



Identifying the socio-economic factors of deforestation and degradation: a case study in Gilgit Baltistan, Pakistan

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Accepted: 29 October 2020 / Published online: 11 November 2020
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Abstract Deforestation remains a major ecological problem in most developing countries especially, Pakistan has a very high deforestation rate. Various socioeconomic factors determine deforestation and degradation. Therefore, this study was aimed to evaluate the causes of deforestation in Basho forest, Gilgit Baltistan, Pakistan. This study collected data on factors of deforestations and degradation resulting in environmental problems such as air pollution, soil erosion, temperature rise and to recommend practices for sustainable forests. A questionnaire survey of 220 respondents was conducted including; educated locals of different age group and forest officials (forest engineers, civil servants and workers) in Forestry service division. Descriptive statistics and a logistic regression model were applied on the collected data and Likert scale method to determine the mean score of socio-economic factors encouraging deforestation. More than 70% respondents were below 30 years old, while 14.6% and 12.6% respondents from 31–40 to 41–50 age groups, respectively. 65.9% and 34.1% of

the respondents were male and female respectively. Only 26.8% of the respondents were university graduates, while below 50% (48.6%) of respondents were primary school graduates. According to the analysis, the respondents were completely dependent on the forest for their livelihood needs. The socioeconomic factors such as rapid population growth, livelihood activities, lack of education, Poor forest management, Fuel wood consumption and Period of residence were found to be the prominent factors for deforestation. Results of the logit regression established reward socioeconomic factors were statistically significant variable at ($p < 0.05$). Based on study results, the deforestation activities cannot be entirely eradicated but it can be reduced to the level of sustainable forest through convenient forest conservation policies and application of efficient and energy conservation technologies. Adequate economic incentives and applied technologies for locals could be a productive approach to reduce deforestation rate.

Keywords Basho factors · Deforestation and degradation · Socio-economic factors · Logistic regression and likert scale method · Sustainable forest practices

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Introduction

Forests regulate hydrologic and carbon cycles, control earth surface temperature, protect soil nutrients and decrease threats and effects of flood and drought. The forests play an imperative role in climate balance and help in providing the world's ecosystem services such as air pollution control, soil erosion control, and water body's regulation. Globally, the extent of the world's forest continues to decline; Globally, extent of the world's forest continues to decline. The total net loss in the 2000–2005 period was around 7.3 million hectares of land area per year (or 0.18% of forest cover) compared with a net loss of 8.9 million hectares (or 0.22% of forest cover) per year in the 1990–2000 period (Fao and Isric 2010). The share of the degraded area was heights on agricultural land (38%) followed by pastureland (21%) and forestland (18%) under the influencing factors causing deforestation. In 2012, 28% of the world's vegetated land is affected by drought. Over the past 25 years (1990–2015) Forest land has been converted from 4.1 billion ha to just under 4 billion ha, down 3.1%. Drought and deforestation risk of more than 1.2 billion people's lives across 110 countries. In degraded soils, crops yield falls while production costs increase. As a result, people pay higher prices for food and forced migration (Fao and Isric 2010; McMorro and Talip 2001).

Wood fuel harvesting for domestic purposes is also linked with deforestation but due to extreme deforestation near the localities, the residents burn dung or crop residues as a household fuel. This tendency leads to serious consequences for local agricultural production because the farmers also rely on this substituted fuel for soil fertility improvement. Apart from deforestation and forest degradation, there are threats to the jobs of people. Forests occupy 31% of the land area on earth and provide employment for people; about 13.2 million people worldwide are working in the forest sector and another 41 million are working in the industry. Forest also a significant source of wood, food, and medicine for the world's poorest 350 million people (Eade et al. 2010; Victor et al. 2000). Subsequently, sustainable forestry management needs to include safe, solid jobs with adequate wages and working situations (Krausmann and Mushtaq 2008).

Deforestation typically involves not only non-forest conversion but also deforestation that decreases forest quality-the density and structure of the trees, the

ecological services are given, the biomass of plants and animals, the variety of species and genetic diversity (Bauman et al. 2006) The social and economic impact of deforestation cannot be overemphasized. Human development of forest lands constitutes one of the key factors in global environmental change and one of the main causes of loss of biodiversity (Mbwambo 2000).

Community-based approaches to forest management have emerged in many parts of the world, after realizing that the top-down approach effectively impedes forest conservation (Wang et al. 2001; Nilsson et al. 2005; Agrawal et al. 2005). In Pakistan, local communities also participated in participatory forest management (PFM) arrangements for better forest resource conservation (Shahbaz et al. 2015). A global trend is the cycle of systemic forest management changes with a focus on the participatory approach (Fisher 1995; Kaimowitz et al. 2002; Pari Baumann and Sinha 2001). The Community forestry service has the ability to make a positive contribution to rural livelihood development and to poverty alleviation (Ahmad et al. 2012; Brown et al. 2002) and Pakistan is following this paradigm. Locally and internationally, inadequate attention has been paid to the serious threats to the health of local citizens, who rely on the forest for their livelihoods. Forest law enforcement does not take into account the rights and interests of forest-dependent communities and state agencies can target poor people vigorously and with less respect for the proper process than the rich and influential target (Martin Baumann 2000). Community forestry strategies have the ability to make a significant contribution to improving rural livelihoods and to alleviating poverty (Pari Baumann and Sinha 2001). On the one hand, the transfer of forest management authority to local communities offers a good chance to improve the living standards of the poor. Nonetheless, it can contribute to an increase in resource extraction to lift local people's incomes. However, one of the keys aims of community forestry policy in most countries is to contribute to local communities' financial and social properties. (Dev et al. 2003; Belcher et al. 2005).

Forest cover is the solitary 5% of the total land area in Pakistan (Ali et al. 2005) And is said to deteriorate rapidly, particularly within mountainous regions (World Conservation Union) (Phillips and Union 2002). The common view of Pakistan's deforestation

is that provincial populations over-exploit the forests for local consumptive waste (Sheikh and Aleem 1975) (Schweinfurth 1983) Pakistan government (GOP), 1991; Organization for Food and Agriculture (Allen et al.). This, it is argued, leads to increased flooding and erosion, particularly during the rainy season, disruption of the hydrological cycle, devastating flooding in the plains, and reduced water reservoir existence due to increased sedimentation. It was subsequently criticized on the basis of absolutely no empirical evidence that the supposed courtship between deforestation and population growth is focused primarily on inadequate and doubtful knowledge (Ali et al. 2005; Blaikie and Brookfield 1987; Ives 2004).

Pakistan already has poor forest cover. In terms of forest area, among 140 countries in the world, Pakistan ranks 113 (Pakistan 2007) 0.03 ha is the per capita forest area in Pakistan, which decreases simultaneously with population growth (Ozakin and Gray 2009) In 1992, A master plan (1992) for the forestry sector was prepared to expand the forest area to 10% through 20,183 however there is no significant increase. Forestry sector master Plan the GOP highlight (1992) estimate of annual rate (4%) national Biodiversity action Plan of decline in growing stock in (1999). In Pakistan, for forest growing stock assessment a national inventory is not available. According to forest working plans, approximately 50% of forest area is covered by coniferous forest, but most of these working plans are based on previous inventories (Nazir and Olabisi 2015) The largest consumer of the household sector is (81.8%) of fuelwood, observed through the industrial fuelwood users (14.9) and business users (3.3%) (Zaman et al. 2012). Production forests are 41.5% and Forest security is 58.5% of the total area of the forest (Sarwar Shah et al. 2007) total decrease in forest area and rangeland area is 1.68% in Pakistan since 1992. 13,000 hectares of forest area per year at a 36% deforestation rate (Edwards et al. 2004) Conifer forests are decreased by 1.27% in Pakistan according to annual forest report in 1992. The decline was – 2.3% over a 10-year period (1992–2001), and a decline of 0.28% for the next ten years (2001–2010). (Ahmad et al. 2012). The annual land loss is 0.043 million hectares⁴ and the rate of deforestation is estimated from 1.66 to 2.1%. Data for fire-induced forests in Pakistan are valid. The annual rate of deforestation in Pakistan was estimated by the World

Bank (2009) at 2.1%. (Fao and Isric 2010) A 2000 study found that a site of 49,986 hectares, i.e. 1.27% of 3950 million hectares assessed, is affected annually by forest area fires (Fao and Isric 2010) performed an examination by the usage of time series linear trend evaluation for unique wooded area sorts on the degree of the united states together with Northern regions and for the years 1992, 1997 and 2001 and projection became made for 2005, 2010, 2015 and 2020. The findings have foreseen a decrease in Pakistan's total forest area at a rate of 28,000 ha in step with the year 2020. In other words, Pakistan's total forest area in 2020 was 2.78 million ha, compared to 3.29 million ha in 2001. The deforestation rate in Pakistan's hilly forest region is lower compared to the deforestation average (Muhammad Qasim et al. 2013).

Despite the fact that Basha forest provides extensive goods and services, the socio-economic factors driving human intrusion in these forests are scarce details. In Gilgit Baltistan the impacts of deforestation on the diversity of tree and shrub species in the Basha forest have been studied (Virk 1999). These studies show that there is a gap in awareness of the anthropogenic factors that cause deforestation in the forest of Basha. This paper analyzes the factors affecting forest deforestation in Gilgit Baltistan. The knowledge provided in this paper is important particularly for scientists and decision-makers dealing with sustainable management of natural and forest reserves. Therefore, the purpose of this study is to test whether socioeconomic factors significantly influence deforestation or not? Keeping in view the socio-climatic impacts of deforestation and degradation of the Basha forest, this study was planned to identify all social and economic factors that cause deforestation. This study was conducted in Basha Forest, Gilgit Baltistan, Pakistan.

Literature review

Natural resources such as soil and water in the world and Pakistan misuse, high population growth, demand for natural resources and so versatile. Are under pressure for reasons. This situation causes irreversible deterioration in natural resources (Jamil 2019) Rapid growth of world population, industrial development, and unconscious land use, etc. (Satterthwaite et al. 2010) As a result, the agricultural land is shrinking and

soil fertility is decreasing due to pollution and erosion (Lundekvam et al. 2003) In addition, it is seen that the use of productive and flat areas as a residential area and as an industrial area, production without regard to soil, water, climate factors, excessive and improper spraying, fertilization processes reduce the agricultural areas and decrease their productivity (Ongley 1996; Cintina and Pukite 2018) While rough and unproductive areas should be used as residential and industrial areas, efficient and flat agricultural areas are opened to settlement (Dwyer 2014). This will cause major problems in the future. In addition, since no measures are taken against erosion in sloping and treeless areas, these areas will become deserted with soil losses. Pakistan annually approximately 1.4 billion tons of soil lost land reserves are located in over 15 countries (Ashraf et al. 2017). According to the American National Aeronautics and Space Administration, our country will turn into a desert or steppe within 50–60 years. As a result of erosion, not only fertile soil are lost. These soils emerging with erosion fill the dams and shorten the lifespan of the dams. Farming becomes impossible in places where soil reserves are reduced. In addition, where there is no food production, human life will be in danger. Therefore, everyone plays an important role in preventing erosion (Eigenbrode et al. 2014; Delgado et al. 2011).

Pakistan, salinity, and natural factors depend on the arid conditions, it's miles widely encountered problems with erosion and desertification. Incorrect practices in soil and water control purpose soil degradation and loss. Our united states of America are many of the danger organization nations in phrases of the results of global warming and faces the weakening of water assets, forest area fires, drought, wasteland, and desertification that are the consequences of world warming. (Scherr 1999; Hillel 1992; Anjum et al. 2010).

The decomposition of rocks and vegetation underneath the have an effect on physical, chemical, and organic elements in natural situations, soils are transported from their place with various erosion results. In our united states, the yield from the unit place decreases daily. Efficient pinnacle soil may be easily transported, especially with the impact of wind and rain, with agricultural operations (sowing, launch, and many others.) completed in sloping agricultural

areas (Zuazo and Pleguezuelo 2009; Baudin et al. 1990; Nawaz et al. 2013).

Globally, the demand for N fertilizer is being multiplied by the price of one. 7% yearly, at the same time as the full N call for in 2015 changed into envisioned at 105.3 million heaps. The annual increase in N fertilizer demand is 7.6 million tonnes and Asia stocks 68% of it. The annual fertilizer demand in Pakistan is set eight. 2 million heaps wherein the percentage of urea are about 5.7 million tons. about three. 34 million lots of urea is misplaced each year due to volatilization, deforestation, and leaching causing financial loss of 45 billion US \$ and critical environmental problems (Mubashir Qasim and Kotani 2014) International N fertilization is about 151 Tg year⁻¹ (Galloway et al. 2003; Akram et al. 2018). Approximately 18% of the forest and wood sector in the world, 21% of the grazing sector, and 38% of the agricultural sector have been subject to land degradation under the pressure of the factors causing desertification. Today, 28% of the world's land assets are affected by drought. The spreading area of desertification has reached 2 billion hectares. 1.2 billion people living in 110 countries around the world are affected by desertification. Yields decrease and production costs increase in degraded soils, people have to pay higher prices for food. As a result, people have to migrate from their land to other places (Akram et al. 2018; S Qasim et al. 2011).

The Pakistan government has published the countrywide action plan these days as a means of combating desertification. This strategy aims at implementing a land coverage program to prevail over destruction across the three policy pillars of herbal resource protection, environmental development, and advanced resource performance. Priority programs for improving land degradation include deforestation projects, enhanced dryland crop production, advanced soil/livestock feeding and management, soil and water conservation, water harvesting and increased water quality, saline/sodium soil regeneration and recycling, advanced drainage and on-farm monitoring, advanced horticultural crop production(Azeem Khan et al. 2013).

To prevent deforestation in the world and Pakistan legal arrangements should be made, various institutional configurations should go to the public should be informed (Pellegrini 2011) In addition to these, deforestation works should be given importance,

rehabilitation works should be done, protection of forest areas should be ensured, degraded forest areas (Mainka and McNeely 2011; Shinwari 2010) should be improved, appropriate processing methods should be used in agricultural areas, organic agriculture supports should be increased, renewable energy use should be expanded (Qureshi et al. 2010; M Ashraf Chaudhry et al. 2009; Siddiqi and Wescoat 2013).

As a result of the measures taken, more yields will be obtained from agricultural lands, poverty and unemployment problems in rural areas will be eliminated and as a result, migration to big cities will decrease. Countries will increase their development levels by using the money they spend to improve the degraded land for their own development and welfare (Imran Sharif Chaudhry et al. 2006; Anwar et al. 2004).

Study area

Gilgit-Baltistan is an administrative area [divided into seven districts (Gilgit, Diamer, Hunza-Nagar, Ghizer, Ghanche, Astor, and Skardu)] in the extreme northern part of Pakistan (Fig. 1). This northern area has 72,971 km² of cover. From its geographical location, the importance of the region is evident as it is the juncture between Central Asia, China, and South Asia. But this important region remained cut off from the rest of the country (Pakistan) until the establishment of the Karakoram Highway (KKH) in 1978. The literacy ratio grew steadily from 14.7% in 1981 to 37.8% in 1998 and grew further to 52.0% in 2012. Nonetheless, women's education reports a twelve-time rise from 1981 (3%) to 2012 (36%). Nevertheless, the literacy level for women in the and Gilgit district is still very small. In the same way, at Gilgit-Baltistan.

Materials and methods

Data collection

The instrument of data collection was a semi-structured questionnaire. The questionnaire was administered with an interview guide to the respondents. A non-probability quota sampling procedure was used as an ideal sampling technique for a survey of district Gilgit Baltistan. A predetermined sampling frame of

220 respondents was selected across the three data collected, Gilgit, sharote, Sakarkoi, Jalalabad, Dany-ore, Juglot, Minawer, Oshi khan, Normal, Baseer, Khomar, Bagrot, Jutal, Nizamabad (14) fourteen villages. The 220 households available were all used for the study area. Socio-demographic information was gathered using structured and semi-structured questionnaires. Locally trained research officials with the local language to increase the trust of the respondents and data quality were involved to conduct interviews of the respondents in the presence of local leaders. The quantitative data analysis, the social sciences statistical package (SPSS version25.0) was also used to organize and code the data. The logit regression model was used. We evaluated the quantitative data using both descriptive and inferential statistical methods.

Descriptive statistics were used, such as frequency and percentage counts to describe and highlight the socioeconomic characteristics of fringe groups in the forest community. Analysis of inferential data was carried out using logistic regression for the analysis of binary dependent variables. This study's binary dependent variable was 'deforestation in the forest' which was given the value '0' if deforestation happens in the forest, and '0' if not. The independent variables Rapid population growth, Livelihood activities, Lack of education, poor forest management, Fuelwood usage, Woodfire, Distance. These are the dependent variable (socio-economic factors) influencing deforestation in Pakistan. The logistic regression model presented in the equation.

$$SE = \beta_0 + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \beta_4x_4 + \beta_5x_5 + \beta_6x_6 + \beta_7x_7 \quad (1)$$

where SE = socio-economic factor, β_1x_1 = Rapid population growth, β_2x_2 = Livelihood activities, β_3x_3 = Lack of education, β_4x_4 = Poor forest management, β_5x_5 = Fuel wood usage, β_6x_6 = Wood fire, β_7x_7 = Period of residence.

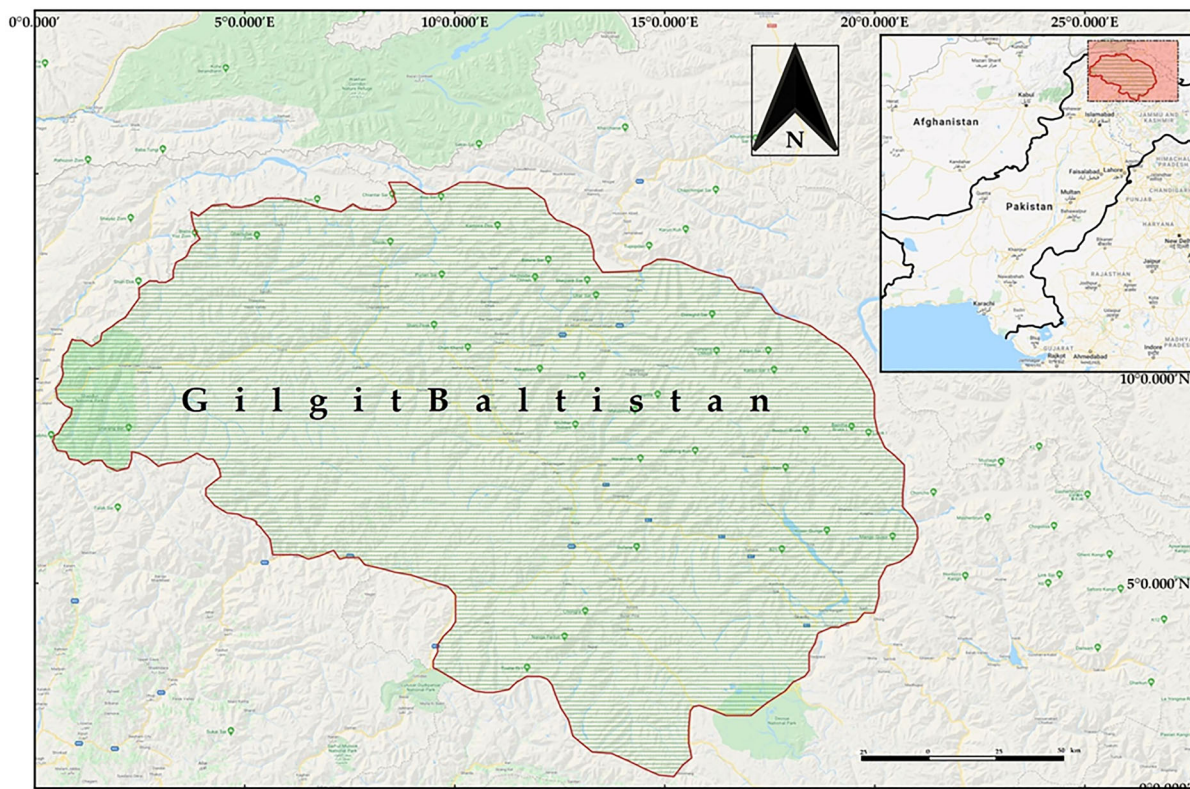


Fig. 1 Map of the study area (Gilgit Baltistan, Pakistan)

Results and discussion

Causes and results of deforestation

The number of factors that causes deforestation is very high in the world and in our country, and these factors increase every day with the degradation of the natural environment. When countries with a high level of scientific studies do not address their land use and environmental development policies, new demands will intensify, and new issues will emerge. Factors causing deforestation are given in Table 1

A few statistic characteristics of the members. Statistic characteristics of the members were given in Table 2.

Accordingly, 65.0% of the respondents live in rural, 35.0% live in urban. 21.8% of respondents were in the 0–20 age group, 51.0% were in the 21–30 age group, 14.6% in the 31–40 age group, 12.6% in the 41–50 age group. While 34.1% of the respondents were women, 65.9% were men. When the educational status of the respondents was examined, 48.6% of the primary

school graduates ranked fourth, 26.8% of the university graduates ranked first, 10.9% of the high school graduates college ranked third, 8.6% of the secondary school graduates, 5.1 no formal education. 65.0% of the respondents are single and 35.0% are married. When the occupational groups of the respondents are examined, the student group is the first with 31.4 majority students. 9.5%, the civil servant group is the second with 11.4%, the working group is the third with 24.1%, the non-working group is the fourth with 10.9%, housewives and last place with 12.7% others.

Rapid population growth

Pakistan's (RPG) positive coefficient of regression (b) of 2.185 with an odds ratio (Exp b) of 3.112 that was statistically significant at a probability level of 5% ($p = 0.005$) (Table 1). In other words, an annual population increase of 3.112% in Pakistan (Bank 2019). The ratio of humans to forest size shows the degree of human pressure on the forests as the rural population grows rapidly, direct forest reliance will

Table 1 Causes of deforestation promoting deforestation in district Gilgit GB Pakistan

Variable	B	SE	Wald	df	Sig	Exp(B)
Rapid population growth	2.185	0.778	7.878	1	0.005	3.112
Livelihood activities	2.158	0.704	9.399	1	0.002	8.651
Lack of education	0.869	0.443	3.846	1	0.050	2.384
Poor forest management	0.845	0.426	3.936	1	0.047	2.328
Fuel wood usage	1.825	0.534	11.678	1	0.001	6.203
Forest fire	0.918	0.446	4.230	1	0.040	2.503
Distance	0.904	0.442	4.182	1	0.041	2.469
Constant	1.547	0.446	12.008	1	0.001	0.213

Number of respondents = 220, Model Chi-square = 92.513 ($p = 0.000$), 2 LL = 154.915^a; Overall percentage = 85.9%, Exp (b) = an odds ratio (probability of success/probability of failure), SE = standard estimate error = statistically non-significant at 0.05 level of significance, Sig = significance, b = regression coefficients which stand for the odds ratio of probability of success to the probability of failure and Wald statistics = $b/(SE)^2$, df = degree of freedom.

*Statistically significant at 0.05 level of significance, ns.

Table 2 Statistic characteristics of the members

Demographic characteristics	Value	Number	Percentage
Where you live	Rural	143	65.0
	Urban	77	35.0
	Total	100	100.0
Age	0–20	48	21.8
	21–30	112	51.0
	31–40	32	14.6
	41–50	28	12.6
	Total	220	100.0
Gender	Woman	75	34.1
	Man	145	65.9
Education	Primary school	107	48.6
	Secondary School	19	8.6
	collages	24	10.9
	University	59	26.8
	No formal education	11	5.1
Profession group	Single	143	65.0
	married	77	35.0
	Officer	21	9.5
	Worker	25	11.4
	Housewife	24	10.9
	Student	69	31.4
	Not working	53	24.1
	Other	28	12.7

decrease and forests could be preserved for ecological functions such as soil conservation, carbon sequestration and recreational uses. The population of the Asia–

Pacific region is growing and will continue to grow. In the last 25 years the population has risen by 1 718 million, from 2.446 million in 1980 to 3.604 million in

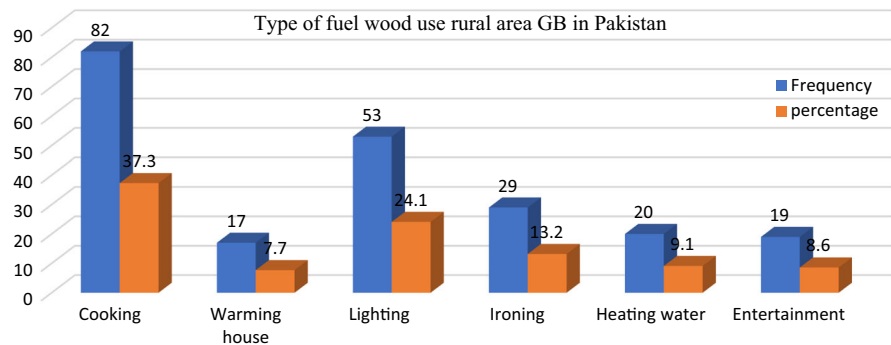
2005. 560 million people are projected to increase the population, to 4.164 million by 2020.

Livelihood activities

Livelihood activities carried out in the study area by households have a positive regression coefficient (b) of 2.158 with an odds ratio (Exp b) of 8.651, which implies a unit rise in livelihood operation raises the probability of forest deforestation by a factor of 2.651 and vice versa (Table 1). Like many places in rural areas. Cooking 37.3% of the livelihood activities performed in the study region Lighting (24.1%), Ironing (13.2%), Heating water (9.1%), Entertainment (8.6%) Warming House (7.7%), were the livelihood activities that depend entirely on Pakistan's forest resources. Results indicate that subsistence practices in the Gilgit Baltistan Forests are impairing. Table 1 indicates that the effects of forest livelihood activity were statistically important at the 5% likelihood point ($p = 0.002$).

Shows that most rely on fuel-wood for cooking, water heating, home warming, lighting, and ironing. The significant variables which explain the use of firewood are the employment status, income, and use of liquefied petroleum gas (LPG) by the respondent. All of these factors affect firewood use negatively. Therefore, as income rises, the probability of using firewood in rural households decreases; if a household uses LPG, the use of firewood is likely to decrease and if the respondent is working, the use of firewood in the household often decreases. As noted earlier, household heads working are less likely to use firewood as they are likely to make more money than their counterparts who are unemployed (Njong and Johannes 2011) (Fig. 2).

Fig. 2 Type of fuel wood use rural area GB in Pakistan



Lack of education

Education has a positive 0.869 coefficient of regression (b), with an odds ratio (Exp b) of 2.384. This means that a statistically significant rise in education ($p = 0.050$) reduces human disruptions in deforestation by a factor of 2.384. In other words, farmers who can read and write possibly won't disturb the forest than those who haven't attended school. Education is an important element in the creation of strategies for living because it determines what a household's livelihood activities are involved in. 48.6% of respondents earned at least primary education in the study field. Many householders are former ones and depend solely on farmland (Table 2). Therefore, education is an enabler factor that influences household participation in the study area in various life-sustainability activities. Specific claims have been forward by (Shalli 2003) in the GB area of Pakistan. He stressed that the degree of education has a significant effect on sustainable natural resource management. Nevertheless, there was no statistically significant impact of education on odds of human disturbance (Table 1), but This variable is very important in terms of raising living standards (Mitinje et al. 2007).

Poor forest management

Weak forest management has a positive coefficient of regression (b) of 0.845, with an odds ratio (Exp b) of 2.328 (Table 1). This suggests that the perception of forest disturbance increases by a factor of 2.328 for each Change of unit inside this variable. In other words, forest management considered to be effective is statistically important ($p = 0.047$); the perception of forest disturbances by neighboring communities is showing a decreasing trend. Figure showed that the

key informants expressed concern about grazing, very rapid 39.5% and rapid 37.7% insufficient personnel and forest management skills, low priority for the district authorities’ forestry activities, and low knowledge of the importance of the forest for the local communities (Giliba et al. 2011) (Fig. 3).

Fuel wood uses

Furthermore, the results in Table 1 indicated that the use of fuelwood is the main concept of the use of deforestation fuelwood has a positive regression coefficient (b) of 1.825 with an odds ratio (Exp b) of 6.203. That was statistically important at a 5% chance ($p = 0.001$). This implies that an increase in forest boundary awareness indicates that human forest activities have decreased by a factor of 6.203. Most rural households used firewood rather than coal and these sources of energy were used for cooking, illumination, heating and household heating activities (Benjaminsen 1993). Growing of the energy sources has provided users with certain challenges. Cooking has emerged as the key practice reported by the interviewees in rural GB. The main use of firewood and charcoal was mainly used as a source of energy for cooking since it can either be easily acquired as a free resource or, once acquired, user fees and a high cooking rate are associated (Wiafe and Kwakwa 2013). Figure 4: In all 220 inhabitants were interviewed and data collection with questioner 65.9% being males and 34.1% females. 38.6 respondents told they always used wood for household and 25.5 sometimes and 20.5 not at all and 15.5 said occasionally their people need economic incentives for reducing deforestation. In this study, we describe socio-

economic factors promoting deforestation (Ali and Benjaminsen 2004).

Forest fire

Furthermore, the results in Table 1 indicated that the use of forest fire is the main concept of the use of deforestation forest fire has a positive regression coefficient (b) of 0.918 with an odds ratio (Exp b) of 2.503. That was statistically important at a 5% chance ($p = 0.040$). This implies that an increase in forest boundary awareness indicates that human forest activities have decreased by a factor of 2.503. Several forest fire incidents in Pakistan from July 2018 to June 2019 have reduced over 1.2 million trees, local reports said Monday. Through damaging the trees, the fire has caused a loss to the provincial government of 27.2 million rupees (about 170,000 U.S. dollars). An investigation was launched to ascertain the cause of the fire, as the loss hurt the efforts of the central government to increase the forest cover of the country.

Distance

Distance from the homestead to the forest has a negative coefficient of regression (b) of 0.904 with an odds ratio of 2.469 (Exp b). This means that an increase in distance between the household and the forest will limit the probability of disturbances by a factor of 2.469 and vice versa (Table 1). The factor is statistically important at a 5% ($p = 0.041$) likelihood point. The distance between the homestead and the forest reserve of Gilgit Baltistan ranged from 0.3 to 3 km, with an average of 1.7 km (Njana 2008). It was recorded that a rise in the distance between the homestead and the Forest limits the contribution of the

Fig. 3 How do you rate the extent of deforestation that look place in your area GB in Pakistan

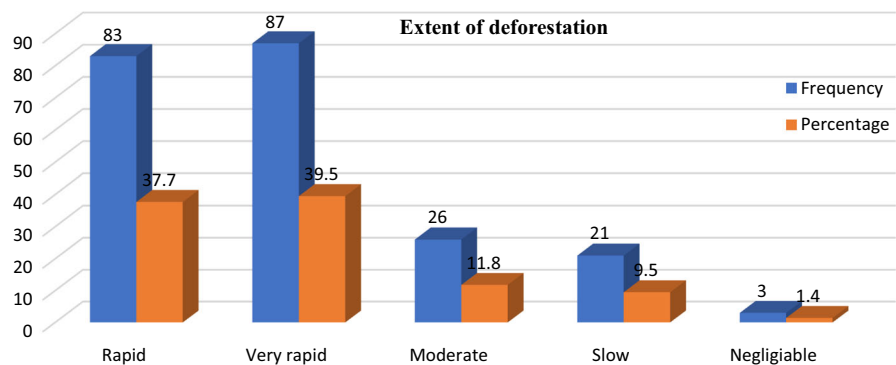
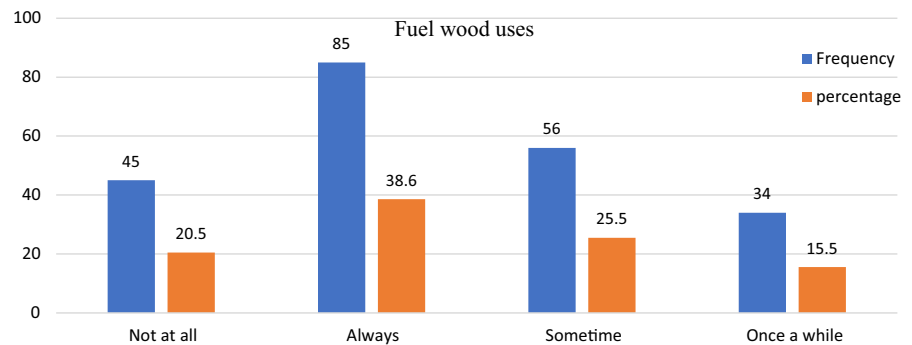


Fig. 4 Frequency of fuel wood uses rural GB in Pakistan



woodland to local communities' livelihoods. Likewise (Grundy et al. 1993). Recorded the spatial effects of the use of forest resources in Pakistan and showed that increasing the distance from the homestead to the forest increased the cost of collecting resources and vice versa (McGregor 1995). A Pakistan's study also argued that increasing scarcity of forest resources led to an increase in distance from forest food resources.

Evaluating the opinions of the participants as a percentage

The evaluation of the opinions of the participants as a percentage is given in Table 3. 90% of the respondents do not want to be destroyed or destroyed even if they do not use forest resources. According to 8.6% of the participants, the destruction or destruction of forest resources is not important. For 97.7% of respondents, it is very important that forests remain for future generations.

97.7% of respondents find it important that forests produce goods and services that can benefit in the future, even if they do not use them today. While 96.8% of the respondents wanted to continue the existence of forests in different parts of the world even if they could never see them, 3.2% stated that they did not agree with this view. While 95% of the participants have information about the function of forests related to deforestation and erosion, 5% do not have any information. According to 92.7% of the respondents, it is important to spend money for protection, improvement and establishment of new forests in order to increase the fight against erosion of forests, whereas this opinion is not important for 7.3%. While 87.7% of the participants could already bear the monetary costs to continue the erosion control service of forests for the future generations to live healthy, 12.3% of them

stated that they did not agree or have no idea. 98.2% of the respondents stated that they wanted to protect against various damages such as loss of soil and water, prevention of floods and floods, especially human health, by increasing the amount of combating erosion by increasing and improving forest areas through various forestry activities. While 68.2% of the participants stated that they took into consideration the other services and benefits provided by forests while making the payment amount, 31.8% stated that I do not consider or have no idea. 75% of the participants stated that the results of this research would provide a new perspective in the determination of forestry policies, while 25% stated that they disagreed or did not have any ideas. The results of this research will increase the public awareness about forests and fight against erosion and 75.9% of the participants agree that 24.1% do not agree.

Discussion

The study examined the socio-economic characteristics of the people of the study area. The study observed that majority of the local people was predominantly farmers and were involved in agricultural activities. However, most of them were involved in activities that depended on the extraction and utilization of forest products (timber and non-timber products) while some others were involved in off-farm economic activities. Accordingly, 65.0% of the respondents live in rural, 35.0% live in urban. 21.8% of respondents were in the 0–20 age group, 51.0% were in the 21–30 age group, 14.6% in the 31–40 age group, 12.6% in the 41–50 age group. While 34.1% of the respondents were women, 65.9% were men. When the educational status of the respondents was examined, 48.6% of the primary

Table 3 Percentage evaluation of the views of the participants

Suggestions	Totally Disagree (%)	I do not agree (%)	No idea (%)	I agree (%)	I totally agree (%)
If I don't make utilize of a forest resource, it isn't imperative for me to have it destroyed or devastated	100%	0%	0%	0%	0%
It is very important for me to keep the forests for future generations (for children, grandchildren, etc).	0%	0%	0%	0%	100%
it is important for me that forests can produce items and offerings advantage me inside the destiny.	0%	0%	0%	0%	100%
it is essential for me that forests in distinct components of the world, including tropical forests, will survive on today.	0%	0%	0%	0%	100%
I have knowledge about the function of forests related to deforestation and erosion.	0%	0%	0%	0%	100%
In order to increase the fight against erosion of forests, it is vital to invest money on protection.	0%	0%	0%	0%	100%
Monetary costs may already be incurred in order for forests to continue their erosion control service.	0%	0%	0%	0%	100%
I would like to protect against various damages such as loss of soil and water, prevention of floods.	0%	0%	0%	0%	100%
When making the payment, I took into account the other services and benefits of the forests.	0%	0%	0%	0%	100%
The results of this research will provide a new perspective in the determination of forestry policies	0%	0%	0%	0%	100%
The results of this research will increase public awareness of forests and combating erosion.	0%	0%	0%	0%	100%

Legend

1 to 9 %	10 to 19 %	20 to 29%	30 to 39%	40 to 49%	50 to 59%	60 to 69%	70 to 79%	80 to 89%	90 to 99%
									100%

school graduates ranked fourth, 26.8% of the university graduates ranked first, 10.9% of the high school graduates collage ranked third, 8.6% of the secondary school graduates, 5.1 no formal education. 65.0% of the respondents are single and 35.0% are married. When the occupational groups of the respondents are examined, the student group is the first with 31.4 majority students. 9.5%, the civil servant group is the second with 11.4%, the worker group is the third with 24.1%, the non-working group is the fourth with 10.9%, housewives and last place with 12.7% others. To determine the probability that the socioeconomic factors influence human disturbances the variables were sequentially found in the forest introduced into the logistic regression model. Once again, the logistic regression model was used to assess the significant socio-economic factors that cause human disturbances in the forest (Hishe et al. 2015). The non-zero Wald statistical values show the relationship between the dependent variables and the explanatory ones. Consequently, the null hypothesis was rejected on the basis of the findings of this analysis in favor of the alternative hypothesis that Socioeconomic Factors have a significant cause of deforestation in the forest level of 5%.

Conclusions

This study was conducted in Gilgit Baltistan, Pakistan to investigate the factors causing deforestation and to measure the public’s knowledge. The results of this study showed that the factors of deforestation are rapid population growth, Livelihood activities, Lack of education, poor forest management, Fuelwood usage, Forest fire, Distance. These factors are promoting deforestation in the forest area. Socio-economic factors that affect forest quality are profoundly rooted in the everyday needs of the communities as regards forest products that meet the increasing population rather than knowledge of the degradation and its implications of forest resources. Human activities are environmentally hazardous in combination with our daily work and actions at home, in industry, and even in agriculture, endanger the stability of the climate and the ecological balance. All these human actions endanger nature and, eventually, we ourselves must face the consequences and be blamed for them. In line with the above argument, the leaders of Gilgit Baltistan are the key culprits in the issue of deforestation because they have refused to provide for the citizenry through the abundance of natural resources that God has provided a way. Participants of the

research mostly benefit from forest resources wood as industrial wood, firewood, water resources in forest areas. Respondents mostly benefit from air pollution prevention service, clean air production service, and climate regulation service of forest resources. Participants do not want forest resources to be pulverized or obliterated. According to the participants, it is important that forests remain for future generations. According to the participants, it is important that forests produce goods and services that can benefit in the future. Participants demand to grow more and more forests around the world for survival. Participants are familiar with the function of forests in combating deforestation and erosion. In order to increase the fight against erosion, it's important to spend money on the protection, improvement, and establishment of a new forest. Monetary costs may already be incurred in order for forests to continue their erosion control service in order to ensure the health of future generations. Participants want to be protected from various damages such as soil and water loss, floods, and floods with various forestry activities.

Recommendations

There should be strong action against corruption as forestry laws and policies along with illegal loggers. Environmental awareness should be made accessible to the general public about the devastating consequences of deforestation on people and society at large. There is a need to launch a new plantation scheme by enlightening the public to fathom that we have only one earth. Government, Non-governmental organizations, and spirited individuals should organize an enlightenment program on the impacts of climate change. The government should add more effort to the poverty eradication program, and the educated unemployed youths should be accorded employment. To curb the rate of deforestation, the skills training system should be coordinated for rural women dwellers and the uneducated youth. From the conclusion, therefore, it is necessary to recognize and introduce successful ways of addressing the daily needs of the communities. The emphasis needs to be placed on seeking alternative energy sources, sustainable agricultural practices, diversifying income sources, and supporting rural development for young people and disadvantaged community members. In order to allow communities to engage actively in

decision-making processes aimed at conserving the forest and improving the livelihoods of rural communities, forestry education and extension should be geared towards institutional strengthening at the local level.

Acknowledgements We would like to thank College of Economics and Management, Northeast Forestry University, Harbin for their support in the conduct of this study.

Funding This study does not receive any financial support.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Human or animal rights Our research does not involve any human Participants or Animals during the whole process.

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