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SOCIO-ECOLOGICAL DYNAMICS IN GILGIT BALTISTAN: INSIGHTS OF HUMAN GEOGRAPHIC PERSPECTIVES

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ABSTRACT

This study determines the complex linkage between the community and nature in Gilgit Baltistan, employing a mixed method of quantitative analysis, qualitative exploration, and comprehensive literature review. Through an extensive examination of existing research and on-the-ground observations, the research unravels the complicated environment of this region's geographical overview, environmental dynamics, and socio-economic capabilities. Notably, statistical analyses shed light on population trends, agricultural patterns, and demographic shifts, offering valuable insights into the region's developmental courses. Moreover, qualitative insights obtained from field visits uncovered the rich cultural heritage, linguistic diversity, and community perceptions embedded within the societal framework of Gilgit Baltistan. Geographic information system (GIS) is used to design the study maps of protected areas and transportation networks, unveiling the region's strategic significance and developmental potential. Among its key findings, the research underscores the pivotal role of transportation links, particularly the Karakoram Highway, in facilitating connectivity and economic development. Moreover, it highlights the emergence of Gilgit Baltistan as a vital gateway for the China-Pakistan Economic Corridor (CPEC), accentuating its growing importance in regional geopolitics and economic integration. In essence, this study offers a holistic understanding of the socio-economic landscape of Gilgit Baltistan, providing actionable insights for policymakers, development practitioners, and stakeholders aiming to foster sustainable growth and socio-economic prosperity in the region.

Keywords: Community; Environmental dynamics; Landscape; Nature; Sustainable growth.
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INTRODUCTION

The complicated interaction and interconnectedness between social and ecological systems within a particular environment or context are studied under the socio-ecological term. It recognizes that human societies are deeply intertwined with their surrounding ecosystems and that social dynamics and ecological processes influence each other in complex ways (Riffat et al., 2023). Socio-ecological systems approach emphasizes the need to understand not only the ecological components of an ecosystem but also the social structures, cultural norms, economic activities, and political institutions that shape human interactions with the environment (Walter, 2022). By considering both social and ecological factors together, socio-ecological analysis provides a holistic framework for addressing environmental challenges and promoting sustainable development. This approach underscores the importance of interdisciplinary collaboration and community engagement in finding solutions that balance human well-being with environmental conservation (Gottwald, 2022).

Ecology in Gilgit Baltistan (GB) is characterized by its diverse and fragile ecosystems, shaped by the region's unique geography, climate, and altitude. Situated at the confluence of three of the world's largest mountain ranges - the Himalayas, Karakoram, and Hindu Kush - GB boasts unparalleled biodiversity and natural beauty. The region encompasses a variety of ecosystems, including alpine meadows, glaciers, forests, and riverine habitats, each supporting a rich array of flora and fauna (Kreutzmann, 2013). However, GB's ecology faces numerous challenges, primarily driven by climate change, unsustainable resource exploitation, and human activities. Glacial melt and altered precipitation patterns pose significant threats to water resources, affecting both local communities and downstream regions (Abbas & khan, 2020). Deforestation, overgrazing, and habitat degradation are exacerbating soil erosion and loss of biodiversity (Díaz-Reviriego et al., 2019). Additionally, rapid urbanization and infrastructure development are encroaching upon natural habitats, further fragmenting ecosystems and disrupting wildlife corridors (Fürst et al., 2017).

The Human geographic perspectives in Gilgit Baltistan (GB) encompass various aspects of human activity and settlement patterns in the region. This includes the distribution of population, cultural diversity, economic activities, infrastructure development, and social dynamics. The region is characterized by a diverse population comprising different ethnic groups contributing to the cultural richness of the area. Settlement patterns vary from urban centers like Gilgit and Skardu to rural villages huddled in mountain valleys (Hussain et al., 2010; Ali, 2014; Qasim, 2018). Economic activities in GB primarily revolve around agriculture, tourism, and trade. Agriculture is the mainstay of the economy, with people engaged in farming practices such as crop cultivation, livestock nurturing, and horticulture (Fazlur-Rahman et al., 2013; Israr et al., 2010). Tourism plays a significant role, with the region attracting domestic and international tourists for its scenic landscapes, trekking routes, and cultural heritage (Arshad et al., 2018). Trade, particularly cross-border trade with China, is also important for the economy of GB, facilitated by key mountain passes like the Khunjerab Pass (Hussain, 2015). Social dynamics in GB are influenced by factors such as religion, education, and gender roles. Overall, human geography in GB reflects a complex interplay of geographical, cultural, and socio-economic factors, contributing to the region's unique identity and heritage.

Efforts to conserve and protect GB's ecology are needed, with initiatives focusing on sustainable land management, biodiversity conservation, and climate resilience (Abbas et al., 2016). Community-based conservation projects, supported by government agencies and non-profit organizations, are needed for environmental awareness and empowering local communities to safeguard their natural heritage (Abbas & Khan, 2020). However, addressing the complex ecological challenges facing GB requires concerted action at local, national, and international levels, emphasizing the importance of holistic approaches to mountain ecosystem management and sustainable development (Ali et al., 2015).

METHODOLOGY

This research employed a mixed-methods approach, combining quantitative analysis, qualitative insights, and literature review to provide a diverse landscape and socio-economic dynamics of Gilgit Baltistan. The study commenced with an extensive review of existing literature encompassing various aspects of the region, including geography, environment, socio-economic factors, protected areas, demography, religion, languages, and transportation infrastructure. The literature review served as the foundation for identifying research objectives and understanding the existing knowledge landscape. Additionally, government reports, academic studies, and other secondary sources provided quantitative data, which were analyzed using statistical methods to ascertain population densities, growth rates, religious demographics, and linguistic distributions. The quantitative data includes the statistics of demography and population, agricultural production of crops, dry fruits, and land availability for different uses, livestock data, and endemic aquatic diversity information. The population data is acquired from the Pakistan Bureau of Statistics according the population census. The agricultural data of production is accessed from the Directorate of agriculture Gilgit Baltistan while the Directorate of fisheries and livestock is contacted for

the data of livestock and endemic fishes. The Ministry of Planning Gilgit Baltistan's annual report is also included for the required data. To get the data of administrative setup in the region, Home Department GB is preferred.

Qualitative data, obtained through observational field visits and supplemented by existing literature, were thematically analyzed to discern cultural practices, religious beliefs, language diversity, and community perceptions. Geographical information system (GIS) tools facilitated the mapping and spatial analysis of protected areas, dams, and transportation routes, aiding in visualizing spatial relationships and identifying potential areas for further investigation. The integration and synthesis of quantitative and qualitative findings allowed for a comprehensive understanding of the research outcomes.

RESULTS AND DISCUSSION

Administration

Gilgit Baltistan is divided administratively in three divisions, Gilgit division, Diamer division and Baltistan division. Gilgit Baltistan comprises of 10 districts (Figure 1), Diamer division administers Astore, famous tourist destination (Rainbow Lake), and Daimer districts, 04 districts in Gilgit including Gilgit, Hunza (Ata Abad Lake), Ghizer (Phander valley), and Nagar (Rakaposhi). There are 04 districts in Baltistan division namely, Skardu (Deosai Plain), Ganche (Siachen Glacier), Kharmang (Manthokha waterfall) and Shiger (K2).

Figure 1. Divisions of Gilgit Baltistan.

The administrative landscape of Gilgit Baltistan (GB) has undergone significant changes over the years, reflecting the evolving needs and dynamics of the region. According to the 1998 Census, GB was organized into a single division, five districts, twelve sub-divisions, nineteen tehsils, and a total of 60 police stations. The prison infrastructure comprised five jails with a combined capacity of 500.

Fast forward to the 2017 Census, and there is a notable expansion in administrative units. GB is now divided into three divisions, ten districts, nineteen sub-divisions, and thirty-one tehsils. The number of police stations has increased to 65, demonstrating a response to the growing complexity of law enforcement needs. In the realm of corrections, the prison system has expanded to six jails, accommodating a higher total capacity of 690.

The most recent statistics from 2021 affirm the continuity of this administrative expansion. GB maintains three divisions, ten districts, twenty sub-divisions, and thirty-one tehsils. The number of police stations has seen a slight rise to 67, indicating continued efforts to enhance law enforcement infrastructure.

Interestingly, the prison infrastructure has reverted to five jails, albeit with an increased total capacity of 990, showcasing improvements in correctional facilities (Table 1).

Table 1. Set up of administration in GB.

S. No.	Units of Administration	1998 Census	2017 Census	2021 statistics
01	Divisions	01	03	03
02	Districts	05	10	10
03	Sub-Divisions	12	19	20
04	Tehsils	19	31	31
05	Union Councils	–	105	113
06	Police Stations	60	65	67
07	Prisons (Jails) in GB	05	06	05
08	Total capacity of Jails in GB	500	690	990

Source: (Home Department GB, 2020).

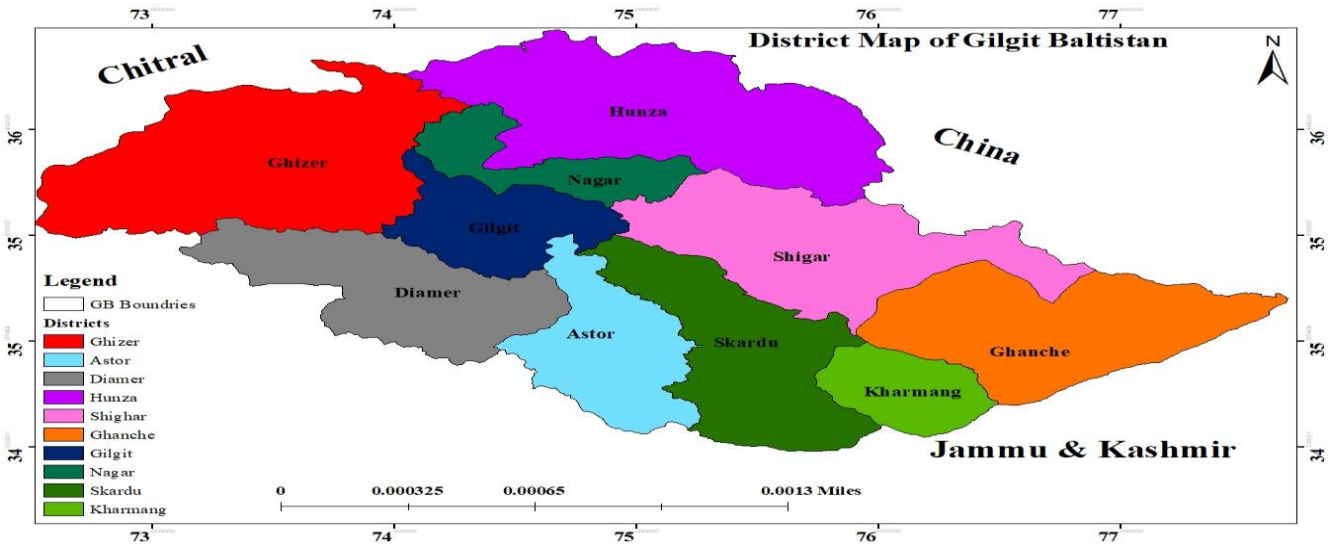

Figure 2. Districts location of Gilgit Baltistan region.

Agriculture in Gilgit Baltistan region

Soil of GB

The soil of Gilgit Baltistan region is fertile and it suits for all type of crops according to the climatic condition of the region. The fine texture of soil in the lower flood path and dominant course in upper land depicts the quality of soil in mountainous valleys. The geomorphic erosion agents as river and glaciers have prominent role in texturing the soil of Gilgit Baltistan region as erosion on the edges and deposition on surfaces shaped the soil with mixture of parental materials. The material of moraine and alluvial fan in upper mountain valleys and hills help in terrace cultivation in the region (Anwar, 2017).

Agricultural Practices

The main source of income generation for the people of GB region is agriculture likewise Pakistan. The last two decades have witnessed changes in agricultural practices in the region from local hard working and time taking techniques to the use of agricultural machineries and the production of vegetables as well as wheat has boosted because of this transformation.

The agricultural potential of Gilgit Baltistan region can be improved through proper awareness and training to the farmers along with betterment of irrigation system. The vegetable production of the region especially

potato has quality to export around the globe. Beside the vegetables and cereal crops, this region has international fame from fruits and dry fruits. Apricot, Apple and Cherry of Gilgit Baltistan play key role in income generation for the region due to access in markets of all over Pakistan with international demand.

In Gilgit Baltistan region, encompassing a vast total area of 72,496 square kilometers, agriculture plays a significant role. A substantial portion of the land, specifically 3,938.784 square kilometers, is designated for cultivation. Within this cultivated expanse, an area measuring 893.95 square kilometers is actively used for growing crops. Interestingly, there exists an additional 3,044.832 square kilometers categorized as cultivable waste, indicating potential agricultural areas that are not currently utilized. The agricultural landscape involves 162,500 families engaged in farming activities, contributing to a total farming population of 910,000. Moreover, each farm in this region has an average size ranging between 0.6 and 0.8 acres. This data provides valuable insights into the scale and nature of agricultural practices, emphasizing the significance of this sector within the local community (Table 2).

Table 2. Land categorization in Gilgit Baltistan.

S. No.	Land category	Area
01	Total Area	72496 sq. km
02	Area (under Cultivation)	3938.784 sq. km
03	Area (Cropped)	893.95 sq. km
04	Cultivable Waste	3044.832 sq. km
05	Total Families (Farming)	162500
06	Total Population (Farm)	910000
07	Total Size of Farm	0.6-0.8 Acres

Source: (Agriculture Department GB, 2020).

In the region of Gilgit-Baltistan (GB), agriculture plays a crucial role as evident from the data outlining crop cultivation. Wheat, a staple cereal, covers an extensive area of 6,422 hectares, contributing to a substantial production of 17,143 metric tons. The consumption of wheat stands at 16,899 metric tons, with a marketed surplus of 284 metric tons. Maize, serving both as a cereal and fodder, occupies 1,392 hectares, yielding a production of 3,245 metric tons, out of which 2,648 metric tons are consumed, and 102 metric tons are available for the market (Table 3).

Barley cultivation spans 3,838 hectares, resulting in a production of 7,442 metric tons. The consumption of barley amounts to 6,308 metric tons, leaving a marketed surplus of 989 metric tons. Buckwheat, classified as a cash crop, is cultivated across 971 hectares, producing 1,104 metric tons. The consumption of buckwheat stands at 1,142 metric tons, with 367 metric tons available for the market.

Potato cultivation covers a significant area of 3,419 hectares, yielding a high production of 29,175 metric tons. The consumption of potatoes is reported at 9,785 metric tons, while a substantial surplus of 40,168 metric tons is available for the market. Lucerne, a fodder crop, occupies 291 hectares, with a production of 15,149 metric tons. The consumption of Lucerne is recorded at 13,547 metric tons, and 1,464 metric tons are available for the market.

Other crops, collectively categorized, have a production value of 12,595 metric tons, with minimal consumption (159 metric tons) and a market surplus of 129 metric tons. In total, crop cultivation in GB encompasses 16,333 hectares, resulting in a combined production of 75,350 metric tons. The overall consumption is 51,466 metric tons, leaving a substantial marketed surplus of 44,818 metric tons. This data provides a comprehensive overview of the agricultural landscape in GB, highlighting the diverse crops cultivated and their contributions to local consumption and market availability.

Table 3. Agricultural Productions and Utilization in Gilgit Baltistan.

S. No.	Crop cultivation in GB	Area cultivated Hac.	Production Mt. Tons	Consumption Mt. Tons	Marketed Mt. Tons
01	Wheat (cereal)	6422	17143	16899	284
02	Maize (cereal/ fodder)	1392	3245	2648	102
03	Barley (cereal)	3838	7442	6308	989
04	Buckwheat (cash crop)	971	1104	1142	367
05	Potato (vegetable)	3419	29175	9785	40168
06	Lucerne	291	15149	13547	1464
07	Tomato	000	2069	907	1173
08	Peas	000	23	71	143
09	Others	000	12595	159	129
	Total	16333	75350	51466	44818

Source: (Agriculture Department GB, 2020).

Gilgit-Baltistan (GB) boasts a diverse and abundant production of fruits, as reflected in the data outlining the production, consumption, and market access of various fruit types. Apricot cultivation takes the lead, covering a substantial area and resulting in a production of 61,188 metric tons. The local consumption of apricots stands at 2,256.46 metric tons, leaving a considerable surplus of 696.47 metric tons available for the market (Table 4).

Apples, another significant fruit crop in GB, are cultivated over an area yielding 6,606.12 metric tons. Local consumption of apples is reported at 3,096.58 metric tons, and a substantial surplus of 3,045.31 metric tons is accessible in the market. Grapes, pears, and peaches contribute to the fruit diversity in GB, with productions of 1,367.41 metric tons, 395.81 metric tons, and 414.32 metric tons, respectively. The local consumption figures are 102.53 metric tons for grapes, 34.748 metric tons for pears, and 226.08 metric tons for peaches. Notably, there is minimal market access for peaches, indicating their limited availability in the market.

Pomegranates, cherries, and mulberries also contribute to the rich fruit production in GB. Pomegranate cultivation yields 168.6 metric tons, with 63.60 metric tons consumed locally and a limited 4.03 metric tons available in the market. Cherries, with a substantial production of 4,499.99 metric tons, are consumed locally at 585.03 metric tons, while 217.93 metric tons are accessible in the market. Mulberries, with a production of 1,937.18 metric tons, witness a local consumption of 998.72 metric tons and a small market access of 17.37 metric tons.

Furthermore, nuts like walnuts and almonds are integral to GB's fruit production. Walnuts are cultivated extensively, producing 4,177.98 metric tons, of which 1,002.19 metric tons are consumed locally, leaving a significant surplus of 453.42 metric tons for the market. Almonds contribute 660.56 metric tons to the fruit production, with 239.93 metric tons consumed locally and a market access of 117.17 metric tons.

In total, GB exhibits a robust fruit production landscape, with an overall production of 81,415.9 metric tons. Local consumption is reported at 9,841.6 metric tons, leaving a substantial market access of 4,878.15 metric tons. This data underscores the diverse fruit cultivation in GB and provides insights into local consumption patterns and market availability.

Table 4. Production of Fruits in Gilgit Baltistan region, North Pakistan.

S. No.	Fruits in GB	Production in Mt. Tons	Consumption in Mt. Tons	Market access in Mt. Tons
01	Apricot	61188	2256.46	696.47
02	Apple	6606.12	3096.58	3045.31
03	Grapes	1367.41	102.53	196.92
04	Pears	395.81	34.748	118.6
05	Peaches	414.32	226.08	10.93
06	Pomegranate	168.6	63.60	4.03
07	Cherry	4499.99	585.03	217.93
08	Mulberry	1937.18	998.72	17.37
09	Walnut	4177.98	1002.19	453.42
10	Almond	660.56	239.93	117.17
	Total	81415.9	9841.6	4878.15

Source: (Agriculture Department GB, 2020).

The production, consumption, and market access data for dried apricots in Gilgit-Baltistan (GB) provide insights into the region's dry fruit dynamics. In terms of production, GB yields a substantial quantity of dried apricots, amounting to 14,675 metric tons. This signifies a significant local capacity for producing this dry fruit (Table 5)

The local consumption of dried apricots in GB is reported at 5,345 metric tons, reflecting the quantity consumed within the region. Simultaneously, the market access for dried apricots stands at 7,480 metric tons, indicating the surplus available for distribution and sale beyond local consumption. This surplus contributes to the market availability of dried apricots, potentially meeting broader demand or being exported to other regions.

Table 5. Production of Dried Apricot in Gilgit Baltistan.

S. No.	Dry Fruit in GB	Production in Mt. Tons	Consumption in Mt. Tons	Market access in Mt. Tons
01	Dried Apricot	14675	5345	7480

Source: (Agriculture Department GB, 2020).

The production data for livestock and dairy products in Gilgit-Baltistan (GB) reveals substantial gaps between local production and the region's consumption requirements. In terms of chicken, GB produces 1,683 metric tons, while the demand stands at 8,550 metric tons, resulting in a significant shortage of 6,867 metric tons. Similarly, the production of beef is 5,467 metric tons, falling short of the local demand of 9,750 metric tons by 4,283 metric tons. For mutton, despite a production of 8,987 metric tons, there is a shortage of 763 metric tons compared to the demand of 9,750 metric tons. In the case of eggs, GB produces a substantial 2,413,125 dozen, but the demand for eggs is considerably higher at 8,625,000 dozen, resulting in a shortage of 6,211,875 dozen. Lastly, milk production in GB is 121,329 metric tons, falling short of the demand of 238,500 metric tons by 117,171 metric tons. These shortages indicate a significant reliance on external sources to meet the local demand for essential livestock and dairy products in Gilgit-Baltistan. Addressing these gaps may require strategic interventions to enhance local production and improve food security in the region (Table 6).

Table 6. Production of Livestock and dairy in GB.

S. No.	Products	Production in Mt. Tons	Requirement in Mt. Tons	Shortage in Mt. Tons
01	Chicken	1683	8550	6867
02	Beef	5467	9750	4283
03	Mutton	8987	9750	763
04	Egg (No. in dozen)	2413125	8625000	6211875
05	Milk	121329	238500	117171

Source: (Livestock Department GB, 2020).

In 2019, the fisheries sector in the region of Gilgit-Baltistan (GB) showcased a notable presence of trout farming and hatcheries. The region boasted 11 trout hatcheries dedicated to the breeding and cultivation of trout species. Additionally, there were five specialized trout farms, two farms specifically focused on carp breeding, and a significant number of private farms – totaling 127 – engaged in trout cultivation. These private trout farms collectively contributed to an annual production of 252 tons of trout. This data underscores the active involvement of private entities in the aquaculture industry of GB, particularly in the production of trout, which holds significance both economically and environmentally. The diversity of fish farms and hatcheries in the region reflects efforts to promote sustainable fisheries practices and contribute to the local economy by meeting the demand for high-value fish species like trout (Table 7).

Table 7. Statistics of Fishes in Gilgit Baltistan.

S. No.	Fishes (Farms, Hatcheries)	Statistics of 2019
01	Trout (Hatchery)	11
02	Trout (Farms)	05
03	Farms for Carp Breeding	02
04	Trout (Private Farms)	127
05	Trout Production (Private Farms)	252 Tons. Per Annum

Source: (Fisheries Department GB, 2020).

Protected Areas in Gilgit Baltistan

The landscape of Gilgit Baltistan also magnetizes the national and international tourist through its four national parks and five wildlife sanctuaries.

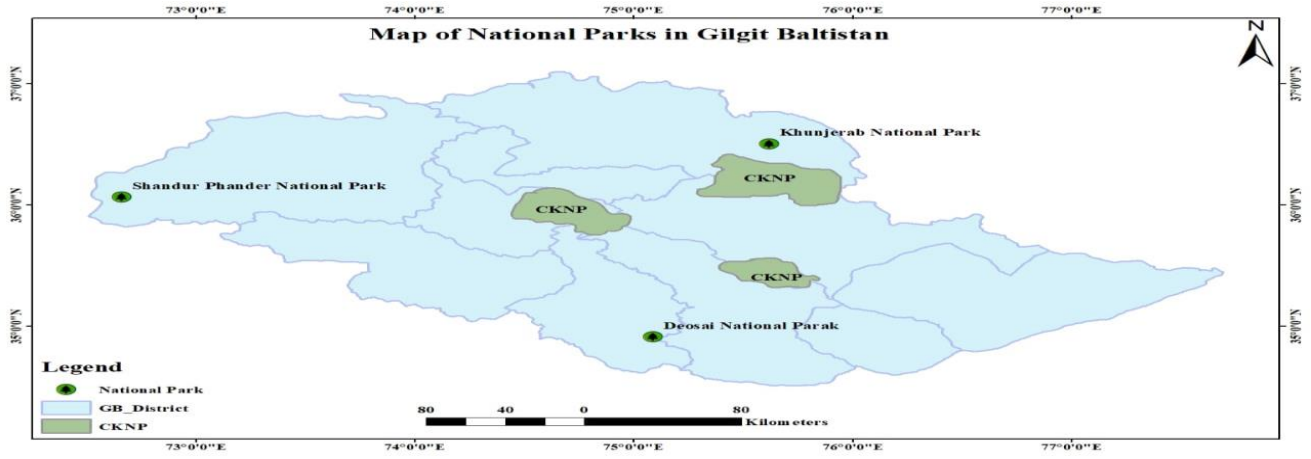

Figure 3. Locations of National Parks in GB.

Pakistan boasts several national parks, each contributing to the country's rich biodiversity and natural heritage. Among these, the Central Karakoram National Park, situated in the Baltistan region, spans an expansive area of 10,557.73 square kilometers. Moving towards Skardu in Baltistan, the Deosai National Park covers a vast expanse of 358,400 hectares, adding to the scenic beauty of the region. In the Gilgit

region, the Khunjerab National Park sprawls across 2,269 square kilometers, encompassing the picturesque surroundings of Hunza. Another notable park is the Shandur – Phander National Park, located in Ghizer, Gilgit, covering an area of 8,000 acres (Table 8). Each of these national parks holds unique ecological significance, preserving diverse flora and fauna, and contributing to the conservation efforts in Pakistan. They not only provide habitats for various species but also offer breathtaking landscapes, making them valuable assets for environmental conservation and ecotourism in the respective regions

Table 8. National Parks of Gilgit Baltistan.

S. No.	Name of National Park	Area in Km	Location
01	Central Karakoram National Park	10,557.73 km2	Baltistan region
02	Deosai National Park	358,400 ha	Skardu, Baltistan
03	Khunjerab National Park	2,269 km^2	Hunza, Gilgit
04	Shandur – Phander National Park	8,000 acres	Ghizer, Gilgit

Source: (WWF, 2021).

Gilgit-Baltistan has several significant dams, each contributing to the region's water management, electricity generation, and irrigation needs. Situated in Skardu, the Satpara Dam covers an area of 2.5 square kilometers. With a gross storage capacity of 0.093 million acre-feet (MAF), it plays a pivotal role in water storage and management. The dam generates 17.38 megawatts (MW) of electricity, providing a valuable energy source to the region. Additionally, it supports irrigation across 15,536 acres of land, contributing to agricultural sustainability (Table 9).

Spanning across Diamer, the Diamer-Basha Dam is a colossal project covering 32,139 acres. With a substantial gross storage capacity of 8 MAF, it stands as a major reservoir. The dam is a powerhouse in electricity generation, producing 4800 MW. This substantial energy output significantly contributes to the region's power supply. Moreover, the dam supports irrigation over 6.4 million acres of land, enhancing agricultural capabilities.

Table 9. Dams in Gilgit Baltistan region.

S. No.	Name of Dam	Division	Location	Total area of Dam	Gross storage capacity	Electricity Generation	Irrigation coverage
01	Sadpara Dam	Baltistan	Skardu	2.5 km2	0.093 MAF	17.38 MW	15,536 Acres
02	Diamer – Basha Dam	Diamer	Diamer	32,139 acres	8 MAF	4800 MW	6.4M acres
03	Bunji Dam (Proposed)	Gilgit	Bunji	-	-	-	-

Source: (GoGB, 2020).

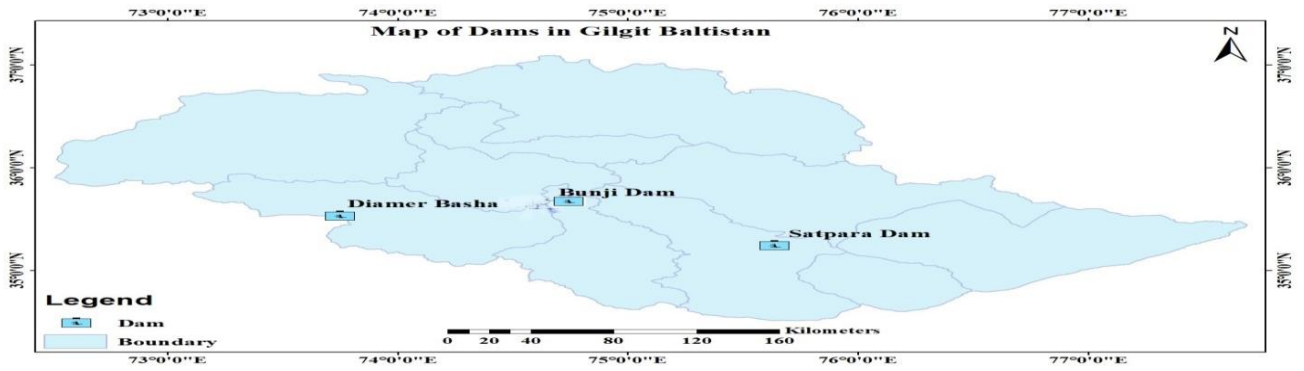

Figure 4. Locations of Dams in Gilgit Baltistan.

Demography of GB region

Ethnicity

There are seven main ethnic groups in Gilgit Baltistan. These ethnic groups are; "Baltis, Kashmiris, Sheen, Yashkun, Wakhis, Mughals and Gujars". Baltis are dominant in all the districts of Baltistan division including Skardu, Ganche, Shiger and Kharmang. Kashmiris; a very little ethnic group in both Skardu district and Gilgit districts are the migrants from Kashmir before the independence in Gilgit Baltistan region. Despite low population, the kashmiris have unique culture and dominant in politics in the region. Sheen and Yaskun are dominant in Gilgit and Diamer division while the Wakhis represent the small areas of Hunza and Ghizer districts (Ullah & Anwar, 2020).

Population

The population of Gilgit Baltistan region is low as compare to other regions of Pakistan. The density of Population in GB region indicates the sparsely populated areas because of unavailability of basic life facilities and landscape remoteness from main cities of Pakistan. The increase in population here is gradual (Mumtaz et al., 2019). Annual growth of population is 2.56 according to last census while it remained unchanged in both last two censuses. According to the census of 2017, population of region is 1.480 million which has increased as of 0.884 million under 1998 census (GoGB, 2020).

Table 10. Population Census data of GB.

S. No.	Census	Population in Million	Annual Growth (%)
01	1951	0.252	---
02	1961	0.308	1.98
03	1972	0.417	2.64
04	1981	0.575	3.8
05	1998	0.884	2.56
06	2017	1.480	2.56

Source: (GoGB, 2020).

Religion and Sects in Gilgit Baltistan

All of the people in Gilgit Baltistan are Muslims but have different sectarian beliefs. The dominancy of sects varies across Gilgit Baltistan region due to mix population of different sect. The main sects of Gilgit Baltistan region are Sunni, Shia, Ismaili and Nurbakhshis. In Baltistan region, the believers of Shia sects are higher in number along with the dominancy of Nurbakhshis in Ganche district of Baltistan region. In Diamer division, Sunni Islamic thoughts dominate and Ismailis are in majority at Hunza district of Gilgit division. There is mix population of Shia and Sunni in Gilgit district (Sokefeld, 2014).

The religious landscape in the Gilgit Baltistan (GB) region is characterized by a diversity of sects, each with its own distinctive presence in different areas. The Shia sect holds a significant presence across various regions, with sizable communities in Gilgit, Hunza-Nagar, Ghizer, Skardu, and Ganche. Hunza-Nagar stands out with a majority Shia population of 55%, while Gilgit and Skardu have substantial Shia communities at 45% and 86%, respectively. Ghizer and Ganche have smaller Shia populations, at 5% and 2%, respectively, while Astore follows with 30%. Sunni Islam is prevalent in Diamer, with a complete Sunni majority of 100%, indicating a distinct sectarian distribution in this region. Sunni communities are also notable in Astore, Skardu, and Ganche, making up significant percentages of the population at 70%, 23%, and 4%, respectively. Gilgit has a Sunni population of 35%. Ismaili Muslims, followers of the Aga Khan, are prominently present in various regions, particularly in Hunza-Nagar, Ghizer, and Diamer, constituting 45%, 85%, and 19.5%, respectively. The Nurbakhshi sect is a minority in the region, with a notable presence in Skardu (6%) and Ganche (75%), indicating a concentration in specific areas. This religious demographic distribution underscores the pluralistic and diverse religious fabric of Gilgit Baltistan, with each sect contributing to the rich cultural and social tapestry of the region.

Table 11. Sectarian distribution of population percentage in GB.

S. No.	Main Sects	Gilgit	Hunza-Nagar	Ghizer	Diamer	Astore	Skardu	Ganche
01	Shia	45%	55%	05%	-	30%	86%	02%
02	Sunni	35%	-	10%	100%	70%	04%	23%
03	Ismaili	19.5%	45%	85%	-	-	-	-
04	Nurbakhshi	0.5%	-	-	-	-	06%	75%

Source: (GoGB, 2020).

People of Gilgit Baltistan

The current inhabitants of GB region are considered descendents of Mongols, Tibetans and Aryans race who entered in region many centuries back. The people in Hunza, Yasin and Nagar have traits and physique of Central Asian states as their ancestors came from over there. The Baltis have resemblance with Tibetans and considered "Aryo – Tibetans". The Mongols migrated from Yarkand and Tibetans from Ladakh. Dards who were Aryans settled into Gilgit as Gilgit was known as Dardistan. So, the present Gilgitis are Dards (Aryan) (Khawar, 2009).

Languages in the Region

The language is not only considered as a dynamic way to communicate but it also have role in identity of the area. Gilgit Baltistan is considered a multilingual region among the regions of the world, as many local languages are spoken here (Clare, 2002). Diversity of languages for communication in GB region escalated the beauty of by strengthening the cultural and ethnic aspects and values. Along with the variety in languages of the unknown area of the world, multiplicity of the dialects is also mentionable. The dominancy and amalgamation of the surrounding languages and culture in Gilgit Baltistan is creating an alarming as well as risk to existence situation for the local languages. Shina, Balti, Brushashki, Khowar, Wakhi, Domaki and Gojri languages are spoken in Gilgit Baltistan region (Hussain, 2017).

Transportation link with Pakistan

Karakuram Highway (N - 35)

The one and only road which connects whole of the Gilgit Baltistan region, the northern most part of Pakistan with the rest of the country is Karakuram Highway which is also known as N – 35. This highway is also known as China- Pakistan friendship Highway. This highway is famous all around the world due to its high elevation and peculiar physical terrain. It covers through the mighty Karakuram range to reach Khunjerab Pass in Hunza valley of Gilgit Baltistan and to touch the boundary of China where it meets with the National Highway of China – 314. Total coverage of this Highway by length is approximately 1300 km. spanning 806 km of length in Pakistan side and 413 km of length in China. Starting from Hunza district of Gilgit Baltistan region and passing through Gilgit district it touches Diamer districts of GB before entering in KPK province of Pakistan. Hassanabdal which is a city in district Attock of Punjab province is the ending point of KKH (Figure 5; NHA, 2011).

All the people of ten districts of Gilgit Baltistan region travel by KKH to reach different cities and localities of Pakistan, as no second option left for by road travel to the people of this region. The game changer project of Sino – Pakistan known as CPEC "China Pakistan Economic Corridor" starts with the same highway in Gilgit Baltistan region as gateway for the project. The infrastructure development and widening on KKH is rapidly going on due to CPEC (Shafique & Iftikhar, 2017).

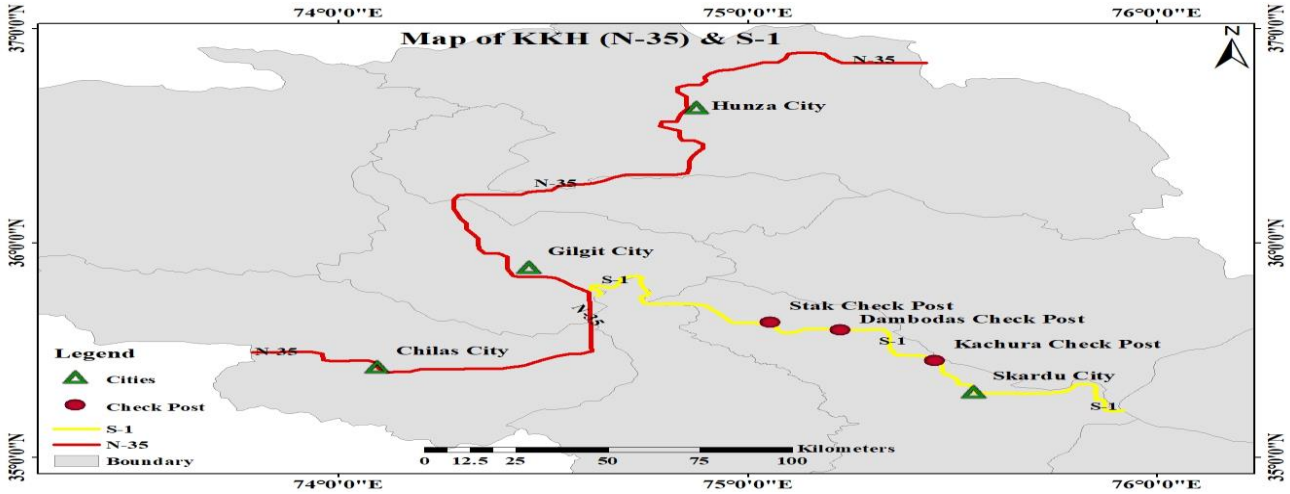

Figure 5. Route map: KKH and S-1.

Strategic Route (S - 1)

The strategic route (S -1), famously known as "Gilgit – Skardu Road" is the only road in Gilgit Baltistan region which connects Baltistan region including three districts and Skardu city with Gilgit district near Juglot (KKH). The length of S – 1 is 167 km which is single option for the people of Baltistan region to access KKH (N - 35) to reach other regions and provinces of Pakistan. This road was constructed in 1982 by military engineers with collaboration of China along river Indus cutting the mountains of mighty Karakuram. The name Strategic route is given due to the strategic importance of the region (ISSI, 1981). Frontier Works Organization (FWO), an organization of military engineering under Pakistan Army established in 1966 is currently working on widening of S – 1 at the cost of Rs. 40 billion.

Air Ports in Gilgit Baltistan

Beside the transportation route through KKH, there are two air ports in Gilgit Baltistan region which facilitate to access from Gilgit to Islamabad and from Skardu to Islamabad international airport through Pakistan International Airline (PIA) domestic flights. For international flights, residents of the said region firstly travel to Islamabad and then to their final destinations. The PIA flights for both Gilgit and Skardu city operates on daily basis depending on the weather condition.

Gateway for China-Pakistan Economic Corridor (CPEC)

Gilgit Baltistan region is the main gateway for the mega project between Sino- Pak which is known as China Pakistan Economic Corridor (CPEC) because the Hunza district of Gilgit Baltistan region connects Pakistan with China through Khunjerab Pass at the very edge of the Karakuram Highway (Yasin & Qasim, 2020). CPEC is part of the Chinese One Belt One Road (OBOR) mission and China aims to reach and access the Gwadar port in Baluchistan province for the sake of international trade and business is dependent on the Gilgit Baltistan region to transport the materials, goods as well as commodities using the land route (Abid & Ashfaq, 2016).

China-Pakistan Economic Corridor (CPEC) which is painstakingly a game changer for Pakistan is a bilateral agreement between Pakistan and the People's Republic of China. It is a regional connectivity framework that will benefit the central Asian countries, Afghanistan and Iran too regarding trade and commerce in the region. It is considered a ray of hope for a better, peaceful, and economically developed future for Pakistan (Butt & Butt, 2015).

CONCLUSIONS

This research has provided a comprehensive overview of Gilgit Baltistan, employing a mixed-methods approach to explore its diverse landscape and socio-economic dynamics. Through a combination of quantitative analysis, qualitative insights, and literature review, the study has shed light on various aspects

of the region, including its geography, environment, socio-economic factors, demographics, languages, and transportation infrastructure. By synthesizing data from government reports, academic studies, field observations, and GIS mapping, the research has highlighted key findings regarding administration, agriculture, protected areas, population dynamics, cultural diversity, and transportation links within the region. The analysis of agricultural practices, production statistics, and language diversity underscores the significance of these factors in shaping the socio-economic fabric of Gilgit Baltistan. Moreover, the discussion on transportation routes, including the Karakoram Highway and strategic routes highlights the region's connectivity and strategic importance as a gateway for the China-Pakistan Economic Corridor (CPEC). Overall, this study contributes valuable insights into the complexities and opportunities within Gilgit Baltistan, informing future research and development initiatives aimed at enhancing the region's socio-economic well-being and sustainability.

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