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An Evaluation of the Sagarmatha National Park Forestry Project (Snpfp), Khumbu, Nepal: A Community Stakeholder Approach

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AN EVALUATION OF THE SAGARMATHA NATIONAL PARK FORESTRY PROJECT (SNPFP), KHUMBU, NEPAL:
A COMMUNITY STAKEHOLDER APPROACH

by

Chet Bhatta, MSc, Tribhuvan University, 2003

A Thesis
Presented to Ryerson University
in partial fulfillment of the
requirements for the degree of
Master of Applied Science
in the Program of
Environmental Applied Science and Management

Toronto, Canada, 2013

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Author's declaration

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Master of Applied Science
Environmental Applied Science and Management
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Abstract

This study adopts a community stakeholder approach to analyze the stakeholders' perceptions on foreign aid and NGO-driven reforestation programme in an impacted community. The focus of the study, the Sagarmatha National Park Forestry Project (SNPFP), has operated in Khumbu, Nepal for thirty years.

The overall performance and impacts of the SNPFP were assessed by interviewing key informants with regard to their experience and perceptions. Qualitative analysis revealed the gap in the involvement of multiple donors and identified how these gaps impacted on quality of foreign aid and NGO-led project. The implications of this study include the recommendation that the immediate stakeholders in a local area are a reliable source of information to measure the value of foreign aid and NGO performance. Furthermore, the future of natural resource conservation and rural development led by foreign aid and NGOs depends on collaboration between the local people, the NGOs, donors, and the government.

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Table of contents

Author’s declaration.....	ii
Abstract.....	iii
Acknowledgements.....	iv
Table of contents.....	v
List of tables.....	ix
List of figures.....	x
Abbreviations.....	xi
1. INTRODUCTION.....	1
1.1. Background.....	1
1.2 Problem and research questions.....	3
1.3 Organization of thesis.....	4
2. LITERATURE REVIEW.....	5
2.1 Study area.....	5
2.1.1 Khumbu, Nepal: regional and physical setting.....	5
2.1.2 Vegetation of Khumbu.....	6
2.1.3 Khumbu and the Sherpa.....	8
2.1.4 Indigenous practices of forest management in Khumbu.....	10
2.2 Deforestation in Khumbu.....	12
2.3 Management responses of deforestation in Khumbu.....	14
2.3.1 The establishment of DNPWC in Nepal.....	14
2.3.2 The establishment of SNP.....	15
2.3.2.1 Origin of SNP.....	15
2.3.2.2 Geography of SNP.....	16
2.3.2.3 Management strategies and public participation in SNP.....	18
2.3.2.4 The implementation of buffer zone concept in Nepal and SNP.....	19
2.3.4 Reforestation in Khumbu.....	21
2.4 Sagarmatha National Park Forestry Project (SNPFP).....	23
2.4.1 Origin and development of SNPFP.....	23
2.4.2 Activities of SNPFP.....	28

2.4.2.1 Establishment of nurseries in Khumbu.....	28
2.4.2.1.1 Tashinga nursery.....	29
2.4.2.1.2 Phurte nursery.....	30
2.4.2.1.3 Phorste nursery.....	31
2.4.2.2 Establishment of plantation plots in Khumbu.....	32
2.4.2.3 Maintenance and management of plantation sites.....	34
2.4.2.4 Measurement of forest growth and influences in Khumbu.....	36
2.4.3 SNPFP hand-over.....	37
2.4.3.1 Reasons for hand-over.....	37
2.4.3.2 Publication of <i>high altitude forestry manual</i>	38
2.4.3.3 Hand-over decision.....	38
2.4.3.4 Hand-over event.....	39
2.4.3.5 Planning for future management.....	39
2.5 Foreign aid and its effectiveness.....	41
2.5.1 What is foreign aid?.....	41
2.5.2 Effectiveness of foreign aid.....	42
2.5.3 Ineffectiveness of foreign aid.....	42
2.5.4 Foreign aid and development in the context of Nepal.....	43
2.5.5 The Everest region, development, and foreign aid.....	44
2.6 Environmental aid and its effectiveness.....	44
2.7 NGOs and development.....	45
2.7.1 NGOs, INGOs, and development in Nepal.....	46
2.7.2 INGOs and NGOs in Khumbu.....	46
2.8 Chapter Summary.....	48
3. RESEARCH DESIGN AND METHODS.....	49
3.1 Introduction.....	49
3.2 Qualitative research approach.....	49

3.3 Data collection procedures.....	50
3.3.1 Secondary data.....	50
3.3.2 Participant observation.....	51
3.3.3 Semi-structured interviews.....	51
3.3.3.1 Stakeholders.....	52
3.3.3.2 Sample sites and key informants (KIs) sampling.....	53
3.3.3.3 Interviews and interview procedures.....	53
3.3.4 Informal conversations and interviews.....	55
3.4 Data analysis.....	56
3.5 Reliability and validity of data.....	59
4. RESULTS.....	61
4.1 Analysis of key informants interviews.....	61
4.1.1 Participant profile: key informants (semi-structured interviews).....	61
4.1.1.1 General characteristics.....	61
4.1.1.2 Sociodemographic characteristics.....	62
4.1.1.2.1 Gender.....	62
4.1.1.2.2 Caste.....	63
4.1.1.2.3 Age.....	64
4.1.1.2.4 Education.....	65
4.1.2 Stakeholders' understanding of SNPFP.....	65
4.1.2.1 Understanding about the source of funding.....	65
4.1.2.2 Attitude towards SNPFP.....	67
4.1.3 Stakeholders' perceptions on the performance of SNPFP.....	69
4.1.3.1 Strength of SNPFP.....	70
4.1.3.2 Weakness of SNPFP.....	71
4.1.4 Stakeholders' perceptions on the impacts of SNPFP.....	74
4.1.4.1 Environmental impacts.....	75
4.1.4.2 Economic impacts.....	77

4.1.4.3 Social impacts.....	79
4.1.5 Stakeholders' perceptions on hand-over of SNPFP.....	81
4.1.5.1 Reasons of SNPFP hand-over.....	82
4.1.5.2 Process of SNPFP hand-over.....	84
4.1.6 Stakeholders' understanding on the sustainable forestry.....	89
4.1.7 Stakeholders' perceptions on the future of SNPFP.....	91
4.2 Summary of findings.....	93
4.2.1 Stakeholders' understanding about SNPFP.....	93
4.2.2 Stakeholders' perceptions on performance and impacts of SNPFP.....	94
4.2.2.1 Perceptions on performance of SNPFP.....	94
4.2.2.2 Perceptions on impacts of SNPFP.....	96
4.2.3 Stakeholders' perceptions on hand-over of SNPFP.....	96
4.2.4 Stakeholders' understanding on the sustainable forestry.....	98
4.2.5 Stakeholders' perceptions on the future of SNPFP.....	98
5. DISCUSSION AND CONCLUSION.....	99
6. FUTURE DIRECTIONS: WHERE WE GO FROM HERE?.....	103
7. STUDY LIMITATIONS.....	105
Appendix A: Interview guide for semi-structured interviews.....	106
Appendix B: Information and consent form used for the study.....	111
Appendix C: Sample transcript of an informal conversation.....	115
Appendix D: Photographs of nurseries and plantation plots.....	116
References.....	118

List of tables

Table 1. Major plantation plots and their year(s) of establishment in Khumbu 1979-2008.....	33
Table 2. Highest annual Thar counts 1992-2010 in Khumbu.....	37
Table 3. INGOs functioning in Khumbu and their activities 1996-2006.....	47
Table 4. NGOs functioning in Khumbu and their activities 1996-2006.....	48
Table 5. Core questions asked during interviews.....	55
Table 6. General Characteristics of Informal Interviews/Conversations Participants.....	56
Table 7. Open coding classification system (<i>a priori</i> nodes and inductive nodes).....	58
Table 8. Coding in-details/ final coding classification system with categories and sub-categories.....	59
Table 9. Stakeholders selected for semi-structured interviews.....	62
Table 10. Sociodemographic characteristics of stakeholders.....	63
Table 11. Perceived strength and weakness on the performance of SNPFP mentioned by stakeholders.....	69
Table 12. Perceived impacts of SNPFP mentioned by stakeholders.....	75
Table 13. Aspects and sub-aspects mentioned by stakeholders on the hand-over of SNPFP.....	81
Table 14. Aspects and sub-aspects mentioned by stakeholders on the future of SNPFP.....	91

List of figures

Figure 1. Map of the Everest region showing Khumbu and SNP.....	6
Figure 2. Protected areas of Nepal.....	15
Figure 3. Sagarmatha National Park and Buffer Zone (SNP/BZ).....	17
Figure 4. Policy and liaison of SNPFP during its origin.....	26
Figure 5. Operation and technical consideration of SNPFP.....	27
Figure 6. Total seedlings composition in the three SNPFP nurseries 2000-2010.....	29
Figure 7. Seedlings composition in Tashinga nursery 2000-2010.....	30
Figure 8. Seedlings composition in Phurte nursery 2000-2010.....	31
Figure 9. Seedlings composition in Phorste nursery 2000-2010.....	32
Figure 10. Map of the areas planted in the SNP 1981-2010.....	34
Figure 11. Key informants' gender distribution among stakeholders.....	62
Figure 12 . Key informants' caste distribution among stakeholders.....	64
Figure 13. Key informants' age distribution among stakeholders.....	64
Figure 14. Key informants' level of education among stakeholders.....	65
Figure 15. Key stakeholders' understanding on the source of funding of SNPFP.....	66
Figure 16. Stakeholders' attitude towards SNPFP.....	68
Figure 17. Proportion of stakeholders on the basis of their familiarity on SNPFP hand-over.....	85
Figure 18. Proportion of stakeholders participated in the hand-over event.....	86
Figure 19. Understanding of sustainable forestry among stakeholders.....	89
Figure 20. Proportion of responses among stakeholders on funding option of SNPFP.....	92

Abbreviation

AGM	Annual General Assembly
BZMC	Buffer Zone Management Council
BZUG	Buffer Zone User Groups
CA	Constitution Assembly
CBOs	Community Based Organizations
CIDA	Canadian International Development Agency
DFO	District Forest Offices
DNPWC	Department of National Parks and Wildlife Conservation
EC	European Commission
FAO	Food and Agriculture Organization
HMG	His Majesty's Government
HRA	Himalaya Rescue Association
HT NP	The Himalayan Trust, Nepal
HT NZ	The Himalayan Trust, New Zealand
ICIMOD	International Centre for Integrated Mountain Development
IMF	International Monetary Fund
INGOs	International Non-governmental Organizations
IUCN	International Union for the Conservation of Nature
KEEP	Kathmandu Environment Education Program
KIs	Key Informants
KU	Kathmandu University
NGOs	Non-governmental Organizations
NMA	Nepal Mountaineering Association
NPC	National Planning Commission
NRS	Nepalese Rupees
NTNC	National Trust for Nature Conservation

NZ	New Zealand
NZFRI	New Zealand Forest Research Institute
ODA	Official Development Assistance
ODF	Official Development Finance
OECD	Organization of Economic Co-operation and Development
PAC	Park Advisory Committee
SEHFC	Sir Edmund Hillary Foundation of Canada
SHTAC	Sherpa Himalayan Trust Advisory Committee
SNP	Sagarmatha National Park
SNPBZ	Sagarmatha National Park Buffer Zone
SNPFP	Sagarmatha National Park Forestry Project
SPCC	Sagarmatha Pollution Control Committee
TAAN	Travel Agents Association of Nepal
TMI	The Mountain Institute
TRPAP	Tourism for Rural Poverty Alleviation Project
TU	Tribhuvan University
UNCED	United Nations Conference on Environment and Development
UNDP	United Nation Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Economic, Social and Cultural Organization
UN-REDD	United Nation's proposal 'Reducing Emissions from Deforestation and Forest Degradation in Developing Countries'
USAID	United States Agency for International Development
VDC	Village Development Committee
WHO	World Health Organization
WTO	World Trade Organization
WWF	World Wildlife Fund

1. INTRODUCTION

1.1 Background

Nepal is a small, mountainous, and landlocked country located in South Asia. Nepal has extreme topographical variation ranging from a few meters above sea level in Terai to the world's highest peak, Mount Everest 8,848 m above sea level. Khumbu lies along the Nepal-China border in the Solukhumbu District of north-eastern Nepal. The elevation of the area ranges from 2,800-8,848 m, which is composed of mostly south and north-facing slopes comprising permanent snowline at approximately 6,000 m on south-facing slopes and 5,700 m on north-facing slopes (Hill and Gale, 2009: 53). This region is almost entirely enclosed by mountain peaks, some reaching beyond 6,000 m. Among the ten highest peaks in the world, three of them including Mount Everest (8,848 m), which is also known to Tibetan speakers as Chomolangma, and to Nepali speakers as Sagarmatha, are located in this region (Byers, 2005).

There are approximately 3,000 ha of forests in Khumbu. For centuries, the forests have been essential in the daily life of Khumbu people as the source of fuel-wood for cooking and heating, timber for building and bridges, and litter or humus to mix with animal manure for soil fertilizer. The forests are also critical components of soil building and erosion prevention, and are the habitat for many unique fauna and flora. In addition, the forests and vegetation have important traditional cultural values to the local indigenous people, the Sherpas. Traditionally, the Sherpas have various strategies to ensure abundant resources for their survival. They had forest guardians called *Shingi nawas* (a community appointed voluntary enforcer of forest protection regulations) to make sure that no one harvested live wood and the forests were used according to community sanctioned rules (Spoon and Sherpa, 2008; Gurung *et al.*, 2010).

With the opening of Nepal to outside visitors in 1950, Khumbu has been transformed from an isolated mountain dwelling to one of the busy tourist destination in the world. The number of foreigners (tourist trekkers, climbers, guides, porters, and researchers) who visit this area each year approached more than 5,000 in 1984 which exceeds the number of local inhabitants (approximately 3,000 in 1984), compared to a total of 20 visitors in the early sixties (Jefferies, 1982). Subsequently, tourism has been increasing consistently in the region, growing from approximately 21,000 in 2006 (Nepal *et al.*, 2007) to 29,000 visitors in 2011 (Sagarmatha National Park Office, 2012). The dramatic increase in tourism has resulted in the development of lodges, seasonal settlement facilities and other forms of infrastructure

(Nepal, 2001). Tourism development in this region has already threatened and destroyed ecological habitat and transformed the natural landscape (Bjonness, 1980; Stevens, 1993; Shrestha, 1994).

In response to the deterioration of natural resources and serious environmental, social, and economic consequences, a number of advances have been made in the management of natural resources in Khumbu (Manning, 1979). Heavy exploitation of natural resources brought the attention of international aid agencies initiated by the effort of Sir Edmund Hillary and many other pioneer mountaineers and trekkers in Khumbu. In effect, many management responses and strategies were implemented in Khumbu starting from the 1970s. These management responses include the establishment of the National Parks and the implementation of park programs, the establishment of Department of Soil and Water Conservation, the amendment of *Forest Nationalization Act*, the development of a National Conservation Strategy, and other several initiatives to improve the existing methods of local and indigenous resource management (Abbott, 1985). Later, several bilateral and multilateral aid agencies administered Official Development Assistance (ODA) in the form of foreign aid in Khumbu. Subsequently, several International Non-governmental Organizations (INGOs), Non-governmental Organizations (NGOs), and local conservation advocacy group increased their presence in Khumbu to protect its environment.

Globally, foreign aid, INGOs and NGOs have emerged as important actors in development. The number of aid agencies, INGOs, and NGOs has increased significantly, especially in developing world. However, this growth does not necessarily mean foreign aid and NGOs are effective at improving rural livelihoods and protecting local environments. Furthermore, the lack of evaluative studies on the effectiveness of foreign aid and NGOs involvement challenges claims of success often found in their reports (Anderson, 2007). Neither NGO reports nor prevailing independent research provides a comprehensive and realistic assessment of the impacts of NGOs on the communities in which they work (Rugendyke, 2007). Even though foreign aid and NGOs were established with good intentions, the results associated with NGO-led development in developing countries are mixed. On the one hand, foreign aid and NGOs are credited for promoting democratic values, advocating human rights, protecting and conserving natural resources, and empowering indigenous populations and women in rural communities (Fisher, 1997; Madon, 1999; Castells, 2005; Willis, 2005; Collingwood, 2006;); on the other hand, they have been criticized over issues of legitimacy, accountability, transparency, representation, and performance (Edwards and Hulme, 1995; Bebbington, 1997; Anderson, 2007;). Nepal is an ideal location for studying the impact of foreign aid and NGO involvement in rural development as the

numbers of NGOs grew up from just 293 in 1990 to over 27,000 in 2010 (SWC, 2010). NGOs in Nepal have established themselves as important stakeholders in the development process. They claimed to have positively impacted the lives of rural communities and are established as a partner in the development process of the country. However, several scholars disagree with this claim (Acharya, 1997; Siwakoti, 2000; Bhattachan, 2004). Bhattachan (2004) opined that, despite more than two decades of NGO involvement in rural development, rural areas in Nepal have changed very little. However, due to the lack of a good evaluation, Nepal's NGO sector challenges many generalization about the role NGOs play.

1.2 Problem and research questions

Since the 1950s, Khumbu environment has been degraded as consequences of the tourism and domestic animal pressure. However, environmental degradation at Khumbu is a much more publicized issue; it is poorly understood phenomenon in reality. The literature during last three to four decades outlined issues related to population pressure, lost forest cover, overgrazing, terracing of marginal land, depletion of wildlife, pollution, shortages in fuel wood, landslides due to slope instability, and several geomorphic hazards in Khumbu valley (Eckholm, 1975, 1976; Sterling, 1976; Reiger, 1981; Byers, 1987; Abbott, 1985; Sherpa, 1985). These became a basis for many past and on-going development projects in Khumbu region although many authors raised the issue about contradictory data base and also questioned the soundness of formulating management policy on the subjective interpretation (Currey, 1984; Thompson and Warburton, 1985; Ives, 1985, 1986; Thompson, Warburton, and Hatley, 1986; Hamilton, 1986a, 1986b; Ives and Messerli, 1987; Byers, 1987).

Many foreign aid agencies, INGOs, and NGOs started to work in Khumbu to restore its environment. Among them, Sagarmatha National Park Forestry Project (SNPFP) worked more than 30 years to restore the forest in Khumbu. The project was initialized by Sir Edmund Hillary in conjunction with the Sir Edmund Hillary Foundation of Canada (SEHFC), the Himalayan Trust, New Zealand (HT NZ), the Himalayan Trust, Nepal (HT NP), Sagarmatha National Park (SNP), and Department of National Parks and Wildlife Conservation (DNPWC), Nepal. At the time, the project was handed over to the local people in 2010, it was claimed that it had achieved most of the project goals in particular: the creation of good nurseries producing excellent seedlings which has led to successful planting with good survival; the development of enough resident forestry skills; limited areas suitable for more planting due to land use pressure for agriculture, grazing and settlement; and adequate resident funding in the form of the Sagarmatha National Park Buffer Zone (SNPBZ) Programme. The involvement of multiple institutions

such as SEHFC (donor), the HT NZ (INGO), and the HT NP (NGO) in a reforestation programme of a remote place of Nepal is really fascinating to analyze how stakeholders of this project perceived its decades of accomplishments.

It is very important to understand that Nepal's development, natural resource conservation, and political economy has for decades been deeply intertwined with practices of international aid and politics. While foreign development assistance entails certain hopes and aspirations for many, it is important to understand its limits. Indeed, there are persistent concerns around what aid means for this country, what has or has not been achieved, and who really benefits from it and who loses? In more specific terms, it has become increasingly relevant to look into how aid can be mobilized along the interests of those who and what are portrayed as aid beneficiaries. This study, " An Evaluation of the Sagarmatha National Park Forestry Project (SNPFP), Khumbu, Nepal: A Community Stakeholder Approach ", represents a community stakeholder approach to evaluate the effectiveness of foreign aid and NGO involvement in an impacted community.

The research questions for this thesis include:

- How do stakeholders of SNPFP perceive the performance and impacts of foreign aid and NGO-driven reforestation programme in Khumbu? Is SNPFP making a real difference in Khumbu?
- How do stakeholders of SNPFP perceive its hand-over? Should SNPFP have been handed-over sustainably to SNP and local people in a long term?

1.3 Organization of thesis

The general introduction and research questions of the study are described in chapter one. The literature concerned with the physical and cultural landscape, the people, vegetation, environmental degradation, foreign aid, and related NGO and INGO activities in Khumbu are reviewed in chapter two. The qualitative field methods adopted toward the fulfillment of project objectives and data analysis techniques are discussed in chapter three. Results of the analysis on stakeholder's perceptions towards SNPFP are presented in chapter four. Discussion and conclusion of the overall results of the study are presented in chapter five. Finally, future research directions, and study limitations are presented.

2. LITERATURE REVIEW

This chapter deals with comprehensive literature review which was undertaken for this research. It begins with a description of a study area and focuses on the trends of deforestation in Khumbu followed by the management responses on it. A detailed description of SNPFP is then presented as a focus of the study followed by some descriptions and discussions on roles of foreign aid, INGO, and NGO sector as actors of development in the developing countries like Nepal.

2.1 Study area

2.1.1 Khumbu, Nepal: regional and physical setting

Nepal consists of six broad physiographic units: the Terai, the Siwaliks, the Middle Hills, the Transition Zones, the High Himalaya, and the Inner Himalaya (Nelson *et al.*, 1980; Brunsdon *et al.*, 1981). In addition, there are the deep river valleys and gorges that separate the massif blocks of the High Himalaya which are collectively referred as the Inner Valley System (Stainton, 1972: 41-49 and Byers, 1987: 11). Located in the eastern mountains of the Himalayan range, the Khumbu region extends from the Tingri District of Tibet to the junction of the Dudh Koshi and Bhote Koshi rivers that originate in Tibet. The Khumbu is always highlighted by the presence of the highest peak of the world, Mount Everest or Sagarmatha and other peaks over 6,000 meters such as Nuptse, Lhoste, and Ama Dablam (Abbott, 1985).

The Everest region comprises three Village Development Committees (VDCs) of the district, each of which further divided in to nine wards. The Khumjung and Namche VDCs cover the northern part of the Everest, also called Khumbu (Figure 1), while Chaurikharka VDC covers the southern part, also called Pharak. The Khumbu region is designated as Sagarmatha National Park and the Sherpa settlement inside the national park and in the Pharak region are designated as SNP Buffer Zone. The SNP and buffer zone in total cover an area of 1,423 square kilometers (Sherpa, 2012). The Everest region is considered to be a *beyul* by the Sherpas : "a sacred hidden valley set aside by the progenitor of Tibetan Buddhism, Guru Rinpoche, as a refuge for peoples in times of need, where people must refrain from negative actions that are inconsistent with Buddhist Philosophy, including the harming or killing of any living things, from humans to animals and plants" (Spoon and Sherpa, 2008).

The population of the Everest region is about 7,000 while more than 29,000 tourists registered at the national park gate in 2011 (SNP Office, 2012). According to Sharma (2008), the revenue collected

at SNP in 2007 amounted to more than 20 million Nepali Rupees (\$243,353 USD), 90% of which is generated from tourism. Therefore, tourism is one of the largest sources of income for the residents of Khumbu and its development as well. The local economy directly or indirectly depends on tourism as most of the residents engage as porters, guides, hotelkeepers, and shopkeepers (Brower, 1991).

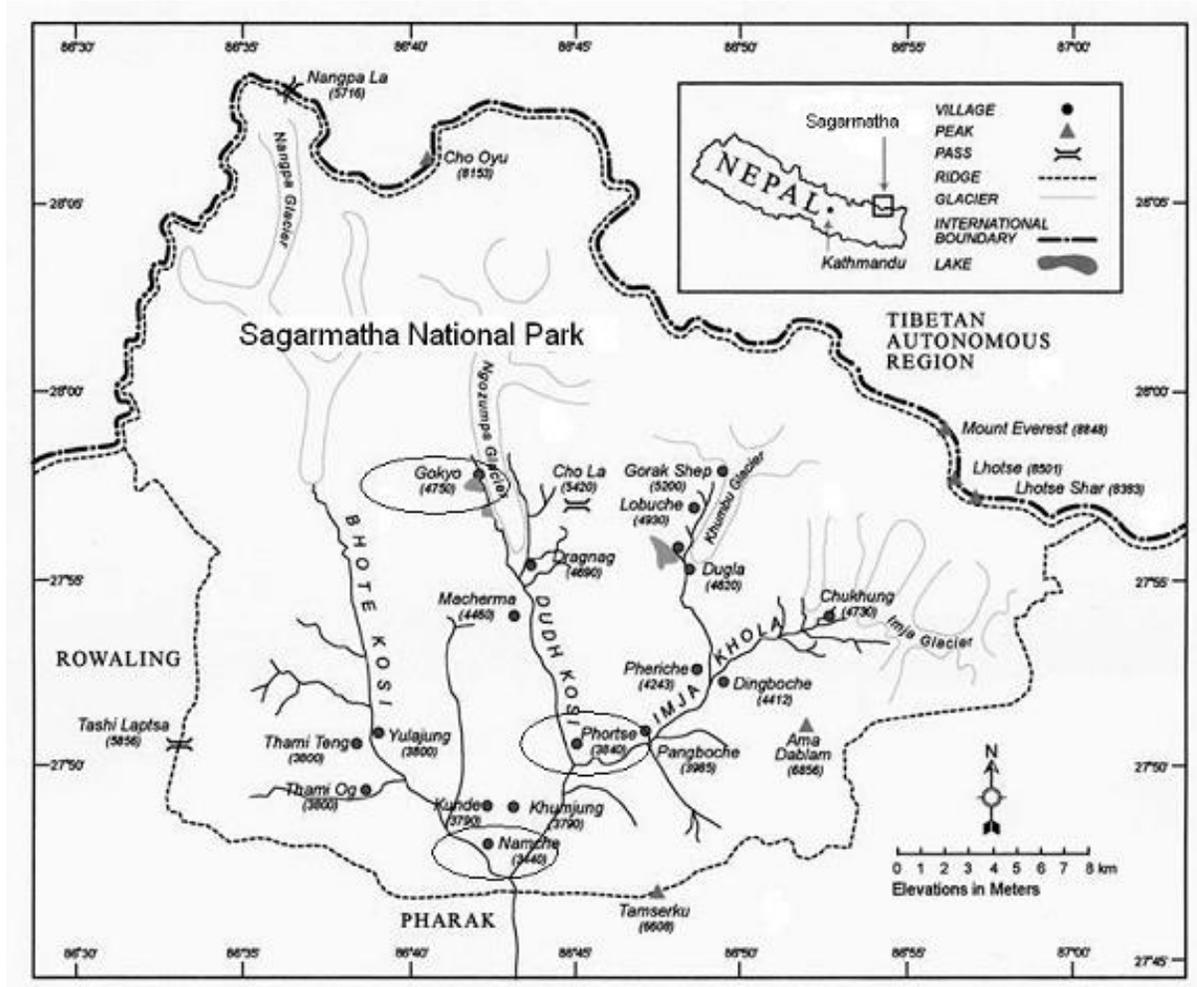


Figure 1. Map of the Everest region showing Khumbu and SNP (Spoon, 2008)

2.1.2 Vegetation of Khumbu

The variation in altitude, slope, steepness, and landforms heavily influences the local vegetation of Khumbu (Kihara, 1955; Polunin and Stainton, 1984). Haffner (1981) modeled the vegetation, land utilization, and settlement patterns as found within the south and north facing physiographic land units of the *Imja Khola* valley. The vast expanses of snow, rock, and ice above 5,500 m hardly provide the chance of growth of life with the exception of occasional Aeolian elements. A small cushion plant,

Stellaria decumbens, has been collected at 6136 m and considered as the uppermost limit of vascular plant growth (Swan, 1961). Between 5,500 m to 4,900 m, especially on the moist north facing slopes, cushion plants, herbs, and grasses (*Anaphalis*, *Arenaria*, *Bistorta*, *Cremanthodium*, *Delphinium*, *Kobresia*, *Leontopodium*, *Logotis*, *Meconopsis*, *Poa*, *Potentilla*, *Primula*, *Rhodiola*, *Saxifraga*, *Sibbaldia*, *Swertia*, *Tanacetum*, and *Waldheimia* spp.) dominate the ground cover and 4,900 m is the upper limit for moist and matted alpine vegetation of dwarf rhododendron (*Rhododendron setosum*, *R. anthopogon*, *R. nivale*), shrub juniper (*Juniper squamata*, *J. indica*), alpine plants (*Ephedra*, *Cassiope*, *Gaultheria*, *Primula*), and some other grass species (Swan, 1981). A thick and shrubby, but less than 50 cm high, rhododendron formation (*R. campanulatum*) is found at approximately 4200 m and continues down until the forest line and is demarcated by pure strands of more than 2 m high *R. campanulatum* and *R. campylocarpum* at the elevation between 3,900-4,000 m.

Actually, these rhododendrons form a thick, dense, and impenetrable belt between 3,800 -4,000 m. fir, birch, rhododendron, and mixed hardwood associations dominate the north facing hill- slopes down to the elevations of approximately 3,200 m (Byers, 1987). The local conditions of the region play a crucial role in species richness, floral diversity, density and composition. In general, northerly and easterly aspects exhibit a more thick, dense, and continuous cover and greater species richness than is found on the southerly and westerly slopes. Southern aspects are generally characterized by dry, terraced shrub lands and grasslands with a large variety of herbs, forbs, and grasses. Above the altitudinal perimeters of most villages and settlements areas, the micro-topography gradually shifts from the heavily to lightly terraced hill slopes, and a herbaceous groundcover takes on a more continuous distribution. Likewise, the moister east-facing aspects of the valleys exhibit a more continuous and dense vegetation cover than do the south-facing slopes. More interestingly, winter dormancy seems like an adaptive strategy for survival of many Khumbu plants (Haffner, 1981: 256). These have been described for alpine and sub-alpine plants in other parts of the world (Price, 1981: 293-300; Billings, 1974).

Fir, birch, rhododendron, juniper, and pine are five major species of trees found in the Khumbu forests. The southern aspects or drier locations are covered by juniper (*J. recurva* and *J. indica*). Likewise, the moister northerly aspects of the *Imja Khola* and *Bhote Khosi* contain large coverage of mixed fir (*Abies* spp.), silver birch (*Betula utilis*), and rhododendron (*R. campanulatum*, *R. arboreum*, *R. campylocarpum*, *R. hodgsonii*). Moreover, northern slope also consists of locally important associations of maple (*Acer caudatum*), mountain ash (*Sorbus microphyllus*), willow (*Salix eriostachya*, *Salix*

daltoniana), bamboo (*Arundinara sp.*), and juniper (*Juniperus recurva*) (Speechy, 1976). Additionally, blue pine (*Pinus excelsa*), considered as "an aggressive colonizer" (Naylor, 1970: 10), is found along the river bottoms with southerly aspects and grows approximately up to 3,300 m where it will even mix with silver fir (*Abies spectabilis*).

The forest dynamics of Khumbu remains largely unknown as the data base is primarily confined to the admirable work of Naylor (1970) and Byers (1987). However, several contradicting statements exist in terms of Khumbu tree line in the past; the species composition of Khumbu is now fairly known (Numata, 1983a, 1983b; Byers, 1987). Although, the altitudinal limits of tree line and forest line differ among various authors, the fir/juniper/rhododendron forest line of north/south striking Khunde region is located at about 3,953-4,122 m and those at the east facing Dole settlement is located at about 4,000-4,091 m (Byers, 1987).

2.1.3 Khumbu and the Sherpa

Furer-Haimendorf (1963, 1964) reported the first detailed account of Sherpa society, religion, and way of their life (who visited Khumbu in 1953 and 1957), and he periodically reassessed the Sherpa society. Subsequently, the Sherpa of Khumbu have been among the most intensively and frequently surveyed and studied people in high altitudes. Later, Jerstad (1969), Optiz (1968), Funke (1969), Orter (1973, 1978), Schidt-Thome and Thingo (1975), Rhoades and Thompson (1975), Teschke (1977), MacDonald (1980), Limberg (1982), and many others studied specific elements of Sherpa society for different purpose (Byers, 1987; Spoons, 2011). Likewise, Bjonness (1979, 1980) and Brower (1983, 1984, and 1986) have studied animal husbandry practiced by Sherpas. Energy issues have been addressed by Hein (1977), Sherpa (1979), Stern (1983), and Coburn (1982). Medical and demographic studies have been conducted by Lang and Lang (1971), Pawson *et al.* (1984), West (1984), Johnson *et al.* (1984), and Weitz, (1984). The impacts of tourism were assessed by Bjonness (1983), Pawson *et al.* (1984), and Coppock (1978). Additionally, Spoon (2008) analyzed the detailed ecological knowledge of the Sherpa community and its importance in Khumbu.

Some authors still debate the specific details of Sherpa culture and history, but all of them agree on the fact that they are Tibetan people practicing a form of Tibetan Buddhism. Most probably, they migrated to the Khumbu region some 300-400 years ago (Byers, 1987; Spoon, 2011). Hardie (1977) and Bjonness (1980) mentioned that the first Sherpa were probably a nomadic people prior to the introduction of potato from Darjeeling area around 1850 and hypothesized their permanent settlement

followed soon after. On the contrary, Furer-Haimendorf (1963:154) cited records which described 169 households in the Khumbu in 1836 and suggested that permanent settlements existed by the late 1700s and even before then (Byers, 1987).

Sagarmatha National Park (1979) reported the population of approximately 2895 Sherpa in Khumbu while Pawson *et al.* (1984) reported a population of 3,108 in 1982. Barley, wheat, buckwheat, potatoes, and dairy products from yak and crossbred *dzum* (Female hybrid between nak and cow bull or cow and yak) and *zopkio* (Male crossbred between yak and cow or cow bull and a nak.) herds provide the staples for the Sherpa people (Byers, 1987). Sherpa people moved their herds and cattle to the higher summer pasture regions during the monsoon season for grazing, returning to the settlement area in the fall, and send them to the high valleys during the winter months where they are occasionally stall fed but mostly encouraged to forage the available pasture (Brower, 1983; Garratt, 1981). This process is kind of mandated to all cattle owners by a village determined ordinance, most likely with historical origin more than 150 years, to allow the unhindered production and storage of fodder grass in the lower valley regions during the year's most productive period, which may then be transported to the winter forage area upon need (Byers, 1987; Spoon, 2011).

Khumbu forests are an integral part of Sherpa people and village life at Khumbu. Forests provide fuel wood, litter, structural timbers, grasses, and grazing pastures. However, resources from the forest were harvested heavily during 1950s to 1970s. Fuel wood collection and timber harvesting from most remaining forests on southerly slopes and in the vicinity of villages has been banned since the park establishment in 1976. Fuelwood and deadwood can be harvested now only in the designated area especially on the northern slopes of the *Imja Khola* (a tributary of the Dudh Koshi river which drains the slopes of Mount Everest). In a specific time of the year in a limited amount per household is permitted to be harvested as directed by the park. Similarly, essential structural timbers are now imported from areas south of the park although limited harvesting permits might be granted on occasion by the park Warden. Litter is also swept from the forest floor twice a year in a specific granted period to use as animal bedding or to store in local outhouses prior to its re-distribution on fields as compost (Personal communication with Assistant Warden, SNP, Bhumi Raj Upadhaya, 2012). However, fuel wood consumption is frequently cited as a contemporary cause of landscape degradation and forest removal from Khumbu. Naylor (1970) reported 4,090 kg/household/year and Sherpa (1979) mentioned 4,927.5 kg/household/year, although these data were primarily based on interviews (Byers, 1987). A household survey conducted by Byers (1987) among six households in Khumjung in 1984 revealed 3.8 kg to 11.8 kg

of fuel wood per household per day. Fuel wood used trend is drastically reduced now a day because of micro-hydro developments in different locations of Khumbu (Personal Communication with Warden, SNP, Ram Chandra Kandel, 2012).

Initially, the Sherpa economy primarily depended on the trade with the Tibet; however, trade was greatly impacted by the border restrictions imposed by the Chinese in the late 1950s (Fuer-Haimendorf, 1975). Additionally, the gradual intervention of mountaineering and tourism seems to have cushioned many economic effects to the Sherpa people (Byers, 1987). However, people from Darjeeling area were recruited initially to facilitate mountaineering and expedition; the Sherpa people received international attention after the successful conquest of Mt. Everest in 1953 by Sir Edmund Hillary and Tenzing Norgay Sherpa. Later, Sherpa people were provided with the opportunities to demonstrate their climbing and logistical skills via mountaineering, trekking, and expedition parties. Subsequently, several mountain documentaries, scientific publications and graduate student dissertations continued to focus global attention on the Sherpa of Khumbu and their changing pattern in lifestyle (Spoon, 2013). The exponential growth in tourism from early 1960s to 1979 created inflation due to additional sources of income among Sherpa people. It caused development of newly built lodges, renovated houses, temporary tent camps, and settlements. It also resulted in a shortage of local manpower due to the removal of young men from villages during the trekking/mountaineering season which subsequently created a permanent need for the hiring of seasonal, non-Sherpa people. More interestingly, several authors opined that exposure to the western cultures have modified certain moral standards, value systems, traditions, and even quality of life (Coppock, 1978; Fuer-Haimendorf, 1984; Byers, 1987; Spoon, 2013). The growing tourism industry motivated development of quality hotels and lodges even in previously uninhabited areas. A "traditional subsistence agriculture/long distance trade "has changed to a "transitional agriculture/service oriented" system which potentially depends on natural resources mainly in terms of deforestation to fulfill the need of fuel wood (Byers, 1987; Spoon, 2013).

2.1.4 Indigenous practices of forest management in Khumbu

There was a village law system in Khumbu called as *Yul-thim* made by influential people in the village. In general, under the *Yul-thim* (a "Village Law" in Sherpa language), the appointment of *Shingi nawas* and *Lotok nawas* (a community appointed voluntary enforcer of agricultural regulations) took place. The *Shingi nawas* had the responsibility of protecting the village-protected forests, while *Lotok nawas* enforced the laws regarding cattle and agricultural production (Hardie *et al.*, 1987). Despite the change in Sherpa lifestyle and economy, *Lotok nawas* is always in practice and never interrupted.

However, the system of *Shingi nawas* has interrupted and failed many times (Personal Communication with Warden, SNP, Ram Chandra Kandel, 2012).

The Nepalese government formulated the *Forest Nationalization Act, 1957* to preserve the forest resources. However, this act came as a policy for the protection and commercial use of forests; local people found this act against the traditional right of the local and indigenous people of the country. This conception of local people motivated them to exploit the forest resources (Sherpa, 1985; Byers, 1987; Abbott, 1985; Mohan, 1981). As a result, the *Shingi nawas* system in Khumbu did not work as the village governments owned the responsibilities and dedications for maintaining the resources which previously existed among the villagers. This change in legislation further posed the threats to the forests resources. Likewise, the arrival of influx of refugees in the early 1960s also caused the conflict among the local people and *Shingi nawas* system was interrupted. Furthermore, the concept of the establishment of SNP in early 1970s also caused the further interruption of *Shingi nawas* system.

Later, when administrators of SNP realized that there was a strong need of different form of public participation in SNP to enforce the park laws, this traditional system of forest guards (*Shingi nawas*) was re-established in 1981. Initially only four *Shingi nawas* were appointed with the help of SNP Warden in the Khunde village. This proved successful. Later, in 1982, one *Shingi nawas* was appointed from each ward of each village *Panchayats* (the local government authority) for a total of 18 *Shingi nawas* all together in Khumjung and Namche village *Panchayats*. *Shingi nawas* are now directly responsible to the Warden of SNP and the Presidents of VDCs, and their duties include reporting the illegal cutting of green wood in their respective villages. Spoon and Sherpa (2008) claim that the traditional *Shingi nawas* forest management and protection system that existed prior to the establishment of SNP still regulates firewood collection in the national park territory. There is a decent system of appointing *Shingi nawas* by village assemblies in rotation and they receive the support of park staff and VDC along with the modest prize for their work (Personal Communication with Assistant Warden, SNP, Bhumi Raj Upadhaya, 2012). The re-introduction of the forest guards system well accepted by Sherpa community and has counteracted the massive problems of destroying forests for fuelwood and still acts as a milestone in conservation of Khumbu forests.

Stevens (1993) explains the Khumbu Sherpa's indigenous forest management system regulates the amount of sub-alpine trees harvested in nearby forests for both spiritual and secular reasons. For instance; sacred groves and lama forests are spiritually restricted forests, where timber cannot be felled,

although collection of leaf litter and other products from the forest floor is allowed. Likewise, Colding and Folke (2001) assess the conservation value of multiple taboos and opined that they can serve as informal institutions that can have the same advantage as formal institutions in biodiversity conservation. However, there is a general trend occurring among the younger generations to have less of a spiritual connection with the landscape due to the influences of tourism. Literature indicates that the most knowledgeable individuals having protection and conservation thoughts in Khumbu include those less market integrated individuals such as elders, less educated males and females, yak herders, present and past tourism service providers, and *Shingi nawas*.

2.2 Deforestation in Khumbu

The mountaineering and climbing expeditions, and the trekking business, since the mid-1960s, normally has been held responsible for much of the forest and alpine shrub removal from Khumbu. Later, since the establishment of the park in 1976, expeditions has been required to import their own chemical fuel, but appeared to do so only after 1984 (Byers, 1987). Based upon two weeks of fuel wood monitoring in a tourist lodge in Namche Bazaar, the annual consumption rate is more than 8,000 kg per household for villages experiencing high rates of tourism (Stern, 1983). The Park tried to enforce the same rule to trekking groups and individual trekkers but enforcement was more problematic and was not successful (Bjonness, 1980).

Between the 1960s and 1980s, several researchers and authors frequently highlighted Khumbu as a representative case study regarding environmental degradation and mismanagement of high Himalayan mountain land resulting from the conversion of the large scale forest to shrub/grassland which had been previously unaffected. Forest removal, overgrazing, and soil erosion induced more serious problems and influenced the breakdown of traditional indigenous management systems. Additionally, the introduction of 6,000 Tibetan refugees in the early 1960s accelerated environmental degradation at Khumbu along with the growth of tourism, and various other factors (Byers, 1987; Spoon, 2013). The anthropologist, Furer-Haimendorf, who pioneered studies of the Sherpa, noted that the forests of Khumbu were in very good condition until late 1950s as compared to the lower land where peasants of Brahmin, Newar, and Chhettri communities already degraded the forest resources (Furer-Haimendorf, 1964: 112).

Based on citations from the literature and personal communication with the local people of Khumbu, it was clear that Khumbu people applied indigenous conservation strategy by appointing *Shingi*

nawas and *Lotok nawas* to fine villagers cutting greenwood or abusing village sanctioned land and forest under regulations (Sherpa, 1979; Byers, 1987; Spoon, 2013). However, the nationalization of forest land in 1957 discouraged the traditional regulatory system and encouraged forest removal in Khumbu. It prompted Furer-Haimendorf to write a book, *Himalayan Traders: Life in Highland Nepal* in 1975 (Byers, 1987). In this book, the author stated that "forests in the vicinity of Khumbu villages have already been seriously depleted, and particularly near Namche Bazaar whole hillsides which were densely forested in 1957 were bare of tree growth in 1975 and villagers have to go further and further to collect dry firewood" (Furer-Haimendorf, 1975: 97-98). Furthermore, the message of the forthcoming establishment of a national park in 1976 led to heavy timber and firewood harvesting to overcome from anticipated restrictions (Jefferies, 1982; Coburn, 1983; Hinrichsen *et al.*, 1983; Byers, 1987; Furer-Haimendorf, 1984; Spoon, 2013).

During the phase of establishment of SNP, New Zealand and Nepalese government officials drafted many studies regarding depletion of forest resources in Khumbu. The conclusions were that "forest destruction would result in disastrous erosion leading to enormous economic and aesthetic loss to the country" (Mishra, 1973). Likewise, Lucas *et al.* (1974) mentioned that he and other New Zealand mission members "saw too much evidence of incipient erosion to feel other than a sense of deep concern for the future". Browler (1983b: 6-7) frequently cited large landslides, torrent-like features, and gullies in Khumbu region as the effects of overgrazing. Bjonness (1980: 270) wrote that overgrazing "has led to a heavy depletion of vegetation" which, along with deforestation, has barely left vegetation which can hold the soil. More interestingly, the word *Namche* in the Sherpa language means "dense forests"; while the village today is conspicuous for its lack of trees (Byers, 1987).

From the aforementioned literature, it seems that Sherpa people arrived in Khumbu a few hundred years ago in the form of Tibetan yak herders in an unpopulated Himalayan mountain region which is densely forested below 13,000 ft. They caused landscape modification as trees from southern slopes were removed to obtain timber and firewood and also caused formation of more pasture area to support increasing population of man. However, natural balance was still observed until late 1950s as Sherpa people applied locally sanctioned land and forest management systems (Naylor, 1970). Subsequently, the breakdown of the local management system began with the *Forest Nationalization Act, 1957* which caused opportunistic villagers to remove all trees from adjacent areas of Namche, Khunde, Khumjung, and Syangboche (Furer-Haimendorf, 1975). Furthermore, the influx of Tibetan

refugees in the early 1960s, tourists, mountaineering, and expeditions parties demanded more resources which lead to pronounced deforestation within 20 years.

2. 3 Management responses of deforestation in Khumbu

The problems of Khumbu have become a major concern for international agencies such as the United Nations Economic, Social and Cultural Organization (UNESCO) and international governments such as New Zealand and India (Abbott, 1985). Likewise, Nepal's strategic position in buffering two powerful neighbors, India and China, also marked by the western world, and the country's obvious need, as one of the developing countries in the world, has provided broad scope for the foreign aid. Additionally, through the multinational organizations such as the Food and Agriculture Organization (FAO) and the United Nations Development Programme (UNDP), assistance was sought to mitigate the environmental problems that Nepal has faced as an agricultural country in a predominantly mountainous region with a rapidly growing population. A portion of this assistance has been directed to the development of the conservation and management strategy of the nation. Therefore, several management strategies were initiated with the help of international aid. Major strategies include: the establishment of DNPWC; the establishment of SNP; and the initiation of reforestation.

2.3.1 The establishment of DNPWC in Nepal

Sherpa (2005) explains the key motivators behind the creation of protected areas in Nepal to be the growing global environmental movement and concerns over the degradation of mountain forest and subsequent soil erosion. These served as major issues for the national and international movement to establish the institutions that deal with protection of nature in Nepal. After the establishment of the National Parks and Wildlife Conservation Section within the Forest Department, the strengthening of protected area institutions began in Nepal in the early 1970s. To empower the development of the protected area system legally, *the National Park and Wildlife Conservation Act* was enacted in 1973 which established the Royal Chitwan National Park as the first national park of the country in the same year and SNP in 1976. In 1980, 3.1% of the total land area of the country was set aside as national parks and protected areas that caused the promotion of the Wildlife Section of the Forest Department into a separate National Parks and Wildlife Conservation Office which subsequently upgraded in the departmental status (Sherpa, 2005). This Department significantly expands its protected area network which has increased the protected land cover to 7.5% in 1990 and jumped into 18.33% by 2004 which includes nine national parks, three wildlife reserves, three conservation areas, and one hunting reserve

covering a total of 27,874 km² (Spoon, 2008). Figure 2 illustrates the map of protected areas in Nepal. SNP was a part of the first cohort of National Parks in Nepal under the umbrella of DNPWC which is in turn under the Ministry of Forests and Soil Conservation.

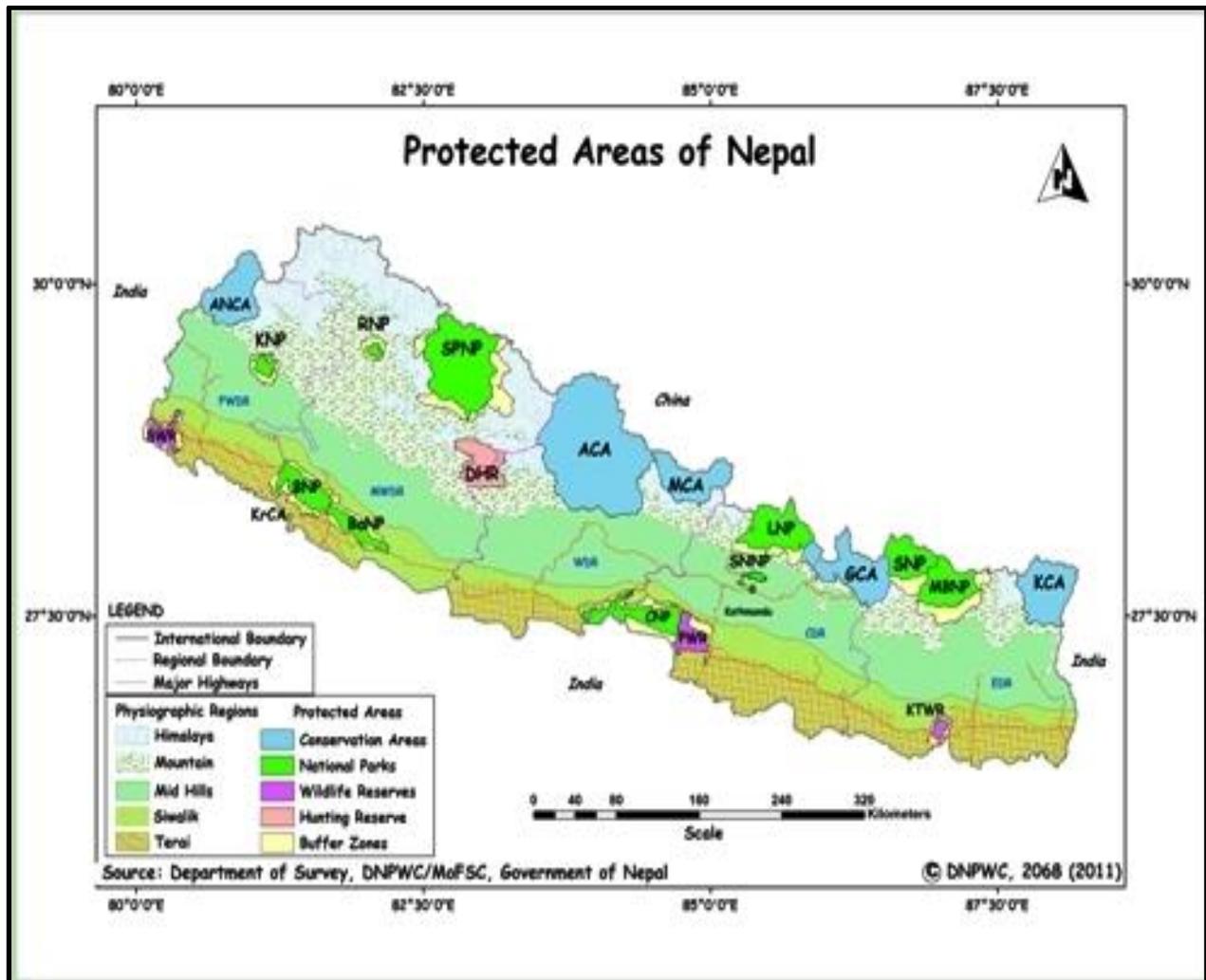


Figure 2. Protected areas of Nepal (DNPWC, 2013)

2.3.2 The establishment of SNP

2.3.2.1 Origin of SNP

The SNP was established with the technical and financial assistance of the New Zealand (NZ) Government as the initiative taken by the Sir Edmund Hillary. Several forestry and conservation experts from NZ were involved in carrying out management planning and development of infrastructure in Khumbu. Many New Zealanders spent months and years during the process (Sherpa, 1985; Abbott,

1985). With the green signal of NZ Government, Prince Gyanendra announced the decision of His Majesty's Government to proclaim 500 square miles of the Everest region as a national park during the 1973 World Wildlife Fund Congresses in Bonn (Abbott, 1985). As his continuous effort, Hillary approached the NZ Ministry of Foreign Affairs in 1974 and was successful in lobbying for action. Subsequently, following a joint visit with His Majesty's Government and FAO ecologists; the NZ mission formed the basis of the present management plan, the development of visitor's center, and the programme to train the local people in park management in 1974. The first NZ's National Park advisor moved to Namche Bazaar in 1975, and on July 19, 1976, the SNP was officially established (Boulton, 1975; Abbott, 1985). At that time, the NZ Government agreed to the overall aid program amounting to \$NZ 300,000 for a five year period, and the responsibility of the NZ project involving three main components: the researching and management production plan; the infrastructure construction in Khumbu; and the training of Nepalese in New Zealand under the Colombo Plan (Lucas, 1977; Jefferies, 1982). This initiative caused construction of a park center on a knoll above Namche bazaar, accommodation and camping complex in Thangboche, and garbage disposal amenities at different locations. Subsequently, a reforestation program was begun around the park buffer zone (Sherpa, 1985; Abbott, 1985). The great deal of suspicion and resentment which existed in the beginning between the park and its regulations concerning use of forest resources were substantially improved when NZ-trained Sherpas took positions in the park's management. However, the enforcement of these regulations was very difficult as fire wood was only source of cooking and heating for the Sherpas (Jefferies, 1982; Ridgeway, 1982). The realization by park officials of daily need of firewood initiated the promotion of alternate energy sources in Khumbu.

2.3.2.2 Geography of SNP

The SNP lies in the northeastern region of Nepal in Solukhumbu District of Sagarmatha Zone. The park consists of the catchment of three major rivers: *Dudh Koshi, Bhote Koshi, and Imja Khola*. The park's northern boundary skirts an approximately 40 km section of Nepal and China (Tibet) border that includes the world's highest mountain, Mt. Everest (8,848 m). To the south, the park extends to Monjo (2810 m), the confluence of the two ridges of Tamserku peak and Kwangde peak. In the upper valleys above 4,000 m, glaciations has created U-shaped valley profiles and lower valleys are essentially very steep sided with a V-shaped valley profile. The natural mountain boundaries of the park surround a series of north-south trending 5,000-6,000 m ridges and peaks (Fushimi, 1978; Vuichard, 1986; Byers, 1987). Figure 3 illustrates the boundary of SNP and its Buffer Zones.

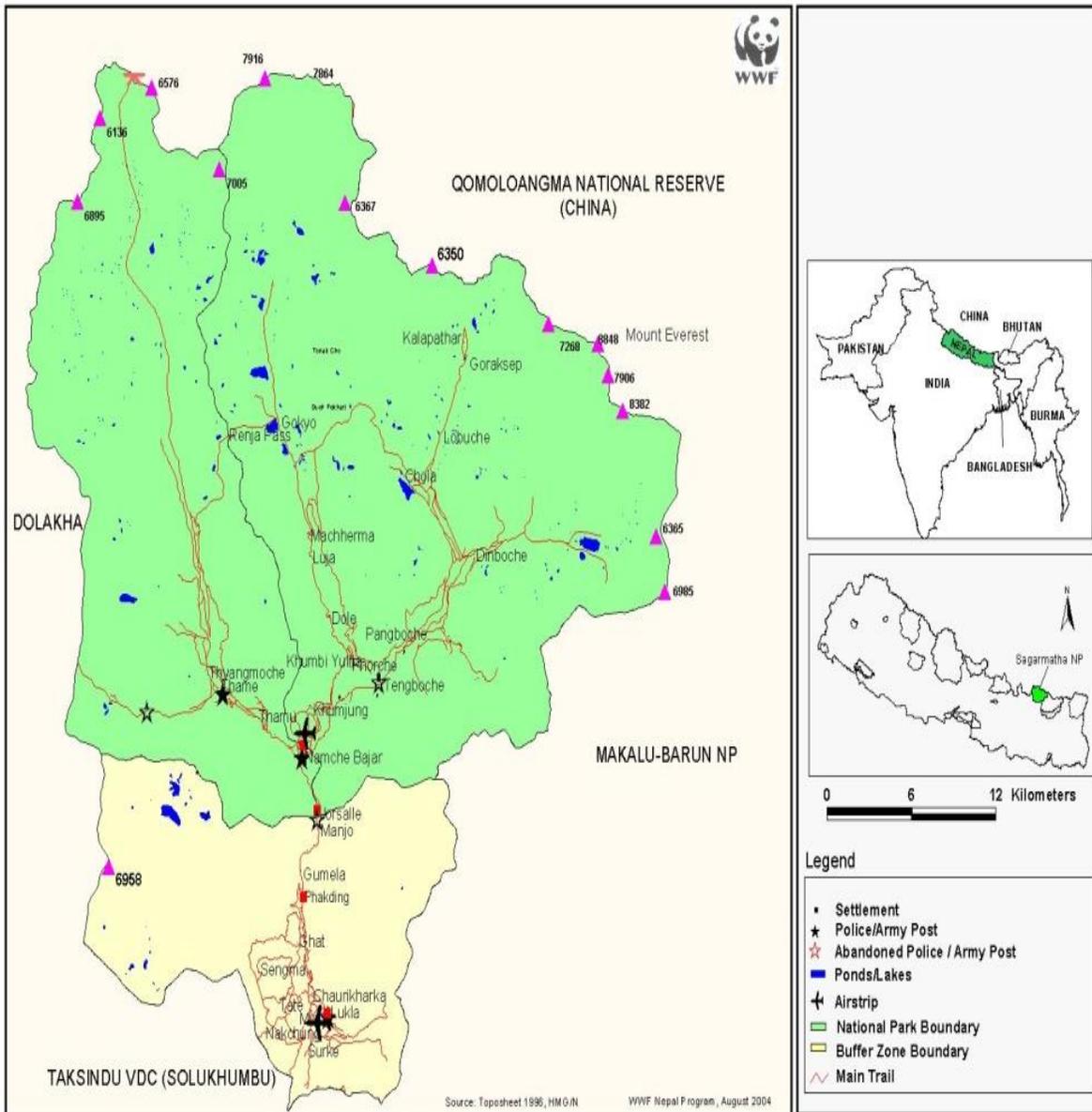


Figure 3. Sagarmatha National Park and Buffer Zone (SNP/BZ) (WWF, 2012).

Geographically, the park area lies within the subtropical Asian monsoon zone which is characterized by pronounced maximum summer rainfall with more than 80 percent of the annual precipitation falling during an approximately 4 month period between June and September (Mani, 1981; Barry and Chorley, 1982). The average annual precipitation for the park headquarters, Namche Bazaar is 1071 mm (based on a 24 year record) and the climate of this area has been classified as "cold humid and

tropical". However, the climates of villages located further north and at higher altitudes are generally drier and cooler (Spoon, 2008).

2.3.2.3 Management strategies and public participation in SNP

Legally, the SNP was established under the rules and regulation of *National Park and Wildlife Conservation Act 1973*. According to this Act, the park is an "area set aside for conservation, management, and utilization of animals, birds, vegetation or landscape together with natural environment" (Garratt, 1981). However, the main villages and settlements were excluded in the legal definition of the park. The importance of unique cultural components of Sherpas have been recognized as nationally and the internationally accepted criteria for national park which was approved at the 11th General Assembly of International Union for Conservation of Nature and Natural Resources (IUCN) in 1972. This action recognized the human occupation, traditional land uses practices, and unique cultural activities of Sherpa in Khumbu (Bjonness, 1980b). Therefore, SNP was inscribed on the World Heritage List in 1979 and the UNESCO describes SNP as "an exceptional area with dramatic mountains, glaciers, and deep valleys, dominated by Mount Everest, the highest peak in the World (8,848 m). Several rare species, such as snow leopard and lesser panda, are found in the park. The presence of the Sherpas with their unique culture, adds further interests in this site" (Brower, 1991).

Initially, park management was very difficult as the government in one hand wished to develop the area for tourism and earn foreign currency. On the other hand, the local people wanted to continue traditional uses of forests and to obtain the benefit of tourism at the local level (Sherpa, 1985). The lack of understanding between the national and local level about the approach of management plan, the rules and regulations were frequently broken by the local people who developed negative attitude towards the park which caused increase in deforestation. The park also started a reforestation programme by planting seedlings raised from locally collected seeds; however, the fastest growing timber species such as blue pine (*Pinus wallichiana*) take more than 60 years to mature (Ridgeway, 1982; Sherpa, 1983; Sherpa, 1985). These lessons warned the park management that there was an urgent need for active public participation in decision making. Since the park's concept was new to the region, the law enforcement to achieve protection and conservation of Khumbu resources seem impossible without local consent. It caused the formation of local advisory body to advise the park authorities on matters of park development (Jefferies, 1982).

Initially, park officials and planners overlooked the cultural and historical perspectives of Sherpa land use and there was no documentation of the local participation in park management. However, the establishment of SNP certainly became a real threat to the local inhabitants which has been done without the consent or advice of local people. Many inhabitants feared of being removed from Khumbu to somewhere in the lowlands and their land uses practices had been regarded as ecologically unsustainable. To control the firewood collection activities inside the park, 65 armed guards were operated in 1979 this was not tolerable to public. Despite all these limitations, park management made many considerable efforts to involve the public gradually. For instance, three Park Wardens from the Khumbu region were trained in NZ under the NZ bilateral aid programme, and a Park Advisory Committee (PAC) was formed by incorporating local inhabitants (Sherpa, 1985). The PACs consisted of head lamas of different monasteries, local elected leaders of existed Village *Panchayats* (now called as Village Development Committees), representatives of the district administration office, village elders, young people, and representatives of minority groups such as blacksmith. The PAC was formulated to discuss and advise the park authorities on matters of park management; however, it soon became inactive due to the lack of co-ordination and conflict between park officials and PACs members. The PAC was reactivated in 1981 considering its potential as a source of local knowledge and its influence to prevent conflict between conservation rules and local demands. Since then the PAC has played an instrumental role in conservation by disseminating information and motivating locals about importance of conservation (Sherpa, 1985; Abbott, 1985). In 2006, a new integrated management plan for SNP was prepared, the *Sagarmatha National Park Management and Tourism Plan, 2007-2012*. This plan created an added incentive for the state to consider local economic needs and recognize the rights of the indigenous Sherpa people to the natural resources (SNP Office, 2012).

2.3.2.4 The implementation of buffer zone concept in Nepal and SNP

In 1990s, DNPWC recognized that national parks and protected areas are not independent entities, but rather parts of larger systems. Furthermore, the establishment of conservation areas such as Annapurna, Manasulu and Kanchenjunga taught the lesson that strict control on the local people hinder conservation (Spoon, 2008). As a result, the Buffer Zones concept was introduced in Nepal to include certain lands which deemed significant in and around the protected areas. Subsequently, between 1995 to 2002, Buffer Zones were created around six national parks accommodating more than 69,000 households (Sherpa, 2005). The Buffer Zone concept has a legal provision to reinvest up to 30-50% of the park or protected area revenue to development and enhancement of local residents by

increasing the level of local governance. According to Bajimaya (2005), as of 2005, US \$ 1.28 million was allocated for the Buffer Zones of Royal Chitwan, Royal Bardia and Langtang National Park only. According to the *National Park and Buffer Zone Act* of Nepal, a Buffer Zone is a "peripheral area of a national park or a reserve which may include village settlements and areas of forests and rangelands" (DNPWC, 2007). Bajimaya (2005) and other several authors frequently explain that the major goals of Buffer Zones are to meet the natural resource needs of the local communities and to minimize the human impacts on protected areas by minimizing the conflicts between park managers and settlers. Additionally, this concept also aims at improving local communities into "strong, self-governed institutions capable of undertaking pro-conservation and development activities". Each Buffer Zone consists of a Buffer Zone Management Council (BZMC) and many Buffer Zone User Groups (BZUG) (Sherpa, 2005).

The SNP Buffer Zone (SNPBZ) was declared in 2001 and formally implemented in 2003. It covers three VDCs: Khumjung and Namche located in Khumbu inside SNP, and Chaurikharka in the Pharak. According to *Sagarmatha National Park Management and Tourism Plan, 2007-2012*, the SNP Buffer Zone Management system has three levels of management structures: the Buffer Zone level, Unit level, and Settlement level (Spoon, 2008). The settlement level is represented by 18 ward level Buffer Zone User Groups (BZUG) from Namche and Khumjung in Khumbu and 10 BZUG in Chaurikharka totaling 28 BZUG altogether. Each household in the Ward is included in the BZUG and they elect three representatives from each ward to lead it. Likewise in the unit level, there is a Buffer Zone User Committee (BZUC) in each VDC represented by two members of BZUG from each ward. The BZUC further has an executive committee representing 9-13 members from the BZUC. This executive committee discusses projects before they are brought to the Buffer Zone level. Finally, the Buffer Zone level consists of Buffer Zone Management Council (BZMC) representing three elected representatives from each VDC, the Chief Warden of the SNP, and a member from District Development Committee. Among the three representatives of three VDC, one is elected as chairperson of BZMC to lead the Buffer Zone Management in SNP (DNPWC, 2003). The BZMC allocates the funds to local development project proposals submitted by the BZUC because it receives a partial amount (30-50%) of the funds collected by the state from the foreign visitors in the region. This concept represents the effective management of local resources by the local people in democratic way. The Buffer Zone concept is considered as a key to engaging the public in local conservation

2.3.4 Reforestation in Khumbu

Forests are renewable resources; they definitely require husbandry for their optimum regeneration. Anthropogenic influences have played greater role to regenerate them sustainably. Despite the facts that protection of the forests will derive future economic, environmental, recreational, and aesthetic benefits; forest resources in Khumbu have been mined as a stock resource rather than managed as renewable resources (Sherpa, 1985). The increases in the population density have resulted a serious deforestation and soil erosion problems in the hill region of Nepal (Emmel, 1977; Mohan, 1981). The overcrowding, pressure from shifting cultivators, uncontrolled herds of goats, sheep, cattle, and wood gathering for home consumption caused deforestation everywhere in the country. Furthermore, presence of harsh environment and lack of arable and habitable land made the mountainous region the most economically depressed area of the country (Sherpa, 1999). More interestingly, forest resources near settlement areas have been depleted for fuel and cattle forage; pastures were overgrazed; and cultivation attempted in the marginal land caused heavy environmental degradation. As a result, the frequency of landslides increased and available croplands were reduced which resulted in a poor economy. With no alternative option of employment, people from hill regions of Nepal heavily depend on migrant labour in India and Terai region of Nepal and elsewhere (Mohan, 1981). In spite of those situations, fortunately Khumbu's indigenous population of Sherpa has remained stable in their homeland due to the trekking and mountaineering business having replaced their economy. Despite of temporary survival of Khumbu's Sherpa, there was a urgent need to restore Khumbu's forest for the long term sustainability of the region.

Obviously, with the establishment of SNP in Khumbu, its management has enforced many rules and regulations to control the felling of green trees. However, the enforcement seemed ineffective in many ways because wood has been the only source of fuel for cooking and heating Sherpa homes. As discussed everywhere, due to the lack of alternative energy means, some decent regulations such as requirements of self-sufficient fuel for all mountaineering expeditions, trekkers, visitors, guides, porters, cooks and researchers were ineffective. The continual use of forest resources to accommodate the increased numbers of visitors in Khumbu resulted a serious deforestation problem in many ways. However, many energy alternatives were already practiced which technically reduced the firewood problem in Khumbu, but barren lands due to the heavy deforestation could no longer support any trees and vegetation. This increased the threat of landslides and soil erosion in the region. In response to this,

international communities and SNP has carried out extensive reforestation programmes in Khumbu to tackle the situation.

The scope of the reforestation programme seemed so vast due to the cold climate, slow growth rates, and availability of limited native species. Therefore, the Khumbu reforestation programme seemed not cost effective programme in a short term but its potential value for providing habitat of wildlife, soil stability, and many other environmental benefits justify the investment in it. The main species of native plants that can be raised in the nurseries include: Fir (*Abies spectabilis*), Blue Pine (*Pinus wallichiana*), Silver Birch (*Betula utilis*), Willow (*Salix sikkimiensis*, *Salix daltoniana*), Rhododendron (*Rhododendron. campanulatum*, *R. arboreum*, *R. campylocarpum*, and *R. hodgsonii*), Maple (*Acer caudatum*), Mountain Ash (*Sorbus microphyllus*), Bamboo (*Arundinara sp.*), and Juniper (*Juniperus recurva*) (Personal Communication with Assistant Warden, SNP, Bhumi Raj Upadhaya, 2012). However, initially only four species of these native plants: Fir (*Abies spectabilis*), Blue Pine (*Pinus wallichiana*), Silver Birch (*Betula utilis*), Willow (*Salix sikkimiensis*) were raised in the nurseries (Sherpa, 1985). Because of the slow grow rates, and difficulties of reforestation on large bare slopes, technical and regionally suitable technical forestry skills were needed in Khumbu to discover scientific procedures which would influence the slow grow rates of native species at Khumbu.

Hardie *et al.* (1987) documented that the earliest effort of reforestation began at Khunde hospital area in 1966 by the first VSA (Volunteer Service Aboard) medical couple. This couple raised the seedlings for planting from locally collected tree seeds in Khumbu forests. Subsequently, this trend was continued by other medical volunteers. Despite their initiation, enthusiasm and effort, the seedlings generally failed to grow because of lack of protection.

When Khumbu was proposed as Sagarmatha (Mt. Everest) National Park, the NZ Aid Advisor, Parajuale (Ranger) from the afforestation section of Australia visited Khumbu (from 12th to 28th November 1973) in coordination with the Department of Forests, Nepal to make a technical report on problems and possibilities of reforestation in Khumbu, Nepal. After the visit, he outlined the problems of deforestation and recommended the legislation for the proposed park should be aimed at: restriction on the number of visitors, restricting the number of hotels, guest houses, and tea shops, developing alternate sources of energy, and encouraging the tourists, trekkers, and visitors to use portable cooking stoves (Hardie *et al.*, 1987). He also recommended numbers of plots in different part of hill slopes for reforestation. Four sites totaling about 200 acres were recommended for reforestation. He also recommended the suitable nursery preparation site in Namche Bazaar. Moreover, seed collection,

sowing and seedling preparation techniques were described and documented including expenditure estimates for proposed nursery preparation and reforestation (Mather, 1973). Later, from 1975 to 1981, the Government of NZ supported a bilateral aid programme to establish SNP in Khumbu Valley. This programme also contained a forestry component to recover Khumbu forests which developed in 1979 as a separate project called the Sagarmatha National Park Forestry Project (SNPFP). Despite this reforestation programme seemed complex and unachievable. However, there was a good local support to implement the reforestation project. As a result, three well managed plant nurseries were established at Tashinga, Phorste, and Phurte and many plantation plots covering 300 hectares were established in Khumbu (Ledgard, 2010). The details of SNPFP is presented as a separate section below.

2.4 Sagarmatha National Park Forestry Project (SNPFP)

This section based on secondary data sources and personal observation during a field visit deals with the analytical summary of SNPFP in terms of its origin, its activities for more than 30 years in Khumbu, and its hand-over to the SNP and local people. These secondary data sources include: available annual reports of SNPFP, published and unpublished articles concerning with the reforestation in Khumbu, and *high altitude forestry manual* prepared by the project at the end by incorporating facts and experiences of Khumbu reforestation (Ledgard, 2010).

2.4.1 Origin and development of SNPFP

Initially, SNPFP started with the assistance of NZ government which supplied finance and expertise through the Volunteer Service Aboard (VSA) and National Forest Research Institute (NFRI) between 1975 and 1981. Foresters from NZ were recruited by VSA and served under their conditions on two year assignments. Their experience with raising locally collected seeds in the nursery proved successful (Ledgard, 2010). Since New Zealand aid was only from 1975 to 1981 and was withdrawn in 1981, Sir Edmund Hillary and his Himalayan Trust proposed that the SEHFC become involved with the National Park Department in a project to establish new plantations and expand and upgrade the nurseries in the Mount Everest region in 1979. The forestry work developed into a separate project, the SNPFP. SEHFC is the Canada based organization established by Zeke O'Connor, a close friend of Edmund Hillary, to honor Sir Edmund Hillary and Khumbu people.

When the NZ Bilateral Aid Project terminated in 1981, forestry activities were taken over and financed by the HT NZ with the program control being undertaken by the SNP's Warden for a transition period. The HT NZ provided Nepalese Rupees (NRS) 100,000 (\$NZ 10,000) per annum from 1982 to 1984

for the forestry work. From 1985 onwards, the funding was increased to NRS 300,000 (\$NZ 30,000) for a period of five years due to the assistance provided by the SEHFC. The SEHFC took on major responsibility for the SNPFP in 1981 when a formal proposal for planting one million seedlings over a six-year period was approved and funded by Canadian International Development Agency (CIDA) (Gurung *et al.*, 2010). From 1985 to onwards, the SEHFC took the whole responsibility of funding and management of SNPFP through the HT NZ and the HT NP (Hardie *et al.*, 1987). The manpower needed for the forestry work was recruited from the local Sherpa population and a foreman was selected and trained. Actually, the skilled staffs were short in supply in those days, therefore, the Warden of SNP and the forestry foreman were considered as the overseers of all forestry work. However, the Warden was busy with the park administration so that he delegated all the operational responsibility to the foreman. Additionally, by the end of the 1986, there were five permanent nursery operators in three nurseries who were well experienced and competently carried out all nursery operations. Still, there was a gap in overall forestry procedures and the entire project was devoid of expertise which would benefit from direction given by qualified and competent foresters (Hardie *et. al*, 1987).

In 1985, a team of four New Zealanders: Norman Hardie (Team Leader), Dr. Udo Benecke, Peter Gorman, and Penny Gorman, visited the SNP and compiled a major document on the forests of Khumbu with the help of government officials and other staff of SNP and DNPWC, Nepal. They outlined several important recommendations for the SNPFP's future management; however, there were several problems with the immediate implementation of all of these recommendations. There were several delays due to the conflict among local Sherpa people, SNP officials, and SNPFP's implementers. Actually, the professional management of the project recommenced in 1989 when Sir Edmund Hillary (Chairman, of the HT NZ) and Zeke O'Connor (Chairman, SEHFC) visited in the Khumbu region. At that time, they also accompanied by New Zealand Forest Research Institute (NZFRI) Scientist, Nick Ledgard, who has provided major technical assistance for the management of the SNPFP ever since (Gurung *et al.*, 2010). Since 1989, the New Zealand foresters, Nick Ledgard (SNPFP Manager), employed by NZFRI, the SNPFP Supervisor, Ranjit Gurung; Nursery operators, Ang Diki Sherpa, Mingma Chamji Sherpa, Ang Chamji Sherpa, Ang Tharke Sherpa, and Dawa Chhoki Sherpa have played a crucial role (Gurung *et al.*, 2010). Additionally, local environmentalists and foresters, Mingma Norbu Sherpa and Dr. Lhakpa Norbu Sherpa, also contributed in managing SNPFP in different phases of the project. Nick Ledgard visited SNPFP area 12 times (each for 15 to 25 days) during the overall course of the project including his first visit in 1989 accompanying with Sir Edmund Hillary and Zeke O'Connor to take the leadership of SNPFP and last visit on November/December 2010 (From November 21 to December 7, 2010) to hand over the SNPFP to

SNP and local people (Ledgard, 2010). Additionally, Gordon Baker (Forester, NZFRI) and Zeke O'Connor (Chairman, SEHFC) visited a few times in absence of Nick Ledgard. Likewise, the Warden, Assistant Warden, Rangers, Game Scouts of SNP, and whole Khumbu community also assisted in the activities of SNPFP in many ways.

Since then combined effort of the HT NZ and the SEHFC continually made a contribution to reforestation in Khumbu through the HT NP in conjunction with SNP. The policy and liaison of SNPFP during its origin are explained by Figure 4, while operational and technical considerations of SNPFP are highlighted in Figure 5. The objective of the SNPFP was outlined as, "To promote the sustainable management by the local people of the forests and shrub lands of SNP area, to provide stable soils, desirable habitats for fauna and flora, and the forest products essential for the long-term survival of local communities" (Gurung *et al.*, 2010). The main project activities were: managing nurseries; selecting plantation sites and establishing plantation; taking caring of already established plantation sites; and promoting education and awareness to local communities and to visiting trekkers for sustainable forest management (Gurung *et al.*, 2010). This project continued over thirty years and finally was handed over to SNP and local people in 2010 (Gurung *et al.*, 2010).

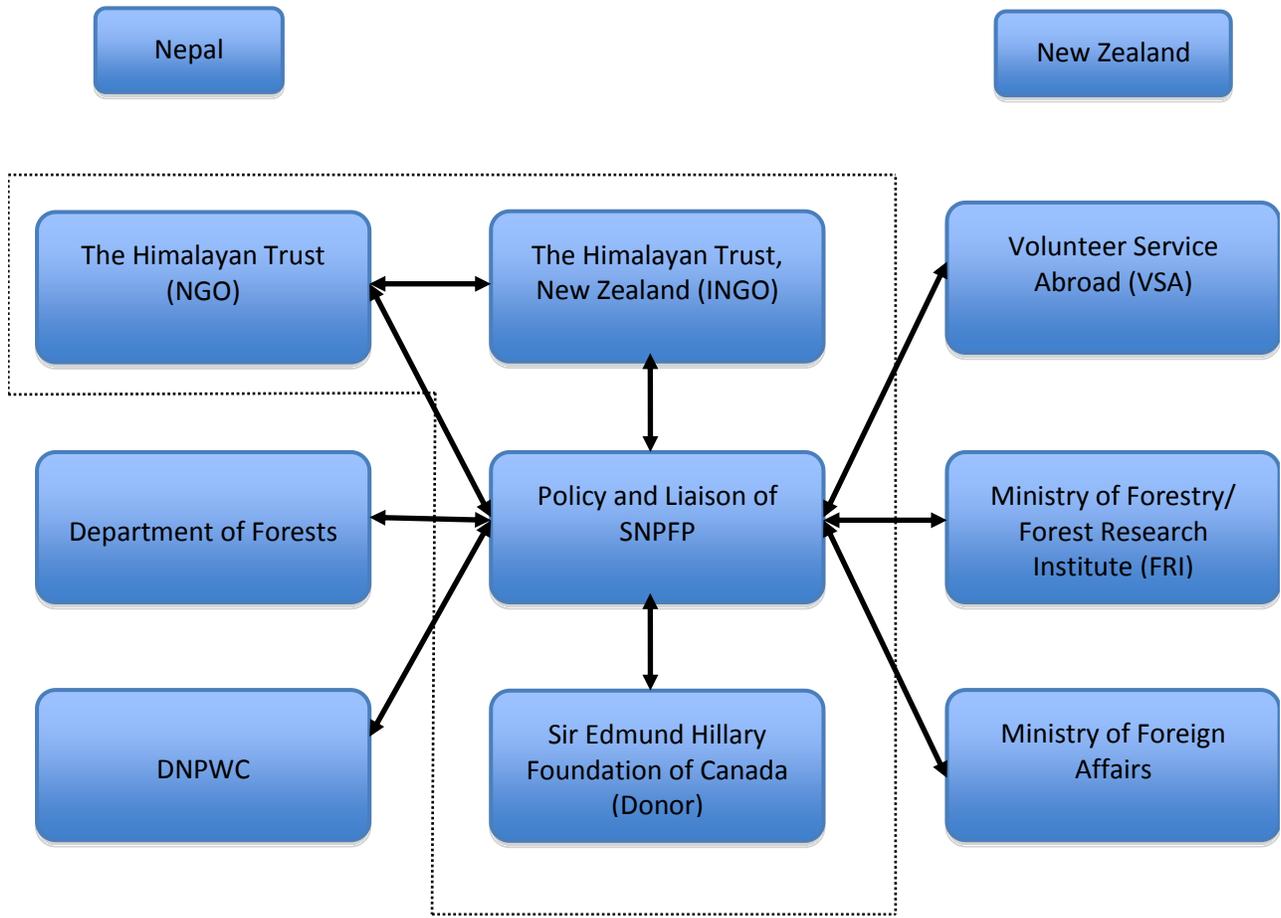


Figure 4. Policy and liaison of SNPPF during its origin

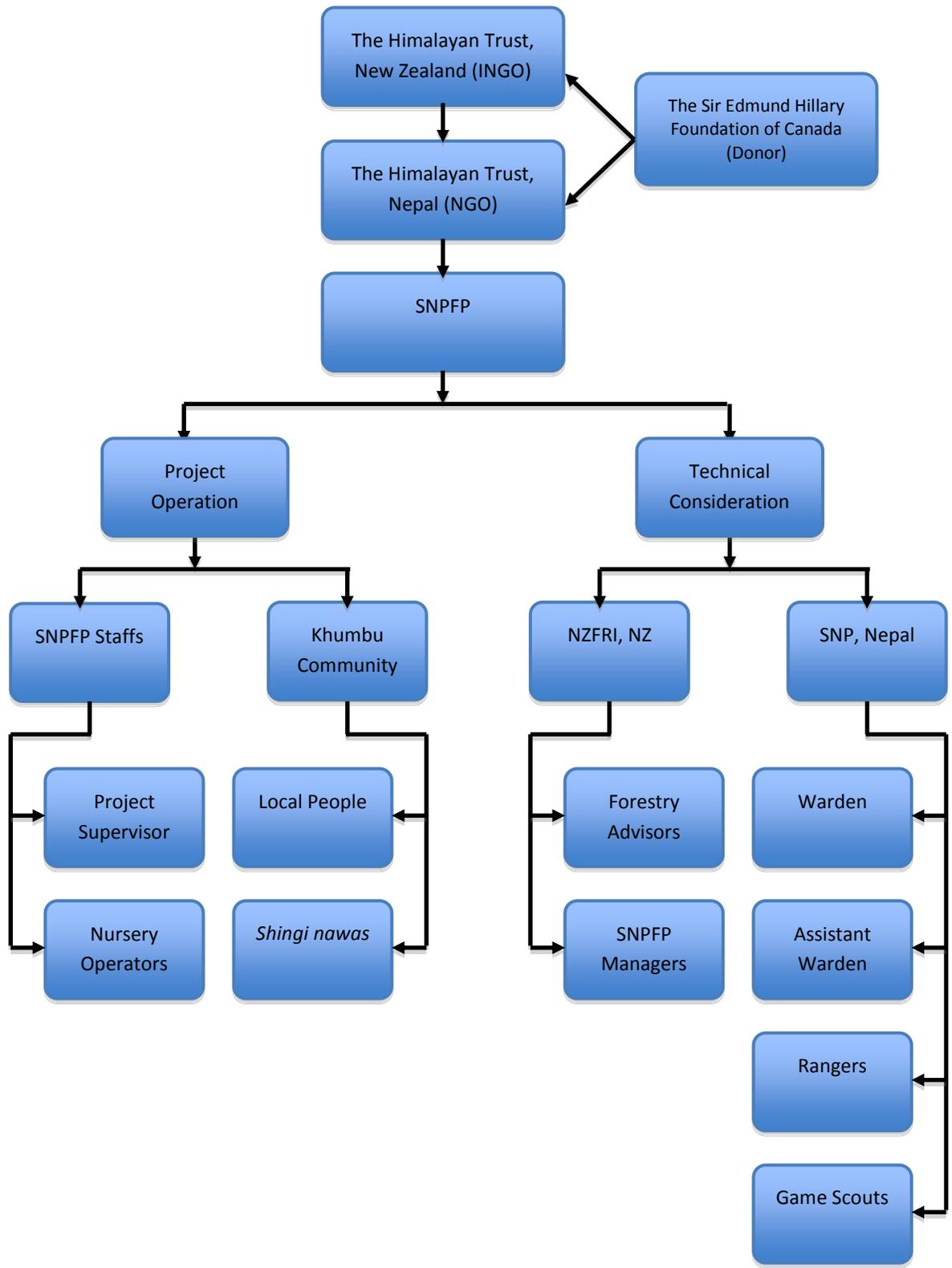


Figure 5. Operation and technical consideration of SNPFP

2.4.2 Activities of SNPFP

The major activities of SNPFP include: establishment and management of nurseries; establishment of plantation sites; maintenance of plantation plots; and measurement of forest influences in the Khumbu.

2.4.2.1 Establishment of nurseries in Khumbu

The concept of nursery establishment to support the reforestation programme was first proposed by the Australian Aid Advisor in 1973 when he visited the proposed the Sagarmatha (Mt. Everest) National Park to study the feasibility of reforestation in Khumbu (Mather, 1973). He also recommended a piece of land just north-east of the administrative office at Namche Bazaar which contains a permanent source of water. The first nursery was established in 1978 in the same plot (Hardie *et. al*, 1987). In 1978 to 1986, five nurseries were constructed under the Volunteer Service Abroad (VSA)/Himalayan Trust program. These were located in: Namche, Tashinga, Phurte, Jorsalle, and Phorste. Two (Namche and Jorsalle) of them have since been abandoned and remaining three (Phurte, Tashinga, and Phorste) are functioning well, and produced good seedling stock (Sherpa, 1986). The first nursery established at Namche in 1978. The site was excellent, sheltered, and sunny with an adjacent water supply. However, the Namche nursery was closed with the termination of the local lease and replaced by the nursery at the Phurte on a similar site located in the property of SNP. Because of its location, it had good public relations value in introducing the local populations to the new concepts of growing and planting seedlings in Khumbu. Likewise, a small nursery established at Jorsalle in 1985 near the SNP entrance was also closed in 1986 due to the major flash flood in 1985. It had the greater advantage of faster seedling growth because of lower altitude; however, transport of the seedling to the plantation sites in the upper regions of Khumbu was expensive (Hardie, *et.al*, 1987). Nurseries at Phurte, Tashinga, and Phorste became successful from every aspects of seedling production; they are continually operating with good and healthy stocks of high altitude forests plant seedlings to support Khumbu reforestation (Ledgard, 2008). These nurseries held more than 150,000 seedlings of different ages and species each year since 1986 which prepared enough seedlings necessary to transfer in the plantation plots each year. Figure 6 illustrates the total numbers of the seedlings (all age classes and species of seedling present in the nurseries) in the three SNPFP nurseries from 2000 to 2010.

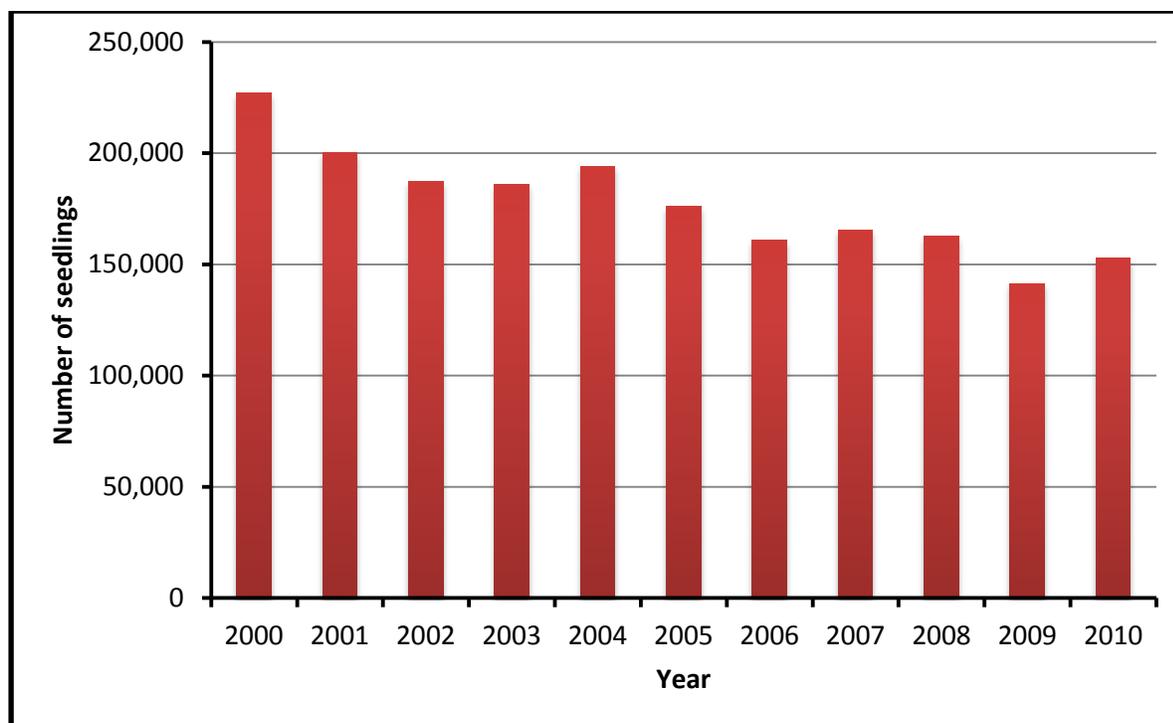


Figure 6. Total seedlings composition in the three SNPFP nurseries 2000-2010 (Ledgard, 2008, 2009, and 2010)

2.4.2.1.1 Tashinga nursery

Tashinga was the second nursery established in Khumbu in 1978 after the Namche Nursery. It is located at 3,400 m altitude in the SNP's land beside the main trekking trail between the Namche and Tengboche (Appendix D). It has a capacity of approximately 80,000 seedling productions (Hardie *et. al*, 1987). This nursery was continually managed by two Sherpanis (female Sherpas), Ang Diki Sherpa and Mingma Chamji Sherpa under the supervision of the forestry foreman (Ranjit Gurung) (Gurung *et.al*, 2010, Ledgard, 2010, Sherpa, 1985, Halkett, 1981). This nursery initially produced large numbers of pine with small quantities of fir, birch, juniper, and willow but later emphasis was given for the production of fir (Hardie *et. al*, 1987). It was the main supplier of planting stock for Khunde, Khumjung, Tengboche, and Deboche areas and appears to be well managed and is producing good quality of seedlings. Total seedlings in Tashinga nursery and their species composition (total seedlings of different ages and species present in the nursery) through 2000 to 2010 are highlighted in Figure 7. This nursery is still in operation and the author had a chance to visit and observe this nursery on August, 2012 during the field visit of this research. On the basis of communication with the nursery operator (Ang Diki Sherpa) and the researcher's personal observation at the nursery site, there were about 10,000 seedlings of different age and species. According to the nursery operator and game scouts of Tashinga Post of SNP, they recently

had carried out planting of 5,000 seedlings in the adjacent area of the nursery in July, 2012; however, there has been no seed collection and sowing going on in recent years.

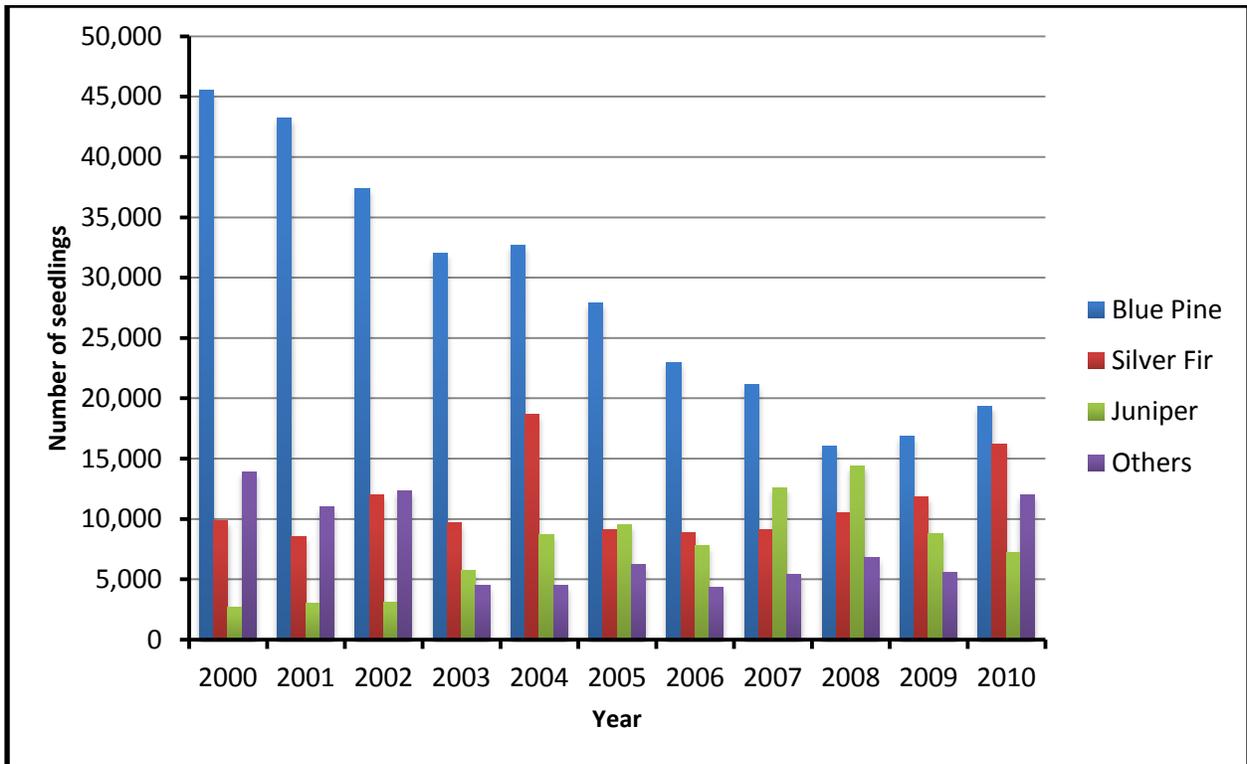


Figure 7. Seedlings composition in Tashinga nursery 2000-2010 (Ledgard, 2008, 2009, and 2010)

2.4.2.1.2 Phurte nursery

Phurte nursery is also located at the altitude of 3,400 m beside the trail to the Thame about 20 minutes further from Namche in the SNP's land (Appendix D). This nursery was established in 1982 as the replacement of Namche nursery which was closed due to the termination of lease. The nursery faces south on a well selected site and has a capacity of 150,000 seedlings. It is continuously managed by a local husband and wife (Ang Tharke Sherpa and Dawa Chhoki Sherpa) who have been employed as permanent staff since March 1986. They are responsible for daily operation of nursery under the supervision of the forestry foreman (Hardie *et. al*, 1987). The author of this research had also chance to communicate with these couple about their exceptional experience on nursery practice in high altitude of Nepal. It appears to be well managed and became the main supplier of planting stock for the Thame, Namche, and Jorsalle areas. It is also considered as the best of the tree current nurseries in Khumbu (Ledgard, 1989). Phurte nursery focused on production of pine and fir that need to be planted below

Namche and adjacent area; however, they also produce smaller numbers of secondary species such as birch, willow, and rhododendrons. Additionally, other special purpose species such as suga phul (*Piptanthus nepalensis*) and white beam (*Sorbus cuspidata*) are also produced in smaller quantities (Ledgard, 1989; Hardie *et al.*, 1987; Sherpa, 1985). Figure 8 illustrates the total numbers of the seedlings and their species composition (all age classes and species of seedlings present in the nursery) in Phurte nursery from 2000 to 2010. On the basis of personal observation and communication with nursery operators and game Scouts of Phurte check post of SNP on August, 2012, there are still approximately 40,000 seedlings of different age and species in stock; however, there also has been no seed collection and sowing going on in recent years.

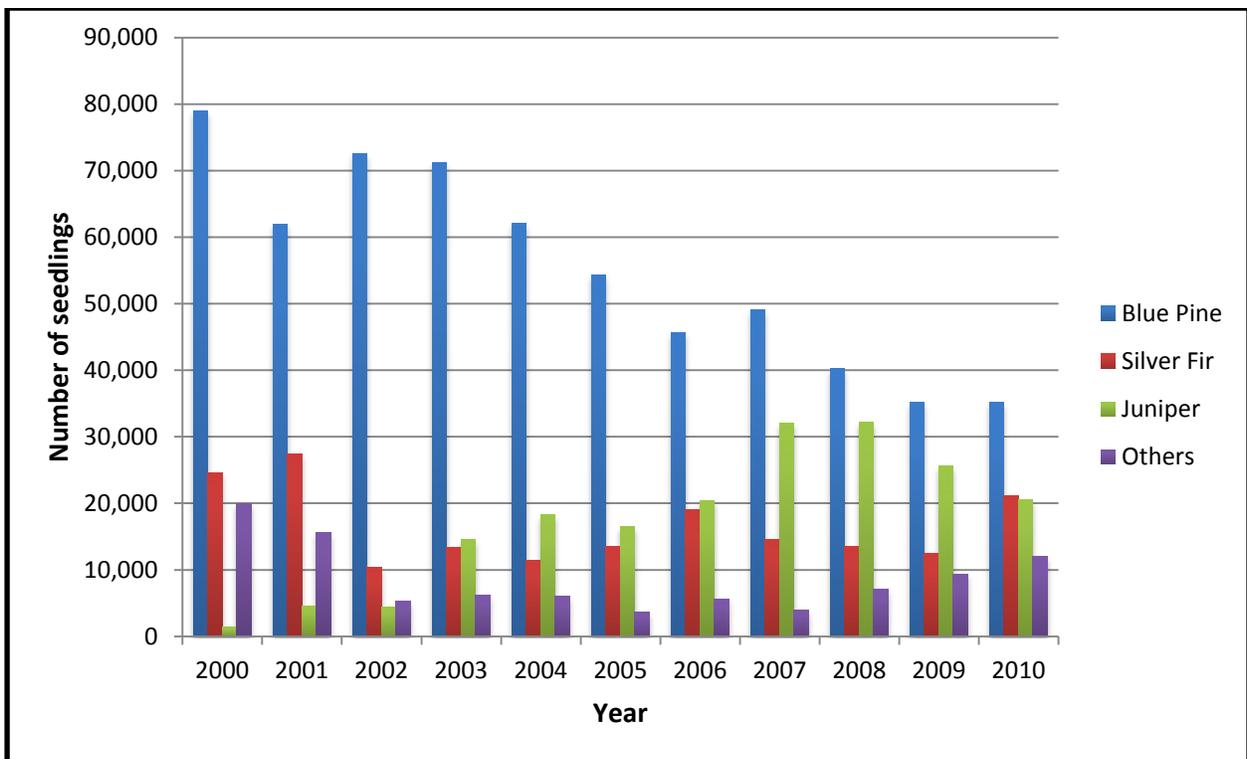


Figure 8 Seedlings composition in Phurte nursery 2000-2010 (Ledgard, 2008, 2009, and 2010)

2.4.2.1.3 Phorste nursery

Phorste nursery was the latest nursery established in the Khumbu in 1986, at the highest altitude of 3600 m near the river just below the Phorste village. Sunshine, soils, and wind shelter are good enough for the growth of the seedlings even in such a high location. Phorste nursery focused on the production of fir, willow, juniper and birch. Some pine seedlings had also been raised; however, this is not recommended later as the nursery is above the ecological limit for the good growth of pine.

Phorste nursery became the main supplier of seedling stock for the Phorste and other high altitude areas of Khumbu. This nursery was well managed by a local Sherpani (Ang Chamji Sherpa) from the village of Phorste in a daily basis under the supervision of the forestry foreman.

Figure 9 illustrates the total numbers of the seedlings and their species composition (all age classes and species of seedlings present in the nursery) in Phorste nursery from 2000 to 2010. Because of project hand over to the local people and SNP after 2010, a downsizing of the nurseries to half of their existed size and cost was decided in 2008. To implement the decision, the nursery at Phorste was closed in December, 2010 keeping one nursery at Namche VDC (Phurte) and another at Khumjung VDC (Tashinga). All the seedlings and equipments of the Phorste nursery were transferred to the Tashinga nursery (Ledgard, 2008; Ledgard, 2010).

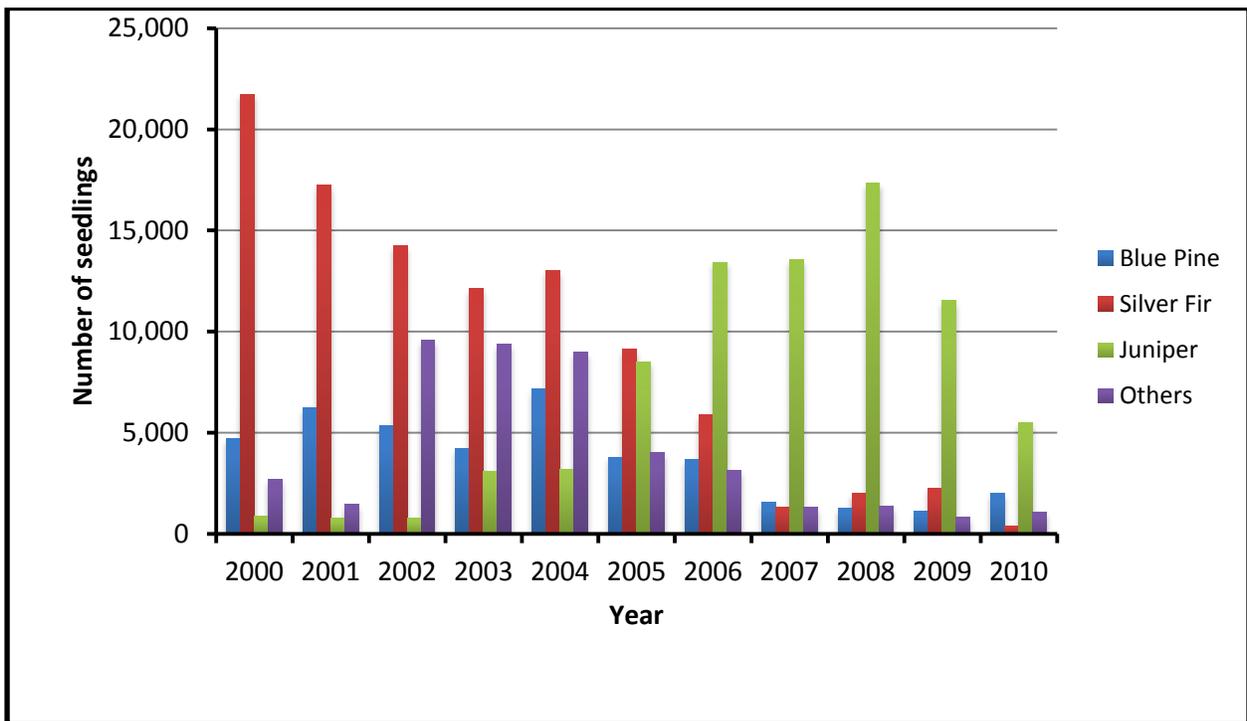


Figure 9. Seedlings composition in Phorste nursery 2000-2010 (Ledgard, 2008, 2009, and 2010)

2.4.2.2 Establishment of plantation plots in Khumbu

A small plantation site was established in the village of Khunde and adjacent area by planting 2-year seedlings in 1979-1980. Subsequently, an area totaling of 55 hectares has been planted with locally grown seedlings between 1980 and 1983 (Gurung *et al.*, 2010). These plantations include a well fenced plantation in Mendelphu Hill (just above the Namche), Khumjung, Khunde, Namche, and Thame and

several unfenced plantation in Phurte, Jonglo, Tegboche, and Sala Kharka. Photographs of Namche and Tashinga plantation plots are attached in Appendix D. Much of the plantation area at high altitude has made poor use of the natural protection and is too frequently concentrated on bare gaps which lack shelter (Hardie *et al.*, 1987). Initially large pits have been dug for seedlings which increased frost heave and exposure, while later, a small hole dug with a trowel or spade was preferred. The programme continually expected planting of 60,000 to 100,000 seedlings every year between 1984 and 1988 (Sherpa, 1983). SNPPF planted one million seedlings by 1988 as the survival rate was improved from 30% to 70-80% (Gurung *et al.*, 2010: 5). The seedling production and plantation continued smoothly until 2010 which resulted in the production of more than 2 million high quality seedlings. This has resulted in the planting of 300 hectares of plantations with good rates of survival in Khumbu (Gurung *et al.*, 2010: 7). There is still some stock of seedlings in Phurte and Tashinga nurseries and planting of 10,000 seedlings was carried out in Tashinga and Khumjung areas in 2012 (Personal Communication with Nursery Operator at Tashinga, Ang Diki Sherpa). Table 1 illustrates the major plantation plots and their year(s) of establishment in Khumbu between 1979 to 2008, and Figure 10 highlights the map of the areas planted in the SNP between 1981 and 2010.

Table 1. Major plantation plots and their year(s) of establishment in Khumbu 1979-2008 (Gurung *et al.*, 2010 and Ledgard, 2009)

Number	Name of Plantation plot	Year(s) Planted	Area(ha)
1	Cherok	1996-1997	2.64
2	Chorcang - Khmuche	1997-2008	25.96
3	Chorcang East and North	1983-1898	5.61
4	Ginikpa	1996-1997	2.42
5	Hungu	1990-1993	6.49
6	Khunde Overall	1979-1999	4.52
7	Khumjung Overall	1983-2008	20.24
8	Lauda	1996-1997	2.97
9	Mendelphu Hill Overall	1981-1990	9.13
10	Namche Overall	1983-2007	39.82
11	Phurte Overall	1998-2005	13.97
12	Phorste Overall	1986-2008	27.72
13	Salakharka, Jorsale	1986	1.87
14	Samsing 1, 2, and 3	1990-2008	4.73
15	Selawa	2007	2.86
16	Tashinga 1 and 2	1984-2008	24.31
17	Teshu 1 and 2	1995-2008	6.71

18	Yangrse	2003-2008	4.95
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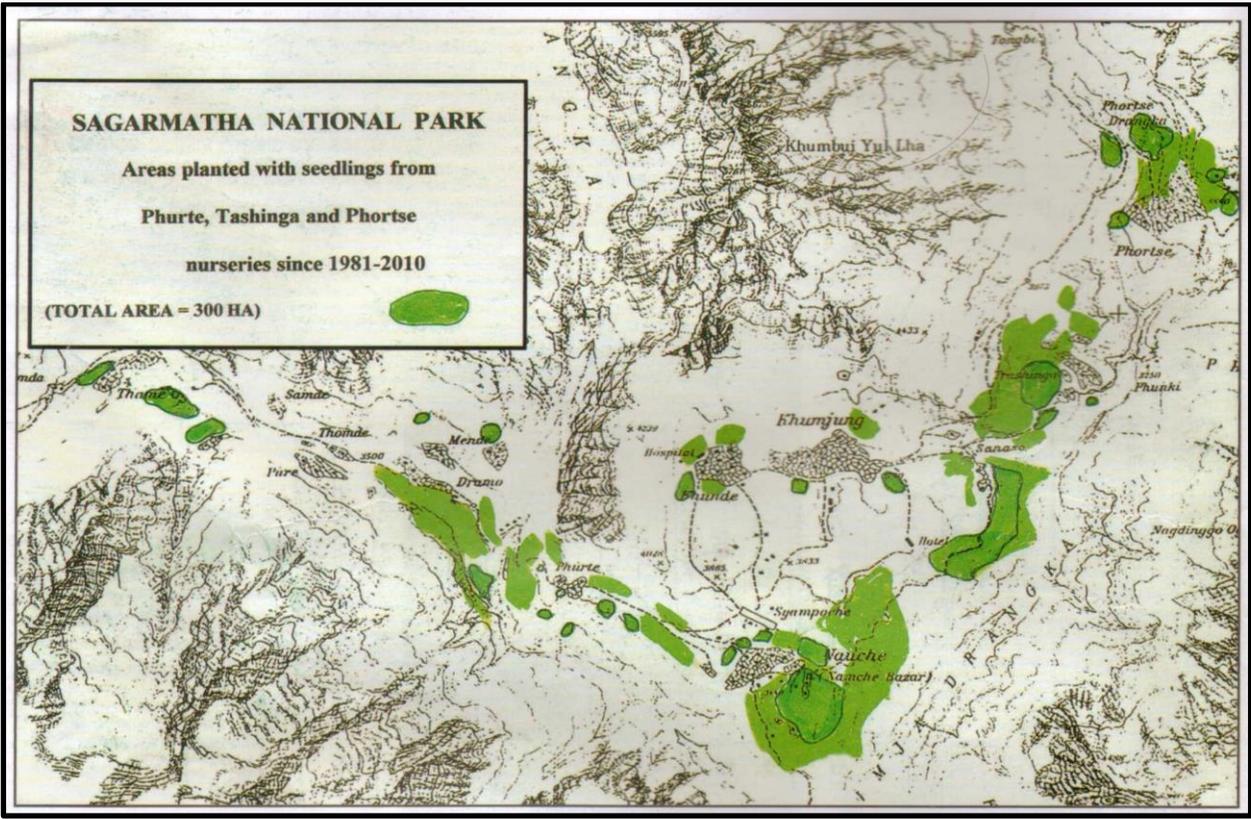


Figure 10. Map of the areas planted in the SNP 1981-2010 (Gurung *et al.*, 2010)

2.4.2.3 Maintenance and management of plantation sites

In the earlier year of planting, there were serious problems of browsing seedlings by animals pushing through the fence. Therefore, different plantation plots in Namche, Phurte, Thame, Khumjung, and Mendelphu hills were given serious consideration and high priority to ensure establishment success. Stone walls were made to cover most of the plantation areas. Likewise, several electrified fences using solar panels were also prepared in different plantation sites such as Khumjung and Mendelphu Hills. The effectiveness of electric fencing driven by a solar charged battery in keeping cattle out and allowing seedling establishment and stunted juniper recovery has been well demonstrated at Namche. These stone walls and electrified fences significantly reduced the problem of browsing by cattle and there were obvious difference in vigor of vegetation inside and outside the fence (Sherpa, 1986; Hardie *et al.*, 1987; Baker, 1995; Ledgard, 2007). Initially, the labor needed for transfer of seedlings from nurseries to plantation site, preparation of plantation plots, and for fencing were

provided by the local people with a minimum labor costs and sometimes even for free. With the expansion of the project, fencing became impossible due to lack of raw materials and extensive steepness of the bare slopes. Therefore, to protect the plantation sites, local people were trained to keep their cattle away from the young trees; watchmen were appointed in several plantation site; and grazing rules were made to allow cattle only in the pine dominant forest areas which are generally not browsed by livestock in comparison to the fir and willow dominant forest areas (Sherpa, 1986; Hardie *et al.*, 1987; Baker, 1993).

Replanting in the unsuccessful plantation sites was frequently done annually. The use of fertilizer has been suggested by Hardie *et al.* (1987) on planting sites as an aid to better tree establishment in case of severe nutrient deficiencies; however, such treatment was expensive and encouraged a weed problem which affected the climatic hardiness of stock. Local residents were encouraged to use tree pruning and thinning along with harvesting monsoonal crop of palatable grass inside the fenced area in return for protecting the plantation plots (Halkett, 1981; Hardie *et al.*, 1987). Fencing policy caused the rapid re-growth of looped and stunted juniper (*J. recurva*) in different plantation sites adjacent to Namche where competing woody trees and shrubs needed thinning and pruning for their maximum growth (Sherpa, 1985; Hardie *et al.*, 1987).

Earlier forestry surveys and reports recognized that at high altitudes such as Khunde, if a household burns an average of 0.5 loads of firewood daily, it would probably need 3 ha of fully stocked fir forest to attain self-sufficiency in fuel on a sustainable basis. While at lower elevation such as below Namche fully stocked pine may have the potential to annually produce one household's fuel on 1-1.5 ha. There were more than 600 households in Khumbu in 1973 which would therefore have needed more than 1,000 ha of fuel wood plantation if grown close to the villages (Mather, 1973; Naylor, 1970). Therefore, to keep the balance between high establishment costs and slow growth rate, plantations were eventually made in smaller plots but nearer to the human settlement area to justify the future timber and fuel wood needs. Considering these facts, all except one of the present eight fenced plantations are individually less than 5 ha in area and adjacent to a village. The successful forest establishment was fully relying on local people's awareness through active support of *Shingi nawas*. Forestry managers and supervisors worked hard on building co-operation and acceptance of responsibility among the elders of the village. Annual monitoring and documentation of survival and growth rate were recommended to avoid the need for excessive replanting and to track valuable information for future planning of forest performance according to species and site (Hardie *et al.*, 1987).

The plantation management in Khumbu is always against the introduction of "fast growing introduced species" as the indigenous flora appears to be perfectly adequate for local needs (Garratt, 1981; Naylor, 1970).

2.4.2.4 Measurement of forest growth and influences in Khumbu

Since 1990 the SNPFP has been establishing transects in plantation sites to monitor the survival and growth of the seedlings planted. Additionally, they established some transects in the mature forest to monitor growth rate and seed recruitment in Khumbu. This was very important to meet the goal of SNPFP as understanding of natural forest growth rates and cycles was crucial for the success of planting operation in Khumbu (Ledgard and Baker, 1995). Transects of varying length and 2-4 m width were established within 1 year of planting and re-measured in years 3, 5 and every 5 years after. Likewise, transects in mature forests are measured at least once every five years. All data obtained were entered in the MS Excel to create the map of plantation plots (Figure 12). In 1990, transects were established in six permanent plantation sample plots while no transects were established in existing mature forests due to the technical difficulties (Ledgard and Baker, 1990). Later in 1991, three line transects were established in modified forests (Namche Hills, forest nearby Hotel Everest View, and Kyamguma) containing both mature existing trees and newly planted seedlings with the aim of monitoring the natural regeneration and growth of seedlings over a period of at least 20 years with re-measurement in each fifth years (Ledgard, 1991). By the end of the 1995, total of 20 transects were established and re-measurement of three modified forests transect established in 1991 were done (Baker, 1995). Consequently, twenty-eight sample plots (Figure 12) were established until 2006 with periodical re-measurements which yielded valuable information relative to what production can be expected from local forest in Khumbu (Ledgard, 2008). Since 2006 no forest growth plots have been measured and the project was handed over to the SNP and local people in 2010 (Ledgard, 2010).

The influence of the forests to the wildlife was clearly observed as wild animal numbers have increased along with the increase plantation plots. Subsequently, concern about increasing Thar numbers and related forests and crop damage was expressed by many villagers. Therefore, a population data base of Himalayan Thar was recommended and counting was started since 1992 with the help of SNPFP supervisor and SNP staffs (Ledgard, 1991). Counts of the Thar population were made continuously since 1992 and five sets of counts were made at the same location to get more reliable data. Table 2 highlights the highest annual Thar counts from 1992 to 2010 in Khumbu.

Table 2. Highest annual Thar counts 1992-2010 in Khumbu

Year/Location	1992	1993	1994	1995	1996	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Chorcang to Chule	81	82	76	79	78	62	75	72	54	80	29	15	22	16	29	22	14
Gangla to Thame/Hungu		45	24	35	44	69	76	72	48	72	26	17	19	18	22	16	14
Total	81	127	100	114	122	131	151	144	102	152	55	32	41	34	51	38	28

2.4.3 SNPFP hand-over

After the decades of assistance and funding by the HT NZ and SEHFC through the HT NP; the future of the SNPFP was discussed in-depth in 2006 which has recommended the project be handed over to the local people by 2010 and the skills, knowledge, and experiences gained over the decades be passed on in the form of an *alpine forestry manual* (Ledgard, 2006). As a result, SNPFP was formally handed over to the local people and SNP on December 1, 2010. The reasons for the hand-over, the publication of the *high altitude forestry manual*, the hand-over decision, the hand-over event, and planning for future management are described below under separate headings.

2.4.3.1 Reasons for hand-over

According to Gurung *et al.* (2010) and Ledgard (2008), the reasons for the project hand-over are explained as follows:

- Most of the project goals have been achieved, principally showing how to successfully run nurseries, produce quality seedlings, and established them in the field.
- The expertise to continue the project is present within the community, mainly in the form of current forestry project staff and the local people who have been trained.
- The Khumbu community now has considerable money coming from the SNPBZ Programme as their share of Park entrance fees which ensures that 50% of Park entrance fees to continue financing the project at a sustainable level.
- Over the last 30 years, the SNPFP has planted most of the areas where local people want to see trees. Now, the remaining narrow altitudinal band at the tree line is intensively used for housing, animal husbandry, and crop production which mean that there are only limited areas suitable for more planting.

- All project staff who started their roles more or less at its inception are getting older and considerations of retiring are growing. For instance, physically the work does not get any easier for all nursery operators and the retirement from the forestry career is in horizon in case of NZ based SNPFP Manager.

2.4.3.2 Publication of *high altitude forestry manual*

As a major component of project handover, SNPFP decided to publish practical handbook or manual by incorporating accumulated experiences and skills relative to tree growing and establishment of nurseries and plantation plot at high altitude. As a result, "*High Altitude Forestry Manual*" was completed and published in 2010 (Ledgard, 2010). Copies of this manual were distributed to the attendees of the event and subsequently have been sent to Khumbu community, project supporters' off-shore, and others who involved with forestry activities in the Himalayas (Ledgard, 2010).

2.4.3.3 Hand-over decision

As recommended in 2006, several preparations were done to make the hand-over decision. The proposed hand-over decision was circulated among the HT NZ; SEHFC; the HT NP; SNPBZC; and local Khumbu community. Subsequently, Karen O'Connor, President of SEHFC and Ex-President, Zeke O'Connor, visited Nepal to inspect the forestry project and to discuss its future in more detail. Following the discussion with the BZMC, BZC, local people, BZUG, and Sherpa Himalayan Trust Advisory Committee (SHTAC) it was concluded that any maintenance and continuation of the forestry project would not command the necessary prioritization from the local Buffer Zone Committee and that input is needed from outside for at least a few more years. As a result, on October 1, 2009, Karen and Zeke suggest the modifications to the original full handover proposal, so that project continues in a reduced form from outside funding for the next five years from 2010 and the existing staffs will be retired from 2010 with their gratuities (Ledgard, 2009).

In the meantime, the overall proposal of SEHFC was discussed in the Annual General Assembly (AGM) of the Himalayan Trust, Auckland, NZ on October 14, 2009. At the same time, SNPFP's existing Manager (Nick Ledgard) presented overall reasons, facts and opinion to justify why he is still favored to a full take-over by local management and a cessation of outside support (Ledgard, 2009). Conclusively, the AGM "affirmed that they preferred the SNPFP manager's proposed cessation of outside funding and project hand-over, but of course would not oppose the SEHFC if they want to proceed" (Ledgard, 2009).

Therefore, it was left to the project manager (Nick Ledgard) and SEHFC to come with final decision (Ledgard, 2009). In April 2010, Karen O'Connor, Chairperson of SEHFC visited Khumbu and paid off gratuities to all SNPFP staffs as per as decision of 2009. Later, further discussions about the issues of hand-over and cessation or reduction of support by outsiders were conducted on November 5, 2010 in 2010 AGM of the HT NZ which approved the full hand-over of SNPFP to the local management (SNP, SNPBZC, and local people).

2.4.3.4 Hand-over event

As the final hand-over decision was approved by 2010 AGM of the HT NZ; the hand-over event was organized on December 1, 2010 in the Namche Bazaar community room under the Namche Library. The event was participated by 54 attendees' altogether. In the event, the SNPFP's past and future was highlighted by the power point presentation given by Project Manager. The event was addressed by several recognized personalities of Khumbu community such as: Warden, SNP; Chairman, SNPBZMC; Army Chief, Namche Barracks; Chairperson, the HT NP; and SNPFP supervisor, Ranjit Gurung. Likewise, nursery operators, project supervisor, and project manager were recognized by framed long service certificate for their noble services. Finally, one-page hand-over agreement document was presented to the attendees and signed by SNP Warden and Chairman, the HT NP (Ledgard, 2010). The core statements from the hand-over agreement are presented below (Ledgard, 2010):

"A period of 30 years of full support to the SNP Forestry Project by the Himalayan Trust (HT) and the Sir Edmund Hillary Foundation of Canada (SEHFC) is ending as of December 31, 2010. It is agreed that:

1. The SNP Forestry Project is to be handed over to the Sagarmatha National Park.
2. Over a one-year transition period through to December, 2011, the HT and SEHFC will maintain existing nurseries and out planting functions on a reduced scale at Phurte and Tashinga with retention of three staff and all existing facilities and equipments.
3. During the 2011 transition period, the SNP and local people will draw up a management plan for the continued management of the SNP Forestry Project after 2011".

2.4.3.5 Planning for future management

To get the public support, several formal and informal talks with local community representatives including members of SNP, SNPBZC, BZC, BZUG, Namche Youth Group, WWF, SPCC, Mother Groups, and local renowned individuals from Sherpa community were organized since 2008. Those talks indicated that local community wants to see the SNPFP's forestry activities continuously carried on in some form, which raised question: In what form and how will it be funded and managed? (Ledgard, 2008). Taking this issue in considerations, in 2008, SNPFP proposed a workshop, seminar, and stakeholders' perception study to be completed in the forthcoming years to discuss the future of the SNPFP, and to determine how Khumbu community has been appreciated the performance of SNPFP to date, and how it is accepted by local people after its hand-over in 2010 (Ledgard, 2008). Proposed events in 2008 included: a high altitude forestry workshop at Namche Bazaar to be organized in early September, 2009; high altitude forestry seminar at Kathmandu to be completed in mid-September immediately after Namche Workshop; and social study of community perceptions of the SNPFP and its hand over to be completed before project hand-over (Ledgard, 2008). Unfortunately, none of them were implemented in action and completely dropped by showing the reasons of tighter finances and times during the last phase of the project (Ledgard, 2009). However, on the basis of several formal and informal talks with Buffer Zone representatives, SNPBZC reported that it is unlikely to be able to continue funding in the SNPFP at its present size. Subsequently, the downsizing of nurseries to half of their existing cost by keeping one in Namche and another in Khumjung (either Tashinga or Phorste) was proposed (Personal communication with Sonam Gelzen Sherpa, President, SNPBZC). However, these options and other alternatives were discussed in detail until 2010; there was a major challenge in Khumbu community to find the knowledgeable and committed local individual to oversee and manage such a venture for a long-term (Personal communication with Ang Rita Sherpa, Chairman, the Himalayan Trust, Nepal). This situation was further repeatedly mentioned by the Ledgard (2009, 2010) in the annual reports as: "Without the local leadership, the venture is unlikely to succeed, and the annual forestry activities of the past, plus the prospects for the future, will cease to exist".

Whatever the existing scenario, the SNPFP was handed over to the local people especially to the SNP and SNPBZC in December 1, 2010 by proposing one year transitional period until December, 2011 to draw the management plan on behalf of local people and SNP (Personal Communication with Kami Temba Sherpa, Medical Officer, Khunde Hospital). According to Ledgard (2010), the following activities were proposed during the transitional phase of the project:

- Among the three nurseries, Tashinga and Phurte nurseries will be managed with reduced production and little new seedlings in 2011. So that one or equivalent of one nursery operator in each nursery will be providing the service.
- The overall project activities will be overseen by the existing project supervisor who will assist in nurseries, monitor progress, and organized out planting as before.
- The Project Manager will not be formally involved in SNPFP after December 31, 2010.
- Payments of the remaining staffs will be provided as before for the duration of one year.
- During the one year transition period, the SNP and local people in the form of BZC will discuss and draw the management plan of NFPF after 2011.

Conclusively, the SNPFP was handed over to the SNP and local people by which the future of it will completely rely on the further developments gained from the discussions among SNP, SNPBZMC, BZC, BZUG, and other local people; however, a major constraint i.e., availability of committed local manger to oversee the project on behalf of local community was repeatedly mentioned in several annual reports of SNPFP.

2.5 Foreign aid and its effectiveness

2.5.1 What is foreign aid?

Since aid allocated for different purposes will probably have different consequences on development, the literature contains ambiguity in the definition of foreign aid. Many authors include all financial flows from donors to developing world as foreign aid, while others include only grants and concessional loans. In general, there are two types of aid from developed world to the developing world: Official Development Finance (ODF) and Official Development Assistance (ODA). Among them ODA is also called as "foreign aid" which is actually subset of ODF. The ODF consists of all the inflows of finance to the developing countries coming from the donor countries and multilateral agencies, while ODA essentially destined in to the poorest countries in the form of grants and concessional loans containing at least 25% of grant component (World Bank, 1998).

Bilateral and multilateral aid agencies administer foreign aid around the globe. For instance: organizations such as the United States Agency for International Development (USAID), the United Kingdom's Department of International Development, Canadian International Development Agency (CIDA) are some of the examples of bilateral agencies, while the World Bank, the United Nations Development Program (UNDP), the International Monetary Fund (IMF), the Regional Development Banks

(the African Development Bank, the Asian Development Bank, and the Inter-American Development Bank), the European Commission (EC), the Organization of Economic Co-operation and Development (OECD), the World Health Organization (WHO), the World Trade Organization (WTO) and many more are examples of multilateral aid agencies (Monkam, 2008).

2.5.2 Effectiveness of foreign aid

Researchers and policy makers have been concerned about foreign aid effectiveness for decades; however, the true relationship between the foreign aid and its effectiveness has only recently achieved its importance. Traditionally, foreign aid was judged on the basis of amount of aid rather than its potential effects which in fact more likely complex as recipient countries heightened economic instability rather than economic growth (Hedger, 2012). Many research findings indicated that disbursements are "highly volatile" which in turn is related to the slower development of aid recipient countries (Ramey and Ramey, 1995; Imbs, 2007; Wolfers, 2003). Obviously, there are so many success stories; millions of people are still dying of hunger, malaria, AIDS, millions of people do not yet have access to clean water and live in unsanitary slums, and much of pristine biodiversity and environment are already degraded. For instance, over five decades, \$1 trillion has been spent on Africa alone since independence, but in many ways, there is too little to justify it and many African countries are even poorer today than they were 50 years ago (Herbort, 2004; Govender *et al.*, 2005; United Nations, 2005). Therefore, foreign aid appears to be as necessary as ever, but it is not a panacea and there is a raising question from everywhere: why foreign aid still could be considered as failure or partial failure for sure despite of all those successes.

2.5.3 Ineffectiveness of foreign aid

The low performance of aid in promoting economic growth and reducing global poverty is called aid ineffectiveness. Unfortunately, this becomes an utterly complex problem which is still unresolved and generated huge literature in recent years. However, western countries, international aid agencies, recipient countries, INGOs, NGOs, and many other agents are in the chain which already spent more than \$2.2 trillion aid since 1960s, their performance yet appear ineffective. One big part of the problem appears to be the largest part of aid transferred to the poor does not actually reach them. Cudjoe (2006) reported on the basis of his calculations, "Out of every dollar of aid given to Africa, an estimated 16% went to consultants from donor countries, 26% went to emergency aid and relief operations, and 14% went to the debt servicing." Likewise, President Paul Kagame of Rwanda reported that, "There

are projects here worth only \$5 million and when I looked at their expenses, I found that \$ 1m was going into buying these cars, each one of them at \$70,000. Another \$ 1m goes to buy office furniture, \$1m more for meetings and entertainment, and yet another \$1m as salaries for technical experts, leaving only \$1m for the actual activities to achieve objectives" (Cudjoe, 2006). Donors, on the other hand argue that aid recipient countries and organization have not utilized development assistance well. They claim that aid has failed due to variety of reasons. For example: poor governments' waste aid on corruption cannot absorb 100% of aid due to a lack of administrative capacity.

2.5.4 Foreign aid and development in the context of Nepal

Bista (1991) wrote in *Fatalism and Development: Nepal's struggle for modernization* that Nepal is a country which was closed to outsiders until 1950. He pointed out that Nepalese may have been poor by international standards but the Nepali peasants were self-sufficient and largely content at those times. He further mentions that increased international attention as one of the poorest countries of the world destroyed the gracefulness, charm, generosity, and hospitality of the rural people more than development. Whelpton (2005) mentions that Nepal has received a first token of payment in the amount of \$ 2,000 when it signed an agreement to accept international funding assistance under the United States' "Point Four Programme on 23rd January, 1951. Initially, the foreign aid contributed to the establishment of the Nepal Industrial Developmental Corporation and expansion of national education system in Nepal. By 1987, there were sixteen individual countries and six international organizations providing foreign aid to Nepal (Sherpa, 2012). Subsequently, the Nepali foreign aid scene was rapidly filled with non-governmental actors such as NGOs and INGOs. According to the website information of the Social Welfare Council (SWC, 2013), there were 223 International NGOs and 27,797 Nepali NGOs registered with SWC as of 2009. Sherpa (2012) criticized that in the earlier phase, foreign aid programme were become largely ineffective because of the donors' failure to realize the fact that ordinary Nepalese citizens were not eager for change. In addition, the political elite of Nepal were also not committed to bringing about change. Likewise, Whelpton (2005) argued that the international bodies particularly the World Bank and the International Monetary Fund (IMF) had severely influenced the government's development. He further indicated that they had to share the responsibility for the developmental failure in Nepal.

The development process in Nepal is generally planned by National Planning Commission (NPC) which was established in 1955. Nepal was divided in to seventy-five districts in the 1960s; however, these are not ideal administrative units and do not represent natural economic and cultural units. In the

1970s, King Birendra divided the country into five developmental regions as a decentralization motive. These include the Eastern, Central, Western, Mid-Western, and Far-Western regions. These regions remained as a fairly weak administrative tier in the country. Since 1956 the NPC has drawn up Five-Year Plans and a Three-Year Interim Plan for the country. NPC now works under the Work Performance Rule, 1991 and carries out its roles acting as (NPC, 2012):

- Leader and principal supervisor in the economic development and economic affairs of the country;
- Key coordinator in the management of economic development and general economic affairs of the country;
- Active facilitator in the implementation of economic developmental policies and programs;
- Pioneer in policy reform;
- A central level institution for monitoring and evaluating economic development of the country; and
- A platform for exchange, dissemination, discussion and consultation in respect to economic affairs and development of the country.

2.5.5 The Everest region, development, and foreign aid

The state sponsored development activities in the Solukhumbu district are carried out from the district headquarters in Salleri, south of the Everest region, most of the development activities in the Everest region are sponsored and directed by foreign aid and NGOs like the World Wildlife Fund for Nature (WWF), the United Nations Development Programme (UNDP), Sir Edmund Hillary's Himalayan Trust, and the International Union for the Conservation of Nature (IUCN). Among them, the Himalayan Trust is arguably the most influential INGO in the Everest region. It has funded the establishment of schools, Lukla airport, a health post, and extensive reforestation in the Everest region (Adams, 1996). Developmental projects in the Everest region have focused largely on environmental issues and the capacity building of Sherpas. Foreign aid has facilitated greater participation in conservation and management of local resources in the Everest region (Sherpa, 2012).

2.6 Environmental aid and its effectiveness

The aid for the environmental protection has not reached at the same scale as other sectors; however the amounts of environmental aid are non-negligible and international cooperation is growing

(Keohane and Levy, 1996). For instance, the World Bank alone estimated its environmental portfolio to amount to 16.4 billion USD as of the third quarter of 2002, and the Bank's environmental lending in 2003 reached 1.1 billion USD, bringing the environmental share of overall World Bank lending to 6 Percent (World Bank, 2004). "Despite repeated promises of aid to address critical global and local environmental problems, little systematic research exists on whether donors have honored their commitments" (Timmons *et al.*, 2009). Since the main goal of environmental assistance is to produce environmental improvement, foreign aid should be addressed for a policy change. This goal has not been achieved yet as link between human activities and the environment is not sustainably balance. Therefore, as we already discussed in case of other type of foreign aid, many important questions again arise: Is environmental assistance effective at achieving its goals? Has aid been greened? If so, by how much? Which donor countries spent and which recipients countries receive most of the foreign assistance and why?

Effectiveness of environmental assistance is defined and analyzed in different ways by many authors. For instance: some definitions are very broad and incorporate the aspects of problem-solving, compliance, economic efficiency, normative requirements, and government policies (Young, 1999) while other studies focus on more narrowly specified criteria to evaluate effectiveness such as cost-benefit analysis (Bernauer, 1995) or environmental outcomes and sustainability (Haas *et al.*, 1993). Victor *et al.* (1998) explain that environmental aid is effective when the aid donor succeeds at inducing national governments to contribute to the costly environmental programs. The evaluation of such changes should be done by the collaboration of the donors and national government that can explore the environmental improvements with the actual degree of the government's involvement. Thus it seems like while many researchers and policy analysts have generated many articles and books on the topic of environmental aid, much of which is based on small samples and qualitative case studies but comprehensive and reliable data on aid projects from bilateral and multilateral donors are rarely analyzed.

2.7 NGOs and development

Vakil (1997) described NGOs as not-for-profit organizations geared toward improving the quality of life of disadvantaged people. Alternatively, Bebbington (1997) defined NGOs as "private, professionally staffed, non-membership and intermediary development organizations". The number of NGOs has increased enormously in recent years resulting formation of more than 50,000 NGOs

operating at international level and 90 % of which were founded during the last 30 years (Collingwood, 2006). Rugendyke (2007) estimated about two million NGOs in India alone.

NGOs are however initially viewed as effective, efficient, participatory, democratic, and less corruptible non-state sector devoted for development (Collingwood, 2006; Madon, 1999), they have failed in many places. Despite their failures in many cases, NGOs have become important for implementing foreign aid based programs in rural areas of many developing countries and continues to expand as one of the important sector in the development paradigm. Therefore, the role of the NGOs should be helping communities to make them self-reliant rather than becoming hostage to NGOs and donor agencies. Clark (1995) suggested that the future of NGOs lies in transforming their operation from supplying development of the communities to addressing the intermediate issues facing by the communities.

2.7.1 NGOs, INGOs, and development in Nepal

Nepal Government defined NGO as "A group of people working together to achieve a specific goal in a non-profit manner". Social Welfare Council (SWC) at the national level and District Development Committee (DDC) at the district level are responsible for registering the NGOs in Nepal. It can be simply registered by a minimum of seven people holding Nepali citizenship. The number of NGOs increased enormously only after 1990 due to the political transformation from a one-party system to a multi-party democracy in 1990 (Roka, 2012). Actually, the number of the NGOs existed from 1947 to 1990 was only 249, which increased more than 27,000 NGOs in 2009 (SWC, 2010).

In Nepal, NGOs generally receive funding from three sources: international agencies, INGOs, and Nepal Government. However, NGOs are required to report the amount of funding they receive, no one in the government or the NGO sector knows the exact amount of the money received from the exact sources. Additionally, many NGOs used their personal connection and communication with donors in developed countries and which were never reported to the government (Roka, 2012). There is no any particular policy to evaluate the NGOs in Nepal. According to SWC (2010), the only provision of monitoring and evaluation was found in the SWC's NGOs and INGOs guidelines, which stated, "Monitoring and evaluation of NGO programs were conducted as a part of protocols agreed upon by the NGOs, INGOs and national government". Therefore, the enormous growth of NGOs does not necessarily justify their presence in the development process of Nepal; however, they definitely have some effects in improving rural livelihoods. Specifically, lack of evaluative studies and government mechanism, NGOs

and INGOs claims their success in the form of reports which is generally not achieved in the field. It made NGO and INGO-led development more skeptical in Nepal.

2.7.2 INGOs and NGOs in Khumbu

Khumbu becomes the hub of INGOs and NGOs due to the international attention of Mt. Everest, tourism, and its consequences to the local environment and people. After the successful conquest of Mt. Everest by the Sir Edmund Hillary and Tenzing Norgay, the involvement of the INGOs was first started by the HT NZ in 1961 with the construction of the Khumjung School, an initiative taken by the Sir Edmund Hillary. The Khunde hospital was established in 1966 which is followed by the establishment of Namche, Phurte, and Tashinga nurseries (1979, 1982, and 1984) with the combined effort of the HT NZ and SEHFC.

Table 3. INGOs functioning in Khumbu and their activities 1996-2006 (Spoon, 2008)

INGOs/Country of Origin	Activities
The Himalayan Trust/New Zealand	School and hospital development Nurseries and plantation Natural disaster relief
The Sir Edmund Hillary Foundation of Canada (SEHFC)	Nurseries and plantation
Eco-Himal/Austria	Alternative energy and sustainable tourism
World Wildlife Fund (WWF)/ Global (USA headquarters)	Research and formation of eco-clubs in school
The Mountain Institute (TMI)/USA	Research, conservation, and livelihood improvement
International Centre for Integrated Mountain Development (ICIMOD)/Regional: South and Central Asia (Kathmandu headquarters)	Research and GIS training
Porter Progress/USA	Capacity building for porters Equipments to porters
EvK2CNR Pyramid/Italy	Research, HKKH project
The World Conservation Union/ Global (Switzerland headquarters)	Research, HKKH project
Cooperazione e Sviluppo /Italy	Research, HKKH project
Organizzazione Non Lucrative di Utilità Sociale/Italy	Thame School assistance and eco-cultural initiatives in Thame area

Subsequently, many organizations have come over the years after the establishment of the SNP in 1976 in the form of both short and long projects. Particularly, INGOs in this region focused on the school education, health, and environmental protection and awareness targeted to Khumbu community (Spoon, 2008). Table 3 lists the different INGOs working in Khumbu, their affiliation and major activities.

Among them, the Himalayan Trust, Eco-Himal, World Wildlife Fund (WWF), IUCN, and the Mountain Institute are the major ones (Personal Communication with SNP Warden, Ram Chandra Kandel, 2012). Likewise, in the recent years, various Nepal-based NGOs with local and national scopes are registered and active in Khumbu; they are much newer than INGOs and some are even mentored by INGOs to carry out their activities independently (Spoon, 2008). Table 4 highlights the major NGOs of Khumbu, their year of establishment and their activities. Among them, the Nepal Mountaineering Association (NMA) and Sagarmatha Pollution Control Committee (SPCC) play significant roles in the Khumbu (Personal Communication with SNP Warden, Ram Chandra Kandel 2012)

Table 4. NGOs functioning in Khumbu and their activities 1996-2006 (Spoon, 2008)

NGOs/Year of establishment	Activities
Tourism for Rural Poverty Alleviation Project (TRPAP)/2001	Capacity building, Water projects, and Trail and bridge development
Sagarmatha Pollution Control Committee (SPCC)/1994	Alternative energy and garbage collection
Nepal Mountaineering Association (NMA)/1973	Mountaineering training and mountain tourism
Travel Agents Association of Nepal (TAAN)/1979	Eco-trekking and alternative energy workshops Cultural heritage awareness campaigns
Himalaya Rescue Association (HRA)/1973	Altitude sickness and its prevention
Mountain Spirit/1996	Baseline surveys for INGOs
Kathmandu Environment Education Program (KEEP)/1992	Sustainable tourism and poverty alleviation

2.8 Chapter Summary

This chapter has integrated the literature on study area; deforestation in Khumbu; foreign aid/NGO-led re-forestation project in Khumbu; and overall context of foreign aid, NGOs, and INGOs driven projects as a holistic discussion. Particularly, it tries to connect how International environmental movement has begun in Khumbu after the establishment of SNP. It broadly presents decade's long forest management practices and its implications in Khumbu led by foreign aid and NGO. It has also attempted to connect the results of the different research already completed by scholars in this region. Taking into account, historical and contemporary conditions of Khumbu deforestation and afforestation trend helps to discern how deforestation accelerated in Khumbu and who are involved in restoring those by collaborating local people. It also explores how local population perceives and interacts with the change in landscape and how their experiences could impact the environmental sustainability in Khumbu. It broadly points out the effort of several international aid agencies who offered strong moral and economic support and technical solutions for the management of the fuel wood consumption and

natural resource depletion although boarder perspective is still required to achieve sustainable development in Khumbu.

3. RESEARCH DESIGN AND METHODS

3.1 Introduction

This chapter begins with the description of the research methods used to obtain data pertaining to the objectives set for the study. This is followed by a description of the data analysis approach that was used. A qualitative research approach was chosen for the research. The effectiveness of foreign aid and NGO involvement was assessed by focusing on key informants in Khumbu community with regard to their experience and perceptions concerning the SNPFP project. Since the objectives and rationales of the foreign aid and NGO sector are to serve communities, deliver services to them, and make them self-reliant after certain period, community members are posited as the best sources of information for evaluating SNPFP. The central research question concerns how members of the communities perceive the role of SNPFP in Khumbu reforestation. The study is intended to provide a case review of the effectiveness of foreign aid and the NGO sector with the objective of suggesting potential policy and programme changes.

This study used both primary and secondary data. For the collection of secondary data, the researcher reviewed secondary sources including annual SNPFP reports, academic and research publications, newspaper articles, legal and government publication, and trending news related to the issues under the consideration of the research. Participant observation, semi-structured interviews, and informal conversation were used to collect the primary data during the field visit. The collected primary and secondary data were organized, analyzed, and reported using NVivo 10 software.

3.2 Qualitative research approach

Since this research is primarily based on a critical social science paradigm, a qualitative approach fits very well with the proposed study for many reasons. The main characteristics of qualitative research are: qualitative inquiry, research in natural settings, purposive sampling, inductive analysis, a case study reporting method, and the tentative application of findings (Lincoln and Guba, 1985). A qualitative approach provides an unique opportunity for the researcher to explore and gain an understanding of a particular situations or events that takes place in a natural setting where the actual events occur (Creswell, 2009). It is also called as naturalistic approach. This is the most appropriate method in which information needed for the research will be acquired from local people and other stakeholders in the field of operation. It is entirely based on multiple interactive and participatory data collection procedures with major emphasis on participant perceptions and experiences of a particular event

(Creswell, 2009). Moreover, qualitative research method is more suited for the researchers who are interested in insight, discovery, and interpretation rather than manipulating outcomes conceived beforehand, and hypothesis on constructed realities (Bowen, 2008; Noor, 2008).

Among the many dimensions of the qualitative research, a case study strategy was used in this study to interpret the real context of Khumbu reforestation activities. According to Yin (1981), a case refers to an event, an entity, an individual or a unit of analysis, and is highly applicable to understanding a contemporary phenomenon in its real-life context using the multiple evidences. Specifically, a case study gives an understanding of "how and why" things happen which allows the researchers to focus on a particular issue or event in a depth.

3.3 Data collection procedures

Qualitative research depends on four basic types of data collection procedures: observations, interviews, and documents. According to Patton (2002), qualitative data consist of "direct quotation from people about their experiences, opinions, feelings, and knowledge" obtained through interviews; "detailed descriptions of people's activities, behaviors, actions" recorded in observations; and "excerpts, quotations, or entire passages" extracted from various types of documents. Based on the principles of qualitative research, data collection procedures used in this study included: the extensive review of secondary data, participant observation, semi-structured interviews, and informal conversations.

3.3.1 Secondary data

The extensive review of published documents and available annual reports of SNPFP was used to understand the more than 30-year history of SNPFP and its activities in Khumbu. The researcher collected many published and unpublished articles, evaluation reports, available annual reports, and other relevant documents regarding forestry work at Khumbu from the HT NP, Kathmandu, Nepal and the SEHFC, Toronto, Canada. The review of these documents is the primary basis for collecting information regarding origin, activities, and present context of the SNPFP. However participant observation, semi-structured interviews, and informal conversation helped to triangulate the data obtained from secondary sources, all quantitative data about the reforestation project was drawn from these secondary sources.

3.3.2 Participant observation

According to Dewalt and Dewalt (2002), participant observation simply refers to a research method in which the researcher is either an insider, i.e. being one of the members of the same group or community studied, or he or she spends a significant amount of time with the people or community on whom the research is being conducted, engages in several informal conversations, and takes part in day-to-day routine activities of community to understand both "explicit" and "tactic" details about the research in question. It has been considered as an important research method in social sciences (DeAndrade, 2000; Kong *et al.*, 2003). There is an argument that the researcher in participant observation may no longer remain objective or scientific (Baruah, 2010). To the contrary, Dewalt and Dewalt (2002) commented that it rather represents a continuum of closeness to an accurate description and understanding of observable phenomena. Therefore, participant observation method helps putting the research in context.

The researcher had a five year experience in working with Community Based Organizations (CBOs) as a seasonal employee of a NGO in Nepal. As a facilitator for CBOs, the researcher worked with a community to promote the community forestry and sustainable soil management in different VDCs of Dhadhing District, Nepal. As a result, the researcher worked very closely with the communities and participated in their discussions, meetings, General Assembly (GA), and several other societal and institutional processes. These all built the confidence that researcher can mingle with Khumbu community during the field visit. Furthermore, living in a Khumbu community for two months (August through September, 2012) during the field visit helped a lot to be a part of the community and got chance of attending village gatherings, meetings of buffer zone focus group, and other daily activities of Khumbu. Moreover, the researcher frequently visited nurseries, plantation sites, and conducted numerous informal conversations with nursery operators of SNPFP, Game Scouts of SNP, local teachers, lodge owners, and SNP staff. All the feelings, concerns, reflections, and facts of observations were kept as a record in a journal on a daily basis. Regular observation helped not only to understand the context of SNPFP but also helped to construct and modify sensible interview guides for semi-structured interviews. Therefore, this method added data richness rather than bringing biases in the research.

3.3.3 Semi-structured interviews

Qualitative interviews are another highly used research method in social science research (Rubin and Rubin, 2005). According to DeMarris (2004), an interview is defined as, "a process in which a

researcher and participant engage in a conversation focused on questions related to a research study" (p. 55). The primary objective of the interview is to obtain a special kind of information by which researchers find out what is "in and on someone else's mind" (Patton, 2002, p.341). Interviewing is an effective tool when one cannot observe behavior and feeling or when one is interested in the past events that are impossible to replicate (Merriam, 2009). According to Merriam (2009), there are three basic types of interview on the basis of the amount of structure: highly structured/standardized, semi structured, and unstructured/informal. The highly structured interviews are standardized interviews where questions and order in which they are asked are determined a head of time, while semi-structured interviews are in the middle between structured and unstructured with more flexibly worded open ended questions. Unstructured or informal interviews do not consist of pre-determined set of questions and these are particularly useful when the researcher does not know enough about a situation to ask relevant questions leading to an exploratory interview (Merriam, 2009). In this study, the researcher used semi-structured interviews in order to gain an understanding of stakeholder's views regarding the SNFPF impacts and their perceptions about the sustainability of the forest management in the present context. The stakeholders' group, sample site and sampling, and interviews procedures involved are explained below under separate headings.

3.3.3.1 Stakeholders

The stakeholders include individuals, groups, and formal organizations engaged in any individual project. They always participate in project execution and consider as driving forces for the success of the project, Freeman (1984) defined stakeholder as "any group or individual who can affect or is affected by the achievement of an organization's objectives" (p.46). Specifically, the project team, strategic planners, customers, alliances, vendors, and senior management are project stakeholders (Duke Corporate Education, 2005, p.11). In this study, stakeholders are defined as those entities whose support and compliance is utmost to achieve its sustainability. For the purpose of semi-structured interviews, three stakeholder groups were identified: local people, project employees, and SNP/SNPBZ officials.

Local people were selected as stakeholders as they have been directly and indirectly involved in the re-forestation activities since the origin of SNFPF. They played an instrumental role in several activities of the project and without their support SNFPF would never have been established. Local people is further divided in to three categories: farmers, lodge owners, and school teachers to obtain the diversity of data and wide range of perception from forest dependent and forest non-dependent local

people. Additionally, women and under-privileged members of the community were also included with the help of a snow-ball sampling method.

SNPFP employees such as nursery operators and project supervisor were selected as another group of key stakeholders as their role in management and implement the SNPFP is crucial in Khumbu.

SNP/SNPBZ has the primary role as a SNP park manager and it also has played a key role in the development of the management plan in Khumbu. All the developmental activities in Khumbu are done by the decision of BZMC now. Moreover, necessary technical knowledge about Khumbu and its environment is possessed in the form of SNP officials such as: the Warden, Assistant Warden, Rangers, Administrative staff, and Game Scouts. Accordingly, SNP/SNPBZ officials were selected as one key stakeholder group. All together forty-eight stakeholders were formally interviewed at the different sample sites.

3.3.3.2 Sample sites and key informants (KIs) sampling

Data were collected from all three stakeholders groups mostly in Namche and Khumjung VDCs of Khumbu. Therefore, SNPFP and Khumbu community are considered as the level of analysis, while Individual residents, project employees, and SNP/SNPBZ officials are considered as the unit of analysis. This study assumed individual perceptions about SNPFP reflect its level of performance in the community.

A purposive sampling technique was used to select the stakeholders on the basis of their knowledge about SNPFP, their relationship to the project, and their role in the field. KIs were identified with the help of telephone conversations and in person visits with local leaders, Himalayan Trust officials and SNP officials. In some cases, additional informants were identified using a snowball-sampling process, specifically to include members of some under-privileged groups (women and *dalits*) and environmental experts working in this area. Although those involved in using forest areas was emphasized, an effort was made to ensure inclusion of both those dependent on the forests, such as farmers, and those, such as local business owners and local school teachers, who would not be expected to rely on forest areas. Moreover, SNP/BZ officials were interviewed with the help of Assistant Warden.

3.3.3.4 Interviews and interview procedures

Face to face, semi-structured interviews were used as the method of data collection to get in-depth quality information. A basic interview guide was developed for each stakeholder group which was

translated into Nepali language without any technical terminology and pre-tested with Nepali Diasporas living in Canada to gauge the technicality of the questions (Appendix A). All interview guides covered the same core questions to collect common information about SNPFP; however, questions were asked in different way to different stakeholder groups.

All interviews were conducted by the researcher in the Nepali language and later translated and transcribed into English. Interview guides were modified in the field whenever it deemed necessary on the basis of the personal observation, interviews, and informal conversation with different stakeholders. Interviews were conducted wherever possible such as in nurseries, schools, fields, forests, roads, hotels, SNP headquarters, SNP check post and homes of local residents, and recorded using a Sony IC Recorder (ICD-BX112). Responses from the interviews were transcribed and translated to English. The data collected from these semi-structured interviews were organized and analyzed with the help of NVivo 10 software.

Each KI was well informed about purpose, the researcher's identity, their right to refuse at any time as a respondent, the consent form, and confidentiality of data a head of the interviews. All respondents were provided with a five page document which covers the purpose and intent of the study, confidentiality, and consent form (Appendix B). Interviews began once KIs agreed to the interview by signing the consent form. To facilitate the interview process more comfortably, general descriptive questions which informants could easily answer such as demographic information, background, and experiences of respondents were asked at the beginning of the interview. In general all interview questions were open-ended to provide flexibility for the collection of in-depth data. More specifically, given the context of the study, the core questions in the interview guides were aimed at exploring participant's perceptions and understanding regarding SNPFP. These questions cover the multiple focuses such as connection to the study area, understanding about SNPFP and their activities biggest success and challenges to SNPFP, impacts of SNPFP to local environment, institutional sustainability, and vision for the future. The common and specific questions asked to the multiple stakeholders along with probing questions are presented in the Table 5.

Table 5. Core questions asked during interviews.

Stakeholder groups	Interview questions	Probing questions
All groups	<ol style="list-style-type: none"> 1. What do you know about SNPFP, its activities and current status? 2. What are the biggest success and challenges of SNPFP? 3. What does the term "sustainable forestry" to you? 4. Do you think SNPFP have done enough for long lasting forest in Khumbu? 5. Were you familiar with the institutional arrangements of SNPFP to conduct their daily activities in Khumbu? 6. Were you informed about project handover? 7. Did you attend the hand-over event? 8. Could you explain the activities conducted during transition phase? 	<ol style="list-style-type: none"> 1a. How do you think SNPFP has influenced the area in terms of social, economic, and environmental impacts? 1 b. Have you ever participated in SNPFP activities? 2 a. Could you list out them? 6a. Were the local communities prepared enough for taking over SNPFP? 8 a. How would you like to see future of SNPFP?
Local people	<ol style="list-style-type: none"> 1. Were you satisfied with the re-forestation activities conducted by SNPFP? 2. Did SNPFP provide any types of awareness training or workshop related to reforestation? 3. Did SNPFP train local residents about nursery practice? 	<ol style="list-style-type: none"> 1 a. Why or why not?
Project employees	<ol style="list-style-type: none"> 1. How did you receive the trainings related to high altitude nurseries and forestry? 2. How did SNPFP conduct its overall activities? 3. Are you satisfied with the project hand over? 	<ol style="list-style-type: none"> 1 a. Do you have any forestry related academic or short term training? 2 a. Who are responsible for reporting?
SNP/SNPBZ officials	<ol style="list-style-type: none"> 1. Did SNPFP co-ordinate with SNP in their activities 2. What is the present condition of SNPFP after it was handed over by donor? 	<ol style="list-style-type: none"> 1 a. Did SNP draw the management plant for its management after taking over from donor? 2 a. Are there any problems with its management now?

3.3.4 Informal conversations and interviews

Several informal conversations in and outside the study site were used to support the data obtained from semi-structured interviews. Information collected from these conversations was noted down immediately after the conversation with date, location, and context of the conversation. Later, all these journal notes were transcribed in a narrative format. The sample informal interview is attached in the Appendix C. These conversations also helped to identify the proper interviewees to be included in the semi-structured interviews.

A total of 31 informal interviews/conversations were conducted. These informal encounters occurred during the period of study specifically in Toronto, Canada, Kathmandu, Nepal, and Khumbu, Nepal. The general characteristics of the informal interviews/conversations participants are presented in Table 6. These included seven (23%) female and 24 (77%) male participants.

Table 6. General Characteristics of Informal Interviews/Conversations Participants

Characteristics	Number of informal interviews/ conversations participants		
	Male	Female	Total
DNPWC executives	4	1	5
Foresters (ICIMOD/ DFO, Salleri)	3	0	3
NTNC executives	2	0	2
University professors	2	1	3
Executives of SEHFC	2	0	2
Executive of the HT NZ	1	0	1
Executives of the HT NP	2	0	2
Officer at SWC, Nepal	1	1	2
Local environmental science university graduates in Khumbu	0	1	1
Local social science university graduates in Khumbu	0	1	1
Local youth at Khumbu	3	3	6
Local NGOs staff at Namche	3	0	3
Total	23	8	31

Among these participants, 13 (42%) were high ranked environmental professionals of the country engaged in different institutions such as DNPWC, National Trust for Nature Conservation (NTNC), ICIMOD, Tribhuvan University (TU), and Katmandu University (KU). These people were met to gather information and their perception regarding environmental aid and its context in case of Nepal and Khumbu in particular. The informal discussion with five executives, one from the HT NZ, two from the SEHFC (donor of SNPFP), and two from the HT NP were done to explore their perceptions on activities of the SNPFP and its longevity. Likewise, informal conversations with one environmental science university graduate, one social science university graduate, and six youth at senior grade of high school were also conducted to get their perspectives in terms of reforestation and its sustainability in Khumbu.

Two officers from SWC, Nepal were met to obtain the information in the issues of foreign aids, INGOs, NGOs, their performance, co-ordination with Nepal government, and evaluation procedures. Similar discussions were carried out with three employees of local NGOs at Khumbu regarding the working pattern of the INGOs/NGOs in the community.

3.4 Data analysis

Creswell (2003) suggests step-by-step procedures for the data analysis in case of qualitative research which include: organizing and preparing data for analysis; obtaining a general sense of information; coding and identifying the main themes; representing main themes in a qualitative narrative; and interpreting data in relation to the literatures and theories. Given the context of the study and following the guidelines from the literature, this thesis consisted of constant comparison of data for qualitative analysis.

To facilitate the analysis, the interviews and field notes from informal conversation were first translated and transcribed. This was followed by development of general themes of transcribed data. Many authors suggest that the constant comparison method as most commonly used in preliminary data analysis in qualitative research (Bowen, 2008; Leech and Onwuegbuzie, 2007; Merriam, 2009).

Following the same principle, interviews were transcribed immediately after the interview whenever possible to facilitate constant comparison and to guide the further questions asked in future interviews. This process was very helpful to use the existing codes from the previous interviews before applying the new code. The new code was only created when the data did not fit in any of the existing codes.

The key of qualitative analysis is discovering themes or patterns by the researcher before, during, and after the data collection which enables bringing coherent categories to the context of the study (Bernard and Ryan, 2009). Step-by-step coding is another big step in qualitative research which includes initial coding and analytical coding (Merriam, 2009). During the initial coding, the researcher tries to gather any possible themes, and when the entire transcripts are coded by initial coding, the categories and sub-categories are identified in detail (Bazeley, 2007). There are several options for data analysis such as manual analysis, analysis through computer software, and a mixed method using both manual and computer management (Merriam, 2009). In this study, a mixed method is used for qualitative analysis. The analysis began with reading the transcript multiple times to note down the main theme of the SNPPF manually. Later, the data were further organized and categorized by the computer-assisted coding and analysis by using Nvivo10 software (QSR International Pty. Ltd., 2009). The Nvivo10 is crucial for extracting coded information in to different themes which made analysis process easier and far better. As suggested by Bazeley (2007), coding of data began with creating open nodes (computer-assisted qualitative analysis software for coding stores code at a node, which is analogous to a file folder that stores segments of text with the same or related coding. Computer-assisted coding facilitates references to passages of text to be stored at multiple nodes without physically moving the text) as a set

of *a priori* nodes based on the questions in the interview guides. Thenafter, inductive nodes were also created on the basis of occurrences of repetitions of the items in the transcript (Table 7).

Table 7. Open coding classification system (*a priori* nodes and inductive nodes)

<i>A priori</i> nodes	Inductive nodes
<ul style="list-style-type: none"> • Understanding about SNPFP and its activities • Biggest success and challenges of SNPFP • Performance of SNPFP • Impacts of SNPFP : social, environmental, and economic • SNPFP hand-over and its longevity • Interpretation of sustainable forestry: • Vision for the future 	<ul style="list-style-type: none"> • Institutional involvement • Long-lasting forests in Khumbu • Long -lasting nurseries • Plantation management • Post plantation cares • Local resident forestry skills • Local funding capabilities • Lack of co-ordination between SNPFP and SNP • Lack of professional foresters at local level • Need of forest awareness trainings • Need for planning and monitoring progress • Lack of information flow at the local level • Policies among donors, NGOs, and government • Social responsibility • Funding options

These open nodes created node trees by elaborating the transcript through who? what? where? how? why? questions (Bazeley, 2007). Consistency in the coding system was maintained through coding comparison function of NVivo which avoided exaggeration and overshadowing of the issues or contents in the transcript. Finally, the data were analyzed on the basis of node trees by identifying the intersections among the nodes through constant comparison method. Themes and patterns appeared in the data which accelerated the deeper analysis process. During the analysis, all issues, beliefs, perceptions, and relationships among the different stakeholders were all documented in a research journal. The overall concepts, connections, and relationships drawn from individual interviews were constantly compared to find out the diverse perceptions of stakeholders towards the SNPFP and its longevity. Furthermore, data obtained from coding classification system were also compared with other source of data such as: secondary data, participant observation, and informal conversation through data triangulation. The Table 8 highlights the final coding classification system (node trees) created in this study using the interview transcript.

Table 8. Coding in-details/ final coding classification system with categories and sub-categories

Categories	Sub-categories
Understanding about SNPFP	Institutional involvement Activities
Attitudes	Positive Negative Neutral Uncertain
Strength of SNPFP	Establishment of nurseries and its management Establishment of plantation plots Public forestry awareness Publication of <i>high altitude forestry manual</i>
Weakness of SNPFP	Lack of professional forester at local level Problems in post-plantation care Lack of co-ordination between INGOs, donors, and government Lack of awareness training and workshop at community level
Impacts	Social impacts, Environmental impacts Economic impacts
Hand-over of SNPFP	Reasons for hand-over Process of hand-over Management in transition period
Future/Longevity of SNPFP	Funding options Social responsibility

3.5 Reliability and validity of data

Creswell (2003) illustrates that validity is important in order to check the accuracy of the research finding in qualitative research. The qualitative approach is often criticized due to the challenges of trustworthiness and lack of rigor (Decrop, 1999). Fortunately, many authors have explored strategies to enhance the validity and reliability of qualitative studies. For instance, Lincoln and Guba (1985) highlight that validity, reliability, and objectivity should be replaced by credibility, transferability, dependability, and conformability. Given the nature of the study, the researcher repeatedly triangulated the data by crosschecking the findings from multiple methods. The use of coding details is the key for data triangulation in this study. The frequency of themes and patterns identified through the use of multiple sources of data: interviews, informal conversations, observations, and secondary data also facilitate the triangulation process. Writing field notes during and immediately after each interview also contributed to gather homogenous data by enabling the researcher to compare observations and inferences about the previous interviews with the data obtained during the interview.

Transferability is another important aspect to make the data reliable and valid. Merriam (2009) opined that the maximum variation in the sample through multiple sites and diverse participants allow the possibility of greater range of findings. In this study, transferability is maintained through the use of a diversity of participants including *dalits* (one of the underprivileged caste of Nepal) , women, underprivileged groups, farmers, teachers, local leaders, and SNP staffs. Likewise, dependability and conformability is used in place of reliability and objectivity to draw the research findings more consistent with the data collected and presented throughout the study (Merriam, 2009).

4. RESULTS

As per as the research questions proposed in the first chapter, this chapter presents and discusses the results in the context of the study. This chapter is broadly divided into two sections. The first section presents findings from key informant interviews described in chapter three. In the second section, the summary of the findings is highlighted.

4.1 Analysis of key informants interviews

The findings from the key informants (KIs) interviews are described in this section. The analysis is principally based on semi-structured interviews with 48 KIs from three stakeholder groups; however, the information gathered through 31 informal interviews from diverse occupational and individual backgrounds associated with Khumbu and its environment are also incorporated throughout the analysis. It begins with a profile of the informants interviewed in the study. It is followed by the findings related to the stakeholders' understanding on SNPPF, their attitude towards SNPPF in general, their perceptions on performance and impacts of SNPPF in Khumbu community, and their interpretation on sustainable forestry in general. Finally, stakeholders' perceptions on the project hand-over and future of SNPPF are presented.

4.1.1 Participant profile: key informants (semi-structured interviews)

4.1.1.1 General characteristics

Among the forty-eight key informants formally interviewed throughout the study, 33 (69%) were local people, 5 (10%) were project employees, and 10 (21%) were SNP/SNPBZ officials. Of the local people stakeholders, 13 (39%) were farmers, 9 (27%) were lodge owners, and 11 (33%) were school teachers (Table 9). A majority of the farmers and lodge owners are involved in the BZUG and SNPBZC of Namche and Khumjung VDC in different time period. While some school teachers are outsiders to Khumbu, priorities were given to the insiders. Likewise, all project employees interviewed have over 25 years of experience working within the SNPPF. Of the five, four were born and raised in Khumbu and one of them was outsider.

All the elected members of SNPBZ/BZC are locals of Khumbu with life-long experience of the area. In case of SNP employees interviewed, two Rangers and one Game Scouts are relatively new, while all other administrative staff and Game Scouts had more than 15 years of experience.

Table 9. Stakeholders selected for semi-structured interview

Stakeholder group	Stakeholders sub-group	Sample site			Total
		Namche VDC	Khumjung VDC	Kathmandu	
Local people	Farmers	7	6		13
	Lodge owners	5	4		9
	School teachers	6	5		11
Project employees		2	2	1	5
SNP/SNPBZ officials		6	4		10
Total		26	21	1	48

4.1.1.2 Sociodemographic characteristics

Sociodemographic characteristics of the key informants are presented in the Table 10. Gender, caste, age, and education of the key informants are analyzed as separate headings below.

4.1.1.2.1 Gender

The researcher interviewed 20 (42%) female and 28 (58%) male key informants' altogether. The majority of key informants were male in local people and SNP/SNPBZ officials stakeholders groups i.e., 17 (52%) in the local people group and 9 (90%) in SNP/BZ officials group; while 3 (60%) of the project participants interviewed were female (Figure 11).

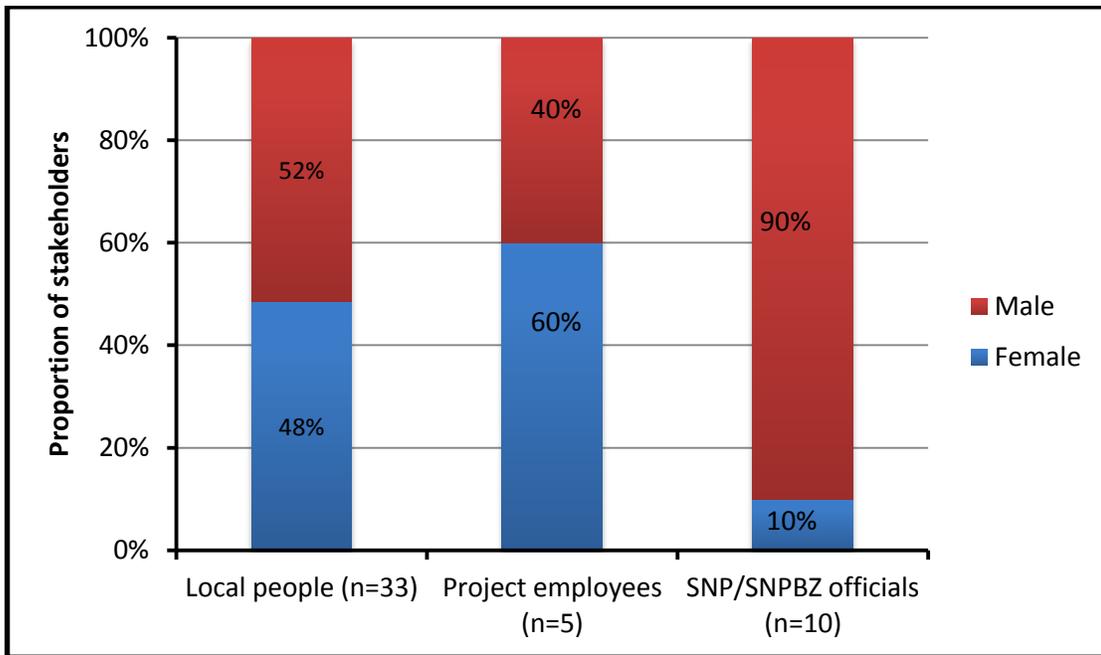


Figure 11. Key informants' gender distribution among stakeholders

Table 10. Sociodemographic characteristics of key informants

Characteristics		Stakeholder groups					
		Local people			Project employees	SNP/SNPBZ officials	Total
		Farmers	Lodge owners	School teachers			
Gender	Female	7	5	4	3	1	20
	Male	6	4	7	2	9	28
Caste	Sherpa	12	6	3	4	2	27
	Brahmin/Chhetri	0	2	5	0	7	14
	Rai/Gurung	0	1	3	1	0	5
	<i>Dalit</i>	1	0	0	0	1	2
Age	20-29 years	2	0	2	0	2	6
	30-39 years	3	4	3	0	4	14
	40-49 years	4	3	5	0	1	13
	50 and above	4	2	1	5	3	15
Education	Uneducated	4	0	0	4	0	8
	Less than 10 th grade	6	5	0	0	4	15
	10-12 class	3	4	5	1	2	15
	Bachelor's degree	0	0	6	0	3	9
	Master's degree	0	0	0	0	1	1

4.1.1.2.2 Caste

The majority of the KIs belonged to local Sherpa caste. Among the stakeholders interviewed, 27 (56%) stakeholders were Sherpa; 13 (27%) were Brahmin/Chhetri, 5 (10%) were Rai/Gurung; and 2 (4%) were *dalit* (Figure 12). It is not surprising that most of the local people stakeholders were Sherpa inhabitants as Khumbu has been dominated by Sherpa settlements; however, many of school teachers were Brahmin/Chhetri and Rai/Gurung caste. Likewise, 4 (80%) of project employees were indigenous local Sherpas, while 1 (10%) was Gurung caste. Seven (70%) of the SNP/SNPBZ officials interviewed were Brahmin/Chhetri; 2 (20%) Sherpa; and 1 (10%) *dalit*. The leadership of the SNP was provided by NZ trained Sherpa in the earlier year of its establishment, now most of the employees were outsiders. All the elected members of SNPBZ were local Sherpa as of now (Personal Communication with Assistant Warden, SNP, Bhumi Raj Upadhaya, 2012).

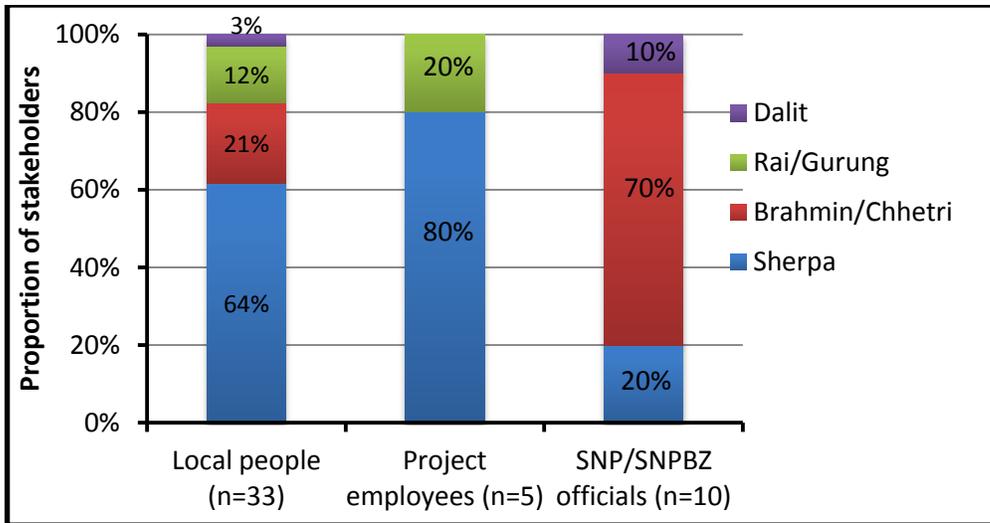


Figure 12. Key informants' caste distribution among stakeholders

4.1.1.2.3 Age

Of the stakeholders interviewed, 6 (13%) were between the ages of 20 and 29; 14 (29%) were between the age of 30 and 39; 13 (27%) were between the ages of 40 and 49; and 15 (31%) were above 50 (Figure 13).

More interestingly, 100 % of the project employees stakeholder group were above 50 years of age (Figure 13). Among the local people interviewed, 4 (12%) were between the ages of 20 and 29; 10 (31%) were between the ages of 30 to 39; 12 (36%) were between the ages of 40 to 49; and 7 (21%) were above 50 years. Two (20%) of SNP/BZ officials interviewed were between the ages of 20 and 29; 4 (40%) of them were between 30 and 39; 1 (10%) of them was between 40 and 49; and 3 (30%) of them were above 50 years (Figure 13).

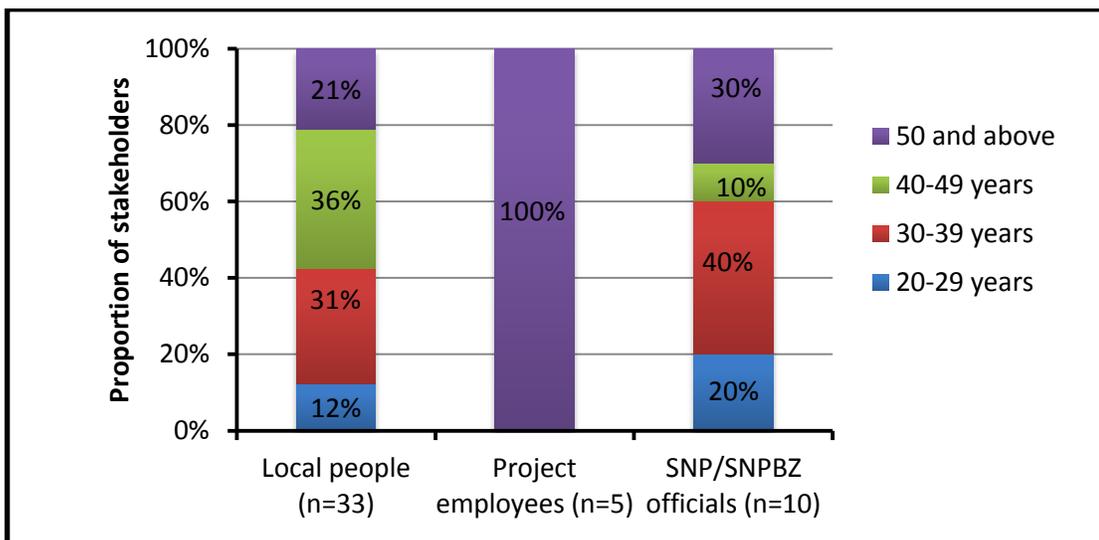


Figure 13. Key informants' age distribution among stakeholders

4.1.1.2.4 Education

In terms of education, 8 (17%) of the stakeholders were uneducated; 15 (31%) had obtained below 10th grade of high school; 15 (31%) were high school graduates (10-12 class); 9 (19%) had bachelor's degrees; and 1 (2%) had earned a master's degree (Figure 14).

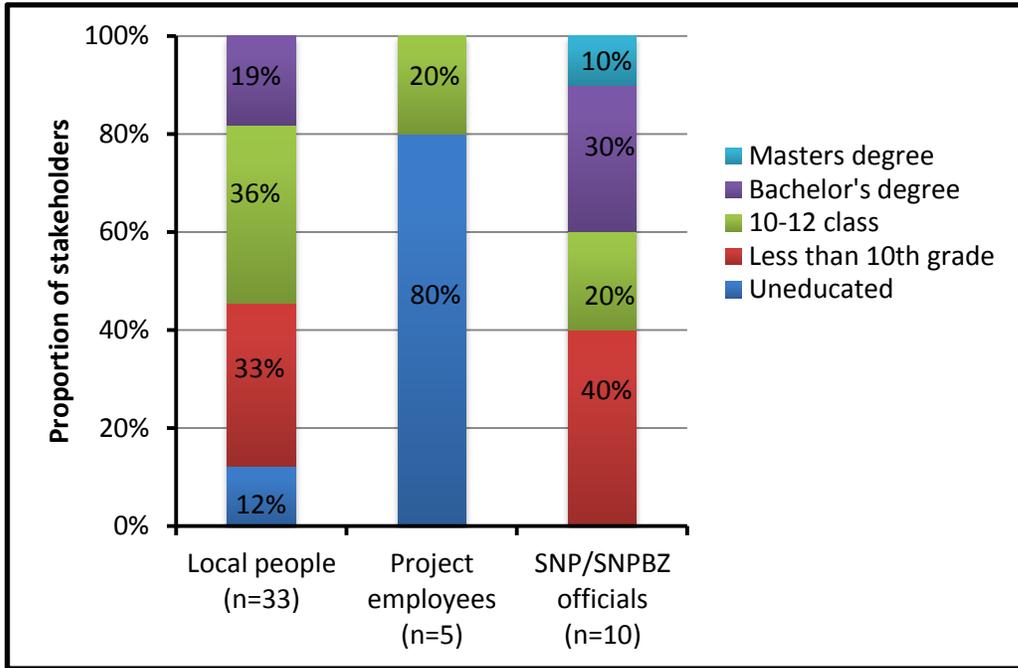


Figure 14. Key informants' level of education among stakeholders

4.1.2 Stakeholders' understanding of SNPFP

Stakeholders were asked about their understanding about SNPFP in terms of how SNPFP gets the funding to carry out the re-forestation activities in Khumbu and their overall attitude towards it.

4.1.2.1 Understanding about the source of funding

All project employees stakeholders said the involvement of the HT NZ and SEHFC was in funding through the HT NP. Four (40%) of the SNP/SNPBZ officials interviewed said the involvement of the HT NZ and SEHFC in funding through the HT NP, while six (60%) of them were not familiar with the involvement of the SEHFC in SNPFP. Likewise, a majority of local people stakeholders did not know about the involvement of SEHFC in SNPFP: three (9%) of them were uncertain about who provides funding at all; 25 (76%) said the sole involvement was of the HT NZ; and 5 (15%) were familiar with the involvement of both (Figure 15). One in each of farmers, lodge owners, and school teachers were not certain about the donors of the project. Among five of the local people who said the involvement was of both donors,

three were school teachers, two were lodge owners, and none farmers. Likewise, 12 (36%) farmers, 6 (18%) lodge owners, and 7 (21%) school teachers local people said the sole involvement of the HT NZ in funding of SNPFP was through the HT NP (Figure 15).

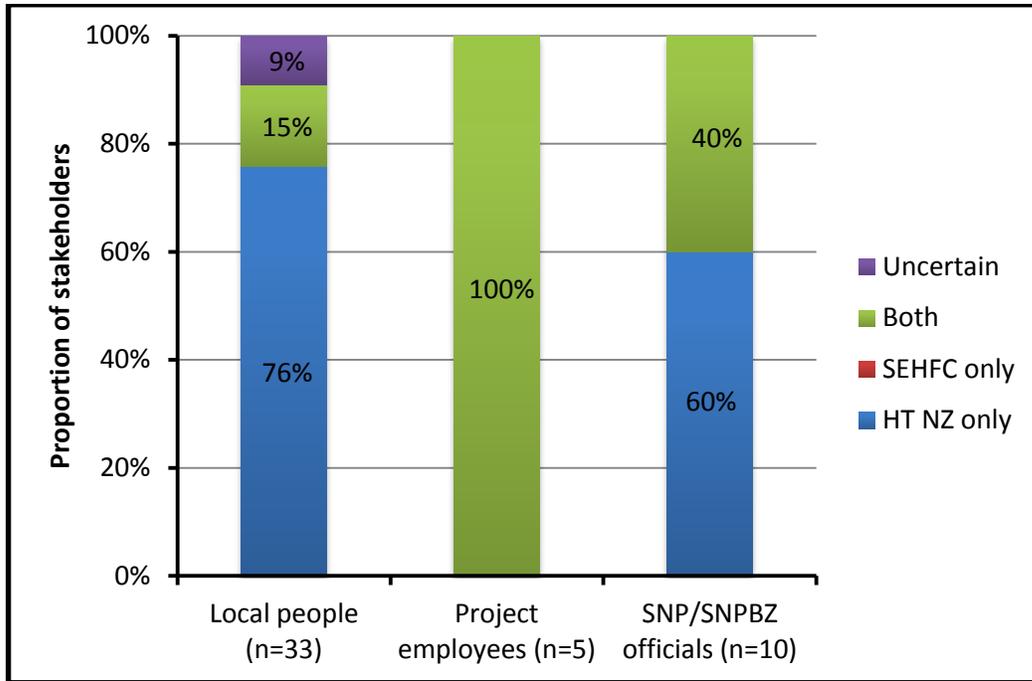


Figure 15. Key stakeholders' understanding on the source of funding of SNPFP

When the donor agencies (HT NZ and SEHFC) and NGO (HT NP) were informed about the understanding of Khumbu community about the source of funding, they responded:

Khumbu community has a great impact of Sir Edmund Hillary and his Himalayan Trust. Therefore, I am not surprised on what they had responded. (E HT NZ 1)

This is not new to us. You are not the first one to tell us about this. We contributed to Khumbu people when Hillary asked us for help and our support is still ongoing to Khumbu community to honor Hillary and to help Sherpas. (E SEHFC 1)

Whatever funding comes from the HT NZ and SEHFC, it is operated through the HT NP. A majority of developmental activities in Khumbu such as: schools and the hospitals were operated through the HT NZ so that Khumbu community has more affection to the HT NZ. However, it is really necessary to honor SEHFC for their contribution by letting public know about their role in SNPFP. (HT NP 1)

The lack of understanding about the source of funding of SNPFP among the stakeholder groups indicated a gap between the local public and project implementers.

4.1.2.2 Attitude towards SNPFP

All stakeholders were asked about their attitude toward SNPFP and coded in terms of positive, negative, neutral, and uncertain attitude. Of the five project employees, all of them (100%) expressed positive attitude. It is not surprising as they were attached to the SNPFP for more than 25 years and three of them are still working with them. They said:

Hillary has changed the faces of Khumbu. This is [pointing to a Juniper tree] the one which I had planted 20 years before. I love this as much as my son. (PE 3)

This kind of greenery would not have been imagined without the effort of SNPFP in Khumbu. (PE 1)

National park's people only work as a part of their job and many of them come and go frequently and nobody cares for the long-lasting forests here. Whatever done here is the effort of the Himalayan Trust. (PE 2)

I think there is nothing negative about the SNPFP whatever they have done here is important to Khumbu people in many ways such as nurseries and re-forestation. It also helps to bring awareness about the importance of forests to the local people and visitors as well. (PE 5)

Of the local people, 21% (3 farmers, 2 lodge owners, and 2 school teachers) were uncertain about any kind of INGO/NGO-driven activities in Khumbu; 49% (5 farmers, 4 lodge owners, and 7 school teachers) expressed the positive attitude and appreciated for their activities, while 24% (3 farmers, 3 lodge owners, and 2 school teachers) were neutral, and 6% (2 farmers) dislike the activities of SNPFP (Figure 16). Here are some responses received during the interviews:

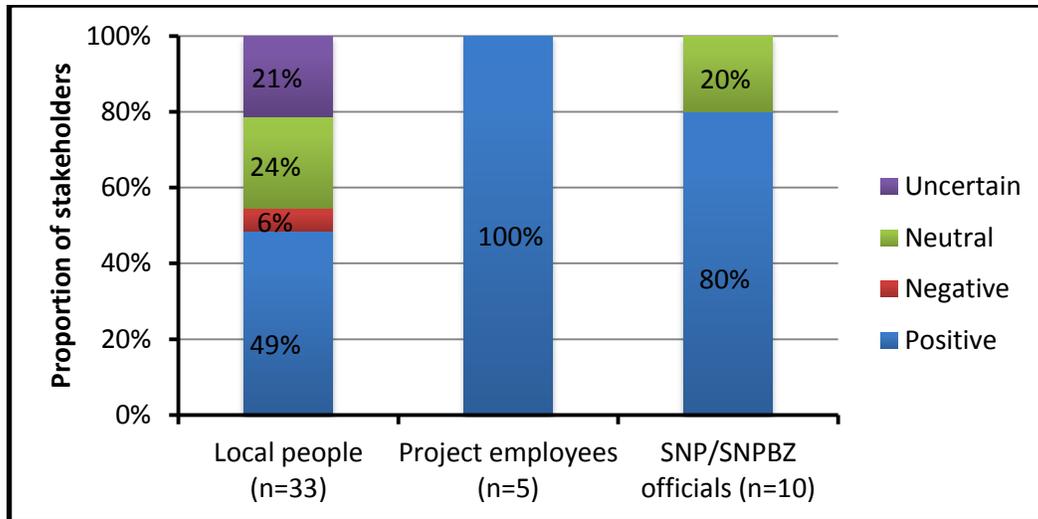


Figure 16. Stakeholders' attitude towards SNPPF

I don't like them. I don't have fire wood to cook my food but they don't let me collect from forest. I have to get permission to collect leaf litter which I need for my cattle. (LP F 12)

I don't know about them. We are busy with our job in season and rest of the season I live in Kathmandu. (LP LO 7)

Himalayan Trust! Oh! They are everything for Khumbu, who will say negative about them? (LP ST 6)

Of 10 SNP/SNPBZ officials, 8 (80%) praise the activities of SNPPF, while two (20%) of them were neutral (Figure 16). The two SNP/SNPBZ who expressed neutral attitude had over 15 years' experience in working SNP in the junior staff position. They elaborated many of the plantation plots were now without a single plant which wasted time and labour, not only of project employees but also of general public. They said:

I am neither positive nor negative to this re-forestation project. What is its importance if you planted thousands of seedlings today which will destroy by wildlife and cattle after a month. (SNP/SNPBZO 4)

Transferring seedlings from nursery to plantation site is not sufficient for its survival, proper care is needed which I usually do not see here. (SNP/SNPBZO 7)

Not too good not too bad. I participated in plantation of seedlings in same plantation plots many times with local people, but I can see many of these plots still without plant especially in the Khumjung area. (SNP/SNPBZO 5)

A majority of stakeholders interviewed expressed a positive attitude and praised the re-forestation activities of SNPFP. Those who expressed a negative attitude were not familiar with difference between SNPFP based activities and the regulations implemented by SNP/SNPBZ. It seems like they were upset because they cannot extract the forests products whenever they want which made them negative to any forest related activities. Those who expressed the neutral attitude were not satisfied in terms of post-plantation care.

4.1.3 Stakeholders' perceptions on the performance of SNPFP

Stakeholders were asked about their perceptions on the performance of SNPFP. A majority of those interviewed had mixed perceptions on the performance of SNPFP. On the one hand, they praised SNPFP for maintaining three nurseries in Khumbu—the basis for establishing many permanent plantation plots. On the other hand, they criticized SNPFP for not addressing issues for sustainable management of the plantation plots. However, a majority of respondents viewed SNPFP played a vital role to generate forest awareness among both local residents and tourists. They also pointed shortcomings such as a lack of institutional building at local level, carelessness in plantation procedures and post-plantation care due to the unavailability of technical foresters on a regular basis. The overall responses obtained on the issue of performance were coded on the basis of strength and weakness of the SNPFP. These aspects were further divided in to sub-aspects on the basis of the commonalities of the responses (Table 11).

Table 11. Perceived strength and weakness on the performance of SNPFP mentioned by stakeholders

Issue Coded for	Aspects	Sub-aspects
Performance of SNPFP	Strength of SNPFP	Establishment and management of nurseries
		Establishment of plantation plots
		Public awareness
		Publication of <i>high altitude forestry manual</i>
	Weakness of SNPFP	Post-plantation care
		Lack of technical foresters
		Lack of local institutional building
		Weak reporting system

4.1.3.1 Strength of SNPFP

Stakeholders were asked about the performance of SNPFP over past 30 years. A majority of stakeholders began by saying "nurseries and re-forestation". According to the informants, the major strengths of SNPFP include: establishment and management of nurseries, establishment of plantation plots, raising public awareness, and publication of a *high altitude forestry manual*.

Eighty five percent (13 farmers, 7 lodge owners, and 8 school teachers) of local people and 100% of project employees and SNP/SNPBZ stakeholder group responded that the establishment of nurseries and re-forestation activities as the major strength of the SNPFP, while 15% (2 lodge owners and 3 school teachers) of local people stakeholder group were uncertain about the strength of the SNPFP. Some common responses of different stakeholders on these sub-aspects are:

Nurseries at Phurte, Tashinga, and Phorste are the sources for the re-forestation activities since 1986. They planted in uncountable numbers of plots in Namche and Khumjung which were previously without trees. (LP F 2)

I think...raising seedlings and planting them are the major success of the Himalayan Trust. (LP LO 3)

Seedling production and re-forestation activities every year since 1980s are major strength of this forestry project, I guess. (LP ST 7)

I have been working in this project since 1981; its nurseries produced more than 20 lakhs (2 million) seedlings and planted them in more than 300 ha of land. I think that is the success of this project. (PE 5)

They started nurseries and plantation activities since 1979 which are the greatest achievement of the SNPFP for me. (SNP/SNPBZO 8)

Eighty two percent (9) school teachers, 80% (4) of project employees and 30% (7) of SNP/SNPBZ officials mentioned about raising public and tourist awareness for the protection of the forests as the another strength of the SNPFP. The publication of a *high altitude forestry manual* is also considered as great achievement of the SNPFP by 100% (5) of project employees and 20% (2) of SNP/SNPBZ officials. Here are some examples of responses:

Nurseries near by the trekking trail brought the attention of local people and visitors so as to think about the importance of forests in Khumbu. That is all due to the activities conducted by SNPFP. (LP ST 4)

Making public aware about the importance of forests through direct and indirect methods is another success of the SNPFP. I have talked several times with school students and visitors regarding the nurseries and reforestation practices in Khumbu. (PE 5)

Creating a public awareness for conservation of forests is strength of SNPFP. They also published *high altitude forestry manual* which describes the nursery and plantation practice in high altitude. (SNP/SNPBZO 4)

Preparation forestry manual by incorporating experiences of reforestation in Khumbu is great achievement of project which is very helpful in case of high altitude forestry. (PE 5)

The majority of participants (70%) from the SNP/SNPBZ officials, all participants from farmers and lodge owners, 18% of school teachers and 20% of project employees did not mention the public and tourist awareness as strength of SNPFP. It indicates that perceptions of stakeholders on the performance of SNPFP may vary with the level of education among the stakeholders.

4.1.3.2 Weakness of SNPFP

In response to the question regarding performance of SNPFP, a majority of respondents expressed their views by saying, "it is better to have something than have nothing." Most of the KIs pointed weakness in post-plantation care, lack of technical foresters on a regular basis, a weak reporting system, and lack of institutional building at the local community level.

None of the project employees had anything to say about the weakness of the project until 2010; however, one nursery operator expressed her opinion that if project manager should had been available throughout the project, the SNPFP would have better results. Here is what she said:

Everything is good here. I think... If Nick [Project Manager] stayed in Khumbu, this project definitely would be better than now. (PE 2)

Among the SNP/SNPBZ officials interviewed, 100% (10) of them mentioned about the lack of post-plantation care, 80% (8) of them pointed out both lack of post-plantation care and lack of technical foresters, and 60% (6) of them cited all four sub-aspects coded for weakness of SNPPFP i.e., lack of post-plantation care, lack of technical forester on a regular basis, lack of institutional building at community level, and weak reporting system. The following are the words of some stakeholders on weakness aspect of SNPPFP:

It is waste of time, money, and labor; if you do not think it for a long-term. Look at this [pointing to the plantation plots above the Namche on the way to Tashinga], there is no space available for the growth of these pine and juniper here, while so many plantation plots in Khumjung were without single plant. So, lack of post-plantation care is the failure part of the project. (SNP/SNPBZO 4; SNP/SNPBZO 6)

The Project supervisor worked so hard, but he is not a technical forester (SNP/SNPBZO 3; SNP/SNPBZO 8)

Nursery operators maintained the nurseries and seedlings were transferred to the plantation site with the help of local people, but there were no local committees and sub-committees on behalf of the project to take care and monitor those plantation sites except the effort of project supervisor and *Shingi nawas* (SNP/SNPBZO 9)

Likewise, 88% of local people (13 farmers, 6 lodge owners, and 10 school teachers) complained about the post-plantation care as the main drawback of the project and 12% of them (3 lodge owners and 1 school teacher) were uncertain about the weakness of the project. The issues of lack of technical foresters, weak reporting system, and local institutional building were also pointed out by 30% (5 farmers and 5 school teachers) of them. Here is what one school teacher said:

The growth rates of plants in Khumbu are negligible. This is the one [pointing to the juniper tree nearby] which was planted 10 years before. Protection from cattle and fires, necessary pruning and thinning, and re-planting are very essential here to see the good forests after 50 years which I did not see here since long. The forestry project is already handed over and most of the local people were engaged in tourism business. There is not that much public involvement in the protection of forests, even *Shingi nawas* system is also in the phase of termination. (LP ST 8)

One environmental expert who worked for another NGO in Khumbu complained that the entire forestry project was operated for over 30 years without involvement of a technical forester except for some technical advice of foreign manager during his short visits of 1-2 weeks each year. Here is what he had to say:

Obviously, SNPFP did a great job by maintaining three nurseries and planting diversity of plants in different plantation plots of Khumbu. However, the entire project was managed by a project supervisor who did not have any formal technical forestry knowledge except what he gains from his daily activities and learns from the foreign manager periodically. There were so many technical errors in plantation and post plantation care each year which cannot be corrected by foreign manager in his short visit. There were no efforts made for institutional building in the local level as there were no participating committees and sub-committees in local level except project employees in the form of project supervisor and nursery operators. Local people were only involved in the process of site selection and plantation. The Project manager highlighted the annual reports on the basis of number of seedling transferred from nurseries to plantation sites; however, in reality the entire seedlings in some plantation sites were browsed by animals and others are too crowded and cannot accommodate their growth soon. (NGOE 2)

Environmental experts, foresters, and university professors from different organizations were skeptical about the survival percentage mentioned by SNPFP and curious about methods adopted by SNPFP to determine the survival percentage:

Eighty percent survival rate is hard to imagine in the Everest region. There must be some technical error in recording survival percentage. (EE NTNC 1)

More interestingly, in response to the question, if SNPFP had submitted any annual report or progress report to District Forestry Office (DFO), Solukhumbu, one government forest officer from the DFO, Solukhumbu mentioned that SNPFP only needed to submit their evaluation report or annual report periodically to the donors and SWC of Nepal. He further added that evaluation or annual report was only a formality and positive impressions about a project were only reported in many cases. Here is what he said:

They do not submit anything to DFO, Solukhumbu. They directly submit their reports to SWC, Nepal and their funding agencies. Generally, all NGO-driven activities have to be reported to the SWC as a rule. It is not surprising that many of the NGOs report are just a formality to continue the project. (EE DFO 1)

Moreover, one senior staff member from the Social Welfare Council of Nepal said there is no specific process available to evaluate the effectiveness of foreign aid and work done by an NGO in Nepal. Projects are only categorized on the basis of amount of funding. He said:

There is no particular process to evaluate the foreign aid until unless there is a reporting of fraud. They are oblique to submit progress report to SWC and SWC defines the foreign aid on basis of funding amount. (SWC 1)

The researcher also communicated with SEHFC, if they had any mechanism to cross check what has been reported in the annual report and what is actually going in reality. In response to that, one executive of SEHFC said:

The forester from New Zealand visited Khumbu every year to provide the technical suggestions to project employees and he used to prepare an annual report on the basis of information collected during his visit with the help of project employees. There was nothing special to cross check. We worked for Sherpa and we believe on them. (SEHFC 1)

When the researcher inquired about the annual report of SNPFP, there were no good collections of the annual report in SEHFC. One official at SEHFC said, "We moved several times and generally reports were kept by the manager at New Zealand."

From all these circumstances, there was little to control the situation should there have been a gap between what SNPFP reported to their donors and reality.

4.1.4 Stakeholders' perceptions on the impacts of SNPFP

The understanding of the stakeholders' perception on the impacts of SNPFP is important not only from the sustainability point of view of the project, but also for the understanding of how stakeholders perceived the project's potential in the given context. Stakeholders were asked how SNPFP

had influenced the area in aspects of social, economic, and environmental impacts. The overall responses obtained from stakeholders were further grouped as sub-aspects (Table 12)

Table 12. Perceived impacts of SNPFP mentioned by stakeholders

Issue coded for	Aspects	Sub-aspects
Impacts of SNPFP	Environmental Impacts	Increase in forest cover
		Rising environmental awareness
		Healthy, green and clean environment
		Conservation of nature
		Increase in forest influences
	Economic Impacts	Boost local economy by increasing tourism activities
		Increase in SNP/BZ revenue by increasing numbers of tourists due to satisfaction
		Opportunities for extracting non-timber products
		Opportunities for extracting timber
	Social Impacts	Opportunities of employment to the local people
		Tourist satisfaction
		Public participation and forest awareness
		Skills and capacity development through experience

4.1.4.1 Environmental impacts

Himalayan Trust re-forestation project in Khumbu is connected with the environment in many ways. All these greeneries [pointing to the plantation plot in Phurte] are due to the reforestation conducted by the project. We have large numbers of growing plantation plots although they still need many years to grow. Local people like me are aware of forest. We get fresh oxygen from our forests. (LP F 13)

The above statement of the key informant shows her concern about the potential impacts of the reforestation project on Khumbu environment. As in many Himalayan regions, livelihoods of local people in Khumbu are heavily reliant on natural resources. Therefore, a majority of local people acknowledged the contribution of SNPFP in forest restoration activities in Khumbu. An increase in forest cover, rising environmental awareness, and healthy, green, and clean environment were the immediate responses of all KIs (100 %) when researcher inquired about the environmental impacts of SNPFP (Table 12).

Sixty percent (3) of the project employees, 80% (8) of the SNP/SNPBZ officials, and 45% (4 farmers, 5 lodge owners, and 6 school teachers) of local people further added conservation of nature

and increase in forest influences as the other environmental impacts of SNPFP. They repeatedly mentioned the protection of loss of soil from landslide, conservation of water resources, conservation of medicinal plants, and population increase of indigenous wildlife such as Himalayan Thar and Musk Deer. Some of the representative responses include:

We can frequently see the Musk Deer and Himalayan Thar nearby the plantation plots which were rarely seen before the reforestation activities in Khumbu. (PE 4)

We practiced the production and sale of several herbal species such as: *Picrorhiza kurrooa*, *Meconopsis paniculata*, *Rheum australe*, and many more. This really helps to conserve the local medicinal plants of Khumbu. (PE 5)

The frequency of landslides is significantly reduced in and around the plantation plots. It further protects the loss of soil and water sources in and around the reforestation sites. (SNP/SNPBZ 4)

The amount of this landslide [pointing to the landslide to nearby the Tashinga] is controlled each year with the increase in vegetation in and around the area. (PE 2)

It is very important to note that the way in which one looks at potential environmental implication depends on where one stands in terms of resource use, one's level of education, the nature of one's everyday job. For instance, a majority of farmers and lodge owners focused on the increase in forest cover, raising public awareness, and healthy, green, and clean environment; while school teachers, project employees, and SNP/SNPBZ officials pointed out conservation of nature and forest influences along with the facts focused on farmers and lodge owners in response to the environmental impacts of SNPFP.

In response to the probing question, if there are any negative environmental impacts of SNPFP, stakeholders perceived that Khumbu reforestation project has only positively influenced the fragile mountain ecosystem of the mountain environment. One old local resident who grew potatoes and buckwheats in the season and also engaged as a porter in the tourist season thanked Sir Edmund Hillary for his initiation of conservation activities in Khumbu. Here is what he had to say:

No, our forest was already destroyed 40-50 years ago. Now there is a hope of new forests in Khumbu in the time of my grandchild. Thanks to Hillary. (LP F 13)

Likewise, two farmers who were harvesting potatoes in Thame claimed that Hillary did everything for Khumbu. Here is what they exactly said:

No, not at all... whatever they had done, all are good for nature and local people. (LP F 1)

I don't think there are any negative impacts of their activities; there are all advantages and advantages. Therefore, I like to thank Hillary and New Zealand people. (LP F 12)

Meanwhile, one young female graduate in environmental science opined that re-forestation in Khumbu in this scale would not have been imagined without the effort of SNFPF. She added that the plantation and survival of the seedling in Khumbu is harder than in plantations in Pharak area. It is not only difficult for planting and survival, but also takes several years to see the effects. As she explained:

The contribution of SNFPF is really praiseworthy. In terms of environmental effects of SNFPF; raising forest awareness among the local people and visitors, plantation of more than 2 million seedlings in 30 years of duration that increases 300 ha of forest cover, and its associated influences in the number of wild life, soil and water are in the front line. Their nurseries hold varieties of local medicinal plants that are crucial to conserve them. Furthermore, I would say plantation and nursery activities are hard to imagine in this altitude without the effort of SNFPF. (UGES 1)

4.1.4.2 Economic impacts

The important economic impacts of the SNFPF, as perceived by its stakeholders are: an increase in SNP/SNPBZ revenue by increasing numbers of tourists due to the tourist satisfaction; boost local economy due to increased tourism activities; opportunities for extracting non-timber products as of now; and opportunities for extracting timber in future (Table 12).

Lodge owners were asked if the activities of SNFPF positively influenced tourists so as to increase their income. Of the 9 lodge owners interviewed, five (56%) of them considered nurseries and growing greeneries are obvious causes of tourists satisfaction and they believed this positively influenced tourism in Khumbu. One female hotel owner in Namche said:

Everybody like green and clean. Himalayan Trust conducted reforestation activities and established many plantation plots. Look at those dense pines and junipers [showing to the plantation plot at the upper hill of Namche]; these and many others plots are now attraction of Khumbu which were without trees 25 years before. However, those forests do not provide direct benefits to us [as we used electricity for everything now]; they attract tourists indirectly in Khumbu. When there are more tourists, there are more jobs to local people and more income. (LP LO 6)

However, 4 (46%) of them were skeptical about the idea because they thought Mount Everest and other peaks are the prime attraction of tourism in Khumbu. Another female lodge owner who operated a small hotel in Thame claimed that there is no link of re-forestation activities with tourism industries in Khumbu. However, she perceived those are beneficial to Khumbu community in different ways. Here is what she had to say:

Mount Everest is the only one cause of tourism here. I do not think people from Europe and America come to Khumbu to see forests. Forests here have their own value. For example; we can collect litter, grasses, and mushrooms from forests. Some local people can even collect more than 10 kg of mushrooms and supply to hotels or dried them for personal use. That is how we are benefitted from forests. Likewise, due to the increase plantation activities, there is greater availability of grasses required for cattle. But, people here in Khumbu do not keep that many cattle now a day except some *zopkios* for carrying goods. Most of the residents are engaged in tourism related activities such as hotels and trekking. (LP LO 9)

A majority of farmers perceived greater availability of leaf litter, fodder, grasses, and mushrooms due to the re-forestation activities which indirectly helped them to generate income. One local farmer who was busy in collecting mushrooms in the forests on the way to Phurte said:

There were not that much mushrooms and grasses available in this forest 20 years before. But, now there is plenty of leaf litter and mushrooms. Yesterday, I collected 5 kg of mushrooms from this area [pointing to the forest area with numerous newly growing pine and juniper trees]. (LP F 6)

Many of farmers were skeptical about the opportunities of harvesting timber in their life span; however, they are hopeful that their children definitely will have opportunity to get timber from the forests of Khumbu. As one farmer commented:

We have to get timbers from Pharak areas and rich people can also bring them from Jiri. I don't think I will be using the timber from these forests. But, if we will able to protect them my son or his son will probably use them. (LP F 8)

Only a few farmers indicated there were no economic impacts of these forests to them. When one farmer at Khunde said, "we cannot get anything from forest now, even for the dry wood we have to wait for the certain period opened by buffer zone and park people." The author further probed about if there were any negative economic impacts of re-forestation activities and he replied:

We cannot use many grazing pasture for our cattle because of plantation activities. Now, most people do not keep cattle; however, those interested in keeping them also do not have that many grazing ground available. (LP F 3)

SNP/SNPBZ officials were asked if the reforestation activities influenced the number of tourists in SNP area so as to increase the overall revenue collected at park's entrance. In response, a majority of them opined that forests have obviously influenced on the satisfaction of tourists which indirectly conveyed the positive message to different part of the globe, although there is no such a study which can explain the influence of newly growing forests to the number of tourists in Khumbu.

4.1.4.3 Social impacts

The potential social impacts of SNPPF are of particular importance to the stakeholders. Table 12 outlines the social impacts of SNPPF as perceived by the stakeholders. These include opportunities of employment to the local people, tourist satisfaction, public participation and forest awareness, and skills and capacity building through experience.

However, a majority of the stakeholders perceived positive social impacts of SNPPF, a few stakeholders particularly; farmers were concerned about the loss of grazing rights and access to the forests. More interestingly, those who complained about the loss of grazing rights immediately admitted that their children are also not interested in cattle farming. One young farmer working in the buckwheat field at Khumjung complained:

We do not have enough grazing ground. They planted seedlings everywhere and banned grazing. However, most of the people do not keep cattle now as they were busy with tourism activities; those who interested in keeping them also do not have sufficient place to feed them. (LP F 13)

Another old farmer who used to keep cattle said, "I had yaks and some goats before, but keeping them are too difficult not only due to fenced re-forestation, but also children and grandchildren are not interested in it." Researcher further probed: is it possible to keep them if you want to keep them now? He replied:

There is still some grazing ground in the upper Khumjung. We can let cattle free there, but all area nearby village has been planted with seedling every year and cannot let them free here. But, the situation here in Khumbu is different now, I am already old and had no energy to do that entire thing and my son worked in a trekking company who is not interested in this at all. (LP F 12)

More interestingly, 5 out of 13 farmers, 7 out of 9 lodge owners, 9 out of 11 school teachers, 5 out of 5 project employees, and 10 out of 10 SNP/SNPBZ officials opined the common view as tourist satisfaction and public forestry awareness in response to the question regarding social impacts of SNPPF. Here are some examples of what they said:

I have three regular guests from Germany who visit the base camp every other year. They were so happy by seeing growing seedlings in different plantation plots of Khumbu. (LP LO 3)

Residents from almost every households of Khumbu took part in transferring seedlings from nurseries to plantation sites which automatically created forestry awareness among them. (SNP/SNPBZO 1)

We organized several field visits to the Himalayan Trust nurseries as a part of student project work. (LP ST 7)

The project proponents (HT NP, HT NZ, and SEHFC) claimed that SNPPF had impacted Khumbu community many ways: it provided job for local people as nursery operators and project supervisor; motivated the public to participate in regular re-forestation activities; and raised forest awareness among local public and visitors. They further added these employees became experts in high altitude

nurseries and the reforestation process and also argued that their accumulated skill and capacity challenged the knowledge of anyone with a formal degree in forestry. Giving more insight in this context, one executive of the HT NP gave the following comment:

Our donors are Sherpa-oriented. Therefore, SNPFP had several social influences over the duration of the project. It provided job for three local Sherpanis and one Sherpa as nursery operators for more than 25 years, three of them are still working in nurseries. They developed such a skill in high altitude forestry which nobody can acquire from formal education. A majority of Khumbu residents are now aware of importance of forests. (HT NP 2)

4.1.5 Stakeholders' perceptions on hand-over of SNPFP

Obviously, it is the aim of all aid programmes to achieve local adoption by the local community for whom the work is carried out. It is of crucial importance to find out how SNPFP has been perceived by its stakeholders before, during, and after its hand-over. Therefore, different stakeholders were asked about how they perceive about the reasons of hand-over and overall hand-over process of SNPFP. The responses obtained were coded in the issue of hand-over which is further divided into two aspects i.e., reasons and process of hand-over (Table 13).

Table 13. Aspects and sub-aspects mentioned by stakeholders on the hand-over of SNPFP

Issue Coded for	Aspects	Sub-aspects
Hand-over of SNPFP	Reasons of hand-over	Achievement of project goals
		Resident funding capability
		Resident forestry skills
		Land use pressure
		Ageing of employees
	Process of hand-over	Information dissemination and consultation
		Hand-over decision and hand-over event
		Management plan in transition period
		Evaluative study of SNPFP

4.1.5.1 Reasons of SNPFP hand-over

Among the several reasons of SNPFP hand-over, stakeholders' perception on particular reason was obtained from the most relevant informants. For examples; questions regarding achievement of project goals and resident funding capability were asked to the SNP/SNPBZ officials, while questions regarding resident forestry skills, land use pressure, and ageing of employees were asked to the local people and project employees. Responses collected from different stakeholders were analyzed under the sub-aspects as shown in the Table 13.

When SNP/SNPBZ officials were asked if they were satisfied on what SNPFP had claimed on achievement of its goals, they expressed mixed perceptions. 40% (4) of them claimed that SNPFP had done enough for Khumbu re-forestation, while 60% (6) of them said there are still so many aspects of the project need to be fulfilled to achieve the success in a long run. Examples of responses include:

It is more than enough. We should not expect everything from foreign aid. SNPFP had served Khumbu community for more than 30 years and they have done enough. Now, time has come to take over the project and make itself sustainable in a local context. (SNP/SNPBZO 1)

Transferring seedlings from nurseries to plantation sites do not ensure the success of the project. The success of the project will depend upon post-plantation care and other management of the project. (SNP/SNPBZO 4)

SNPFP claimed success relying upon Khumbu community for its future management. But we can see several project failures when they were handed over. (SNP/SNPBZO 8)

In response to the question of resident funding capability, 100% of SNP/SNPBZ officials were skeptical and complained about the political conflict and government instability of the country which did not allocate the fund for buffer zone management as outlined in buffer zone management plan. They also expressed that even when funds are available there are many other areas where this can be spent before it comes to the forest management. Here is what they had to say:

Since 2010, BZMC have not received its part of share [30% to 50%] collected as park entrance fees due to the ongoing political scenario of the country. The Government centralized all funding to settle down the issue of armed force management which is in the phase of transition now. (SNP/SNPBZO 8)

Even if funding is available, there are so many other developmental works on pending; they will get the first priority than the forests. (SNP/SNPBZO 1)

Allocation of funding depends on how buffer zone committee perceived their need in the context of development. Therefore, regular funding for sustaining nurseries and care of plantation plots can't be guaranteed. (SNP/SNPBZO 2)

According to the majority of school teachers, the resident forestry skills were confined among the five nursery operators and one project supervisor as no other local residents were technically involved in the day to day activities of SNPPF. They further emphasized that all these employees were in the age of retiring, the project supervisor was outsider whose experience is useless to this community now, and one nursery operator unfortunately died last year. As one school teacher said:

However, nursery operators and project supervisor gained mastery of Knowledge in terms of nurseries, no lower generations were trained enough to take the future responsibility of nurseries in absence of existing manpower. For example: the Project supervisor [Ranjit] who had managed every aspect of the project is from Khotang district and he left Khumbu after transition period of the project ended in December 2011. Now, his knowledge is useless for Khumbu. Likewise, one nursery operator died last year. (LP ST 2)

On the basis of above information, of the six experienced project employees, 3 (50%) are available and still working in the nurseries of Khumbu, one (16%) took early retirement on June, 2010 and no longer interested in working with nurseries, another one (17%) is an outsider and already has left Khumbu, while remaining one (17%) died. Those who are still working in nurseries are also planning to leave as communicated with the researcher in 2012. Here is what one nursery operator said:

I am already old and worked for this nursery almost 28 years. Now, my son worked in Saudi Arabia and he can help me for money. I worked here now because I love these seedlings [pointing the seedling stocks at Tashinga nursery] too much. I told the park people many times to find the new person to take care this nursery. (PE 3)

One hundred percent of project employees accepted the reason, aging of project employees, as one of the cause of project hand-over outlined by SNPPF. One stated "We already worked for more than 25 years and wanted to leave this job, but we are still working due to the emotional attachment of

nurseries." When the researcher probed, if they had trained lower generations to take over their work, here is what they said:

I worked under the supervision of supervisor [Ranjit]. When one of my friends left the job, one student from Khumjung School worked with me. He also left since the end of 2010. (PE 4)

No, we are working in nurseries and take care of them since long. No other residents worked with us. (PE 1 and PE 2)

Contradicting with those responses, school teachers argued that the ageing of the employees should not be the relevant cause of project hand-over as it can be easily resolved by hiring other potential local residents. As one school teacher complained:

They technically planned to hand-over the project; otherwise, they can train other residents and hire them to run the project for some more years. I think handover of SNPPF was in wrong time. We can see its consequences here now. (LP ST 9)

In response to the question of land use pressure, a majority of informants agreed that most of the areas were planted with seedlings; however, many barren slopes are still available for plantation and many plantation plots were damaged due to landslide, animal grazing, and forest fire. One farmer responded:

That slope [pointing to the hill slope above Khumjung] was planted more than five times, but still need to be planted as most of the seedlings were browsed by animals. (LP F 6)

Another farmer pointed to the landslide above the Khunde and said, "Every year this landslide damaged growing seedlings here." (LP F 10)

4.1.5.2 Process of hand-over

As presented in Table 13, the responses collected in the process of project hand-over were categorized into several sub-aspects on the basis of commonalities of the information.

Most of the local respondents and even nursery operators were uncertain about project hand-over process. When the researcher probed about how SNPPF informed local people regarding hand-

over, one executive of the Himalayan Trust, Nepal revealed that despite of proposed high altitude forestry workshop, Namche Bazaar and high altitude forestry seminar, Kathmandu to be conducted on September 2009, all of those were cancelled due to lack of time and budget. According to him few formal and informal talks with local community representatives such as the Sherpa Himalayan Trust Advisory Committee, Buffer Zone Committee, Youth Groups, and Mothers Groups were conducted to disseminate the information of project hand-over.

While the researcher inquired all stakeholders whether they now aware about the status of SNPPFP, 67% of local people stakeholder group (8 farmers, 7 lodge owners, and 7 school teachers) and 30% (3) of SNP/SNPBZ officials were not familiar with project hand-over (Figure 17).

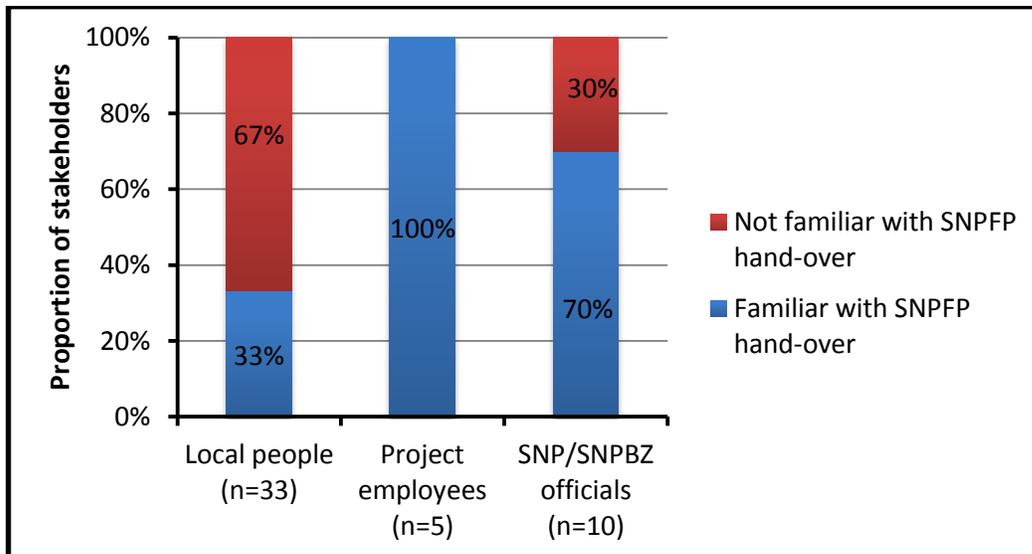


Figure 17. Proportion of stakeholders on the basis of their familiarity on SNPPFP hand-over

The stakeholders who were familiar with the project hand-over were further queried whether they participated in the hand-over event. It revealed that among the stakeholders interviewed , 21% (3 farmers, 2 lodge owners, and 2 school teachers) of local people stakeholder group, 100% (5) of project employees, and 50% (5) of SNP/SNPBZ officials were participated in the hand-over event (Figure 18). In response to the question regarding what steps were taken during the transition period of the project, a majority of respondents complained that nothing special was done during the period except the downsizing of nurseries and plantation procedures. From the responses obtained, it revealed that local people and SNP/SNPBZ could not meet together to draw the management plan that need to be implemented after December 2011 and the project supervisor left Khumbu after the termination of the

transition period. In terms of nurseries at Phurte and Tashinga, existing nursery operators were encouraged to work just to protect the seeding stocks remained with uncertainty of the future of the project.

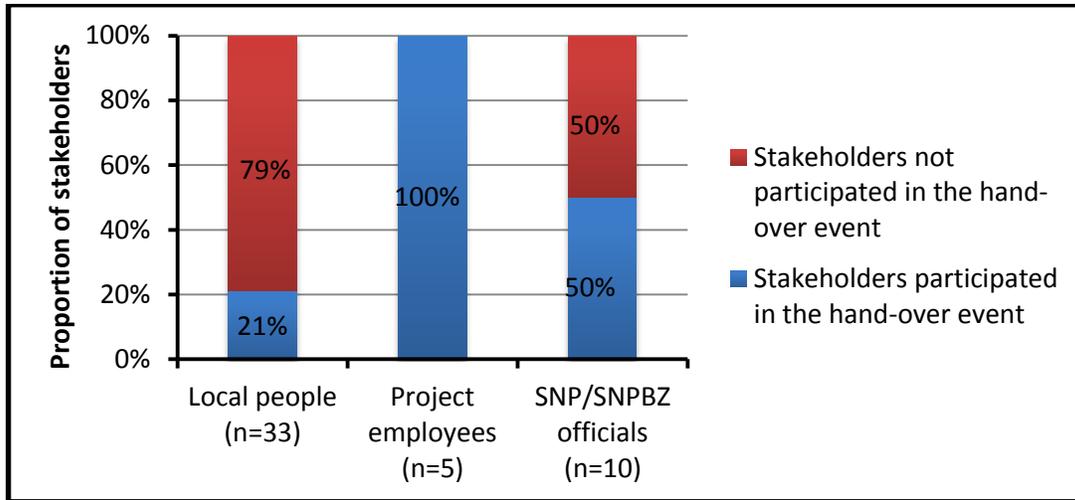


Figure 18. Proportion of stakeholders participated in the hand-over event

More interestingly, nursery operators have not received salaries from past several months and uncertain about who are their employer now. Here are some sample responses from the respondents in this issue:

Here is severe problem of budget allocation now. All money collected in park entrance is directed to the Ministry of Finances and we have been told that those were used to settle down the armed force problems of the country. We received very little since 2011 and that money was utilized as prioritized by buffer zone committees which could not cover the expenditures needed for nurseries. (SNP/SNPBZO 1)

The transition period finished without drawing a solid plan for future management, however, which was the main objective of it. The Project supervisor just worked as in previous years and left Khumbu. There is something lacking among all to coordinate here. Even the HT NZ and SEHFC also had different view on the issue of project hand-over. Now, SEHFC had just responded on these issues to do something independently to protect the 30 years of their noble work. (SEHFCE 2)

I have not received my salary for 8 months. (PE 3)

We sent out a small report explaining about the existing scenarios to SEHFC and got positive response for funding. (ESUG 1)

The researcher had an opportunity to talk with an employee of local NGO who attended the hand-over event. He reported that the project was handed over in a small meeting with neither a detailed workout nor a future management plan. As he described the situation:

The project was handed over in a hotel at Namche in the presence of a group of people affiliated with the National Park, Buffer Zone Management Committee, Himalayan Trust, and a few local people. The root cause of the project handover seems like ageing of project employees. However, there were no solid future management plan and no lower generation prepared enough to take over. The proposed one-year transition period to draw up a management plan did not work out at all. Nurseries are now vanishing, one is already closed and the other two hold some seedlings but they stopped the seedling production process that requires five years to transfer into plantation sites. Now nursery operators are working without salary for several months and are uncertain about for whom they are working. (NGOE 2)

A majority of KIs pointed out that SNPFP made no efforts to conduct a summative evaluation to assess program effectiveness in Khumbu community at all. One project employee mentioned that project manager talked about the importance of a social study of the project to determine the long-term success of the project. He also added that frequent discussion was conducted among the project employees regarding how local people appreciated the project. However, actual evaluation was not conducted due to the lack of time and money. Here is what he said:

The Project manager [Nick] told us the importance of social study of SNPFP and he planned to conduct interviews with major stakeholders and decision makers. Unfortunately, he did not come in 2009 and the project hand-over issue was in progress. Later, due to the lack of time and money, such study and other formal meeting were cancelled. (PE 5)

Most of the respondents in the interviews complained that SNPFP officials did not return to see the project after its hand-over. One school teacher reported:

NGOs were like elected political leaders: failing to visit the community once the project or election was over and returning only to implement new projects or to campaign for re-election. (LP ST 9)

The researcher had an opportunity to meet with a top executive of the Himalayan Trust, New Zealand in the Himalayan Trust, Nepal office. During the short conversation, researcher questioned about the issue of SNPPF evaluation. Responding to the question, he indicated that evaluation is a responsibility of local government and SNP/SNPBZ. He further added, because of a lack of financial and human resources, SNPPF did not conduct post-project evaluations and surveys. Here is what he said:

This project had been operated more than 30 years. The Project manager from New Zealand had served since 1989. He was looking for potential committed local individual to transfer the responsibility which was unsuccessful and the project was handed over in 2010. This project has a problem in funding as well. SEHFC provided funding for salaries of project employees and the project manager had to visit every year from New Zealand which is not sustainable and the project need to transfer to the local people after all. (HT NZ E 1)

Later, the researcher had an opportunity to talk with one top executive of SEHFC. He responded that SEHFC did not agree with the complete hand-over of SNPPF to the local people in 2010. He further added that SEHFC proposed other option of funding and continuation of the project for five more years. he blamed the HT NZ decided the project hand-over which was insistently recommended by the NZ-based project manager. He also disagreed with what the executive of the HT NZ said about the project. Here is what he said:

We wanted to continue the project for five more years in a reduced form. It was the project manager who wanted to hand-over the project in 2010... Oh! President, of the Himalayan Trust, New Zealand... he is very new and entirely from different field and does know nothing about the re-forestation in Khumbu. We don't want to ruin our more than 30 years of work in Khumbu which we did for Sherpa of Khumbu to respect Hillary. We think in a broader way, one local female environment graduate from University of Manitoba is already returned to Khumbu now. We were informed about the situation in Khumbu by local Sherpas and also contributed some funds to settle down the situation. Probably, I will be visiting Khumbu next year. (SEHFC E 1)

4.1.6 Stakeholders' understanding of the sustainable forestry

Stakeholders were asked what they understood about sustainable forestry so as to relate with the level of interpretation existing among the stakeholders. All SNP/SNPBZ officials (100%) and project employees (100%) interviewed had good knowledge of sustainable forestry; i.e., they seem familiar with the term and could elaborate what they primarily understood it to mean. However, they could not explain the three dimensions of sustainable forestry. Among the local people stakeholder group 36% (6 farmers and 6 lodge owners) of local people stakeholder group lacked the knowledge of sustainable forestry; i.e., they had not heard the term and concept, while 64% (7 farmers, 3 lodge owners, and 11 school teachers) of them were familiar with the term and could explain their understanding in local term (Figure 19).

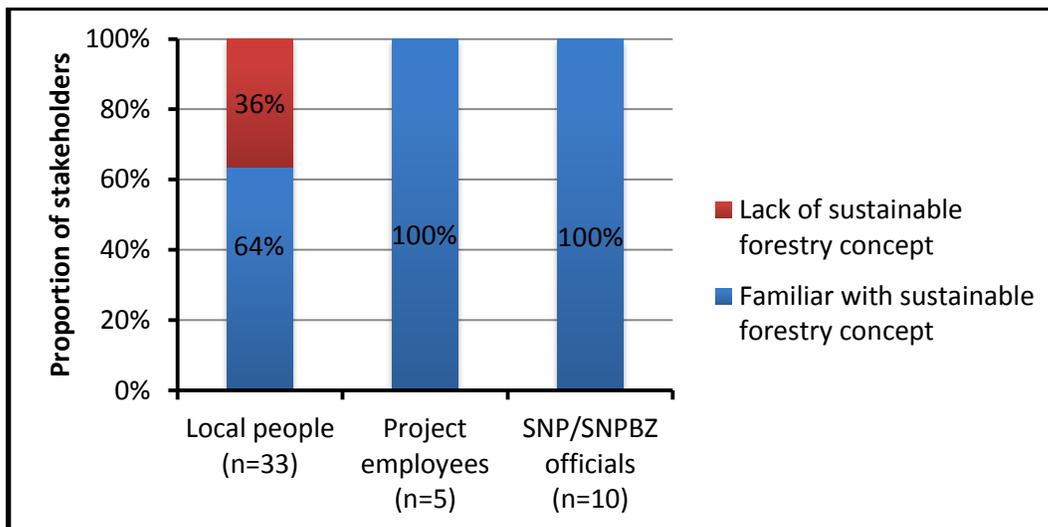


Figure 19. Understanding of sustainable forestry among stakeholders

It is not surprising that SNP/SNPBZ officials, project employees, and school teachers had some level of knowledge regarding sustainable forestry because they acquired these concepts in the form of formal and informal education and work related experience. When these informants were asked about whether they had received any form of training, workshop, seminar related to forest protection and its sustainable use organized by SNPFPP, their responses included:

I have been teaching in this school since 15 years, I have not participated in that kind of training organized by any NGOs. However, wardens of SNP used to provide some

form of conservation education to the students and teachers with field excursions.
(LP ST 5)

Ranjit [Project Supervisor], sometimes came to school and talked with students regarding nurseries and distribute the posters informally, but not in the form of seminar or workshop. (LP ST 3)

Not by the NGOs, we organized awareness workshop periodically for Buffer Zone User Group. (SNP/SNPBZO 2)

Whatever we learned is from Ranjit [Project Supervisor]. We do not understand from Nick [Project Manager] because we do not know English. (PE 1)

There were no such frequent workshops and seminars organized by SNPPF because forestry manager used to visit once a year only for 2-3 weeks which is not even sufficient to visit the nurseries and plantation sites. However, I had talked with so many school teachers, students, trekkers, guides, porters, and local people regarding the project, nurseries, and plantation process. Sometime, I also distributed the posters to the school students. (PE 5)

No, I studied about the importance of long-lasting forests in high school. (LP F 4)

Among the six farmers who lacked the concept of sustainable forestry, four were above the age of 50 and two were in between 45 and 50. They were not much interested in training. A majority of lodge owners who lacked the knowledge of sustainable forestry expressed their view that they had nothing to do with forests now because they are here only to run their seasonal business and will be in Kathmandu when season is over. Here are some responses from these farmers and lodge owners:

I do not know. I do not like to participate in training. (LP F 11)

We do not use anything from forests now. We buy everything to run our business in the season. I am not interested in forests. (LP LO 9)

The overall responses obtained in the context of understating of the sustainable forestry among these stakeholders indicate that those people who directly involved in the forest related activities such as SNP/SNPBZ officials and school teachers were fully aware of it due to their nature of work and level of education. However, the most important stakeholders, i.e., local farmers and lodge owners, were still

not aware at that level which is needed for sustainability of local forests. Nurseries, plantation plots, and planting procedures of SNPFP directly or indirectly create awareness among its stakeholders, but there were no significant level of training, no workshops at a community level which are crucial for the long-lasting forests in Khumbu.

4.1.7 Stakeholders' perceptions on future of the SNPFP

Respondents were asked about their perceptions on how to ensure the future of SNPFP. Responses obtained were coded on the issue of future of SNPFP and analyzed under two aspects: funding option and social responsibility (Table 14).

Table 14. Aspects and sub-aspects mentioned by stakeholders on future of the SNPFP

Issue coded for	Aspects	Sub-aspects
Future of SNPFP	Funding options	Long-term funding contract from SNP/SNPBZ
		Funding from NGOs, INGOs, and donors
		Funding from tourism business owners
	Social responsibility	Willingness of local leadership for the long run of the project
		Willingness of local people to participate in forest related volunteer activities

A majority of stakeholders expressed future of SNPFP will depend on the funding options, while stakeholders with peripheral importance such as SNP officials and several respondents from informal conversations pinpointed the issue of social responsibility to ensure the future of the SNPFP.

As the probing question, stakeholders were asked about what they perceive about the most long-lasting options of funding to ensure the longevity of forest related activities in Khumbu. Of the stakeholders interviewed, 76% (10 farmers, 8 lodge owners, and 7 school teachers) of local people, 100% (5) of project employees, and 30% (3) of SNP/SNPBZ officials said the involvement of some form of foreign aid as the best source of funding. Likewise, 9% (2 farmers and 1 school teacher) of local people and 7 (70%) of SNP/SNPBZ officials expressed some form of regular support from the fund of SNP/SNPBZ; while 15% (1 farmer, 1 lodge owner, and 3 school teachers) of local people said the possibility of funding from tourism business owners (Figure 20).

Here are some examples of what they said:

In our country, we cannot expect anything from government side, they generally don't start any sort of work, if started which is never continued. Thus foreign aid is the best option. (LP ST 1)

We can contribute some money to protect our forests annually. How long we will depend on NGOS? (LP LO 1)

Regular funding from the national park is the best options which need to be worked out in detail with the community. (SNP/SNPBZ 4)

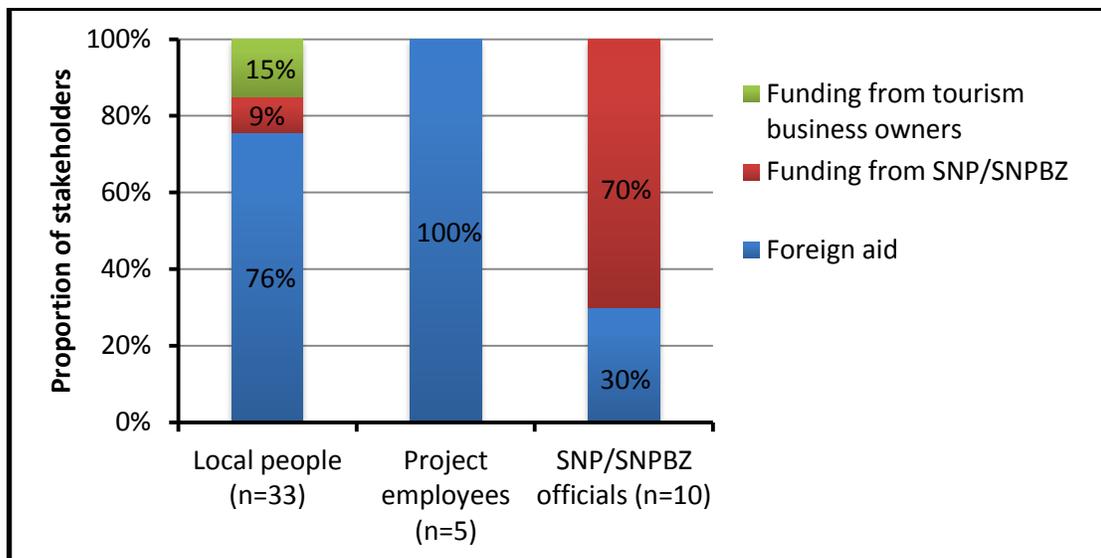


Figure 20. Proportion of responses among stakeholder groups on funding option of SNFPF

On the contrary, a majority of SNP officials and a few local people argued that social responsibility is the key for the future of SNFPF. According to them, willingness of long-term local leadership and local people's volunteer participation are of crucial importance to continue the nurseries and reforestation related activities in Khumbu. Here is what one SNP official said:

Donors and NGO already worked for more than 30 years. It's time for local adoption. (SNP/SNPBZ 1)

One local social science university graduate opined that any activities which were driven by foreign aid and NGO should have to consider the hand-over option from the very beginning of the project. She further added that success of the project will depend on how they will develop social

responsibility in the impacted community rather than on what they had done during the project duration. Here is what she said:

I think, how SNPPF has changed the attitude of Khumbu community towards local forests is more important than what they had done in 30 years. Getting funding from outsiders would not be sustainable for long-term. Now, Khumbu community has to have looked for local source of funding. (SSUG 1)

Social responsibility is a growing concept in which an individual or organization has an obligation to act to benefit society so as to maintain a balance between the economy and the ecosystem. Moreover, Corporate Social Responsibility (CSR) is one of the newest management strategies where organizations try to create a positive impact on society while performing its activities. "CSR is the overall relationship of the corporation with all of its stakeholders. These include customers, employees, communities, owners/investors, government, suppliers and competitors. Through effective CSR practices, organizations will: achieve a balance between economic, environmental and social imperatives: address stakeholders' expectations, demands, and influences: sustain shareholder value" (Khoury *et al.*, 1999). Despite the importance of social responsibility to ensure the future of the project, it seems like majority of Khumbu community either do not have hope of local funding or do they feel more secure in the presence of foreign aid. It might be either due to the lack of co-ordination among the institutions involved in the project to define their long-term goals or due to their straight forward work which unable to build social responsibility.

4.2 Summary of findings

On the basis of the information presented in the analysis of key informants' semi-structured interview in section 4.1, this section summarizes the research findings for clarity.

4.2.1 Stakeholders' understanding about SNPPF

Despite the fact that SNPPF had operated for more than 30 years in Khumbu, a majority of the stakeholders interviewed were not familiar with the involvement of SEHFC in the project. Eventhough SEHFC claimed sole involvement in SNPPF after 1985, the project was operated under the umbrella of the HT NZ which obtained the funding from SEHFC and everything was channeled through the HT NP. There is still a gap in knowledge among the stakeholders regarding the institutional involvement of SNPPF.

A majority of the informants had a positive attitude to the SNPFP; however, a few informants who were not aware of foreign aid and NGO involvement in the re-forestation expressed negative attitudes blaming SNP not letting them to use the forest resources whenever they want. To the contrary, some informants were neutral to all NGO-based activities and expressed the view "something is better than nothing."

4.2.2 Stakeholders' perceptions on performance and impacts of SNPFP

4.2.2.1 Perceptions on performance of SNPFP

Analysis of the KIs interviews found that informants had mixed perceptions regarding the performance of SNPFP. In terms of the major success, the establishment of nurseries, establishment of plantation plots, raising public forestry awareness, and the publication of *high altitude forestry manual* were highlighted by the stakeholders. Among the points mentioned "nurseries and plantation plots" was the first response who responded on the strength of SNPFP. However, most of the local people stakeholders did not mention about the issue of public forestry awareness and the publication of the *high altitude forestry manual* as strength of project. Most of the stakeholders praised SNPFP for:

- Establishment of three nurseries at a high altitude of Nepal containing diversity of high altitude seedlings.
- Nurseries are operated by local people
- Planting of 300 ha of land which established several permanent plots that increased the forest cover and forest influences in Khumbu.
- Publication of "*High Altitude Forestry Manual*" at the end of the project by incorporating the challenges and experiences of re-forestation in a high mountain environment.
- Generation of forestry awareness among both local residents and tourists.

Likewise, in terms of weakness, a majority of stakeholders began with the response, "lack of post plantation care" and mentioned other issues such as a lack of technical foresters, weak reporting system, and lack of institutional building at the local community level. It seems that the major reasons identified by the stakeholders were mostly related to the sustainability of SNPFP. For instance: among the 10 SNP/SNPBZ officials interviewed, 60% of them mentioned the all four sub-aspects coded for weakness of SNPFP: lack of post-plantation care; lack of technical foresters, weak reporting system, and lack of institutional building at the local community level; 80% of them expressed two sub-aspects: lack of post-

plantation care and lack of technical foresters; and 100% of them mentioned about the lack of post-plantation care. Project employees did not pinpoint the weakness of the project; however, their responses obtained from other general and probing questions were contradictory. For instance, they complained the lack of time spent by the project manager on the project site and also realized the poor management of plantation plots. However, a majority of farmers did not mention the lack of a technical forester and the lack of institutional building at the local level. A few participants from school teachers and lodge owners and a majority of SNP/SNPBZ officials complained about this issue. Their major concerns were:

- Local people were only utilized for the process of site selection and other volunteer activities such as plantation of seedlings but there were not any participating committees and sub-committees in the community.
- The project manager never conducted meetings and workshops with the local community to incorporate the feedback from the local community except some informal talks and meetings in the phase of project hand-over.
- The Project manager used to compile the overall information whatever he got from the project employees especially from project supervisor in his short visit of 1-3 weeks to make the annual report which needs to be submitted to the participating NGO, INGO, and donor.
- No efforts were made to hire a project supervisor with a technical forestry background ever in the duration of 30 years.
- Survival percentages were recorded and reported annually but not in a cumulative basis. In reality, entire seedling in some plantation sites were browsed by animals and others are too crowded and cannot accommodate their growth.
- Lack of scientific procedures in plantation and post plantation care.
- The annual report was highlighted on the basis of number of seedling transferred from nurseries to plantation sites.

More interestingly, this study has found that neither the government entities nor participating NGO/INGO/donor evaluated or cross-checked the overall performance of SNFPF since the overall evaluation done by Hardie *et al.* (1987) in the early phase of the project. In terms of Nepal, SWC does not have any mechanism to evaluate the foreign aid and NGO-driven projects until they were reported for frauds, while participating NGO/ INGO/donors were reliant on the project manager and project

employees. Given the facts, there was no mechanism to reveal the gap in what had been reported and what had been happened in reality.

4.2.2.2 Perception on impacts of SNPFP

As discussed in section 4.1.4, the SNPFP is bound to have some impacts on the environment, society, and economy of Khumbu. As the overall objective of the project is associated with sustainable management of forests and all activities were concerned with re-forestation related activities, a majority of stakeholders weigh the implications of the project from the viewpoint of how they are benefitted. A few farmers; however, complaint about the loss of their grazing rights and access to forests. They also agreed with decreasing trend of cattle farming in Khumbu due to the ongoing tourism centric economy. Thus, most of the stakeholders are apprehensive about the consequences of the projects for the existing tourism and natural resource-based livelihoods in Khumbu. The perception on the impacts of the SNPFP varies among stakeholders: local people, project employees, and SNP/SNPBZ officials. To the project employees, the SNPFP created the employment opportunities so as to accommodate five people for more than 25 years. Likewise, lodge owners and SNPBZ were benefitted from increased tourism activities and tourism revenue respectively. Stakeholders noticed SNPFP had influenced to increase forest cover, to raise environmental awareness, to conserve soil, water, and wildlife, and to increase forest influences as an environmental impacts. Socially, SNPFP increased tourist satisfaction, developed forestry skills and capacity among the local public through their direct and indirect participation, and also provided opportunities of employment for local people. Economically, it boosted the local economy though increased tourism related activities and opportunities of extracting non-timber products now and timber in future.

4.2.3 Stakeholders' perceptions on hand-over of SNPFP

Stakeholders' perceptions on the hand-over of SNPFP were analyzed under two aspects: reasons for the hand-over and the process of hand-over as discussed in section 4.2.5. Their perceptions on the reasons for hand-over as outlined by SNPFP were counter to the SNPFP. However, a few stakeholders responded in favor of the project especially in the case of the accomplishment of project goals and land use pressure. For instance, 40% of SNP/SNPBZ officials were satisfied with what SNPFP had done to achieve their goals, while 60% of them were skeptical and pointed out many aspects which need to be completed to achieve their goals. The reason, resident funding capability, was heavily criticized by stakeholders. Stakeholders complained the government directing all the money collected as park

entrance fees to the Ministry of Finance which did not allocate 30-50% of its share to the buffer zone management as indicated in buffer zone management plan. Due to the ongoing political instability, country's economy totally focused on the Constitution. Stakeholders were totally uncertain when buffer zone management will get its part of share to govern its developmental activities. Contradicting with the another reason, sufficient resident forestry skills, stakeholders commented forestry skills are confined among the project employees and no such big efforts were made to train other people in the community to transfer the skills. At the same time, they argued that the project supervisor was outsider and there is no significant impact of his skills in the future. Stakeholders perceived the reason; ageing of employees, is not a relevant reason. They further blamed the project manager that he wanted to get rid of without addressing the issue of sustainable hand-over.

According to the stakeholders, the process of project hand-over was the weakest part of SNPFP. This raised a question on its sustainability. A majority of stakeholders were uncertain about the project hand-over and those who were informed about the hand-over also were uncertain about the future management plan of the project. Major complaints of the stakeholders on the process of SNPFP hand-over included:

- The project was handed over in a small meeting without a detail work out and future management plan.
- The proposed 1-year transition period to draw up the management plan did not work out at all.
- The proposed workshop and seminar to be organized in 2009 regarding project hand-over were cancelled and no efforts were made to reschedule them.
- The root cause of the project hand-over seems like ageing of project employees. However, there were no lower generation prepared enough to take over.
- The proposed social study of the project to find out how local people appreciated the activities of SNPFP until now and how they will accept it after hand-over was also not done.
- Nurseries are vanishing, one is already closed and other two hold some seedlings but they stopped seedling production that requires 5 years to transfer into the plantation site.
- Now nursery operators have been working without salary for several months. They are attached to the nurseries but uncertain about to whom they are working for.

An analysis of the annual reports of SNPFP and communication with the executives of participating organizations revealed that there was a conflict among them regarding hand-over issue of

the project. However, SEHFC had expressed the interest to continue the project for five more years in a reduced scale. The HT NZ approved and decided the hand-over in December 2010. It was also revealed that SEHFC responded to the appeal of local people regarding the status of project after its transition period and expressed the interest for support. However, an amendment of the agreements between the SWC, Nepal (Government of Nepal), the HT NZ (INGO), and the HT NP (NGO) in December, 2010 restricted all funding from all trust's international donors to be channeled through the HT NP. It also defined the areas where aid programmes will be run which excluded the re-forestation component. As a result, there is a technical problem to allocate funds in re-forestation; however, SEHFC is still interested in funding for SNPFP.

4.2.4 Stakeholders' understanding of the sustainable forestry concept

Understanding of the sustainable forestry concept varied among the stakeholder groups. The SNP/SNPBZ officials and project employees group had 100% of the participants familiar with sustainable forestry concept. While the local people stakeholder group was the most heterogeneous group where the lodge owners had the largest proportion of participants lacking sustainable forestry knowledge, followed by farmers and teachers. Interpretation of the sustainable forestry varied among both stakeholders and stakeholder groups. Lodge owners had the weakest interpretation followed by project employees and SNP/SNPBZ officials. The result from the analysis of understanding of sustainable forestry concept indicated that the immediate stakeholders of SNPFP such as farmers and lodge owners still need to have some level of training so as to participate in the forest related activities for long-term at their own interest.

4.2.5 Stakeholders' perceptions on future of SNPFP

A majority of stakeholders still worried about the funding options to secure the future of the SNPFP; however, few of them raised the issue of social responsibility for its longevity. In case of funding options, 100% of project employees and a majority of local people explained foreign aid as the best option of funding, while a majority of SNP/SNPBZ officials and a few local people recommended some form of continuous funding from SNP/SNPBZ fund. A few participants from local people stakeholder group raised the possibility of regular funding from tourism business owners as well. Those who pinpointed the issue of social responsibility viewed the future of SNPFP depends on availability of local leadership.

5. DISCUSSION AND CONCLUSION

Since the 1950s, Nepal has made some progress in development including education, health services, and natural resources conservation due to the introduction of foreign aid. However, foreign aid resulted in the growing number of the NGOs and INGOs with little change in the field. While the government of Nepal has tried to put in place a foreign aid policy and set up "foreign aid" division across the several ministries, no policies were implemented to address some specific questions such as: How foreign aid can be addressed? Who is to be involved, and how projects and programs are devised, implemented, and evaluated? (Dhakal, 2006). Even though supporters of foreign aid and NGO-led development viewed them as contributors of development, opponents blamed them for doing only little for target groups. Despite this, important gains also have been made through the involvement of non-governmental actors. Moreover, working through Nepal's political conflict and collaborating with many funding agencies, there is obvious in-country experience in achievement of specific goals of the projects. A majority of literature marks the positive perceptions of foreign aid and NGOs; however, there are a few studies evaluating them on the basis of how the impacted community perceived them (Khanal, 2006).

The purpose of this research was to analyze stakeholders' perceptions on performance, impacts, and hand-over of the foreign aid and NGO-driven re-forestation project in Khumbu, Nepal. Accordingly, the researcher applied a community stakeholder approach based on the premise that multiple stakeholders' perceptions would reflect overall performance and cumulative impacts of the project in the impacted community. This study utilized the input from semi-structured interviews of 48 key informants and informal interviews/conversations from 31 participants. The semi-structured interviews were designed to obtain the perceptions of SNPPF, its impacts, and existing condition of the project after hand-over; while informal interviews collected broader information from heterogeneous informants.

The exploration of the stakeholders' perceptions on the NGO-led re-forestation project has important implications on the future planning and management of such projects. Findings indicated high degree of heterogeneity in a comparison of key informant's responses among different stakeholder groups which is consistent with the findings of many other foreign aid and NGO related studies (Ashley and Maxwell, 2001; Narayan *et al.*, 2005; Roka, 2012;). Qualitative analysis revealed that several sociodemographic characteristics such as age, sex, caste, and education were critical to influence the responses among the key informants both among stakeholders and stakeholder groups. For instance, key informants with high level of formal education provided more critical comments regarding

performance, impacts and hand-over of the project, while people with lower level of education provided general information. As one SNP/SNPBZ official in Namche commented:

Khumbu people are addicted to the foreign aid and NGO-led activities and most of them forgot about social responsibility. However, many youngsters got the opportunity of foreign education in western countries, but they were not interested to contribute in Khumbu for long-term. In case of SNPPF, we should not expect more than this from donors, but currently the situation here was worsened due to the political conflicts. And the buffer zones share of park entrance fees were used by the government on armed force settlement rather than for the purpose of buffer zone management (SNP/SNPBZ 2).

Likewise, local people generally commented on visible strength and weakness of SNPPF such as the establishment of nurseries, establishment of plantation plots, and post plantation care, while School teachers and SNP/SNPBZ officials raised many key issues such as public forestry awareness, lack of institutional building at the local level, and weak reporting system.

The perceived impacts of SNPPF on environment, economy, and society also varied among the stakeholder groups. A majority of lodge owners and farmers viewed the project from the point of environmental benefits, while school teachers, project employees, and SNP/SNPBZ officials also pointed out social and economic benefits of the project. More interestingly, nobody raised the issue of the negative impacts of the project except some farmers who complained about the loss of grazing rights and access to the forests.

The study indicated a failure to incorporate activities and future plan with community needs. SNPPF carried out an extensive re-forestation programme without taking the initiative for local adoption in the long-term. This mismatch in community capacity building and contributed problems in the longevity of project, which is consistent with findings of many authors who suggested the same reasons to the failure of many development projects implemented by many INGOS and NGOs in developing countries (Chambers, 1993; Ashley and Maxwell, 2001; McMichael, 2008).

As criticized by Ronald (2010) and Suar *et al.* (2006) on sustainability of NGO-led projects, a majority of SNPPF stakeholders were also concerned about the accountability and sustainability of SNPPF. Stakeholders complained about the procedures of the SNPPF hand-over. Most of the stakeholders were neither well-informed nor consulted appropriately before the project hand-over.

Moreover, stakeholders were neglected by cancelling the proposed workshops and seminars which need to be done to get public opinion regarding the hand-over. Most importantly, there was not much evidence that SNPFP worked to help communities to become self-reliant and capable of managing after hand-over. All project employees of SNPFP were in the age of retiring, and no lower generations were trained so as to transfer the responsibility of the nurseries. Petras (1999) and Hudson (2001) also found the similar issue of uncertainty in the stage of project hand-over in their previous research on NGO-led development.

This study also found conflicts among the participating agencies in different phases of the project. For instance; the HT NZ decided on the hand-over of SNPFP while SEHFC was still in the favor of continuation of the project in a reduced scale. It indicated that the decision making process among participating institutions was not participatory which in turn resulted in the project hand-over without the drawing of a solid management plan. Likewise, the interaction of SNPFP with local government and SNP was very limited just fulfilling the imposed requirements such as: to determine the plantation sites and to get their consent in the phase of project hand-over. In these circumstances, the success of foreign aid and NGO-led project, therefore, depended on the mechanism of how it was implemented rather than who implemented the project. For example, a study conducted by Korten (1992) on five successfully initiated NGO-led forestry projects in Asia found the projects that were successful as NGOs were proactive in developing models responsive to the need of the impacted community at a particular time and place which had enabled them to build the self-reliant and strong organization capable of making the work sustainably even after project hand-over. Additionally, the findings of the study also revealed that Khumbu community is still relying on foreign aid in most of the activities instead of developing social responsibility; however, the situation is different there now as the economy of Khumbu is far better than other villages nearer to the urban centers of the country.

This study explored one of the most understudied aspects of foreign aid and NGO-led natural resource conservation and rural development in Nepal and the implications it holds for the future foreign aid led development projects in developing countries like Nepal. These findings are particularly relevant for understanding the impacts of foreign aid and NGOs' activities on rural communities. Although several studies have evaluated the work of NGOs and effectiveness of foreign aid, this study adopted a community approach for assessing the impact of foreign aid and NGO activities. The understandings of these issues are still limited, although their importance has been emerging. It is

revealed that it is necessary to understand how foreign aid and NGOs interact with other actors such as states, donors, locals, and the governments.

This research can contribute to the study of foreign aid and NGOs. Future of foreign aid and NGO-led natural resource conservation and rural development should be more collaborative involving various implementing agencies and, critically, local stakeholders. Such interactions should focus on identifying issues in the community, selecting the implementing agency, developing a monitoring and evaluation policy, and promoting accountability and transparency. Such purposeful interactions would result in long lasting and mutual relationships among stakeholders, governments, donors, and NGOs; which are critical for successful foreign aid and NGO-led activities to occur. Similarly, the enhanced interaction would facilitate the sharing of information among the stakeholders so as to determine where, when and how projects are implemented, how long projects will operate, and when project will be handed over to the stakeholders. The interaction would also focus on ways to integrate financial, technical and local resources to implement larger projects, which would bring substantial changes to communities. This study also explored the fact that local and extra-local agencies involved in foreign aid and NGO-led natural resource conservation should focus on creating and strengthening the community field. According to Theodori (2005), a strong community field would entail successful adoption and continuing management of completed projects. It will help to generate the process involved in assessing problems faced by the community, and once a problem has been identified, stakeholders can interact to develop an integrated solution to the issues. They can also identify how each stakeholder can contribute. The findings of this study, therefore, reveal that a stronger community field is a key to making foreign aid and NGO-led development sustainable at a local level and local people along with other stakeholders are the reliable source of information to measure the performance of foreign aid and NGO-led projects.

6. FUTURE DIRECTIONS: WHERE WE GO FROM HERE?

This research suggests a new perspective on the role of foreign aid and NGOs in natural resource conservation and community development in rural areas of developing countries. However, a number of avenues remain open to further research. First, this research focuses on a single project—future research should move towards covering multiple projects. Such studies would serve to fill the empirical gap that currently exists between previous individual project level case studies and micro level analysis. Second, research on the role of international development organizations and donors in promoting participatory forms of development and conservation practices in developing countries is also of utter importance.

This study also raises some important questions worthy for future research. For instance: do donors and NGOs develop any model of evaluation for their terminated projects? Do their reports correspond to the reality of their activities in the impacted community? To what extent do their logic and consequences conflict? How are foreign aid and the governments of developing countries coupled? What are the evaluation criteria developed by the governments of developing countries to assess the effectiveness of foreign aid and NGO activities?

This research recommends more studies to assess the effectiveness of projects associated with foreign aid and NGO activities in other rural communities. Such studies are critical for improving the NGO sector, and for narrowing the gap between international aid agencies and community development. NGOs should not view evaluation as interference from government authority or donor agencies. Instead, they should use evaluation to improve their effectiveness. On their part, government and donor agencies should adopt appropriate evaluation techniques to prevent resource misuse at the local level. Monitoring and evaluation are the only way to make natural resource conservation and rural development effective. Further research on the role of the government and local people for the successful implementation of NGO-led projects are necessary to make foreign aid and NGO-led activities more successful and sustainable.

A critical perspective of NGO organizational practices must be adopted by researchers and integrated into an understanding of social and environmental change. Shifting how donors perceive accountability and evaluation may be a slow process, but should remain a focus of the NGO-led community development. If NGOs are not able to reflect upon their own activities and concentrate on reporting positive results in order to maintain funding, it will be difficult to achieve their goals and to

ensure that NGOs are indeed reaching the right stakeholders in the proper ways. Legitimacy, accountability, transparency, representation, and performance are the major areas that need to be further explored in terms of NGO-led conservation and development projects (Anderson, 2007). There are only a few examples of research that examine the processes and negotiations of evaluation for NGOs that work for conservation and grassroots social change (Hilhorst, 2003). This research has demonstrated possibilities for increased understanding of foreign aid and NGO-led development that can result from a community stakeholder approach.

This study also revealed the gap in the involvement of multiple donors and identified how these gaps impacted on quality of foreign aid and NGO-led project. Therefore, the findings of the study recommend that strong collaboration between the local people, the NGOs, donors, and the government is the key for the sustainability of foreign aid and NGO-led projects. It is very important to conduct the study on devolution of foreign aid based project in the developing country to find out the mechanism that how state based foreign aid converts into non-state based aid and which subsequently terminates at all. At the same time, this study also recommends the government of aid recipient country should take their serious responsibility in the phase of inception, operation, and hand-over of the foreign aid and NGO driven projects.

7. STUDY LIMITATIONS

Research based on a community stakeholder approach has several challenges. Among many of them the most important one is the researcher's role in the evaluation process and its impact on research subjects (Kusow, 2003; Harrington, 2003). The most important aspect which the researcher noticed during data collection is that local people would respond differently to a foreigner than to a Nepali. More interestingly, local people see even Nepali researchers from cities or outside the community as NGO staff. During the field visit and data collection, many respondents assumed the researcher was an employee of a NGO. They were very interested to share specific problems in their communities and even requested projects to address them. To address this issue, it was really important to spend time with stakeholders so as to convince them of the role of the researcher. Surprisingly, while informant anonymity is a critical part of research involving human subjects here in Canada and North America, several respondents in Nepal were happy to release their sociodemographic information.

Moreover, the presence of local leaders and NGO employees also sometimes affect the interpretation of local people. In Khumjung, women and local farmers were hesitant to speak openly in the presence of a NGO employee. Therefore, this research found that it was very crucial to keep the ongoing study away from local power structure although local leaders and NGOs employees were critical for identifying key informants in this research. This research was conducted under the constraints of time, budget, and access to resources which did not explore the generalizability of its findings in terms of work conducted by other NGOs and INGOs in this region. To achieve this, a project would need to cover diverse group of NGOs and INGOs which are engaged in different sectors such as environmental conservation, local livelihood development, and health sectors. Despite the limited generalizability, the issue questioned by this research is one of the least studied aspects of foreign aid and NGO-led projects in developing countries and the effects it holds for future fate of them.

Another important limitation that must be addressed is that the project employees were not sufficiently consulted as the project was already terminated and project staffs were already scattered in different places. Likewise, local herders were unable to include in the local stakeholder group due to time, money, and logical constraints. Sampling of these people would have required more budget and time.

Appendix A: Interview guide for semi-structured interview

The questions in these interview guides were developed keeping in mind to address the following research questions:

- How stakeholders of SNPFP perceive the performance and impacts of foreign aid and INGOs/NGO-driven re-forestation programme in Khumbu? Is SNPFP making a real difference in Khumbu?
- How stakeholders of SNPFP perceive its hand-over? Should SNPFP have been handed-over sustainably to SNP and local people in a long term?

Stakeholder group I: Local people (Local farmers, Lodge owners, and School teachers)

Demographics and connection to the study area

- Would you mind to provide your age, caste, and education?
- Do you have any children? How many? What ages and sex? What are they doing?
- How many years have you lived in...? _____ (current place of residence)?
- Where are you originally from if not from here?
- Did you live here all year round or live elsewhere during certain parts of the year while you were working at SNPFP?

Understanding about SNPFP

What do you know about Sagarmatha National Park Forestry Project?

- Who were involved in SNPFP?
- What is the current status of SNPFP?
- Who are taking care of nurseries and forest now?

Attitude toward SNPFP

How do you think about the activities of SNPFP in Khumbu? And why?

Performance of SNPFP

- What is the success/strength of SNPFP? Anymore?
- What are the weakness/failures of SNPFP? Anymore?

Impacts of SNPFP

1.) Economic impacts

- Do you think implementation of SNPFP make any difference in the household income of local people (you or overall local residents) in any aspect? If yes, how?

2.) Environmental impacts

- What are the changes in the environment after the implementation of SNPFP in Khumbu? Could you please elaborate them?

3.) Social impacts

- What are the positive and Negative influences in the society due to the implementation of SNPFP? And why?

- Have you or any of your family members ever involved in any activities of SNPFP? If yes, for what kinds of activities?
- Did the project management personnel inform all public before making important decision such as selecting plantation site?
- Did SNPFP provide any types of awareness training or workshop related to reforestation program?

Project hand-over

- Do you know about SNPFP hand-over? If yes, how?
- Did you attend the hand-over event?
- How do you view about the hand-over of SNPFP?
 - Were the local communities prepared enough for this?
 - If not what more needs to be done?
- How do you explain the activities conducted in transition period of the project?

Interpretation of sustainable forestry

- How your work is related to forests?
- What does the term “sustainable forestry” mean to you?

Vision for the future

- Who do you think should be involved in working to make sure that forest in this region is sustainable or more sustainable?
- What are the possible funding options to run the project for long run?

Stakeholder group II: Project employees

Demographics and connection to the study area

- Would you mind to provide your age, caste, and education?
- What is/was your position and role at SNPFP?
- What kind of forestry related training or education do you have? And from where?
- How many years have you worked for SNPFP?
- How many years have you lived in...? _____ (current place of residence)?
- Where are you originally from if not from here?
- Did you live here all year round or live elsewhere during certain parts of the year while you were working at SNPFP?

Understanding about SNPFP

What do you know about Sagarmatha National Park Forestry Project?

- Who were involved in SNPFP?
- What is the current status of SNPFP?
- Who are taking care of nurseries and forest now?
- What were the roles of SNPFP for 30 years?

- How did SNPFP report in progress to government of Nepal

Attitude toward SNPFP

How do you think about the activities of SNPFP in Khumbu? And why?

Performance of SNPFP

- What is the success/strength of SNPFP? Anymore?
- What are the weakness/failures of SNPFP? Anymore?

Impacts of SNPFP

1.) Economic impacts

- Do you think implementation of SNPFP make any difference in the household income of local people (you or overall local residents) in any aspect? If yes, how?

2.) Environmental impacts

- What are the changes in the environment after the implementation of SNPFP in khumbu? Could you please elaborate them?

3.) Social impacts

- What are the positive and Negative influences in the society due to the implementation of SNPFP? And why?
- How do you inform all public before making important decision such as selecting plantation site?
- How do you provide any types of awareness training or workshop related to reforestation program?
- Did SNPFP train any other local people/school students/lower generation about nursery preparation and plantation procedures?

Project hand-over

Are you satisfied with project hand-over?

- Did you attend the hand-over event?
- How do you view about the hand-over of SNPFP?
 - Were the local communities prepared enough for this?
 - If not what more needs to be done?
- How do you explain the activities conducted in transition period of the project?

Interpretation of sustainable forestry

- How your work is related to forests?
- What does the term “sustainable forestry” mean to you?

Vision for the future

- Who do you think should be involved in working to make sure that forest in this region is sustainable or more sustainable?
- What are the possible funding options to run the project for long run?

Stakeholder group III: SNP/SNPBZ officials

Demographics and connection to the study area

- Would you mind to provide your age, caste, and education?
- What is your position and role in SNP/SNPBZ?
- What kind of forestry/ ecology/environment related training do you have? And from where?
- How many years have you lived and worked in Khumbu?
- Where are you originally from if not from here?
- Do you live here all year round or do you live elsewhere during certain parts of the year?

Understanding about SNPFP

What do you know about Sagarmatha National Park Forestry Project?

- Who were involved in SNPFP?
- What is the current status of SNPFP?
- Who are taking care of nurseries and forest now?

Attitude toward SNPFP

How do you think about the activities of SNPFP in Khumbu? And why?

Performance of SNFP

- What is the success/strength of SNPFP? Anymore?
- What are the weakness/failures of SNPFP? Anymore?

Impacts of SNPFP

1.) Economic impacts

- Do you think implementation of SNPFP make any difference in the household income of local people (you or overall local residents) in any aspect? If yes, how?

2.) Environmental impacts

- What are the changes in the environment after the implementation of SNPFP in Khumbu? Could you please elaborate them?

3.) Social impacts

- What are the positive and Negative influences in the society due to the implementation of SNPFP? And why?
- Do you have any ideas on how SNPFP inform all public before making important decision such as selecting plantation site?
- Did SNPFP train any other local people/school students/lower generation about nursery preparation and plantation procedures?

Project hand-over

- Do you know about SNPFP hand-over? If yes, how?
- Did you attend the hand-over event?
- How do you view about the hand-over of SNPFP?
- Were the local communities prepared enough for this? If not what more needs to be done?
- How do you explain the activities conducted in transition period of the project?
- Did SNPFP coordinate with SNP in their activities? If yes how?
- What is the present condition of SNPFP?

Interpretation of sustainable forestry

- How your work is related to forests?
- What does the term “sustainable forestry” mean to you?

Vision for the future

- Who do you think should be involved in working to make sure that forest in this region is sustainable or more sustainable?
- What are the possible funding options to run the project for long run?

**Appendix B: Information and consent form used for the study
Ryerson University**

Consent Agreement

Study title: "An Evaluation of the Sagarmatha National Park Forestry Project (SNPFP), Khumbu, Nepal: A Community Stakeholder Approach"

You are being asked to take part in a research study. Before you agree to be a volunteer, it is important that you read the following information and ask any questions to make sure you understand what you are being asked.

Investigator: Chet Prasad Bhatta (MAsc Candidate at Ryerson University)

Purpose of the study: The purpose of this study is to get an understanding of how stakeholders' perceive about Sagarmatha National Park Forestry Project to address the following research questions:

- How stakeholders of SNPFP perceive the performance and impacts of foreign aid and INGOs/NGOs-driven re-forestation programme in Khumbu? Is SNPFP making a real difference in Khumbu?
- How stakeholders of SNPFP perceive its hand-over? Should SNPFP have been handed-over sustainably to SNP and local people in a long term?

I am seeking for exact information about this project. Any biasness regarding the information will impact on the result of my study. Getting this information is very important for making this forestry project more sustainable which in turn directly and indirectly promotes the local communities and protects the environment. However, the researcher cannot guarantee any direct benefit to participants.

Description of study: The questions in this interview ask you to: 1) provide information about what you know about Sagaramatha National Park Forestry Project; b) provide some details about your experience with SNPFP; c) provide information about what you think are the biggest successes of SNPFP and what are the biggest challenges to SNPFP; d) provide your opinions about what should be done to make this forestry program more sustainable, and e) provide some basic information about yourself, such as your gender and your age for example. The interview will take about thirty minutes to an hour to complete.

Confidentiality: Any information we gather will be kept confidential, meaning any personal information you share with the investigator will not be given to anyone else. The data collected from this study will

be used for educational purposes and only the investigator will have access to the data. The data, which is the information from the interviews, the consent forms and investigator observations, will be carried under lock and key. Data will be both password protected and encrypted, will not be stored on a laptop, but rather in my luggage or carry-on, separately from my computer. Any hard copies of data will be destroyed once the research has been completed. Computer data will be kept for a period of 7 years on an online data storage system which only the investigator will have access to. After this time period, computer data will be destroyed. Confidentiality will be maintained as much as the law allows. I will be storing all the data in the password protected form in the pen drive. All the data from laptop will be deleted after transferring to pen drive. Pen drive and all hard copy documents will be placed in my luggage during travelling.

Incentives to Participate: Participants will not be paid to take part in this study.

Voluntary Nature of Participation: Participation in this study is voluntary. Your choice of whether or not to participate will not affect your future relations with Ryerson University. Likewise, participation or non-participation will not affect relations with Sagarmatha National Park Forestry Project.

If you decide to take part, you are free to change your mind and leave at any time during the study. At any point in the study, you may refuse to answer any question. If you would like at any time, your responses to interview questions can be erased and destroyed.

Questions about the Study:

If you have any questions about this research at this point of time, please ask. If you discover that you have questions in the future, please contact me:

Chet Prasad Bhatta

MASc Candidate, Ryerson University, Toronto, ON, Canada.

Environmental Applied Science and Management Program,

E-mail: cbhatta@ryerson.ca

If you have any questions about this research or about Ryerson University and the Environmental Applied Science and Management Program, please contact:

Dr. Michal Bardecki
Program Director,
Environmental Applied Science and Management Program,
Ryerson University, Toronto, ON, Canada.

bardecki@GEOGRAPHY.ryerson.ca

416-979-5000 x6175

If you have questions regarding your rights as a human subject and participant in this study, you may contact the Ryerson University Research Ethics Board for information.

Research Ethics Board

C/o Office of the Vice President, Research and Innovation

Ryerson University

350 Victoria Street

Toronto, ON M5B 2K3

416-979-5000 x7112

Illiterate Consent Process: If any participants are found to be illiterate, I will read the information line by line that is provided in the consent form and ensure that the participant understands what they are being told and fully agrees to participate. If there is any issue with relaying this information in the consent, I will take help from my research assistant and other literate local people to ensure that the participant fully understands the information. Obviously, I don't have any language related problems as my mother tongue is Nepali.

Agreement for Participation: Your signature below means that you have read and understand the information in this agreement and have had a chance to ask any questions you have about the study. Your signature also means that you agree to be in the study and have been told that you can change your mind and leave the study at any time. You have been given a copy of this agreement. You have been told that by signing this consent agreement you are not giving up any of your legal rights.

Name of Participant (please print)

Signature of Participant

Date

Signature of Investigator

Date

Agreement for Audio-recording: Your signature below means that you agreed to record your interview which will be deleted permanently once I translated them into English.

Name of Participant (please print)

Signature of Participant

Date

Signature of Investigator

Date

Appendix C: Sample transcript of an informal conversation

Informal interview/conversation with a local NGO employee in Namche

It was raining outside and the researcher was having tea in the dining lounge of a hotel at Namche. A man who stayed in the same hotel came up to the dining lounge and we introduced each other. He said he has been working for local NGOs since five years. We started to talk about the nurseries and re-forestation in Khumbu. He seemed really quite concerned for the future of nurseries and plantation plots in Khumbu. His main concern is about the forestry project hand-over in 2010. Although, he agreed with local adoption of the forestry project in a long run, he seemed disagree with the project hand-over procedure that happened in December, 2010. He complained about the closure of the nursery at Phorste and further added that nursery at Tashinga is also in the phase of termination. He is worried on the fact that seed collection and sowing of seedlings were completely stopped in the nurseries which is not sustainable. He is skeptical that nursery may be totally closed when already sowed seedling will finish. He also complained about the post plantation care in many plantation plots as the entire seedlings in some plantation sites were browsed by animals and others are too crowded and cannot accommodate their growth soon.

However, he praised SNPFP for a great contribution for establishment and maintenance of three nurseries and plantation plots of Khumbu, he disliked the fact that the entire project was managed by a project supervisor who did not have any formal technical forestry knowledge except what he gained from his daily activities and what he learned from the foreign manager periodically. He shared that he attended the hand-over event that was scheduled on December, 2010 with a short notice given by project supervisor. According to him, project was handed over by stating one-year transition period in which management plan should be drawn for the future management of the project, but he do not see any progress in the project after 2010. In response to the question of social responsibility, he is quite skeptical about Sherpa community in terms of local development. As he stated, "Majority of Sherpas are in foreign country and seasonal hotels here are run by their wives, and they also live in Kathmandu and other city in off-season. Those who were educated and trained do not return here. So, who will take responsibility? He further emphasized that the budget from buffer zone were also prioritized to the monasteries and other local development rather than environmental protection. According to him local leadership with a long-term job contract is necessary to continue the nursery and re-forestation in Khumbu.

Appendix D: Photographs of nurseries and plantation plots



Plate 1. Tashinga nursery



Plate 2. Phurte nursery



Plate 3. Plantation plot in Namche



Plate 4. Plantation plot in Tashinga

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