Chapter 7. Attitude and perception of user groups towards benefits provided by forest

SUMMARY
For the present chapter the attitude of local community towards ecosystem services provided by NDBR was evaluated. For the present study, services were divided into two categories; direct which included provisioning services and tourism (cultural; particularly economic benefits from tourism were considered), and indirect services which included regulating and supporting services. A total of 11 clusters were formed using hierarchical cluster analysis using secondary information - demographic parameters, development parameters, distance from forest and condition of forest, and 22 villages were selected for intensive study and 764 interviews were conducted from randomly selected households. Respondents were asked to value the services on the scale of 4 to 1 (4 is the highest value and 1 is the lowest). In cases where respondent did not give any value to a service, it was marked as ‘0’. The study revealed that the people assigned more values to the services such as fodder, fuelwood, leaf litter, water and nutrient retention which contribute to their day to day life and livelihoods. The services which do not contribute directly such as prevention of landslide, aesthetic value, etc. have been given less values. The difference was significant between the values assigned by the people living close to forest and away from forest (p<0.000). People living close to less degraded forest assigned more values than the people living close to degraded forest (p<0.000). There was significant difference in the attitude of men and women towards conservation practices in the area. The attitude of respondents towards conservation practices was found to be positively correlated with, average years of schooling of households and contribution of direct and indirect benefits. The perceptions of people were significantly positive towards the conservation of the wildlife and forest resources. Although, the attitude of people was found to be associated negatively due to human wildlife conflict \( r(763)=-.206^{**}, p<0.05 \).

7.1. Introduction
Ecosystem services provided by the natural ecosystems play an important role in social and cultural associations (Lindemann-Matthies et al., 2013). Different communities with specific social and cultural practices, value nature differently and
have different attitudes toward it (Johnson et al., 2004). The attitude of user towards services is mainly predicted by the extent of direct dependence of people on nature and the contribution of natural resources to the economy of people (Sarwono, 1992; Inglehart, 1995; Ignatow, 2006). Attitudes, knowledge, behaviors, and concerns of local communities and other stakeholders directly and indirectly affect the environment and future decisions concerning natural resources and their allocation and conservation (Meinhold and Malkus, 2005). According to Deng et al. (2006), environmental problems are mainly embedded into the traditional values, attitudes, and beliefs of a given society. Maloney et al., (1975) stated that “we must determine what the population knows, thinks, feels, and actually does regarding ecology and pollution” (In Deng et al., 2006). According to Stern et al. (1995), this biospheric-altruistic value orientation is placed higher in a value-attitude-behavior hierarchy than the new environmental archetype, which “fits into a causal model between values and more specific beliefs, such as beliefs about specific environmental problems” (p. 725). However, members of different cultures value forest biodiversity and ecosystem services differently and may or may not support conservation goals set by governments for instance (Deng et al., 2006). Economic status also plays an important role in shaping the attitude of people towards nature and its services. Human psychological and socio-psychological values, perceptions and attitudes provide a feedback between structure of ecosystem and evaluation of the benefits, as the understanding of the attitudes can be used to achieve sustainable management and conservation of natural ecosystems (Nassauer, 2011; Nassauer et al., 2011).

A large number of studies have valued environmental preferences. The predilections for conserving and protecting environmental goods have been issues of concern in the last few years. Most of the studies have so far focused on specific and limited environmental goods e.g. air quality, fuel wood and fodder (Carlsson and Johansson-Stenman, 2000; Bulte et al., 2004; Dupont, 2004; Torgler and Garcia-Valiñas, 2005). However, limited peer reviewed studies are available which focus on attitude towards the environmental services (Badola and Hussain, 2005; Deng et al., 2006; Lindemann-Matthies et al., 2013).

Till now studies on ecosystem services focused on economic evaluation of services on the basis of local and global market values. Values assessed and perceived by local users (direct user) have been ignored. The values given by local community member and their attitude are important to conserve and use the natural resources
sustainably as most of the ecosystems suffer from unsustainable utilization (DeFries et al., 2005) and the majority of these environmental services are now declining (MEA, 2005; Sodhi et al., 2010). To aggravate the environmental conditions, local communities are often not supportive of conservation practices due to limited access to natural resources (Sodhi et al., 2008). To resolve such anthropogenic pressure nature should be preserved for ecosystem services and not just for the conservation of biodiversity (Daily 1997; Kareiva and Marvier, 2007). It is equally important to consider perception of local community towards ecosystem services in decision making as it plays an important role in management and allocation of the natural resources. Most of the local people are not aware about the true value contribution of natural system in terms of the ecosystem services (Sodhi et al., 2010) but are aware of the direct and indirect benefits they get from the natural systems (especially from forest, freshwater system and rangelands).

For the present study, attitude of local community towards ecosystem services provided by NDBR have been evaluated. The present study assessed the values assigned to different ecosystem services provided by the Reserve to the people and how people see and assess the contribution of natural system services to their lives. For the present attitude study, services were divided into two categories, direct which included provisioning services and tourism (cultural; particularly economic benefits from tourism were considered), and indirect services which included regulating and supporting services.

7.2. Methodology
The data for attitude of local people towards ecosystem services and conservation practices was collected in three stages through review of secondary information, selection of villages for extensive survey and semi-structured questionnaire based interviews (Badola and Hussain, 2003; Harris and Brown, 2010); as interviews are considered as important tool to acclimatize planning to existing perceptions and attitudes (Buchecker et al., 2003; Höchtl et al., 2005). The first stage involved a rapid assessment of the study area in order to obtain an overall perspective of the villages. In the second stage secondary data about all the villages of NDBR was gathered and information on type of nearby forest and distance from nearby forest was collected. Hierarchical cluster analysis was carried out using secondary information-demographic parameters, development parameters, distance from forest and condition
of forest. A total of 11 clusters were formed and representative villages were selected for intensive study. In third stage, the primary data for selected villages were collected (Torgler and Garcia-Valiñas, 2005; Sodhi et al., 2010). Households in selected villages were sampled on random basis. Head of the house or any family member older than 18 years was interviewed (irrespective of gender) to get reliable information. A structured interview based questionnaire was developed to assess the attitude of people towards services provided by the forest. The data were collected from both primary and secondary sources. Primary data were obtained through both formal and informal interviews. To avoid the personal and respondent biasness which occur by a propensity of people to tell us what we perceive (Sheil and Wunder, 2002), the questionnaire was first tested in the field with 25 interviews and slight modifications were made to suit the conditions of the study area.

A total of 764 interviews were recorded from 22 selected villages. Personal information of respondents was collected. Respondents were asked to value different direct and indirect services provided by their forest on the basis of importance of services in their economic and social well-being. They were asked to value the services on the scale of 4 to 1 (4 is the highest value and 1 is the lowest). In cases where respondent did not give any value to a service, it was marked as ‘0’. Technical jargons were avoided while framing the questions to make them easy for the respondents of rural background. The questions were asked in local language and were related to the respondent’s daily interaction with natural resources. Questions were asked indirectly to avoid the tendency to pick the first option (Sodhi et al., 2010).

7.2.1. Data analysis

To know the difference between the values attached to ecosystem services provided by degraded and less-degraded forest Mann–Whitney U test was used. Mann–Whitney U test was also used to know the difference between values given to direct and indirect benefits. Spearman correlation was done to know the association that exists between average years of schooling of households and attitude. Kruskal-Wallis H test was used to know the difference between attitude of male and female member of the community.
7.3. Results

7.3.1. Direct benefits or provisioning and recreational services

Fuel wood

All 764 households reported that they use fuel wood from the nearby and accessible forest. Fuelwood is the main energy source for cooking and as the area experiences harsh winters and less warm summers therefore people use fuelwood for space heating also. Some of the households use wood just to keep their houses warm while for cooking and other purposes they use modern energy resources and appliances. A high percent of household representative (93.19%, n=764) gave maximum value to resource (4), while 6.81% (n=764) valued it as 3.

Fodder

Livestock rearing being one of the important livelihoods of the area, most respondents (93.06%, n=764) gave highest value to forest fodder as most important resource, 6.28% valued fodder as very important resource (value as 3). Less than 1% people did not give any value to the fodder provided by the forests. Some families which did not have livestock and were not using fodder in the present still valued fodder as most important and very important (by giving value of 4 and 3 to it) which shows that these families despite not using fodder from forest at present, consider its importance for future.

Leaf litter

70.29% respondents gave value of 4 to leaf litter and considered it as a very important forest product, 17.93% gave value of 3 to it while 8.64% and 2.23% gave it 2 and 1, respectively. Less than 1% of the respondents did not give any value to the provision of the leaf litter as these respondents either did not have or had very few livestock.

Material for construction

All respondents said that they have used some of the forest products while constructing a house and cowshed. But with the modernization of the building design in the area, the dependence on forest for construction material has reduced. More than 25% respondents gave a value of 4 to material of construction while 50.13% household representatives said that construction material provided by the forest is the very important resource and valued it 3 as all the people build the houses with the
material provided by the forests. 21.33% valued it as 2 while 2.75% respondents did not give any value to the resource.

Medicinal plant
Most of the local residents do not follow the traditional medicinal practices, and use the services of modern health workers (trained doctors, nurses), hence do not feel any importance of the medicinal plants (50.26%, n=764). Only about 1% of the respondents valued medicinal plants as most important (valued 4) while 30.63% valued them as 3. Rest of the 17.8% said that medicinal plants are important and valued it as 2.

Tourism
More than 64.01% (n=764) respondents did not give any value to the tourism and recreation as it provides economical benefits to only few households. 12.43% valued the service as 4 while 9% valued it as 3. 10.60% and 3.93% valued it as 2 and 1, respectively.

7.3.2. Indirect services: regulating and supporting services
Water retention
All respondents, except one (99.61%, n=764), said that the most important indirect benefit they get from forests of NDBR is retention of fresh water and valued it as 4. This service not only supports the domestic needs of the local communities but also provide water for agricultural and local small level industrial use also.

Nutrient retention
About 90% (n= 764) household representatives gave maximum values to nutrients retention by different types of forest while 10.08% valued the service at 3 considering it as very important, as the nutrients provided by the forest play an important role in maintaining the agricultural productivity. 0.39% respondents said that the service is of less importance and valued it as 2 while 0.26% did not give any value to it.

Air purification
More than 72% (n= 764) of the respondents said that purification of the air is the most important service provide by the forests and without it their society have to live in ‘city like environment’. These respondents gave maximum value to the air
purification service of forests. 18.19% and 8.64% household representative valued it as 3 and 2, respectively. Only 0.26% respondents did not give any value to the air purification.

Prevention of landslide
Being a landslide prone area, the service plays an important role in daily life and lifestyle of local residents. Prevention of landslide by the presence of forests and trees was valued as 4 and 3 by 47.51% and 42.54% respondents, respectively. About 2% of the respondents said that it is not a very crucial service but is an important one and value it at 2 while 7.85% said that this service do not have any value for them.

Prevention of land erosion
45.42% of the respondents put prevention of land erosion by different means (by natural: rain, snowfall; artificial: construction) in the category of most important services by giving it maximum value while 34% valued it as 3. 10.73% respondents value the service as 2, while rest of the 9.82% did not give any value to the service.

Genetic value
In spite of being a biologically diverse area, people are not much aware of the genetic resources and only 16.1% of the people gave maximum value (4) to the genetic resources of the area. 4.06%, 16.49% and 8.38% valued it as 3, 2 and 1, respectively. Most of the respondents (54.97%) did not give any value to the genetic resources provided by the NDBR.

Aesthetic value
Aesthetic pleasure provided by the nature is rated as one of the most important services of NDBR by only 4.58% who gave it maximum value while 12.70% and 15.18% of the respondents valued it as 3 and 2, respectively. 8.38% said that it does not have much value (valued as 1) while about 60% did not give any value to it.

Spiritual & religious
Spiritual & religious services provided by the NDBR was rated as one of the most important services of NDBR by only 3.8% of the respondents who gave it maximum value while 13.22% and 21.73% of the respondents gave it 3 and 2 value,
respectively. 0.26% said that it has very less value (1) while more than 60% did not give any value to it.

### 7.3.3. Conservation of forest and its resources

Most of the respondents (99.73%, n=764) were positive about the conservation of forests and wanted to save it from further degradation. Only two respondents said that they do not want to have their area covered with forest and want to replace it with some developmental activities.

**Reason for conservation of forests**

Most of the livelihood practices in the area are directly and indirectly forest product dependent hence all the respondents wanted to save the forest. 99.87% (n=762) respondents said that forests provide products to meet their day to day needs while 100% of them said that forest products support their livelihood and hence should be preserved. 75.72% responded that forests retain water which is the basic need for survival. 62.86% said that forest should be conserved as it provide shelter to the wild species and in the absence of the forest and forest products, the conflict between human society and wildlife will increase. 67.98% respondents said that forest provides an aesthetic pleasure and they feel proud to have a forested landscape in their area (Fig. 7.1).

![Figure 7.1. Reason for conservation of forest and forest products](image_url)
7.3.4. Strategies suggested by local people to improve the forest condition

Respondents were asked to suggest a solution to improve the present condition of their forest, a total of six different strategies were suggested by them i.e. plantation (p), no felling (nf), fencing (f), prevention of forest fires (pf), training to local people (tp) and reduced dependence on forests (rd). Most of the respondents (76.05%; n=764) said new plantation should be done to improve the present condition of the forest while ban on felling was supported by 34.29%. 24.21% of the respondents said that trees and saplings should be fenced and saved from livestock and lopping. 31.68% said that more techniques should be introduced to prevent and manage the forest fires, as forest fires in the area damage the natural resources. 30.89% suggested that local people should be trained with different techniques to prevent forest resource loss and conservation of natural resources. Only 2.23% of the respondents said that forest can be conserved by reducing the direct dependence on forest products (Fig. 7.2).

![Figure 7.2. Strategies suggested by respondents to improve the condition of nearby forest](image)

Most of the respondents suggested more than one strategy to conserve the natural forest conditions. 14.12% said that plantation and ban on felling are the combination of solutions to protect and improve the quality of forest resources. 19.76% respondents preferred plantation with fencing while 16.3% said plantation with prevention from forest fires is better solution. 13.06% said that plantation should be done and local people especially youngsters should be trained. 12.57% said that people should be trained to prevent forest fire which prevents the loss of natural wealth (Fig. 7.3).
7.3.5. Conservation of wildlife

When asked about the reason for saving the wildlife in the nearby forest 50% (n=764) said they want the wildlife to be conserved while 49.48% (n=764) respondents do not want to conserve it. Very few respondents (0.52%, n=764) were not aware and did not know what should be done.

Reason for conserving wild animal

Those who said wild animals should be conserved (n=382), were given four options; (aesthetic value (av), recreational value (rc), right to live (rl), maintain balance in nature (mb); to choose why they want to save the wildlife. 67.54% said that wild animals should be saved because of their aesthetic value, while 62.30% said that they attract tourists and give an identity to the area. Most of the respondents (90.58%) said that the wild animals also have right to live as humans have. 6.02% respondents said that the wild animals maintain the balance of nature by preying upon species which otherwise will increase in number and hamper the agriculture output and put extra pressure on the available natural resources (Fig. 7.4). Of 382 respondents who supported conservation of wildlife, 62.3% chose aesthetic value and recreational value as reasons for conservation. 58.64% chose aesthetic value and right to live, 2.09% opted for aesthetic value and maintenance of the balance of nature and 54.45% opted for recreational value and right to live. Other most preferred combination of options given was aesthetic value with recreational value and right to live (preferred by 54.45%) (Fig. 7.4).
Reason for not saving the wildlife

Question related to not saving wildlife was open ended and 4 major reasons were observed. Local residents \((n=378)\) do not want to save the wildlife as they kill people \((kp)\) and livestock \((kl)\), damage crop \((dc)\) and do not provide any benefit to the human society \((nb)\). About \(58.20\%\) respondent gave all the four reason for not to save wild animals. \(95.24\%\) said that wild animals kill people and, livestock and raid the crop field and damage the economy and so should not be saved. \(58.20\%\) people said that wildlife does not provide any benefit to the society and so they should either be moved to some other place or killed; these respondents also gave others reasons (kill people and livestock, and damage crop). \(98.97\%\) respondents do not want wildlife in their area as because of wildlife their life and livestock are under threat (Fig. 7.5).

![Figure 7.4. Reason for conservation of wildlife](image)

![Figure 7.5. Reason for not conserving wildlife](image)
7.3.6. Suggestion by people to improve the forest
Respondents were asked what they want to do with the forest near their village. When asked whether the forest should be cut 98.69% (n=764) disagreed while 50.52% said that they would like to remove the wild animals and keep the forest as it is while 49.21% disagreed and 0.26% were not sure. 99.74% do not like the present situation and 0.26% were not aware about it. 99.48% respondents said that they would like more plantations (Fig. 7.6).

![Figure 7.6. Views of people on nearby forested area](image)

7.3.7. Benefits to agriculture from nearby forest
Most of the respondents (n=764) agreed that forest near their agricultural land contribute to the yield in many different ways. More than 66.88% respondents said that agricultural fields located near forests produce more yield than the fields away from forest (Table 7.1). Although most of them said that instead of better growth the crop is generally damaged by the wild animals. 12.04% responded that closeness to forest does not make any difference in the yield while 0.26% were not aware about it. 85.47% agreed that agricultural fields near forest require less fertilizer than the fields away from the forest while 11.39% disagreed to the given option and rest of the 3.14 (%) were not sure about it. More than 98% said that the soil of agricultural land near forest has more moisture content than the field away from forest while 1.57% found no difference in both the condition. 88.48% respondents said that forests regulate the local rain fall pattern thus contributing to rain fed agriculture and better production of the different seasonal crops (Table 7.1).
Table 7.1. Benefits from forest near agricultural fields

<table>
<thead>
<tr>
<th>Benefits from forest near agricultural fields</th>
<th>Yes (%)</th>
<th>No (%)</th>
<th>Do not know (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Areas near the forest give more yield</td>
<td>87.70</td>
<td>12.04</td>
<td>0.26</td>
</tr>
<tr>
<td>Fertilizers required in less quantity near forest</td>
<td>85.47</td>
<td>11.39</td>
<td>3.14</td>
</tr>
<tr>
<td>Water table is high near forest</td>
<td>98.17</td>
<td>1.57</td>
<td>0.26</td>
</tr>
<tr>
<td>Regulates rainfall</td>
<td>88.48</td>
<td>11.13</td>
<td>0.65</td>
</tr>
</tbody>
</table>

7.3.8. Difference in the attitude

A significant difference was found between the values, given by people living close to forest and away from forest (U= 71169.5, Z= -3.486, p< 0.000). Although both categories understand the importance of the direct and indirect contribution of the natural resources (both directly and indirectly) to the local and regional economy and level of human wellbeing, it was found that the people living close to forest with better accessibility to high quality resources (less-degraded) appreciate contribution of nature more.

There was a significant difference between the values attached to ecosystem services provided by degraded and less-degraded forest (oak forest: U= 4672, Z= -11.345, p<0.000; mixed conifer forest: U= 10500, Z= -5.299, p<0.000; moist temperate deciduous forest: U= 47430, Z= -6.242, p<0.000); deodar forest: U= 0, Z= -12.725, p<0.000).

The attitude of respondents was found to be positively correlated with, average years of schooling of households, r(763)= +.114**, p<0.005, benefits (both direct and indirect contribution of the forest, r (763)= +.096**, p<0.005 and total income (earning from forest and other livelihoods), r(763)= +.218**, p<0.00).

The attitude towards indirect benefits was found to be positively correlated with, educational status of the individual and overall household, r(763)= + .131**, p<0.005, benefits (both direct and indirect contribution of the forest, r (763)= +.149**, p<0.005 and total income (earning from forest and other livelihoods), r(763)= +.189**, p<0.005). Similarly, attitude towards direct benefit was found to be positively correlated with educational status of the individual and overall household, r(763)= + .080*, p< 0.05, benefits (both direct and indirect contribution of the forest, r (763)= +.077*, p<0.05 and total income (earning from forest and other livelihoods),
The correlation between attitude towards overall benefit and indirect was found to be higher as the understanding towards these contributions are mainly not visible in the day to day life of dependent families. Contribution of direct benefits is visible and understood by the users irrespective of their educational or economical status.

Gender has also played an important role in structuring individual’s attitude towards ecological services provided by natural land use type and there was significant difference between attitude of male and female member of the community \((H=7.496, p\leq0.005)\). Men gave more score to the total benefits provided by the nature than women and similar pattern was observed for direct and indirect benefits. This difference was found to be significant for direct and indirect benefits and total benefits together (indirect benefit-, \(H=9.471, p<0.005\), direct benefit- \(H=3.776, p\leq0.05\)). The difference in the attitude of men and women can be attributed to the difference in the educational status of both and men get more chances to visit places, participate more in public meetings, get more time and chances to access media and other means of communication such as newspaper, television etc.

Attitude of people was also found to be associated with the extent of loss caused by wildlife. There was a negative relation between attitude and human wildlife conflict \((r(763)=-.206**, p<0.05)\).

7.4. Discussion
Results show that the attitude of people of NDBR is significantly positive towards the environment and its services. Respondents have given high values to all the services, though direct services (fuel wood and fodder) have been given maximum value (4) for highest number of times in comparison to indirect services. This is because the direct services contribute to the local livelihood and daily needs noticeably and provide a direct improvement in economy of local communities. The mountain communities of NDBR have traditionally been having the sustenance economy, where they used to consume what they grew and hence dependence on market was nil or negligible. However, this trend is changing (Pearce & Atkinson, 1993), despite this people give importance to the services which sustain their lives and secure their well-being (Daily et al., 2000; Newton and Newman, 2013).
While regulating and supporting services often contribute by enhancing quality and quantity of direct benefits, therefore, adding to the local economy and daily life, indirectly. Hence, indirect benefits of nature were given equal values but more focus was given to direct benefits which directly contribute to their daily needs and livelihood viz., agriculture and livestock production in the area. The indirect services which contribute to the agricultural productivity and environmental security were valued more in comparison to others which do not contribute directly to local economy (Table 7.2). Most of the respondents support forest resource conservation and want to save it from further degradation, as forests provide main resources to meet their daily needs and support their livelihood. Local people of NDBR want more plantations of native species to be done in the area, they also suggest that the local people should be trained to take care of the plantations and to maximize the survival rate. About half of the respondents want to remove wild animals from the area as they cause loss of crops, livestock and human life every year. Loss of crop and livestock leads to an immense economical pressure on the affected families as agriculture and livestock raring are the main livelihood of the local people. Other half of the respondents wanted to protect the wild animals as they believe that animals also have a right to live and help in maintaining the balance in nature. Most of the respondents agreed that the agriculture fields located near the forest produce more yield than the field located away from forest. But the yield from these fields do not benefit the people as most of the crop is damaged by the wild animals (Table 7.1).

The significant difference in the values attached to the services by people living close to and away from forest is mainly due to more direct contribution to the livelihood of local communities and easy access to the important natural resources. As members of households situated closer to forest have to put less efforts and time to get the resources than the members of households located away from forest, they appreciate the contribution of forest more and want to conserve it and are willing to participate in improvement of the condition of the forest.

The conservation of biodiversity is crucial for the functioning of ecosystems and for continuous flow of their services (Hooper et al., 2005). The biological conservation is more or less influenced by the knowledge, attitude and behaviour of the local residents who live in the direct association with the natural systems (Bizerril, 2004; Barraza and Robottom, 2005; López-del-Toro et al., 2009). According to Gao et al. (2013) forest and other natural resources linked with traditional cultural practices
and beliefs have been maintained for longer periods without much disturbance or change; as the cultural linkage makes the attitude of people affirmative towards conservation practices. At other times, however, human attitudes can be aggressive with respect to conservation practices and may lead to loss of biodiversity (Newmark et al., 1993). Usang (1995) observed that negative attitudes of the people resulted in forest destruction. Understanding the attitudes of dependent community help in identifying and realizing their ideas, opinions and suggestions regarding conservation and management of natural resources (Badola et al., 2012). Although the conservation with ecosystem approach is determined by bigger policy decisions, but the sustainable use of resources relies mainly on communities living in the vicinity of natural systems (Pyrovetsi and Daoutopoulos, 1997; Badola et al., 2012).

Local communities are often dependent (more directly) on the natural resources to meet their needs, financial benefits and subsistence and value the resources more than the communities indirectly and less dependent for basic amenities. Local communities’ attitude towards conservation and management of ecosystem often differ with the external social and developmental agents (Matta and Alavalapati, 2006). In some cases people may appreciate benefits, but may not be aware of the supply (Archabald and Naughton-Treves, 2001). Ignorance towards the values that people put on the nature leads to the failure of acknowledgement and undervaluation of the benefits (Parry and Campbell, 1992; Gillingham and Lee 1999; Gadd, 2005). Introduction of modern technologies and life style have changed the behaviour and attitude of people towards natural system and some of them want natural resources be replaced by new developmental activities. As the dependence on natural system for daily needs is shifting towards substitutions (markets), people have started ignoring the importance of ecosystem services (Sandhu et al., 2008). Assessment of the attitude and behaviour of local communities can be used to understand the value local people put on flow of environmental services and their actual values.
Table 7.2. Values given by respondents to different ecosystem services

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Values given by respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4</td>
</tr>
<tr>
<td><strong>Indirect</strong></td>
<td></td>
</tr>
<tr>
<td>Water retention</td>
<td>761</td>
</tr>
<tr>
<td>Nutrient retention</td>
<td>682</td>
</tr>
<tr>
<td>Air purification</td>
<td>557</td>
</tr>
<tr>
<td>Prevention of landslide</td>
<td>363</td>
</tr>
<tr>
<td>Prevention of land erosion</td>
<td>347</td>
</tr>
<tr>
<td>Genetic value</td>
<td>123</td>
</tr>
<tr>
<td>Aesthetic value</td>
<td>35</td>
</tr>
<tr>
<td>Spiritual &amp; religious</td>
<td>29</td>
</tr>
<tr>
<td>Biodiversity value</td>
<td>27</td>
</tr>
<tr>
<td><strong>Direct</strong></td>
<td></td>
</tr>
<tr>
<td>Fodder</td>
<td>711</td>
</tr>
<tr>
<td>Fuel</td>
<td>712</td>
</tr>
<tr>
<td>Leaf litter</td>
<td>565</td>
</tr>
<tr>
<td>Material for construction</td>
<td>195</td>
</tr>
<tr>
<td>Medicinal plant</td>
<td>9</td>
</tr>
<tr>
<td>Tourism</td>
<td>95</td>
</tr>
</tbody>
</table>