is highly recognized for protecting wild resources and generating revenue for the local communities through hunting fees,

which encourages the locals to protect the wildlife around them. This approach is usually adopted in an area where the species are endangered. It was applied in Pakistan as some of the wild resource populations were about to extinct. In Pakistan, Trophy hunting is carried out, and 80% of the hunt fee goes to the community as an incentive.

(WWF-P 2001b) considers that Pakistan has led the world in conservation by introducing community-based trophy hunting programs. Since the 1980s, for the preservation of different endangered species such as Afghan urial (Ovis vignei Blandford), Punjab urial (Ovis vignei punjabiensis), Sindh ibex (Capra 21 hircus blythi), flare-horned markhor, and Himalayan ibex (Capra ibex sibirica). Pakistan introduced trophy hunting in Baluchistan, Khyber Pakhtunkhwa, and Northern Areas (Shackleton, 2001). In many countries, the targeted numbers of species have sustainably increased due to the introduction of Community Based Trophy Hunting(Shackleton, 2001).

1.1.10 Community-Based Trophy Hunting In Chitral

Chitral, the largest district of Khyber Pakhtunkhwa, had a large population of sub-species of Markhor that either died when reaching the upper limit of age or were hunted illegally before 1983. They became subject to poaching and overhunting. This put the Markhor species on IUCN red list. In 1983 Khyber Pakhtunkhwa wildlife department, which was the North West Frontier Province wildlife department, started working on the conservation of Markhor and established the "Chitral Conservation Hunting Program." It was later banned when the government of Pakistan banned the export of trophies. At that time, the initiative was taken without involving the communities. When in 1998, the Federal Government approved the trophy hunting program, the wildlife department Khyber Pakhtunkhwa restarted the program.

With time they involved communities in the conservation with a share of 80% of the hunt fee that will be used for the upward mobility of communities by spending on infrastructure development. According to wildlife department statistics, from 1998 to 2021 total of 65 hunts were carried out in Chitral, a total of US$4552500 revenue was generated, and US$3642000 went into community share. Khyber Pakhtunkhwa was the first province that offered trophy hunting and empowered the local communities with hunt fees (S. Ali, 2008).

Two conservancies in Chitral were declared as community-managed conservation areas with the consent of local communities, which were the Toshi-Shasha Conservancy and Gahirat Conservancy (North West Frontier Province1998a, 1998b). In 1998 Government of Pakistan submitted a proposal to the Convention on International Trade in Endangered Species for the allocation of a yearly hunting quota of markhor, and that was approved with the condition that 75-80% of the hunt fee would go to the village conservation committee for the development works within communities (Arshad et al., 2013).

Six annually, the hunt Convention on International Trade approved quotas of Markhor in Endangered Species for Pakistan. The National Council for Conservation of Wildlife will monitor or look at this, the management authority for Convention on International Trade in Endangered Species in Pakistan(S. Ali, 2008).

1.1.11 Hunting Permit and Bidding

The provincial government will issue hunting permits for non- CITES (Convention on International Trade in Endangered Species) species. The National Council for Conservation of Wildlife will allocate quotas to communities after examining the sound population. The criteria for permit allocation are:

1. A trophy-sized animal should be available

2. Hunt success probability is high
3. A community should be capable of undertaking a hunt
4. Plan how to utilize the fund

An open auction is advertised in the newspaper forbidding. The highest bid will receive the hunting permit if the hunter accepts the hunting permit by paying or depositing the fee in full in advance with the Khyber Pakhtunkhwa Wildlife department, which is usually the last week of November. If the hunter cannot submit the price in the given timeframe, the second and final highest bidder will receive the hunting permit. The hunting season starts in the first week of December to the end of March. During this time, the male will move towards low altitudes for breeding as the females live in low altitudes.

1.1.12 Hunting Fee

Hunting fees 80% go to the community, and 20 % go to the government treasury. The village conservation committee will use this fund for community-level infrastructure development.

1.2 Statement of Problem

Reckless hunting, poaching, and human encroachment in wildlife habitats have been one of our most significant biodiversity concerns. This has resulted in various fauna, especially those that have already become extinct or are on the verge of extinction. Often than not, poor communities living in precarious and impoverished regions of Asia have no way but to rely on these resources for their livelihood need and have little incentive to protect endangered species. As a response to these concerns, the government has experimented with various institutional arrangements that are decentralized and rooted in learning from the design characteristics of long-enduring self-governing institutions.

Trophy hunting (TH) is one such experiment with theoretical insights on co-management thinking. TH is globally recognized for creating a sense of stewardship among locals to protect wildlife in the surrounding ecosystem. TH is an officially permitted shooting of big game for pleasure, often in lieu of hefty fees earmarked to support local development objectives ranging from biodiversity conservation to livelihood support to local infrastructure development.

Pakistan has also established trophy hunting to protect near-extinct species such as the Capra Species locally known as Markhor. Markhor links the Chitral district of Khyber Pakhtunkhwa to the global market for trophy hunting. Recently the wildlife department issued a trophy permit for a Kashmiri Markhor for $140,000 to an American hunter in the Toshi game management area in lower Chitral (Published in Dawn, December 16th, 2019).

In principle, the revenue generated from trophies goes to the local stakeholder and the government in the proportion of 80:20, respectively (Wildlife Department Khyber Pakhtunkhwa, 2006). Huge economic stakes involved in trophy hunting make it the subject of political influence and rent-seeking, and tragedy of the commons. The situation demands a thorough institutional analysis of trophy hunting.

1.3 Research Questions

- How did trophy hunting as institutions evolve?
- What was the impact of trophy hunting on three crucial indicators: the living standard of local communities, the Markhor population, and the local economy?
- How do formal institution wildlife institutions working with informal institutions?

1.4 Research Objectives

- To evaluate the institutional arrangements of protected areas.

- To evaluate the socio-economic benefit of community-based trophy hunting for a community
- To determine how effective, the trophy hunting program has been in generating the knowledge on conservation and sustainable use of natural resources for the benefit of both, conservation, and the people
- To evaluate the participatory approach among stakeholders in the conservancy area.

Chapter 2

2 Literature review

This study uses an argumentative literature review in which the researcher investigates a selective part of the literature to obtain a sufficient understanding of the phenomenon. More specifically, this section reviews trophy hunting as institutions evolved and its impact on three leading indicators: living standard of local communities, markhor population, and local economy. It also evaluates the level of trust among different stakeholders in the conservancy area and highlights the intersection of formal wildlife institutions with informal community institutions. The literature covers the socio-ecological system framework, an advanced version of the institutional analysis and development framework. It sheds light on different stakeholders of the trophy hunting industry and discusses the problems and gaps in the community-led conservation programs.

2.1 Institution and Governance in community-based conservation

Different definitions of community-based conservation have been given in the literature. (Salerno et al., 2021) define community-based conservation as all the institutions that concurrently increase human development, especially for people living in the jurisdiction or directly living with nature and biodiversity. Institutions are the shared norms in any jurisdiction that maintain orders among Institutions can be formal or informal both govern human behavior in the decision-making process. Institutions are ongoing regularities of human actions in action situations governed by rules, norms, the biophysical world, and strategies. When one draws boundaries of an institution, it should depend on the theoretical question of interest, time scale posited, and the pragmatics of a research project (Crawford & Ostrom, 1995).

Academic studies have come out with different conditions associated with successful common pool resource management institutions (Gibson et al., 2000). However, a significant amount of uncertainty exists taking the institutional process through which community-based conservation may work effectively (Salerno et al., 2021). This process includes both external and local attributes. At the same time, for political and legal support, government agencies will be necessary. Local society and international NGOs are essential in capacity building and providing funds (Salerno et al., 2021). the Interaction of these actors with local governance and local knowledge systems will further help resource management strategies (Salerno et al., 2021).

The evolution of the institution and governance process in community-based conservation is the most critical factor affecting program outcomes. Meanwhile, the generation of institutions, rules, or norms has been the main focus of the social science discipline. This problem has been approached by political scientists, economists, and social scientists. This problem was left to the political scientist, economists, and social scientists who were interested in rational choice theory and the field of institutional economists (McKinnon et al., 2016). This new institutionalist has worked notably in this field; however countable number of anthropologists have taken an interest in it (Acheson, 2011).

Ostrom's work on developing institutions for the shared pool resources is one of her remarkable works in resource management. Ostrom's contributions in the form of institutional analysis and development framework and the advanced version of it, a socio-ecological system in which she has identified constraints such as physical attributes and traits of the human community. In her work, she has described that local people should act together to solve the problems rather than involve the state in any collective action problems.

In her career, she has argued that local decision-making groups should be nested within state structure to make local decisions efficient. In her final design principle (#8), she gives the central concept of polycentrism. The processes of appropriation, allocation, dispute resolution, governance enforcement, and monitoring are organized in the multi-level nested enterprise (Ostrom 1980.101). Multi-layers of nested enterprises have been found more efficient than single large enterprises (Gibson et al., 2000).

The state has four crucial roles in the polycentric system. The first one is threatening to impose a solution, the second provides neutral information to mitigate self-serving bias, the third provides an arena for negotiation, and the fourth is monitoring and implementing (Crawford & Ostrom, 1995). In her presidential address to the American Political Science Association, such institutions with no external support are unlike solving the more challenging common- pool resource problems alone by reciprocity.

2.2 Impact of trophy hunting on the living standard of local communities, Markhor population, and local economy

There has been a scarcity of information among the locals and other people regarding the positive impact of trophy hunting, which significantly hinders conservation. According to (Angula et al., 2018), Trophy hunting is part of controversial goods and services for elegance and decorum. This was the western narrative against trophy hunting; in response to that (Infield & Namara, 2001) pointed out the benefit and profit derived through safari clubs that have promoted the local economy and have been influential in the conservation of wildlife.

Revenue or other benefits such as food and employment opportunities for local communities are also frequently cited (Batavia et al., 2019). The community-based conservation programs in Namibia have been recognized as a significant contributor to the dramatic recovery of the wildlife population and the increase in locals' livelihood (NAIDOO et al., 2011). Trophy hunting

can generate revenue for the local communities (NAIDOO et al., 2011). The payments include conservation management, employment for the locals, and infrastructure development in the community. In both Zambia and Zimbabwe, where community-based conservation programs depend on trophy hunting as a source of benefit for upward mobility of those communities, the most important achievement of these programs is changing people's attitude towards conservation programs (NAIDOO et al., 2011).

Results from Pakistan also suggest that tangible benefits are received from trophy hunting. In the Mountains Area Conservancy Projects in Chitral, the Village Committee Fund is used for collaborative projects, such as repairing water channels, school construction or repair (S. Ali, 2008). Trophy hunting has benefited the locals of Chitral with (3.2%) in the form of employment (8.8 %) respondents were benefited with daily labor, (2.2 %) got subsistence allowances (1.6 %) got benefit as a porter of guide among the sampled respondents of 125 respondents from a total population of 1250 households. In Karimabad village, 10.4% of sampled respondents benefited from employment, 16.8% from daily wages, 5.6% from subsistence allowances, and 13.6% from guide or porter (S. Ali, 2008).

Trophy hunting of Markhor is carried out annually with three hunt permits per year, and 80% of the share of the hunt price goes to the local communities for their socio-economic wellbeing (Shackleton, 2001). However, a long debate exists in the world academia about the legitimacy of trophy hunting and its impact on species' population (Crosmary et al., 2015). In this regard, two views exist in the literature; one suggests that local people benefit from the program in return, they have controlled illegal poaching of endangered species (NAIDOO et al., 2011). At the same time, others view that this program harms the species' population (Batavia et al., 2019). Trophy hunting is usually considered a minor threat to the animal species (Lindsey et al., 2007).

Meanwhile, literature exists in academia that perceives trophy hunting as a threat to conservation. (Palazy et al., 2012) states that harvesting large low-density animals strongly impacts their variability and growth. With the worldwide increase in wealth, particularly in some countries such as the Middle East, Russia and China have parallel increased sports hunting demand (Palazy et al., 2012). The harvesting of large low-density animals strongly impacts their variability and growth. The decrease in the population has been further increased by the lack of scientific knowledge and the data used to determine hunting quotas and enforcement of those quotas (Palazy et al., 2012). In trophy hunting, usually, males are hunted down, which increases the pressure on reproduction and results in low survival in ratio to females. In recent studies, it has been found that rare species have high economic value rarity is directly related to the high value (Palazy et al., 2012). Under the Anthropogenic Allee effect (AAE), rare species should be more attractive and valuable to the hunters. Different wild-life markets have been related to it, and trophy hunting may be one.

The sustainable trophy harvest of Markhor has increased the population in the Torghar conservancy in Baluchistan, Pakistan. However, the overall reproductive rate of production would decrease due to losing a small number of adult males. Trophy hunting can play a significant role in conserving and rehabilitating endangered species without threatening species' population growth (Palazy et al., 2012). In South Africa, hunting revenues played a vital role in recovering white Rhinoceros populations (Lindsey et al., 2006).

2.3 Evolution of trust level among different stakeholders in the conservancy area and the working of formal institutions with informal institutions

The success of conservation is significantly affected by people's attitudes towards conservation. For the community conservations program to be successful, the community's positive attitude toward conservation is most important. Unless the locals don’t become an integral part of the

conservation measures, they will become doomed (Infield & Namara, 2001). How effectively the community supports the conservation is necessary, which will be used to assess the changes in the community's behavior, which will further help deal with poaching and illegal harvesting. Lake Mburo National Park (LMNP) in south-western Uganda was declared a national park in 1983, with a political motivation behind the declaration (Infield, 1988). The disadvantage of this park was that the population of Banyankole people, especially Bahima pastoralists who held anti-government sentiment, did not benefit from it despite their population living in the protected area. When the government fell from power, the new government encouraged the ignored population; the park was destroyed, eradication of some large mammals started. Since the start of (IUCN, 1980), the conservation approaches have undergone significant changes. Conservation thinkers have rejected the protectionist policies and favor utilizing wildlife resources(Infield, 1988). Difference of opinion exists in the people's view of conservation areas.

(Infield & Namara, 2001) asserts that a wide range of support exists for national parks. (Infield, 1988) found resistance from the people to conserve the area, and rural Africans had little interest in wildlife conservation. However, it is possible to predict people's attitudes towards conservation will be influenced by protection policies, which leads to effective planning.

Developing countries, especially local communities, are at risk of creating protected areas as their livelihoods depend on them (Saberwal et al., 1994). They indirectly pay for the loss of access to firewood, timber, grazing lands, and other forest product. However, in recent years these protected areas have increased the livelihoods of people in the surrounding (Saberwal et al., 1994)

People's attitude towards conservation depends on the benefit those people get from the protected area. Households who were direct beneficiaries of the protection were optimistic about

covering areas for conservation. It has been found that more affluent families had a positive attitude towards conservation than poorer ones (Infield, 1988).

Infield Mark's research, the most exciting result is that the more affluent families did not favor sanctioning hunting demand more than the poorer households. The conservationist with the protection and management of protected areas often brings hardships to the poor communities living in or around the room, losing access to natural resources and damage caused to livestock and farm (Pimbert & Pretty, 1997). The only reason behind the negative attitude of people toward conservation is colonial approaches to conservation which exclude communities from wildlife resources with licensing control and punitive policies (Pimbert & Pretty, 1997). Community-based conservation has to be inclusive rather than exclusive to rural communities (Hutton et al., 2005).

Local perception and priority of natural resources problems are different from that of external development agents(Shackleton, 2001).

The community-based conservation strategy involves engaging and ensuring the participation of native or local communities and the resource user for biodiversity conservation and the well-being of local livelihood (Salerno et al., 2021). while on a ground basis, communities are often mingled with external conservation interests (Salerno et al., 2021). Changes in the conservation priorities, community-based conservation design, and implementation also vary (Salerno et al., 2021), but community-based conservation needs policy change, and policy change on ground intervention is necessary(Salerno et al., 2021).

Community-based conservation to be more progressive and inclusive, community representation in the program design and implementation is needed (Salerno et al., 2021). Without representation from the community side in program design and implementation or designing and

implementing policies diversely, the outcome will be uncertain or mixed (Salerno et al., 2021). Interventions in CBC are often drawn from the principle of collective action, community participation and common pool resources(Salerno et al., 2021)

2.4 Formal and informal institutions

Theories suggest informal community institutions can be formalized into a governance process for sustainable natural resource management (Salerno et al., 2021). However, links and feedback between local institutions, the administration of CBC programs, central authority, and international conservation interests are complicated and not fully understood (Salerno et al., 2021). Adaptation of institutions for community conservation at the CBC level and higher organization level should be parallel under complex and uncertain situations within Social-ecological systems that are correlated and path-dependent (Salerno et al., 2021).

In the case of CBC, it is most common for livelihood, partnership, and institutions with time and in response to interventions (Salerno et al., 2021) These changes are due to social learning as actors make new relationships, build trust, share knowledge, and resolve the problem.

Rules and regulations used worldwide to solve social issues prevent over harvest of natural resources. Such rules and regulations are formal institutions in political science literature (Stiglitz, 2000). The traditional tools or strategies used to regulate social issues are informal institutions. So many informal institutions exist to control natural resources, which guide voluntary behavior. One of them is angler education programs and voluntary changes in individual behavior, achieving management objectives and goals as an informal institution (Cooke et al., 2013).

Why is there a need to use informal institutions as an alternative to formal institutions? A variety of reasons has been given for justifications first reason is that for a management process to be successful, involving the stakeholders is essential (Cooke et al., 2013).

Using educational efforts to encourage voluntary regulation will affect formal institutions. Formal institutions are costly as they need some level of enforcement to be effective. Formal institutions are limited in developing countries and some developed countries. It is widely accepted that protected areas or management areas institutions have to be biologically and socially influential and acceptable to achieve their objectives (Cooke et al., 2013).

The declining level of trust among stakeholders is a growing issue for wildlife managers and administrations trying to involve stakeholders and develop effective and sustainable wildlife conservation. Trust and confidence are necessary among stakeholders to achieve wildlife conservation outcomes for any state wildlife agency (RILEY et al., 2018).

Organizational trust is essential to any collective action, such as public wildlife conservation, because acting outside one's self-interest can create problems and uncertainty from the activities of the public trustees (RILEY et al., 2018). The need for trust is a deep-rooted concept in modern democracies. In wildlife conservation, trust is critical such as the hunter's support for rules and cooperation with policies such as a ban on feeding and torturing wildlife. State wildlife agencies often achieve wildlife conservation outcomes through decrees and regulations imposed by power; however, this kind of framework has limited effectiveness in the absence of stakeholder corporations, which depends on the level of trust in the regulatory agency (RILEY et al., 2018).

Along with the trust deficit in government, science, and public administration, the trends in wildlife management are going towards collective action and participatory democracy rather than

traditional or classical forms of governance. If this continues with time, the stakeholder's trust in wildlife conservation agencies will play an important role. According to research on organizational trust, two critical factors effects or influence stakeholders' trust in an organization: procedural fairness and technical competency. Competency has been defined as professional qualifications to improve wildlife conservation management. Procedural fairness means the procedure and process by policymakers or decision-makers rather than the outcome of wildlife governance (RILEY et al., 2018). Procedural fairness is possible when stakeholders fully understand state wildlife agency decisions. Making a decision is fair, and stakeholders are confident that they have a voice in the decision-making (RILEY et al., 2018). A most important role of an agency in wildlife conservation is the technical competence in the process of wildlife management. The way decisions are made and showing goodwill towards the stakeholders by state wildlife conservation agency personnel is essential in building trust between stakeholders and the state wildlife agency (RILEY et al., 2018). To achieve transparency, it is necessary to provide first-rate contact with stakeholders that is possible through direct, frequent, and on-time communication. Secondly, create a consistent and constructive talk with stakeholders' groups in forums and data-driven conservation for their concerns and problems (RILEY et al., 2018).

Many scholars are pessimistic about how natural resources can be managed to solve common property resource problems. Some favor privatization, others favor state involvement, and some are interested in involving communities in managing natural resources and biodiversity conservation. In this regard, various natural resources management programs have been in the literature for sustainable management of resources. They have limitations in one way or the other.

2.5 Socio-Ecological system framework

CAMPFIRE was established to decentralize the natural resource management in the shared lands of Zimbabwe (Balint, 2006). It was widely developed around wildlife and wildlife management for the benefit of the inhabitants (Martin, 1986). The operational mechanisms of organizations working via AA (RDC) are not much appreciated (Balint, 2006) because they do not involve a participatory approach in wildlife management due to their complex and expensive administrative structures based on western systems.

Local communities are not even represented in the recent policy discussions over trophy hunting (Angula et al., 2018). Failure to involve local communities in framing the conservation policies by not considering their understanding of the benefits of trophy hunting might lead to futile results (Angula et al., 2018)

Elinor Ostrom, a Nobel prize winner, has given an approach that is useful in examining institutional structure or governance structure, leading to implementing the best ecosystem-based management program. Her approach to the Institutional Analysis and Development Framework (IAD) in managing common-pool resources has gained tremendous importance. It is being practiced to resolve the common pool resources problem.

The Institutional Analysis and Development (IAD) Framework abridge the combined efforts of the community to understand how institutions operate and evolve (McGinnis, 2011). Different governments have produced decentralizing property rights to resources and communities, which depend on resources in making national policies for sustainability (Rahman et al., 2012).

Decentralization focuses on three essential questions: who are the involved parties in devolution, and how to define those who need to be involved? The second question is, what could be the process of decentralization? Finally, how is this decentralized system governed (Rahman et al., 2012)? The decentralization, often called the bottom-up governance system, leads to a robust

political economy. Ostrom explains that the decentralized governance structure is best for coping with limited knowledge problems and other abatable constraints in communities.

The political economy framework signals two major human imperfections to be dealt with to have institutional analysis: bounded rationality and the second is Opportunistic behavior or the problem of opportunism (McGinnis, 2011). Suppose these two human imperfections are dealt with. In that case, we can have robust institutions that allow people to adapt and learn from previous mistakes and gain from unexpected opportunities(Sekhar, 2003). The socio-ecological system framework (SESF) (McGinnis, 2011) is a conceptual framework giving a set of variables that come across each other and affect the outcomes in the Socio-ecological system. The evolution history of this system goes back to empirical research on institutions, collective actions, and common problems (McGinnis, 2011). This framework is now less viewed as a theoretical framework in collective action theory. It is mainly considered a tool to determine the sustainability of the social-ecological system. The focus of the socio-ecological framework is to know different directions of system functioning, make it an interdisciplinary field, and develop and implement normative societal goals related to sustainability (Gibson et al., 2000). SES under the two main pillars: understanding SES functioning and understanding development implementation and transformation into normative sustainable goals associated with different theories and methods. A massive portion of SES research attempts to link these two main pillars. The Socio-ecological system framework is among many conceptual frameworks to do this and arguably the broadest framework, but many others exist. The socio-ecological system framework is mainly cited in the SES discourse. It is primarily associated with ecosystem services in many other environmental governances: multilevel governance, polycentric governance, and collaborative adaptive management (Partelow, 2018). This framework has been applied in

different variety of empirical contexts. Most of the literature is found on everyday goods, extensively focusing on small-scale fisheries' community-based system (Partelow, 2018). However, the framework has also been used to analyze the food production system (Partelow, 2018). The newest version of the Socio-ecological system framework from McGinnis and Ostrom (2014) consists of 56 second series of variables, but not all the variables have been focused on in literature; comparatively, some of the variables are less important, such as Climate patterns and pollution patterns. The Socio-ecological system framework can be used as a research tool for further research, such as conducting mix-method, qualitative and quantitative analyses of a single case study. It can also be used for meta-analysis and comparative analysis (Partelow, 2018).

2.6 Stakeholders' Roles in Markhor Trophy Hunting

In collaboration with the communities, the wildlife department is also working on protecting species against illegal hunts. The wildlife departments and community watchers are always on the field with binoculars to monitor the species population. If someone is caught violating the rules or hunting species illegally, the offender will face punishment from the community. Also, action will be taken against the offender according to court rules. According to the Khyber Pakhtunkhwa Wildlife Act of 1975 department strongly discourages the poaching and illegal trade of markhor and other wildlife species. A damage report will be registered in the court against the offender for the trial.

2.6.1 Hunt Regulation

The Khyber Pakhtunkhwa Wildlife Department Act 1975 has classified animals and birds into three schedules. The first schedule includes all those birds and animals for which a hunting license from the Khyber Pakhtunkhwa wildlife department is necessary. The second includes all

those game animals' possession is allowed under the conditions of having certificates of lawful possession. The third schedule includes all those animals whose hunting capturing is not allowed as they are endangered animals. Markhor comes in this schedule with limited hunts allowed. Each year, the KP wildlife department issues three hunting permits for two conservancies Toshi and Shasha and Gahiert conservancy. Each conservancy gets one hunting permit, and one hunting permit is issued merit-based. Bidding for the hunt starts in the first week of November under the supervision of the KP Wildlife Department. The highest bidder will receive the hunting permit.

2.6.2 Habitat Improvement

Most of the northern areas do not have gas, so due to harsh winter, demand for firewood increases, decreasing the diet for Markhor, and deforestation, soil erosion, and flash floods disturb the habitats of Markhor. Most of the people in north life depend on the livestock as a source of meat or assets, so domesticated goats are grazed in high altitudes due to diet overlap between markhor and domestic goats, and the scarcity of foods for markhor increases. KP wildlife department has banned the cutting of woods for fire in all Markhor conservancies. Domestication of goats is also not allowed in some Village Conservancy Areas. Some Village conservancy areas are allowed to domesticate goats under conditions that those goats will not be grazed in the markhor habitats. In some regions, afforestation has also been done by KP Wildlife Department.

2.6.3 Involvement of local communities

Conservation is not possible without the involvement of local communities. Many kinds of literature also back this. As in her framework socio-ecological system framework Ostrom says that society and ecology go together they cannot be separated from each other. The wildlife

department works on conservation by involving communities living near or in the protected area. Communities are getting the 80% of the hunt fees as an incentive used for the infrastructure development of communities. Under section19 of Act 1975, wildlife department communities are empowered with the conservation. So, village conservancies are formed in areas where Markhor is found under some procedure.

2.6.4 Communities' Role in Conservation of Markhor

Communities' role in the conservation of markhor is significant, and communities are the prime stakeholders in conservation. Without the preservation of markhor seems to be impossible. Communities in the protected areas are dependent on the resources, including grazing of domesticated goats, deforestation for firewood, and illegal hunting, which will cause severe problems if communities do over-exploitation. Conservation is only possible due to cooperation and the active involvement of communities.

2.6.5 Enforcement of Law

Each VCC within the conservancy is responsible for enforcing the KP Wildlife act 1975. VCC takes effective measures for the conservation of Markhor, which includes reporting the illegal hunting by a member of VCC or by outsiders, reporting other activities within VCC that can harm the preservation, and reporting those that violate the Wildlife Act 1975.

2.6.6 Habitat Management

Preservation of habitat plays an essential role in the conservation of Markhor. VCCs are also responsible for habitat preservation by preventing overgrazing by livestock, deforestation of trees in the conservancy, and other harmful activities. VCCs also work on habitat improvement through afforestation, the vegetation of grasses in markhor habitats, and other suitable practices.

2.6.7 Active Participation

Communities in each VCC are encouraged to participate in the conservation efforts. They conduct meetings once a month to discuss the problems and future possibilities and opportunities. Day and night, they are voluntarily ready for any assistance.

2.6.8 Appointment of Village Wildlife Watcher

Each VCC will appoint Village wildlife watchers. The number depends on the village conservancy fund, and the VCC fund is paying them. These designated watchers are responsible for regular monitoring, recording the number of animals and if the animal died, the cause of death, and information about sex, age, and horn size. Community watchers also carry out population censuses along with department watchers. Community watcher is also recording the movement of animals. Most importantly, if a predator is found in the conservancy, reporting to high authorities also comes in his responsibilities.

2.6.9 Trophy Hunting

Trophy hunting is carried out from December to March each year. The executive body of VCC starts surveying the animal population in their conservancy to identify trophy-sized animals and communicate it to the high authorities. Communities also provide porters and guides to the hunter and are responsible for bringing the animal to a feasible hunting place. The communities also offer security to the hunter.

2.6.10 Village Conservation Fund

To manage the community share of trophy hunt fees, VCCs and the KP wildlife department opened a joint bank account. This account's primary source of income will be the community share in the hunt fee and donations from the government or NGOs—the acceptable amount for those who violate conservation rules.

2.6.11 Village Conservation Fund Utilization

Village conservation funds are used primarily for the infrastructure development of communities. Some of the fund portions are used as a salary to the village wildlife watchers, afforestation of habitat, and expansion of hydropower plants, reducing the demand for firewood. Some proportion of the fund is invested in the community center, health, and education sector of the community.

2.6.12 Community Incentives

Economic incentives play a significant role in achieving conservation worldwide. Deer hunting in Scotland depends on many economic and social factors. Incentives can increase the net return (MacMillan & Phillip, 2010). Several incentives are given to the people living near the wildlife conservancies, such as land ownership, financial benefits, and empowerment. (MacMillan & Phillip, 2010) have pointed out that local communities will be involved in poaching and exploiting natural resources without incentives.

2.6.13 Empowerment

An efficient and sustainable way of conservation includes empowering the local communities (Gibson et al., 2000). Empowering the locals will incentivize them to make better decisions about protection. (Gibson et al., 2000) a view that the empowerment of local communities will motivate them for effective conservation. The wildlife department has established VCCs in the conservancy areas, and the people in the VCC which has created a sense of ownership among the local communities

2.6.14 Share in Hunting Fee

Community-based trophy hunting gives economic incentives in the form of a share in hunting fees to the communities. The community's share in trophy hunting is 80% of the total hunt fee.

Within the local communities, this 80% is distributed in different proportions. If the hunt is carried out in any VCC jurisdiction, 50% of the 80% goes to those VCCs, and the remaining 30% is distributed among the rest. The hunt's community share is deposited in the village conservation fund (Arshad et al., 2013). Each VCC will utilize that fund at the community level. However, direct cash to an individual is discouraged.

2.6.15 Development of Basic Facilities

The village conservation fund is used to develop basic facilities within the communities, such as link roads, water channel repair, constructions of new water channels, clean drinking facilities, and many more. The fund is also used to repair school infrastructure and hire schoolteachers from the fund. The fund is also used in hydropower plants which serve as an alternative to firewood demand.

2.6.16 Job Opportunities

Trophy hunting has created job opportunities for the locals living in or near the protected areas. Village wildlife watchers are being hired by the community and paid from the village conservation fund. Some of the people are employed by the KP wildlife department as a watcher, along with community watchers working on the conservation of Markhor. During the hunt of Markhor, local people are hired as porter guide and cook, and the hunter pays them.

2.6.17 Linkage with Other Organizations

The local community's share in the fund is not that huge for large projects in the community, so they use some amount of the fund as a matching grant with other NGOs and bring numerous projects to the community as the project is essential for the community, so the people take an interest in it, which opens the gate of many projects from different organization in the community.

2.6.18 Problems and Gaps in Markhor Conservation

Khyber Pakhtunkhwa wildlife department is working on the conservation along with the communities. The real essence of protection is increasing the number of the Markhor population. The real meaning is the sustainability of the Markhor population. Specific problems still exist in the conservation, which is being discussed below, which can further boost the conservation efforts of the Khyber Pakhtunkhwa wildlife department if solved.

2.6.19 Lack of Adequate Involvement in Local Communities

Communities are the prime and main stakeholders, and they have an essential role in biodiversity conservation and natural resource conservation. The communities living in the northern areas of Pakistan are poor and generally not aware of the conservation and wildlife resources (S. Ali, 2008). Excluding local communities from the management system of protected areas has resulted in problems such as violence and illegal hunting degradation of protected areas. During the British colonial period, protected areas were designated without involving the Himalayas and Hindu Kush Region. Local people do not know the philosophy of conservation. They want the economic incentives on individual hands and in immediate time. In this phenomenon, the wildlife department finds it difficult to get the support of locals for conservation (S. Ali, 2008).

2.6.20 Habitat loss

With the rapid increase in the human population followed by changes in land use for agriculture, the habitat of Markhor is also shrinking the high demand for firewood by local communities, increasing the rate of habitat loss (S. Ali, 2008). Depletion of biodiversity and decrease in the productivity of fodder resources have been caused by a lack of alternative sources of heat, a decline in natural dominant plant species, and rapid growth of alien plant species (S. Ali, 2008).

(S. Ali, 2008) has pointed out that migration of markhor to other remote and unsuitable habitats is due to habitat degradation.

2.6.21 Lack of Research and Training

Research on population viability and landscape ecology does not occur due to a lack of scientific approaches and expertise. Extensive social training is required for a community staff member, including training on habitat conservation and technical expertise training to deal with outfitters and hunters. This will not be a socio-economical advantage to the communities and increase the communities' capacity, which is needed for the sustainability of conservation (S. Ali, 2008).

2.6.22 Marketing of Hunts by the Government

Khyber Pakhtunkhwa wildlife department has a significant role in publicizing hunt and marketing markhor on websites and national-international newspapers (Arshad et al., 2013). Communities should also do marketing of hunt. Direct advertisement and marketing of hunts by the communities without government involvement will increase the confidence of hunters and international conservation agencies in community-based trophy hunting programs. However, the government should only monitor the marketing of the hunt (Shackleton, 2001).

2.6.23 Unequal Share Distribution of Trophy Hunting Fee

Revenue generation from the wildlife conservation does not make it successful conservation. Protection is successful when it boosts the local economy. People realize that wildlife conservation has a socio-economic benefit that is only possible by effective decision-making and fair revenue distribution. Hostility and friction arise among communities when benefits from natural resources are distributed among the locals (S. Ali, 2008).

2.6.24 Lack of Public Awareness

Environmental education is the primary conservation tool, but this tool has not been used effectively in most conservation programs. Most of the local communities of Khyber Pakhtunkhwa do not have information about the economic outcomes of wildlife conservation (H. Ali et al., 2015). Most wildlife species face extinction due to a lack of awareness about intensive outreach programs, technical approaches, and lack of funding. Creating awareness among the communities is essential, which will help them in practical conservation and monitoring activities. It will also enable them to express their need for natural resource management.

2.7 Literature gap

According to the Khyber Pakhtunkhwa wildlife department, 80% of the trophy hunt price goes to the community, which is considerable, but the impact of such a vast amount is non to be seen. The policy leakage exits somewhere as the directed groups are not getting the benefit. The conservation program needs a new decentralized approach that helps the community solve the problems independently. For this, empirical observation of past and present events, hypothetical forecasts, and simulations are necessary (Ostrom, 1990). This research contributes to our knowledge of the role of institutions in community wildlife conservation by considering two relationships. The first one is the link between institution and corporation, and the second is cooperation and biodiversity outcomes

Chapter 3

3 Methodology, Study Area, Sampling, and Analysis

This chapter consists of four parts. The first parts explain the research methodology and research design. The second part discusses the explanation of research tools for data collection and the data collection unit. The third part consists of the sampling method. The final chapter is of analysis.

3.1 Research Methodology

It is the process that is used to solve research problems. It is also called the way of studying how research is conducted scientifically (Kothari, 2004). Further explanation of the research methodology was given by (Kothari, 2004) in such a way. "W*hen we talk of research methodology, we not only talk of the research methods but also consider the logic behind the methods we use in the context of our research study and explain why we are using a particular method or technique and why we are not using others so that research results are capable of being evaluated either by the researcher himself or by others*." The research design and methods I have used in my study have been explained below.

3.2 Research strategy

Indeed mixed-method studies involve the integration of the qualitative and quantitative findings in any research process. It can be data collection, interpretation, or analysis (Kothari, 2004). A mixed-method is defined as "*research in which the investigator collects and analyses data, integrates the findings, and draws inferences using qualitative and quantitative approaches*." This research is concerned with understanding the importance of trophy hunting economically and socially, so a mixed method was adopted.

3.3 Research Design

Among the research design defined by literature, case study approaches are essential methodological tools in social science inquiry (Tellis, 1997). The empirical investigation and in-depth study carried out in one case can be site, individual, or policy. According to (Östlund et al., 2011), an approach is used to describe, explore, and explain a phenomenon in daily life. (Creswell & Creswell, 2017) say that a case study is an in-depth investigation of an event in a particular context. It studies a community, group, person, event, and institution. (Creswell & Creswell, 2017) have defined three types of case study: *descriptive, explanatory, instrumental,* and *collective.* I have used a descriptive case study research design, keeping my research questions and objectives in view. A descriptive case study research design is used to obtain an accurate and precise picture of an event or specific social group being studied and to find the frequency of an event in the population. A detailed analysis and price description of a case are obtained from the case study research design (Kothari, 2004). For my current research, I intended to analyze the socio-economic status of beneficiaries of the trophy hunting fee and the analysis of institutions on the ground for the collaboration of stakeholders and the local economy of the study area.

Further, the research methods used in my study are explained below. This study collected data through the Likert scale method. Five responses were given to an individual to agree, somewhat agree, ultimately, neither agree nor disagree, somewhat disagree, and completely disagree. Likert scale method is simple to construct, likely to produce a highly reliable scale, and easy to read and complete for participants

3.4 Research Methods

Research method means the techniques which the researcher uses for data collection. Given a Mixed research strategy, a descriptive case study research design methods used in this research are as follows:

3.4.1 Structured questionnaire surveys

A community-based questionnaire was developed for household interviews and key informant interviews for data collection. Each VCC household's population data was collected through individual questionnaires from the household's male, who is about 18, and the upper limit of age was not defined. Out of the total household population of 1691 of Toshi Shasha conservancy, 352 households' data was collected through individual questionnaires. Locals' norms and cultural practices do not allow the women to talk to strangers, so all the data was collected from males. In November, a survey was conducted, and the questionnaire was translated into the local language. The support of the wildlife department was taken in approaching the community presidents, and further inclusion of the wildlife department in data collection made the sampling and data biased. The questionnaire was divided into four categories as follows:

1. Coversheet Information

   This section consisted of the questionnaire code, date of interview, VCC name, VCC status, and the interviewer's name. This section was designed to make data punching easy and avoid mixing questionnaires during punching.

2. Profile of the respondents and his family

   This section was designed to get the data necessary to know the socioeconomics status. This section consists of questions about income, family size, education level, sources of income, and household expenditure.

3. Community projects and their importance

   This portion of the questionnaire was designed to get to know what kind of projects were undertaken by village conservation and the most important projects undertaken from hunt fee in the view of the household.

4. Likert scale surveys

   In this portion, around 32 questions were asked from the household member, and he was to respond with completely agree, somewhat agree, neither agree nor disagree, somewhat disagree, or completely disagree. The questions were asked about the profitability of conservation, the relationship of community people, the wildlife department's efficiency, conflict resolutions, the use of funds, perception about conservation and decision making, and rent-seeking or corruption.

The questionnaire was pre-tested in the two villages of the conservancy, Seen village and Bokhtuli village.

3.4.2 Focus Group discussion

Focus group discussion is usually used as a research tool to gather data from communities about a specific theme (Kakakhel, 2020). This method is also used in conservation science. Focus group discussion is used to assess organizational intervention or strategies in place (Kakakhel, 2020). This study preferred a focus group discussion tool to get information about conservation in a non-informative way. Focus group discussion can remark comprehensive data about community-based trophy hunting programs by disclosing the facts and viewpoints in a slow dialogue. Focus group discussions can polish the gained data from household questionnaires for data analysis. For focus group discussion, eight members were selected in each VCC, including individuals of different ages and two members of the executive committee of that VCC, and the

president of that community. Focus group discussion was carried out in 8 VCCs out of twelve VCC. However, in the remaining 4 VCCs, the focus group discussion was not carried out due to the unavailability of executive members.

3.5 Study Area

Toshi Shasha Conservancy is in the district lower Chitral at a distance of 15 km from Main lower Chitral town. It lies between 35° 57′ 13″ N and 31° 48′ 51.70″ E (Kakakhel, S. F. B. (2020). Toshi Shasha conservancy is the active Markhor trophy hunting game management area. Two trophies hunting against hefty fees are carried out in this conservancy annually (Kakakhel, 2020). The total area of 20000 hectares in the foothills of the Hindukush Mountains. This conservancy was founded in 1979 with an area of 1045 hectares. Later on December 16, 1998, the size was increased to 20000 hectares (Kakakhel, 2020). Its borderlines are narrow hilltop between Shoghor touching Chitral Gol National Park in the west, the watershed line between Mastuj River and Lotkho River in the east, and the south Lotkho valley and Main Chitral.

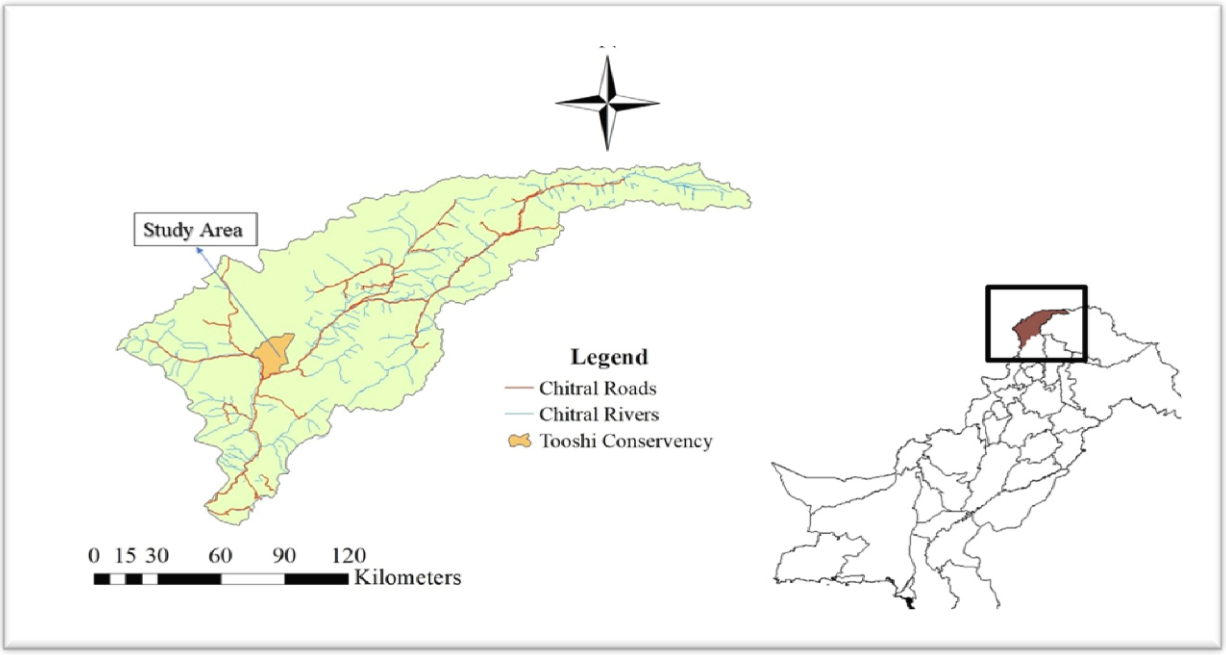

Figure 8 Study Area Map

3.6 Sampling

Sampling is a technique used in research for selecting research units of the targeted population that will be part of the research study (Sarantakos, 2012). In social science research, two types of sampling have been used: probability sampling and non-probability sampling. Non-probability sampling is a sampling method that does not incorporate any opinion of probability or occurrences of every unit presentation in the sample. Probability sampling is also called random sampling, which allows every population unit to have an equal chance to occur or present in the sample(Sarantakos, 2012). So, in this study, the sampling method was that 25 % of the population was selected for a mini-survey. The questionnaire was translated into the local language and filled by the researcher from the household head or from the household member who was above the age of 18 years. The selection of an individual for filling questioner was random, considering that every age group's views should be considered. So different aged group

was asked to give their viewpoint on the questionnaire. To cover every place in the study areas, the questionnaire was filled out by individuals from different parts of the villages.

3.7 Simple Random Sampling

Simple random sampling was used in this study to give each individual a chance to be selected from the population. The reason for choosing this sampling method was that its internal and external validity is high, and easy to analyze the data. 25% of the population was selected to fill the questionnaire from each conservancy village, and the sample size was dependent on the people of the respective villages.

3.8 Analysis

I have used thematic analysis to analyze the data collected through semi and unstructured data and focus group discussions. For the data obtained by mini-survey through household questionnaire, I have used descriptive statistics both have been discussed in detail below:

3.8.1 Thematic Analysis

Thematic analysis, analyses the data received from unstructured and semi-structured interviews and focus group discussions. With the thematic approach, the tool for analysis is framework analysis. This has two main stages which are used to analyze the qualitative data. Initially, the collected data is managed, and secondly, establishing relationships of the organized data. These two stages precede each other because a researcher will not be able to establish a connection until and unless data is not managed. Center for Social Research developed this method during the 1980s. It is based on such analytical tools, which help precise and best data management during qualitative data analysis. It makes sure that all the analytical hierarchy stages should be involved systematically and allows the researcher to go back and forth between levels during research.

In thematic analysis I have used framework analysis for generating themes and sub-themes. I have begun with transcription of my raw data, transcription as defined by Mayring, 2014 is the textual representation of any verbal and behavioral expressions during discussions.

For transcription I have used clean read and smooth verbatim transcript. This method involves transcription of all the data except utterances like ahh, hmm, right, you know etc. by applying this method the data comes in more grammatically structure. I have used this method so that all the views my respondents would appear in an appropriate grammatical structure.

After transcribing the data, I have read and re-read the transcription and all the field notes for familiarization. After getting familiar with the data coding is the next stage. During this stage I have assigned initial codes, which is called indexing.

The data was given colorful and numerical codes, later they were organized into groups which had meaningful orientations. The whole process was done by employing manual techniques of coding and indexing.

Final step in the process was generating, interestingly, the final step of generating themes begins from the initial period. Every time from transcription and familiarization themes and sub-themes would prompt out. Codes were tagged and separate charts were made for code which had sub-groups of codes and sub-codes. Then all the codes were rearranged and I employed condensation technique for themes selection which served my research purpose.

3.8.2 Descriptive statistic and ANOVA Test

As the mini-survey conducted for this study to collect the view of individual households from the Village conservancy community through a questionnaire, most of the questions were Likert-type questions in the questionnaire. Data collected from personal Likert-type questions are treated as ordinal level data. A descriptive statistic summarizes this ordinal level data in visual form. I have

assigned a code to each question, a number, and added up the number to get the response frequency to a question. For the ordinal measurement scale, descriptive statistics recommend mode, the median for central tendency, and frequency for variability (Boone, H. N., & Boone, D. A. 2012).

After cleaning the data was divided into two section one section is called TOSHI and other section is SHASHA. ANOVA test was applied on the both section separately to know the perception of the people from both areas about the conservancy.

Chapter 4

4 Lay of the Land

This chapter consists of 4 parts. In the first part, the location of Toshi Shasha Conservancy and its geography, the language of the areas, the religion of the area, and subsistence farming. The second part provides a detailed account of the community's socioeconomic setup and interaction with Markhor, and the third part is markhor habitat dynamics, including population.

4.1 Location and Geography

Chitral northern part of Khyber Pakhtunkhwa province of Pakistan is a mountainous region with 27,850 km2. Elevations range from 1500 m to 7,900 m (S. Ali, 2008). Chitral is the home of three famous mountain ranges: the Himalayas, the Karakorum, and the Hindu Kush. Chitral enjoys four seasons spring, summer, autumn, and winter. On average, the summer temperature is 35 degrees centigrade, and in winter, it reaches down to -4 in the main town of Chitral. The precipitation is from 200 mm to 800 mm annually and is mainly received in summer and winter, mainly in the snow (S. Ali, 2008). There is a vast biological diversity of fauna and flora species in this Chitral area (Arshad et al., 2013) and a rich cultural heritage.

Chitral remained an independent and self-governed state for the rest of the world for a long time. After the independence of Pakistan on 14 August 1947, Chitral merged with Pakistan as a settled area of Khyber Pakhtunkhwa. Subsistence Hunting is common practice in the area. In 1983 Khyber Pakhtunkhwa wildlife department was the North West Frontier Province wildlife department, started working on the conservation of Markhor, and established the Chitral Conservation Hunting Program. It was later banned when the government of Pakistan banned the export of trophies.

At that time, the initiative was taken without involving the communities. When in 1998, the Federal Government approved the trophy hunting program, the wildlife department Khyber Pakhtunkhwa restarted the program. With time they involved communities in the conservation with a share of 80% of the hunt fee. They will be used for the upward mobility of communities by spending on infrastructure development.

For that purpose, Conservancies were formed under the supervision of Divisional Forest officer Dr. Mumtaz Malik. Toshi Shasha conservancy at that time was created within 1045 hectares of the area. Later it was extended to 20000 hectares. It is located 10 km away from the main Chitral town.

Toshi Shasha Conservancy consists of 12 villages, each of which has been declared a village conservation community. Seen, Alburhan, Khoranlasht, Bulyough, Bukhtuli, Oghder, Kaseth, Shoghoor, Siwakht, Madashil, Karimaba, pursan, and Kuju Payeen. The total household population of this conservancy is 1691, and out of this population, Community organization 164 are executive body members. The member of the Community organization executive body members is different in each village conservation community as it depends on the community's population.

This conservancy geographical is the mountains region of Hindu Kush Mountain Range and the main river Lothkoh. The climate of Toshi Shasha conservancy is dry, with mean annual precipitation of 445 mm in winter and spring. Summer and autumn are dry, receiving 10-25 mm of rain per month (North West Frontier Province and IUCN Pakistan, 2004). The mean temperature is 16.8 °C (S. Ali, 2008). The mountains are high with precipitous cliffs and steep slopes. Scare vegetation of holly oak trees (Quercus ilex).

Rosa webbiana, Artemesia maritima, Astragulus spp., and Tamarix spp are the important flora (S. Ali, 2008). Dominant plant species are Betula utillis (Birch), Juniperus excelsa (Juniper), Salix spp., Poplar spp., Ephedra spp., Artemisia spp., wild sedges, and grasses (S. Ali, 2008). Large mammals such as Markhor, snow leopard, wolf, and Himalayan lynx are found in the Toshi Shasha conservancy (KHYBER PAKHTUNKHWA WD 1997a, 1997b).

4.2 Language of the area

Khowar (ISO 639-3: khw) is an Indo- Aryan language spoken in lower and upper Chitral districts of Kyber Pakhtunkhwa in Toshi Shasha Conservancy by 200,000- 300,000 people (Liljegren & Khan, 2017). Khowar is most spoken in Chitral; however, people living in some adjacent areas of Gilgit Baltistan also speak the Khowar language (Liljegren & Khan, 2017). Khowar is a dominant language in the Lower and upper districts of Chitral; however, it is also used as a second language in areas such as Yasin and Ghizer Valleys of Gilgit Baltistan, in a few villages of kalam in Swat (Bashir, 2007).

Khowar is also spoken as a second language by the people who speak Pashto, Wakhi, Kalasha, Persian, and Burushaski. Therefore two types of bilingualism exist in Khowar. The first one is the use of Khowar as a second language, and the second is the use of other languages by the people in contact situations inside or outside the valley (Bashir, 2007).

Residents of Toshi Shasha Conservancy speak Khowar as their first language; however, due to frequent contact with tourists and hunters, they also speak English and Urdu as their second language.

4.3 The religion of the area

The leading ethnic group of Chitral is people who speak Khowar, known as Khowaris, and a minority of the people, Kalasha, also live in the Chitral. The Khowaris consists of followers of

Aga Khan, known as Shia Ismaili, and the other group of Khowari is Sunni Muslims(Sher et al., 2016). The most well-known ethnic minority is the Kalash people living in Bumburat, Biri, and Rumbur.

Toshi Shasha Conservancy has 12 villages. These villages are Shia Ismaili Muslims and Sunni Muslims populated areas. Some of the villages are Shia Ismaili majority some are Sunni Muslim majority.

4.4 Subsistence Farming

The average monthly income of the sampled households was calculated as 63505.79. On average, 18.53429% of revenue comes from crop production, as two crops can be harvested in these areas. Wheat is a significant crop along with maize in many villages. However, some of the VCCs also grow rice and vegetables. In most VCCs, rice production is not possible due to land unevenness, and the infertility of lands is also not suitable for vegetable production. The largest village of this conservancy, Karimabad, is famous for its vegetable production. Each year, tons of tomatoes, beans, broccoli, and many other vegetables come to the local market for sale from Karimabad. During an informal talk with the villager, one of the village residents shared his view. He said that

"*This year, I have sold 40 tons of tomatoes to the local market of Chitral and planning to build a greenhouse next year for early production of vegetables.*"

The rent contribution from commercial property and lands to the average income is 0.805714%. Toshi Shasha area is on the other side of the Lotkho River, away from the main road, so the commercial property value is negligible. 3.065903% contributes to the income from livestock herding as most VCCs have banned the domestication of goats and sheep. This source of income from cows, buffalos, etc. Some VCCs are still domesticated goats which are the main obstacles

to conservation. The domestication of goats has been discouraged in protected areas in many works of literature as they are the main reason for the scarcity of food for markhor. When those VCCs were asked, they said we are herding them in different pastures, which are not the habitats of Markhor

4.5 Socio-Economic Setup

People living in the north, which is a mountainous area and remote, are dependent on natural resources for their household income and basic livelihood needs(Tabassum, 2014). This belt is a diversified rich natural resource base (Tabassum, 2014). People living in these areas' most crucial livelihood assets are water, natural vegetation, forests, pastures, and vast rangelands. These remote and underdeveloped areas have little or no contribution to the national economy. Due to this, Govt has not given much attention to the site's development, so people have poor access to trade, government, and private services as a source of income. Therefore, the inhabitants of these areas are dependent on locally available natural resources as a source of income. These natural resource bases are limited as the population increases geometrically (Tabassum, 2014)

Toshi Shasha conservancy has a 1691 household population. 352 households were my sample size for questionnaire filling. The average monthly income was calculated as Rs. 63505.79 Pakistani currencies, with an average monthly expenditure on the food of Rs. 13901.43 average monthly spending on clothing was Rs.4665.17. The average monthly expenditure on clothing was less because people in those areas only buy new dresses on two Eids. On the occasion of marriage ceremonies, this is also rare. Some wealthy families spend on clothing during marriage ceremonies. Average monthly utility bills were calculated as Rs.2715.429 as the hunt fee has been used in hydropower construction or hydropower maintenance. In return, the community

people will get cheap electricity in some villages. It was Rs 200 per month, and in some towns, it was Rs 500 per month. Average monthly social networking expenses were calculated as Rs 2912.571. In these areas, costs on social networking are of one type: buying gifts when you are invited to a relative marriage, and no other expenses on social networking were found. Education average monthly fees were Rs 5566.571 as most of the schools in these areas are community-based schools and Schools of Aga Khan Education Service Pakistan. These two types of schools in these areas provide affordable and quality education to the children along with remission in fees. These schools are also providing need and merit-based scholarships. Secondly, some village conservation communities have hired teachers to community-based schools from the village conservation fund, and in return, they are getting a cheap and quality education. When it comes to health, the average monthly expenditure on health is Rs. 6227.286.

Due to changing weather, living on heights, and changes in organic diet. Most people suffer from joint pains in the legs as they blame the change in diet as a cause of joint pains. Before the conservancy formation, they were allowed to domesticated livestock such as goats, sheep, and other animals. They had organic foods in the shape of dairy products and sources of vitamins and meats. The conservation has banned the domestication of livestock, which dragged all the people to an inorganic diet and made bones narrow. These areas do not have access to PTCL internet services or other private internet services; however, Telenor's only network with 4G Internet. It is also the only cellular source of communication in these areas.

Due to this pandemic, all the educational systems were online. One of the VCC requested divisional forest officer Chitral to install an internet tower in the specific VCC inform an application. The wildlife department declined that request, Chitral saying the sound of an electric generator in the VCC will disturb the markhor habitat, and they will move to other places. So,

the average monthly expenses for internet and mobile were calculated as Rs. 1008.714 as Telenor is giving different internet monthly offers at Rs.450, Rs.750, etc. So, most households were availing of these monthly offers, including other network minutes, Telenor to Telenor minutes internet megabyte (MB), and all network short message service (SMS). When it comes to miscellaneous expenses, no one could give the exact amount of expenditure in this section. The justification was that we do not keep a record of miscellaneous expenses. So, the average miscellaneous monthly cost was Rs. 2918.857.

Trade and business contribute to the income of conservancy people as 16.19771% is being donated to the above-average income. The business mainly includes retail shops or full shops in Chitral and some general stores within VCCs. The significant contribution to the average income comes from employment other than trophy hunting which is 43.81064%. This includes jobs in the private or government sectors. 11.38571 people of the conservancy work as daily wage laborers, including people working within the community or in urban areas of Pakistan on a daily wage. Some people work in the trophy hunting industry as community watchers, 2.128571%. The community people or their household members working outside Pakistan contribute 4.071429% to the average income in remittances.

4.6 Community interaction with Markhor and other fauna

The communities of Toshi Shasha have made great sacrifices for conservation purposes. The male Markhor in the breading season fight with each other to breed the female. Whoever wins the battle will breed the females. As the community is living just below the protected areas and there are huge stones in the markhor habitat, during their fight, these stones slip and roll down towards the houses and damage the homes and lives. One female household member died on the spot when the rock came down during the fights of markhor in the breeding season. Mr. Sher

Afzal, father of the female who died from falling rocks, was the eyewitness to this accident; he shared with us what he saw. He said:

"*It was mid of day. I was sitting on my lawn, meanwhile, I heard the sound of rocks falling, and also the people of the village started shouting that rocks are falling save yourself in that movement when my daughter was running to save her life. The sharp rock hit her, and she fell; due to bleeding, she lost her life*".

Another respondent added to it concerning the interaction of Markhor Species with the local community.

"*One day, my wife and I were working just below the cliff. She was cutting grass for animals, and I was looking up towards the mountain so that I would inform her about falling rocks. A few movements later, small pebbles fell on both sides, and a large rock followed those pebbles, and at the difference of an inch, it fell to the other side, and I was safe there. So you never know about the falling rocks, so while working outside homes in the field, one has to look towards the hills and inform others about falling rocks. This is the level of interaction between us*". These stones have injured most people, and many houses have been partially damaged. The people of this conservancy have made considerable sacrifices to protect the population of Markhor. If they do not get what incentives they are promised, this will lead to the emergence of exclusive institutions in the area and degrade the natural resource.

The role of communities in the conservation includes active participation in conservation by employing village wildlife guards for monitoring and not allowing illegal poaching; Communities also adopt specific livestock management measures and strategies to deal with fuelwood shortage. Every VCC member is indirectly involved in the conservation, from children to elders, from females to males. Whoever sees unusual activity in the conservancy report to the

household elder at that time. The unusual activity means someone carrying a gun, someone is seen bringing firewood from pastures, or someone has dog and taking it to the fields as dogs disturb markhor by chasing them due to this the move to other areas. It is banned to take pet dogs to pastures. The community people are too much involved in the conservation of Markhor and the other fauna, including wolf, lynx, snow leopards, and fox.

Chapter 5

5 Findings and Results

5.1 Themes

Trophy hunting is carried out to conserve the species, and many other functions are connected. Along with preserving the specific species, Trophy Hunting also safeguards local economies and culture. Multifunctionality in the case of trophy hunting means that all the activities which are concerned with trophy hunting are benefiting the locals. It has an ecological, social, and economic function.

After thematic analysis of collected data from respondents following themes and sub, themes were generated

5.1.1 Economic Functions of Trophy hunting

Trophy hunting in Pakistan is a significant intervention designed to provide economic benefit to the local communities living in or near the Community Based Conservation. Trophy hunting fee is distributed with a ratio of 80:20, 80% goes to the community, and 20% goes to the government account. This 80% is used to improve community services such as clean drinking water infrastructure, construction, and maintenance of school buildings, hiring teachers for community schools, employment opportunities as a community guards, labor in community projects, maintenance and Development of water channels, Construction of protection walls, spending on the hydropower stations, building new bridges, etc. Trophy Hunting directly benefits the local communities through employment and an indirect benefit in developing projects within the community from trophy hunting funds.

One of the respondents said, "*Mr. Zahir is the father of three daughters. Being the only breadwinner in the family with no job he was living hard life, so our community has hired him as community guards, and now he has a better living than before*".

The direct benefit of trophy hunting is less than the indirect benefit of trophy hunting, and the local communities also support the use of trophy hunting in community projects.

In one of the key informant interviews, Mr. Shakil said, "*If we start giving cash or other direct benefits to each household in the community, then we will not be able to achieve upward mobility in the community. So we discourage the direct benefit of trophy hunting fees to any individual other than employment opportunities. There is also the possibility of conflicts in the community as all individuals will try to get the direct benefit*".

According to the divisional forest officer, they discourage the direct transfer of trophy hunting benefits to the individual or the household as this will only benefit that individual or family. However, the fund's spending on community projects will have trickledown effect. It is also evident from the work of different scholars; according to (Adhikari et al., 2021), in Toshi Shasha conservancy Chitral, the hunting fund has benefited 94% of the local population. The revenue is invested in constructing and repairing water channels, building basic health units for the community, and training the women on social issues. (Mir, 2006) states that in Gilgit, community-based conservation revenue is used to construct and maintain jeep-able roads, bridges, and different tracks for ecotourism.

According to the community, trophy hunting positively impacts their overall living standards. They do not rely on the government to work in the development of community infrastructures; they have made it possible for every household to have jeep-able roads to its doorstep. They have done it by constructing link roads to every small valley or village. This has reduced the cost of

transportation. Mr. Ahmad residence of the conservancy says, "*I have a jeep able road to my home thanks to the village conservation committee. Before this road, I used to pay a huge amount to labor to bring goods from the main road to my house. Now I have them on my doorsteps in my vehicle*."

Toshi Shah Conservancy is a less populated valley, so the government has not paid attention to fulfilling fundamental need such as roads, clean drinking supply, etc. In Toshi Shasha Conservancy, one village named Boghtuli has 81 households, and they have built four-link roads to their village for trophy hunting fees. Revenue Generated from Markhor Trophy Hunt during 1998-99 to 2015-16 in Toshi Shasha Conservancy Chitral is US$2,218,600, which has been distributed between community and government with a ratio of 80: 20. The community share of US$1774880 and US$443720 has gone to local government accounts(Kakakhel, 2020). The community has used their share in clean drinking supplies, construction, and maintenance of water channels, roads constructions, construction of bridges, spending on school buildings and academics, and building protection walls and hydropower houses.

The direct benefit of the hunting fee includes the creation of employment opportunities such as community Guards and labor in community projects. Below are the sub-themes of how TH hunting had indirectly and directly benefited the communities.

5.1.1.1 Agriculture

Different empirical studies have revealed that increased agricultural productivity is the main pathway out of poverty in developing countries (Amare et al., 2017). The literature suggests that agriculture can reduce poverty in many ways it increases real income, generate employment opportunities, and has non-farm multiplier effects (Amare et al., 2017). Theodore Schultz started his speech after accepting the Noble Prize in Economics in 1979 stated:

"*Most of the people in the world are poor, so if we knew the economics of being poor, we would know much of the economics that matters. Most of the world's poor people earn their living from agriculture, so if we knew agriculture's economics, we would know much of the economics of being poor*"

Toshi Shasha Conservancy is a mountainous area of 20000 hectares in the foothill of the Hindukush Mountains. Most of the people of this area are dependent on the subsistence farming of wheat and vegetables. Some villages are too fertile to produce vegetables and fruits as they sell in the market. One of the villages in this conservancy has huge potential for producing tomatoes, beans, apples, and broccoli. Each year tons of vegetables, as mentioned above, and fruits make it to the local market. Some land areas were left barren due to a shortage of water or no water channels to those lands. So after the trophy hunting industry was introduced, the community people started constructing water channels for those barren lands and maintaining the leakages of the old water channels in their villages. The construction of water channels increased the availability of land for agriculture and positively impacted their living. One of the respondents said,

"*I had barren lands at the end of my village (pointing finger to its left) which were left barren due to unavailability of water. It has been four years since a water channel was constructed on those lands; now, I grow two seasonal crops on those lands. Before this, I used to buy wheat and fodder from the market. Now I do not need to buy*".

The secondary data of the wildlife department Chitral reveals that from 2010 to 2019, PKRs 15841000 have been spent on constructing water channels or repairing old water channels in different villages of Toshi Shasha Conservancy. One of the respondents during the informant interview said:

"*We have invested a huge amount in constructing the water channels to an area of 400 Kanal barren lands and repairing the old water channel. The productivity of lands increased as the water was available in time. Before this, we used to water fields in turns as one household gets his turn after seven days now after the construction of water channels we do not have to wait for turns*".

Village Karim Abad in Toshi Shasha conservancy is the most fertile area for vegetables and fruits. Vegetables and fruits are also sold at the local market in this area. Mr. Shahid from Karim Abad Said,

"*In this season, I have earned around 5 lac Pakistani rupees in just two months by selling tomatoes*".

In most villages during May and June, when the temperature increases, the shortage of water starts, as agricultural lands and fruit trees are to be watered every two or three days. Some fruits and grounds will die out during the peak time if not watered for a long time. One of the community people expressed their view in this regard he said;

"*The water channel constructed by trophy hunting fee was not built, my apple trees died out, and I was unable to recover them due to water unavailability for 12 days. Thanks to God, we will not face such a situation in the future because we have constructed a water channel from trophy hunting* ".

The importance of the subsistence level of farming has been cited in many scholarly articles (Kostov & Lingard, 2004) argue that when small-scale subsistence and semi-subsistence farm aggregate is compared to commercial agriculture, it is positive for production and consumption.

5.1.1.2 Clean Drinking Supplies

According to World Health Organization (WHO), many children die of diarrhea due to unsafe drinking water supplies. Chitral being in the north, is home to massive glaciers and springs. It has been a common myth in Chitral that spring water directly comes out from underground so it will be clean and safe for drinking. Chitral's traditional way of storing water for winter use in the community or individual well has a high chance of spreading water-borne diseases. According to the IUCN report of Chitral, 80% of diseases in the local population are water-borne diseases.

Toshi Shasha conservancy has invested a considerable amount of PKRs 15754310 from Village conservation funds in clean drinking supplies from 2010 to 2020. This amount is used as a matching grant for pure drinking water schemes offered by non-Government organizations such as the Aga Khan Rural Support Program and the Water and Sanitation Extension Program (WASEP) of the Aga Khan Development Network. In this regard, one of the respondents shared his views. He said,

"*In old days, children's had common diseases of pain in the stomach for a long time, and it was common in every child of age three years to ten years. When (Water and Sanitation Extension Programme) WASEP has started its clean drinking water scheme in our village, the diseases no longer exist. We realize that was due to water we were used in our houses for drinking and cooking*".

Water and Sanitation Extension Programme (WASEP) offers its water scheme to the local comminutes after receiving some money as a matching grant from the community. In most of the villages of Toshi Shasha conservancy Water and Sanitation Extension Programme has spread the pipelines in the whole town and given the scheme to the communities. First, the water sample will be sent to a laboratory for testing. If that water is fit for use, they will build a large water tank in the proper place, store water in it, and supply it to the village. The community will bear

the digging cost for pipes from the main water tank to each household house. The village conservation fund is used to pay the digging and water tank maintenance costs. In this regard, Mr. Asghar said:

"*We have paid a huge amount as a matching grant and digging cost to bring clean drinking water supply to our village. We have also ensured that the whole village should have WASEP pipeline on their doorsteps*".

Another respondent also shared his view:

"*During winter, when the temperature drops to negative, the old pipeline was frozen, which were just 1 foot below the ground. We had to travel 1 km to the main water tank daily 4 to 5 times to bring water, and it was so difficult to walk on the slippery snow, and many people had broken their body parts while falling on the ice. WASEP is now digging 4 feet below the ground for pipelines, and also the pipes are covered with specific foam to keep them warm in winter. Now it has been three years we haven't faced freezing of pipelines problems in winter, and we get water the whole year.*"

Many scholarly articles on the importance of water for better living; (Daud et al., 2017) say that in Pakistan, 50% of diseases and 40% of deaths occur due to the utilization of unsafe water. (Akbar et al., 2013) states that about five million children's deaths occur due to drinking unsafe water in developing countries.

5.1.1.3 Spending on Schools

Educational infrastructure and facilities play a significant role in schools' teaching and learning process. Good infrastructure is one factor that improves the quality of learning in schools (Siswanto & Hidayati, 2020). While defining the education facility and infrastructure facility, (Siswanto & Hidayati, 2020) say that the facilities we need for the learning process, both moving

and not moving, are called education facilities. The facility used to support the learning process is the infrastructure facility. When the facilities and infrastructures are fulfilled, the learning will be fun (Siswanto & Hidayati, 2020).

According to the 2017 Census, the Chitral literacy rate was 67.31%, the male literacy rate was 80.50%, and the female literary rate was 55.31%. Female literacy is low in Chitral; there are many reasons behind the gap between male and female literacy rates. One of the main reasons for the low female literacy rate is the distance to school, as social constraints and cultural taboos do not welcome girls' education (Uddin et al., 2021). Cultural barriers restrict women's mobility in public places.

Due to this reason, some of the Villages of Toshi Shasha Conservancy have spent PKRs 5447000 from the village conservation fund as matching grants for the construction of Community-based schools from 2015 to 2020 (Chitral Wild Life Department). Through the Village conservation fund, they have hired teachers for schools. Jahangir, a resident of the community, shared his thought on this:

"*We have spent 12 lac and 97 thousand Pakistani rupees as a matching grant for constructions of community schools, and along with this, we have also hired teachers for the school. They are being paid by Village Conservation Fund each month*."

One of the respondents of other villages said:

"*It was difficult for our children, especially girls, to travel 5 KM daily on foot to school. Due to the long-distance, I had to stop my daughter's education and send her for religious education*."

Due to mobility barriers people are not sending their daughters to school. One of the respondents during my informal discussion on the mobility barrier said:

“X*uro hani duderi alti sabaq dik ish kya zaruri no pingah hasy aff nesi khur kos dura b axelian zakhtalik*”

Translation: "*It is not necessary to send girls that far for education; after marriage, they have to go to other houses and look after their children*."

Such cultural barriers reduce the female literacy rate. People are not interested in girls' education. They just need an excuse not to send their daughters to school. The village people whom the researcher interviewed had informal discussions and perceived that community schools built by village conservation funds have a tremendous impact on education children's enrollment and performance. Each year, in one of the community schools, approximately four boys and five girls qualify for the test and interview of prestigious schools of Chitral for Secondary Education. As the community schools built near villages have less distance to school has a positive impact on the enrollment and performance of the schools. Due to fewer distances, Children have time after school to do homework and study. In this regard, one of the respondents said:

"*It was so difficult to send children to school before this community school was built as the distance to the old school was long, and children were supposed to get up early by 6 am. Secondly, returning from school after traveling 5 Km on foot, they could not do homework due to tiredness. Now, they go to school happily, and after school, they have time to do homework and play*".

Due to cultural barriers, people were not sending their daughters to school, due to long distance. The construction of community schools near the villages has increased the enrollment of the girls who were unable to make it to school due to mobility barriers. These community schools provide quality education compared to other private and government schools. The reason is the

community people are monitoring these schools. The community people have made a committee who voluntarily monitors these schools and present its report at monthly meetings.

5.1.1.4 Link Road Construction

Investment in roads will significantly impact the use of local resources, job creation, strengthening and support for the local economy, and e-commerce. It will contribute to reducing poverty (Donnges et al., 2007). For the long-term sustainability of any project, community participation is essential; Community participation is not just a contribution to labor but also community involvement in decision making, maintenance, and management (Donnges et al., 2007)

Secondary data from the wildlife department revealed that from 2015 to 2020, approximately PKRs 7497049 had been spent on the construction and maintenance of link roads in different villages. These link roads act as catalysts to increase economic activities and have made easy access to primary healthcare and education. People used to pay huge costs to get things to their doorsteps. Mr. Ijaz resident of the villages, says:

"*I was unable to build my houses due to the huge labor cost of bringing construction materials to the area where I was supposed to build the houses. Last year, the village's conservation fund link road was constructed to that area, and now my houses will be ready by March 2023*".

The repair and maintenance of roads have made the life of people easy and secure. The government is taking maintenance as a secondary issue; if roads are not maintained, the benefit of the construction of roads will be lost. In 1988 World Bank stated that if one dollar is spent on the maintenance, it will save four spent on rehabilitation (ADB. Road Funds and Road Maintenance. ADB 2003). When it comes to rough roads, maintenance is more critical; rough

roads that are not maintained will cause the death of lives in a road accident. Mr. Hussian, who was the local diver of public transport, expressed his views on the maintenance of roads:

"*At around 2 pm, I was on the way to my village with ten passengers, including two females and three children, in my vehicle. In Bokgtuli goal (Village name), at the sharp turn, my vehicle's front right tire fell into the hole, and the vehicle's excel broke down, and thanks to Allah, we all were safe. The road in this area is not maintained; this could not happen if that road were maintained properly*".

In a similar view, another respondent also said:

"*You have seen the road to Parchan valley (by addressing me) how hard it is to drive in; in 2012, my relative died on this road in an accident two of them got injured. Due to these consequences, we discourage unnecessary travels on these roads*".

For rural development, rural connectivity plays an essential role in the socio-economic development of rural communities with easy access to basic facilities such as education, health, and marketing (Biswas & andAnwaruzzaman, 2018). In discussion with the community on the importance of roads and link roads for the conservation of natural resources, one of the presidents of the village conservation committee stated:

"*We do not allow anyone in our village to keep guns in their houses, so all the wild animals and birds living in our village are not afraid of the people because they do not see the threat from us. In simple words, you can say that our village is a zoo you can see wild birds and animals as you see in the zoo the difference is that in the zoo they are in a specific area in here they are free to fly and go but is open zoo. Our next goal is to metal our main road and link roads so that we will*

be able to capture tourists to see these animals and birds; tourists do not visit us just because the valley has rough roads and they are hard to travel."

Communities living in Toshi Shasha conservancy villages are far away from the main road constructed by the government. If someone gets ill or in any emergency getting to the main road takes time on foot. So the construction of link roads has made transportation easy, and such emergency cases are handled quickly. These have benefited the locals in every aspect.

5.1.1.5 Construction of Bridges

Bridges are built in rural communities to improve people's mobility and enhance the community's access to markets, schools, health centers, and administrative centers. Bridges connect rural communities to the rest of the world and open up opportunities to access different urban services. Toshi Shasha Conservancy is a geographically sizeable steep piece of land on the left of the Lotkho River; some of the villages touch the river some are at a distance from the river. Their connectivity to the urban areas is possible through bridges. According to secondary data from the wildlife Chitral department, an approximate amount of PKRs 11725008 has been spent on constructing metal and wood bridges and repairing old bridges in different villages from 2014 to 2020. These bridges have made the mobility of people easy and have opened up other opportunities for the people. According to Mr. Amjad, a respondent from villages, these bridges have made their livelihood easy, he says:

"*The only bridge that connected my village to the rest of the world was hit by a flood two years ago. We were crossing the river by footbridge for three months, and after three months, we started working on the bridges by the village conservation fund, and the bridge was built in a few months. If we had waited for the government to build the bridge for us, we would have been using that unsecured footbridge till now*"

Another respondent shared his view in this regard:

"*Our representative of that time visited us and promised to build the bridge in a few months, and their tenure also finished; they might not know that we have built the bridge. So why would we wait for a non-serious government to develop our infrastructure*".

Toshi Shasha conservancy is a hilly geographical area, and bridges, being the central pillar of connectivity, highly impact the population of females and children. Female and children's access to basic facilities such as schools and health centers highly depends on the bridges. In this regard, one of the respondents shared his view he stated:

"*When the Markhor Bridge (Name of the bridge) was not built, we were using our own made footbridge to cross the river; one day, my son was crossing that bridge with 40 kg of the floor on his shoulder and holding his 10-year-old son on his left hand. In the middle of the bridge, his son's feet slipped in that bridge to save his son; he has to let the 40 Kg floor into the river and saved his son, this kind of difficult life we were living. Now We have constructed a concrete bridge to our village"*

May scholarly articles have also emphasized the importance of bridges for the development of an area. (Zhu et al., 2020) states that China carried out many coastal bridge projects to satisfy the need for socio-economic development. Bridges connect the local communities with the rest of the world, which will open gates to access different services and facilities. It plays a vital role in developing rural areas (Gautam, 2020). According to (Fourie, 2006), urban planners and economists have identified two kinds of infrastructure: Economic and Social infrastructure; economic infrastructure promotes economics such as the construction of roads, bridges, airports, etc. Social infrastructure includes schools, universities, hospitals, etc. Both have direct and indirect impacts on welfare.

5.1.1.6 Construction of hydropower

For socio-economic development and economic growth, energy is much needed. Electricity is the primary part of life and one of the most used forms of energy. Pakistan has enormous potential for producing hydropower energy that is economical and environmentally friendly. Pakistan installed electric generation of 19,547 MW, out of which 6599 MW are produced by hydropower (Mirza et al., 2008).

Pakistan's potential for producing hydropower energy is 60,000MW (Yousuf et al., 2017), with a small hydropower capacity of 50MW. Chitral has enormous potential for producing small hydropower. Keeping in mind the need for energy for the local communities and the area's potential for producing hydropower energy, Toshi Shasha Conservancy has spent PKRs 6407000 on the construction and repair of a small hydropower station in different villages of the conservancy through community conservation funds.

This expenditure has a significant positive impact on the habitat of markhor. As these areas are too cold in winter, and surviving without a heating facility is impossible. People used to bring wood from the pasture and store them for winter. After the conservancy was formed, people were not allowed to bring wood from those pastures and were given an alternative source of cheap hydro energy. The ban on bringing timber from the pastures increased the markhor species' diet and maintained their habitat.

In this regard, one of the respondents shared his view:

"*I have huge forest land in the pastures, which used to be my asset. I used to bring wood from that land and store it for winter. The conservancy rules do not allow us to bring those woods, so we are now totally relying on hydroelectricity for heating and cooking*".

Adding to it, one of the representatives said:

"*Bringing wood from the pasture is not allowed as it disturbs the habitat of the Markhor species. We have spent conservation funds on the construction of hydropower to provide cheap electricity for the people, and every household has to pay a fixed amount of PKRs 100 each month*".

The investment in small hydropower has made the communities' life easy they now have light for most of the day in summer; however, some hour of load shedding is done in some areas due to a shortage of water in winter.

Before introducing small hydropower projects, people used kerosene oil for lighting. Later, solar panels replaced kerosene oil; now, the hydropower supply to each household has left no room for using solar or kerosene oil.

An old citizen respondent shared his view regarding the hydropower energy generation:

"*We have spent our entire life using kerosene oil and Saruz (Local name of the wood used before the kerosene oil for lighting as it burns for a long time nonstop) for lighting in the night. We have also seen the light generation from water,"* Burning of kerosene oil or the Saruz wood has negative impact on people's health. The emission from kerosene oil combustion can cause the impairment of the lungs, create asthma, and increases infection illness(Lam et al., 2012).

In this regard, one of the respondents shared his view he says:

"*In the past, when we were using Kerosene oil for lighting, respiratory diseases were common among children and women. Some people had goiter due to the combustion of kerosene oil*."

The hydro powers in the conservancy have positively impacted people's lives. It is not only a cheap source of energy for them but also available most of the time. People use this for cooking, and this way, it has decreased the demand for wood and has a positive impact on their income.

Hydropower electricity has a positive effect on the community children who are studying. It has increased the working hours of children, which will result in their better performance in studies.

In this regard, one respondent shared his view:

"*Hydropower construction in our village has a high impact on the children going to school. They sit late at night for studies during winter break as light is available for lightning and use an electric heater to keep them warm.*"

Many scholarly articles have also emphasized that small hydropower projects positively impact the lives of communities living in rural areas. Arthur and Stephen (2006) stated that hydropower affects the rural population through productive activities and generation of employment opportunities, making the nighttime possible for working and increasing study hours for students. According to (Barkat, 2005), homes and businesses at the household level are created with access to electricity than those who don't.

Hydropower electricity also has lower indoor pollution than kerosene oil burning (Khandker et al., 2014). This also has a high impact on the study hour of students; as in the case of kerosene lamps, due to dim or dull light, studying is complex, and it also harms students' eyes.

According to (Khandker et al., 2014), hydropower electricity is a bright light that has replaced kerosene lamps which are dull and not suitable for reading and work. When light is available, students use it to study at night, positively impacting their performance.

5.1.2 Social Functions of Trophy Hunting

In this case study, I have found the mobility of people has increased, which has led to an increase in social networking and given room to interact with other institutions. These social functions in this case study have directly or indirectly increased the social capital of the area. Hunting has significant social functions, as it develops or helps to develop the symbolic and social capital with the creation of maintaining bonds in the social groups (Fischer et al., 2013).

Below discussed are the subthemes of Social functions of Trophy Hunting.

5.1.2.1 Mobility

Mobility in the case of rural areas opens vast opportunities for the people, which would not be possible if the people were restricted to their villages by different constraints. Mobility makes people socially active and opens up gates of economic opportunities. When the mobility of people is easy, they get a chance to interact with people from other societies. Mobility of the people can be enhanced by constructing link roads and bridges and by maintaining the old streets. Toshi Shasha conservancy village committees have invested in easing the mobility of their people. The investment in roads Bridges construction has increased the mobility of the people, especially for the females and old citizens. According to Mr. Shahid, a resident of one of the villages of conservancy says:

"*The link construction to our village has made our life easy I am traveling to main Chitral town three times in a week to bring vegetable and other things as before this link road I used to go to main Chitral town once in a week. I also get to hear news regarding domestic and national politics and enjoy people's discussion on these topics*."

In this regard, one of the retired army men shared his view

"*I retired in 2001 from the army, and now I am 50- plus years old. I get bored sitting here in my house. So I usually go to the main town to spend my time*".

The ease in mobility has a significant impact on females, as, before the construction of these roads the long-distances were the constraints restricting the mobility of females. Now the investment in the infrastructure through Village Conservation funds has made the mobility of females easy. The traditions and cultural barriers restrict walking on foot for long distances. As mobility is now easy, females of different villages travel to Chitral town for education, shopping, and treatment.

According to (Lück & Schneider, 2010), individuals with more freedom built more social ties according to their presence. In a culture where many people are mobile great cultural, social, and economic flexibility also goes into that culture. (De Bruijn & Hahn H, 2007)as come up with a view that when people's network is mobile, they can create their economics. Mobility is essential to people's livelihood. We take the recent developments in West Africa as the mobility of people has resulted in globalization.

5.1.2.2 Social Networking

Social networking, which was previously impossible or limited, is available for everyone who knows the internet. Social networking is the most critical communication tool nowadays, with its pros and cons. It has been built on the idea that people interact with each other. The investment in the power supply from the village conservation fund in Toshi Shasha has also increased the people's social networking. The full-day supply of electricity has increased the number of people using mobile phones and has increased the number of people using personal computers. Mr. Sher Ali, an old citizen of one of the villages, says:

"*When we used to have an emergency, we used to go to Mr. Sher Ahmad's house, who used to have a landline in his house. Now three out of seven members in my house have a mobile. I can contact anyone anytime*".

Social networking has a positive and negative impact on children's education, as identified by the villager. The availability of the internet has saved the cost of traveling to downtown submission of job applications and keeping the young generation updated about happenings or different jobs. Mr. Najam Student in his Second year, shares his experiences he says:

"*We have 4G internet in my village; the electricity is available most of the time. Now I can easily fill out my admission applications at my home. Otherwise, I had to travel to the down area by paying PKRs 500 and the cost of food, etc*."

Social networking gives people open space and power to share and stay connected (Zaidieh, 2012) Social networking has a significant impact on our lives as it helps us in lots of fields such as politics, economics, and the field of education.

5.1.2.3 Interaction with other institutions

The local community's interaction with local and international organizations is vital in developing that community in rural areas. This interaction opens opportunities to benefit from those organizations in different development projects. The local communities of Toshi Shasha conservancy have used the funds of village conservancies as a matching grant for various development projects in their area. For example, PKRs 420000 were used in Bokhtuli Village Conservancy as a matching grant for water supply in 2010.

Similarly, in Karim Abad Village Conservancy amount of PKRs 150000 was used from the village conservation fund for drinking water supply with the Water and Sanitation Extension Program (WASEP) subsidiary of Aga Khan Agency for Habitat, Pakistan. On the topic of the interaction of local community organizations, one of the presidents of the village conservation committee expressed his view, he says:

"*We do not receive that large amount from trophy hunts that we will be able to start the project from its base to completion, so the amount we get from the hunt is utilized mostly as a matching grant to get developmental projects for our area. Mostly we get projects from Aga Khan Development Network subsidiaries such as Aga Khan rural support program organization etc*."

Adding to it one the member of focus discussion member said:

“*Ispa hayi kya ki korum b sheni naa hamit saaf Aga khan o Idaran kardu korum hokumat ispaty kya d no kori asur*”

Translations:

"*Whatever development work has been done in our areas Aga Khan Development Network has done them, the government has not done anything*."

Aga Khan Rural Support Program, a subsidiary of Aga Khan Development Network, has worked effectively and sustainably for rural development in the north of Pakistan. The local communities of the north have made local organizations in the names of village societies. These societies collect some amount in each meeting, and those amounts are later used as matching grants for different projects of community developments. As Toshi Shasha Conservancy villages have the hunt amount in their village account, they use it to get various projects from other organizations.

One of the members of focus group discussions in this regard shared his view he said:

"*Other villages in the vicinity that do not have share in the trophy hunting fee, so they collect money from each household monthly or weekly, used as a matching grant for development projects. We do not need to do so as we have the hunt fee in our village account. We are using that fund as a matching grant*".

The conservation fund has been used to encourage and promote private sector development in the form of a matching grant. Many national and international NGOs urge the matching grant concept involving the private sector. A recent review of World Band Group shows that World Bank Group has supported around 106 private sector development matching grants over the past year. A recent World Bank review concludes that the experience of matching grants shows that matching grants have broad and durable economic benefits (Sberro-Kessler, 2019).

Matching grants are temporary instruments; however, they can address different constraints of both demand and supply sides to finance agriculture. Demand-side constraints addressed by matching grants are lack of willingness to invest, lack of skills to support, and lack of trust in financial institutions. The supply-side constraints being addressed by matching grants are lack of collateral, risk, costs, and lack of long-term liquidity (Sberro-Kessler, 2019).

5.1.3 Ecological Functions of Trophy Hunting

5.1.3.1 Ecotourism

Ecotourism is addressed or described as a recreational activity or vacationing in a natural setting that is environmentally, economically, ecologically, socially sustainable, and acceptable. Ecotourism has social or economic benefits. It also plays an essential role in the sustainable use of natural resources. Toshi Shasha conservancy is blessed with beautiful landscapes with beautiful views of snow-covered mountains of the Hindu Kush range. The Markhor conservation has led to the increase in the population of other wildlife animals and birds, and they are not afraid of people. So they have a tremendous opportunity to introduce ecotourism in their respective areas. Unfortunately, no such steps have been taken to introduce ecotourism in these places.

While talking about the Toshi Shasha Conservancy, one of the respondents described the picture of their pastures he says;

"*Just at a distance of one and half hour walk, we have a pasture known as Dokshall (Name of place), the most beautiful place to visit in summer. It is a lush green plain with small springs on either side of the land. You will see different kinds of flowers and butterflies. If you camp there early morning, you will hear different birds singing, it is a piece of heaven in our land*".

Upon asking that you have such beautiful places and why you have not introduced ecotourism in these places, one of the respondents said,

"*These places do not have jeep-able roads, so it is difficult for a tourist to walk for those places*."

Many more different responses came from the people about not introducing ecotourism. Most of them believed that we do not have vehicle access to these places. So another question was asked why do you not use your conservation fund to build a road to these places? One of the respondents said,

"*We would like that road to be built to these places, and we have to benefit from existing resources. If we can build a road to these places, we would be able to grow Mushechi (Native name of herb which is the favorite diet of markhor), and Markhor will gather in that place, and it will be a breathtaking view for the tourist. So far, we have not thought about the introduction of ecotourism. We had no idea that we would be able to get such benefits*."

The lack of knowledge about ecotourism and the local wildlife department's lack of interest in introducing ecotourism in the respective areas have kept people from the most significant industry. If ecotourism is taught in these separate areas, it will increase the livelihood of the local people and positively impact the local economy of Chitral. Many scholarly articles insist on introducing ecotourism in regions where the capacity exists. It will positively impact the locals.

(Ahmad et al., 2018) says that tourism is a significant contributor to the economy in northern areas. Approximately 50% of the tourist who visits Pakistan from different countries also visits northern regions. Being a part of a country's economic growth, tourism also has the potential to contribute to the living standards of people living in tourist destinations (Alavi & Yasin, 2000). (Wunder, 2000) states that getting tourism benefits and conserving nature without the support of

local communities cannot succeed. Ecotourism is a sustainable way of naturally based tourism, mainly focusing on learning about nature.

5.1.3.2 Markhor Population

Pakistan has seven species of Markhor, with a further subdivision of 12 species in Pakistan (Kakakhel, 2020). These species are counted through local communities' vintage point survey method and the wildlife department's technical support. The count survey is carried out twice a year. During the rutting season in winter, the primary purpose of this survey is to count the number of trophy hunt animals available. During December and January, the male animals will move towards the lower altitude to breed the female, making the counting easy. Secondly, the survey is carried out in May and June at the time of lambing to find out the reproduction in the population.

5.1.3.2.1 Total Markhor Population growth rate

The total markhor population growth rate was calculated using the exponential growth rate formula. The value of the 'r,' which is the exponential growth rate, was calculated as 3.79 percent for the last 33 years from 1985 t0 2017. The population data were collected from the wildlife department Chital. Hence the value of the exponential growth rate is more significant than zero, so the total markhor population growth rate is increasing. According to wildlife department Khyber Pakhtunkhwa the population of Markhor has drastically increased in the protected areas and in buffer zones. Such increase in the population has created a situation that the animals are more then the capacity of the areas. This will result in worse situation of spread of diseases among the animals eventually leads to disturbance in the species habitat.

5.1.3.2.2 Male population growth rate

The male population growth for the last 33 years from 1985 to 2017 was also calculated through the exponential growth formula and the value of exponential growth rate 'r' was 5.46%, which is greater than 0. Since the male population growth rate during the last 33 years has increased.

5.1.3.2.3 Female population growth rate

The female population growth rate was also increasing; however, the increase was not that significant. Using the exponential growth rate formula, the growth rate calculated for females was 1.4%. Compared to the total and male populations, the growth rate is prolonged upon asking the authorities why they said that female species usually live at lower altitudes and are small. So they quickly become the victim of other wildlife animals such as lynx and snow leopard. They are also readily available for an illegal hunter to hunt.

5.1.3.2.4 Fawn Population Growth rate

Fawn is the youngest species in their first year. The lambing survey is carried out to find out the population fawn. The growth rate of the fawn was 4.13% over the 33 years. The growth rate was also calculated through an exponential growth rate. The growth rate above zero is that this species eats a healthy and organic diet and produces twins most of the time. Rarely can any female give birth to a single baby.

5.2 Control of Resource

Trophy hunting was introduced in Toshi Shasha Conservancy in the northern area of Pakistan to generate revenue to provide socio-economic and ecological benefits at the community level and the regional level. According to official data, it is profitable and sustainable, but it is not benefiting the locals on the ground level. According to locals, the local elites have captured the distributional impact of trophy hunting funds. They have better connections and links with the

external world; thus, they quickly catch the benefit of trophy hunting, and the leftover is distributed among the other communities. A resident said:

"*A ma xaw xebonian laa wasa toriru espa gharibana taay behcheru charuran*"

Translation: "*Everyone capable of doing corruption they do it, we the poor get the leftover.*"

The elite classes of the conservancy who have a better link with the external world and department officials benefit from the trophy hunting fund. According to the locals, the influential local people in the conservancy benefit from the conservation compared to other villages inside the conservancy. According to the village committee president:

"*In this conservancy areas which belongs to the ruler family of Chitral. He uses his influence, links with other people, and carries out a hunt in his area. As per the rule, the area where the hunt is carried out will get 40% of the community share of the trophy hunt fund. So using his influence and links, he carries out hunts in his area. So most of the hunts are carried out in his area, and he gets the maximum share of the hunt fee. We have requested the wildlife department to carry out a hunt in our area. They rejected our appeal with lame excuses, such as your area is difficult to hunt, or you do not have hunt animals. We have the best animals to hunt, and they die out due to old age, and just for personal benefits, these animals are dying out and eaten by wolfs or jackals.*"

Another respondent added to his comment he said:

"*Years ago, when we heard that hunter has reached to hunt, we gathered our village elder and went to him to request that he should come to our area and look at the animals which are big enough to hunt. He sent his guide with us to look at the animals. When we reached our village along with the hunter guide, another son of the former ruler of Chitral who lives near our village, opened direct fire at those animals in front of the Divisional Forest Officer. Those*

animals fled away, and the guide went without examining those animals. At that time, no serious action was taken against that man as he was elite and influential. Later we heard that Divisional Forest Officer had filed an FIR on him, and later we did not hear any action against him. As firing directly on animals inside conservancy is not allowed."

According to the people, most of the hunts are carried out in the area of Mr. X, the most influential and elite person in the conservancy. Huge grieves exist among the locals, their site has been put aside, and they are deprived of the hunt each year. Tremendous anger was found among the locals. Some argued that they will start killing those animals illegally as they are deprived of their rights.

One of the respondents shared his view he says:

"*Whole year we take care of these animals, in the end, we are deprived of the benefits. The man, Mr. X, is doing nothing, and in the end, he carries out hunts in his area using his influence and links. We are helpless. We have requested the wildlife department several times that they reject our appeals by lame accuse. We are not allowed to meet the hunter directly, nor are we informed about the hunter's arrival. The hunter is told that Mr. X's area is feasible and hunt animals are also present here. He has been misinformed that other areas that they are harsh and hard to hunt*."

Every village conservancy except those in the area of Mr. X conservancy is not happy with the hunt distributional ratio. They asserted, that department should conduct research on the distribution ratio and that it needs to be changed. Recently the hunt fee has been distributed with a ratio of 80% to the community and 20% to the government. Further, 80% community share is divided with 40% of the area where the hunt is carried out, and the remaining 40% is distributed among the other village conservancies. It has to be divided with 10% of the hunt fee going to the

village conservancy committee instead of the area where the hunt is carried out. The remaining should be divided among other remaining 11 Village conservancy committees equally.

It is also evident from the work of different scholars that resource control hurts the sustainability of the resource system (Calfucura, 2018) has broadly discussed the impact of resource control by elites on the distributional benefits of community-based conservation. Due to existing power and economic asymmetries in societies that have created inequality, local elites surge to exacerbate the community-based conservation because the institutions are not strong enough to restrain the local elites from the appropriation of community-based conservation benefits (Calfucura, 2018). In community-based conservation, local elites act as dictators or premier institutions to extract the benefits and impact the distribution with unfair means such as bribing the community members (Calfucura, 2018). This situation creates political inequalities in communities, resulting in a resource curse.

5.3 Elite Capture

It is concept in which a small number of actors who have key positions in powerful organization or who can exert pressure or can influence any major decisions. The policies and decisions making are not only influenced by these people they play key role in developing extractive institutions in the area. It is the phenomena which occurs in the less developed and poor countries which have less economic development and poor democracy.

The conservancy being in the most backward area of Pakistan so people are mainly depending on subsistence farming and livestock's herding and the introduction of conservation has banned the livestock herding and has shut down the main source of income. In return if they are not getting the benefits of the hunt then the concept of sustainable conservation no more exists and the degradation of the resource system starts on that day.

The results indicate that some of the beneficiaries of the trophy hunting program are making it subject of political influence through their links and connection and indirectly controlling the resource system for own benefits.

The rules and terms of partnerships signed between the community and the wildlife department are also supporting these people. As one of the rule is hunt which is carried out in the any area of the conservancy the villages around this jurisdiction will have 10% of the hunt fee and the remaining hunt fee is distributed among remaining villages in the conservancy with equal proportion. So these people are using their links and connection for carrying out hunt in the area which falls in their jurisdiction and getting large benefits of the hunt fee. Many literatures have also cited that keeping away the communities living in the protected areas from the benefits will results in the degradation of the whole resource system. The community people were well aware of the fact that the resource system is controlled by the some of the influential people.

According to the people living the protected areas they have complaint about it to the wildlife department the department every time have rejected the complaint by making different excuses such hunt animals are only present in the specific area etc. Secondary data of wildlife department also revealed that most of the hunts have been carried out so far in the area which comes in the jurisdiction of these peoples.

They question here need to be asked how can we really address the key issues with extractive institutions in place. It is double exploitation of the people and the nature. The in place intuitions in the conservancy are weak and weakness of the institutions are strengthening the elite capture of the resources. It is necessary for the state to play active role in the development along with it oversee legal and contractual instruments which can make sure property protection, and defines rules which reduces the elite captures.

The ANOVA results clearly indicates the impact of elites capture on the view of people about the conservancy. For the analysis of the mini survey the data was divide into two section one section includes the communities who are benefited with 10% of the hunt fee as hunt was carried out in their jurisdiction and other section includes communities who were getting 5% of the community share as hunt carried out in a place was not falling in their jurisdiction. ANOVA test was applied on both section a significance difference was found in the view of people about conservation. As the people who were getting 5% of the hunt fee from community share was not happy since hunt animals were also present in their areas and hunt was not carried out. One time these people directly contacted the hunter and brought him to area to show the hunt animal and that animals was forced to run away by directly firing at him which is illegal in the presence of the officials by one of the relative of the elite family. These kinds of situations will not only discourage the people in the management of resource will also lead to illegal hunting eventually leading to resource degradation

5.4 Socio-Ecological system of Trophy hunting in Toshi Shasha Conservancy

Second-tier variables of social-ecological system which are been used in this study.

Social, economic, and political settings (S)

S1—Economic development; S2- Demographic Trends; S3- Political Stability

Resource systems (RS)

RS1—Sectors
RS2—Clarity of system boundaries
RS3—Size of resource system
RS5—Productivity of system
RS9- Location

Actors (A)

A1—Number of users
A3—History of use
A4—Location
A5—Leadership
A8—Importance of resource

Governance system (GS)

GS1—Government organizations
GS2—Non-government organizations
GS3—Network structure
GS4—Property-rights systems
GS5—Operational rules
GS6—Collective-choice rule
GS8—Monitoring and sanctioning rules

Resource units (RU)

RU1—Resource unit mobility
RU2—Growth or replacement rate
RU4—Economic value

Action situations: Interactions (I) → Outcomes (O)

I1—Harvesting; I2—Information sharing; I4—Conflicts; I5—Investment activities; I8—Networking activities; I9—Monitoring activities;

O1—Social performance measures; O2—Ecological performance measures; O3—Externalities to other SESs

This framework was proposed by Ostrom (2009) and later modified by MacGinnis & Ostrom in 2014 to analyze the sustainability of the socio-ecological system. It has first-tier variables followed by second-tier variables. In natural Component, Resource Units (RUs) and Resource systems (RS) both complement each other; the Governance system (GS) and the actors (A) within the resource system make up the social components. These components' interaction (I) in action situation leads to outcomes (O).

This study contains three steps:

1. The first step is to analyse the interaction between users in a specific Governance system where economic activity is generated. As in Toshi Shasha Conservancy, economic activity is being developed through trophy hunting as this is integrated at the user level and into the biophysical system.

2. The second step is the selection of the second-tier variable, which will be used in our study as shown in table 1.
3. I am using the socio-ecological system Framework to study the interaction for the sustainable outcomes of the socio-ecological system.

The Second tier variables of socio-ecological system of trophy hunting

(A1) Actors in the Toshi Shasha conservancy are people living in or near protected areas, mostly living in these areas from a long year ago. Some of them are aboriginals, and some have migrated to these areas. The history (A3) of this conservancy goes back to 1979, when this area was declared a game reserve (Kakakhel, 2020) and later included the adjacent areas; on December 16, 1998, the total area of 20,000 hectares was re-designated as a game reserve (H. Ali et al., 2015). (A4) Toshi Shasha conservancy is located 16 Km away from Chitral town within 35° 57′ 13″ N and 31° 48′ 51.70″ E. (A5) In 1998, the Toshi Shasha area has declared a conservancy in collaboration with the people living in these areas, with a community-based conservation concept. Each village in the protected area has a community organization with executive body members; this administrative body has a president. The people elect this president as head of the community organization through voting or mutual consensus. All the village presidents in the conservancy select the head of the cluster that represents them in high forums. (A8) The resource has enormous importance for the resource users as trophy hunting fee is used for the community development in the shape of different developmental projects within communities. According to (Kakakhel, 2020), the total revenue generated from trophy hunting from the year 1998 to 2016 was US$1774880 for the community.

(RS1) This sector comprises 12 villages that have made up a conservancy to protect the Markhor (Capra falconeri) species, a large wild goat that was at the edge of extinction. (RS2) The 12 villages of the conservation area have demarcated boundaries, and each town is responsible for

protecting species within their vicinity or boundary. However, if they see any poaching or unlawful act outside their border, they will inform the authorities about the externality. (RS3) According to (S. Ali, 2008), the area of 2000 hectares was declared a conservancy on December 16, 1998. It has dried temperate and also supports other species.

(RS5) This resource system is productive, as the community is getting the hunt fee and using it in developmental work within the community. According to(Kakakhel, 2020), the communities in this conservancy are getting revenue of US$ 98604 per year. The income is used to sponsor different development projects, giving financial incentives for financing wildlife conservation.

(RU1) Markhor in the protected area is the resource unit, as they are the targeted species for protection. (RU2) When we talk about the growth and replacement rate of the resource unit, which is the Markhor population, the below table explains the replacement rate of the resource unit for four years from 2013 to 2017.

Years	*Male*	*Female*	*Fawn*
2013	345	571	575
2014	400	672	772
2015	372	621	673
2016	925	530	673
2017	1098	460	673

Source: Secondary data from wildlife department Chitral

(RU4) According to (Kakakhel, 2020), who is also the conservator of the Malakand region, the economics of trophy hunting is vast. According to him, from 1998 to 2016 total number of 39 hunts were carried out in Toshi Shasha Conservancy with a total hunt fee of US$ 2,218,600. In winter 2021 highest bidder offered $163850 for a single hunt in Toshi Shasha Game Reserve.

(GS1) The district wildlife department and the local communities run the conservancy at the district level. The provincial-level Khyber Pakhtunkhwa wildlife department advertises the hunt and bids on the hunt. The government also issues license and hunting permits.

(GS2) Non-Government has no direct involvement in the conservancy; however, they participate in different community developmental projects upon the community's request. The local community organization defines the local bylaws for conservation and signs terms of partnership with the wildlife department with its executive body. These administrative bodies of villages frequently meet to discuss conservation strategies and future planning.

(GS4) In the local governance system, property rights have been developed through the cooperation of the people living in protected areas, which grant them exclusive rights over the habitat of Markhor.

(GS) The rules in use in the conservancy are the Khyber Pakhtunkhwa Wildlife and Biodiversity (Protection, Preservation, Conservation, and Management) Act, 2015, and the local bylaws for the protection and conservation Markhor population and its habitat.

(GS6) The executive body, through consultation with the elders of the villages, defines conservancy rules and, in any case of conflict, rules are approved or declined by democratic voting.

(GS8) The local governance system supports the district wildlife department in the monitoring and sanctioning. The wildlife officers frequently visit the conservancy to get the latest happenings. In case of conflict in the community, the district administration gets involved in solving the issues.

(I1) Two hunts are carried out at Toshi Shasha conservancy in a year. However, this is not a sustainable amount of hunt according to locals. The number of hunting permits should be

increased to five from two as the amount of ready-to-hunt animals is high, they either die or fall from rock cliffs due to old age. So the increase in the permit will decrease the probability of waste of hunting animals.

(I2) Information regarding hunt fees used in different developmental projects is shared with community people in monthly meetings. Before the start of the project, community people set up three committees of people from the village:

1. Dekhbal (look after) Committee 2. Audit Committee 3. Project Committee

These three committees share their reports with the people at the end of each project. The executive body keeps the financial and other records in the record book and shares them in a monthly meeting.

(I4) Deputy Commissioner lower Chitral is the chairman of the district conservation committee who will solve the conflict among the users. Still, the ground data reveals that Deputy Commissioner was unable to resolve the issue so each village has paid PKRs 230000 from the village conservation fund in 2019 for the court cases according to wildlife department Chitral data. Secondly, most people within the community do not accept the executive body and have filed a claim with them. A vast conflict exists among the people of villages taking their sect. As the administrative body has more members of the higher sect, other people blame them for discrimination regarding the developmental work in the towns. So far, implemented projects from this trophy hunting fund have not benefited our area because they consider that we belong to the low sect, but everyone is equal in the eyes of God. We are proud of what we are; one of the villagers complains about the executive body. Another man added that we would start illegally hunting these animals if we remained deprived of this fund.

(I5) The investment through trophy hunting fees has been mostly for developmental projects within the communities, such as investment in link roads, clean drinking water supplies, etc.

(I8) The trophy hunting fee is also used as a matching grant with a different non-government organization for developmental projects. Trophy hunting has made the networking of the community solid with other organizations. This will play an essential role in the upward mobility of the community and open the gates for international organizations to work in these communities.

(I9) Monitoring in case of species protection or developmental work is not appreciable. Illegal hunting happens once or two in a year. Those who are being caught by community guards or by locals during unlawful hunting they are not punished accordingly. According to community people, they saw these illegal hunters and handed them over to authorities. They get free or get fewer penalties by using their linkages. In the case of developmental projects, no proper monitoring committee exists whose members are experts in the field neither at the community level nor at the departmental level. Community members have made committees of different community people who are ordinary residents, not experts in the relevant field.

(O1) The social performance of trophy hunting is low; it contributes to the lives of the community people but not to the extent to which it has to contribute. This activity's inefficiency is due to the unequal distribution of trophy hunt fees and the resource control by some influential villagers inside the conservancy. According to the conservancy residents, few resource users use their links and status to carry out hunting each year in their area. So, the law says that the area will get 40% of the hunt fee where the hunt is carried out, so we are deprived of that amount as we have the capacity and animals to carry that hunt. This rule needs a redefinition with mutual

consultations until and unless this problem is not solved, achieving sustainability of the resource is not possible.

(O2) Ecological performance of this activity is too good. It has a positive impact on the population of Markhor, and their population is growing day by day. Valdez, 2008 reported that the adult markhor population was assessed as less than 2500 worldwide. Now only Toshi Shasha conservancy holds the population of 1782 according to the 2019 vintage point survey.

(O3) The protected areas in this conservancy do not allow the use of guns. The community people who had guns voluntarily submitted to the government when the village conservation was formed. As Toshi Shasha conservancy is not only the habitat of Markhor, it has different birds and wild animals such as lynx, snow leopard, foxes, feral cats, wolf, etc. These all animals also feel safe in these areas. According to locals, the population of other species living in Toshi Shasha Conservancy also increased as now they do not find any threat from humans. They even come near to our houses. One of the locals responded that in winter, the chukar partridge comes to the roof of our homes looking for grains to eat the foxes can be seen roaming over the small mountains. So this is a positive externality due to this activity

5.5 ANOVA test and its Significance

Trophy hunting programs have been practiced as a conservation tool since 1980,s in different areas of Baluchistan, Sindh, Punjab, and Khyber Pakhtunkhwa; at that time, it was North West Frontier Province to conserve Markhor, urial, and ibex population, which was limited to some areas, and animals. In 1983 Khyber Pakhtoonkhaw wildlife department started for the first time Conservation program in Chitral, one of the largest districts of the province (S. Ali, 2008). The Government of Pakistan imposed a ban on trophy hunting and export of all kinds of the hunt for three years. The inclusion of Markhor in the Appendix of CITES (Convention on International

Trade in Endangered Species) in 1992 caused the country's temporary ban on trophy hunting. The animals in Appendix1 are threatened with extinction, and trade of those species is permitted in exceptional circumstances.

In 1993 Wildlife department of Khyber Pakhtoonkhaw started the trophy hunting program in Chitral along with the participation of the local communities living near the protected areas and becoming the first province to start trophy hunting in collaboration with the community. Societies were organized in two regions, Gahirat and Toshi Shasha. These areas were declared as community-managed conservation areas with the consent of the communities. The government proposed that 80% of the hunt fee would go to the village conservation fee of the communities for different developmental works within the communities (S. Ali, 2008).

The terms of a partnership are signed between the community and the wildlife department Chitral on the management and preservation of the Markhor population and about the distribution of the hunt fee among the communities. According to the terms of a partnership signed between communities and the wildlife department, the hunt fees will be distributed among communities in such a way that the 40% out of 80% of the community share will go to the area where the hunt is carried out, and the other 40% will go to the remaining regions. This conservancy has two blocks one block is Toshi which has four village conservation organizations, and the other block is Shasha which has the remaining eight village conservation organizations. So far, from 1998 to 2021, a total number of approximately 45 animals have been hunted down, and the out of 45 animals, only two animals have been hunted down in Shasha block and the remaining 43 animals have been hunted down in the Toshi area of the conservancy which has four village conservation organizations, and the 40% is distributed among the four with 10% to each village conservation organization.

When the reason was asked from the locals of Shasha in Focus Group Discussions and in other informal discussions, the point emerged that Toshi Block of the conservancy has one Village conservation organization which belongs to the elites people of Chitral, and they use their links and references to carry out hunt their area so that they will get the maximum benefit of the hunt fee.

This will create a societal imbalance, resulting in a de facto open access status of the resource. De facto open access will create a situation in which everyone benefits from the resource and nobody feels responsible for the management and conservation of the resources (Memon & Thapa, 2016). To produce socially desirable goods and services, the right in complex common pool resources needs to be redefined and allocating to different entities instead of packing and distributing the right to a single entity (Memon & Thapa, 2016).

To analyze this issue, a structured questionnaire mini-survey was conducted in the conservancy to get into the depths of the problem. The questionnaire consists of coversheet information, community projects and their importance, and Likert scale questions to get the view of the residents of both blocks about the resource system, its governance system, about resource users who the coordinate with each other about the institutions working in the conservancy, etc. All have been discussed below in detail.

5.5.1 Source of Income

A mini-survey was conducted from 351 households of the conservancy, and they were asked about their monthly income and their source of income. The total yearly mean income from the sources was calculated as PKRs 652354.29; however, the details of income have been given in below pie chart.

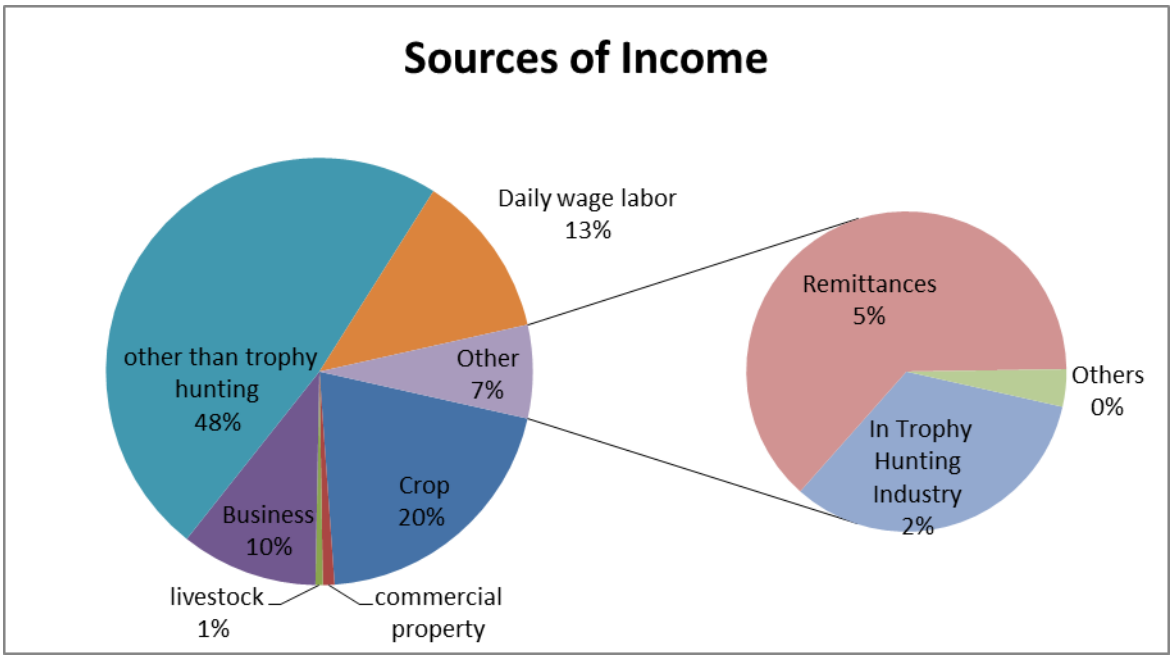

Figure 9 Source of Income distributions

According to the above figure 9, the primary source of the income of the overall residents of the conservancy was Income from other than trophy hunting which mainly includes Private or government-paid jobs. Agriculture also has a significant contribution to the income of the people of the conservancy; however, trophy hunting fund has also increased the agriculture income as due to new water channels constructions barren lands are now can be cultivated by the people. The monthly income was converted to annual to get the mean yearly income of the two blocks separately and for the overall conservancy. Adding all household incomes in both blocks and the entire study area, an independent t-test was applied to see if they were statistically different. The results are as below in table 1.

Table 1 Yearly Income of the Respondents

Yearly Income				
Conservancy	N	Mean	Std. Deviation	Sig. Value
Toshi Block	93	549032.26	551635.955	.031
Shasha Block	257	689743.19	531431.039	
Total	350	652354.29	539678.191	

The mean yearly income from all the sources of Toshi Block in the conservancy is PKRs 549032.26; in the Shasha block, the mean annual income from all the sources is PKRs 689743.19, and the mean yearly income of the overall conservancy from all the sources is PKRs 652354.29 as shown in the above table 1. The P-value is .002, which means that there is a significant difference between the average yearly income of Toshi and Shasha.

5.5.2 Trophy hunting Income

Trophy hunting does not directly contribute to the household's income. It contributes indirectly to the household's income; the only people employed as community guards or watchers are paid a monthly salary by trophy hunting fee. Only 2% of the people are employed in the trophy hunting industry in the whole conservancy, as shown in figure 9. Trophy hunting directly contributes 2% to the income of the households, and to see the statistical difference Independent Sample T-test was applied. The results are as below in table 2.

Table 2 Trophy hunting Income

Trophy Hunting Income				
Conservancy	N	Mean	Std. Deviation	Sig. Value
Toshi Block	93	21935.48	72349.665	.001
Shasha Block	257	3712.06	25101.567	
Total	350	8554.29	43669.522	

The overall income of the conservancy depends on different things such as income from agriculture, income from property, income from the business, remittances, income from daily wage labor, etc. Among them some households in both blocks, trophy hunting is also a source of income in the shape of paid watchers or Community guards in the conservancy, so the above tables show the yearly share of trophy hunting in the overall annual income of both blocks. The annual mean value of the share of trophy hunting income in shape of amount paid to watchers and guards in the overall annual income of the conservancy is PKRs 21935.48 for Toshi Block,

for the Shasha Block, the yearly average income is PKRs 3712.06, and for the overall conservancy, it is PKRs 8554.29 as shown in table 2. The mean value for the Toshi Block is greater than the mean value of Shasha Block, so the more significant benefit of trophy hunting goes to Toshi Block as compared to Shasha Block.

The p-value is .001, so a significant difference exists between the two blocks in the share of trophy hunting income to overall income. Secondly, the reason for the small percentage of trophy hunting in the income is that mainly the trophy hunting income, which is the trophy hunting fee, is used in the different developmental project in the societies and is not goes to any individual as a direct income except to the people who are community guards in the conservancy.

5.5.3 Expenditures

The expenses of the conservancy residents are too high as the area is hilly, and farming is not good in these areas. Almost 80% of the people are dependent on the market for each and everything, so the cost of living for these people is too high as they have to buy everything from the market and do not have the capacity in the area to produce their own. The expenses details have been explained in below figure 10.

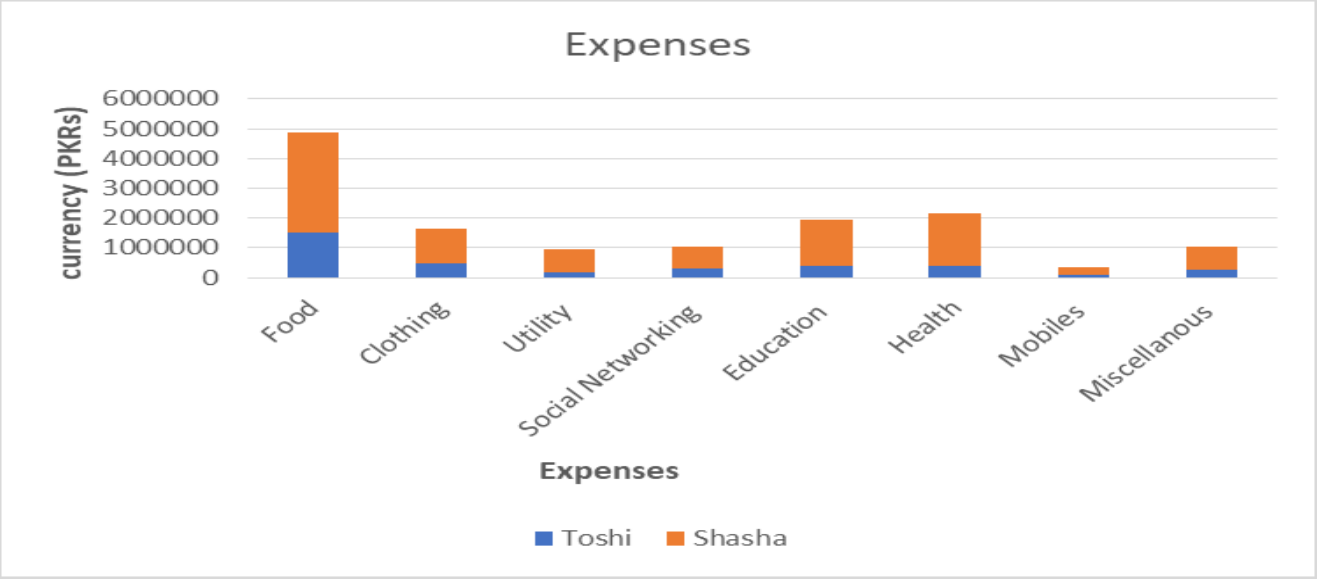

Figure 10 Monthly Expenses of the Respondents

The above figure 10 shows the expenses of the people of both blocks of the conservancy. Shasha blocks expenses on the food seem to be more than Toshi blocks expenses. The Expenses on education in both blocks of the conservancy are high as people are very serious about investing in the education sector. In the future, they are planning to open a community-based school in different villages from the trophy hunting fee.

To find out the share of trophy hunting income in total expenditure, a new variable with the name of total expenses was formed by adding all the household expenses. Working out trophy hunting as a percentage of the total expenses and dividing trophy hunting income by total expenses and independent-sample t-test was applied to see if they are statistically different, and the results are in the table 3.

Table 3 Share of Trophy Income in Total Expenditure

Share of Trophy Income in Total Expenditure				
Conservancy	N	Mean	Std. Deviation	Sig. Value
Toshi Block	93	.0600	.21473	.002
Shasha Block	257	.0116	.07648	
Total	350	.0245	.13002	

The above table explain the trophy hunting income share in total expenditures. The mean value for the Toshi Block is .0600, which means that 6% of the total expenses are covered by trophy hunting in Toshi Block. In the case of Shasha Block, the mean value is .0116, so it means that 2% of the total expenditure is covered by trophy hunting income in Shasha Block, as shown in above table 3.

The p-value is 0.002, so a significant difference exists between the two blocks in terms of the share of trophy hunting income in total expenditure.

5.5.4 Most likely compromised expenses if Trophy hunting is banned

In the structured questionnaire survey to determine what expenses are most likely to depend on trophy hunting, one question was included which of the most likely expenses you will decrease or compromise if trophy hunting is banned. The responses from 351 individuals were collected, and for analysis, the graph was formed as shown below.

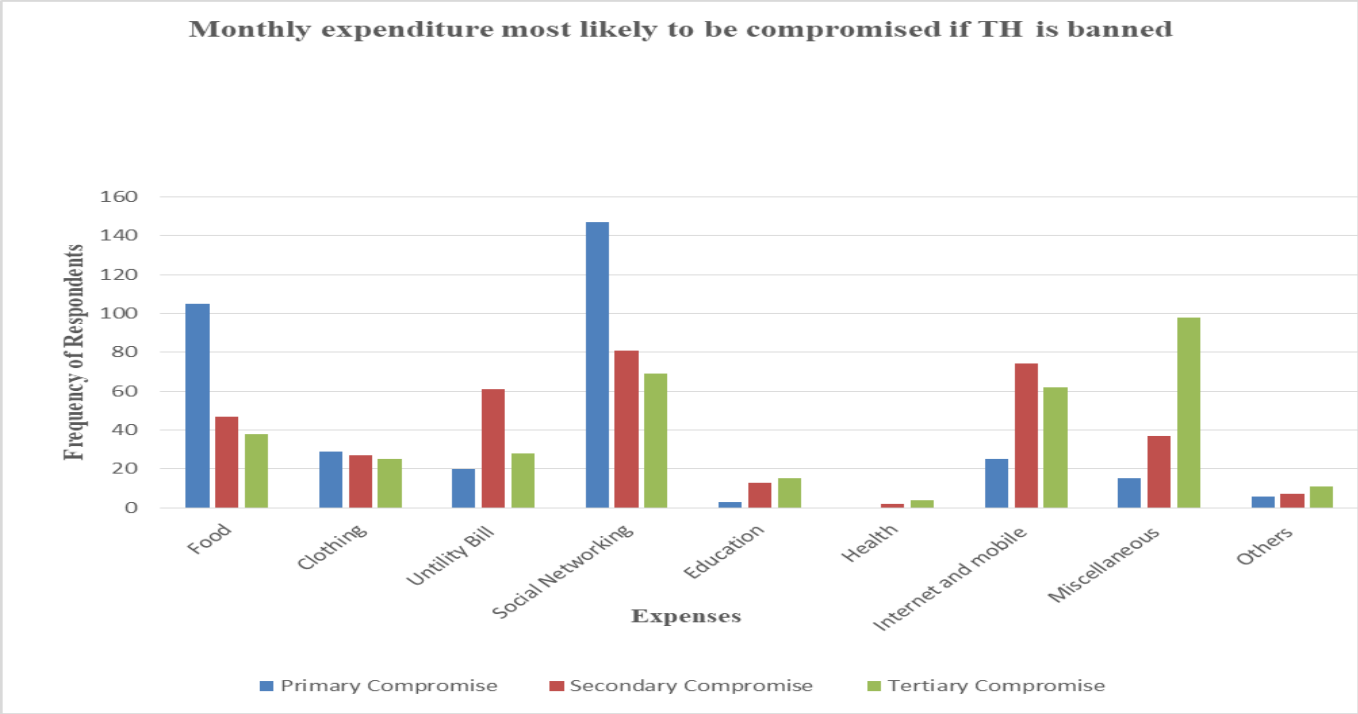

Figure 11 Frequency Distributions of the respondent's expense

The above graph shows that mostly they most primary compromised expense will be social networking. It is the custom of the areas that if some the relative or neighbor is getting married or having a baby, all the close relatives will go to their house with lots of gifts. Those gifts include new clothes, sweets, cooked dishes, and one whole meat of the animal. So the cost of social networking is too high in these areas, and people consider it necessary. They believe that if we are to compromise our expenses, we will reduce the cost of social networking. Secondly, as shown above that monthly expenditure shows that people's primary compromise in the second

number would be the food. They believed that they would compromise on the food and could live with it, and compromising on other expenses is difficult. However, the compromises on the health and education expenses seem to be very low in the overall conservancy.

The people of the area have shared during an informal discussion that Education and health expenses cannot be compromised because both are the main things to survive. One of the residents shared his view. He said that "*we will not decrease our investment in the education of our children because in this globalized world without education, living is impossible. So we will sell our properties to educate our children. We cannot think of compromise in this sector*."

To get an in-depth analysis of the data collected from the household about their compromises in expenses, the data was analyzed by creating indexes of compromise.

The locals of the conservancy were in a survey requested to share the expenses they will compromise if Trophy hunting is banned for a year. What expenses are most likely to be compromised when trophy hunting is banned.

The data was analyzed by creating compromise indexes. The scale values were set according to the number of compromises as follows:

Compromises	**Primary Compromise**	**Secondary Compromise**	**Tertiary Compromise**
Scale	1	.66	.33

Here after the Indexes were calculate as:

((1 x f (primary compromise) + .66 x f (secondary compromise) + .33 x f (tertiary compromise)) / f (primary) +f (secondary) + f (tertiary)

The indexes are summarized in table 4, ranking is also shown in the below table.

Table 4 Table shows the respondents compromises in expenses if trophy hunting is banned

Compromises in Consumption expenses	Toshi Block		Shasha Block		Overall conservancy	
	Score	Rank	Score	Rank	Score	Rank
Foods	0.462	II	0.408	II	0.424	II
clothing	0.262	III	0.117	VI	0.157	VI
utility bills	0.142	VI	0.218	IV	0.198	V
Social Networking	0.575	I	0.658	I	0.637	I
Education	0.083	VII	0.033	VII	0.047	VII
Health	0.003	IX	0.009	IX	0.007	IX
Communications	0.212	IV	0.289	III	0.269	III
Miscellaneous	0.181	V	0.213	V	0.205	IV
Other expenses	0.038	VII	0.041	VII	0.040	VII

The residents of Toshi Block and Shasha block's expenses on social networking are likely to be compromised if trophy hunting is banned for a year. The lowest compromise is attached to Health and education in both blocks of the conservancy. The ranking of the expenses through creating indexes of compromises gives us an overall view of all the expenses and at what level the conservancy residents are compromising them. Ranks were given to the expenses based on their scores highest index score has a rank, the second-highest index score has a rank of II as followed

5.5.5 Community developmental projects by Trophy Hunting Fees

Trophy hunting fee is used to develop different community projects in each village. It is not used for the benefit of an individual. The joint problems of the community are solved with this fund. So far, according to the secondary data from the wildlife department Chitral, the fund has been used in 196 activities within the conservancy. Most of the activities are the developmental work within society; however, some of the amounts have been paid to solve the conflicts in court cases. During the pre-testing of the questionnaire most important projects undertaken by the trophy hunting fund were identified, and they were put in the questionnaire. The people were asked what they think is an essential project intervention that has happened so far from the

trophy hunting fee. The people were given the option to tell the first five crucial projects in their area from trophy hunting fee. To get the overall view of the conservancy people about the most important project they think has happened. Different people prioritize different projects. To summarize, their indexes were constructed, and the scale of index construction was as follows:

Priority	**First**	**Second**	**Third**	**Fourth**	**Fifth**
Scale	1	0.8	0.6	0.4	0.1

Here after the Indexes were calculate as:
((1 x f (First priority) + .8 x f (second priority) + .6 x f (Third priority) + .4 x f (Fourth priority) + 0.1 x f(Fifth Priority)) / f (First) +f (Second) + f (Third)+f (Fourth) + f(Fifth)

The indexes are summarized in table:
The residents of Toshi block in the conservancy have prioritized Clean Drinking Water Supply as the most important project intervention from trophy hunting fee.

The residents of Shasha Block in the conservancy consider the construction of a new water Channel as the most project intervention from trophy hunting fees. Overall, the conservancy thinks the clean drinking water supply is the most important project intervention.

The lowest priority is attached to giving Scholarships to students. The introduction of proper monitoring and evaluation system in the areas by Toshi block residents and Shasha block residents attached the lowest priority to Interest-Free loans. Overall, conservancy Residents have attached the lowest importance to the Introduction of a Proper monitoring system.

Table 5 Respondents view about the most important project intervention from trophy hunting fee

Most Important Project Intervention	Toshi Block		Shasha Block		Overall Conservancy	
	Score	Rank	Score	Rank	Score	Rank
New Road Constructions	0.545	II	0.296	VI	0.362	III
New Water Channel Construction	0.478	III	0.648	I	0.175	VII
Maintenance of	0.152	VI	0.065	XI	0.088	XI

Roads						
Clean Drinking water Supply	0.568	I	0.516	III	0.528	I
Flood Protection Wall	0.034	XII	0.066	X	0.057	XII
Spending on School Infrastructure	0.055	XI	0.374	V	0.288	V
Employment Opportunities	0.245	IV	0.141	VIII	0.168	VII
Interest Free Loans	0.010	XIV	0.0003	XVII	0.004	XV
Spending on Health Facilities	0.006	XIII	0.002	XVI	0.003	XVI
Spending on education	0.007	XV	0.018	XIII	0.230	VI
Building Mosque	0.080	VIII	0.0023	XV	0.0353	XIII
Scholarship	0	XVII	0.007	XIV	0.001	XVII
Hydropower construction	0.006	XVI	0.526	II	0.007	XIV
Maintenance of hydropower's	0.057	X	0.129	IX	0.399	II
Bridges constructions	0.152	V	0.382	IV	0.135	IX
Maintenance of water channels	0.146	VII	0.153	VII	0.317	IV
Introduction of Proper monitoring system	0	XVIII	0.001	XVIII	0.0002	XVIII
Spending on Conservation	0.0640	IX	0.027	XII	0.129	X

Different kinds of projects have been carried out in the conservancy, from the trophy hunting fee. The projects mentioned in the above table 5, are the major projects carried out in most of the village from the trophy hunting fee. However, every village spent its share on that project which is the most needed in that area, and it benefits most of the people of the village. For example, in one of the villages of the conservancy trophy hunt fee was used to level the graveyard. This was the only village that had used this fund in graveyard leveling as it was the collective problem of the village. So above table mentioned projects are the most important projects undertaken in almost every village or most of the villages. So this will also help us identify the people's priorities when it comes to investing of the trophy hunting fee.

5.5.6 Perception of the locals about the Resource System

This resource system is a human and natural constructed resource in which excluding the locals from the benefits through physical or institutional means will degrade the whole resource system. This will lead to the unavailability of the resource system for others. When the resource users cannot benefit from the resource system, it will substantially lead to the free-riding in two ways: overuse of the resource without thinking of its negative impact on others, without adequate measures of maintaining and improvement of the resource system. From the qualitative data from the focus group discussion, in an informal discussion with locals during the data collection, most of the conservancy people expressed their concern about the unequal distribution of the benefits of the hunt fee either directly or indirectly. Many of the locals suggested changing the hunt's distributional ratio or making sure that the hunt should be done in each area where hunt animals are present.

To get a clear picture of the issue, the people's views were asked about the resource system in the form of Likert scale questions. The Likert scale questions asked were related to second tier variables of Socio Ecological System Framework first tier variables . The first tire variables were as follows Resource Unit, which contains question-related about the resource unit, Resource system, this group had questions that were related to the resource system, Governance which had inquiries related to the governance of the resource system and finally, Resource Users, which had a question related to the users of the resources their relationship and collaboration in the management of the resource system.

The purpose of this portion of the questionnaire was to find out whether the people of both blocks of the conservancy Toshi and Shasha blocks are of the same view when it comes to the resource system or if there exist any differences in the opinion of the people as one block of the residents have a serious concern about the unequal distribution of the hunt fee. The Likert scale

data were then grouped, and Likert scale questions with a scale of 1 for completely agree, 2 for somewhat agree, 0 for neutral, -1 for somewhat disagree, and -2 for completely disagree. A total of 351 household members responded to these 23 Likert scale questions. After grouping, means and standard deviation were taken against each statement to test the difference between the opinions of the people in Toshi Block Shasha Block. The overall conservancy ANOVA test was applied, and the below table 6 shows the test results.

Table 6 the respondents of the conservancy view against each statement of the Mini Structured Survey

Statements with regards to each Variable	Toshi Block	Shasha Block	Overall Conservancy	Sig. Value
Group 1 Resource Units				
a. Sustainability of Resource Unit	2 (000)	1 (1.57)	1.27 (1.41)	0.000
b. Resource unit contribution to livelihood of the people	1.95 (0.227)	1.81 (0.397)	1.84 (0.364)	0.001
c. Potential of Resource unit for generating income	1.85 (0.642)	0.40 (1.810)	0.78 (1.702)	0.000
d. Resource unit Conservation from Trophy hunting fee	1.98 (0.146)	1.28 (1.268)	1.47 (1.132)	0.000
Group 2 Resource User				
a. Trophy hunting source of Community Cohesion	1.84 (.517)	.96 (1.514)	1.19 (1.38)	.000
b. Appropriators are dealt with collective decisions	1.94 (.247)	1.44 (1.233)	1.57 (1.086)	.000
c. Users evert Tragedy of commons	1.94 (.355)	1.97 (.224)	1.96 (.265)	.246
d. The trust level among Users is good	1.85 (.510)	.79 (1.524)	1.411 (1.07)	.000
e. Users are satisfied from Government work for conservation	1.41 (1.106)	.86 (1.285)	1.01 (1.262)	.000
f. Users' mind about conservation is positive	1.89 (.598)	.40 (1.852)	.80 (1.745)	.000
Group 3 Governance System				
a. Users' knowledge of relevant Governance system	1.94 (.288)	1.70 (.684)	1.104 (1.433)	.001
b. Transparent decision making inside VCC	1.60 (.957)	.83 (1.520)	1.04 (1.433)	.000
c. Users can craft and enforce their own rules	1.69 (.642)	1.07 (1.372)	1.24 (1.250)	.000
d. Formal and Informal Rules work	1.77	1.11	1.28	.000

efficiently	(.796)	(1.500)	(1.380)	
e. Community and Government work effectively for conservation	1.71 (.854)	1.00 (1.393)	1.19 (1.310)	.000
f. Resource is controlled by someone	-.02 (1.608)	1.46 (1.060)	1.07 (1.391)	.000
g. Transparency in trophy hunting fund utilization	1.69 (.859)	1.13 (1.491)	1.28 (1.373)	.001
Group 4 Resource System				
a. Protected areas are being protected	1.60 (1.012)	1.20 (1.590)	1.31 (1.46)	.023
b. Resource System productivity has increased	1.46 (1.166)	.91 (1.444)	2.00 (.062)	.001
c. Rules are clearly defined in resource system	1.95 (.227)	.63 (1.805)	-1.25 (1.260)	.000
d. poaching and degradation happens in resource system	-1.78 (.907)	-1.06 (1.315)	-1.25 (1.260)	.000
e. Boundaries are clearly demarcated	1.96 (.252)	2.00 (.062)	1.99 (.141)	.022
f. Species are protected outside the boundary	1.98 (.146)	1.94 (.235)	1.95 (.215)	.157
Overall Score				
Resource Unit	1.94 (.18842)	1.216 (.64617)	1.3400 (.66920)	.000
Resource User	1.8100 (.32563)	1.0707 (.67401)	1.2671 (.68421)	.000
Governance System	1.4823 (.44677)	1.1851 (.56579)	1.2641 (.55201)	.000
Resource System	1.1935 (.31979)	.9345 (.51700)	1.0033 (.48594)	.000

The computed results were mean and standard deviation values against each statement. The values in parentheses are the standard deviation value, and the values not in parenthesis are mean values against each statement.

The results depict that the mean response against each statement in Toshi and Shasha block is different from when we take the first statement of the Resource Unit, where the people were asked

that Trophy hunting program is a sustainable way of conservation. Let's look at the mean value against this statement in both blocks, in the Toshi block. Most people entirely agree with it as the mean value is two, and in Shasha block, the mean value is 1 and most of the people seem to

agree somewhat or disagree with this statement. The same case is with most of the responses.. They shared in the informal discussion that we are not getting the full benefit of the conservation in such a situation. Some of the influential people get the maximum benefit. So why should I participate in conservation management as I am not getting the benefits of the resource? If this continues, we will start illegal hunting of the species we will bring our woods from our pastures as they have banned it due to conservation. One of the residents shared his view during an informal discussion.

To test the differences in means ANOVA test was applied, and the results are that there exist significant differences in the means of each statement. This clearly depicts that when it comes to the management of the resource system their exist a clears difference between the opinion about the conservancy among the people.

Chapter 6

6 Discussions

Trophy hunting started in Chitral back in 1983, with ban on the export of Trophy by government of Pakistan for few years. The program was restarted in 1998 with the approval of Federal Government and from 1998 to 2021 a revenue of USD4552500. According to the distribution of hunt fee 80% which is USD3642000 has gone to the communities who are living in the protected areas. This huge amount becomes subject of political influence and rent-seeking, and tragedy of the commons as huge economic stakes involved in trophy hunting. The situation demands a thorough institutional analysis of trophy hunting.

6.1 Infrastructure Development

Development being a physical reality and state of mind where society obtain better life through combination of social, economic and institutional process. Infrastructure development plays vital role in the economic growth which leads to poverty reduction. With investment in the construction of new infrastructure and maintenance of old infrastructure will help to achieve many goals such as poverty reduction and millennium development goals in developing countries.

Physical Infrastructure basically means the physical structures which are necessary for any economy to survive and function such a constructions of bridges, constructions of new road and link roads, building powerhouses which have vital role in the upward mobility of rural livelihood. It is clear that there exist clear connection between poverty and access to economic and social services.

The results indicates that the 80% of the trophy hunt fee which has gone to the community has been mostly used in the development of rural infrastructure such as building new bridges, construction of new roads and link road, maintenance of old roads, construction and maintenance

of school infrastructure and hydropower houses. These infrastructure development benefits the whole community by improving people mobility and enhance access to market, schools, health units and administrative centers. These people living in the remote areas rural infrastructure and transportation systems have major role in the development of these communities.

Toshi Shash Conservancy have spent PKRs5447000 from the village conservation fund as matching grants for the construction of Community-based schools from 2015 to 2020 (Chitral Wild Life Department). Secondary data from the wildlife department revealed that from 2015 to 2020, approximately PKRs7497049 had been spent on the construction and maintenance of link roads in different villages.

An approximate amount of PKRs11725008 has been spent on constructing metal and wood bridges and repairing old bridges in different villages from 2014 to 2020. They have also spent PKRs6407000 on the construction and repair of a small hydropower station in different villages of the conservancy through community conservation funds.

The village conservation fund is mostly used a matching grant for different projects such as construction of clean drinking supplies, for constructions or repair of hydropower and Schools. The system of using this grant as a matching grant connects the communities with different national and international NGOs. This interaction opens opportunities to benefit from those organizations in different development projects within these communities.

The conservation fund has been used to encourage and promote private sector development in the form of a matching grant. Many national and international NGOs urge the matching grant concept involving the private sector. A recent review of World Band Group shows that World Bank Group has supported around 106 private sector development matching grants over the past

year. A recent World Bank review concludes that the experience of matching grants shows that matching grants have broad and durable economic benefits.

Infrastructure development is very important in these areas as mostly of the people are benefited from these development. Community's life was very difficult before these facilities, it has enhanced the transportation system and made easy for the people to get access to different services and centers.

However these development can made better if community spent some amount from the trophy hunt fee in the monitoring and evaluation of these projects. These projects are being monitored by the local's people in voluntarily base. If some amount is spent and these projects are monitored by the experts these projects will be up to the mark and will be more durable and sustainable.

6.2 Lack of Ecotourism Enterprise

Ecotourism and wildlife conservation are overlapping sectors of an economy. Ecotourism is defined a responsible travel to an area which conserve the natural environment which supports the well-being of the locals. If ecotourism enterprises along with wildlife conservation is realized it will have positive impact on the wellbeing of the people. Wild ecotourism and conservation are very instrumental tools for the resource system conservation and rural development. Tourism being the third largest industry after oil and automobile industry. According to the United Nation World Trade Organization tourism not only increases the demand of goods and service it also creates employment opportunities in the localities.

The study results indicates that there is no concept of ecotourism enterprise in the conservancy as they have huge potential for this industry. When the people were asked what are the reasons of non-presence of this industry in the region. They were unaware of the concept and during my

mini-survey I have observed they will be able to earn more income form the ecotourism than trophy hunting. As the conservancy is protected area so use of guns are strictly prohibited in the area. It has positive impact on the other wild animals and bird's population. They are not afraid of the people and they can be seen at a distance of meters. The area has huge potential of ecotourism industry but they community need capacity building for the ecotourism industry. The serious need of the area which I have observed is creating awareness among the communities along with designing policies and laws at local level which should help the local communities and local entrepreneur to take part in the development of ecotourism in these protected areas. Capacity building and better funding which can be through Conservation fund or from other source to local institutions which can further boost the ecotourism by participating in cross border ecotourism and conservation related enterprises.

6.3 Institutional Arrangements

Institutional arrangements in any conservancy are the main pillars of the conservation, the conservation effectiveness totally depends on the institutional arrangements of the conservancy. Weak and unstable institutional arrangements can lead to the degradation of the resources system whether they are formal or informal institutions. To structure any political, economic and social interaction institutions are devised by humans. The institutions can be formal and informal.

The results of the study indicates that the role of institutions is very crucial in the management of the conservancy whether they are formal or informal institutions. The informal institutions which used to exist in the old times for the management and regulation of the conservancy still exist but not that much effective. The informal institutions in the conservancy are now considered as mythical stories.

However the formal institutions are still in place in the conservancy working for the management of game areas. Two kind of formal institutions were found in the conservancy one is the rules and regulation written and signed by the community and the wildlife department which they called terms of partnerships. The term of partnerships has no fix time for change as that was signed at the start of the conservancy so far no amendment or change has been made in the term of partnership. The other kind of the formal institutions are the rules and regulation for the community about do's and don'ts within that community decided by the people by mutual consultations. They change the rules time to time when needed. The results of the study indicates that the institutional arrangements in the conservancy are too weak they conservancy is still working on the rules which were designed in 1998, no amendment or change has been made in those rules and regulations and it lacks the enforcement of those rules. If someone is illegally hunting the species or doing any unlawful act within VCC he is set free in few days if that individual has good links and connection. The rules are only for the poor people who are not even capable of doing illegal hunt. There is need of amendment in the terms of partnerships and involving the locals in the law making is most important they hold good and accurate knowledge about the conservancy as compared to the officials.

Chapter 7

7 Conclusion and Recommendations

It is evident from the research and the literature that until and unless communities are not involved in the conservation, the program is not successful because it is designed to integrate both society and ecology, which are part and parcel of conservation. If the community is separated from ecology through unequal distribution of the benefits or any means. In that case, it will create a gap in which free riders of the resource will emerge and result in the degradation of the specific resource system.

The significant threat to the resource system is when the communities living in the resource system are being ignored in the decision-making of the agreement. In this conservancy community, suggestions and agreements are frequently ignored or taken on secret bases by the authorities. When it comes to the community development works, they are very few compared to the level of funds received from the trophy hunting.

This program could be effective if the communities are trained in basic conservation principles. The government should not be directly involved in communities when it comes to the use of village trophy hunting share. The revision of the hunt fee distribution is necessary, along with making sure that the hunt is carried out in each village where the hunt animal are presents

7.1 Recommendations

1. For conserving the biodiversity, organizing, boosting, and empowering the capacity of the local communities is necessary
2. Strong legislation and framing of a financial framework are needed, which should be community conducive.

3. The distributional ratio of the hunt fee among communities should be revised, and the local wildlife department should make sure that hunts should not only be carried out in one village it should also be carried out in other towns where hunt animals are present
4. The terms of the partnership signed between communities and the wildlife department should be revised in three years
5. The 20% of the fee which goes to the treasury of the government should be given to the local wildlife department to enhance its capacity
6. The hunting quota should be increased to five hunts each year from two hunts as the hunt animals are present in the areas
7. The Community representatives should be for five years, and after five years new representative should be selected or elected

7.2 Significance of the Study

The study adds to the existing knowledge of the trophy hunting program and its management and the development so far in this program. The study is helpful in disclosing the institutional arrangement of the conservancy both formal and informal. This is the first study which has used the socio ecological system framework to study this conservancy. Which is globally accepted framework to study any natural ecological system.

7.3 Limitations

Due to the culture norms the view of the women from the communities were not able to collect also due to financial constraints the comparative analysis of this conservancy with other conservancy was not possible. Some of the people who had crucial role in the conservancy management such as the chief conservator of KP wildlife department and other official's views were not recorded due to their busy schedule and unavailability.

8 Appendix

Population Growth Rate Formula

The population growth rate depends on the actual size of the population. All the individuals in the population have contributed to the growth of the people, so the population grows by multiplication. The growth rate of the male, female, and fawn populations was calculated by taking the difference in natural logarithms of the initial and final populations and dividing it by the total number of years.

$r = [\text{Ln } N(t) - \text{Ln } N(o)]/t$

r = Exponential Growth Rate

N (o) = Initial population

N (t) = Final population

t = Total no of years population growth occurs. The value of r will determine the population growth rate so if the value of r is greater than zero which is $r > 0$ the population growth increasing if the $r = 0$ the population growth rate is unchanged and if $r < 0$ the population growth rate is decreasing.

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