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COMBINED RESPONSES OF STAKEHOLDERS ON DEFORESTATION AND ITS CAUSES IN GILGIT BALTISTAN PAKISTAN

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Abstract

Deforestation is one of the major environmental issues in today's world specially a matter of concern in developing countries. Pressure on the natural resources has increased like conversion of forest into agricultural land for their food and for their living purposes. If this process is not controlled in time then it will have worse consequences in the near future. There should be alternate for deforestation like plantation of some plants in a different place but these lines are only found in books and papers. It has become a major problem for Gilgit Baltistan. This paper aimed to find the deforestation rate and amount of forest in the Hindukush, Karakoram and Himalayan region of Gilgit Baltistan Pakistan. The survey was questionnaire based. Total numbers of respondents were 200. The main objective of conducting this study was to identify the important factors that are causing deforestation in Gilgit Baltistan. Majority are of the view that a huge amount of decrease in forest is observed in the last one and half decade. Results revealed that inefficiency of management of Forest Department, increasing demand of wood industries, increasing urbanization; large scale mining and increasing livestock are the important factors that cause deforestation in Gilgit Baltistan, Pakistan. It is revealed from this study that people are aware of this fact that deforestation is happening at an alarming rate and want immediate measures to stop it.

Keywords
Deforestation, Stakeholders, Gilgit Baltistan, HKH Region, Strategies.

1. Introduction

Deforestation is the conversion of forest land into non forested land for human use (Ahmad, 2008; Anyanwu, 2013; Roy, 2014). Humans began life on earth as forest dwellers. Forest prevents soil erosion (FAO, 2009; Miura *et al.,* 2015). Forests play an important role in global carbon regulation (Wang *et al.,* 2020). Humans were food gatherers and depended on the forest for all their livelihood resources like food, clothing, and shelter (Ratnam *et al.,* 2014; Köhl *et al.,* 2015). According to Alfaro *et al.,* (2014) and MacDicken *et al.,* (2015) approximately 30 percent of the world's total land mass is covered by forest. Humans gradually became food growers, clearing a small patch in the forest to grow food. Human continued to depend on forests to meet a lot of their needs. Forests are the home of other natural resources such as they provide watersheds protection, habitat to wildlife, timber and non-timber products and so many other natural products (Khan *et al.,* 2015), if deforestation increases all the ecosystem factors will disturbed (UNRISD, 1994). Even today people depend on the forest for paper, timber, fuel wood, medicine, and fodder known as ecosystem services (Acharya and Dangi, 2009). Sufficient evidence is available that the whole world is facing an environmental crisis on account of heavy deforestation due to humans (Giliba *et al.,* 2011; Chakravarty *et al.,* 2012; MacDicken, 2015). Many of the developed nations of the world have decimated their own forests (Vadez *et al.,* 2003), population growth was responsible for 79 percent of global deforestation between 1973 and 1988 (Nath and Mwchahary, 2012). Though today many nations are involved in attempts at preserving vast tracts of the forest in the form of protected areas (Sharma *et al.,* 2013), they have already contributed to the problem by the destruction wrought during their formative period.

In Asia, the forests in the Hindukush and Himalayan region are considered to be among the most depleted (Kabir Uddin *et al.,* 2015). Deforestation in the Himalayan region is also often attributed to increasing human population. Monitoring of forest cover and its functions give information about its policy making (Romijn *et al.,* 2015; Lierop *et al.,* 2015).There is a great link of environment with livelihood of poor people (Ghaffar *et al.,* 2012). Pakistan is a poor forest country due to its climate (APFSOS II, 2009). Pakistan is among those countries, which has very high deforestation rate. The remaining forests are very diverse in nature and of significant importance to Pakistan's economy and livelihoods of local people. According to FAO (2009) the forest cover of Pakistan is 2% and 1,902 Ha of the total area (FAO, 2005). Deforestation increases the amount of Carbon in air (Moutinho and Schwartzman, 2005; Shakoor *et al.,* 2011) and tropical deforestation is the major contributor of carbon (Kanninen *et al.,* 2007). According to Baig *et al.,* (2008) social forestry can be done to manage sustainable forest management. Due to illegal conversion of tropical forest into agricultural land caused

1047gt of co2 per year in 2000-2012 (Lawsan, 2014). This is an alarming rate given the quite high ecological value of these types of forest. According to FAO (2005) forests are managed for a variety of uses and values.

Gilgit- Baltistan is one of the top listed endangered places where unchecked cutting of trees has resulted in rapid deforestation. With one of the highest rates of deforestation in the world, the forests of Gilgit-Baltistan are in an urgent need of protection and conservation. The major threat to these forests is mismanagement and unsustainable cutting for living purposes and timber products. There is a dire need of proper management practices to stop deforestation. This study is a preliminary step and aimed to evaluate the opinion of major stakeholders about the situation of forest in Gilgit Baltistan. Although it is questionnaire based but it was very important to know about the knowledge of stakeholders about forest, whether they are decreasing or increasing. There was a mix response but it concludes that many people know about the current status of forest in Gilgit Baltistan.

2. Materials and Methods

2.1 Study Area

Gilgit Baltistan comprising ten districts, lies between latitude 35^{o} $30^{/}$ N to 37^{o} N and longitude 72^{o} $30^{/}$ E to 75^{o} E and is the fifth province of Pakistan bordering with China through Xinxiang province (Hussain *et al.,* 2021). It covers almost an area of 72 496 sq. Km (Ali, 2010). Here the three mightiest mountain ranges of the world – Karakoram, Hindukush and N W Himalaya, intersect near Bunji at the confluence of Gilgit and Indus River. Indus River moves from here, feed by Gilgit River, Hunza River and shyoke River. The longest glaciers outside polar region are located here. Climate change and its negative consequences are becoming increasingly visible in Gilgit-fragile Baltistan's ecosystems (Hussain *et al.,* 2019). Pristine valleys are the home of vast species of wildlife. Gilgit Baltistan has the most widespread perpetual ice (22,000 km^2) outside of the polar region. The height range in this region is tremendous, ranging from the world's second highest point, 8611 m at K-2 Peak, to little over 569 m in the lowlands (Hussain *et al.,* 2021). Temperature in valleys vary from 40°C in summer to less than –10 °C in winter (Ishaq *et al.,* 2019).

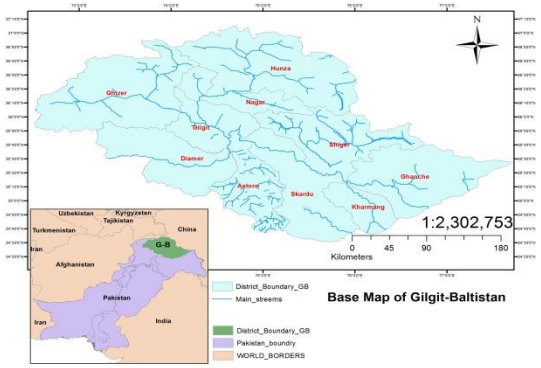

Figure 1: Map Gilgit Baltistan Showing Different Surveyed Districts.

2.2 Sampling Procedure

The population was heterogeneous having different groups so Probability and stratified sampling was employed for data collection. Data

was collected through questionnaires with both open and close ended questions, structured and unstructured interviews and secondary sources, Focus group discussions were held during field visits. I have presented the data from the responses of all the five types of stakeholders of the issue of my research. Questionnaires were given to Forest Department Officials, Timber Merchants, Aga Khan Rural Support Program (AKRSP) Officials, World Wildlife Federation (WWF) and Timber Consumers. I have visited all the departments of stakeholders in order to distribute the questionnaires in order to obtain authentic data and responses. Deforestation was a very sensitive issue. Respondents from all stakeholders provided information on the condition that their names will be kept secret.

The sample size for the purpose of this study will comprise of a total of 200 respondents in the following manner:

Table 1: Sample size determination of Stakeholders

Stake Holders	**Sample Size**
Timber Consumers	140
Timber Merchants	20
WWF Officials	15
Ministry of Forest officials	5
AKRSP Officials	25
Total	**200**

2.3 Relationship among Different Stockholders/ Variables

The independent variables used for the purpose of this study include various aspects of deforestation in Gilgit Baltistan. Level of management of forest department has an impact on deforestation. Greater the management by the forest department, greater will be the decrease in deforestation. Similarly if the mining activities in Gilgit Baltistan are controlled it will also help to decrease deforestation. The demand of wood industry has also a direct relationship with deforestation. If the demand of wood industry is controlled then deforestation will reduce. Role of Ministry of Forest (Moderating Variable) moderates the overall relationship of dependent and independent variables. Increases in the level of management will decrease the large scale mining and demand of wood industry. Role of local communities (Moderating Variable) moderates the overall relationship of dependent and independent variables. Local communities can protest against the poor management and enforce the Ministry of Forest to deny the greater demand of wood industries. Local people in their respective areas will arrange committees who will keep an eye on miners and report the police. Likewise to control miners local communities can develop councils at village level to restrict the livestock to certain grazing areas. They can choose areas for urbanization away from forests.

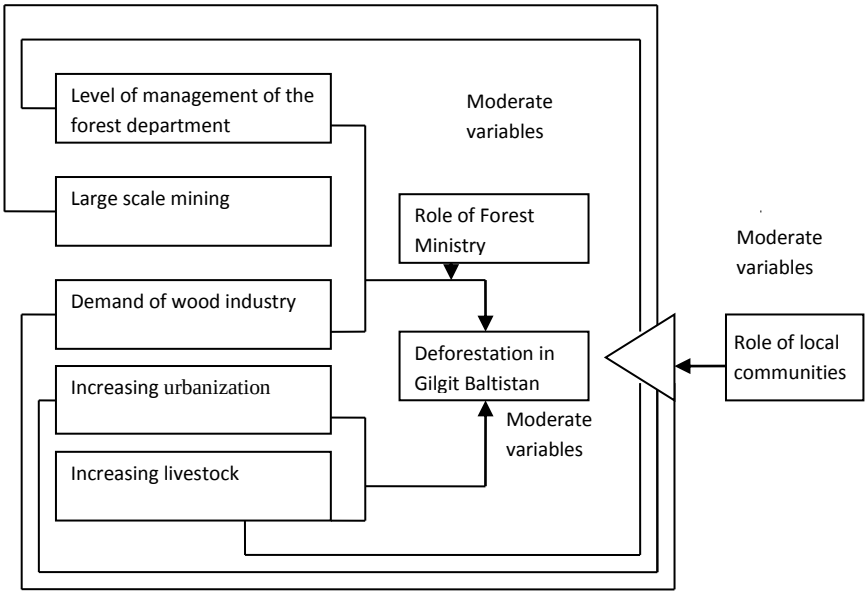

Figure 2: Relationship among Different Variables

3. Results

3.1 Extent of Deforestation

From the overall responses it is concluded that majority of the respondents believe that rate of deforestation has increased to a great extent over the past 10 years. 70% respondents were of the opinion that the area covered by the forests was more than 75% of the total area in 1999 while on the other hand a mixed response from the respondents holds favour that more than 50% area is covered by forests. But the area covered by more than 75% with forests in 2020 is less than 50% which is reported by majority of the stakeholders. Interestingly, Timber Merchants have expressed the view that the area covered more than 75% by forests in 2020 is more than that covered in 1999. The main reason is removal of trees without sufficient reforestation.

3.2 Demand of wood industries

Majority of respondents responded that demand of wood industry has increased to a great extent during the last two decades and increased demand is greatly affecting the forests. They are being cut down continuously. Half or less than half of the respondents feel that the demand of wood is being regulated by the Forest Department. Majority of the Timber Merchants, AKRSP officials and WWF officials are of the view that regulation is not carried out consistently by Forest Department. This inconsistency is contributing to corruption in the department which is resulting in deforestation at a large scale that only half of the respondents Timber Merchants, AKRSP official and WWF officials believe the wood industries working in the area are having legal permits while half of the respondents from Timber Merchants, AKRSP official and WWF officials are of the

opinion that wood industries are working without legal permits and their demand is greater than the allocated capacity.

3.3 Demand Of Wood Industries Over The Last Two Decades

Majority of the respondents are of the view that demand of wood industry from Gilgit Baltistan has increased approximately 25% to 50%. It was surprising to note that 20% of the respondents from AKRSP and 20% of the respondents from timber merchants were not educated about the prevailing threat to the forest of Gilgit Baltistan. In another statement when the respondents were asked to comment on the consumption areas of the forest wood of Gilgit Baltistan, about 70% of respondents are of the view that wood of Gilgit Baltistan is used for wood industries and wood processing. One fifth of the respondents are of the view that this wood is used for housing and construction purposes. Majority of the Forest Department officials, Timber Merchants and AKRSP officials reported that wood from Gilgit is being sent to Khyber Pukhton khaw and minor number of all respondents is of the view that wood is being sent to Northern Punjab. In a statement when the respondents were asked to spot the area where the maximum wood from Gilgit Baltistan is sent, majority are of the view that Darel and Tangier are fulfilling the demand of wood.

To

A minor number of respondents are of opinion that Chilas, Astore and Baltistan Valley are also fulfilling the demand of wood to some extent. 100% of Forest Department officials and 80% of Timber Merchants and AKRSP officials are of the view that to a great extent, the forests of Gilgit Baltistan are being threatened by the demand of wood industries. 20% of the total respondents are of the view that demand of wood industry is to some extent threatening the forests of Gilgit Baltistan.

3.4 Impact of Urbanization on Forests

To delineate the indicators of urbanization, respondent were asked, the indicators of rise in urbanization. Majority of the respondents from the relevant stakeholders believe that "increase in consumption of wood" is the main indicator of rise in urbanization whereas second majority of the respondents believe that reduction in forest area is the main indicator of rise in urbanization. Minor number of respondents believes that "increase in population of villages and towns" is the main indicator of rise in urbanization. While on the other hand the smallest numbers of respondents were of the opinions that increase in villages and towns is the main indicator of rise in urbanization. In another statement when the respondents were asked to comment on the pace of increase in population majority of the respondents were of the opinion that the pace of increase in population is high. 30% of the population is of the view that increase in population is not very high. However 15% respondents from among Timber Merchants and Timber consumers were not aware of the issue. In another statement, respondents were asked whether the prevailing pace of increase in population is a threat to the

forest of Gilgit Baltistan. More than half of the replies reveals that majority of the respondents from the relevant stakeholders prefer to reply in the negative while on the other hand it was also interesting to note that the second majority choose the option of "partially yes. While at the other hand a considerable number of respondents were not aware of the prevailing phenomenon. As a follow up statement, respondents were asked to highlight the forest areas which are under threat of urbanization. Responses reveal the following order of threat from most to least, Chilas, Darel and Tangir, Astore, Baltistan Valley and Naltar Valley respectively. In another statement respondents were asked to comment whether the prevailing urbanization in the areas of Gilgit Baltistan is likely to lead to deforestation in future. A great majority of the relevant respondents from different stakeholders were of the opinion that it will definitely lead to deforestation while the second majority were of the opinion that it will result in partial deforestation and a third majority failed to present a rationale. While on the other hand, a considerable number of respondents from timber merchants, AKRSP and timber consumers don't know whether or not, the prevailing urbanization will result in deforestation. In another statement the respondents were asked to give opinion on how urbanization leads to deforestation. A great majority of the respondents believe that increase in demand for constriction purposes will result in deforestation whereas the second majority is of the opinion that urbanization will lead to decreased forested area while the third majority of the respondents are of the judgement that urbanization will result in increase in demand for fuel wood which ultimately result in deforestation. Out of total respondents 15% of timber merchants and 3% of timber consumers are not aware of the prospective threats of urbanization on forests.

3.5 Management of Forest Department

In order to demarcate the basic reasons for deforestation in Gilgit Baltistan, respondents were asked to choose one of the options which they consider the most basic and responsible reason for deforestation. Majority of stakeholders believe that deforestation in Gilgit Baltistan is due to ineffective management practices. Only few respondents' i.e 20% are of the view that the basic reason for deforestation in Gilgit Baltistan is due to smuggling of wood. (Here in this case the option of wood smuggling was used to cross verify the ineffective management practices). In another statement, respondents were asked to mention the level of ineffective management practices. In response to this question, a great majority of the respondents were of the opinion that it is at the policy making level whereas second majority of the respondents blame the field staff. it was also surprising to note that some respondents (about 20%) from Forest Department Officials and 10% from timber merchants felt confident in saying that management is effective. When the respondents were asked whether or not there is a

need to improve management within Forest Department it was found that 80% of the respondents were in favour of improving the management practices. Only one fifth respondents from Forest Department Officials and 15% from timber merchants believe that management practices in the forest department do not demand any augmentation. It was also surprising to note that minor number of the respondents except the respondents from AKRSP even did not know whether or not there is a need for improvement in management practices.

3.6 Large Scale Mining

In order to delineate the effect of mining on the forests of Gilgit Baltistan respondents were asked to spot the areas which are most prone to large scale mining. It was found that Baltistan Valley is the hub of mining but a minor number of respondents are of the view that Astore is also prone to mining. Very few respondents are of the view that Chilas, Naltar Valley, Daril and Tangier are also prone to mining. Small scale mining takes place in these areas which is selected by 82% respondents and it affect the forests to some extent. More than half of respondents are of the view that wherever there is mining roads and infrastructure has to be made by cutting trees. Less than half the respondents are of the opinion that trees do not grow where mining occurs 15% of the Timber Merchants reveal that Forest Department lose jurisdiction over the areas where mining occurs. In order to mine, trees and vegetation are cleared. Less than half of the respondents are of view that there are some specific areas where deforestation takes place due to mining. More than half of respondents are of opinion that small scale mining is not causing deforestation.

3.7 Impact of Livestock

In order to ascertain whether the increase in livestock results in deforestation, respondents were asked firstly to point out the species of live stock that is found in large number in Gilgit Baltistan. Majority of the responses from the relevant stakeholders were of the opinion that goats are found in large number whereas the second majority believe that sheep are found in large number. On the other hand, a third majority of the respondents were of the opinion that buffalos are the most abundant species which are found in Gilgit Baltistan. In another statement respondents were asked to indicate the areas with the largest number of grazing livestock less than half of the respondents believe that Darel and Tangir are the area which has the large number of grazing live stock whereas the second majority of the respondents are of the opinion that Astore has large number of grazing livestock and the third majority nominates Chilas as the area of large number of grazing stock whereas Baltistan and Naltar Valley remained on fourth and fifth respectively. Respondents were asked to further specify whether the grazing livestock in the above mentioned areas is a threat to deforestation. In this context, the majority of the respondents were of the opinion that live stock is a potential

threat to deforestation where as the second majority of the respondents were not knowledgeable about the phenomenon. A third majority believe that livestock partially contributes to deforestation and only a small number of respondents said that grazing of livestock has nothing to do with deforestation.

3.8 Role of Ministry Of Forest

More than half of the respondents are of the opinion that Ministry of the Forest has increased the efficiency of Forest Department. Less than half of the respondents are of the opinion that Ministry has also control over the demand of wood industries. A minor number of respondents are of the view that the Ministry has control over smuggling of wood and has been able to initiate new plantation. 60% of the Forest Department, Timber Merchants and AKRSP officials are of the opinion that to some extent Ministry of Forests has controlled deforestation while 40% of Timber Merchants and AKRSP officials and 20% of Forest Department officials and WWF officials have given the opinion that Ministry of Forests is unable to control deforestation. A minor number of respondents were not aware of the issue in hand. 15% of the stakeholders are of the opinion that the Ministry should control deforestation but 85% of the stakeholders are of the opinion that only controlling deforestation is not enough and Ministry of Forest should make arrangements for new plantation. All the respondents agree that the Ministry of Forests has made arrangements of plantation to some extent and new species are planted in Chilas, Astore, Daril, Tangir, Baltistan Valley and Naltar Valley. Plantation of new plants is a successful remedy for deforestation and all the stakeholders are agree on this point. 80% of the stakeholders are of the view that Ministry of Forest is facing some hurdles in the management of Forest Department and also facing lack of cooperation from local communities. From the average of overall responses it is concluded that Forest Department can play an essential role by increasing the efficiency of Forest Department so that standard management practices will be followed to reduce deforestation.

3.9 What Role Can Local Communities Play To Reduce Deforestation In Gilgit Baltistan?

The entire Forest Department officials, a majority of Timber Merchants, AKRSP officials, WWF officials and Timber Consumers are of the view that local communities should start effective plantation. Less than 20% respondents are of the view that there should be community based forest and 3% Timber Merchants selected that local communities voluntarily contribute in order to protect forests It is known that local communities should participate in plantation and protection of forests.

4. Discussion

The main reason is removal of trees without sufficient reforestation. Although trees are replanted in some areas, Chilas, Astore, Daril and Tangir but this plantation rate is lagging behind the rate at which trees are being cut down. Absence of regeneration and low number

of young trees are the main causes of deforestation. Merely replanting trees may not help in solving the problems of deforestation is estimated that the forest area is declining at the rate of 40,000 hectares annually (Ahmad, 2005). It is one of the top listed endangered places where unchecked cutting of trees has resulted in rapid deforestation. This is considered as the second highest deforestation rate in the world. With one of the highest rates in the world, the forest of Gilgit Baltistan is in an urgent need of protection and conservation.

Forestry is also essential for maintaining a sustained supply of wood and wood products. But the increasing demand of wood industries has become one of the main elements of deforestation. These forests are commercially harvested for the purpose of construction ofIt e buildings and timber products. Over the past two decades, much exploitation of the forest has been done in order to meet the increasing demand of wood industries. This has resulted in serious depletion of the forest resources. Some favoured timber species have become scarce while others have become extinct in certain areas. Demand of wood industry is much greater than the capacity of the area. Wood is transferred to the big cities both by legal and illegal ways for construction purposes and timber products. Some people are even cutting trees without having legal permits. From the above responses it is concluded that rate of demand of wood industry is greater than the capacity and the timber mafia is one of the main contributors to this. They fulfil this demand by illegal means without bothering about the damage that is being caused to the ecology of the area. It was found that demand of wood industries has increased 25% to 50% over the last two decades. Chilas, Daril, Tangir and Naltar fulfil the maximum demand of wood. Wood is being transferred to Khyber Pukhton khaw and Northern Punjab and it is being used for construction and timber products. The forests of Gilgit Baltistan are being threatened by the demand of wood industries. The ban imposed by government on cutting trees has not prevented the timber mafia from their activities because of political interference, theft, corruption and lack of serious commitment on the part of the government to bring the culprits to book.

It emerge from the respondents that urbanization is partially affecting forests. Increase in consumption of wood and reduction in forest area are the main indicators of rising urbanization. In another statement when the respondents were asked to comment on the pace of increase in population, majority of the respondents were of the opinion that the pace of increase in population is high. This prevailing pace of increase in population is not a great threat to the forests of Gilgit Baltistan. A great majority of the respondents believe that increase in demand for construction purposes will result in deforestation whereas second majority is of the opinion that urbanization will lead to decreased forested area. The removal of forests tracts to grow crops by the forest dwellers, forest

cutting for road construction and dependence of rural population on wood for fuel is some causes of forest depletion. The proper implementation of management practices is central to the protection of forests. All the five types of stakeholders were asked regarding the level of implementation of management practices in their organizations. Majority of the respondents think that management practices are not being implemented in their true spirit in the organizations and they seem to be merely paper plans. The response of the management was also quite divergent. Most of the respondents also believe that the standard management practices are not being implemented in their true spirit while 20% respondents believe that management practices are being implemented fully or partially.

On the whole, the response of all stakeholders clearly indicates that ineffective and unsustainable management practices by the Forest Department are the main cause of forest depletion which have focused more on economic than on environmental utility. These forests are confronted with lots of management issues i.e. among the policy making process and among the field staff. Management plans of none of these forests have ever been prepared. Standard management practices which are the central element for protection of forest are not being implemented. There is a dire need of standard management practices to stop deforestation.

Large scale mining affects the land and makes it barren for agricultural activities. Extracting these minerals is frequently a destructive activity that damages the forest system and causes problems for people living nearby. Majority of the respondents are of the opinion that Baltistan Valley is the hub of large scale mining. Some of the respondents are of the view that Astore is also prone to mining. Small scale mining takes place in these areas and it damages forests to some extent. Small scale miners perform operations in a vast area. In order to mine, trees and vegetation are cleared and leave the land barren. Wherever there is mining, roads and infrastructure has to be made by cutting trees. Mining is a mode of business in Baltistan, Astore and Chilas. It is therefore recommended that government should ensure controlled mining through proper surveillance.

The increase in livestock partially affects the forests while on the other hand some of the respondents are of the opinion that increase in live stock has no impact on forests. Majority of the responses from the stakeholders were of the opinion that goats are found in large number whereas the second majority believe that sheep are found in large number, while on the other hand, a third majority of the respondents were of the opinion that buffalos are the most abundant species which are found in Gilgit Baltistan. People rely on forest for fodder of livestock. Darel and Tangir are the areas which have the largest number of grazing live stock. Chilas, Naltar Valley and Baltistan are also considered grazing zones. Local dwellers do not cut trees for economic purposes. They have to use minor

part of the forests resources for their survival such as fuel wood, fodder and timber for household. The government in collaboration with the local communities should develop rules for controlling the grazing zones. Only limited areas should be nominated for animal grazing.

Deforestation can be reduced by increasing the efficiency of management of the Forest Department. Less than half of the respondents believe that Ministry of Forest is working on the management of Forest Department. It has succeeded to some extent to improve the management practices of Forest Department. Forest Department officials should implement and act according to the rules and regulations defined by the Ministry of Forest. They must frame the best policies to control unchecked cutting of trees and initiate plantation in Chilas, Daril, Tangir, Astore, Baltistan and Naltar Valley so that demand of wood industries could be fulfilled. Plantation is a successful remedy for deforestation. Another major aspect is that the demand of wood industries that has increased over the last two decades. Demand of wood industries is carried out inconsistently by the Department. This inconsistency has contributed to corruption in the department resulting in deforestation at a large scale. Forest Department officials must keep check and balance over this issue. Wood industries having legal permits should be allowed to work in the area but must be effectively monitored to ensure that they do not exceed the limits specified in their permits. Ministry of Forests is facing some hurdles in the conservation of Forest due to lack of cooperation of local communities. Local communities should be educated on this very serious issue and must cooperate with the Department to protect the forests. Local public representatives should also be involved in motivating the general public to cooperate with Forest Department in the protection of forests.

On the issue of role of communities to reduce deforestation, it is found that local communities have very strong role in conservation of forests. Plantation is a successful remedy for deforestation. Local communities should start effective plantation in collaboration with the Forest Department. It is known that local communities should participate in plantation. Tree plantation and their preservation should be undertaken very religiously and monitored by the local public representatives since it means so much to the future well being of the community living in that area.

5. Conclusion

It is concluded that deforestation is a great threat to forests of Gilgit Baltistan. It is quite evident from the data that deforestation has many causes such as mismanagement of forest department, increasing demand of wood industries, urbanization, mining and increasing live stock. But, the main cause is the mismanagement of forest department which needs unleashes inefficiency. Sufficient plantation takes place but this plantation rate is not fulfilling the rate at which trees are being cutting down. No doubt, other factors are vital to control deforestation

but mismanagement of forest department is the major factor in to reduce deforestation. Thus, if appropriate forest management practices are followed and initiatives are taken for plantation of new forest by the Forest Department in Gilgit Baltistan, the rate of deforestation can be controlled.

6. Recommendations

1. People should be given awareness regarding the importance of forests. Forest Department should organize local communities to form village committees who will be given training programmes, village based workshops to raise awareness of the benefits of forests.
2. Ban imposed by government on deforestation has not prevented the timber mafia from their activities because of political interference. Proper law enforcement in this regard is necessary.
3. There should be a strict ban on smuggling of wood.
4. Forest Department should follow internationally defined management practices of new plantation.
5. Wood should be supplied only to licence holders and they should be provided a defined quota.
6. Role of media is imperative in order to create awareness regarding adverse effects of deforestation.
7. Proper supervision of Forest Department is necessary to ensure that no illegal cutting of trees.
8. Govt should prevent haphazard urbanization and specific areas should be authorized for urbanization

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