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Thesis title: Place Attachment in Mountain Communities: Examining the Dependence of Indigenous Groups on Ecosystem Services.

Case of Shimla Hills, North-west Himalayas.

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Summary

Thus far, the relation of place attachment with ecosystem services has received limited attention in social science research. The indigenous people of the mountains largely rely on ecosystems for a range of services that these ecosystems offer to the community, along with monetary or non-monetary benefits that the communities may derive from the ecosystem services (Sangha et al, 2018).Looking at the heavy dependence on these ecosystems, the study aims to explain the ways ecosystem services and related benefits (monetary and non-monetary) derived by indigenous communities from mountain ecosystems influence their level of place attachment.

The research locale is a peri-urban area comprising of three hamlets of Jarol, Kotgarh and Thanadhar situated 70kms away from Shimla, the capital of Himachal Pradesh. Six ecosystems were pre-identified in the case study area namely; forest with oak and cedar trees, eco-tourism park, Tannijubbar lake, river Satluj, Hatu peak and farmlands.

Case study strategy was chosen in combination with survey for collection of primary data. 113 questionnaires along with 5 semi-structured key informant interviews were analysed to identify the important mountain ecosystems to the community, classification of ecosystem services and benefits the indigenous derive from these ecosystems and the level of place attachment they hold for these ecosystems.

The data analysis showed that all sub-indigenous groups have high level of importance for forest followed by farmlands and Hatu peak. Majority of the ecosystem services which were extremely important were derived from forest and farmlands. Lastly, there was more place dependence than place identity under every sub-group, however, forest had the highest level of place attachment followed by farmlands and Hatu peak. Statistically, professionals and the group of others have maximum number of regulating and cultural services which strongly influence the place attachment levels.

The main research findings show that non-economic services, that are, regulating and maintenance and, cultural services influence place attachment more than provisioning services. It was also observed that majority of the respondents from each sub-group do not derive monetary benefits from provisioning services. Hence, it is non-economic services which has a strong influence on place attachment levels amongst all indigenous sub-groups.

Keywords

Place attachment, Indigenous community, Ecosystem services, Monetary benefits, Non-monetary benefits

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Abbreviations

ES	Ecosystem Services
MEA	Millennium Ecosystem Assessment
TEEB	The Economics of Ecosystems and Biodiversity
CICES	Common International Classification of Ecosystem Services
ECNC	European Centre for Nature Conservation
GOI	Government of India
SPSS	Statistical Product and Service Solutions
D.W.L.	Daily wage labours

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Chapter 1: Introduction

1.1 Background

The concept of place attachment demonstrates the way people are attached to a certain place and encapsulates the different goods and services provided by the place along with the emotional and symbolic bond formed with the place (Brown et al, 2015). This is what humanistic geographers refer to as "topophilia" or as a 'sense of place' which is often used as a synonym for place attachment (Lewicka, 2011). Some researchers might portray place attachment as a concept that shows the bonding between individuals and the places that are important to them while some might locate attachment at the level of home, city or country (Scannell and Gifford, 2010). Due to this diversity in perspectives, the meaning of place attachment remains scattered in the literature. However, the most common definition of place attachment is expressed as "the bonding of people to places" (Low and Altman, 1992, p.2). In Urquhart and Acott (2014) and Quinn and Halfacre (2014), place attachment is based on occupational structure and family ties and is linked to social cohesion and their cultural identity. On the other hand, place attachment is often through a combination of nature and people, which means that people do not only depend on the value provided by nature but also the relationships built around it, mediated through social norms and cultural beliefs (Cundill et al, 2017).

Calling attention to the ways in which nature and people are connected is by looking through the lens of ecosystem services, a concept that has been coined around 40 years ago (Groot et al, 2017). Ecosystem services, according to the Millennium Ecosystem Assessment or MEA (2005), are the "benefits people obtain from ecosystems". Further, the ecosystem services are divided into four typologies: *provisioning* which are the direct material outputs from the ecosystems like food, water and raw materials; *regulating* moderates conditions in the natural environment, such as regulation of climate, floods and disease; *cultural* are the non-economic benefits derived from the environment such as recreation, beliefs and aesthetic; and *supporting* which are essential to produce all the ecosystem services like nutrient cycling and formation of soil (MEA, 2005). Therefore, some benefits are provided directly by ecosystem services to everybody, while some ecosystem services need to be converted into benefits through diverse knowledge use or practices (Cundill et al, 2017). These benefits which are gained from the services can be monetary or non-monetary in nature.

Ecosystem services also tend to differ from place to place, depending on the type of ecosystems the communities are surrounded with. The benefits drawn from these services then vary from one group to another, who, in effect, have varying levels of place attachment. In coastal areas, place characteristics, such as presence of fishes in the natural environment, and fishing activities – as individual and collective identities – contribute to place attachment. (Urquhart and Acott, 2014). Gunderson (2006) examined the way the indigenous communities attach meaning through the provisioning and cultural ecosystem services they derive from their landscapes. In mountainous terrain, the indigenous community members engage in tourism not to have monetary benefits but for non-monetary gains, such as, to support their traditional lifestyle choices (Schilar and Keskitalo, 2018). Hence, place attachment is usually based on how people understand their natural environment; that along with some exclusive characteristics, such as the services and benefits derived from ecosystems, help in building and creating the feeling of place attachment.

1.2 Problem statement

While some literature deals with place attachment in connection to the natural environment (e.g. Brandenburg and Carroll, 1995; Gunderson, 2006), the concept of ecosystem and ecosystem services is not usually considered. The research studies which focused on a particular ecosystem such as forest ecosystem, resulted with locals identifying and ranking ecosystem services according to their personal lifestyle and ethnicity (Cundi-Sanchez et al, 2019), or only examined cultural ecosystem services (e.g. Knez and Eliason, 2017) which resulted in stronger prediction of place identity in the region. Researchers like Adams and Adger (2013) showed in their study the way people develop place attachment due to non-economic factors even though importance is given to provisioning services which can be accounted for. Also, there is too little literature focussing on the benefits (monetary and non-monetary) that are gained from ES (e.g. Schilar and Keskitalo, 2018).

This leaves us with a knowledge gap in terms of the role ecosystems and all its services and benefits play in nurturing place attachment by systematically engaging into the subdimensions of place attachment, that are, identity and dependence (Quinn and Halfacre, 2014; Masterson et al, 2017).According to Brown (2015) place identity can be defined as "dimensions of self, such as the mixture of feelings about specific physical settings and symbolic connections to place that define who we are" while, place dependence refers to the functional connections to a place to satisfy the living needs of a person. As such, the research would focus on understanding the indigenous communities' attachment to places by exploring the services and benefits (monetary or non-monetary) they derive from the ecosystems they are dependent on, and explain how these are influencing their place attachment in the mountains in the north-west part of the Himalayas.

Mountain ecosystem services have provided local communities with benefits that are crucial for the region's economy and important to the social and cultural heritage activities performed by them locally and regionally. Indigenous communities of the mountainous terrain have their livelihood strategies, food habits and cultural identities intimately interlaced with the mountain environment they are inhabiting in. The dependency of the indigenous community (or their sub-groups) might differ from ecosystem to ecosystem, while different sub-groups might derive services from the same ecosystem – both scenarios leading to different levels of place attachment (Adhikari et al, 2018; Cundi-Sanchez et al, 2019). Therefore, there are specific characteristics of indigenous communities found in the mountainous terrain, each having their own medium of being attached to the place.

Case Study

The area under reference is what the researcher intends to call as 'Shimla Hills', a peri-urban area beyond Shimla, the summer capital of the north Indian state of Himachal Pradesh. The area is about 70 kms away from Shimla *(Figure 1)*, what once was situated on the old historic Hindustan -Tibet road, during the British Raj, which has ever since then evolved in many ways. The research picks up three adjoining hamlets: Jarol, Kotgarh and Thanadhar, along with an adjacent mountain peak namely, Hatu, to draw the various connections the local communities have with their respective ecosystems. The physical features of the entire case study area, with its specific characteristics, reflects on what ecosystems do the local communities depend upon.

Hatu, at a height of 11,500 feet (above sea level) is surrounded by thick cedar and oak trees and beautiful meadows with a water catchment area, providing water supply to all three hamlets. Apart from being known for its natural beauty, Hatu is a site for a temple dedicated to Goddess *Kaali,* attracts a large number of pilgrims and tourists. Hatu is also home to nomadic

pastoralists. The meadows make an ideal location for the pastoralists to settle here during the summer months from May to August. Their flocks generally consist of sheep and goats. Sheep rearing is an important activity for this community.

About 12 kms from Hatu are the famous hamlets of Jarol, Kotgarh and Thanadhar, all popularly known for the cultivation of high-quality apples. The apple belt extending over a span of mountain slopes, has one of the highest per capita income of the country. Kotgarh and Thanadhar, caught the eye of the British way back in 1815 and has past linkages with Christian missionaries. Christian establishments such as a mission school and a Church reflects past linkages between Kotgarh and Christian missionaries. Thanadhar has an Arya Temple that unfolds an interesting narrative about an American Quaker, Samuel Stokes. Known for bringing apple cultivation to this area, Stokes attachment to this land was asserted by his conversion to Hinduism.

A part of one of the major rivers of India, river Satluj flows through the valley of the case study region. The view of the river can be clearly seen from Kotgarh, adding serene beauty to the case study region along with providing water for irrigation facility to the hamlets of Kotgarh and Thanadhar through its upper water catchment scheme.

At the hinterland of Jarol is a small natural lake, Tannijubbar, at the height of 8,500 meters (above sea level). A local mountain (*Pahari*) temple faces the lake, that the local temple committee proudly claims as its prime possession. The lake is maintained by the elders of the village who head the temple committee as well and prefer no interference in the matters of the lake and the temple from the State authorities, whatsoever. All local fairs, mostly religious, are conducted around the lake. The Tannijubbar lake is amidst a thick cedar forest that has been marked by the State Forest Department as an eco-park for visitors, for the main purpose of protecting the wildlife and flora-fauna of the region. Apart from apple orchards, people have, lately started venturing out in tourism, by opening their houses as home stays or even opening small resorts.

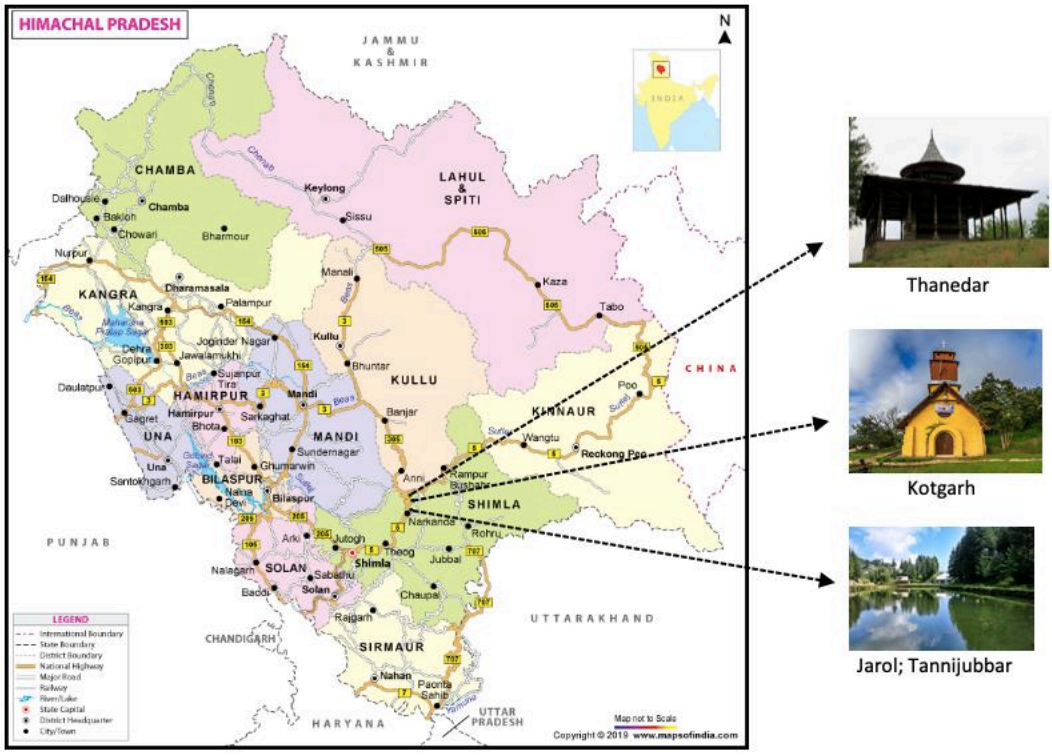

Figure 1. ***Location of case study region***

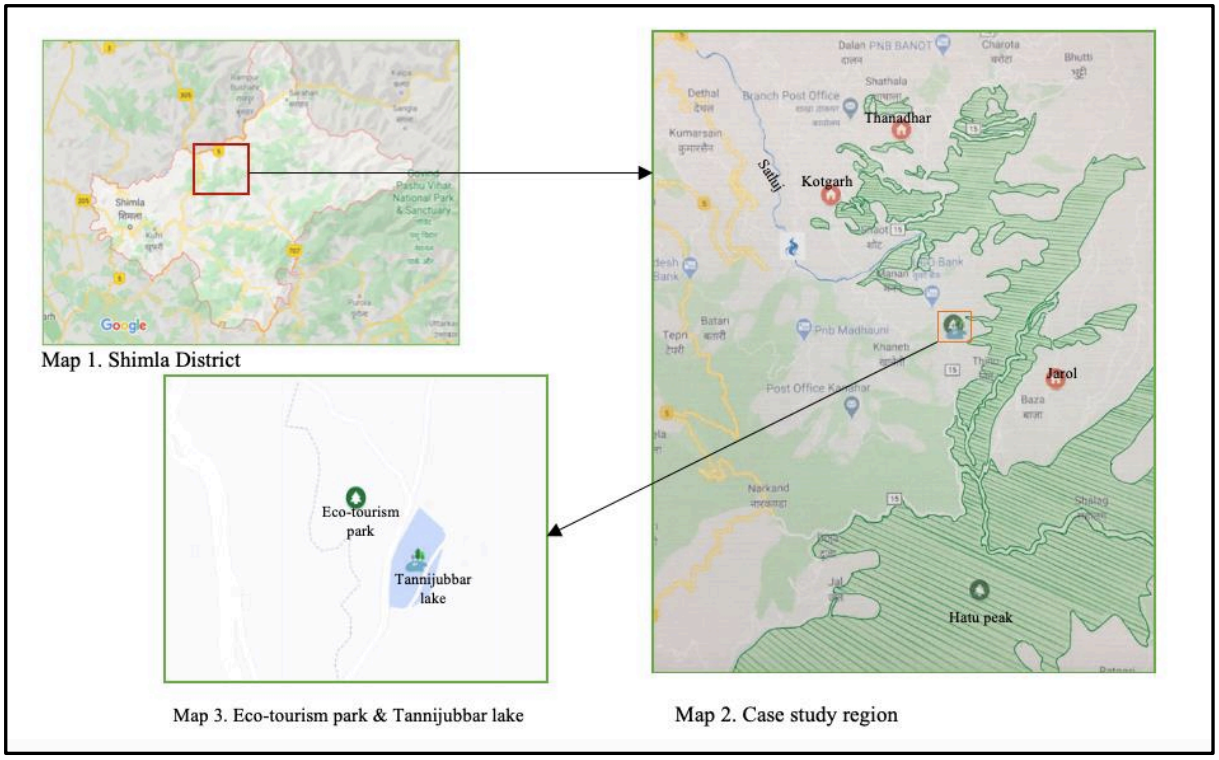

Figure 2. ***Location of Hamlets and the Ecosystems***

1.3 Relevance of Research

By looking into the inter-relation between place attachment and ecosystem services, the aim is to understand the level of place attachment of indigenous communities in the mountain ecosystems. This study also helps to explore levels of place attachment among different sub-groups to this region, through the differences and similarities in deriving ecosystems services and related benefits by these sub-groups, from the same ecosystems. The study of place attachment is still limited, especially in connection with ecosystem services which will be worth exploring.

Since this research will be focussing from the perspective of the indigenous communities it can help planners and other government or private authorities to develop frameworks as tools to assess the contribution of nature on human life for effective policy decision making.

As majority of the population in the selected case study region are engaged into the cultivation of apple orchards; they should undertake sustainable land use practices by integrating indigenous perceptions with scientific knowledge which will help in empowering the communities and develop governance and management procedures which are culturally relevant.

1.4 Research Objective

The following research aims to explain how ecosystem services and related benefits (monetary and non-monetary) derived by indigenous communities from mountain ecosystems influence their level of place attachment

The specific objective of the study is;

- To identify the mountain ecosystems that are important to indigenous community groups.
- To classify the ecosystem service and related benefits (monetary and non-monetary) that the indigenous community groups derive from mountain ecosystems.
- To explain the level of place attachment for mountain ecosystems by indigenous community groups.

1.5 Research Question(s)

Main research question:

How does the ecosystem services and related benefits (monetary and non-monetary) derived by indigenous communities from mountain ecosystems influence their level of place attachment?

Research sub-questions:

1. Which mountain ecosystems are important to indigenous community groups?
2. Which ecosystem service and related benefits (monetary and non-monetary) do indigenous community groups derive from mountain ecosystems?
3. What is the level of place attachment for these mountain ecosystems by indigenous community groups?

Chapter 2: Literature review/theory

2.1 Introduction

This chapter focuses on the review of noteworthy literature and theories that would support the research along with giving clarity to the major concepts fundamental to it, thus meeting the general objective of this thesis. The chapter starts with discussing the concepts of place attachment and ecosystem services, their definitions, frameworks and methodologies developed over time, before moving onto the case studies showing the relationship between the main concepts. Lastly, the conceptual framework will be presented on which this thesis is based upon.

2.2 Place Attachment

2.2.1 Definitions

As human beings, we have the tendency to form an attachment with not only other beings but also to places and environment. Over time, this concept of place attachment has had various definitions according to different perspectives. Some authors have included the concept of place attachment under the bigger umbrella of 'sense of place' (e.g. Shamai, 1991). Other authors seem to have used the concept exclusively, such as, Low and Altman (1992, p.2) whose definition is commonly used as a base for understanding place attachment. They conclude that place attachment is formed due to the interaction between "affection and emotion, knowledge and beliefs, behaviors and actions" (Najafi and Kamal, 2012). Hernandez, et al., (2007, p. 310) defines place attachment as "an affective bond that people establish with specific areas where they prefer to remain and where they feel comfortable and safe". Manzo (2005) argues that place attachment is understood by the way people construct meanings, values and emotions to a place.

While many researchers like Quinn and Halfacre (2014) and Raymond, et al., (2010) talk mostly about positive experiences in their researches, Manzo (2005) emphasizes and demonstrates on the need to explore negative experiences of people in relation to a place since it also contributes in forming an identity. Thereafter, this work of Manzo has been taken into serious consideration by other authors, such as, Scannell and Gifford (2010) and Lewicka (2011) in their research for giving room to negative experiences as well, while developing frameworks.

Due to its application in different perspectives, place attachment is treated as a multifaceted concept between individuals and their environment (Low and Altman, 1992; Scannell and Gifford, 2010). As such, a multi-faceted and fundamentally evaluative definition for place attachment is as follows: "an emotional bond, usually positive, between individuals or groups and their environment" (Masterson et al, 2017).

2.2.2 Frameworks

As with the definitions, different authors have tried to come up with different frameworks on understanding the concept of place attachment. These include the tripartite model of place attachment by Scannell and Gifford (2010) which is a three-dimensional framework developed in an organized and coherent technique to incorporate the various definitions of place attachment which have existed in the past and as shown in current literature under the category of the 3 P's - person, process and place. According to Scannell and Gifford (2010), the *person* dimension takes in to consideration the way people attach meaning to a space based on their

past experiences and beliefs, either individually or in a group; the *process* dimension considers the bond that is formed between people and place because it satisfies a certain need or provides feeling of belongingness; lastly, the *place* dimension analyses the characteristics of and the role a "place" plays in attachment. According to the authors, there is flexibility in this framework to either use all the dimensions for measuring place attachment or maybe done separately.

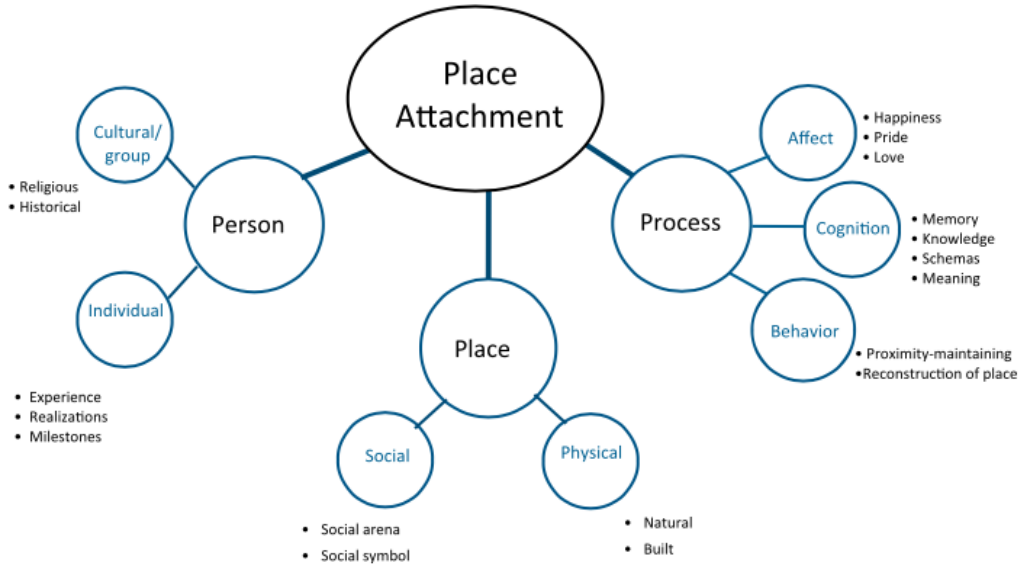

Figure 3. ***Tripartite Model of Place Attachment (Scannell and Gifford, 2010)***

Reviewing the literature on place attachment for research, method and theory, Lewicka (2011) came up with a framework similar in structure to the tripartite model (Scannell and Gifford, 2010). The *research* component looks at all the previous researches done on place attachment. The *method* component comprises of the qualitative and quantitative methodologies used by various researchers to measure place attachment. The major essence of the article is discussed in the *theory* section, wherein Lewicka (2011) points out how the person component in Scannell and Gifford (2010) have attracted majority of attention, largely ignoring the *processes* component.

Another model often discussed in the literature is the two-dimensional model used for measuring place attachment (Raymond et al, 2010; Masterson et al, 2017; Cundill et al, 2017; Cundi-Sanchez et al, 2019). The model considers *place identity* and *place dependence* as two dimensions of place attachment to assess the intensity of place bonds (Brown, 2015). Place identity is defined as "those dimensions to self that define the individuals personal identity in relation to the physical environment by means of a complex pattern of conscious and unconscious ideals, beliefs, preferences, feelings, values, goals, and behavioral tendencies and skills relevant to this environment" (Proshanksy, 1978, p.155 in Cundill et al, 2014, p. 142). Place dependence is defined as "functional connection based specifically on individual physical connection to a setting (Raymond et al, 2010, p.5). Cundill et al. (2017) argues that place dependence is about the opportunities provided by a place to satisfy the needs of people.

This model is also used by Raymond, et al., (2010) for developing a model with five dimensions examining place identity, place dependence, nature bonding, family bonding and friend bonding. However, the main concept of this model is similar to the tripartite model of place attachment but has key differences. To illustrate, the five-dimension model doesn't consider psychological processes and tests the model at regional level scale while Scannell and Gifford (2010) test it at a community level.

2.2.3 Methodologies

Qualitative and quantitative methodologies have been used to understand place attachment in empirical case studies. While quantitative methods point more towards objectivity, qualitative measures are subjective and provide in-depth information. Over the years, many scales to measure place attachment through a quantitative method have been developed. Some are regarded as unidimensional (e.g. Hernandez et al, 2007) while some are multidimensional (e.g. Scannell and Gifford, 2010; Raymond, 2010). However, Brandenburg and Carroll (1995) argue to use qualitative methods since it brings out exclusivity in the concept of place attachment rather than generalizing the findings. Gunderson (2006) argues that variety of terms can be used to describe the attachment to their places often showing the intensity of attachment.

In recent years, authors believe that valuation techniques cannot capture intangible values like identity and attachment (Urquhart and Acott, 2014; Cundi-Sanchez et, al., 2019). Hence, the most common method under qualitative methodology is the use of semi-structured interviews. Quinn and Halfacre (2014) argue in their paper that using semi-structured interview can dig deeper into life stories and add in-depth quality in the findings. Another methodology is the use of mixed methods i.e. qualitative as well as quantitative which will bring out the strengths of both the analytical methods, providing better understanding of any research problem. Adams and Adger (2013) and Knez and Elliason (2017) used the mixed methods approach for getting re-assured answers.

2.3 Ecosystem Services

2.3.1 Definitions

The MEA (2005) defines ecosystem as "a dynamic complex of plant, animal, and microorganism communities and the nonliving environment interacting as a functional unit". MEA tries to categorize 10 systems, however they can't be labelled as ecosystems as each of this category may have more than one ecosystem (MEA, 2005). An ecosystem can differ in size, such as, from a temporary pond to an ocean basin - which can be both called as ecosystems (MEA, 2005).

Table 1. ***Millennium Ecosystem Assessment Reporting Categories (MEA, 2005)***

Category	*Central Concept*
Marine	Ocean, with fishing typically a major driver of change
Coastal	Interface between ocean and land, extending seawards to about the middle of the continental shelf and inland to include all areas strongly influenced by the proximity to the ocean
Inland Water	Permanent water bodies inland from the coastal zone, and areas whose ecology and use are dominated by the permanent, seasonal, or intermittent occurrence of flooded conditions
Forest	Lands dominated by trees; often used for timber, fuelwood, and non-timber forest products
Dryland	Lands where plant production is limited by water availability; the dominant uses are large mammal herbivory, including livestock grazing, and cultivation
Island	Lands isolated by surrounding water, with a high proportion of coast to hinterland
Mountain	Steep and High lands
Polar	High-latitude systems frozen for most of the year

Cultivated	Lands dominated by domesticated plant species, used for and substantially changed by crop, agroforestry, or aquaculture production
Urban	Built environments with a high human density

Mankind has always had strong dependence on natural environment for assets like food, water, and soil formation (Tallis, 2005). Throughout mankind's history, these assets have been addressed as different names, until recently where they have gained attention under the name of "ecosystem services". There are various definitions of ES in literature before MEA definition (2003) became broadly accepted. Earlier definitions of ecosystem services covered "the conditions and processes through which natural ecosystems, and the species that make them up, sustain and fulfil human life" (Daily,1997, p.3). Costanza, et al., (1997, p. 253), on the other hand, defined ecosystem services as "the benefits human population derive, directly or indirectly, from ecosystem functions".

After the MEA defined ecosystem services, Boyd and Banzhaf (2007, p. 619) suggested an alternative way to define the term as "components of nature directly enjoyed, consumed, or used to yield human well-being". The services in Boyd and Banzhaf (2007) does not include indirect processes and functions of ES (Fisher et al, 2009). While Fisher, et al., (2019, p. 645) definition drew largely on Boyd and Banzhaf (2007); "aspects of ecosystems utilized (actively or passively) to produce human well-being" – it took both aspects of directly and indirectly provided services and gives its definition an ecological root, considering the term was originally developed by ecologists (Groot et al, 2017).

While the Economic and Ecological Foundation (TEEB) defined ecosystem services "as the direct and indirect contributions of ecosystems to human well-being" (Kasparinskis et al, 2018) other researchers used the definition by MEA (Wallace, 2007; UK NEA, 2011). More latest publications define it as "contributions of ecosystem structure and function (in combination with other inputs) to human well-being" (Burkhard and Maes, 2017, p. 23). While MEA (2003) definition is regarded as ambiguous, this definition promotes transdisciplinary research and inventiveness (Boerema et al, 2017).

Building on the MEA's classification of ecosystems (see Table 1.), the Government of India (GOI) prepared a report in 2006 on the classification of mountain ecosystems in the entire Himalayan range within Indian territory.

Table 2. ***Classification of Himalayan Mountain Ecosystems (Government of India, 2006)***

Category	*Description*
Forest Ecosystem	The entire spectrum of ecosystems from Tropical forests in the floodplains, to Subtropical, Temperate and Alpine forest ecosystems in the high mountains are found more or less parallel to each other across the length of the Himalaya.
The Cold Deserts	The rain shadow areas north of Great Himalayan range especially in much of Ladakh, Lahul and Spiti, inner ranges of Uttaranchal and a small portion of Sikkim plateau represent this ecosystem.
Alpine Meadows	The alpine zone in the Himalaya is separated by a distinct tree line (3500+200 m in the Western and 4000+200 m in the eastern Himalaya). This is the zone of treeless vegetation with highly specialized growth forms.

Grassland Ecosystem	Most of the grasslands in the temperate, sub-tropical and tropical belts in the IHR* are anthropogenic in nature i.e., derived as a result of frequent fire and forest clearing.
The Riverine Ecosystem	The drainage system in the IHR can be broadly grouped into three main river systems viz. the Indus, the Ganges, and the Brahmaputra.
The Wetlands	The margins of shallow lakes, river courses and man - made water bodies in this region represent the wetland ecosystems.
Agro-ecosystems	Agriculture and animal husbandry have been age-old land use practices in the IHR. A considerable area in the WH is under settled agriculture (terrace farming).

*IHR – Indian Himalaya Region.

Since GOI (2006) have not defined forest and riverine ecosystem in a coherent manner. Sen (2020) has come up with a more explicit definition of forest ecosystem as "the community of plants, animals, microbes and all other organisms in interaction with the chemical and physical features of their environment". Hanna et al, (2017) has defined riverine landscape as a "flowing river or a stream draining a landscape while supporting people's livelihoods and traditions". These definitions give an overall meaning of the ecosystems rather than talking about the ecosystems in a particular geographical region.

2.3.2 Classification of ES

It is imperative to categorize the ecosystem services in order to identify them and share the results in a transparent manner. A number of typologies have been created to classify the ES. As already mentioned in previous chapter, the MEA (2003) classification of ES describes four types of ES shown in figure 4.

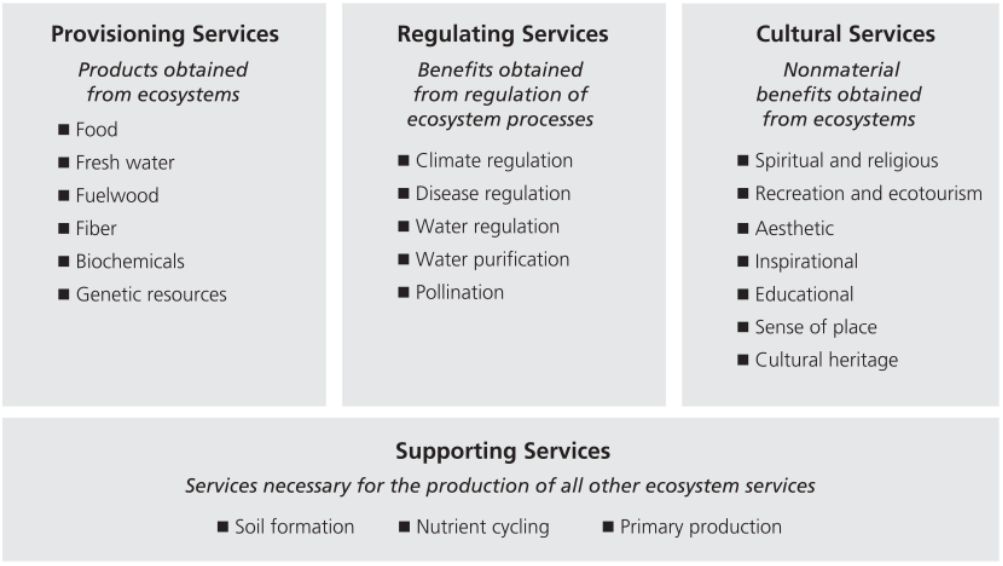

Figure 4. ***Classification of ecosystem services by MEA (MEA, 2003)***

TEEB adopts similar classification of ES as presented by MEA. However, TEEB labels the fourth ES as "Habitat or Supporting", while the rest remains the same i.e. provisioning, regulating and cultural services (Kasparinskis et al, 2018). The "habitat or supporting services" includes habitats for species and maintenance of genetic diversity (Kasparinskis et al, 2018).

Another classification of ES is done by the Common International Classification of Ecosystem Services (CICES) (Haines-Young and Potschin, 2017). Under a hierarchical system, where the three main 'sections' of provisioning, regulating and cultural are adopted from MEA (2003), and then these sections are further split into 'divisions', 'groups' and 'classes'. The classification aims to target the "end products" of nature from where the goods as well as the benefits are derived (Kasparinskis et al, 2018). It is also referred to as the 'cascade model'. The reason it does not incorporate 'supporting services' is to avoid double-counting of ES while valuing them (Kasparinskis et al, 2018).

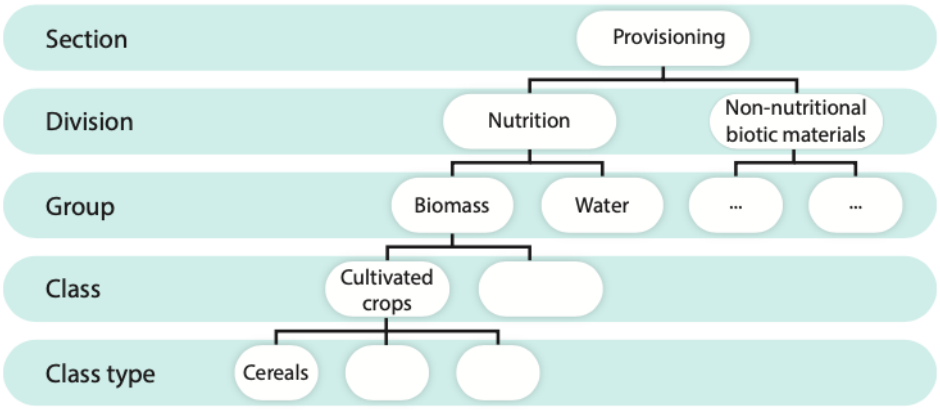

Figure 5. ***The Hierarchical Structure of CICES (Haines-Young, 2017)***

Nevertheless, looking at the complexity in classifying ES, one comprehensive method of classification will not solve the problem of all studies related to ecosystem assessment. While CICES is more relevant in accounting of ecosystem services, the classification by MEA is recognized more globally as compared to TEEB and is the most suitable choice for identification of ecosystem services (Ojea et al, 2012).

2.3.3 Methodologies

There is no single methodology to identify people's use of ecosystem services. The data collection methods are either qualitative or quantitative. Under them, surveys and questionnaire methods are recognized as quantitative; while interviews and group discussions as qualitative. Field observation is another method conducted in the research area.

While Rasmussen et al., (2015) reviewed in his paper, the different methodologies that have been used to gather data, the results showed a bias towards survey-based data collection method. Hence, there is a need to improve the application of other methodology techniques.

According to Kaplowitz (2000), focused group discussions and interviews are two types of collection methods which are heavily relied on to collect majority of information on the use and understanding of the services provided by an ecosystem. Quantitative methods are suitable for identifying ecosystem services. However, it aims to only objectify the result and provides no other information beyond that (Boerema et al, 2017). While not many researchers use a mixed-method approach, Rasmussen, et al., 2015 and Adhikari, et al., (2018) have carried out research studies using a combination of different methods resulting in intensive knowledge of ecosystem services used by the communities living in the regions.

2.4 Interrelation between Ecosystem Services and Place Attachment

2.4.1 Role of Ecosystems in Place Attachment

Since humans are regarded as a crucial part of an ecosystem, they tend to attach a meaning to the ecosystem (MEA, 2005). There are various researches conducted to get an insight into the ways place attachment develops in different ecosystems. Researchers mention about the various sort of relationships people form with their natural environment. Gunderson (2006), for example, carried out a research study to understand the variety of deeper meanings people attached to the wilderness part of their landscapes which are expressed by using various terms to describe the character of the place. The study has widely shown the attachment that the local residents hold about their place in nature; in emotional, symbolic and functional sense. Urquhart and Acott (2014) based their research on a coastal ecosystem where people hold a significant value attached to their natural landscape because of the strong social bonds and cultural identity. Other ecosystems like mountains (e.g., Knez and Elliason, 2017; Schilar and Keskitalo, 2018), forest (e.g. Cundi-Sanchez et al, 2019), riverscapes (Ghasemi et al, 2014) have shown similar results i.e. positive level of place attachment.

Ghasemi, et al., (2014) shows the importance of attachment to natural ecosystems (in this case, riverscape) by researching on the perceptions of people living in urban areas where place attachment is found to be low. While, on the other hand, people living in natural landscapes, intend to form a positive relation with their natural ecosystem which is shown by Brandenburg and Carroll (1995), the authors studied forest and river ecosystems, and the results show that communities who are closer to these ecosystems show more attachment to place than the ones which are further away from them.

2.4.2 Role of Ecosystem Services in Place Attachment

While people are attached to their ecosystems, it is necessary to understand what underpins the values and perceptions of human relationships with nature (Masterson et al, 2017). Attitude towards ecosystem services varies from one individual to another in accordance to the ecosystem services available in that particular geographical scale (Adams and Adger, 2013). Despite people living in the same ecosystem they might have different levels of place attachment depending on the services and benefits that they derive, which will be discussed in subsequent sections (Brandenburg and Carroll, 1995). This can be seen in the study by Cundi-Sanchez, et al. (2019) on the way local groups (in this case, pastoralists and farmers) are dependent on the same ecosystem services yet deriving different benefits from it. The results of the research showed that pastoralists' place identity was lower than farmers because they weren't native to the place where as, both the groups showed higher place dependence. Likewise, in the research of Adhikari, et al., (2018), the local groups identified, and prioritized ecosystem services based on their background, profession and individual interests. There are researchers who only view ecosystem services and place attachment from the perspective of local group under the same profession, while there are a few differences observed in the type of services derived from a particular ecosystem, yet, they show deep attachment with the place (Quinn and Halfacre, 2014; Schilar and Keskitalo, 2018).

Adams and Adger (2013) in their study found that it is not the provisioning ecosystem services that develops place attachment but more due to the non-economic ecosystem services. Along these similar lines, Knez and Elliason (2017) results showed that cultural ecosystem services play an imperative role in developing the feeling of place identity which may lead to enhancement in human well-being. Sangha, et al. (2018) gives equal importance to cultural ES by stressing on the point that the indigenous people's connection is not merely about deriving services from the ecosystems but the knowledge and skills that they hold to derive those

services. According to them, the values, beliefs, traditions and customs help in preserving the ES of a region.

2.4.3 Role of Ecosystem Service Benefits in Place Attachment

Only a few articles have explicitly addressed the concept of benefits, whether monetary or non-monetary, obtained from ecosystem services. The European Centre for Nature Conservation (ECNC) (2017) defines monetary benefits as "the process whereby people express the importance or preference they have for the service or benefits that ecosystems provides in monetary terms". Non- monetary benefits are defined as "the process whereby people express the importance or preference they have for the service or benefits that ecosystems provide in terms other than money" (ECNC, 2017). Schilar and Keskitalo (2018) talk about the ways the indigenous community engaged into tourism not because of the monetary benefits that they could derive from their ecosystems and their services but for non-monetary benefits to preserve and support specific lifestyle choices. According to the results, "tourism activity could be seen as an expression of place attachment" (Schilar and Keskitalo, 2018). Similarly, Quinn and Halfacre (2014) in their study prove that place attachment is not due to the monetary benefits that farmers derive but more because of the non-monetary benefits such as the bond which they have with neighbouring friends and family and the surrounding nature and wild animals.

2.5 Conclusion

Despite gaining significant attention since the past two decades, the concept of place attachment still holds the challenge of having multiple meanings presented in the literature. Thus, this thesis will incorporate positive as well as negative experiences during the research conducted. Based on their own understanding, many researchers have developed various models and tools for measuring the level of place attachment amongst different groups of people at different geographical scales. The above-mentioned literature shows the way people tend to have relational values in the ecosystems they are living in. Ecosystem services is yet another complex concept where one has to dig deep into understanding the conversion of these services into benefits derived by the people. The dependence on ecosystem services differs from one ecosystem to another, sometimes even overlapping the services of one ecosystem with another or two groups of communities deriving different benefits from the same service (MEA, 2003; Adhikari et al, 2018; Cundi-Sanchez et al, 2019). There are diverse case studies based on the ways native and non-native communities have bonded with nature based on their personal and/or community beliefs, values and emotions generating in them a feeling of attachment to their respective places. These research studies, either qualitative or quantitative or both in terms of methodology, are selected based on suitability.

2.6 Conceptual Framework

The main concepts of this conceptual framework are “mountain ecosystems” and “place attachment”. The major ecosystem services falling into the three categories are regulating and maintenance, cultural and provisioning would be identified during the research. Along with the services, benefits which are derived from these services are categorized into monetary and non-monetary. The entire research will be conducted from the perspective of indigenous community. With the identification of the major ecosystem services and the benefits, the level of place attachment will also be measured. The two-dimensional place attachment model with the components of place identity and place dependence (Cundill et al, 2017; Cundi-Sanchez et al, 2019) is chosen to measure the place attachment levels amongst the indigenous community.

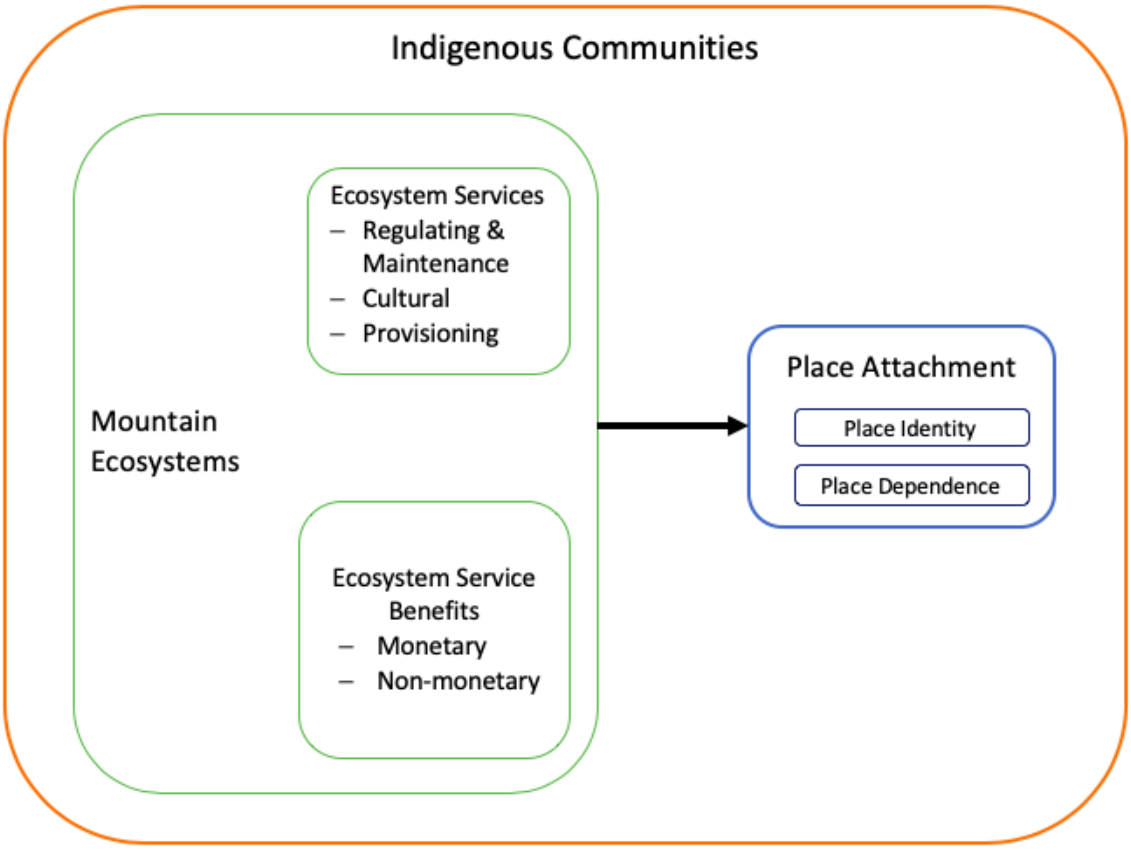

Figure 6. ***Conceptual Framework***

Chapter 3: Research design, methods and limitations

3.1. Research Strategy

The research strategy chosen for this thesis was the case study strategy aiming to collect information at a chosen geographical location to understand the link between the variables in depth; in combination with survey for the collection of primary data. Usually, a case study takes a holistic approach with the aim to gather qualitative or quantitative data in relation to the case (Thiel, 2014). It is a common methodology used to collect data in social science research either involving a single case or multiple case studies. This strategy is used for studying the situation in great detail; aiming for meaningful results (Thiel, 2014). Case study is often characterized with a smaller number of units but a greater number of variables to study. Any research opting for this strategy is conducted in a naturalistic setting, aiming for rich and detailed understanding. In actual practice, case study is labour intensive and demands for time, commitment and expertise. However, the rich and meaningful description in a case study, helps the researcher arrive at a better explanation at the end of the research. Since this strategy is very case specific, the findings of this research conducted cannot be generalized to other situations; resulting in low external validity. On the contrast, internal validity of the research tends to be on a higher level because of the richness of data collected due to the specificity of the case. The validity and reliability of this research will be discussed further in the sub-section.

The case study is the most suitable strategy for this research since it would provide the real reasons behind indigenous community's level of place attachment through the identification of the ecosystem services and benefits, they derive from the ecosystems available in the case study area. It is a single case study selected in the mountainous terrain because of the known fact that people in the mountains depend hugely on ecosystems and its services for their living (Sangha et al, 2018). The research focuses on a single situation aiming for the depth of the findings. In this study, the researcher will work on collecting primary quantitative data through questionnaires and qualitative data through key informant interviews, more of which will be discussed in section 3.3.

3.1.1 Validity and Reliability

Validity of a research can be achieved by making an appropriate choice in selecting the research strategy and methods to answer the question in a rational and transparent manner. Validity is divided into two parts: internal and external. Internal validity means that the effect has been measured the way it was intended to (Thiel, 2014). Two main points of internal validity are that the theoretical concepts have been adequately operationalized, and the measurement instrument is clearly defined and exclusive to the case only. Another way to address the internal validity of the questionnaires is through conducting a pilot study before the real data collection period, since it would provide ideas and approaches that might not have been foreseen before the actual survey.

External validity is the ability to apply the results of a scientific study outside of that study (Thiel, 2014). While external validity is important for statistical studies, it is not the case in this research. Even though quantitative analysis is chosen for this research but since it adopts case study method the research will gather empirical knowledge on the specific case.

Reliability also plays an important role in this research strategy. Reliability of a research is the accuracy and inconsistency with which data is collected (Thiel, 2014). Every step during data collection shall be kept transparent by systematically recording the procedure in a log or a database. To avoid a bias, this research takes into account multiple subgroups (of the indigenous community) from the sample population where the researcher can compare the results.

3.2. Operationalization

The operationalization is derived from the theoretical framework, narrowing down the variables till the indicators, to help facilitating data collection and analysis. The main variables, in respect to this thesis, are defined as follow;

- *Indigenous community:* is defined as a community which is attached to their ancestral environment, having links with their surrounding natural areas and uphold distinct culture and beliefs. In this thesis, all the residents are indigenous to the case study area as no outsider is allowed to settle in the area.

- *Mountain Ecosystems*: This research intends to study the ecosystems available in mountains due to the presence of significant global biodiversity and additionally has natural spiritual and aesthetic value (MEA, 2005). As per the suitability, the researcher would select the mountain ecosystems lying in the study area i.e. north-west Himalayas (Himachal Pradesh) from the Government of India (2006) report. Mountain ecosystems include the ecosystems such as forest ecosystem, alpine meadows, riverine ecosystem, wetlands, and the agro-ecosystem in the steep and high lands (GOI, 2006; MEA, 2005).

- *Ecosystem Services and Benefits:* Ecosystem services are the benefits people obtain from ecosystems. (MEA, 2005) This thesis will follow typology of ecosystem services given by CICES (Haines-Young and Potschin, 2017) i.e. provisioning, regulation and maintenance, and cultural. The benefits derived from these ecosystem services can be monetary or non-monetary in nature.

- *Place Attachment* is defined as "an emotional bond, usually positive, between individuals or groups and their environment" (Masterson et al, 2017).

Table 3. ***Variables and sub-variables definitions.***

Concept	Variables	Sub-variables	Definition
Indigenous community's level of place attachment	Mountain Ecosystems	Forest Ecosystem	A forest ecosystem describes the community of plants, animals, microbes and all other organisms in interaction with the chemical and physical features of their environment (Sen, 2020).
		Alpine Meadows	Meadows with low grass usually found in high-mountain regions. The meadows comprise a large number of herbaceous communities rich in medicinal and aromatic plants (GOI, 2006).
		Riverine Ecosystem	Flowing river or a stream draining a landscape while supporting people's livelihoods and traditions (Hanna et al, 2017).
		Wetlands	The margins of shallow lakes, river courses and man - made water bodies in this region represent the wetland ecosystems (GOI, 2006).
		Agro-ecosystem	An agricultural ecosystem is an ecosystem managed with a purpose, usually to produce horticulture crops (Andren, 2008; GOI, 2006).
	Ecosystem Services	Provisioning	Products people obtain directly from the ecosystems such as food, fuel, fibre, fresh water, and genetic resources (MEA, 2005).
		Regulating	Regulating services are the benefits people obtain from the regulation of ecosystem processes including air quality maintenance, climate regulation, erosion control (MEA, 2005)
		Cultural	Nonmaterial benefits people obtain from ecosystems through spiritual enrichment, recreation, and aesthetic experiences (MEA, 2005).
		Supporting	Supporting ecosystem services are essential to produce all the ecosystem services like nutrient cycling and formation of soil (MEA, 2005).
	Ecosystem Service Benefits	Monetary	The process whereby people express the importance or preference they have for the service or benefits that ecosystems provides in monetary terms. (ECNC, 2017)
		Non-monetary	The process whereby people express the importance or preference they have for the service or benefits that ecosystems provide in terms other than money. (ECNC, 2017)
	Place Attachment	Place Identity	Those dimensions of self, such as mixture of feelings about the physical surroundings and symbolic connection to that place, that define who we are (Raymond et al, 2010).
		Place Dependence	It refers to the connection of a person to a place that provides the opportunity to satisfy important needs (Masterson et al, 2017).

Table 4. ***Operationalisation of Indicators***

Concept	Variable	Sub-variable		Indicator	Measurement Unit	Data Type	Data Collection Method	Data Source
Indigenous community's level of place attachment	Mountain Ecosystem	Forest Ecosystems	Forest with Oaks and Cedars; Eco-tourism park	Spatial Proximity Level of Importance	No. of minutes; Scoring (1-5)	Primary Data	Quantitative Data	Indigenous Community
		Alpine Meadows	Hatu Peak	Spatial Proximity Level of Importance				
		Riverine Ecosystems	River Satluj	Spatial Proximity Level of Importance				
		Wetlands	Tannijubbar Lake	Spatial Proximity Level of Importance				
		Agro-ecosystems	Orchards	Spatial Proximity Level of Importance				
	Ecosystem Services	Provisioning services	Biomass	Crops – Apple, Cherry, Vegetable(s) [value, type]	Scoring (1-5)			
				Wild food – wild berry, wild vegetables, medicinal plants, fodder [value, type]				
			Water	Freshwater – Irrigation, household consumption [type]				
		Regulating and maintenance services	Atmospheric composition	Air quality maintenance by the ecosystem used [Regulating the physical quality of air]				

Indigenous community's level of place attachment				Climate regulation by the ecosystem used. [Regulating our global climate]	Scoring (1-5)	Primary Data	Quantitative Data	Indigenous Community
			Mediation of nuisance of anthropogenic origin	Noise Attenuation [Reducing noise]				
			Regulation of soil quality	Erosion control by the ecosystem used. [Controlling or preventing soil loss]				
				Decomposition and fixing processes and their effect on soil quality [Ensuring organic matter in soil is maintained]				
			Lifecycle maintenance, habitat and gene pool protection	Maintaining nursery populations and habitats [Providing habitat for wild plants and animals that can be useful to us]				
				Pollination [Pollinating fruit trees and other plants]				
		Cultural services	Physical and experiential interactions with natural environment	Recreational and Tourism significance of the ecosystem used. [For recreation and tourism]				

Indigenous community's level of place attachment			Intellectual and representative interactions with natural environment	Characteristics of living systems that enable education and training [For education and training]	Scoring (1-5)	Primary Data	Quantitative Data	Indigenous Community
			Intellectual and representative interactions with natural environment	Aesthetic significance of the ecosystem used [The beauty of nature]				
				Cultural heritage value of the ecosystem used [for history and culture]				
			Spiritual and symbolic and other interactions with natural environment	Spiritual and religious significance of the ecosystem used [For spiritual and religious activities]				
				Folklore dedicated to the ecosystem used [For folklore tradition]				
	Ecosystem Service Benefits	Monetary	—	Economic value assigned to the use of ecosystem	Yes/ No			
		Non-monetary	—	Non-economic value assigned to the use of ecosystem				
	Place Attachment	Place Identity	—	Level of positive emotional connection to the place in respect to each mountain ecosystem	Likert (1-5)			
		Place Dependence	—	Level of Satisfaction of needs in respect to each mountain ecosystem				

3.3 Data Collection Methods

Data collection is a method to gather and measure specific information on variables enabling the researcher to answer the research question and evaluate the outcomes (Kabir, 2016). Data collection is of two types, namely; qualitative and quantitative. This research has used, both, quantitative and qualitative ways to collect and analyze primary data. Quantitative data are always numerical in nature, usually measuring values or counts while, qualitative data is non-numerical and descriptive in nature. Questionnaire and key informant interviews were selected as instruments for collecting primary data. A questionnaire consists of a series of questions with a choice of answers, aimed at gathering information from the respondents. They can be given to more people in a short span of time, hence, making it a time efficient approach. Key informant interviews are interviews with respondents who have intense knowledge of the on-going in a particular area or on a particular case (Kabir, 2016). In this research, the use of secondary data is limited to know the population size to collect the sample size for questionnaires and to gather information on the various mentioned ecosystems available in the area. The name of ecosystems was selected based on the researcher's knowledge about the area.

Questionnaire was selected as a research instrument as it was seen as the most suitable way to measure the level of place attachment by knowing the types of services and benefits the indigenous community derive from the ecosystems they use. The questionnaire provided uniformity all across, since every respondent answered the same set of questions. It was seen as a suitable method for answering straight forward questions (Chasteauneuf, 2010). Close-ended questionnaire with fixed set of answers is prepared for this research. The questionnaire had a mixed format of multiple-choice questions (MCQs), including yes/no questions, and use of scoring/ranking and scaling (likert scale).

One of the most common and the suitable scale for measuring is the Likert-scale. According to Thiel (2014), "A likert scale consists of a number of items (statements or propositions) on one and the same subject; for each item, the respondent has to indicate to what extent they agree with the statement". The score/ranks of the respondents were then added up and the results were further analyzed. In this research, the answers of the questionnaire consisted of numbers that have an intrinsic meaning and numerical scores from 1 to 5 is used (Thiel, 2014). For each question, each respondent selected the answer that was the most appropriate in his/her view. The use of questionnaires in case study assumes that respondents have a personal understanding of the phenomena being studied and have the ability to communicate their understandings towards it (Chasteauneuf, 2010). Hence, the questionnaires can provide sufficient empirical data needed for case study research.

For the key informant interviews, an interview guide was prepared beforehand comprising of five questions related to their attachment with the place. One respondent from every sub-group was contacted for the interview who provided responses on the behalf of the entire sub-group.

Considering not everybody is familiar with the technical terms, the questionnaires were distributed in two languages i.e. English and Hindi. For the key informant interviews as well, the questions were asked in Hindi as well as English to make sure the interviewee understood the question. Irrespective of the language, the level of the questionnaire and the interviews were kept as simple as possible which were understood by the respondents easily. The questionnaire included a list of instructions on how to fill it in making it easier for the respondents to answer appropriately. Before designing the questionnaire, it was kept in mind to choose the right variables and indicators during the operationalization stage, and then formulating the questionnaire items carefully and putting them in a logical manner. It was crucial to unfold the

questions in a sequence starting with simple questions at first which made them familiarize with the research being conducted (Thiel, 2014). Besides questions on the variables, the questionnaire also has a set of control variables concerning personal details such as age, gender, profession and spatial proximity that "might be of influence on people's answering patterns, which means they can interfere with the effect the researcher intends to measure" (Thiel, 2014).The question asking about the profession helped the researcher in categorizing the sample population in different sub-groups while 'name', was not necessary in a questionnaire for keeping the anonymity; helping the respondent to answer questions at ease.

Before handing out the links of the questionnaires to the people via online portals such as emails and WhatsApp, a pilot study was also conducted by handing out the links of the questionnaire to test if the link/questionnaire had any glitches and to ensure the reliability and validity of it.

3.3.1 Sample Size and Selection

While conducting a research it is not possible to include every possible unit of study, hence, a certain kind of selection is to be made. This selection of a certain number of units is known as a sample. According to Thiel (2014, p. 45), "a sample (n) is a selection from the total population (N) of possible units of study". Sampling procedures are distinguished into two types of approaches; probability and non-probability (Thiel, 2014). The units chosen under probability sampling are based on the theory of probability, i.e. selection by chance, whereas, in non-probability the researcher makes a decision as to who has to be selected in the sample size.

This research found probability sampling as a suitable choice since, the researcher selected a sample size by chance or probability, specific to the case being studied in this research. Under probability sampling a combination of stratified convenience sampling and cluster convenience sampling were used. Hence selection of the sample size were made from pre-determined groups based on chance as well as on a shared characteristic/feature (Thiel, 2014); (in this case, profession). The case study area looked into population of three hamlets of Jarol, Kotgarh and Thanadar. The total population of this area according to the last census i.e. census of India (2011) is 1666 i.e. 951 of Jarol, 608 of Kotgarh and 107 of Thanadhar. Since this research is using questionnaires as a data collection instrument, it would calculate the sample size from the total population of the case study area. To calculate the sample size, Solvin's Formula is used given the population size and a margin error (Ellen, 2018). The formula is written as follows;

$$n=N\div(1+Ne^2)$$

where, n = sample size

N = population size

e = margin of error

Putting the values in the formula and taking error tolerance as 0.05 the sample size we get is;

$$n=N\div(1+Ne^2)$$

$$n= 1666\div [1+1666\ (0.05)^2]$$

n=322

Hence, with 1666 number of people, the sample size n=322. The researcher distributed the questionnaires amongst people known in the area as well as on social media platforms. However, for increasing the chances of getting a greater number of complete questionnaires back from the selected sample size the researcher politely sent follow up messages to ensure that the respondent had received the questionnaires and gained trust in filling them. For the key informant interviews 8 residents were contacted out of which 5 responded positively.

After one month of data collection period, the total number of filled questionnaires were 113 where, 57 were filled by orchardists, 10 were tourist actors, 14 professionals, 7 daily wage labours, 14 students and 11 others. While for the key informant interviews, the interviewees that were selected were one each from the sub-group of professional, student, others (housewife), daily wage labour and the orchardist. The orchardist is also a tourist actor and so, provided in-depth information for both the sub-groups.

3.4 Data Analysis

In this thesis, quantitative data was gathered through primary source i.e. closed-ended questionnaires, the results of which was recorded and analysed through descriptive statistics and with the help of SPSS. Descriptive statistics was performed for the three sub-questions where the data was summarized quantitatively after its collection, in MS Excel, under each sub-indigenous group. Those findings were highlighted where the score allotted to a question was half (50%) or more than half (>50%). SPSS is a computer software widely used in quantitative data analysis, especially in the field of social sciences. It helps in managing and documenting huge volumes of data and later, conducting analysis of the collected data through the tools available.

For this research, SPSS was used to answer the main question by performing correlation analysis. The analysis was carried out under every sub-group by uploading the data in different data editors. Since the question relating to monetary benefits was a string variable, it was converted into numeric i.e. 0 for No and 1 for yes were allotted. Correlation was performed between 1). Place identity/dependence with level of importance, 2). Ecosystem services and their benefits in SPSS to know whether the influence of ecosystem services on place attachment levels are strong/moderate/weak. The findings with strong/moderate positive or negative correlation were highlighted by the researcher. The correlation of spatial proximity with place identity/dependence could not be performed since it was too complex of a string variable to be converted into numeric.

While the qualitative data is gathered through key informant interviews, it was analysed through manual coding. Each interview was recorded by taking permission from the interviewee. The recordings were then transcribed in MS-word and noteworthy points which could be used while reporting data were highlighted.

The results of the descriptive statistics, correlation analysis and the interviews are shared in the next chapter.

3.5 Challenges and Limitations

The outbreak of COVID-19 pandemic influenced the research strategy and data collection methods. Due to the imposed lockdown worldwide, there was an inability to access the study area, which possessed issues in contacting the sample size for the collection of data.

Keeping the social distancing measures in mind, all the procedures for data collection were shifted to the online mode. While the online data collection methods are monetarily not expensive yet, it is a challenge in the study area since internet users are generally "bombarded with misleading and seductive information and invitations, which can make them insensitive to requests from researchers to participate in a survey" (Thiel, 2014). Hence, not receiving responses from all the respondents lowered the sample size.

Number of respondents from each sub-group differed, hence, effecting the correlation analysis. SPSS did not correlate some variables as the data was constant i.e. there was same answer by all the respondents making it difficult for SPSS to analyze data for those variables. With a larger sample size under each sub-group this problem could have been avoided.

Limitation of this approach would be the inability to include observation or participatory mapping methods due to the lockdown measures being imposed. Another limitation of this approach is that there is no way to tell how much thought a respondent would put into answering the questionnaire online whereas, if made them filled by the researcher on field they might answer more seriously.

Chapter 4: Presentation of data and analysis

The data collected through questionnaires and interviews are analyzed and presented in this chapter, for each variable and its indicator as mentioned in the theoretical framework of chapter 2.

4.1 Which mountain ecosystems are important to indigenous community groups?

As per the results of the survey out of 113 respondents, six indigenous groups were identified in the case study region. These groups are classified into 57 orchardists (50%),10 tourist actors (11%), 14 professionals (16%), 7 daily wage labours (8%), 14 students (16%) and 11 others (12%). The level of importance and spatial proximity of each indigenous group is analyzed. Refer to tables 1 and 2 under annex 2 for this sub-question.

Orchardists

Table 1 indicates that orchardists consider farmlands and forests as the most important mountain ecosystems. Out of the 57 orchardists, 52 (91%) consider forest as extremely important,4 (7%) as important and 1 (2%) found farmlands moderately important. On the other hand, out of 57 orchardists, 56 (98%) consider farmlands as extremely important and 1 (2%) considers farmlands as important. Also, 29 (51%) orchardists find Hatu peak as extremely important, 27 (47%) consider it as important while just 1 (2%) considers the peak as moderately important. For river Satluj, 60% orchardists consider it extremely important. None of the majority respondents consider Tannijubbar lake and eco-tourism park as extremely important.

Likewise, based on spatial proximity forest and farmlands are the closest to the orchardists. Out of 57 orchardists, 56 (98%) are within 15 minutes of walking while 1 (2%) live about 15-30 minutes away from forest. For farmlands, out of the 57 orchardists, 51 (89%) live under 15 minutes of walking and 6 (11%) live about 15-30 minutes away. For Hatu peak, 33 orchardists (58%) live 30-45 minutes away. For river Satluj, 42 out of 57 orchardists (74%) live 45-60 minutes away. For eco-tourism park and Tannijubbar lake, same results were notes i.e. the distance ranges from under 15 minutes to above 60 minutes, as both the ecosystems are located next to each other.

According to the interviewees, farmlands are the closest in spatial proximity:

> *"...our farmlands are very dear to us. There is a whole rich history behind how apples came to this part of the country and we value it. Most of us have our orchards at the backside of our houses and others might have at a very close distance from their homes." – Orchardist*

> *"... so, our farmlands are mostly behind or adjacent to our houses." - Student*

Despite the distance of river Satluj and Hatu peak, majority of the orchardists hold high level of importance for both the ecosystems as a high score is allotted to the ecosystem.

Tourist Actor

Table 1 shows, most of the ecosystems have been marked as having a high level of importance irrespective of the distance. For forest, Tannijubbar lake and farmlands, all 10 (100%) tourist actors find the ecosystems extremely important. For both, Eco-tourism and Hatu peak same results were recorded i.e. Out of 10 tourist actors, 9 (90%) considers the ecosystems as extremely important and 1 (10%) as important. Also, 8 out of 10 tourism actors (80%) find the river Satluj extremely important, while 2 (20%) found this important. When

asked the same question to an interviewee, the reply seemed that they hold all the ecosystems almost equally important in their profession;

> *"As a tourist actor, the mentioned ecosystems serve as tourist attractions, hence all of them are important to us."- Tourist actor*

Table 2 shows that most of the tourist actors are located in a close proximity to the ecosystems except for river Satluj and Hatu peak. All 10 tourism actors live closest to the forest i.e. under 15 minutes. Majority of the tourist actors live under 15 minutes of distance from Tannijubbar lake, eco-tourism park and farmlands while the rest, live about 15-30 minutes away. For river Satluj, half of the respondents live 45-60 minutes away. While for Hatu peak half of the respondents live about 15-30 minutes away.

Based on the interviews, the tourist actors situated near the eco-tourism park and Tannijubbar lake tend to have higher level of importance for the ecosystems, than the ones situated a little farther away.

> "*Since Eco-tourism park and Tannijubbar lake are near Jarol, so the tourist actors near to them treat these both ecosystems more importantly than the tourist actors which are living in Kotgarh and Thanadhar. However, they will still be important for all tourist actors"- Tourist actor*

Professionals

Table 1 indicates that 14 professionals (100%) find forest as extremely important, followed by Hatu peak, 9 out of 14 professionals (64%) find the ecosystems extremely important and 5 (36%) found Hatu peak important.

For ecotourism park, half of the professionals i.e. 7 (50%) professionals find it moderately important, while, for Tannijubbar lake half of the respondents- 7 professionals (50%) consider the ecosystem as important. For river Satluj, 9 (64%) find the ecosystem moderately important.

Farmlands are in a close vicinity to their houses i.e. 11 out of 14 professionals (79%) live under 15 minutes of distance while, 3 (21%) live about 15-30 minutes away. River Satluj is considered the farthest of all ecosystems where 8 out of 14 professionals live 45-60 minutes away. For both, ecotourism park and Tannijubbar lake, the spatial proximity varies between under 15 minutes of walking distance to above 60 minutes away.

As per professionals, the level of importance is the highest for forests followed by Hatu peak. As said by an interviewee, "due to engagement into professions like government offices or academic sector, there is not much relevance of any other ecosystem as it is with the forest." The interviewee further added that the professionals living closer to ecosystems like Eco-tourism park and Tannijubbar lake might have higher level of importance which can be predicted from table 1. However, since forest is in close vicinity to all respondents it tends to have the highest importance;

> *"Forest will be considered as the most important. We are surrounded by forests all over and have many personal stories/moments attached to it along with the myths and folklores." – Professional*

Daily wage labours

Table 1 indicates, 7 (100%) daily wage labours (D.W.L) find forest, farmlands and Hatu peak extremely important. 6 out of 7 D.W.L (86%) found the Tannijubbar lake to be important and 4 (57%) find river Satluj as important.

The distance to forest and farmlands for all D.W.L is under 15 minutes while for Hatu peak they live 30-45 minutes away. For river Satluj, 5 out of 7 D.W.L (71%) live 45-60 minutes away. For eco-tourism park and Tannijubbar lake, the distance ranges between under 15 minutes to 15-30 minutes.

For this indigenous group, forest, farmlands and Hatu peak holds the highest level of importance. The reason for farmlands as having maximum level of importance is as they work in these farmlands, thus, serves as a source of income;

> *"Since most of us are employed for the cultivation of farmlands. Especially during the seasons when we have to pluck and pack them… So, farmlands provide us with income to sustain ourselves and our families." – D.W.L*

Tannijubbar lake also possesses importance, since it is a religious lake and people often visit when they have to worship in the temple, adjacent to the lake; irrespective of the distance.

> *"… for most of us the lake is important because we come here every week to worship in the temple." – D.W.L*

Students

According to table 1, 14 students (100%) consider both forest and Hatu peak as extremely important. 7 out of 14 students (50%) consider farmlands as extremely important and 50% find eco-tourism park as moderately important.

The spatial proximity of forest and farmlands for all 14 students (100%) is under 15 minutes of walking. 8 students (57%) live 30-45 minutes away from Hatu peak and 45-60 minutes away from river Satluj.

Hence, from table 1 and 2 it is evident that Forest and Hatu peak have the highest level of importance. When asked an interviewee about the level of importance, forest and farmlands were considered to be important.

> *"Forest and farmlands, since we have been surrounded by them throughout our lifetime. My father is an orchardist… We derive our income through these farmlands. Same goes around for most of the students here. However, if their parents are not into this profession, they still have always been surrounded by them and they treasure it." – Student*

Others

In the indigenous group of others, mainly including housewives, all 11 of them consider forest as extremely important. 7 out of 11 others (64%) consider Hatu peak as important. For rest of the ecosystems, there aren't maximum respondents considering them as either extremely important or just important.

Forest is under the distance of 15 minutes for all others. 10 others (91%) live under 15 minutes of walking distance from farmlands. 8 others (73%) live 45-60 minutes away from river Satluj.

Hence, for this indigenous group, forest holds the highest level of importance followed by Hatu peak. According to an interviewee;

> *"Throughout our lives we have been surrounded by forests and I don't think any of us can imagine our lives without it."- Housewife (Others)*

Summary of results

Level of importance

Per group, it was observed that orchardists find forest, farmlands and Hatu peak extremely important compared to other ecosystems. All ecosystems are extremely important for tourist actors. Both, professionals and students find forest and Hatu peak, compared to other ecosystems, as extremely important. D.W.L find forest, Hatu peak and farmlands, compared to other ecosystems, as extremely important. For the group of others, forest is the only ecosystem, which is extremely important, compared to others.

Across groups, it can be noted that all groups consider forest ecosystem as extremely important. Compared to other groups, tourist actors find eco-tourism park, Tannijubbar lake and river Satluj extremely important; D.W.L find farmlands and Hatu peak as extremely important and students consider Hatu peak having extreme importance.

Spatial Proximity

Per group, tourist actors are situated the closest to ecotourism park, Tannijubbar lake and Hatu peak as compared to other groups. Tourist actors live under 15 minutes away or less to eco-tourism park and Tannijubbar lake. All D.W.L live 30-45 minutes away from Hatu peak.

All groups live 15 minutes away or less to forest and farmlands while, all groups live 45-60 minutes away from river Satluj.

Overall, forest has the highest level of importance for all the respondents followed by farmlands and Hatu peak. For spatial proximity, forest is considered to be the closest to the respondents followed by farmlands.

4.2 Which ecosystem service and related benefits (monetary and non-monetary) do indigenous community groups derive from mountain ecosystems?

4.2.1 Regulating and Maintenance Services

Tables under annex 3 to be referred for this section of the answer.

4.2.1.1 Reducing noise

As per the results of the survey, 81% of others find this service moderately important for forest ecosystem. 5 out of 10 tourist actors (50%) find it moderately important for river Satluj. 50% of tourist actors consider the service as slightly important for eco-tourism park and farmlands

4.2.1.2 Regulating our global climate

All sub-groups find global climate regulation as a very important service for the following ecosystems: Forest, eco-tourism park, and Hatu peak. 5 out of 10 tourist actors (50%) consider the service as moderately important for farmlands.

4.2.1.3 Controlling or preventing soil loss

The service is considered to be extremely important by all sub-groups for farmlands.5 tourist actors (50%), 7 professionals (50%), 6 D.W.L (86%), 6 others (54%) find the service to be of moderately important for forest. 29 orchardists (51%), 5 tourist actors (50%), 8 professionals (57%) and 5 D.W.L (71%) consider this service important for eco-tourism park. Lastly, 29 orchardists (51%), 11 professionals (79%), and 10 students (71%) consider the service as moderately important while, 4 out of 7 D.W.L (57%) consider it as important for Hatu peak.

4.2.1.4 Pollinating fruit trees and other plants

All sub-groups consider this service as extremely important derived from farmlands. 7 out of 14 professionals (50%) consider the service as slightly important for forest. While none of the sub-groups consider it important under any other ecosystem.

4.2.1.5 Regulating the physical quality of air for people

All sub-groups find regulation of physical quality of air as an extremely important service under the following ecosystems: forest, eco-tourism park and Hatu peak. 30 orchardists (53%), 8 professionals (57%), and 7 others (63%) consider the service as extremely important for farmlands. 8 out of 10 tourist actors (80%) find the service important for river Satluj

4.2.1.6 Ensuring organic matter in the soil is maintained

The service is considered to be extremely important by 44 orchardists (77%), 10 tourist actors (100%), 8 professionals (57%), 10 students (71%) and 8 others (73%) while, 4 D.W.L (57%) consider it to be just important for farmlands. 9 out of 14 professionals (64%) find the service as moderately important derived from Hatu peak.

4.2.1.7 Providing habitat for wild plants and animals that can be useful to us

All sub-groups consider this service as extremely important under the following ecosystems; forest, eco-tourism park and Hatu peak. For farmlands, only 7 students (50%) consider the service as slightly important.

4.2.2 Cultural Services

Tables under annex 4 to be referred for this section of the answer.

4.2.2.1 The beauty of nature

All subgroups consider beauty of nature as an extremely important service under the ecosystems: forest, eco-tourism park, Tannijubbar lake and Hatu peak. For river Satluj, 38 orchardists (66%), 10 tourist actors (100%), 10 professionals (71%) and 6 others (86%) consider this service as extremely important and 4 D.W.L (57%) find it important. For farmlands, 42 orchardists (74%), 10 tourist actors (100%), 7 professionals (50%), 6 D.W.L (86%) consider the service as extremely important.

4.2.2.2 For folklore tradition

This service is considered as extremely important by 31 orchardists (54%) and 7 professionals (50%) for forest ecosystem and, 10 tourist actors (100%) for eco-tourism park. The service is also considered important by 5 D.W.L (71%) for forest and 6 D.W.L for Hatu peak. There are 6 from the sub-groups of others which consider the service as moderately important for Hatu peak.

4.2.2.3 For history and culture

4 D.W.L (57%) for forest and, 5 D.W.L (71%) and 7 students (50%) for Hatu peak consider the service as slightly important.

4.2.2.4 Using nature to destress

The use of nature to destress is considered extremely important by all subgroups for forest; 6 tourist actors (60%) and 7 students (50%) for eco-tourism park; 5 tourist actors (50%) for Tannijubbar lake and; 29 orchardists (51%),5 tourist actors (50%) 6 D.W.L (86%) and 9 students (64%) for Hatu peak. The service is considered moderately important for 7 professionals (50%) and 7 students (50%) for Tannijubbar lake and; 34 orchardists (60%) for farmlands. The service was considered as important by the remaining 5 tourist actors (50%) each for Tannijubbar lake and Hatu peak; 8 professionals (57%) for Hatu peak and lastly, 5 tourist actors (50%) and 4 D.W.L (57%) for farmlands

4.2.2.5 For education and training

None of the sub-groups consider the following service as important under any ecosystem as majority have given a low score to the service.

4.2.2.6 For recreation and tourism

Tourist actors consider the service of recreation and tourism as extremely important for all the ecosystems. For Hatu peak, this service is considered to be extremely important by 7 D.W.L (100%) and moderately important for 7 professionals (50%).

4.2.2.7 For spiritual and religious activities

50% each of tourist actors, professionals and students consider the service as moderately important for Tannijubbar lake. For Hatu peak, 31 orchardists (54%) consider the service as moderately important and, 7 tourist actors (70%) and 8 professionals (57%) consider the service as important.

4.2.3 Provisioning Services

Tables under annex 5 to be referred for this section of the answer.

4.2.3.1 Freshwater for household consumption

All the sub-groups consider deriving freshwater for household consumption extremely important as a service from the ecosystem Hatu peak. None of the service consider the ecosystem as important for other ecosystems.

4.2.3.2 Freshwater for irrigation

'Freshwater for irrigation' is of high importance for 61% of the orchardists derived from river Satluj. This service is of low importance to rest of the sub-groups.

4.2.3.3 Wild vegetables

'Wild vegetables' is not seen to have scored high in any of the ecosystems, hence, having low level of importance by each sub-group.

4.2.3.4 Wild berries

'Wild berries' is not seen to have scored high in any of the ecosystems, hence, having low level of importance by each sub-group.

4.2.3.5 Medicinal herbs

This service is not seen to have scored high in any of the ecosystems, hence, having low level of importance by each sub-group.

4.2.3.6 Fodder

This service is not seen to have scored high in any of the ecosystems, hence, having low level of importance by each sub-group.

4.2.3.7 Apple

The service is considered extremely important by 56 orchardists (98%) and 7 D.W.L (100%) for farmlands. This service is of no importance by any sub-group for any other ecosystem.

4.2.3.8 Cherry

This service is not seen to have scored high in any of the ecosystems, hence, having low level of importance by each sub-group.

4.2.3.9 Cultivated vegetables

This service is not seen to have scored high in any of the ecosystems, hence, having low level of importance by each sub-group.

4.2.4 Monetary and Non-monetary Benefits

Tables under annex 6 indicate that majority of the respondents do not derive any monetary benefits. It was observed that 53 out of 57 orchardists (93%) gain monetary benefits from apple. None of the sub-groups derive any monetary benefits from services related to freshwater for household consumption and irrigation. While a very small percentage of respondents, that too, not from all sub-groups derive monetary gains from wild vegetables, wild berries, medicinal herbs, fodder, cherry and cultivated vegetables.

Summary of results

Regulating and maintenance services

The percentage of D.W.L finding control/prevention of soil loss under eco-tourism park as extremely important is maximum followed by professionals, orchardists and tourist actors. Under farmlands, the group of others find regulating physical quality of air extremely important followed by professionals and orchardists. Apart from D.W.L all other sub-groups find 'ensuring organic matter is maintained' under farmlands as extremely important.

All groups find regulation of global climate, regulation of physical quality of air and provision of habitat for wild animals/ plants as extremely important under ecosystems: forest, eco-tourism park and Hatu peak. Similarly, all groups find 'control of soil loss' and 'pollinating fruit trees/other plants' under farmlands as extremely important. While none of the groups consider any of the regulating services as extremely important under Tannijubbar lake and river Satluj.

Cultural services

Orchardists find folklore tradition for forest, beauty of nature for Satluj and farmlands and, nature to destress for Hatu peak as extremely important. Tourist actors find recreation and tourism, for all ecosystems, as extremely important. Nature to destress and folklore tradition

for eco-tourism park and; nature to destress for Tannijubbar lake, beauty of nature for farmlands, nature to destress and beauty of nature for Hatu peak are also considered extremely important by tourist actors. Professionals find folklore tradition for forest, beauty of nature for river Satluj and farmlands as extremely important. D.W.L find recreation and tourism and nature to destress for Hatu peak and beauty of nature for farmlands as extremely important. Students find nature to destress for eco-tourism park as extremely important.

All groups find 'the beauty of nature' extremely important for ecosystems: forest, eco-tourism park, Tannijubbar lake and Hatu Peak. 'Nature to destress' for forest ecosystem is considered to be extremely important by all sub- groups as well.

Provisioning services

Orchardists find 'freshwater for irrigation' as extremely important for river Satluj and 'apples' for farmlands. D.W.L consider 'apples' as extremely important under the ecosystem farmlands.

All groups consider 'freshwater for household consumption' as extremely important for Hatu peak.

Only orchardists derive maximum monetary benefits from the provisioning service of 'apple'.

4.3 What is the level of place attachment for these mountain ecosystems by indigenous community groups?

4.3.1 Place Identity

Table 1, annex 7 to be referred for this section of the answer.

Orchardists

All 57 orchardists strongly agree on having high level of place identity for ecosystems: forest and farmlands. 36 orchardists (63%) have agreed on having high level of place identity for Hatu peak while, 29 orchardists (51%) have. a neutral opinion on having high level of place identity. As said by an interviewee when asked about positive emotional connection;

> "Absolutely. I have hardly come across anyone who has spoken otherwise. We definitely have a strong positive emotional bond with the ecosystems and the entire region."

Tourist Actor

Tourist actors tend to have strongly agreed on having high level of place identity for all six ecosystems. The same was said by a tourist actor during the interview;

> "…these ecosystems are used as a way to attract tourists from all across the country. Afterall, the tourist ventures are started because we want to showcase our lifestyle to other people."

Professional

There are 12 out of 14 professionals (86%) for forest and half of them (50%) for Tannijubbar lake who have strongly agreed on having high level of place identity. 8 professionals (57%) for Hatu peak and 7 (50%) for farmlands agree to have high level of place identity. When asked an interviewee about place identity;

> "We have been interlinked with these ecosystems throughout our lives. We happen to form a good bond with these ecosystems and have happy personal memories attached to them."

Daily Wage Labour

Majority of daily wage labours strongly agree for having strong positive connection with every ecosystem in the area representing high level of place identity for every ecosystem. Growing up in these ecosystems throughout their lives, they seem to have fond memories attached to them.

> "We have seen these ecosystems since childhood. We have hung around in these ecosystems with our friends and family and have good memories to cherish."

Students

All 14 students (100%) strongly agree on having high level of place identity for forest. 13 students (93%) for Hatu peak and 10 students (71%) for farmlands have strongly agree for having high level of place identity while, 7 students (50%) for eco-tourism park agree on having high level of place identity.

History and culture of apple orchards of this case study region adds to the levels of place identity as the respondents feel deeply connected with the ecosystems;

> "There are various myths and beliefs attached to the some of the ecosystems you mentioned. There is a lot of history behind apple cultivation in this area and we are proud of it. Especially our great grandfathers and grandfathers. Since they have lived the moments."

Others

In this category of indigenous community, 10 out of 11 (91%) strongly agree on having high level of place identity for forest. 7 others (63%) and 6 (55%) have agreed on having high level of place identity with Hatu peak and farmlands respectively. According to an interviewee, born and brought up in the same region there is always an emotional connection with the ecosystems.

> "Most of us are born and brought up here, so we have been in this area throughout our lives. Like, my parents' home is in Thanadhar while I live in Jarol. So I have used the same set of ecosystems. Hence, it has been the same with most of us. So yes, we have emotional connection with all the ecosystems."

4.3.2 Place Dependence

Table 2, annex 7 to be referred for this section of the answer.

Orchardists

The percentage of orchardists who strongly agree for having high level of dependence on ecosystems are: 95% for forest, 53% for Tannijubbar lake, 66% for Hatu peak and 100% for farmlands. Hence, all orchardists are most dependent on farmlands:

"…of course, the farmlands. They provide us with an income. So I believe it says a lot about it."

Tourist Actor

The percentage of tourist actors who strongly agree for having high level of dependence on ecosystems are: 100% for forest,90% for eco-tourism park, 90% for Tannijubbar lake,70% for river Satluj, 90% for Hatu peak and 90% for farmlands. Thus, all ecosystems hold high level of place dependence for tourist actors.

Professional

The number of professionals who strongly agree for having high level of dependence on ecosystem are: 12 professionals (86%) for forest, 8(57%) each for ecotourism park, Hatu peak and farmlands, and 7 (50%) each for Tannijubbar lake and river Satluj. Hence, this indicates more than half of the respondents in this sub-group represent high level of dependence for all ecosystems.

Daily Wage Labour

All 7 D.W.L (100%) strongly agree for having high level of dependence have for the ecosystems: forest, eco-tourism park, Tannijubbar lake, Hatu peak and farmlands, while, for river Satluj there are only 6 D.W.L (86%) who strongly agree.

Students

The percentage of students who strongly agree for having high level of dependence on ecosystems are: 100% for forest,71% for eco-tourism park, 71% for Tannijubbar lake,50% for river Satluj, 93% for Hatu peak and 79% for farmlands. As said by an interviewee, the reason for high dependence for every ecosystem is because every ecosystem provides with the essentials that are needed for daily survival.

"Definitely. For us it is mainly about hanging out and exploring and knowing our area but we all are satisfied by the ecosystems since they provide us with the essentials for our daily lives."

Others

The percentage of respondents in this sub-group, who strongly agree for having high level of dependence on ecosystems are: 100% for forest, 54% for Tannijubbar lake, 64% for Hatu peak and 82% for farmlands. As said by an interviewee when asked on having high level of place dependence;

Yes. In case, we need fodder for animals when it is not available in our farmlands we take them to the forest. Seasonally we pick wild mushrooms and berries as well. Children often love the berries. Rest, we get water from the Hatu catchment area, and we go there to pray as well. We have Tannijubbar lake which is related to another temple so we can go there to pray. River Satluj adds up to the serene beauty of the area.

Summary of results

Place Identity

Both, orchardists and students strongly agree for having high level of place identity for ecosystems: forest, Hatu peak and farmlands. Tourist actors and D.W.L have strongly agreed on having high level of place identity for all the mentioned ecosystems. Professionals strongly agree on having high level of place identity for Tannijubbar lake and forest. The group of others strongly agree on having high level of place identity for only forest ecosystem. across groups it was observed that all groups strongly agree for having high level of place identity with forest. Compared to other groups, majority of tourist actors strongly agree for having high level of place identity for eco-tourism park, while majority of D.W.L for Tannijubbar lake, river Satluj and Hatu peak.

Place Dependence

Orchardists and the group of others, both sub-groups individually, strongly agree on having high level of place dependence on ecosystems: forest, Tannijubbar lake, Hatu peak and farmlands. Tourist actors, D.W.L, professionals and students strongly agree on having high level of dependence on all ecosystems.

All groups have high level of dependence on forest, Tannijubbar lake, Hatu peak and farmlands. Compared to other groups, D.W.L have the highest level of place dependence on eco-tourism park, Tannijubbar lake and rive Satluj.

Overall, forest has the highest level of place identity and dependence, followed by farmlands and Hatu peak.

4.4 How does the ecosystem services and related benefits (monetary and non-monetary) derived by indigenous communities from mountain ecosystems influence their level of place attachment?

To avoid any misunderstandings when reporting the correlation coefficients, the Pearson's r value has been categorized into perfect (+/- 1), strong (+/- 0.7 to 0.9), moderate (+/- 0.4 to 0.6) and weak (+/- 0.1 to 0.3) (Akoglu, 2018).

Tables in annex 8 to be referred for this main question.

Orchardists

As per the results of the correlation test performed, level of importance of forest has a strong positive correlation with place dependence. Pearson's r is 0.859 indicating strong influence of level of importance on place dependence.

Level of importance of eco-tourism park, Tannijubbar lake, River Satluj and Hatu peak, indicates moderate positive influence on place attachment levels.

Level of importance of farmlands has a weak negative influence on place identity and dependence levels, meaning that changes between the two variables will take place in an inverse direction

Providing habitat for wild plants and animals for forest ecosystem has a strong positive influence on place identity and dependence, thus, any change predicted in the services will influence the place attachment levels in the same direction.

Amongst the cultural services, 'beauty of nature' for forest ecosystem has a strong influence of 0.701 on place identity.

Tourist Actor

The level of importance of eco-tourism park and Hatu peak is a perfect correlation of 1 with place attachment levels. The level of importance of river Satluj with place dependence is very close to perfect correlation (i.e. 0.930). Hence, any changes in level of importance in these ecosystems has strong positive influence on place attachment levels.

Regulating global climate and providing habitat for wild plants and animals for Tannijubbar lake shows moderate negative correlation, each of -0.681with place identity and dependence meaning that the services influence the place attachment levels in inverse direction.

A strong inverse influence is observed between folklore tradition for Tannijubbar lake and Satluj; history and culture for river Satluj and eco-tourism park with place attachment levels. Recreation and tourism service for eco-tourism park has a perfect correlation with place attachment levels indicating a strong influence on place attachment levels.

The service, nature for destress, has a moderate correlation value of 0.688 with both identity and dependence. The service moderately influences the place attachment levels in same direction.

Professionals

There is strong influence of level of importance of ecosystems: farmlands, river Satluj and Tannijubbar lake; and moderate influence of eco-tourism park and Hatu peak on place identity levels.

There is moderate influence, of level of importance of Tannijubbar lake and Hatu peak with place dependence. While there is negative influence between level of importance of farmlands and place dependence level. Negative influence indicates that any changes in level of importance will lead to changes in place attachment levels in an inverse direction.

Amongst the regulating and maintenance service, regulating air quality service for forest ecosystem has a perfect correlation with place identity and dependence, indicating there is strong influence of this service on place attachment levels. Soil loss, pollinating fruit trees and wild plants and organic soil for farmlands; regulating global climate for forest ecosystem and river Satluj; regulating air quality for river Satluj and farmlands have a strong positive influence on place identity levels.

The services beauty of nature and, recreation and tourism for river Satluj; beauty of nature for farmlands have strong positive influence on place identity levels while, folklore tradition and, history and culture for Hatu peak shows moderate positive influence on place identity levels.

Using nature to destress for forest ecosystem has a strong positive influence on place dependence level, whereas, folklore tradition and, history and culture for river Satluj and farmlands, respectively, have a strong negative influence on place dependence levels. Similarly, beauty of nature for farmlands; folklore tradition, history and culture and, recreation and tourism for Hatu peak have moderate negative influence on place dependence levels.

Amongst the provisioning services, the service fodder for forest ecosystem shows a moderate negative influence with place attachment levels.

Daily wage labours

Amongst the regulating services, 'regulating soil loss' for eco-tourism park shows strong negative influence on place identity level.

'Nature to destress' for eco-tourism park has a strong positive influence on the level of place identity.

Students

The level of importance of eco-tourism park strongly influences the place identity level, while moderate influences place dependence. There is moderate influence of level of importance of Tannijubbar lake on place identity level. Level of importance of river Satluj strongly influence the place attachment levels.

For eco-tourism park, reducing noise has a strong positive influence on place dependence level, while, pollination of fruit trees and wild plants has strong negative influence on place dependence levels. Organic soil for farmlands has a strong positive influence on place identity levels.

The services which have a moderate positive influence on place identity/dependence levels are global climate for river Satluj; soil loss and reducing noise for farmlands. While services with moderate negative influence on place attachment levels are 'pollination of fruit trees' and 'ensuring organic soil is maintained' for eco-tourism park, meaning any change in level of importance will influence the place attachment levels in an inverse direction. There is moderate positive influence of 'ensuring organic soil is maintained' and 'regulating soil loss' with place identity of farmlands.

Amongst cultural services, history and culture for eco-tourism park has strong negative influence on place identity level, folklore tradition for Tannijubbar lake has strong negative influence on place dependence levels and, beauty of nature for farmlands has strong positive influence on place identity levels.

History and culture for eco-tourism park has moderate negative influence on place dependence level, while, nature to destress for river Satluj and farmlands and, beauty of nature for farmlands has moderate positive influence on place dependence levels.

For eco-tourism park, recreation and tourism has moderate positive influence on place identity level, whereas, education and training have a moderate negative influence on the place identity level.

Amongst provisioning services, medicinal herbs for eco-tourism park show a strong negative influence on place identity and moderate negative influence on place dependence levels.

Others

The level of importance of ecotourism park, river Satluj and farmlands has a very strong positive correlation with place identity. The level of importance of eco-tourism park also has a strong positive correlation with place dependence. This indicates that any change in the level of importance will strongly influence the change in place identity/ dependence levels in the same direction.

The services, regulating global climate for eco-tourism park and river Satluj; regulation of air quality for river Satluj shows strong positive influence with place identity. While,

regulating global climate for ecotourism park shows a strong positive correlation with place dependence.

There is moderate negative influence of reducing noise for ecotourism park on place identity and regulating air quality for Hatu peak with place dependence. The services which have moderate positive influence on place identity are reducing noise, regulating global climate and air quality all for farmlands.

The services beauty of nature, nature to destress and recreation & tourism has strong positive influence on place attachment levels of eco-tourism park. Beauty of nature and nature to destress for farmlands have strong negative influence on place identity levels.

Education for eco-tourism park; recreation & tourism for river Satluj; history & culture for farmlands have moderate positive influence on place identity levels. While, folklore & tradition and history & culture for Hatu peak; history & culture for farmlands have moderate negative influence on place dependence levels. Lastly, beauty of nature for Tannijubbar lake has moderate positive influence on place dependence.

Amongst the provisioning services, wild berries for forest ecosystem and apples for farmlands show moderate positive influence on place identity levels. While wild vegetables and wild berries under Hatu peak indicate a strong negative influence on place dependence.

Amongst the benefits derived, wild berries for Hatu peak and fodder for farmlands indicate moderate negative correlation. Hence, changes in the derivation of benefits will inversely influence place dependence levels.

Summary of results

Orchardists show a strong influence of level of importance of river with place attachments, forest with place dependence and Hatu peak with place identity. There is strong influence of provision of habitat for wild animals/plants and beauty of nature for forest ecosystem with place identity.

Tourist actors have a very strong influence of level of importance with place attachment levels of eco-tourism park and Hatu peak. There is a strong influence of history and culture, recreation and tourism for ecotourism park; folklore tradition for Tannijubbar lake and river Satluj, with place attachment levels. History and culture for river Satluj has a strong influence on the place dependence level.

Professionals have strong influence of level of importance of lake and farmlands with place identity levels. Regulating global climate and regulating air quality are strongly influencing the place attachment levels of forest, place identity of river and, place identity farmlands. For farmlands and rivers, beauty of nature is strongly influencing place identity while, history and culture influences the place dependence levels. Nature to destress is strongly influencing place dependence of forest and, recreation and tourism has a strong influence on place identity level of river Satluj.

D.W.L have a strong influence of nature to destress and regulating soil loss with place identity levels of eco-tourism park.

Students have a strong influence of level of importance of river Satluj on place attachment levels. There is a strong influence between reducing noise and pollination of fruit trees with place dependence levels of eco-tourism park; beauty of nature and maintenance of organic soil with place identity levels of farmlands and; medicinal herbs with place identity of eco-tourism park.

The group of others have a strong influence on place attachment levels of eco-tourism parks with the level of importance, regulation of global climate, beauty of nature, nature to destress and, recreation and tourism. Level of importance, regulating global climate and regulation of air quality for river Satluj has strong influence on place identity levels. Similarly, place identity is strongly influenced by the farmlands' level of importance, beauty of nature and nature to destress. Lastly, place dependence is strongly influenced by the Hatu peak's history and culture, wild vegetables and, wild berries.

Compared to other groups, professionals and the group of others have maximum number of ecosystems and their services that strongly influence either the levels of place identity or place dependence or both. None of the monetary and non-monetary benefits have any strong influence on place attachment levels.

Chapter 5: Conclusions

The results of this research show that sub-indigenous groups have large dependencies on ecosystems and its services as well as, different services are being derived from the same ecosystem by different sub-groups (Adhikari et al, 2018). Hence, the place attachment levels of every sub-group are influenced by these differences. Importantly, it is also observed that not all sub-indigenous groups derive monetary benefits from the provisioning services. The conclusion of this master's research is derived as follows; -

Which mountain ecosystems are important to indigenous community groups?

While there are some ecosystems which are preferred homogenously i.e. by all the respondents of each sub-group, there are others where every sub-indigenous group tends to identify and score the ecosystem on the basis of their profession. Forest, farmlands and Hatu peak are considered as the most important ecosystems by all the sub-groups. Knez and Elliason (2017) and, Cundi-Sanchez (2019) also show that ecosystems: mountains and forests have positive level of place attachment. As far as the spatial proximity is concerned, forest and farmlands lie in close proximity, however, Hatu peak being farther away still has higher level of importance than other ecosystems which might be closer like, eco-tourism park and Tannijubbar lake. The lake and the park are considered to be important by the respondents or sub-groups that live closer to these ecosystems. As also proved by Brandenburg and Carroll (1995) in their paper that communities closer to any natural ecosystem have high level of place attachment with those ecosystems. Hence, the level of importance of an ecosystem is not only attributed to spatial proximity but also, based on the usage of the particular ecosystem by an indigenous sub-group.

Which ecosystem service and related benefits (monetary and non-monetary) do indigenous community groups derive from mountain ecosystems?

Majority of regulating and maintenance services are derived from the ecosystems: forest, farmlands and Hatu peak usually by the respondents of all indigenous sub-groups. Most of the cultural services are derived from ecosystems: forest and Hatu peak. Tourist actors hold high importance for the greatest number of cultural services which can be linked more to their willingness to support their lifestyle choices than for monetary purposes. Researches by Cundi-Sanchez (2019) and Adhikari et al (2018) shows that the local groups of a region are dependent on the same ecosystems yet derive different services from it. For the derivation of provisioning services, the pre-selected ecosystem services depend on ecosystem to ecosystem. Services like fodder, apple, cherry, and cultivable vegetables are applicable for farmlands out of which, apple is an important service derived by the orchardists. Hatu peak is considered important for the service of freshwater for household consumption as it has a catchment area which supplies water for household to the entire case study region and for irrigation as well, to a part of the case study area.

As far as the monetary and non-monetary benefits are concerned, only orchardists derive maximum monetary benefits from apples. Hence, as shown by Adams and Adger (2018) and Quinn and Halfacre (2014) in their papers, monetary benefits are not the sole reason for influencing place attachment levels in a person but rather, more of non-monetary benefits.

What is the level of place attachment for these mountain ecosystems by indigenous community groups?

As per the interviews and the results of the survey, overall, place dependence amongst sub-groups is higher than the levels of place identity. This indicates that all groups show dependence on the ecosystems as they provide to meet their needs and their well-being (Cundi-Sanchez, 2019). According to the analysis, there is high level of place identity and place dependence for forest with oak and cedar trees. After forest, farmlands and then, Hatu peak are considered as having high level of place attachment levels.

How does the ecosystem services and related benefits (monetary and non-monetary) derived by indigenous communities from mountain ecosystems influence their level of place attachment?

Statistically, not all services and their benefits show an influence on the place attachment levels, these include, majority of provisioning services and monetary or non-monetary benefits. Some services influence either one out of the two indicators of place attachment. Under every sub-group the results varied, hence, again stressing on the point that despite these groups have dependence on same ecosystems yet they derive different benefits from them, hence leading to different levels of place attachment (Adhikari, 2018).

First, level of importance of each ecosystem was analysed with place identity and dependence levels. Under all sub-groups apart from daily wage labours have shown that there is influence between level of importance of an ecosystem with place identity or dependence or both. For ecotourism park some sub-groups are moderately influencing only place identity levels while other sub-groups are moderately as well as strongly influencing both, place identity and dependence levels. Orchardists, tourist actors, professionals show that the level of importance of Hatu peak influences place attachment levels. While the level of importance of forest influences the place dependence levels of only orchardists.

Secondly, under every sub-group it was observed that there are equal (to regulating and maintenance services) or more amount of cultural services which influences the level of place attachment. This again brings us to the point where it is not the provisioning services or its monetary benefits but rather non-economic services that are strongly influencing place attachment levels (Adams and Adger, 2013).

Hence, statistically as well as through descriptive analysis we are arriving at the same conclusion that for every sub-group, that are - orchardists, professionals, tourist actors, students, D.W.L and others, there is strong influence of non-economic services (regulating & maintenance and, cultural services) derived from the ecosystems, especially services like: history, folklore, religion and other spiritual practices which are strongly influencing the levels of place attachment amongst all indigenous sub-groups of the case study area i.e. the three hamlets of Jarol, Kotgarh and Thanadhar (Sangha, 2018).

5.1 Suggestions for future work

While this research focussed more on quantitative methods and use of qualitative methods is mainly for triangulation methods; it would be interesting to continue it with only qualitative methodology. Qualitative methods such as interviews and focus group discussions will provide more rich insights from large number of respondents from the case study area. Mapping through participatory approaches would be another method to study this topic since it would help in giving this research a different and newer perspective. Observation method

can also be implemented by regularly visiting the ecosystem areas and observing the people in the area. However, observation method is more suitable in such research if the duration of the fieldwork is much longer.

The research did not consider any gender bias and males as well as females were included in both, surveys and key informant interviews. Since, women in the mountains play an equally important and strong role in being the bread-earner of the house – it will be intriguing if the entire research is done from the perspective of women.

Similar research can also be conducted in other mountainous areas of the world by identifying one or more ecosystems in the selected case study area.

This study can also be conducted from the lens of either one occupational group or indigenous as well as non-indigenous groups, in any ecosystem. The research if done for a longer time would give more knowledge on ecosystems and their services/benefits resulting in richer insights - knowing more about the influence on place attachment levels.

This research shows that local sub-groups are not to be taken as a homogenous group and the wider context of socio-cultural factors need to be taken into account for successful implementation of conservation and development related projects.

Overall, the identification of ecosystem services can help prioritize these services for better management of crucial services from the region by the government officials as well as the indigenous community themselves.

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Annex 1: Research Instruments

QUESTIONNAIRE

The link to the questionnaire:
https://docs.google.com/forms/d/e/1FAIpQLSeNbvLPMcraYngQqD09VvhxfLuXQ1GaSVu8irJtukOs8TYnMg/viewform?usp=sf_link

INTERVIEW GUIDE

The following questions will be asked based on six ecosystems found in the area of Jarol, Kotgarh and Thanadhar. The six ecosystems are as follows; **Forest with oak and cedar trees**, **Eco-tourism park**, **Tannijubbar lake, river Satluj, Hatu peak and farmlands**. The interview might take 15 to 30 minutes of your time.

1. Out of the all the ecosystems mentioned to you, which of them are the most important to orchardists/ tourist actors/ professional/ D.W.L/ student/ others?

2. Do any of these ecosystems benefit orchardists/ tourist actors/ professional/ D.W.L/ student/ others economically?

3. In general, do orchardists/ tourist actors/ professional/ D.W.L/ student/ others have positive emotional connection with the ecosystems?

4. In general, do the needs of orchardists/ tourism actors/ professional/ D.W.L/ student/ others are satisfied by the ecosystems that are available in the region?

5. Are there any other ecosystem you'd like to mention, that you avail benefits from but was not listed?

Annex 2: Tables for Level of Importance and Spatial Proximity

Table 1. Level of Importance of Ecosystems

Level of Importance		1		2		3		4		5	
	No. of respondents	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
FOREST											
Orchardist	**57**	0	0%	0	0%	1	2%	4	7%	52	91%
Tourist Actor	**10**	0	0%	0	0%	0	0%	0	0%	10	100%
Professionals	**14**	0	0%	0	0%	0	0%	0	0%	14	100%
Daily wage labours	**7**	0	0%	0	0%	0	0%	0	0%	7	100%
Student	**14**	0	0%	0	0%	0	0%	0	0%	14	100%
Others	**11**	0	0%	0	0%	0	0%	0	0%	11	100%
Sub-total	**113**	**0**	0%	**0**	0%	**1**	**1%**	**4**	**4%**	**108**	**95%**
ECO-TOURISM PARK											
Orchardist	**57**	1	2%	6	11%	23	40%	14	24%	13	23%
Tourist Actor	**10**	0	0%	0	0%	0	0%	1	10%	9	90%
Professionals	**14**	0	0%	1	8%	7	50%	3	21%	3	21%
Daily wage labours	**7**	0	0%	3	43%	0	0%	3	43%	1	14%
Student	**14**	0	0%	0	0%	7	50%	4	29%	3	21%
Others	**11**	1	10%	0	0%	4	36%	3	27%	3	27%
Sub-total	**113**	**2**	**2%**	**10**	**9%**	**41**	**36%**	**28**	**25%**	**32**	**28%**
TANNIJUBBAR LAKE											
Orchardist	**57**	0	0%	4	7%	19	33%	20	35%	14	25%
Tourist Actor	**10**	0	0%	0	0%	0	0%	0	0%	10	100%
Professionals	**14**	0	0%	0	0%	4	29%	7	50%	3	21%
Daily wage labours	**7**	0	0%	0	0%	0	0%	6	86%	1	14%
Student	**14**	0	0%	0	0%	4	28%	6	43%	4	28%
Others	**11**	0	0%	0	0%	4	36%	4	36%	3	28%
Sub-total	**113**	**0**	0%	**4**	**4%**	**31**	**27%**	**43**	**38%**	**35**	**31%**
RIVER SATLUJ											
Orchardist	**57**	2	4%	3	5%	10	17%	34	60%	8	14%
Tourist Actor	**10**	0	0%	0	0%	0	0%	2	20%	8	80%
Professionals	**14**	3	21%	0	0%	9	64%	0	0%	2	14%
Daily wage labours	**7**	0	0%	2	29%	0	0%	4	57%	1	14%
Student	**14**	2	14%	2	14%	2	14%	5	36%	3	21%
Others	**11**	2	18%	1	9%	5	45%	3	27%	0	0%
Sub-total	**113**	**9**	**8%**	**8**	**7%**	**26**	**23%**	**48**	**43%**	**22**	**19%**
HATU PEAK											
Orchardist	**57**	0	0%	0	0%	1	2%	27	47%	29	51%
Tourist Actor	**10**	0	0%	0	0%	0	0%	1	10%	9	90%
Professionals	**14**	0	0%	0	0%	0	0%	5	36%	9	64%
Daily wage labours	**7**	0	0%	0	0%	0	0%	0	0%	7	100%
Student	**14**	0	0%	0	0%	0	0%	0	0%	14	100%
Others	**11**	0	0%	0	0%	0	0%	7	64%	4	36%
Sub-total	**113**	0	0%	0	0%	1	**1%**	**40**	**35%**	**72**	**64%**
FARMLANDS											
Orchardist	**57**	0	0%	0	0%	0	0%	1	2%	56	98%
Tourist Actor	**10**	0	0%	0	0%	0	0%	0	0%	10	100%
Professionals	**14**	3	21%	1	7%	3	21%	5	36%	2	14%
Daily wage labours	**7**	0	0%	0	0%	0	0%	0	0%	7	100%
Student	**14**	0	0%	0	0%	6	43%	1	7%	7	50%
Others	**11**	1	9%	2	18%	0	0%	5	45%	3	27%
Sub-total	**113**	**4**	**4%**	**3**	**3%**	**9**	**8%**	**12**	**10%**	**85**	**75%**

Table 2. Walking Distance to Ecosystems

Distance by Walking		Under 15 minutes		15-30 minutes		30-45 minutes		45-60 minutes		Above 60 minutes	
	No. of respondents	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
FOREST											
Orchardist	**57**	56	98%	1	2%	0	0%	0	0%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professionals	**14**	13	90%	1	10%	0	0%	0	0%	0	0%
Daily wage labours	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Student	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**111**	**98%**	**2**	**2%**	**0**	0%	**0**	0%	**0**	0%
ECO-TOURISM PARK											
Orchardist	**57**	16	28%	24	42%	6	11%	0	0%	11	19%
Tourist Actor	**10**	6	60%	4	40%	0	0%	0	0%	0	0%
Professionals	**14**	5	36%	3	21%	1	7%	2	14%	3	21%
Daily wage labours	**7**	3	43%	3	43%	1	14%	0	0%	0	0%
Student	**14**	5	36%	5	36%	1	7%	1	7%	2	14%
Others	**11**	4	36%	5	45%	1	9%	0	0%	1	9%
Sub-total	**113**	**39**	**34%**	**44**	**39%**	**10**	**9%**	**3**	**3%**	**17**	**15%**
TANNIJUBBAR LAKE											
Orchardist	**57**	16	28%	24	42%	6	11%	0	0%	11	19%
Tourist Actor	**10**	6	60%	4	40%	0	0%	0	0%	0	0%
Professionals	**14**	5	36%	3	21%	1	7%	2	14%	3	21%
Daily wage labours	**7**	3	43%	3	43%	1	14%	0	0%	0	0%
Student	**14**	5	36%	5	36%	1	7%	1	7%	2	14%
Others	**11**	4	36%	5	45%	1	9%	0	0%	1	9%
Sub-total	**113**	**39**	**34%**	**44**	**39%**	**10**	**9%**	**3**	**3%**	**17**	**15%**
RIVER SATLUJ											
Orchardist	**57**	0	0%	0	0%	1	2%	42	74%	14	24%
Tourist Actor	**10**	0	0%	0	0%	4	40%	5	50%	1	10%
Professionals	**14**	0	0%	0	0%	0	0%	8	57%	6	43%
Daily wage labours	**7**	0	0%	1	14%	1	14%	5	71%	0	0%
Student	**14**	0	0%	0	0%	1	7%	8	57%	5	36%
Others	**11**	0	0%	0	0%	2	18%	8	73%	1	9%
Sub-total	**113**	**0**	0%	**1**	**1%**	**9**	**8%**	**76**	**67%**	**27**	**24%**
HATU PEAK											
Orchardist	**57**	0	0%	4	7%	33	58%	8	14%	12	21%
Tourist Actor	**10**	0	0%	5	50%	4	40%	1	10%	0	0%
Professionals	**14**	0	0%	0	0%	9	64%	0	0%	5	36%
Daily wage labours	**7**	0	0%	0	0%	7	100%	0	0%	0	0%
Student	**14**	1	7%	1	7%	8	57%	1	7%	3	21%
Others	**11**	0	0%	4	36%	5	45%	1	9%	1	9%
Sub-total	**113**	**1**	**1%**	**14**	**12%**	**66**	**58%**	**11**	**10%**	**21**	**18%**
FARMLANDS											
Orchardist	**57**	51	89%	6	11%	0	0%	0	0%	0	0%
Tourist Actor	**10**	7	70%	3	30%	0	0%	0	0%	0	0%
Professionals	**14**	11	79%	3	21%	0	0%	0	0%	0	0%
Daily wage labours	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Student	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	10	91%	1	9%	0	0%	0	0%	0	0%
Sub-total	**113**	**100**	**88%**	**13**	**12%**	**0**	0%	**0**	0%	**0**	**0%**

Annex 3: Tables of Regulating and Maintenance Services

Table 1. Regulating Services of Forest

Level of Importance		1		2		3		4		5	
	No. of respondents	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
REDUCING NOISE											
Orchardist	**57**	5	9%	10	18%	21	37%	9	16%	12	21%
Tourist Actor	**10**	2	20%	3	30%	4	40%	1	10%	0	0%
Professional	**14**	2	14%	2	14%	6	43%	1	7%	3	21%
Daily wage labour	**7**	3	43%	3	43%	1	14%	0	0%	0	0%
Students	**14**	0	0%	3	21%	6	43%	2	14%	3	21%
Others	**11**	0	0%	1	9%	5	81%	2	18%	3	27%
Sub-total	**113**	**12**	**11%**	**22**	**19%**	**43**	**38%**	**15**	**13%**	**21**	**18%**
REGULATING OUR GLOBAL CLIMATE											
Orchardist	**57**	0	0%	0	0%	1	2%	7	12%	49	86%
Tourist Actor	**10**	0	0%	0	0%	0	0%	0	0%	10	100%
Professional	**14**	0	0%	0	0%	0	0%	3	21%	11	79%
Daily wage labour	**7**	0	0%	0	0%	0	0%	0	0%	7	100%
Students	**14**	0	0%	0	0%	0	0%	4	28%	10	71%
Others	**11**	0	0%	0	0%	0	0%	1	9%	10	91%
Sub-total	**113**	**0**	**0%**	**0**	**0%**	**1**	**1%**	**15**	**13%**	**97**	**86%**
CONTROLLING OR PREVENTING SOIL LOSS											
Orchardist	**57**	0	0%	1	2%	6	11%	26	46%	24	42%
Tourist Actor	**10**	2	20%	2	20%	1	10%	5	50%	0	0%
Professional	**14**	0	0%	0	0%	3	21%	7	50%	4	29%
Daily wage labour	**7**	0	0%	0	0%	1	14%	6	86%	0	0%
Students	**14**	0	0%	2	14%	2	14%	5	36%	5	36%
Others	**11**	0	0%	0	0%	2	18%	6	54%	3	27%
Sub-total	**113**	**2**	**2%**	**5**	**4%**	**15**	**13%**	**55**	**49%**	**36**	**32%**
POLLINATING FRUIT TREES AND OTHER PLANTS											
Orchardist	**57**	20	35%	13	23%	15	13%	4	7%	5	9%
Tourist Actor	**10**	6	60%	1	10%	2	20%	1	10%	0	0%
Professional	**14**	4	28%	7	50%	2	14%	0	0%	1	7%
Daily wage labour	**7**	6	86%	1	14%	0	0%	0	0%	0	0%
Students	**14**	10	71%	2	14%	2	14%	0	0%	0	0%
Others	**11**	3	27%	3	27%	3	27%	0	0%	2	18%
Sub-total	**113**	**49**	**43%**	**27**	**24%**	**24**	**21%**	**5**	**4%**	**8**	**7%**
REGULATING THE PHYSICAL QUALITY OF AIR FOR PEOPLE											
Orchardist	**57**	0	0%	0	0%	1	2%	5	9%	51	89%
Tourist Actor	**10**	0	0%	0	0%	0	0%	2	20%	8	80%
Professional	**14**	0	0%	0	0%	0	0%	2	14%	12	86%
Daily wage labour	**7**	0	0%	0	0%	0	0%	0	0%	7	100%
Students	**14**	0	0%	0	0%	0	0%	3	21%	11	79%
Others	**11**	0	0%	0	0%	0	0%	0	0%	11	100%
Sub-total	**113**	**0**	**0%**	**0**	**0%**	**1**	**1%**	**12**	**11%**	**100**	**88%**
ENSURING ORGANIC MATTER IN THE SOIL IS MAINTAINED											
Orchardist	**57**	8	14%	6	11%	11	19%	16	28%	16	28%
Tourist Actor	**10**	5	50%	2	20%	0	0%	3	30%	0	0%
Professional	**14**	2	14%	1	7%	4	28%	5	36%	2	14%
Daily wage labour	**7**	3	43%	1	14%	3	43%	0	0%	0	0%
Students	**14**	4	28%	4	28%	5	36%	0	0%	1	7%
Others	**11**	1	9%	2	18%	2	18%	3	27%	3	27%
Sub-total	**113**	**23**	**20%**	**16**	**14%**	**25**	**22%**	**27**	**24%**	**22**	**19%**
PROVIDING HABITAT FOR WILD PLANTS AND ANIMALS THAT CAN BE USEFUL TO US											
Orchardist	**57**	0	0%	0	0%	0	0%	1	2%	56	98%
Tourist Actor	**10**	0	0%	0	0%	0	0%	0	0%	10	100%
Professional	**14**	0	0%	0	0%	0	0%	0	0%	14	100%
Daily wage labour	**7**	0	0%	0	0%	0	0%	0	0%	7	100%
Students	**14**	0	0%	0	0%	0	0%	0	0%	14	100%
Others	**11**	0	0%	0	0%	0	0%	0	0%	11	100%
Sub-total	**113**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**1**	**1%**	**112**	**99%**

Table 2. Regulating Services of Eco-tourism Park

Level of Importance		1		2		3		4		5	
	No. of resp.	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
REDUCING NOISE											
Orchardist	**57**	27	47%	9	16%	15	26%	1	2%	5	9%
Tourist Actor	**10**	4	40%	5	50%	1	10%	0	0%	0	0%
Professional	**14**	5	36%	5	36%	4	28%	0	0%	0	0%
Daily wage labour	**7**	4	57%	2	28%	0	0%	0	0%	1	14%
Students	**14**	4	28%	6	43%	3	21%	1	7%	0	0%
Others	**11**	4	36%	4	36%	5	45%	0	0%	1	9%
Sub-total	**113**	**48**	**42%**	**31**	**27%**	**28**	**25%**	**2**	**2%**	**7**	**6%**
REGULATING OUR GLOBAL CLIMATE											
Orchardist	**57**	0	0%	0	0%	2	4%	14	24%	41	72%
Tourist Actor	**10**	0	0%	0	0%	0	0%	0	0%	10	100%
Professional	**14**	0	0%	0	0%	0	0%	3	21%	11	79%
Daily wage labour	**7**	1	14%	0	0%	0	0%	0	0%	6	86%
Students	**14**	0	0%	0	0%	1	7%	4	29%	9	64%
Others	**11**	0	0%	0	0%	0	0%	1	9%	10	91%
Sub-total	**113**	**1**	**1%**	**0**	**0%**	**3**	**2%**	**22**	**19%**	**90**	**79%**
CONTROLLING OR PREVENTING SOIL LOSS											
Orchardist	**57**	0	0%	2	4%	10	18%	16	28%	29	51%
Tourist Actor	**10**	2	20%	2	20%	0	0%	1	10%	5	50%
Professional	**14**	0	0%	0	0%	4	28%	2	14%	8	57%
Daily wage labour	**7**	0	0%	0	0%	1	14%	1	14%	5	71%
Students	**14**	0	0%	0	0%	3	21%	8	57%	3	21%
Others	**11**	0	0%	0	0%	4	36%	3	27%	4	36%
Sub-total	**113**	**2**	**2%**	**4**	**3%**	**22**	**19%**	**31**	**27%**	**54**	**48%**
POLLINATING FRUIT TREES AND OTHER PLANTS											
Orchardist	**57**	24	42%	7	12%	18	32%	4	7%	4	7%
Tourist Actor	**10**	6	60%	2	20%	2	20%	0	0%	0	0%
Professional	**14**	7	50%	4	28%	2	14%	0	0%	1	7%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	10	71%	1	7%	2	14%	1	7%	0	0%
Others	**11**	3	27%	5	45%	1	9%	0	0%	2	18%
Sub-total	**113**	**57**	**50%**	**19**	**17%**	**25**	**22%**	**5**	**4%**	**7**	**6%**
REGULATING THE PHYSICAL QUALITY OF AIR FOR PEOPLE											
Orchardist	**57**	0	0%	0	0%	2	3%	10	17%	45	79%
Tourist Actor	**10**	0	0%	0	0%	0	0%	0	0%	10	100%
Professional	**14**	0	0%	0	0%	0	0%	1	7%	13	93%
Daily wage labour	**7**	0	0%	0	0%	0	0%	1	14%	6	86%
Students	**14**	0	0%	0	0%	0	0%	3	21%	11	79%
Others	**11**	0	0%	0	0%	0	0%	0	0%	11	100%
Sub-total	**113**	**0**	**0%**	**0**	**0%**	**2**	**2%**	**15**	**13%**	**96**	**85%**
ENSURING ORGANIC MATTER IN THE SOIL IS MAINTAINED											
Orchardist	**57**	11	19%	3	5%	13	23%	8	14%	22	38%
Tourist Actor	**10**	6	60%	0	0%	3	30%	0	0%	1	10%
Professional	**14**	2	14%	1	7%	3	21%	2	14%	6	43%
Daily wage labour	**7**	4	57%	1	14%	2	28%	0	0%	0	0%
Students	**14**	3	21%	4	29%	2	14%	4	29%	1	7%
Others	**11**	1	9%	2	18%	2	18%	2	18%	4	36%
Sub-total	**113**	**27**	**24%**	**11**	**10%**	**25**	**22%**	**16**	**14%**	**34**	**30%**
PROVIDING HABITAT FOR WILD PLANTS AND ANIMALS THAT CAN BE USEFUL TO US											
Orchardist	**57**	1	2%	0	0%	0	0%	2	4%	54	94%
Tourist Actor	**10**	0	0%	0	0%	0	0%	0	0%	10	100%
Professional	**14**	0	0%	0	0%	0	0%	0	0%	14	100%
Daily wage labour	**7**	0	0%	0	0%	0	0%	0	0%	7	100%
Students	**14**	0	0%	0	0%	0	0%	0	0%	14	100%
Others	**11**	0	0%	0	0%	0	0%	0	0%	11	100%
Sub-total	**113**	**1**	**1%**	**0**	**0%**	**0**	**0%**	**2**	**2%**	**110**	**97%**

Table 3. Regulating Services of Tannijubbar Lake

Level of Importance		1		2		3		4		5	
	No. of resp.	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
REDUCING NOISE											
Orchardist	57	55	96%	1	1%	1	1%	0	0%	0	0%
Tourist Actor	10	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	14	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	7	7	100%	0	0%	0	0%	0	0%	0	0%
Students	14	14	100%	0	0%	0	0%	0	0%	0	0%
Others	11	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	113	111	98%	1	1%	1	1%	0	0%	0	0%
REGULATING OUR GLOBAL CLIMATE											
Orchardist	57	13	23%	9	16%	18	32%	14	25%	3	5%
Tourist Actor	10	0	0%	7	70%	2	20%	1	10%	0	0%
Professional	14	7	50%	2	14%	2	14%	1	7%	2	14%
Daily wage labour	7	7	100%	0	0%	0	0%	0	0%	0	0%
Students	14	6	42%	4	28%	4	28%	0	0%	0	0%
Others	11	2	18%	3	27%	2	18%	2	18%	2	18%
Sub-total	113	35	31%	25	22%	28	25%	18	16%	7	6%
CONTROLLING OR PREVENTING SOIL LOSS											
Orchardist	57	57	100%	0	0%	0	0%	0	0%	0	0%
Tourist Actor	10	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	14	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	7	7	100%	0	0%	0	0%	0	0%	0	0%
Students	14	14	100%	0	0%	0	0%	0	0%	0	0%
Others	11	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	113	113	100%	0	0%	0	0%	0	0%	0	0%
POLLINATING FRUIT TREES AND OTHER PLANTS											
Orchardist	57	57	100%	0	0%	0	0%	0	0%	0	0%
Tourist Actor	10	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	14	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	7	7	100%	0	0%	0	0%	0	0%	0	0%
Students	14	14	100%	0	0%	0	0%	0	0%	0	0%
Others	11	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	113	113	100%	0	0%	0	0%	0	0%	0	0%
REGULATING THE PHYSICAL QUALITY OF AIR FOR PEOPLE											
Orchardist	57	14	24%	9	16%	18	33%	14	24%	2	3%
Tourist Actor	10	0	0%	1	10%	7	70%	2	20%	0	0%
Professional	14	5	36%	2	14%	4	28%	1	7%	2	14%
Daily wage labour	7	7	100%	0	0%	0	0%	0	0%	0	0%
Students	14	7	50%	4	28%	3	21%	0	0%	0	0%
Others	11	3	27%	4	36%	0	0%	2	18%	2	18%
Sub-total	113	36	32%	20	18%	32	28%	19	17%	6	5%
ENSURING ORGANIC MATTER IN THE SOIL IS MAINTAINED											
Orchardist	57	57	100%	0	0%	0	0%	0	0%	0	0%
Tourist Actor	10	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	14	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	7	7	100%	0	0%	0	0%	0	0%	0	0%
Students	14	14	100%	0	0%	0	0%	0	0%	0	0%
Others	11	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	113	113	100%	0	0%	0	0%	0	0%	0	0%
PROVIDING HABITAT FOR WILD PLANTS AND ANIMALS THAT CAN BE USEFUL TO US											
Orchardist	57	44	77%	6	10%	5	9%	1	2%	1	2%
Tourist Actor	10	6	60%	1	10%	2	20%	1	10%	0	0%
Professional	14	10	71%	1	7%	3	21%	0	0%	0	0%
Daily wage labour	7	7	100%	0	0%	0	0%	0	0%	0	0%
Students	14	13	93%	1	7%	0	0%	0	0%	0	0%
Others	11	8	72%	1	1%	1	1%	1	1%	0	0%
Sub-total	113	88	77%	10	9%	11	10%	3	3%	1	1%

Table 4. Regulating Services of river Satluj

Level of Importance		1		2		3		4		5	
	No. of resp.	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
REDUCING NOISE											
Orchardist	57	25	44%	5	9%	23	40%	2	3%	2	3%
Tourist Actor	10	3	30%	1	10%	5	50%	0	0%	1	10%
Professional	14	8	57%	1	7%	4	28%	0	0%	1	7%
Daily wage labour	7	7	100%	0	0%	0	0%	0	0%	0	0%
Students	14	9	64%	2	14%	3	21%	0	0%	0	0%
Others	11	3	27%	0	0%	4	36%	3	27%	1	9%
Sub-total	113	55	49%	9	8%	39	35%	5	4%	5	4%
REGULATING OUR GLOBAL CLIMATE											
Orchardist	57	11	19%	1	2%	6	10%	20	35%	19	33%
Tourist Actor	10	0	0%	0	0%	0	0%	6	60%	4	40%
Professional	14	3	21%	0	0%	0	0%	6	43%	5	36%
Daily wage labour	7	7	100%	0	0%	0	0%	0	0%	0	0%
Students	14	4	28%	0	0%	7	50%	1	7%	2	14%
Others	11	2	18%	0	0%	0	0%	6	54%	3	27%
Sub-total	113	27	24%	1	1%	13	11%	39	34%	33	29%
CONTROLLING OR PREVENTING SOIL LOSS											
Orchardist	57	57	100%	0	0%	0	0%	0	0%	0	0%
Tourist Actor	10	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	14	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	7	7	100%	0	0%	0	0%	0	0%	0	0%
Students	14	14	100%	0	0%	0	0%	0	0%	0	0%
Others	11	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	113	113	100%	0	0%	0	0%	0	0%	0	0%
POLLINATING FRUIT TREES AND OTHER PLANTS											
Orchardist	57	57	100%	0	0%	0	0%	0	0%	0	0%
Tourist Actor	10	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	14	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	7	7	100%	0	0%	0	0%	0	0%	0	0%
Students	14	14	100%	0	0%	0	0%	0	0%	0	0%
Others	11	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	113	113	100%	0	0%	0	0%	0	0%	0	0%
REGULATING THE PHYSICAL QUALITY OF AIR FOR PEOPLE											
Orchardist	57	11	19%	1	2%	6	10%	19	33%	20	35%
Tourist Actor	10	0	0%	0	0%	0	0%	8	80%	2	20%
Professional	14	3	21%	1	7%	2	14%	2	14%	6	43%
Daily wage labour	7	7	100%	0	0%	0	0%	0	0%	0	0%
Students	14	6	43%	1	7%	4	28%	1	7%	2	14%
Others	11	2	18%	0	0%	1	9%	5	45%	4	36%
Sub-total	113	29	25%	3	3%	13	11%	35	31%	34	30%
ENSURING ORGANIC MATTER IN THE SOIL IS MAINTAINED											
Orchardist	57	56	98%	0	0%	0	0%	0	0%	1	2%
Tourist Actor	10	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	14	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	7	7	100%	0	0%	0	0%	0	0%	0	0%
Students	14	14	100%	0	0%	0	0%	0	0%	0	0%
Others	11	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	113	112	99%	0	0%	0	0%	0	0%	1	1%
PROVIDING HABITAT FOR WILD PLANTS AND ANIMALS THAT CAN BE USEFUL TO US											
Orchardist	57	44	77%	4	7%	3	5%	1	2%	5	9%
Tourist Actor	10	5	50%	2	20%	0	0%	2	20%	1	10%
Professional	14	8	57%	0	0%	4	28%	2	14%	0	0%
Daily wage labour	7	7	100%	0	0%	0	0%	0	0%	0	0%
Students	14	14	100%	0	0%	0	0%	0	0%	0	0%
Others	11	7	63%	1	9%	3	27%	0	0%	0	0%
Sub-total	113	85	75%	7	6%	10	8%	5	4%	6	5%

Table 5. Regulating Services of Hatu peak

Level of Importance		1		2		3		4		5	
	No. of resp.	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
REDUCING NOISE											
Orchardist	57	33	58%	8	14%	16	28%	0	0%	1	2%
Tourist Actor	10	8	80%	1	10%	1	10%	0	0%	0	0%
Professional	14	9	64%	4	28%	1	7%	0	0%	0	0%
Daily wage labour	7	5	71%	2	29%	0	0%	0	0%	1	14%
Students	14	5	36%	5	36%	1	7%	3	21%	0	0%
Others	11	5	45%	3	27%	3	27%	0	0%	0	0%
Sub-total	113	65	57%	23	20%	22	19%	3	2%	2	2%
REGULATING OUR GLOBAL CLIMATE											
Orchardist	57	0	0%	0	0%	1	2%	10	17%	46	81%
Tourist Actor	10	0	0%	0	0%	0	0%	0	0%	10	100%
Professional	14	0	0%	0	0%	0	0%	5	36%	9	64%
Daily wage labour	7	0	0%	0	0%	0	0%	3	43%	4	57%
Students	14	0	0%	0	0%	0	0%	3	21%	11	79%
Others	11	0	0%	0	0%	0	0%	3	27%	8	72%
Sub-total	113	0	0%	0	0%	1	1%	24	21%	88	78%
CONTROLLING OR PREVENTING SOIL LOSS											
Orchardist	57	0	0%	1	2%	29	51%	15	26%	12	21%
Tourist Actor	10	2	20%	2	20%	1	10%	4	40%	1	10%
Professional	14	0	0%	0	0%	11	79%	2	14%	1	7%
Daily wage labour	7	0	0%	1	14%	2	28%	4	57%	0	0%
Students	14	0	0%	0	0%	10	71%	2	14%	2	14%
Others	11	0	0%	2	18%	5	45%	2	18%	2	18%
Sub-total	113	2	2%	6	5%	58	51%	29	25%	18	16%
POLLINATING FRUIT TREES AND OTHER PLANTS											
Orchardist	57	14	24%	12	21%	22	38%	4	7%	5	9%
Tourist Actor	10	3	30%	3	30%	3	30%	1	10%	0	0%
Professional	14	3	21%	4	28%	5	36%	0	0%	2	14%
Daily wage labour	7	6	86%	1	14%	0	0%	0	0%	0	0%
Students	14	5	36%	6	43%	2	14%	0	0%	1	7%
Others	11	5	45%	1	9%	4	36%	0	0%	1	9%
Sub-total	113	36	32%	27	24%	36	32%	5	4%	9	8%
REGULATING THE PHYSICAL QUALITY OF AIR FOR PEOPLE											
Orchardist	57	0	0%	0	0%	0	0%	9	16%	48	84%
Tourist Actor	10	0	0%	0	0%	0	0%	0	0%	10	100%
Professional	14	0	0%	0	0%	0	0%	4	28%	10	71%
Daily wage labour	7	0	0%	0	0%	0	0%	1	14%	6	86%
Students	14	0	0%	0	0%	0	0%	5	36%	9	64%
Others	11	0	0%	0	0%	0	0%	5	45%	6	54%
Sub-total	113	0	0%	0	0%	0	0%	24	21%	89	79%
ENSURING ORGANIC MATTER IN THE SOIL IS MAINTAINED											
Orchardist	57	10	17%	9	16%	20	35%	7	12%	11	19%
Tourist Actor	10	6	60%	0	0%	1	10%	3	30%	0	0%
Professional	14	1	7%	2	14%	9	64%	1	7%	1	7%
Daily wage labour	7	3	43%	1	14%	2	29%	1	14%	0	0%
Students	14	1	7%	5	36%	6	43%	1	7%	1	7%
Others	11	1	9%	3	27%	5	45%	1	9%	1	9%
Sub-total	113	22	19%	20	17%	43	38%	14	12%	14	12%
PROVIDING HABITAT FOR WILD PLANTS AND ANIMALS THAT CAN BE USEFUL TO US											
Orchardist	57	0	0%	0	0%	1	2%	0	0%	56	98%
Tourist Actor	10	0	0%	0	0%	0	0%	0	0%	10	100%
Professional	14	0	0%	0	0%	0	0%	2	14%	12	86%
Daily wage labour	7	0	0%	0	0%	0	0%	0	0%	7	100%
Students	14	0	0%	0	0%	0	0%	0	0%	14	100%
Others	11	0	0%	0	0%	0	0%	0	0%	11	100%
Sub-total	113	0	0%	0	0%	1	1%	2	2%	110	97%

Table 6. Regulating Services of Farmlands

Level of Importance		1		2		3		4		5	
	No. of resp.	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
REDUCING NOISE											
Orchardist	**57**	15	26%	10	17%	16	28%	8	14%	8	14%
Tourist Actor	**10**	4	40%	5	50%	1	10%	0	0%	0	0%
Professional	**14**	5	36%	3	21%	5	36%	0	0%	1	7%
Daily wage labour	**7**	6	86%	1	14%	0	0%	0	0%	0	0%
Students	**14**	6	43%	3	21%	5	36%	0	0%	0	0%
Others	**11**	2	29%	4	36%	4	36%	1	9%	0	0%
Sub-total	**113**	**38**	**33%**	**26**	**23%**	**31**	**27%**	**9**	**8%**	**9**	**8%**
REGULATING OUR GLOBAL CLIMATE											
Orchardist	**57**	11	19%	1	2%	3	5%	16	28%	26	45%
Tourist Actor	**10**	0	0%	0	0%	5	50%	1	10%	4	40%
Professional	**14**	3	21%	1	7%	2	14%	4	28%	4	28%
Daily wage labour	**7**	0	0%	1	14%	2	29%	3	43%	1	14%
Students	**14**	4	28%	0	0%	3	21%	4	28%	3	21%
Others	**11**	2	18%	1	9%	2	18%	3	27%	3	27%
Sub-total	**113**	**20**	**17%**	**4**	**3%**	**17**	**15%**	**31**	**27%**	**41**	**36%**
CONTROLLING OR PREVENTING SOIL LOSS											
Orchardist	**57**	0	0%	0	0%	1	2%	7	12%	49	86%
Tourist Actor	**10**	0	0%	0	0%	0	0%	0	0%	10	100%
Professional	**14**	3	21%	0	0%	0	0%	1	7%	10	71%
Daily wage labour	**7**	0	0%	0	0%	0	0%	2	29%	5	71%
Students	**14**	0	0%	0	0%	0	0%	5	36%	9	64%
Others	**11**	1	9%	0	0%	0	0%	0	0%	10	91%
Sub-total	**113**	**4**	**3%**	**0**	**0%**	**1**	**1%**	**15**	**13%**	**93**	**82%**
POLLINATING FRUIT TREES AND OTHER PLANTS											
Orchardist	**57**	0	0%	0	0%	0	0%	1	2%	56	98%
Tourist Actor	**10**	0	0%	0	0%	0	0%	0	0%	10	100%
Professional	**14**	3	21%	0	0%	0	0%	1	7%	10	71%
Daily wage labour	**7**	0	0%	0	0%	0	0%	0	0%	7	100%
Students	**14**	0	0%	0	0%	0	0%	1	7%	13	92%
Others	**11**	1	9%	0	0%	0	0%	0	0%	10	91%
Sub-total	**113**	**4**	**3%**	**0**	**0%**	**0**	**0%**	**3**	**2%**	**106**	**94%**
REGULATING THE PHYSICAL QUALITY OF AIR FOR PEOPLE											
Orchardist	**57**	6	10%	3	5%	6	10%	12	21%	30	53%
Tourist Actor	**10**	0	0%	0	0%	4	40%	2	20%	4	40%
Professional	**14**	3	21%	1	7%	2	14%	0	0%	8	57%
Daily wage labour	**7**	0	0%	2	29%	1	14%	1	14%	3	43%
Students	**14**	3	21%	1	7%	2	14%	4	28%	4	28%
Others	**11**	2	18%	0	0%	2	18%	0	0%	7	63%
Sub-total	**113**	**14**	**12%**	**7**	**6%**	**17**	**15%**	**19**	**17%**	**56**	**50%**
ENSURING ORGANIC MATTER IN THE SOIL IS MAINTAINED											
Orchardist	**57**	0	0%	0	0%	2	3%	11	19%	44	77%
Tourist Actor	**10**	0	0%	0	0%	0	0%	0	0%	10	100%
Professional	**14**	3	21%	0	0%	0	0%	3	21%	8	57%
Daily wage labour	**7**	0	0%	0	0%	0	0%	4	57%	3	43%
Students	**14**	1	7%	0	0%	1	7%	2	14%	10	71%
Others	**11**	1	9%	0	0%	0	0%	2	18%	8	73%
Sub-total	**113**	**4**	**3%**	**0**	**0%**	**3**	**3%**	**22**	**19%**	**83**	**73%**
PROVIDING HABITAT FOR WILD PLANTS AND ANIMALS THAT CAN BE USEFUL TO US											
Orchardist	**57**	8	14%	13	23%	24	42%	6	10%	6	10%
Tourist Actor	**10**	1	10%	4	40%	3	30%	2	20%	0	0%
Professional	**14**	5	36%	2	14%	4	29%	2	14%	1	7%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	5	36%	7	50%	1	7%	1	7%	0	0%
Others	**11**	4	36%	1	9%	4	36%	1	9%	1	9%
Sub-total	**113**	**30**	**26%**	**27**	**24%**	**36**	**32%**	**12**	**11%**	**8**	**7%**

Annex 4: Tables of Cultural Services

Table 1. Cultural services of Forest

Level of Importance		1		2		3		4		5	
	No. of resp.	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
THE BEAUTY OF NATURE											
Orchardist	**57**	0	0%	0	0%	0	0%	1	2%	56	98%
Tourist Actor	**10**	0	0%	0	0%	0	0%	0	0%	10	100%
Professional	**14**	0	0%	0	0%	0	0%	0	0%	14	100%
Daily wage labour	**7**	0	0%	0	0%	0	0%	0	0%	7	100%
Students	**14**	0	0%	0	0%	0	0%	1	7%	13	93%
Others	**11**	0	0%	0	0%	0	0%	0	0%	11	100%
Sub-total	**113**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**2**	**2%**	**111**	**98%**
FOR FOLKLORE TRADITION											
Orchardist	**57**	0	0%	2	3%	10	18%	14	24%	31	54%
Tourist Actor	**10**	0	0%	1	10%	4	40%	4	40%	1	10%
Professional	**14**	0	0%	1	7%	3	21%	3	21%	7	50%
Daily wage labour	**7**	0	0%	0	0%	2	29%	5	71%	0	0%
Students	**14**	0	0%	2	14%	4	29%	3	21%	5	36%
Others	**11**	0	0%	1	9%	2	18%	3	21%	5	45%
Sub-total	**113**	**0**	**0%**	**7**	**6%**	**25**	**22%**	**32**	**28%**	**49**	**43%**
FOR HISTORY AND CULTURE											
Orchardist	**57**	5	9%	3	5%	8	14%	15	26%	26	45%
Tourist Actor	**10**	2	20%	4	40%	0	0%	3	30%	1	10%
Professional	**14**	2	14%	1	7%	2	14%	3	21%	6	43%
Daily wage labour	**7**	1	14%	4	57%	1	14%	1	14%	0	0%
Students	**14**	2	14%	5	36%	2	14%	0	0%	5	36%
Others	**11**	1	9%	5	45%	3	27%	0	0%	5	45%
Sub-total	**113**	**13**	**11%**	**22**	**19%**	**16**	**14%**	**22**	**19%**	**43**	**38%**
USING NATURE TO DESTRESS											
Orchardist	**57**	0	0%	0	0%	1	2%	14	24%	42	74%
Tourist Actor	**10**	0	0%	0	0%	1	10%	0	0%	9	90%
Professional	**14**	0	0%	0	0%	1	7%	4	29%	9	64%
Daily wage labour	**7**	0	0%	0	0%	0	0%	0	0%	7	100%
Students	**14**	0	0%	0	0%	0	0%	3	21%	11	79%
Others	**11**	0	0%	0	0%	0	0%	1	9%	10	90%
Sub-total	**113**	**0**	**0%**	**0**	**0%**	**3**	**3%**	**22**	**19%**	**88**	**78%**
FOR EDUCATION AND TRAINING											
Orchardist	**57**	45	79%	3	5%	5	9%	4	7%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	8	57%	1	7%	2	14%	3	21%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	8	57%	2	14%	2	14%	0	0%	2	14%
Others	**11**	7	63%	0	0%	1	9%	0	0%	3	27%
Sub-total	**113**	**85**	**75%**	**6**	**5%**	**10**	**9%**	**7**	**6%**	**5**	**4%**
FOR RECREATION AND TOURISM											
Orchardist	**57**	9	16%	7	12%	22	39%	7	12%	12	21%
Tourist Actor	**10**	0	0%	0	0%	0	0%	0	0%	10	100%
Professional	**14**	1	7%	4	29%	5	36%	3	21%	1	7%
Daily wage labour	**7**	0	0%	0	0%	0	0%	6	86%	1	14%
Students	**14**	0	0%	5	36%	5	36%	4	29%	0	0%
Others	**11**	0	0%	3	27%	4	36%	1	9%	3	27%
Sub-total	**113**	**10**	**9%**	**19**	**17%**	**36**	**32%**	**21**	**18%**	**27**	**24%**
FOR SPIRITUAL AND RELIGIOUS ACTIVITIES											
Orchardist	**57**	5	9%	22	39%	23	40%	3	5%	4	7%
Tourist Actor	**10**	0	0%	4	40%	5	50%	1	10%	0	0%
Professional	**14**	2	14%	6	43%	4	29%	1	7%	1	9%
Daily wage labour	**7**	1	14%	3	43%	2	28%	1	14%	0	0%
Students	**14**	5	29%	7	50%	1	7%	0	0%	1	7%
Others	**11**	1	9%	2	18%	3	27%	2	18%	3	27%
Sub-total	**113**	**14**	**12%**	**44**	**39%**	**38**	**34%**	**8**	**7%**	**9**	**8%**

Table 2. Cultural services of Eco-tourism Park

Level of Importance		1		2		3		4		5	
	No. of resp.	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
THE BEAUTY OF NATURE											
Orchardist	**57**	0	0%	1	2%	1	2%	6	10%	49	86%
Tourist Actor	**10**	0	0%	0	0%	0	0%	0	0%	10	100%
Professional	**14**	0	0%	0	0%	0	0%	0	0%	14	100%
Daily wage labour	**7**	0	0%	0	0%	0	0%	0	0%	7	100%
Students	**14**	0	0%	0	0%	0	0%	3	21%	11	79%
Others	**11**	0	0%	0	0%	0	0%	1	9%	10	90%
Sub-total	**113**	**0**	**0%**	**1**	**1%**	**1**	**1%**	**10**	**9%**	**101**	**89%**
FOR FOLKLORE TRADITION											
Orchardist	**57**	47	82%	6	10%	2	3%	1	2%	1	2%
Tourist Actor	**10**	0	0%	0	0%	0	0%	0	0%	10	
Professional	**14**	12	86%	0	0%	1	7%	1	7%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	13	93%	0	0%	1	7%	0	0%	0	0%
Others	**11**	9	82%	0	0%	1	9%	1	9%	0	0%
Sub-total	**113**	**88**		**6**		**5**		**3**		**11**	
FOR HISTORY AND CULTURE											
Orchardist	**57**	33	58%	10	17%	8	14%	4	7%	2	3%
Tourist Actor	**10**	7	70%	2	20%	1	10%	0	0%	0	0%
Professional	**14**	12	86%	0	0%	0	0%	1	7%	1	7%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	10	71%	1	7%	3	21%	0	0%	0	0%
Others	**11**	4	36%	4	36%	2	18%	1	9%	0	0%
Sub-total	**113**	**73**	**65%**	**17**	**15%**	**14**	**12%**	**6**	**5%**	**3**	**3%**
USING NATURE TO DESTRESS											
Orchardist	**57**	6		5		14		13		19	
Tourist Actor	**10**	0	0%	0	0%	0	0%	4	40%	6	60%
Professional	**14**	0	0%	4	29%	3	21%	5	36%	2	14%
Daily wage labour	**7**	0	0%	1	14%	1	14%	0	0%	5	71%
Students	**14**	0	0%	2	14%	4	29%	1	7%	7	50%
Others	**11**	1	9%	0	0%	3	27%	3	27%	4	36%
Sub-total	**113**	**7**	**6%**	**12**	**11%**	**25**	**22%**	**26**	**23%**	**43**	**38%**
FOR EDUCATION AND TRAINING											
Orchardist	**57**	51	89%	2	3%	3	5%	0	0%	1	2%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	10	71%	0	0%	2	14%	2	14%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	11	79%	1	7%	1	7%	1	7%	0	0%
Others	**11**	7	63%	1	9%	0	0%	3	27%	0	0%
Sub-total	**113**	**96**	**85%**	**4**	**3%**	**6**	**5%**	**6**	**5%**	**1**	**1%**
FOR RECREATION AND TOURISM											
Orchardist	**57**	10	18%	17	30%	13	23%	7	12%	9	16%
Tourist Actor	**10**	0	0%	0	0%	0	0%	1	10%	9	90%
Professional	**14**	6	43%	2	14%	2	14%	4	29%	0	0%
Daily wage labour	**7**	1	14%	3	43%	0	0%	1	14%	2	28%
Students	**14**	5	36%	5	36%	3	21%	1	7%	0	0%
Others	**11**	1	9%	5	45%	2	18%	3	27%	0	0%
Sub-total	**113**	**23**	**20%**	**32**	**28%**	**20**	**18%**	**17**	**15%**	**20**	**18%**
FOR SPIRITUAL AND RELIGIOUS ACTIVITIES											
Orchardist	**57**	54	94%	1	2%	0	0%	1	2%	1	2%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	13	93%	1	7%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	12	86%	1	7%	0	0%	0	0%	1	7%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**107**	**94%**	**3**	**3%**	**0**	**0%**	**1**	**1%**	**2**	**2%**

Table 3. Cultural services of Tannijubbar lake

Level of Importance		1		2		3		4		5	
	No. of resp.	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
THE BEAUTY OF NATURE											
Orchardist	**57**	0	0%	0	0%	3	5%	18	32%	36	63%
Tourist Actor	**10**	0	0%	0	0%	0	0%	2	20%	8	80%
Professional	**14**	0	0%	0	0%	0	0%	4	29%	10	71%
Daily wage labour	**7**	0	0%	0	0%	0	0%	2	28%	5	71%
Students	**14**	1	7%	0	0%	0	0%	6	43%	7	50%
Others	**11**	0	0%	0	0%	0	0%	5	45%	6	54%
Sub-total	**113**	**1**	**1%**	**0**	**0%**	**3**	**3%**	**37**	**32%**	**72**	**64%**
FOR FOLKLORE TRADITION											
Orchardist	**57**	35	61%	12	21%	4	7%	4	7%	2	3%
Tourist Actor	**10**	8	80%	1	10%	0	0%	0	0%	1	10%
Professional	**14**	8	57%	3	21%	1	7%	0	0%	2	14%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	11	79%	1	7%	1	7%	1	7%	0	0%
Others	**11**	6	54%	3	27%	2	18%	0	0%	0	0%
Sub-total	**113**	**75**	**66%**	**20**	**18%**	**8**	**7%**	**5**	**4%**	**5**	**4%**
FOR HISTORY AND CULTURE											
Orchardist	**57**	21	37%	7	12%	7	12%	15	26%	7	12%
Tourist Actor	**10**	4	40%	2	20%	0	0%	1	10%	3	30%
Professional	**14**	5	36%	0	0%	1	7%	6	43%	2	14%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	6	43%	3	21%	0	0%	4	29%	1	7%
Others	**11**	4	36%	0	0%	2	18%	5	45%	0	0%
Sub-total	**113**	**47**	**42%**	**12**	**11%**	**10**	**9%**	**31**	**27%**	**13**	**11%**
USING NATURE TO DESTRESS											
Orchardist	**57**	4	7%	9	16%	17	30%	18	31%	9	16%
Tourist Actor	**10**	0	0%	0	0%	0	0%	5	50%	5	50%
Professional	**14**	0	0%	2	14%	6	43%	4	29%	2	14%
Daily wage labour	**7**	1	14%	1	14%	1	14%	3	43%	1	14%
Students	**14**	3	21%	2	14%	4	29%	2	14%	3	21%
Others	**11**	0	0%	0	0%	4	36%	7	63%	0	0%
Sub-total	**113**	**8**	**7%**	**14**	**12%**	**32**	**28%**	**39**	**34%**	**20**	**18%**
FOR EDUCATION AND TRAINING											
Orchardist	**57**	56	98$	0	0%	0	0%	1	2%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	13	93%	0	0%	0	0%	1	7%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**111**		**0**	**0%**	**0**	**0%**	**2**	**2%**	**0**	**0%**
FOR RECREATION AND TOURISM											
Orchardist	**57**	22	29%	12	21%	11	19%	5	9%	7	12%
Tourist Actor	**10**	0	0%	0	0%	0	0%	3	30%	7	70%
Professional	**14**	5	36%	5	36%	4	29%	0	0%	0	0%
Daily wage labour	**7**	1	14%	5	71%	1	14%	0	0%	0	0%
Students	**14**	11	79%	2	14%	1	7%	0	0%	0	0%
Others	**11**	5	36%	3	27%	2	18%	1	9%	0	0%
Sub-total	**113**	**44**	**39%**	**27**	**24%**	**19**	**16%**	**9**	**8%**	**14**	**12%**
FOR SPIRITUAL AND RELIGIOUS ACTIVITIES											
Orchardist	**57**	0	0%	24	42%	19	33%	9	16%	5	8%
Tourist Actor	**10**	1	10%	0	0%	5	50%	3	30%	1	10%
Professional	**14**	1	7%	4	29%	7	50%	2	14%	0	0%
Daily wage labour	**7**	0	0%	2	28%	2	28%	3	43%	0	0%
Students	**14**	0	0%	5	36%	7	50%	2	14%	0	0%
Others	**11**	2	18%	1	9%	5	45%	2	18%	1	9%
Sub-total	**113**	**4**	**3%**	**36**	**32%**	**45**	**40%**	**21**	**18%**	**7**	**6%**

Table 4. Cultural services of river Satluj

Level of Importance		1		2		3		4		5	
	No. of resp.	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
THE BEAUTY OF NATURE											
Orchardist	**57**	1	2%	0	0%	3	5%	15	26%	38	66%
Tourist Actor	**10**	0	0%	0	0%	0	0%	0	0%	10	100%
Professional	**14**	0	0%	0	0%	2	14%	2	14%	10	71%
Daily wage labour	**7**	1	14%	0	0%	0	0%	4	57%	2	28%
Students	**14**	0	0%	1	7%	2	14%	5	36%	6	43%
Others	**11**	0	0%	0	0%	0	0%	5	45%	6	86%
Sub-total	**113**	**2**	**3%**	**1**	**1%**	**7**	**6%**	**31**	**27%**	**72**	**64%**
FOR FOLKLORE TRADITION											
Orchardist	**57**	26	46%	9	16%	16	28%	2	3%	4	7%
Tourist Actor	**10**	6	60%	2	20%	1	10%	0	0%	1	10%
Professional	**14**	8	57%	2	14%	3	21%	1	7%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	11	78%	0	0%	0	0%	2	14%	1	7%
Others	**11**	7	63%	3	27%	1	9%	0	0%	0	0%
Sub-total	**113**	**65**	**58%**	**16**	**14%**	**21**	**18%**	**5**	**4%**	**6**	**5%**
FOR HISTORY AND CULTURE											
Orchardist	**57**	19	33%	2	3%	7	12%	11	19%	18	31%
Tourist Actor	**10**	6	60%	0	0%	0	0%	0	0%	4	40%
Professional	**14**	6	43%	0	0%	2	14%	6	43%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	11	78%	0	0%	0	0%	2	14%	1	7%
Others	**11**	4	36%	1	9%	2	18%	3	27%	1	9%
Sub-total	**113**	**53**	**47%**	**3**	**2%**	**11**	**10%**	**22**	**19%**	**24**	**21%**
USING NATURE TO DESTRESS											
Orchardist	**57**	3	5%	10	17%	21	37%	11	19%	12	21%
Tourist Actor	**10**	0	0%	0	0%	4	40%	6	60%	0	0%
Professional	**14**	1	7%	1	7%	7	50%	5	36%	0	0%
Daily wage labour	**7**	1	14%	2	28%	1	14%	3	43%	0	0%
Students	**14**	1	7%	1	7%	7	50%	5	36%	0	0%
Others	**11**	1	9%	0	0%	5	45%	5	45%	0	0%
Sub-total	**113**	**7**	**6%**	**14**	**12%**	**45**	**40%**	**35**	**31%**	**12**	**10%**
FOR EDUCATION AND TRAINING											
Orchardist	**57**	57	100%	0	0%	0	0%	0	0%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	11	79%	0	0%	1	7%	2	14%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**110**	**97%**	**0**	**0%**	**1**	**1%**	**2**	**2%**	**0**	**0%**
FOR RECREATION AND TOURISM											
Orchardist	**57**	18	31%	16	28%	13	23%	5	9%	5	9%
Tourist Actor	**10**	0	0%	0	0%	1	10%	2	20%	7	70%
Professional	**14**	3	21%	5	36%	4	29%	2	14%	0	0%
Daily wage labour	**7**	0	0%	6	86%	0	0%	1	14%	0	0%
Students	**14**	6	43%	4	29%	3	21%	1	7%	0	0%
Others	**11**	3	27%	6	54%	1	9%	1	9%	0	0%
Sub-total	**113**	**30**	**26%**	**37**	**33%**	**22**	**19%**	**12**	**11%**	**12**	**11%**
FOR SPIRITUAL AND RELIGIOUS ACTIVITIES											
Orchardist	**57**	54	95%	2	3%	1	2%	0	0%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**110**	**97%**	**2**	**2%**	**1**	**1%**	**0**	**0%**	**0**	**0%**

Table 5. Cultural services of Hatu peak

Level of Importance		1		2		3		4		5	
	No. of resp.	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
THE BEAUTY OF NATURE											
Orchardist	**57**	0	0%	0	0%	0	0%	1	2%	56	98%
Tourist Actor	**10**	0	0%	0	0%	0	0%	0	0%	10	100%
Professional	**14**	0	0%	0	0%	0	0%	0	0%	14	100%
Daily wage labour	**7**	0	0%	0	0%	0	0%	0	0%	7	100%
Students	**14**	0	0%	0	0%	0	0%	2	14%	12	86%
Others	**11**	0	0%	0	0%	0	0%	0	0%	11	100%
Sub-total	**113**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**3**	**3%**	**110**	**97%**
FOR FOLKLORE TRADITION											
Orchardist	**57**	1	2%	2	3%	25	44%	16	28%	13	23%
Tourist Actor	**10**	1	10%	1	10%	4	40%	3	30%	1	10%
Professional	**14**	0	0%	2	14%	6	43%	2	14%	4	29%
Daily wage labour	**7**	0	0%	0	0%	1	14%	6	86%	0	0%
Students	**14**	1	7%	6	43%	3	21%	1	7%	3	21%
Others	**11**	2	18%	1	9%	6	54%	1	9%	1	9%
Sub-total	**113**	**5**	**4%**	**12**	**11%**	**45**	**40%**	**29**	**25%**	**22**	**19%**
FOR HISTORY AND CULTURE											
Orchardist	**57**	5	9%	4	7%	9	16%	22	38%	17	30%
Tourist Actor	**10**	3	30%	3	30%	0	0%	3	30%	1	10%
Professional	**14**	2	14%	1	7%	2	14%	5	36%	4	29%
Daily wage labour	**7**	0	0%	5	71%	1	14%	1	14%	0	0%
Students	**14**	1	7%	7	50%	1	7%	2	14%	3	21%
Others	**11**	2	18%	1	9%	4	36%	1	9%	3	27%
Sub-total	**113**	**13**	**11%**	**21**	**18%**	**17**	**15%**	**34**	**30%**	**28**	**25%**
USING NATURE TO DESTRESS											
Orchardist	**57**	0	0%	0	0%	7	12%	21	37%	29	51%
Tourist Actor	**10**	0	0%	0	0%	0	0%	5	50%	5	50%
Professional	**14**	0	0%	0	0%	0	0%	8	57%	6	43%
Daily wage labour	**7**	0	0%	0	0%	0	0%	1	14%	6	86%
Students	**14**	0	0%	0	0%	0	0%	5	36%	9	64%
Others	**11**	0	0%	0	0%	1	9%	5	45%	5	45%
Sub-total	**113**	**0**	**0%**	**0**	**0%**	**8**	**7%**	**45**	**40%**	**60**	**53%**
FOR EDUCATION AND TRAINING											
Orchardist	**57**	51	89%	1	2%	2	3%	3	5%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	9	64%	0	0%	2	14%	3	21%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	10	71%	0	0%	2	14%	0	0%	2	14%
Others	**11**	7	63%	1	9%	1	9%	2	18%	0	0%
Sub-total	**113**	**94**	**83%**	**2**	**2%**	**7**	**6%**	**8**	**7%**	**2**	**2%**
FOR RECREATION AND TOURISM											
Orchardist	**57**	3	5$	11	19%	20	35%	12	21%	11	19%
Tourist Actor	**10**	0	0%	0	0%	0	0%	1	10%	9	90%
Professional	**14**	3	21%	0	0%	7	50%	3	21%	1	7%
Daily wage labour	**7**	0	0%	0	0%	0	0%	0	0%	7	100%
Students	**14**	1	7%	2	14%	5	36%	6	43%	0	0%
Others	**11**	2	18%	1	9%	4	36%	4	36%	0	0%
Sub-total	**113**	**9**	**8%**	**14**	**12%**	**36**	**32%**	**26**	**23%**	**28**	**25%**
FOR SPIRITUAL AND RELIGIOUS ACTIVITIES											
Orchardist	**57**	0	0%	0	0%	31	54%	16	28%	10	17%
Tourist Actor	**10**	0	0%	0	0%	2	20%	7	70%	1	10%
Professional	**14**	0	0%	1	7%	4	29%	8	57%	1	7%
Daily wage labour	**7**	0	0%	0	0%	2	28%	2	28%	3	43%
Students	**14**	0	0%	2	14%	4	29%	5	36%	3	21%
Others	**11**	0	0%	2	18%	3	27%	5	45%	1	9%
Sub-total	**113**	**0**	**0%**	**5**	**4%**	**46**	**41%**	**43**	**38%**	**19**	**17%**

Table 6. Cultural services of Farmlands

Level of Importance		1		2		3		4		5	
	No. of resp.	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
THE BEAUTY OF NATURE											
Orchardist	**57**	0	0%	0	0%	4	7%	11	19%	42	74%
Tourist Actor	**10**	0	0%	0	0%	0	0%	0	0%	10	100%
Professional	**14**	2	14%	0	0%	2	14%	3	21%	7	50%
Daily wage labour	**7**	0	0%	0	0%	0	0%	1	14%	6	86%
Students	**14**	1	7%	0	0%	3	21%	5	36%	5	36%
Others	**11**	1	9%	0	0%	3	27%	4	36%	3	27%
Sub-total	**113**	**4**	**3%**	**0**	**0%**	**12**	**11%**	**24**	**21%**	**73**	**65%**
FOR FOLKLORE TRADITION											
Orchardist	**57**	34	60%	4	7%	12	21%	2	3%	5	9%
Tourist Actor	**10**	8	80%	1	10%	1	10%	0	0%	0	0%
Professional	**14**	9	64%	0	0%	2	14%	3	21%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	12	86%	1	7%	0	0%	1	7%	0	0%
Others	**11**	7	64%	2	18%	0	0%	1	9%	1	9%
Sub-total	**113**	**77**	**68%**	**8**	**7%**	**15**	**13%**	**7**	**6%**	**6**	**5%**
FOR HISTORY AND CULTURE											
Orchardist	**57**	15	26%	3	5%	3	5%	10	18%	26	45%
Tourist Actor	**10**	4	40%	1	10%	0	0%	4	40%	1	10%
Professional	**14**	6	43%	0	0%	0	0%	4	29%	4	29%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	10	71%	0	0%	0	0%	4	29%	0	0%
Others	**11**	4	36%	1	9%	2	18%	1	9%	3	27%
Sub-total	**113**	**46**	**41%**	**5**	**4%**	**5**	**4%**	**23**	**20%**	**34**	**30%**
USING NATURE TO DESTRESS											
Orchardist	**57**	2	3%	6	10%	34	60%	9	16%	6	10%
Tourist Actor	**10**	0	0%	1	10%	2	20%	5	50%	2	20%
Professional	**14**	7	50%	3	21%	3	21%	1	7%	0	0%
Daily wage labour	**7**	0	0%	1	14%	2	28%	4	57%	0	0%
Students	**14**	5	36%	4	29%	4	29%	1	7%	0	0%
Others	**11**	3	27%	1	9%	7	63%	0	0%	0	0%
Sub-total	**113**	**17**	**15%**	**16**	**14%**	**52**	**46%**	**20**	**17%**	**8**	**7%**
FOR EDUCATION AND TRAINING											
Orchardist	**57**	52	91%	0	0%	0	0%	3	5%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	12	86%	1	7%	0	0%	0	0%	1	7%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	13	93%	0	0%	1	7%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**105**	**93%**	**1**	**1%**	**1**	**1%**	**3**	**3%**	**1**	**1%**
FOR RECREATION AND TOURISM											
Orchardist	**57**	35	61%	4	7%	7	12%	6	10%	5	9%
Tourist Actor	**10**	0	0%	0	0%	0	0%	4	40%	6	60%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	3	43%	3	43%	1	14%	0	0%	0	0%
Students	**14**	13	93%	0	0%	1	7%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**76**	**67%**	**7**	**6%**	**9**	**8%**	**10**	**9%**	**11**	**10%**
FOR SPIRITUAL AND RELIGIOUS ACTIVITIES											
Orchardist	**57**	56	98%	0	0%	0	0%	1	2%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**112**	**99%**	**0**	**0%**	**0**	**0%**	**1**	**1%**	**0**	**0%**

Annex 5: Tables of Provisioning Services

Table 1. Provisioning services of Forest

Level of Importance		1		2		3		4		5	
	No. of resp.	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
FRESHWATER FOR HOUSEHOLD CONSUMPTION											
Orchardist	**57**	57	100%	0	0%	0	0%	0	0%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**113**	**100%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**
FRESHWATER FOR IRRIGATION											
Orchardist	**57**	57	100%	0	0%	0	0%	0	0%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**113**	**100%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**
WILD VEGETABLES											
Orchardist	**57**	12	21%	8	14%	9	16%	18	32%	10	17%
Tourist Actor	**10**	3	30%	3	30%	1	10%	1	10%	2	20%
Professional	**14**	6	43%	1	7%	2	14%	1	7%	4	29%
Daily wage labour	**7**	3	43%	2	28%	1	14%	1	14%	0	0%
Students	**14**	9	64%	3	21%	0	0%	2	14%	0	0%
Others	**11**	3	27%	1	9%	2	18%	3	27%	2	18%
Sub-total	**113**	**36**	**32%**	**18**	**16%**	**15**	**13%**	**26**	**23%**	**18**	**16%**
WILD BERRIES											
Orchardist	**57**	8	14%	10	17%	9	16%	17	30%	13	23%
Tourist Actor	**10**	2	20%	3	30%	1	10%	2	20%	2	20%
Professional	**14**	2	14%	2	14%	3	21%	3	21%	4	29%
Daily wage labour	**7**	1	14%	2	28%	1	14%	3	43%	0	0%
Students	**14**	3	21%	3	21%	4	29%	2	14%	2	14%
Others	**11**	1	9%	1	9%	4	36%	3	27%	2	18%
Sub-total	**113**	**17**	**15%**	**21**	**18%**	**22**	**19%**	**30**	**27%**	**23**	**20%**
MEDICINAL HERBS											
Orchardist	**57**	41	72%	3	5%	5	9%	5	9%	3	5%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	7	50%	0	0%	2	14%	3	21%	2	14%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	8	57%	0	0%	1	7%	2	14%	3	21%
Others	**11**	6	55%	0	0%	1	9%	0		4	36%
Sub-total	**113**	**79**	**70%**	**3**	**3%**	**9**	**8%**	**10**	**9%**	**12**	**10%**
FODDER											
Orchardist	**57**	41	72%	4	7%	8	14%	3	5%	1	2%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	13	93%	0	0%	1	7%	0	0%	0	0%
Daily wage labour	**7**	4	57%	0	0%	0	0%	3	43%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	7	64%	0	0%	1	9%	3	27%	0	0%
Sub-total	**113**	**89**	**79%**	**4**	**3%**	**10**	**9%**	**9**	**8%**	**1**	**1%**
APPLE											
Orchardist	**57**	57	100%	0	0%	0	0%	0	0%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**113**	**100%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**
CHERRY											
Orchardist	**57**	57	100%	0	0%	0	0%	0	0%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**113**	**100%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**
CULTIVATED VEGETABLES											
Orchardist	**57**	57	100%	0	0%	0	0%	0	0%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**113**	**100%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**

Table 2. Provisioning services of Eco-tourism Park

Level of Importance		1		2		3		4		5	
	No. of resp.	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
FRESHWATER FOR HOUSEHOLD CONSUMPTION											
Orchardist	**57**	57	100%	0	0%	0	0%	0	0%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	113	**100%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**
FRESHWATER FOR IRRIGATION											
Orchardist	**57**	57	100%	0	0%	0	0%	0	0%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	113	**100%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**
WILD VEGETABLES											
Orchardist	**57**	12	21%	8	14%	9	16%	18	32%	10	17%
Tourist Actor	**10**	3	30%	3	30%	1	10%	1	10%	2	20%
Professional	**14**	6	43%	1	7%	2	14%	1	7%	4	29%
Daily wage labour	**7**	3	43%	2	28%	1	14%	1	14%	0	0%
Students	**14**	9	64%	3	21%	0	0%	2	14%	0	0%
Others	**11**	3	27%	1	9%	2	18%	3	27%	2	18%
Sub-total	**113**	**36**	**32%**	**18**	**16%**	**15**	**13%**	**26**	**23%**	**18**	**16%**
WILD BERRIES											
Orchardist	**57**	8	14%	10	17%	9	16%	17	30%	13	23%
Tourist Actor	**10**	2	20%	3	30%	1	10%	2	20%	2	20%
Professional	**14**	2	14%	2	14%	3	21%	3	21%	4	29%
Daily wage labour	**7**	1	14%	2	28%	1	14%	3	43%	0	0%
Students	**14**	3	21%	3	21%	4	29%	2	14%	2	14%
Others	**11**	1	9%	1	9%	4	36%	3	27%	2	18%
Sub-total	**113**	**17**	**15%**	**21**	**18%**	**22**	**19%**	**30**	**27%**	**23**	**20%**
MEDICINAL HERBS											
Orchardist	**57**	41	72%	3	5%	5	9%	5	9%	3	5%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	7	50%	0	0%	2	14%	3	21%	2	14%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	8	57%	0	0%	1	7%	2	14%	3	21%
Others	**11**	6	55%	0	0%	1	9%	0		4	36%
Sub-total	**113**	**79**	**70%**	**3**	**3%**	**9**	**8%**	**10**	**9%**	**12**	**10%**
FODDER											
Orchardist	**57**	41	72%	4	7%	8	14%	3	5%	1	2%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	13	93%	0	0%	1	7%	0	0%	0	0%
Daily wage labour	**7**	4	57%	0	0%	0	0%	3	43%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	7	64%	0	0%	1	9%	3	27%	0	0%
Sub-total	**113**	**89**	**79%**	**4**	**3%**	**10**	**9%**	**9**	**8%**	**1**	**1%**
APPLE											
Orchardist	**57**	57	100%	0	0%	0	0%	0	0%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**113**	**100%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**
CHERRY											
Orchardist	**57**	57	100%	0	0%	0	0%	0	0%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**113**	**100%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**
CULTIVATED VEGETABLES											
Orchardist	**57**	57	100%	0	0%	0	0%	0	0%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**113**	**100%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**

Table 3. Provisioning services of Tannijubbar lake

Level of Importance		1		2		3		4		5	
	No. of resp.	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
FRESHWATER FOR HOUSEHOLD CONSUMPTION											
Orchardist	**57**	57	100%	0	0%	0	0%	0	0%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**113**	**100%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**
FRESHWATER FOR IRRIGATION											
Orchardist	**57**	57	100%	0	0%	0	0%	0	0%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**113**	**100%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**
WILD VEGETABLES											
Orchardist	**57**	55	97%	0	0%	2	3%	0	0%	0	0%
Tourist Actor	**10**	9	90%	1	10%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	13	93%	1	7%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**109**	**96%**	**2**	**2%**	**2**	**2%**	**0**	**0%**	**0**	**0%**
WILD BERRIES											
Orchardist	**57**	54	95%	1	2%	2	3%	0	0%	0	0%
Tourist Actor	**10**	9	90%	1	10%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	12	86%	2	14%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**107**	**95%**	**4**	**3%**	**2**	**2%**	**0**	**0%**	**0**	**0%**
MEDICINAL HERBS											
Orchardist	**57**	54	95%	1	2%	1	2%	0	0%	1	2%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	11	100%	1	7%	0	0%	1	7%	1	7%
Others	**11**	7	64%	0	0%	2	18%	2	18%	0	0%
Sub-total	**113**	**103**	**91%**	**2**	**2%**	**3**	**3%**	**3**	**3%**	**2**	**2%**
FODDER											
Orchardist	**57**	57	100%	0	0%	0	0%	0	0%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**113**	**100%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**
APPLE											
Orchardist	**57**	57	100%	0	0%	0	0%	0	0%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**113**	**100%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**
CHERRY											
Orchardist	**57**	57	100%	0	0%	0	0%	0	0%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**113**	**100%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**
CULTIVATED VEGETABLES											
Orchardist	**57**	57	100%	0	0%	0	0%	0	0%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**113**	**100%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**

Table 4. Provisioning services of river Satluj

Level of Importance		1		2		3		4		5	
	No. of resp.	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
FRESHWATER FOR HOUSEHOLD CONSUMPTION											
Orchardist	**57**	56	98%	0	0%	0	0%	0	0%	1	2%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**112**	**99%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**1**	**1%**
FRESHWATER FOR IRRIGATION											
Orchardist	**57**	22	39%	0	0%	0	0%	0	0%	35	61%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	5	71%	0	0%	0	0%	0	0%	2	28%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	9	82%	0	0%	0	0%	0	0%	2	18%
Sub-total	**113**	**74**	**65%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**39**	**35%**
WILD VEGETABLES											
Orchardist	**57**	57	100%	0	0%	0	0%	0	0%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**113**	**100%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**
WILD BERRIES											
Orchardist	**57**	57	100%	0	0%	0	0%	0	0%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**113**	**100%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**
MEDICINAL HERBS											
Orchardist	**57**	57	100%	0	0%	0	0%	0	0%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**113**	**100%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**
FODDER											
Orchardist	**57**	57	100%	0	0%	0	0%	0	0%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**113**	**100%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**
APPLE											
Orchardist	**57**	57	100%	0	0%	0	0%	0	0%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**113**	**100%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**
CHERRY											
Orchardist	**57**	57	100%	0	0%	0	0%	0	0%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**113**	**100%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**
CULTIVATED VEGETABLES											
Orchardist	**57**	57	100%	0	0%	0	0%	0	0%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**113**	**100%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**

Table 5. Provisioning services of Hatu peak

Level of Importance		1		2		3		4		5	
	No. of resp.	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
FRESHWATER FOR HOUSEHOLD CONSUMPTION											
Orchardist	**57**	0	0%	0	0%	0	0%	0	0%	57	100%
Tourist Actor	**10**	0	0%	0	0%	0	0%	0	0%	10	100%
Professional	**14**	0	0%	0	0%	0	0%	0	0%	14	100%
Daily wage labour	**7**	0	0%	0	0%	0	0%	0	0%	7	100%
Students	**14**	1	7%	0	0%	0	0%	0	0%	13	93%
Others	**11**	0	0	0	0%	0	0%	0	0%	11	100%
Sub-total	**113**	**1**	**1%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**112**	**99%**
FRESHWATER FOR IRRIGATION											
Orchardist	**57**	34	60%	0	0%	0	0%	0	0%	23	40%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	4	7%	0	0%	0	0%	0	0%	3	43%
Students	**14**	13	93%	0	0%	0	0%	0	0%	1	7%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**86**	**76%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**27**	**24%**
WILD VEGETABLES											
Orchardist	**57**	29	51%	12	21%	6	11%	10	17%	0	0%
Tourist Actor	**10**	7	70%	1	10%	1	10%	1	10%	0	0%
Professional	**14**	10	71%	2	14%	1	7%	1	7%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	6	43%	2	14%	2	14%	1	7%	0	0%
Sub-total	**113**	**73**	**65%**	**17**	**15%**	**10**	**9%**	**13**	**12%**	**0**	**0%**
WILD BERRIES											
Orchardist	**57**	28	49%	10	17%	9	16%	10	17%	0	0%
Tourist Actor	**10**	5	50%	0	0%	2	20%	3	30%	0	0%
Professional	**14**	5	36%	2	14%	3	21%	4	29%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	7	50%	2	14%	2	14%	1	7%	2	14%
Others	**11**	6	55%	2	18%	2	18%	1	9%	0	0%
Sub-total	**113**	**58**	**51%**	**16**	**14%**	**18**	**16%**	**19**	**17%**	**2**	**2%**
MEDICINAL HERBS											
Orchardist	**57**	46	81%	1	0%	4	7%	4	7%	2	3%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	11	79%	0	0%	1	7%	1	7%	1	7%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	8	57%	0	0%	2	14%	2	14%	2	14%
Others	**11**	6	54%	0	0%	2	18%	1	9%	2	18%
Sub-total	**113**	**88**	**78%**	**1**	**1%**	**9**	**8%**	**8**	**7%**	**7**	**6%**
FODDER											
Orchardist	**57**	54	95%	0	0%	2	3%	0	0%	1	2%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	9	82%	1	9%	1	9%	0	0%	0	0%
Sub-total	**113**	**108**	**95%**	**1**	**1%**	**3**	**3%**	**0**	**0%**	**1**	**1%**
APPLE											
Orchardist	**57**	57	100%	0	0%	0	0%	0	0%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**113**	**100%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**
CHERRY											
Orchardist	**57**	57	100%	0	0%	0	0%	0	0%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**113**	**100%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**
CULTIVATED VEGETABLES											
Orchardist	**57**	57	100%	0	0%	0	0%	0	0%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**113**	**100%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**

Table 6. Provisioning services of Farmlands

Level of Importance		1		2		3		4		5	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
FRESHWATER FOR HOUSEHOLD CONSUMPTION											
Orchardist	**57**	0	0%	0	0%	0	0%	0	0%	57	100%
Tourist Actor	**10**	0	0%	0	0%	0	0%	0	0%	10	100%
Professional	**14**	0	0%	0	0%	0	0%	0	0%	14	100%
Daily wage labour	**7**	0	0%	0	0%	0	0%	0	0%	7	100%
Students	**14**	1	7%	0	0%	0	0%	0	0%	13	93%
Others	**11**	0	0	0	0%	0	0%	0	0%	11	100%
Sub-total	**113**	**1**	**1%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**112**	**99%**
FRESHWATER FOR IRRIGATION											
Orchardist	**57**	34	60%	0	0%	0	0%	0	0%	23	40%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	4	7%	0	0%	0	0%	0	0%	3	43%
Students	**14**	13	93%	0	0%	0	0%	0	0%	1	7%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**86**	**76%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**27**	**24%**
WILD VEGETABLES											
Orchardist	**57**	29	51%	12	21%	6	11%	10	17%	0	0%
Tourist Actor	**10**	7	70%	1	10%	1	10%	1	10%	0	0%
Professional	**14**	10	71%	2	14%	1	7%	1	7%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	6	43%	2	14%	2	14%	1	7%	0	0%
Sub-total	**113**	**73**	**65%**	**17**	**15%**	**10**	**9%**	**13**	**12%**	**0**	**0%**
WILD BERRIES											
Orchardist	**57**	28	49%	10	17%	9	16%	10	17%	0	0%
Tourist Actor	**10**	5	50%	0	0%	2	20%	3	30%	0	0%
Professional	**14**	5	36%	2	14%	3	21%	4	29%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	7	50%	2	14%	2	14%	1	7%	2	14%
Others	**11**	6	55%	2	18%	2	18%	1	9%	0	0%
Sub-total	**113**	**58**	**51%**	**16**	**14%**	**18**	**16%**	**19**	**17%**	**2**	**2%**
MEDICINAL HERBS											
Orchardist	**57**	46	81%	1	0%	4	7%	4	7%	2	3%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	11	79%	0	0%	1	7%	1	7%	1	7%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	8	57%	0	0%	2	14%	2	14%	2	14%
Others	**11**	6	54%	0	0%	2	18%	1	9%	2	18%
Sub-total	**113**	**88**	**78%**	**1**	**1%**	**9**	**8%**	**8**	**7%**	**7**	**6%**
FODDER											
Orchardist	**57**	54	95%	0	0%	2	3%	0	0%	1	2%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	9	82%	1	9%	1	9%	0	0%	0	0%
Sub-total	**113**	**108**	**95%**	**1**	**1%**	**3**	**3%**	**0**	**0%**	**1**	**1%**
APPLE											
Orchardist	**57**	57	100%	0	0%	0	0%	0	0%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**113**	**100%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**
CHERRY											
Orchardist	**57**	57	100%	0	0%	0	0%	0	0%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**113**	**100%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**
CULTIVATED VEGETABLES											
Orchardist	**57**	57	100%	0	0%	0	0%	0	0%	0	0%
Tourist Actor	**10**	10	100%	0	0%	0	0%	0	0%	0	0%
Professional	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Daily wage labour	**7**	7	100%	0	0%	0	0%	0	0%	0	0%
Students	**14**	14	100%	0	0%	0	0%	0	0%	0	0%
Others	**11**	11	100%	0	0%	0	0%	0	0%	0	0%
Sub-total	**113**	**113**	**100%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**

Annex 6: Tables for Monetary/Non-monetary Benefits

Table 1: Benefits from Forest

Monetary Benefits		Yes		No	
	No. of resp.	Frequency	%	Frequency	%
FRESHWATER FOR HOUSEHOLD CONSUMPTION					
Orchardist	**57**	0	0%	57	100%
Tourist Actor	**10**	0	0%	10	100%
Professional	**14**	0	0%	14	100%
Daily wage labour	**7**	0	0%	7	100%
Students	**14**	0	0%	14	100%
Others	**11**	0	0%	11	100%
Sub-total	**113**	**0**	**0%**	**113**	**100%**
FRESHWATER FOR IRRIGATION					
Orchardist	**57**	0	0%	57	100%
Tourist Actor	**10**	0	0%	10	100%
Professional	**14**	0	0%	14	100%
Daily wage labour	**7**	0	0%	7	100%
Students	**14**	0	0%	14	100%
Others	**11**	0	0%	11	100%
Sub-total	**113**	**0**	**0%**	**113**	**100%**
WILD VEGETABLES					
Orchardist	**57**	3	5%	54	95%
Tourist Actor	**10**	1	10%	9	90%
Professional	**14**	0	0%	14	100%
Daily wage labour	**7**	0	0%	7	100%
Students	**14**	0	0%	14	100%
Others	**11**	1	9%	10	91%
Sub-total	**113**	**5**	**4%**	**108**	**96%**
WILD BERRIES					
Orchardist	**57**	2	3%	55	97%
Tourist Actor	**10**	1	10%	9	90%
Professional	**14**	0	0%	14	100%
Daily wage labour	**7**	0	0%	7	100%
Students	**14**	0	0%	14	100%
Others	**11**	2	18%	9	82%
Sub-total	**113**	**5**	**4%**	**108**	**96%**
MEDICINAL HERBS					
Orchardist	**57**	3	5%	54	95%
Tourist Actor	**10**	0	0%	10	100%
Professional	**14**	0	0%	14	100%
Daily wage labour	**7**	0	0%	7	100%
Students	**14**	2	14%	12	86%
Others	**11**	4	36%	7	64%
Sub-total	**113**	**9**	**8%**	**104**	**92%**
FODDER					
Orchardist	**57**	0	0%	57	100%
Tourist Actor	**10**	0	0%	10	100%
Professional	**14**	0	0%	14	100%
Daily wage labour	**7**	0	0%	7	100%
Students	**14**	0	0%	14	100%
Others	**11**	0	0%	11	100%
Sub-total	**113**	**0**	**0%**	**113**	**100%**
APPLE					
Orchardist	**57**	0	0%	57	100%
Tourist Actor	**10**	0	0%	10	100%
Professional	**14**	0	0%	14	100%
Daily wage labour	**7**	0	0%	7	100%
Students	**14**	0	0%	14	100%
Others	**11**	0	0%	11	100%
Sub-total	**113**	**0**	**0%**	**113**	**100%**
CHERRY					
Orchardist	**57**	0	0%	57	100%
Tourist Actor	**10**	0	0%	10	100%
Professional	**14**	0	0%	14	100%
Daily wage labour	**7**	0	0%	7	100%
Students	**14**	0	0%	14	100%
Others	**11**	0	0%	11	100%
Sub-total	**113**	**0**	**0%**	**113**	**100%**
CULTIVATED VEGETABLES					
Orchardist	**57**	0	0%	57	100%
Tourist Actor	**10**	0	0%	10	100%
Professional	**14**	0	0%	14	100%
Daily wage labour	**7**	0	0%	7	100%
Students	**14**	0	0%	14	100%
Others	**11**	0	0%	11	100%
Sub-total	**113**	**0**	**0%**	**113**	**100%**

Table 2: Benefits from Eco-tourism park

Monetary Benefits		Yes		No	
	No. of resp.	Frequency	%	Frequency	%
FRESHWATER FOR HOUSEHOLD CONSUMPTION					
Orchardist	57	0	0%	57	100%
Tourist Actor	10	0	0%	10	100%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	0	0%	11	100%
Sub-total	113	0	0%	113	100%
FRESHWATER FOR IRRIGATION					
Orchardist	57	0	0%	57	100%
Tourist Actor	10	0	0%	10	100%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	0	0%	11	100%
Sub-total	113	0	0%	113	100%
WILD VEGETABLES					
Orchardist	57	3	5%	54	95%
Tourist Actor	10	1	10%	9	90%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	1	9%	10	91%
Sub-total	113	5	4%	108	96%
WILD BERRIES					
Orchardist	57	2	3%	55	97%
Tourist Actor	10	1	10%	9	90%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	2	18%	9	82%
Sub-total	113	5	4%	108	96%
MEDICINAL HERBS					
Orchardist	57	3	5%	54	95%
Tourist Actor	10	0	0%	10	100%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	2	14%	12	86%
Others	11	4	36%	7	64%
Sub-total	113	9	8%	104	92%
FODDER					
Orchardist	57	0	0%	57	100%
Tourist Actor	10	0	0%	10	100%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	0	0%	11	100%
Sub-total	113	0	0%	113	100%
APPLE					
Orchardist	57	0	0%	57	100%
Tourist Actor	10	0	0%	10	100%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	0	0%	11	100%
Sub-total	113	0	0%	113	100%
CHERRY					
Orchardist	57	0	0%	57	100%
Tourist Actor	10	0	0%	10	100%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	0	0%	11	100%
Sub-total	113	0	0%	113	100%
CULTIVATED VEGETABLES					
Orchardist	57	0	0%	57	100%
Tourist Actor	10	0	0%	10	100%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	0	0%	11	100%
Sub-total	113	0	0%	113	100%

Table 3: Benefits from Tannijubbar lake

Monetary Benefits		Yes		No	
	No. of resp.	Frequency	%	Frequency	%
FRESHWATER FOR HOUSEHOLD CONSUMPTION					
Orchardist	57	0	0%	57	100%
Tourist Actor	10	0	0%	10	100%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	0	0%	11	100%
Sub-total	113	0	0%	113	100%
FRESHWATER FOR IRRIGATION					
Orchardist	57	0	0%	57	100%
Tourist Actor	10	0	0%	10	100%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	0	0%	11	100%
Sub-total	113	0	0%	113	100%
WILD VEGETABLES					
Orchardist	57	3	5%	54	95%
Tourist Actor	10	1	10%	9	90%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	1	9%	10	91%
Sub-total	113	5	4%	108	96%
WILD BERRIES					
Orchardist	57	2	3%	55	97%
Tourist Actor	10	1	10%	9	90%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	2	18%	9	82%
Sub-total	113	5	4%	108	96%
MEDICINAL HERBS					
Orchardist	57	3	5%	54	95%
Tourist Actor	10	0	0%	10	100%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	2	14%	12	86%
Others	11	4	36%	7	64%
Sub-total	113	9	8%	104	92%
FODDER					
Orchardist	57	0	0%	57	100%
Tourist Actor	10	0	0%	10	100%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	0	0%	11	100%
Sub-total	113	0	0%	113	100%
APPLE					
Orchardist	57	0	0%	57	100%
Tourist Actor	10	0	0%	10	100%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	0	0%	11	100%
Sub-total	113	0	0%	113	100%
CHERRY					
Orchardist	57	0	0%	57	100%
Tourist Actor	10	0	0%	10	100%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	0	0%	11	100%
Sub-total	113	0	0%	113	100%
CULTIVATED VEGETABLES					
Orchardist	57	0	0%	57	100%
Tourist Actor	10	0	0%	10	100%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	0	0%	11	100%
Sub-total	113	0	0%	113	100%

Table 4: Benefits from river Satluj

Monetary Benefits		Yes		No	
	No. of resp.	Frequency	%	Frequency	%
FRESHWATER FOR HOUSEHOLD CONSUMPTION					
Orchardist	57	0	0%	57	100%
Tourist Actor	10	0	0%	10	100%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	0	0%	11	100%
Sub-total	113	0	0%	113	100%
FRESHWATER FOR IRRIGATION					
Orchardist	57	0	0%	57	100%
Tourist Actor	10	0	0%	10	100%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	0	0%	11	100%
Sub-total	113	0	0%	113	100%
WILD VEGETABLES					
Orchardist	57	3	5%	54	95%
Tourist Actor	10	1	10%	9	90%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	1	9%	10	91%
Sub-total	113	5	4%	108	96%
WILD BERRIES					
Orchardist	57	2	3%	55	97%
Tourist Actor	10	1	10%	9	90%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	2	18%	9	82%
Sub-total	113	5	4%	108	96%
MEDICINAL HERBS					
Orchardist	57	3	5%	54	95%
Tourist Actor	10	0	0%	10	100%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	2	14%	12	86%
Others	11	4	36%	7	64%
Sub-total	113	9	8%	104	92%
FODDER					
Orchardist	57	0	0%	57	100%
Tourist Actor	10	0	0%	10	100%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	0	0%	11	100%
Sub-total	113	0	0%	113	100%
APPLE					
Orchardist	57	0	0%	57	100%
Tourist Actor	10	0	0%	10	100%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	0	0%	11	100%
Sub-total	113	0	0%	113	100%
CHERRY					
Orchardist	57	0	0%	57	100%
Tourist Actor	10	0	0%	10	100%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	0	0%	11	100%
Sub-total	113	0	0%	113	100%
CULTIVATED VEGETABLES					
Orchardist	57	0	0%	57	100%
Tourist Actor	10	0	0%	10	100%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	0	0%	11	100%
Sub-total	113	0	0%	113	100%

Table 5: Benefits from Hatu peak

Monetary Benefits		Yes		No	
	No. of resp.	Frequency	%	Frequency	%
FRESHWATER FOR HOUSEHOLD CONSUMPTION					
Orchardist	57	0	0%	57	100%
Tourist Actor	10	0	0%	10	100%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	0	0%	11	100%
Sub-total	113	0	0%	113	100%
FRESHWATER FOR IRRIGATION					
Orchardist	57	0	0%	57	100%
Tourist Actor	10	0	0%	10	100%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	0	0%	11	100%
Sub-total	113	0	0%	113	100%
WILD VEGETABLES					
Orchardist	57	3	5%	54	95%
Tourist Actor	10	1	10%	9	90%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	1	9%	10	91%
Sub-total	113	5	4%	108	96%
WILD BERRIES					
Orchardist	57	2	3%	55	97%
Tourist Actor	10	1	10%	9	90%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	2	18%	9	82%
Sub-total	113	5	4%	108	96%
MEDICINAL HERBS					
Orchardist	57	3	5%	54	95%
Tourist Actor	10	0	0%	10	100%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	2	14%	12	86%
Others	11	4	36%	7	64%
Sub-total	113	9	8%	104	92%
FODDER					
Orchardist	57	0	0%	57	100%
Tourist Actor	10	0	0%	10	100%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	0	0%	11	100%
Sub-total	113	0	0%	113	100%
APPLE					
Orchardist	57	0	0%	57	100%
Tourist Actor	10	0	0%	10	100%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	0	0%	11	100%
Sub-total	113	0	0%	113	100%
CHERRY					
Orchardist	57	0	0%	57	100%
Tourist Actor	10	0	0%	10	100%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	0	0%	11	100%
Sub-total	113	0	0%	113	100%
CULTIVATED VEGETABLES					
Orchardist	57	0	0%	57	100%
Tourist Actor	10	0	0%	10	100%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	0	0%	11	100%
Sub-total	113	0	0%	113	100%

Table 6: Benefits from Farmlands

Monetary Benefits		Yes		No	
	No. of resp.	Frequency	%	Frequency	%
FRESHWATER FOR HOUSEHOLD CONSUMPTION					
Orchardist	57	0	0%	57	100%
Tourist Actor	10	0	0%	10	100%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	0	0%	11	100%
Sub-total	113	0	0%	113	100%
FRESHWATER FOR IRRIGATION					
Orchardist	57	0	0%	57	100%
Tourist Actor	10	0	0%	10	100%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	0	0%	11	100%
Sub-total	113	0	0%	113	100%
WILD VEGETABLES					
Orchardist	57	3	5%	54	95%
Tourist Actor	10	1	10%	9	90%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	1	9%	10	91%
Sub-total	113	5	4%	108	96%
WILD BERRIES					
Orchardist	57	2	3%	55	97%
Tourist Actor	10	1	10%	9	90%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	2	18%	9	82%
Sub-total	113	5	4%	108	96%
MEDICINAL HERBS					
Orchardist	57	3	5%	54	95%
Tourist Actor	10	0	0%	10	100%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	2	14%	12	86%
Others	11	4	36%	7	64%
Sub-total	113	9	8%	104	92%
FODDER					
Orchardist	57	0	0%	57	100%
Tourist Actor	10	0	0%	10	100%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	0	0%	11	100%
Sub-total	113	0	0%	113	100%
APPLE					
Orchardist	57	0	0%	57	100%
Tourist Actor	10	0	0%	10	100%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	0	0%	11	100%
Sub-total	113	0	0%	113	100%
CHERRY					
Orchardist	57	0	0%	57	100%
Tourist Actor	10	0	0%	10	100%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	0	0%	11	100%
Sub-total	113	0	0%	113	100%
CULTIVATED VEGETABLES					
Orchardist	57	0	0%	57	100%
Tourist Actor	10	0	0%	10	100%
Professional	14	0	0%	14	100%
Daily wage labour	7	0	0%	7	100%
Students	14	0	0%	14	100%
Others	11	0	0%	11	100%
Sub-total	113	0	0%	113	100%

Annex 7: Tables of Place Identity/Dependence

Table1. Level of Place Identity

Place Identity		1		2		3		4		5	
	No. of resp.	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
FOREST											
Orchardist	57	0	0%	0	0%	0	0%	2	3%	55	97%
Tourist Actor	10	0	0%	0	0%	0	0%	0	0%	10	100%
Professional	14	0	0%	0	0%	0	0%	2	14%	12	86%
Daily wage labour	7	0	0%	0	0%	0	0%	0	0%	7	100%
Students	14	0	0%	0	0%	0	0%	0	0%	14	100%
Others	11	0	0%	0	0%	0	0%	1	9%	10	91%
Sub-total	113	0	0%	0	0%	0	0%	3	3%	110	97%
ECO-TOURISM PARK											
Orchardist	57	0	0%	2	3%	14	25%	24	42%	17	30%
Tourist Actor	10	0	0%	0	0%	0	0%	1	10%	9	90%
Professional	14	0	0%	0	0%	4	29%	6	43%	4	29%
Daily wage labour	7	0	0%	0	0%	0	0%	1	14%	6	86%
Students	14	0	0%	0	0%	2	14%	7	50%	5	36%
Others	11	0	0%	0	0%	2	18%	5	45%	3	27%
Sub-total	113	0	0%	2	2%	22	19%	44	39%	44	39%
TANNIJUBBAR LAKE											
Orchardist	57	0	0%	0	0%	8	14%	27	47%	22	39%
Tourist Actor	10	0	0%	0	0%	0	0%	1	10%	9	90%
Professional	14	0	0%	0	0%	3	21%	4	29%	7	50%
Daily wage labour	7	0	0%	0	0%	0	0%	0	0%	7	100%
Students	14	0	0%	0	0%	2	14%	6	43%	6	43%
Others	11	0	0%	0	0%	1	9%	5	45%	5	45%
Sub-total	113	0	0%	0	0%	14	12%	43	38%	56	50%
RIVER SATLUJ											
Orchardist	57	2	3%	1	2%	29	51%	16	28%	9	16%
Tourist Actor	10	0	0%	0	0%	2	20%	2	20%	6	60%
Professional	14	3	21%	0	0%	5	36%	4	29%	2	14%
Daily wage labour	7	0	0%	0	0%	0	0%	1	14%	6	86%
Students	14	4	29%	0	0%	3	21%	4	29%	3	21%
Others	11	2	18%	0	0%	5	45%	4	29%	0	0%
Sub-total	113	11	10%	1	1%	44	39%	31	27%	26	46%
HATU PEAK											
Orchardist	57	0	0%	0	0%	2	3%	19	33%	36	63%
Tourist Actor	10	0	0%	0	0%	0	0%	1	10%	9	90%
Professional	14	0	0%	0	0%	0	0%	8	57%	6	43%
Daily wage labour	7	0	0%	0	0%	1	14%	1	14%	5	71%
Students	14	0	0%	0	0%	0	0%	1	7%	13	93%
Others	11	1	9%	0	0%	0	0%	7	63%	3	27%
Sub-total	113	1	1%	0	0%	3	3%	37	33%	72	64%
FARMLANDS											
Orchardist	57	0	0%	0	0%	0	0%	3	5%	54	95%
Tourist Actor	10	0	0%	0	0%	0	0%	1	10%	9	90%
Professional	14	3	21%	0	0%	2	14%	7	50%	2	14%
Daily wage labour	7	0	0%	0	0%	0	0%	0	0%	7	100%
Students	14	0	0%	0	0%	1	7%	3	21%	10	71%
Others	11	2	18%	1	9%	0	0%	6	55%	2	18%
Sub-total	113	5	4%	1	1%	3	3%	17	15%	87	77%

Table 2. Level of Place Dependence

Place Dependence		1		2		3		4		5	
	No. of resp.	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
FOREST											
Orchardist	57	0	0%	0	0%	1	2%	2	3%	54	100%
Tourist Actor	10	0	0%	0	0%	0	0%	0	0%	10	100%
Professional	14	0	0%	0	0%	0	0%	2	14%	12	86%
Daily wage labour	7	0	0%	0	0%	0	0%	0	0%	7	100%
Students	14	0	0%	0	0%	0	0%	0	0%	14	100%
Others	11	0	0%	0	0%	0	0%	0	0%	11	100%
Sub-total	113	0	0%	0	0%	1	1%	4	3%	108	95%%
ECO-TOURISM PARK											
Orchardist	57	0	0%	0	0%	6	11%	25	44%	26	45%
Tourist Actor	10	0	0%	0	0%	0	0%	1	10%	9	90%
Professional	14	0	0%	0	0%	3	21%	3	21%	8	57%
Daily wage labour	7	0	0%	0	0%	0	0%	0	0%	7	100%
Students	14	0	0%	0	0%	0	0%	4	29%	10	71%
Others	11	1	9%	0	0%	0	0%	5	45%	5	45%
Sub-total	113	1	1%	0	0%	9	8%	38	34%	65	58%
TANNIJUBBAR LAKE											
Orchardist	57	0	0%	0	0%	1	2%	26	46%	30	53%
Tourist Actor	10	0	0%	0	0%	0	0%	1	10%	9	90%
Professional	14	0	0%	0	0%	3	21%	2	14%	7	50%
Daily wage labour	7	0	0%	0	0%	0	0%	0	0%	7	100%
Students	14	0	0%	0	0%	0	0%	4	29%	10	71%
Others	11	0	0%	0	0%	0	0%	5	45%	6	54%
Sub-total	113	0	0%	0	0%	4	3%	38	34%	69	61%
RIVER SATLUJ											
Orchardist	57	2	3%	0	0%	12	51%	24	42%	19	16%
Tourist Actor	10	0	0%	0	0%	2	20%	1	10%	7	70%
Professional	14	0	0%	0	0%	6	43%	1	7%	7	50%
Daily wage labour	7	0	0%	0	0%	0	0%	1	14%	6	86%
Students	14	3	21%	0	0%	2	14%	2	14%	7	50%
Others	11	1	9%	0	0%	1	9%	1	9%	2	18%
Sub-total	113	6		0	0%	23	20%	30	26%	48	42%
HATU PEAK											
Orchardist	57	0	0%	0	0%	1	2%	18	32%	38	66%
Tourist Actor	10	0	0%	0	0%	0	0%	1	10%	9	90%
Professional	14	0	0%	0	0%	1	7%	5	36%	8	57%
Daily wage labour	7	0	0%	0	0%	0	0%	0	0%	7	100%
Students	14	0	0%	0	0%	0	0%	1	7%	13	93%
Others	11	0	9%	0	0%	0	0%	4	36	7	64%
Sub-total	113	0	0%	0	0%	2	2%	29	26%	82	72%
FARMLANDS											
Orchardist	57	0	0%	0	0%	0	0%	1	2%	56	98%
Tourist Actor	10	0	0%	0	0%	0	0%	1	10%	9	90%
Professional	14	0	0%	0	0%	1	7%	5	36%	8	57%
Daily wage labour	7	0	0%	0	0%	0	0%	0	0%	7	100%
Students	14	0	0%	0	0%	0	0%	3	21%	11	79%
Others	11	0	0%	0	0%	0	0%	2	18%	9	82%
Sub-total	113	0	0%	0	0%	3	3%	8	7%	86	76%

Annex 8: Correlation Tables

Table 1. Place attachment levels of orchardists

		Forest		Eco-torisim park		Tannijubbar lake		River Satluj		Hatu peak		Farmalnds	
		PI_Forest	PD_Forest	PI_Park	PD_Park	PI_Lake	PD_Lake	PI_River	PD_River	PI_HatuT26	PD_Hatu	PI_Farms	PD_Farms
Level of Importance	Pearson Correlation	0.209	.859**	.600**	0.257	.492**	0.059	.774**	.776**	.725**	.566**	-0.031	-0.018
	Sig.	0.118	0	0	0.054	0	0.663	0	0	0	0	0.816	0.895
Reduce noise	Pearson Correlation	0.114	-0.004	0.052	-0.016	0.023	-0.172	.447**	0.065	-.328*	-.329*	-0.049	-0.028
	Sig.	0.397	0.976	0.701	0.907	0.864	0.201	0	0.633	0.013	0.013	0.719	0.839
RegulateGlobal Climate	Pearson Correlation	0.159	0.05	0.106	-0.034	0.142	-0.228	.433**	-0.047	-0.059	-0.016	-0.085	-0.107
	Sig.	0.237	0.713	0.431	0.802	0.291	0.088	0.001	0.727	0.663	0.906	0.529	0.427
Regulate Soil Loss	Pearson Correlation	0.074	0.009	0.128	0.053	.b	.b	-0.108	-0.106	-0.102	-0.069	-0.091	-0.051
	Sig.	0.582	0.944	0.341	0.696	.	.	0.425	0.431	0.451	0.609	0.502	0.704
Pollination	Pearson Correlation	-0.179	-0.208	0.088	-0.229	.b	.b	-0.075	-0.147	-.305*	-0.177	-0.031	-0.018
	Sig.	0.182	0.12	0.514	0.086	.	.	0.577	0.276	0.021	0.189	0.816	0.895
Air Quality	Pearson Correlation	0.19	0.075	0.116	0.205	0.079	-0.258	.420**	-0.047	-0.055	-0.109	-0.059	-0.1
	Sig.	0.156	0.581	0.392	0.126	0.558	0.053	0.001	0.727	0.687	0.421	0.664	0.46
Organic soil	Pearson Correlation	-0.006	0.033	0.231	-0.219	.b	.b	-0.075	-0.147	-.356**	-0.233	-0.121	-0.068
	Sig.	0.964	0.805	0.084	0.102	.	.	0.577	0.276	0.007	0.082	0.371	0.613
Habitat	Pearson Correlation	.701**	.392**	0.15	-0.091	0.041	-.296*	0.083	-0.117	-0.097	-0.091	-0.179	-0.259
	Sig.	0	0.003	0.266	0.501	0.764	0.025	0.541	0.387	0.474	0.499	0.182	0.052
Beauty of nature	Pearson Correlation	.701**	.392**	0.109	-0.056	0.126	-0.044	-0.033	-.267*	-0.138	0.241	-0.13	-0.074
	Sig.	0	0.003	0.418	0.682	0.351	0.746	0.806	0.045	0.306	0.07	0.333	0.584
Folklore & tradition	Pearson Correlation	0.065	0.012	0.091	0.001	0.122	-0.221	-0.064	-0.234	-.363**	-0.099	-0.069	-0.107
	Sig.	0.632	0.928	0.502	0.993	0.367	0.098	0.634	0.08	0.005	0.465	0.61	0.429
History & culture	Pearson Correlation	-0.083	0.254	0.034	-0.074	-0.204	-.367**	0.086	-.261*	-.288*	-0.093	-0.208	-0.118
	Sig.	0.537	0.057	0.802	0.586	0.128	0.005	0.523	0.05	0.03	0.494	0.12	0.382
Nature to destress	Pearson Correlation	0.086	0.214	0.253	.345**	.440**	0.155	0.142	0.044	0.13	0.035	-0.037	-.272*
	Sig.	0.525	0.111	0.058	0.008	0.001	0.249	0.293	0.745	0.334	0.794	0.783	0.041
Education	Pearson Correlation	-0.22	-0.075	0.159	0.068	0.148	-0.127	.b	.b	0.069	-0.049	0.072	0.041
	Sig.	0.099	0.578	0.237	0.614	0.273	0.345	.	.	0.612	0.716	0.596	0.764
Recreation & tourism	Pearson Correlation	-0.058	0.145	0.174	.319*	.373**	0.043	.340**	-0.005	0.079	0.239	-.453**	-.289*
	Sig.	0.67	0.282	0.195	0.016	0.004	0.749	0.01	0.969	0.559	0.073	0	0.029
Spiritual activities	Pearson Correlation	-0.171	0.145	0.133	0.048	.274*	0.019	-0.064	-0.124	-0.143	-0.017	0.031	0.018
	Sig.	0.203	0.283	0.324	0.724	0.039	0.891	0.638	0.359	0.288	0.903	0.816	0.895
Household water	Pearson Correlation	.b	.b	.b	.b	.b	.b	-0.075	-0.147	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	0.577	0.276	.	.	.	.
Irrigation water	Pearson Correlation	.b	.b	.b	.b	.b	.b	0.168	.404**	-0.046	-0.135	.b	.b
	Sig.	.	.	.	.	.	.	0.212	0.002	0.733	0.318	.	.
Wild Veg	Pearson Correlation	-0.121	0.056	0.119	0.043	.b	.b	.b	.b	-.308*	-.420**	.b	.b
	Sig.	0.37	0.68	0.377	0.751	.	.	.	.	0.02	0.001	.	.
Wild Berries	Pearson Correlation	-0.098	0.089	0.114	0.017	.b	.b	.b	.b	-.341**	-.372**	.b	.b
	Sig.	0.468	0.51	0.397	0.901	.	.	.	.	0.009	0.004	.	.
Medicinal Herbs	Pearson Correlation	-0.123	-0.009	-0.031	-0.109	.b	.b	.b	.b	-0.093	-0.149	.b	.b
	Sig.	0.364	0.949	0.817	0.417	.	.	.	.	0.489	0.27	.	.
Fodder	Pearson Correlation	0.108	-0.091	.b	.b	.b	.b	.b	.b	0.061	0.044	-0.143	-0.178
	Sig.	0.425	0.501	.	.	.	.	.	.	0.652	0.747	0.29	0.184
Apple	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	-0.031	-0.018
	Sig.	.	.	.	.	.	.	.	.	.	.	0.816	0.895
Cherry	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	0.192	0.109
	Sig.	.	.	.	.	.	.	.	.	.	.	0.153	0.421
Cultivated Veg	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	-.370**	-0.238
	Sig.	.	.	.	.	.	.	.	.	.	.	0.005	0.075
Household water	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Irrigation water	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Wild Veg	Pearson Correlation	-.382**	-0.196	.b	.b	.b	.b	.b	.b	0.138	-0.241	.b	.b
	Sig.	0.003	0.144	.	.	.	.	.	.	0.306	0.07	.	.
Wild Berries	Pearson Correlation	0.036	0.042	0.003	-0.071	.b	.b	.b	.b	0.097	-0.169	.b	.b
	Sig.	0.788	0.755	0.983	0.601	.	.	.	.	0.474	0.208	.	.
Medicinal Herbs	Pearson Correlation	-.382**	-0.196	-0.111	-0.101	.b	.b	.b	.b	-0.033	-0.241	.b	.b
	Sig.	0.003	0.144	0.41	0.454	.	.	.	.	0.807	0.07	.	.
Fodder	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	-0.084	0.065
	Sig.	.	.	.	.	.	.	.	.	.	.	0.535	0.629
Apple	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	-0.065	-0.037
	Sig.	.	.	.	.	.	.	.	.	.	.	0.632	0.786
Cherry	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	0.194	0.11
	Sig.	.	.	.	.	.	.	.	.	.	.	0.148	0.416
Cultivated Veg	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	-.544**	-.309*
	Sig.	.	.	.	.	.	.	.	.	.	.	0	0.02

*/** Correlation is significant at the 0.05 level.

b Cannot be computed because at least one of the variables is constant.

Table 2. Place attachment levels of tourist actors

		Forest		Eco-tourism Park		Tannijubbar lake		River Satluj		Hatu Peak		Farmlands	
		PI_Forest	PD_Forest	PI_Park	PD_Park	PI_Lake	PD_Lake	PI_River	PD_River	PI_Hatu	PD_Hatu	PI_Farms	PD_Farms
Level of Importance	Pearson Correlation	.b	.b	1.000**	1.000**	.b	.b	0.563	.930**	1.000**	1.000**	.b	.b
	Sig.	.	.	0	0	.	.	0.091	0	0	0	.	.
Reduce noise	Pearson Correlation	.b	.b	0.364	0.364	.b	.b	0.104	-0.258	0.156	0.156	-.677*	-.677*
	Sig.	.	.	0.301	0.301	.	.	0.775	0.473	0.667	0.667	0.032	0.032
RegulateGlobal Climate	Pearson Correlation	.b	.b	.b	.b	-.681*	-.681*	0.102	0	.b	.b	-0.389	-0.389
	Sig.	.	.	.	.	0.03	0.03	0.779	1	.	.	0.267	0.267
Regulate Soil Loss	Pearson Correlation	.b	.b	-0.296	-0.296	.b	.b	.b	.b	0	0	.b	.b
	Sig.	.	.	0.406	0.406	.	.	.	.	1	1	.	.
Pollination	Pearson Correlation	.b	.b	-0.167	-0.167	.b	.b	.b	.b	-0.272	-0.272	.b	.b
	Sig.	.	.	0.645	0.645	.	.	.	.	0.447	0.447	.	.
Air Quality	Pearson Correlation	.b	.b	.b	.b	-0.557	-0.557	0.063	-0.31	.b	.b	-0.373	-0.373
	Sig.	.	.	.	.	0.094	0.094	0.864	0.383	.	.	0.289	0.289
Organic soil	Pearson Correlation	.b	.b	-0.248	-0.248	.b	.b	.b	.b	-0.218	-0.218	.b	.b
	Sig.	.	.	0.489	0.489	.	.	.	.	0.545	0.545	.	.
Habitat	Pearson Correlation	.b	.b	.b	.b	-.681*	-.681*	-0.238	-0.422	.b	.b	-0.145	-0.145
	Sig.	.	.	.	.	0.03	0.03	0.508	0.224	.	.	0.688	0.688
Beauty of nature	Pearson Correlation	.b	.b	.b	.b	-0.167	-0.167	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	0.645	0.645	.	.	.	.	.	.
Folklore & tradition	Pearson Correlation	.b	.b	.b	.b	-.969**	-.969**	-.721*	-.894**	-0.557	-0.557	0.156	0.156
	Sig.	.	.	.	.	0	0	0.019	0	0.094	0.094	0.667	0.667
History & culture	Pearson Correlation	.b	.b	-.804**	-.804**	-0.442	-0.442	-.663*	-.760*	-0.56	-0.56	-0.279	-0.279
	Sig.	.	.	0.005	0.005	0.201	0.201	0.037	0.011	0.092	0.092	0.435	0.435
Nature to destress	Pearson Correlation	.b	.b	0.408	0.408	0.333	0.333	0.408	0.253	-0.333	-0.333	.688*	.688*
	Sig.	.	.	0.242	0.242	0.347	0.347	0.242	0.48	0.347	0.347	0.028	0.028
Education	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Recreation & tourism	Pearson Correlation	.b	.b	1.000**	1.000**	-0.218	-0.218	-0.452	-0.374	-0.111	-0.111	0.408	0.408
	Sig.	.	.	0	0	0.545	0.545	0.189	0.287	0.76	0.76	0.242	0.242
Spiritual activities	Pearson Correlation	.b	.b	.b	.b	-0.232	-0.232	.b	.b	-0.062	-0.062	.b	.b
	Sig.	.	.	.	.	0.519	0.519	.	.	0.865	0.865	.	.
Household water	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Irrigation water	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Wild Veg	Pearson Correlation	.b	.b	0.111	0.111	.b	.b	.b	.b	0.196	0.196	.b	.b
	Sig.	.	.	0.76	0.76	.	.	.	.	0.587	0.587	.	.
Wild Berries	Pearson Correlation	.b	.b	0.111	0.111	.b	.b	.b	.b	0.322	0.322	.b	.b
	Sig.	.	.	0.76	0.76	.	.	.	.	0.364	0.364	.	.
Medicinal Herbs	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Fodder	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Apple	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Cherry	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Cultivated Veg	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Household water	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Irrigation water	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Wild Veg	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	0.111	0.111	.b	.b
	Sig.	.	.	.	.	.	.	.	.	0.76	0.76	.	.
Wild Berries	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	0.111	0.111	.b	.b
	Sig.	.	.	.	.	.	.	.	.	0.76	0.76	.	.
Medicinal Herbs	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Fodder	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Apple	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Cherry	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Cultivated Veg	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.

*/** Correlation is significant at the 0.05 level.

b Cannot be computed because at least one of the variables is constant.

Table 3. Place attachment levels of professionals

		Forest		Eco-tourism Park		Tannijubbar lake		River Satluj		Hatu Peak		Farmlands	
		PI_Forest	PD_Forest	PI_Park	PD_Park	PI_Lake	PD_Lake	PI_River	PD_River	PI_Hatu	PD_Hatu	PI_Farms	PD_Farms
Level of Importance	Pearson Correlation	.b	.b	.627*	0.111	.802**	.548*	.753**	-0.367	.645*	.595*	.757**	-.589*
	Sig.	.	.	0.016	0.705	0.001	0.043	0.002	0.197	0.013	0.025	0.002	0.027
Reduce noise	Pearson Correlation	0.342	0.342	0.355	0.26	.b	.b	0.455	-0.117	0.099	-0.183	0.369	-0.249
	Sig.	0.232	0.232	0.213	0.37	.	.	0.102	0.69	0.735	0.531	0.195	0.391
RegulateGlobal Climate	Pearson Correlation	.782**	.782**	0.23	0.015	0.07	-0.431	.834**	-.536*	0.043	0.119	.721**	-0.42
	Sig.	0.001	0.001	0.428	0.959	0.813	0.124	0	0.048	0.884	0.686	0.004	0.135
Regulate Soil Loss	Pearson Correlation	-0.249	-0.249	-0.107	-0.243	.b	.b	.b	.b	0.315	0	.906**	-0.456
	Sig.	0.391	0.391	0.715	0.403	.	.	.	.	0.273	1	0	0.101
Pollination	Pearson Correlation	-0.169	-0.169	-0.336	-.570*	.b	.b	.b	.b	0.067	0	.906**	-0.456
	Sig.	0.563	0.563	0.24	0.033	.	.	.	.	0.821	1	0	0.101
Air Quality	Pearson Correlation	1.000**	1.000**	0.367	0.464	-0.128	-.559*	.793**	-0.443	0.228	0.252	.756**	-0.511
	Sig.	0	0	0.197	0.095	0.662	0.038	0.001	0.112	0.433	0.384	0.002	0.062
Organic soil	Pearson Correlation	-0.072	-0.072	0	-0.257	.b	.b	.b	.b	-0.093	-0.064	.922**	-0.469
	Sig.	0.808	0.808	1	0.375	.	.	.	.	0.751	0.827	0	0.091
Habitat	Pearson Correlation	.b	.b	.b	.b	0.109	-0.423	0.413	-0.435	-0.059	-0.326	0.488	-0.44
	Sig.	.	.	.	.	0.711	0.132	0.142	0.12	0.841	0.256	0.077	0.115
Beauty of nature	Pearson Correlation	.b	.b	.b	.b	0.028	-0.055	.743**	-0.466	.b	.b	.743**	-.534*
	Sig.	.	.	.	.	0.923	0.852	0.002	0.093	.	.	0.002	0.049
Folklore & tradition	Pearson Correlation	-0.354	-0.354	-0.211	-0.372	0.278	-0.35	0.077	-.792**	-.609*	-.651*	0.431	-0.401
	Sig.	0.215	0.215	0.469	0.19	0.337	0.22	0.792	0.001	0.021	0.012	0.124	0.156
History & culture	Pearson Correlation	-0.223	-0.223	-0.305	-0.462	0.058	-0.447	0.269	-.880**	-.688**	-.676**	0.39	-.707**
	Sig.	0.443	0.443	0.289	0.096	0.845	0.109	0.353	0	0.006	0.008	0.168	0.005
Nature to destress	Pearson Correlation		.702**	0.272	0.356	0.426	0.523	0.245	-0.28	-0.167	-0.23	0.415	-0.115
	Sig.	0.005	0.005	0.347	0.212	0.129	0.055	0.399	0.331	0.569	0.428	0.14	0.695
Education	Pearson Correlation	-0.163	-0.163	-0.163	-0.423	0.249	-0.483	0.288	-0.105	-0.29	-0.49	0.164	-0.273
	Sig.	0.578	0.578	0.578	0.132	0.391	0.08	0.318	0.722	0.315	0.075	0.575	0.344
Recreation & tourism	Pearson Correlation	-0.226	-0.226	-0.074	-0.305	0.145	-0.389	.751**	-0.257	-0.443	-.539*	.b	.b
	Sig.	0.437	0.437	0.802	0.289	0.622	0.169	0.002	0.375	0.112	0.047	.	.
Spiritual activities	Pearson Correlation	-0.388	-0.388	0	0.22	0.242	-0.031	.b	.b	0.431	-0.238	.b	.b
	Sig.	0.17	0.17	1	0.45	0.405	0.916	.	.	0.124	0.412	.	.
Household water	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Irrigation water	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Wild Veg	Pearson Correlation	-0.068	-0.068	.b	.b	.b	.b	.b	.b	0	-0.44	.b	.b
	Sig.	0.817	0.817	.	.	.	.	.	.	1	0.115	.	.
Wild Berries	Pearson Correlation	-0.335	-0.335	.b	.b	.b	.b	.b	.b	-0.417	-.553*	.b	.b
	Sig.	0.242	0.242	.	.	.	.	.	.	0.138	0.04	.	.
Medicinal Herbs	Pearson Correlation	-0.128	-0.128	.b	.b	.b	.b	.b	.b	-0.432	-0.398	.b	.b
	Sig.	0.662	0.662	.	.	.	.	.	.	0.123	0.158	.	.
Fodder	Pearson Correlation	-.679**	-.679**	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	0.008	0.008	.	.	.	.	.	.	.	.	.	.
Apple	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	0.34	0.221
	Sig.	.	.	.	.	.	.	.	.	.	.	0.235	0.447
Cherry	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	0.34	0.221
	Sig.	.	.	.	.	.	.	.	.	.	.	0.235	0.447
Cultivated Veg	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Household water	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Irrigation water	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Wild Veg	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Wild Berries	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Medicinal Herbs	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Fodder	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Apple	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Cherry	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Cultivated Veg	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.

*/** Correlation is significant at the 0.05 level.

b Cannot be computed because at least one of the variables is constant.

Table 4. Place attachment levels of daily wage labours

		Forest		Eco-tourism Park		Tannijubbar lake		River Satluj		Hatu Peak		Farmlands	
		PI_Forest	PD_Forest	PI_Park	PD_Park	PI_Lake	PD_Lake	PI_River	PD_River	PI_Hatu	PD_Hatu	PI_Farms	PD_Farms
Level of Importance	Pearson Correlation	.b	.b	-0.251	.b	.b	.b	-0.167	-0.167	.b	.b	.b	.b
	Sig.	.	.	0.587	.	.	.	0.721	0.721	.	.	.	.
Reduce noise	Pearson Correlation	.b	.b	0.258	.b	.b	.b	.b	.b	0.303	.b	.b	.b
	Sig.	.	.	0.576	.	.	.	.	.	0.508	.	.	.
RegulateGlobal Climate	Pearson Correlation	.b	.b	-0.167	.b	.b	.b	.b	.b	-0.51	.b	.b	.b
	Sig.	.	.	0.721	.	.	.	.	.	0.243	.	.	.
Regulate Soil Loss	Pearson Correlation	.b	.b	-.764*	.b	.b	.b	.b	.b	0.077	.b	.b	.b
	Sig.	.	.	0.046	.	.	.	.	.	0.87	.	.	.
Pollination	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	0.24	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	0.604	.	.	.
Air Quality	Pearson Correlation	.b	.b	-0.167	.b	.b	.b	.b	.b	-0.24	.b	.b	.b
	Sig.	.	.	0.721	.	.	.	.	.	0.604	.	.	.
Organic soil	Pearson Correlation	.b	.b	0.331	.b	.b	.b	.b	.b	0.598	.b	.b	.b
	Sig.	.	.	0.468	.	.	.	.	.	0.156	.	.	.
Habitat	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Beauty of nature	Pearson Correlation	.b	.b	.b	.b	.b	.b	-0.047	-0.047	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	0.921	0.921	.	.	.	.
Folklore & tradition	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	-0.24	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	0.604	.	.	.
History & culture	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	-0.192	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	0.68	.	.	.
Nature to destress	Pearson Correlation	.b	.b	.804*	.b	.b	.b	0.311	0.311	-0.24	.b	.b	.b
	Sig.	.	.	0.029	.	.	.	0.497	0.497	0.604	.	.	.
Education	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Recreation & tourism	Pearson Correlation	.b	.b	0.27	.b	.b	.b	0.167	0.167	.b	.b	.b	.b
	Sig.	.	.	0.558	.	.	.	0.721	0.721	.	.	.	.
Spiritual activities	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	0.336	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	0.461	.	.	.
Household water	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Irrigation water	Pearson Correlation	.b	.b	.b	.b	.b	.b	-0.645	-0.645	-0.679	.b	.b	.b
	Sig.	.	.	.	.	.	.	0.117	0.117	0.093	.	.	.
Wild Veg	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Wild Berries	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Medicinal Herbs	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Fodder	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Apple	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Cherry	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Cultivated Veg	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Household water	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Irrigation water	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Wild Veg	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Wild Berries	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Medicinal Herbs	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Fodder	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Apple	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Cherry	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Cultivated Veg	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.

*/** Correlation is significant at the 0.05 level.

b Cannot be computed because at least one of the variables is constant.

Table 5. Place attachment levels of students

		Forest		Eco-tourism Park		Tannijubbar lake		River Satluj		Hatu Peak		Farmlands	
		PI_Forest	PD_Forest	PI_Park	PD_Park	PI_Lake	PD_Lake	PI_River	PD_River	PI_Hatu	PD_Hatu	PI_Farms	PD_Farms
Level of Importance	Pearson Correlation	.b	.b	.781**	.568*	.540*	0.418	.894**	.891**	.b	.b	0.531	0.401
	Sig.	.	.	0.001	0.034	0.046	0.137	0	0	.	.	0.051	0.155
Reduce noise	Pearson Correlation	.b	.b	0.334	.767**	.b	.b	0.512	0.292	-0.458	-0.458	0.483	.549*
	Sig.	.	.	0.243	0.001	.	.	0.061	0.312	0.1	0.1	0.081	0.042
RegulateGlobal Climate	Pearson Correlation	.b	.b	0.049	-0.435	-0.175	-0.298	.591*	.588*	0.531	0.531	0.289	0.281
	Sig.	.	.	0.869	0.12	0.549	0.3	0.026	0.027	0.051	0.051	0.317	0.331
Regulate Soil Loss	Pearson Correlation	.b	.b	-0.162	-0.483	.b	.b	.b	.b	0.163	0.163	.541*	0.337
	Sig.	.	.	0.58	0.08	.	.	.	.	0.577	0.577	0.046	0.238
Pollination	Pearson Correlation	.b	.b	-.618*	-.761**	.b	.b	.b	.b	0.259	0.259	0.292	-0.145
	Sig.	.	.	0.018	0.002	.	.	.	.	0.37	0.37	0.311	0.621
Air Quality	Pearson Correlation	.b	.b	-0.092	-0.33	-0.238	-0.426	0.397	0.335	0.372	0.372	0.375	0.358
	Sig.	.	.	0.754	0.249	0.412	0.129	0.159	0.242	0.19	0.19	0.186	0.209
Organic soil	Pearson Correlation	.b	.b	-.676**	-.636*	.b	.b	.b	.b	-0.083	-0.083	.749**	0.513
	Sig.	.	.	0.008	0.014	.	.	.	.	0.779	0.779	0.002	0.061
Habitat	Pearson Correlation	.b	.b	.b	.b	-0.113	-0.439	.b	.b	.b	.b	0.181	-0.09
	Sig.	.	.	.	.	0.7	0.117	.	.	.	.	0.537	0.761
Beauty of nature	Pearson Correlation	.b	.b	-0.161	-0.37	-0.311	-0.132	.556*	0.523	-0.113	-0.113	.813**	.599*
	Sig.	.	.	0.582	0.193	0.279	0.654	0.039	0.055	0.7	0.7	0	0.024
Folklore & tradition	Pearson Correlation	.b	.b	-0.088	0.175	-0.307	-.750**	-0.049	-0.005	0.201	0.201	0.063	-0.031
	Sig.	.	.	0.764	0.549	0.286	0.002	0.868	0.987	0.49	0.49	0.83	0.916
History & culture	Pearson Correlation	.b	.b	-.708**	-.576*	-0.242	-0.391	-0.049	-0.005	-0.223	-0.223	0.111	-0.055
	Sig.	.	.	0.005	0.031	0.404	0.167	0.868	0.987	0.444	0.444	0.706	0.852
Nature to destress	Pearson Correlation	.b	.b	0.202	0.097	0	0.112	0.496	.629*	-0.207	-0.207	0.531	.582*
	Sig.	.	.	0.489	0.741	1	0.704	0.071	0.016	0.478	0.478	0.051	0.029
Education	Pearson Correlation	.b	.b	-.620*	-0.4	.b	.b	.b	.b	0.163	0.163	0.162	0.145
	Sig.	.	.	0.018	0.156	.	.	.	.	0.577	0.577	0.579	0.621
Recreation & tourism	Pearson Correlation	.b	.b	.572*	0.342	0.322	0.038	0.402	0.41	0.347	0.347	0.162	0.145
	Sig.	.	.	0.032	0.232	0.262	0.896	0.154	0.145	0.225	0.225	0.579	0.621
Spiritual activities	Pearson Correlation	.b	.b	-0.109	0.217	0.13	0.268	.b	.b	-0.102	-0.102	.b	.b
	Sig.	.	.	0.711	0.457	0.658	0.354	.	.	0.729	0.729	.	.
Household water	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	-0.077	-0.077	.b	.b
	Sig.	.	.	.	.	.	.	.	.	0.794	0.794	.	.
Irrigation water	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	0.077	0.077	.b	.b
	Sig.	.	.	.	.	.	.	.	.	0.794	0.794	.	.
Wild Veg	Pearson Correlation	.b	.b	0.323	0.175	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	0.259	0.549	.	.	.	.	.	.	.	.
Wild Berries	Pearson Correlation	.b	.b	0.476	0.258	.b	.b	.b	.b	0.229	0.229	.b	.b
	Sig.	.	.	0.085	0.373	.	.	.	.	0.432	0.432	.	.
Medicinal Herbs	Pearson Correlation	.b	.b	-.747**	-.602*	.b	.b	.b	.b	0.226	0.226	.b	.b
	Sig.	.	.	0.002	0.023	.	.	.	.	0.437	0.437	.	.
Fodder	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Apple	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	0.31	0.277
	Sig.	.	.	.	.	.	.	.	.	.	.	0.28	0.338
Cherry	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	0.015	-0.111
	Sig.	.	.	.	.	.	.	.	.	.	.	0.959	0.704
Cultivated Veg	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	0.167	0.083
	Sig.	.	.	.	.	.	.	.	.	.	.	0.569	0.779
Household water	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Irrigation water	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Wild Veg	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Wild Berries	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Medicinal Herbs	Pearson Correlation	.b	.b	-0.088	0.175	.b	.b	.b	.b	0.113	0.113	.b	.b
	Sig.	.	.	0.764	0.549	.	.	.	.	0.7	0.7	.	.
Fodder	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Apple	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Cherry	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Cultivated Veg	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.

*/** Correlation is significant at the 0.05 level.

b Cannot be computed because at least one of the variables is constant.

Table 6. Place attachment levels of others

		Forest		Eco-tourism Park		Tannijubbar lake		River Satluj		Hatu Peak		Farmlands	
		PI_Forest	PD_Forest	PI_Park	PD_Park	PI_Lake	PD_Lake	PI_River	PD_River	PI_Hatu	PD_Hatu	PI_Farms	PD_Farms
Level of Importance	Pearson Correlation	.b	.b	.871**	.833**	0.422	0.586	.931**	0.398	0.543	0.571	.960**	-0.132
	Sig.	.	.	0	0.001	0.196	0.058	0	0.225	0.084	0.066	0	0.699
Reduce noise	Pearson Correlation	-0.44	.b	-.617*	-0.381	.b	.b	.730*	0.19	-0.418	-0.165	.615*	0.194
	Sig.	0.175	.	0.043	0.247	.	.	0.011	0.576	0.201	0.628	0.044	0.567
RegulateGlobal Climate	Pearson Correlation	-0.1	.b	.800**	.904**	0.242	0.337	.900**	0.356	0.391	-0.463	.656*	-0.539
	Sig.	0.77	.	0.003	0	0.473	0.311	0	0.283	0.235	0.152	0.028	0.087
Regulate Soil Loss	Pearson Correlation	0.043	.b	0.383	0.287	.b	.b	.b	.b	0.178	-0.298	0.565	-0.149
	Sig.	0.9	.	0.245	0.392	.	.	.	.	0.601	0.373	0.07	0.662
Pollination	Pearson Correlation	0.126	.b	0.462	0.375	.b	.b	.b	.b	0	-0.488	0.565	-0.149
	Sig.	0.713	.	0.153	0.256	.	.	.	.	1	0.127	0.07	0.662
Air Quality	Pearson Correlation	.b	.b	.b	.b	0.138	0.267	.892**	0.341	0.175	-.690*	.654*	-0.329
	Sig.	.	.	.	.	0.686	0.428	0	0.305	0.607	0.019	0.029	0.324
Organic soil	Pearson Correlation	-0.132	.b	0.065	-0.065	.b	.b	.b	.b	0	-.685*	0.5	-0.222
	Sig.	0.698	.	0.85	0.85	.	.	.	.	1	0.02	0.118	0.511
Habitat	Pearson Correlation	.b	.b	.b	.b	0.404	0.319	0.395	-0.073	.b	.b	0.595	-0.558
	Sig.	.	.	.	.	0.218	0.338	0.229	0.831	.	.	0.053	0.074
Beauty of nature	Pearson Correlation	.b	.b	.800**	.904**	0.516	.633*	0.524	0.371	.b	.b	.779**	-0.528
	Sig.	.	.	0.003	0	0.104	0.036	0.098	0.261	.	.	0.005	0.095
Folklore & tradition	Pearson Correlation	-0.289	.b	-0.338	-0.075	-0.1	-0.194	0.133	0.123	-0.078	-.633*	0.392	-0.593
	Sig.	0.389	.	0.309	0.826	0.77	0.568	0.697	0.72	0.819	0.037	0.233	0.054
History & culture	Pearson Correlation	-0.32	.b	-0.086	0	-0.408	-0.319	0.365	0.079	-0.062	-.710*	.682*	-.627*
	Sig.	0.337	.	0.802	1	0.213	0.34	0.27	0.818	0.856	0.014	0.021	0.039
Nature to destress	Pearson Correlation	-0.1	.b	.797**	.778**	-0.454	-0.311	0.404	-0.457	0.271	-0.454	.765**	-0.34
	Sig.	0.77	.	0.003	0.005	0.16	0.353	0.218	0.158	0.421	0.16	0.006	0.306
Education	Pearson Correlation	-0.13	.b	.611*	0.447	.b	.b	.b	.b	0.146	-0.432	.b	.b
	Sig.	0.702	.	0.046	0.168	.	.	.	.	0.668	0.184	.	.
Recreation & tourism	Pearson Correlation	-0.175	.b	.857**	.728*	0.336	0.283	.612*	0.311	0.562	-0.587	.b	.b
	Sig.	0.607	.	0.001	0.011	0.313	0.399	0.045	0.352	0.072	0.058	.	.
Spiritual activities	Pearson Correlation	-0.155	.b	.b	.b	0.044	-0.071	.b	.b	-0.489	-0.251	.b	.b
	Sig.	0.649	.	.	.	0.897	0.835	.	.	0.127	0.457	.	.
Household water	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Irrigation water	Pearson Correlation	.b	.b	.b	.b	.b	.b	0	0.083	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	1	0.808	.	.	.	.
Wild Veg	Pearson Correlation	0.428	.b	.b	.b	.b	.b	.b	.b	0	-.869**	.b	.b
	Sig.	0.189	.	.	.	.	.	.	.	1	0.001	.	.
Wild Berries	Pearson Correlation	.650*	.b	.b	.b	.b	.b	.b	.b	0	-.869**	.b	.b
	Sig.	0.03	.	.	.	.	.	.	.	1	0.001	.	.
Medicinal Herbs	Pearson Correlation	-0.399	.b	0.515	0.407	.b	.b	.b	.b	0.108	-0.299	.b	.b
	Sig.	0.224	.	0.105	0.214	.	.	.	.	0.752	0.372	.	.
Fodder	Pearson Correlation	0.235	.b	.b	.b	.b	.b	.b	.b	0.423	0.334	0.541	-0.241
	Sig.	0.488	.	.	.	.	.	.	.	0.194	0.315	0.086	0.476
Apple	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.629*	-0.043
	Sig.	.	.	.	.	.	.	.	.	.	.	0.038	0.9
Cherry	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	0.541	-0.241
	Sig.	.	.	.	.	.	.	.	.	.	.	0.086	0.476
Cultivated Veg	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	0.183	-0.26
	Sig.	.	.	.	.	.	.	.	.	.	.	0.59	0.439
Household water	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Irrigation water	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.
Wild Veg	Pearson Correlation	0.1	.b	.b	.b	.b	.b	.b	.b	0	-0.418	.b	.b
	Sig.	0.77	.	.	.	.	.	.	.	1	0.2	.	.
Wild Berries	Pearson Correlation	0.149	.b	.b	.b	.b	.b	.b	.b	0	-.624*	.b	.b
	Sig.	0.662	.	.	.	.	.	.	.	1	0.04	.	.
Medicinal Herbs	Pearson Correlation	-0.418	.b	0.463	0.386	.b	.b	.b	.b	0.181	-0.214	.b	.b
	Sig.	0.2	.	0.152	0.241	.	.	.	.	0.594	0.527	.	.
Fodder	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	0.126	-.671*
	Sig.	.	.	.	.	.	.	.	.	.	.	0.713	0.024
Apple	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	0.359	-0.389
	Sig.	.	.	.	.	.	.	.	.	.	.	0.278	0.237
Cherry	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	0.359	-0.389
	Sig.	.	.	.	.	.	.	.	.	.	.	0.278	0.237
Cultivated Veg	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b	.b
	Sig.	.	.	.	.	.	.	.	.	.	.	.	.

*/** Correlation is significant at the 0.05 level.

b Cannot be computed because at least one of the variables is constant.

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