



Tinjure-Milke-Jaljale Rhododendron Conservation Area

A Strategy for Sustainable Development

Prepared in partnership with

IUCN Nepal

NORM

2010



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List of Abbreviations / Acronyms

| | |
|-------|---|
| ACA | Annapurna Conservation Area |
| CAMR | Conservation Area Management Regulations |
| CFUG | Community Forest User Group |
| CITES | Convention on International Trade on Endangered Species |
| DDC | District Development Committee |
| DFO | District Forest Office/ Officer |
| DNPWC | Department of National Parks and Wildlife Conservation |
| EIA | Environmental Impact Assessment |
| I/NGO | International/Non Government Organization |
| ICDP | Integrated Conservation and Development Project |
| IUCN | International Union for Conservation of Nature |
| KCA | Kanchenjunga Conservation Area |
| MBNP | Makalu-Barun National Park |
| NGOs | Non-Governmental Organizations |
| NORM | National Rhododendron Conservation and Management Committee |
| NTB | Nepal Tourism Board |
| NTFP | Non-Timber Forest Product |
| NTNC | National Trust for Nature Conservation |
| RCWC | Rhododendron Conservation Women Committee |
| TAAN | Trekking Agencies Association of Nepal |
| TMJ | The Tinjure-Milke-Jaljale |
| TRPAP | Tourism for Rural Poverty Alleviation Program |
| UNDP | United Nations Development Program |
| VDC | Village Development Committee |
| WWF | World Wildlife Fund |

Summary

About this document: The strategy for sustainable development proposed here for the Tinjure-Milke-Jaljale area consists of seven parts. Begun with basic introduction of the strategy, the strategy provides its conceptual framework, a short description of the setting and major obstacle along with the outline of priority actions and the proposed implementation plan. Desk-top analysis, consultation, interaction and PRA were used to collect basic information for the preparation of the strategy.

Overall goal: The Tinjure-Milke-Jaljale area (referred as TMJ hereafter) of Sankhuwasabha, Taplejung, and Tehrathum districts is selected for the conservation as it is considered the capital of Rhododendron with more than 25 species. It falls in Eastern part of Nepal. The overall goal of the plan is to develop the TMJ area as the hub of the Rhododendron studies, conservation and sustainable uses in Nepal. It has set up four objectives. The conceptual framework of the strategy is intended to maximize community's role in the overall management of the area. On the basis of impact areas, the strategy has identified four major areas for intervention; (a) biodiversity conservation, (b) preservation of cultural heritage, (c) development of livelihood alternatives and (d) eco-tourism development.

Major obstacles: Several obstacles have been identified to achieve the conservation goal of the area. These obstacles include legal ambiguity in terms of boundary and institution, loss of habitats, poor infrastructures, inadequate basic services, lack of livelihood opportunities, etc.

Implementation outline: The Strategy lists 28 priority actions for four objectives with the total of 12 outputs. The implementation outline suggests the immediate endorsement of the strategy by the government, engaging local communities, designating an implementing agency, building capacity and raising awareness. The strategy also highlights the role and responsibilities of the stakeholders.

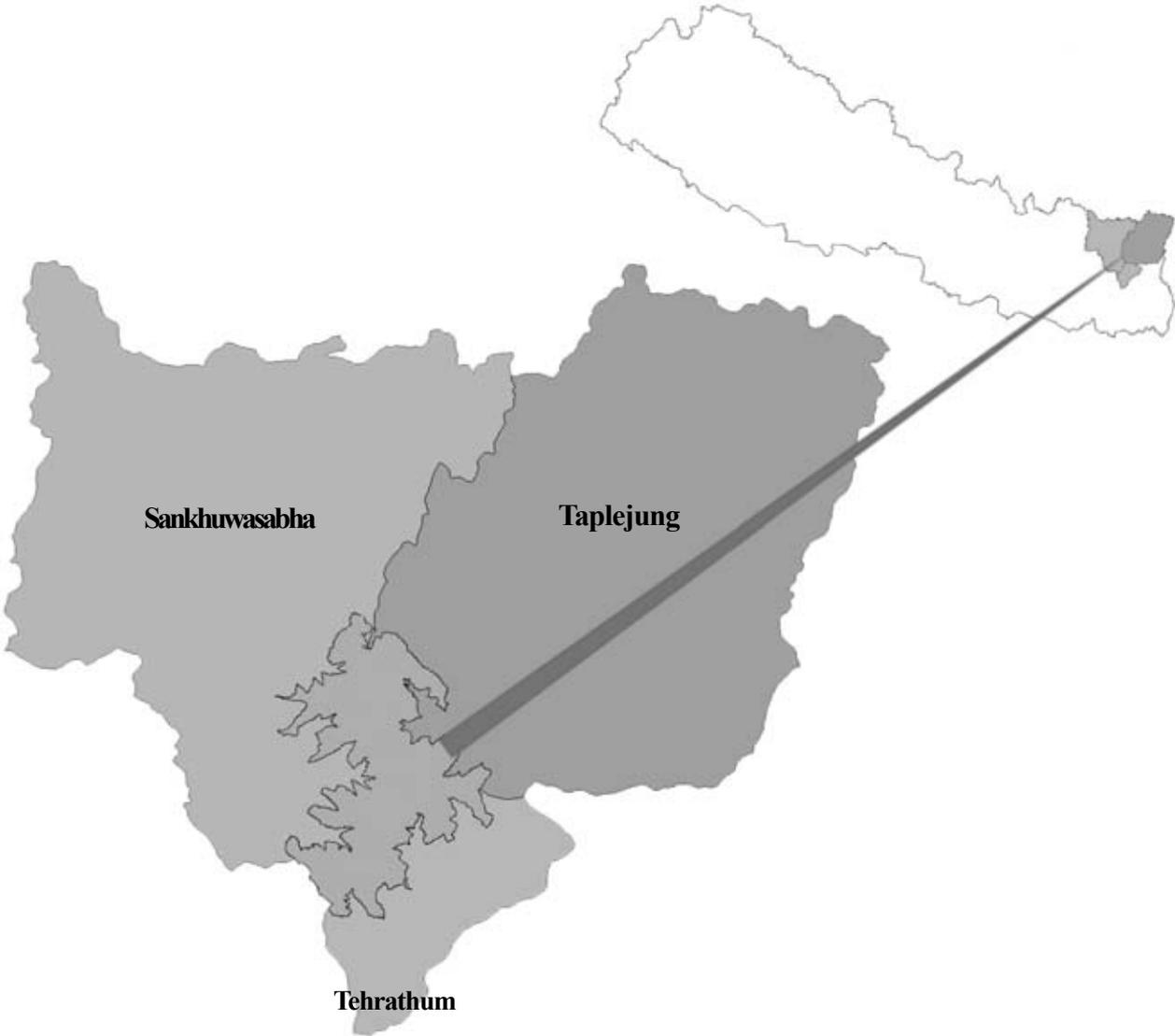
Conclusion: It is suggested that the management policy of the TMJ area should come under national protection act and should be guided by Nepal's development policies, biodiversity strategy and related regulations. Suggestions are made that various acts including Conservation Area Management Regulation 1996, Soil and Watershed Conservation Act 1982, Forest Act 1993 and Local Self-Governance Act 1999 may be employed for its management with the intention that the area be declared as a **community-conserved conservation area** and that should be guided by the principles such as the recognition of private and community forests, recognition of traditional rights and empowerment of local people.

Fact Sheet

| | |
|-------------------------------|---|
| Location | : Eastern Development Region |
| Geographical Coordinates | : 27°6'57'- 27°30'28' N Latitude and 87°19'46 - 87°38'14 E Longitude |
| Conservation Area declaration | : 1997 |
| IUCN Category | : VI (proposed by this plan) |
| Area | : 585.26 Km ² of Tehrathum, Sankhuwasabha, and Taplejung districts |
| Boundary | : Between Arun and Tamor rivers |
| Major geophysical character | : Middle mountain –High Himalayan |
| Major Ethnic groups | : Rai, Limbu, Chhetri, Brahmin, Sherpa, Tamang and other |
| Economy | : Agriculture, Animal husbandry, Trade |
| Major River | : Arun, Tamor |
| Major Lake | : Jaljala Pokhari, Sabha Pokhari, Panch Pokhari, Gufa Pokhari, etc. |
| Bioclimatic zone | : Temperate and Alpine |
| Biogeographic realm | : Palearctic/Oriental |
| Global 200 Ecoregion | : Alpine Meadows and Shrubs, Broad leaved Forest, and Pine Forest |
| Climate | : Temperate and Alpine |
| Mean annual rainfall | : 1650 mm |
| Mean Temperature | : 2 – 22° C |
| Elevation Range | : 1700-5000 m |
| Endangered Mammals | : Snow leopard, Leopard cat, Clouded leopard, Himalayan Musk deer |
| Globally Threatened Birds | : Pheasants |
| Major Forest/vegetation types | : Sub-tropical, temperate, sub-alpine, and Alpine Pastures |
| Uniqueness of the area | : Extensive rhododendron forests with >25 species of rhododendron; Capital of rhododendron |
| Community forests | : 62 (Tehrathum 46, Sankhuwasabha 13, and Taplejung 3) |
| Total local population | : > 52123 |
| Population density | : 89 per Km ² |
| Total VDCs | : 23 |
| Annual Visitors (Approx) | : 5000 |
| Major Issues | : High biodiversity, unique socio-culture, subsistence livelihood and poverty leading to high dependency on natural resources, deforestation and environmental degradation. |

Source: Different sources

Figure 1: Map of Nepal showing the location of the Tinjure-Milke-Jaljale



I. Introduction

1. Background

Biodiversity protection with an ever growing human population and demand for natural resources has become a formidable challenge for all and every where. Globally the protected area system has proved effective to protect species, ecosystems, and landscapes within the legally defined boundaries. In fact, this approach has saved rare and endangered species and spaces from extinction more than any other approaches of biodiversity conservation.

Nepal's high priority in biodiversity conservation is reflected in the increasing number of protected areas and their coverage, which is more than 20% of the total area of the country. For details please see **Box A below**.

Box A. Nepal's Conservation and Management Policy

The primary legislative mechanism for conservation in Nepal is the National Parks and Wildlife Conservation (NPWC) Act, which was enacted and came into force in 1973 (**HMG 1973**). It is the landmark legislation for the conservation of species and their habitats. Chitwan National Park was declared in 1973 as the first National Park in Nepal. Since then, over 16 protected areas covering more than 20% of the total area of the country have been set aside for biodiversity conservation. The mountain protected areas are managed under the Himali National Parks Regulations 2030 (**HMG 1979**). In addition, various international conventions related to conservation and multilateral environmental agreements such as Convention on Biological Diversity (CBD) also provide overall guidance in biodiversity conservation. The National Conservation Strategy (*NPC/IUCN 1991*) for Nepal has emphasized sustainable use of land and natural resources by giving management responsibility to local communities.

Five-year plans have stressed the need for conserving wildlife. The Eighth Plan (1992-1997) recognized the role and involvement of local people in conservation of ecosystem through equitable benefits sharing (**NPC 1992**). The Ninth Plan (1997-2002) stressed the involvement of stakeholders in all the stages of biodiversity conservation (**NPC 1997**). The Tenth Plan (2002-2007) sought to reduce poverty from 38% to 30% by 2007 through four key areas such as high, sustainable and broad-based economic growth, social sector and rural infrastructure development, targeted programs for the ultra-poor, vulnerable and deprived groups and good governance (**NPC 2002**). Reinforcing the Nepal Biodiversity Strategy and its Implementation Plan, the Tenth Five-Year Plan considered biodiversity conservation as a potential area in creating additional employment opportunities.

Nepal Biodiversity Strategy (NBS) 2002 is a commitment of government towards protection and use of the country's biologically diverse resources, conserve ecological processes and systems, and ensure equitable sharing of all benefits on a sustainable basis with the local people (**HMG 2002**). The strategy has emphasized a close link between biological diversity and livelihoods and economic development by relating to agricultural productivity and sustainability, human health and nutrition, indigenous knowledge and gender equality, building materials, water resources, and cultural well-being of the society.

More areas with natural and cultural significances have been identified and proposed for the management and conservation of Nepal's resources. The Tinjure-Milke-Jaljale area (referred as TMJ hereafter) of Sankhuwasabha, Taplejung, and Tehrathum districts is one of them. The following reasons authenticate the importance of the TMJ area.

- It represents middle and high mountain landscapes between two successfully protected areas of Nepal, Kanchenjunga Conservation Area (KCA) and Makalu-Barun National Park (MBCNP) and is a popular tourist destinations for mountaineering, trekking and rafting.
- It represents important global ecoregions including Eastern Himalayan Alpine Grasslands and Shrubs and Broadleaf Forest.
- It harbors more than 250 plant species including 17 endemic, nine endangered and 14 threatened species.
- With more than 25 species of rhododendron, it is known as the capital of rhododendron. Therefore, it provides ample opportunities for scientific research on rhododendron, watersheds, highland and lowland (upstream and downstream) linkage, climate change, socio-culture, rural livelihood, etc.
- Faunal diversity of the area includes rare, endangered and threatened species of mammals like snow leopard (*Uncia uncia*), leopard cat (*Felis bengalensis*), clouded leopard (*Neofelis nebulosa*), musk deer (*Moschus chrysogaster*), pangolin (*Manis species*) etc.
- Most of the forests belong to community forest groups as more than 49 community forests have been handed over to local communities. It has a unique socio-cultural setting with a mixture of ten ethnic & indigenous communities.

The conservation of the TMJ area was formally initiated in the mid 1990s when IUCN Nepal began natural resource management program following the recommendations of the special task force to assess biological diversity, socio-economic status and cultural values of the area (see **Table 1** for chronology of events). The Government of Nepal declared the TMJ Area as National Rhododendron Environmental Conservation Area (NRECA) under the Ministry of Population and Environment in 1997 (MOPE 1997). IUCN Nepal expanded its activities on biodiversity conservation and community development programs after the declaration of the TMJ area as environmental conservation area. Presently, IUCN is working on various programs in partnership with local grassroot level organizations such as National Rhododendron Conservation Management Committee (NORM) and Rhododendron Conservation Women Committee (RCWC). Major ongoing programs include institutional mechanism for landscape governance, landscape level strategic plan, community conservation plan, gender and capacity building of local communities and institutions.

2. Vision, mission and goal

Vision: The vision of the strategic plan is that the TMJ area is developed as a model for sustainable use, conservation and development where people enjoy their rights over, and access to natural resources.

Mission: Mission of the strategy is to empower local people and build their capacity to conserve, manage and promote biological and socio-cultural uniqueness of the TMJ area through the community based conservation area approach.

Goal: The overall goal of the plan is to develop the TMJ area as the hub of the Rhododendron studies, conservation and sustainable uses in Nepal. Its major objectives have been set up as follows.

1. Develop the TMJ area as the center for studies, management and conservation of rhododendron
2. Formulate mechanism for the identification and preservation of cultural values and heritage
3. Develop livelihood alternatives for reducing poverty, particularly of women, poor and socially excluded groups
4. Promote ecotourism for the management and conservation of natural resources.

3. Methods and analysis

The following methods were employed to collect data and information for preparation of the strategy for sustainable development in the TMJ area.

Desktop review: Desktop review of the literature and secondary data were conducted [Strategic Plan of the Sacred Himalayan Landscape (GoN 2006), Management Plan of the KCA (DNPWC 2004), and related policy documents such as National Parks and Wildlife Conservation Act 1973, Himali National Parks Regulations 1979, Buffer zone Regulations 1999 (HMG 1973, 1979, 1999), Kanchenjunga Conservation Area Management Regulations (GoN 2008) were reviewed] to examine concepts and practices of successful practices of conservation. Broadly the concept of integrated conservation and community development programs (ICDP) was also reviewed and best practices extracted (**see Box B (Brown and Wyckoff-Baird 1992)**).

Consultations and interactions: Consultation meetings were organized with experts and representatives of various organizations including Trekking Agents Association of Nepal (TAAN), Nepal Tourism Board and FECOFUN to discuss about the need and scope of the plan. Then, a team from IUCN Nepal visited the TMJ area and conducted community interactions including PRA, focused group discussion and key informant. Five interaction meetings were organized in Basantapur and Myaglung of Tehrathum, Mudhe of Sankhuwasabha, and Taplejung district. More than 250 local people including District Development Committee (DDC) and VDC representatives, community leaders, teachers and CFUG representatives participated in the interaction. SWOT analysis helped refine management issues and qualitative information.

Survey: The questionnaire survey was also conducted in order to collect data and information on the socio-economic status of the area.

Data analysis: Situation analysis of biological and socio-economic conditions was used to identify conservation issues and possible future programs. The plan was drafted bringing issue, strategies and actions and possible outcomes together. In-house comments and suggestions from stakeholders and partners were incorporated in the final report

Table 1: Chronology of key events in the TMJ area

| Year/s | Events/activities in the TMJ area |
|--------|---|
| 1992 | A French scientist documented the abundance of rhododendron/forests and their changes |
| 1993 | IUCN Nepal initiated conservation activities |
| 1996 | Ministry of Population and Environment, National Planning Commission and IUCN Nepal conducted a field study |
| 1997 | Government declared TMJ Rhododendron Conservation Area under the Environmental Protection Act 1996 and Environmental Protection Regulations 1997 |
| 1997 | IUCN in partnership with NORM, Government of Nepal and local communities initiated conservation and livelihood programs |
| 1999 | Nepal-UK Community Forest Development Project and Forests for Livelihood Program conducted forest management and livelihood programs |
| 2002 | IUCN Nepal conducted biological assessment of the area |
| 2005 | Nepal Biodiversity Strategy Implementation Plan (2006-2010) identified the TMJ area as one of the priority areas |
| 2000 | Parliamentary Committee for Natural Resources recommended that the management responsibility be given to local community and that MoFSC coordinate conservation activities. |
| 2006 | A task force formed under the chairmanship of the State Minister of MoFSC for the preparation of a report on the TMJ area (2063/11/29 BS). |
| 2006 | The task force submitted the following recommendations: a) Declare the TMJ Rhododendron Conservation Area by changing (degazetting) National Rhododendron Environmental Conservation Area under the Environmental Act, b) Establish a Conservation Funds for the area, c) Prepare a Conservation Management Plan, and d) Develop a required institutional model for management |
| 2008 | Preparation of a Strategic Plan for Sustainable Development |

Source: Oli 2002, Task force report and field study 2008

Box B. Integrated conservation and community development program

In Nepal, the concept of an Integrated Conservation and Community Development Program (ICDP) was developed and implemented from the mid-1980s. Nepal is known for a successful implementation of ICDP through the Annapurna Conservation Area, which has become the best model of community-based conservation. Basic concept of ICDP is that conservation and development objectives should be well linked.

Characteristics: 1) all material benefits of the program must be clearly tied to its conservation actions and local people must perceive development activities as incentive for sustainable conservation of the resources, 2) the program should offer a means of balancing the needs of local people, the environment and future generations, and 3) the programs should continuously improve the quality of life and promote the conservation and management of resources.

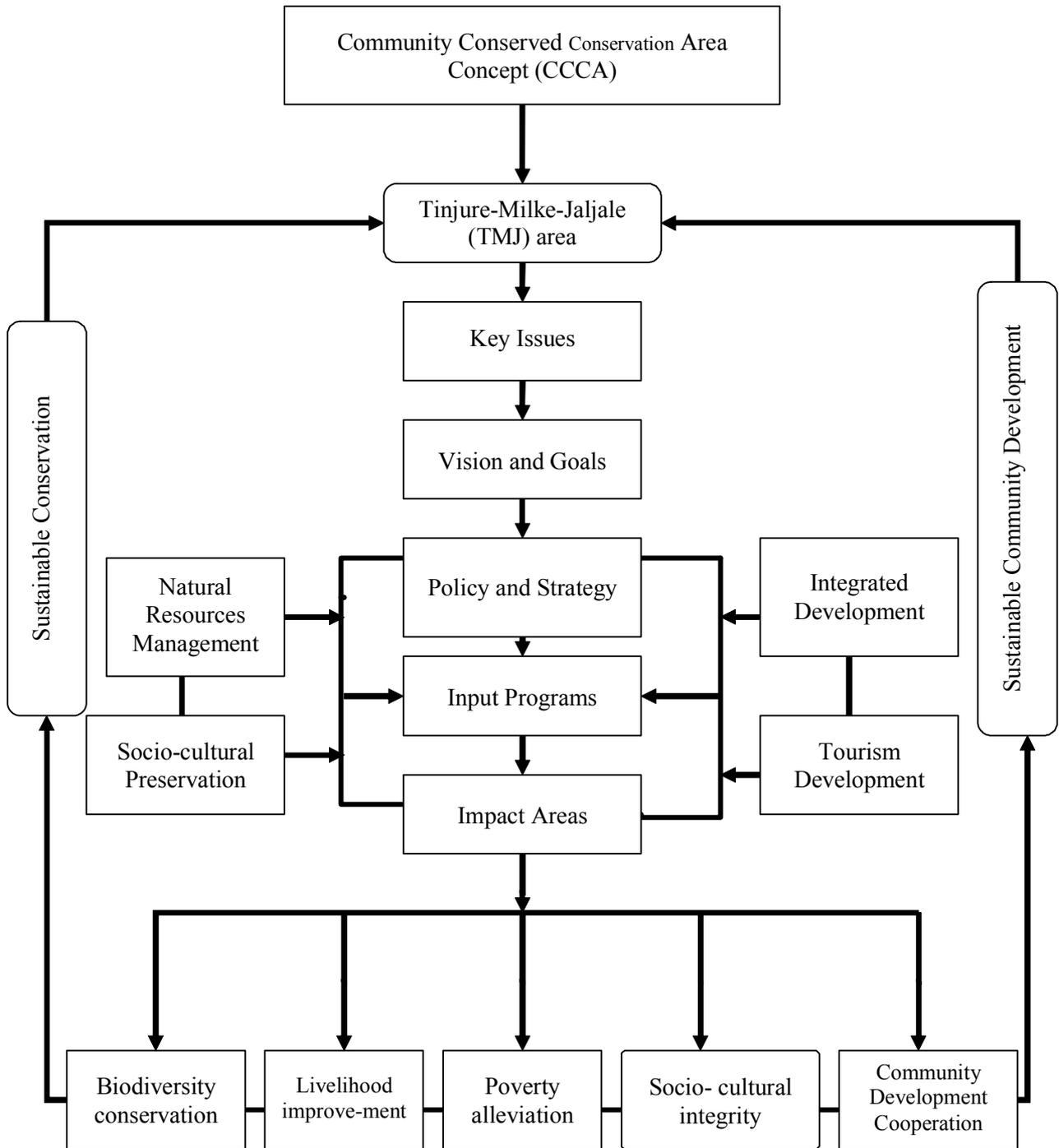
Components: Its major components include 1) research, planning, monitoring and evaluation, 2) conservation of the resource base and environmental management, 3) conservation education, 4) social and economic development and 5) institutional strengthening.

Implementation: Programs are implemented by local people by forging partnerships with different organizations and identifying their roles. For example, government provides technical and financial assistance at the beginning, NGOs support in facilitation and linkage, and donors provide required funding.

II. Conceptual Framework of the Strategy

The strategy for the TMJ area has been designed to maximize community's role in the overall management of the area. The management issues of the area were identified and its inputs were set through the inter-linkage between input programs and impact areas according to the Nepal's current policy and actions in conservation. These input programs help to generate a set of impact areas, which not only serve as guide for implementation but also provide a ground for an effective monitoring and evaluation (M&E) activities in the ground. The impact areas include (i) **natural resource management**, (ii) **socio-cultural preservation**, (iii) **integrated development**, and (iv) **tourism development**. The linkages of different components-issues, programs, and impact areas- are also shown in **Figure 2**. Specific targets and outcomes within these impact areas have been identified and strategies, developed accordingly. The priority actions have been set to address the issues along with their expected outputs. The proposed actions are presented in the tabular form in the fourth section. Similarly, the tentative implementation guidelines have also been outlined in Section VI. On the basis of impact areas, the strategy has identified four major areas for intervention. They are (a) **biodiversity conservation**, (b) **preservation of cultural heritage**, (c) **development of livelihood alternatives** and (d) **eco-tourism development**.

Figure 2: Conceptual framework showing the inter-linkage between program components



III. The Setting

Physical setting: The TMJ area located between 27° 6' 57" to 27° 30' 28" North latitude and 87° 19' 46" to 87° 38' 14" East longitude, covers an area of more than 585 km² of three districts - Sankhuwasabha, Tehrathum and Taplejung between the Arun and Tamor rivers in the Eastern Development Region of Nepal (Figure 1). It is one of the longest mountain ridges lying between the watersheds of the Arun and Tamor rivers. The Tinjure covers Sankhuwasabha and Tehrathum districts whereas the Milke and Jaljale at the border of three districts. The north-south and east-west lengths of the area measure roughly 30-45 km and 6-25 km respectively. The area covers seven Village Development Committees (VDCs) of Sankhuwasabha, ten VDCs of Tehrathum and six VDCs of Taplejung (Table 2).

Table 2: VDCs in the TMJ area

| Districts | VDCs | Settlements | Area (km ²) |
|---------------|---|-------------|-------------------------|
| Shankuwashava | Madi Mulkharka, Nundaki, Siddhapokhari, Sabhapokhari, Jaljala, Tamaphok, Mawadin (7) | 77 | 272.95 |
| Taplejung | Sanghu, Dhunge Sanghu, Change, Hampang, Phakumba, Thinglabu (6) | 89 | 146.77 |
| Tehrathum | Basantapur, Sungam, Solma, Jirikhimti, Ambung, Morahang, Srijung, Pouthak, Samdu, Khamlalung (10) | 52 | 165.54 |
| Total | 23 | 218 | 585.26 |

The area falls under the lesser Himalaya and represents high variations of topography within an elevational range of 1700m-5000m. The greater part of the area (42.41%) has moderately sloped (5-30°) terrain. More than 26% of the area belongs to steep slopes (30-40°) and the rest 31.46% has very steep sloppy (>40°) terrain. The area has a wide climatic range, from warm temperate in the lower region to alpine in the upper hill slopes. The temperature drops with increasing altitude and results in different climatic zones within a short vertical distance. They include warm temperate (mean temperature range 15-20°C), cool temperate (3-15°C), and alpine (0-10°C). Precipitation varies from 1000 to 2300 mm; the average rainfall for the TMJ area is about 1650 mm. In a regional scale, the Area falls under the monsoon climatic region where rainfall and temperature have great seasonal variations.

Land use pattern is influenced by topographic, climatic and anthropogenic factors. Like in many parts of the country, agriculture land, forests and pastures have been intensively used. Land use data from the 1970s show that the extension of an area under cultivation is not significant but the forest areas have increased significantly during the last two decades or more.

Faunal diversity: The high topographic and climatic variability and diverse landforms have significantly contributed in determining complex ecological gradients and ecosystem diversity over a relatively small area. The Area represents important global ecoregions including Eastern Himalayan Alpine Grasslands and Meadows and Broadleaf Forest, which are characterized by unique assemblages of flora and fauna and their habitats (Basnet 2000).

Faunal diversity comprises different wild and domestic animals (e.g. yaks) with sub-tropical, temperate and alpine components. The area provides habitats for more than 30 mammalian species, which include rare and endangered species such as snow leopard (*Uncia uncia*), clouded leopard (*Neofelis nebulosa*), leopard cat (*Felis bengalensis*), red panda (*Ailurus fulgens*), musk deer (*Moschus chrysogaster*), Himalayan palm civet (*Paguma larvata*), Hanuman langur (*Presbytis entellus*), Chinese pangolin (*Manis pentadactyla*), yellow throated marten (*Martes flavigula*) and goral (*Nemorhaedus goral*), most of which are also on the CITES list. Other species include Himalayan bear (*Selenarctos thibetanus*),

common leopard (*Panthera pardus*), jackal (*Canis aureus*), Himalayan Thar (*Hemitragus jemlahicus*), barking deer (*Muntiacus muntjak*), Assamese monkey (*Macaca assamensis*). Similarly, more than 274 bird species have been recorded from the Area. Spiny babbler, hill partridge and pheasants such as Himalayan monal and kalij are the main attraction of the area.

Floral diversity: With over 250 species of plants, the area is rich in floral diversity in general and rhododendron diversity in particular. There are more than 25 species of rhododendron. Some of the important tree species of the area include *Rhododendron* species, *Taxus baccata*, *Swertia chirayita*, *Schima wallichii*, *Castanopsis indica*, *Pinus roxburghii*, *Abies spectabilis*, *Alnus nepalensis*, *Juniperus species*, *Michelia doltsopa*, *Quercus semicarpifolia*, *Lyonia ovalifolia* etc., which are used as timbers and Non-Timber Forest Products (NTFPs) by the local people. There are more than 50 plant species with food value. For example, *Berberis aristata* (Chutro), *Mahonia napaulensis* (Keshari) and *Rubus ellipticus* (Ainselu) are the major edible fruits of this region. Various species of ferns (*Dryopteris* species), *Lycopodium clavatum* (Nagbeli/Sunthagne), a pteridophyte of the family Lycopodiaceae, is also found in this area. A boric like powder is extracted from the spores and is exported. Various species of ferns (*Dryopteris species*) locally called Niuro, are used by local people as food. lichens (*Unsea species*, *Parmellia species* and *Ramellina species*) are used by local people as food as well as medicine. *Aconitum palmatum* (Bikhma), *Aconitum ferox* (Bikh), *Artemisia dubia* (Titepati), *Astilbe rivularis* (Budhokhat), *Bergenia ciliata* (Pakhanved), *Nardostachys jatamasi*, *Dactylorhiza hatagirea* (Panchaunle), *Rubia manjith* (Majitho), *Swertia chirayito* (Chirayito), *Viscum album* (Hadchur), *Zanthoxylum armatum* (Timmur), *Pimpinella species* (Soanp), *Lepidium sativum* (Chamsur), *Heracleum nepalens* (Ching phing) and *Evodia fraxinifolia* (Khanakpa) are some of the widely used medicinal plants in the area. The Limbu and Rai people use lichens of the *Parmellia species* (Limbu-Yangben) in various food preparations. Other species like *Artemisia dubia* (Titepati), *Rhododendron anthopogon* (Supati), and *Juniperus species* (Dhupi) are commonly used as incense plants in almost all functions and by all tribal people.

These plants are commonly used by the local healers (Dhami/Jhankri, Lama, Phedangma) during worship, especially in rituals to protect people from harmful evil spirits. *Rhododendron arboreum* (Laligurans), *Rhododendron anthopogon* (Sunpati), *Alnus nepalensis* (Utis), *Quercus semicarpifolia* (Kharsu), *Castanopsis indica* (Dhale Katus), *Lyonia ovalifolia* (Angeri) and *Abies spectabilis* (Gobre sallo) were found to be used widely as firewood by local people in the TMJ area. One species of gymnosperm, viz. *Taxus baccata*, belonging to the family Taxaceae, is a high value medicinal plant found in this region. *Lycopodium clavatum* (Nagbeli/Sunthagne) of Lycopodiaceae is also found here.

Ecosystem & habitat diversity: Natural ecosystems include forests (**Table 3**), grasslands and meadows and wetlands (rivers and ponds) and rock and barren areas. The area is one of the largest potential rangeland ecosystems among the wet rangeland areas of Nepal. Tinjure-Milke-Jaljale area is one of the largest potential rangeland ecosystem among the wet rangelands areas of Nepal. Of the total 58527 ha of the area an estimated 6555ha (about 11 %) of the land is under grassland category - alpine and sub-alpine pasture (above 3000 m), temperate pastures (between 2000-3000 m) and subtropical pastures (below 2000 m) (**Oli 2002**). Species composition and community structure of these grasslands vary significantly and so does the grazing pressure. Temperate pastures were the most degraded because they serve as corridors for the movement of animals between the sub-alpine and sub-tropical pastures. A large number of livestock and wildlife species share these grazing pastures, whose conditions have degraded due to several reasons. More than 13 sub-watersheds¹ and 33 ponds of various sizes located along the ridge of the Tinjure provide critical habitats

¹ Major watersheds include (1) Lambu (Banantapur, Sungam), (2) Pingwa (Solma, Jirikhimti), (3) Tangmaya (Ambung, Morag), (4) Khorunga (Shreejung, Pouthak) and (5) Koya (Khamlalung, Samdu), (6) Sobuwa (Hampang, Change) from Tehrathum district; (1) Mangmaya (Dhangesanhu, Sanghu), (2) Neruwa (Sanghu, Phakumba), and (3) Maiwa (Phakumba, Thinglabu) from Taplejung; and (1) Sabha (Sabhapokhari), (2) Hewa (Siddhapokhari, Jaljala), (3) Piluwa (Mawadin, Nundhaki) and (3) Maya (Tamaphok, Madimulkharka) from Sankhuwasabha district.

for a number of important flora and fauna of the area, source of water for drinking and irrigation and sites of religious and spiritual values. Sabhapokhari at the Jaljale Himal, Guphapokhari at Nundhaki and Lampokhari in the Tinjure hills are some of the important ponds.

Table 3: Type of forests in the TMJ area

| Zone | Forest types | Remarks |
|---------------------------------|--|--|
| Sub-Tropical zone (<2,000m) | Sub-tropical forests occur in a narrow zone below 2,000m and in the river valleys. <i>Schima-Castanopsis</i> is the dominant forest, widespread on both north and south faces of the Arun and Tamor valleys. <i>Alnus nepalensis</i> is common in wet and unstable areas. | Rich biodiversity |
| Temperate zone (2,000–3,000m) | Temperate forests occur in temperate climatic conditions with a warm summer and cold winter season at an altitude ranging from 2,000 to 3,000m. They include: a) East Himalayan Oak-Laurel Forest, a broad-leaved forest at 1900-2600 m, b) Mature forests of rhododendron at 2600-3000 m, c) Mixed Rhododendron-Maple Forests observed in Chauki, Tinjure and Milke <i>Danda</i> from 2,600m to 3,000m. | High species diversity area including rhododendron |
| Sub-Alpine zone (3,000m–4,000m) | Forests at the sub-alpine zone (3,000m–4,000m) include <i>Abies spectabilis</i> , <i>Betula utilis</i> and a large number of medicinal and aromatic herbs such as <i>Aconitum species</i> , <i>Picorhiza scrophulariiflora</i> , <i>Rheum species</i> , <i>Dactylorhiza hatagirea</i> , and <i>Nardostachys grandiflora</i> . | High diversity of MAPs |
| Alpine Zone (>4,000m) | The Alpine zone occurs from 4000 to 5000m and comprises dwarf rhododendron scrub and alpine meadows. | High diversity of MAPs |

Corridors and connectivity: The TMJ area is located in the Sacred Himalayan Landscape (SHL) between two protected areas of different management system such as the MBNP and KCA, which are connected to the Quomolongma Nature Reserve, the Autonomous Region of Tibet in the People’s Republic of China. The KCA is a part of the Greater Kanchenjunga Landscape that links Nepal with India, China and also Bhutan through the Biological Conservation Complex of Bhutan (WWF 2000). Since the TMJ landscape maintains contiguity with the MBNP and the KCA, it shares their challenges and options as well. For example, it provides a dispersal ground for built-up populations of wildlife in either parks through natural corridors and linkages.

Population growth: The population of the area is over 52000 with the number of 8892 households distributed in over 128 settlements in 23 VDCs. Population growth rate is less than 0.68%, which is much lower than the national growth rate at 2.08% (CBS 2001). The infant and child mortality rate is high. Economically active population in the area was estimated at 22,848 (about 44%) for 2001. Migration plays an important role in population growth and also serves as a safety valve for the sustainable livelihoods of mountain people by reducing pressure on fragile natural resources. Migration is either temporary or seasonal. The out-migration is high in search of employment, education, health treatment and so on. Population growth is an important measure to understand the pressure on natural resources. The main characteristics of the population growth of this area include a) low population growth, b) more females than male population, c) high migration rate, d) increasing number of settlements and households, which also indicate an increasing pressure on local resources like forests, grasslands and agriculture land.

Ethnicity, culture and heritage: The TMJ area is known for ethnic, cultural and religious diversity. There are more than ten ethnic groups, who have their own cultural and religious practices, traditions and languages. The majority of people belong to the Rai and Limbu ethnic groups followed by the Brahman and Chhetri (35%), Sherpa and Bhote (7%) and Tamang (5%). Other castes, like the Newar, Kami, Damai and

Sarki account for five percent. A large number of festivals are celebrated in the area, which vary with castes and religions. *Dashain, Tihar, Baishake Purnima, Lhosar, Pushe Mela, Baisakhi Mela, and Fagu Mela* etc. are the festivals of the area. Similarly, the *Chandi dance* of the *Rai* and *Dhan Nach* and *Chyaprun* dance of the *Limbu* are found only in these areas. There are number of religious and cultural heritage sites in the area. *Sabhapokhari, Guphapokhari, Singhadevi, Siddhakali, Gaunkhuridham* and *Pathibhara* temples are important religious sites. According to a legend Lord Mahadev lived in *Guphapokhari*. *Bhimsen's* stone is yet another similar legend associated with the *Pandava* of the *Mahabharata*.

Economy: Agriculture, animal husbandry and business are the main sources of subsistence economy. More than 90% of the total households are involved directly or indirectly in agriculture and animal husbandry. Major agriculture crops include rice, maize, millet, buckwheat, barley, cereals, oilseeds and varieties of vegetables and fruits that are tolerant of extreme climatic conditions. But the agricultural production is not enough to meet all the basic needs. Food grains are produced in the southern parts with limited or no irrigation facilities. Fruit production has been limited by technology, accessibility and markets. The risk of pests and disease is high. Recently, cultivation of cardamom and other cash crops, beekeeping and cottage industries have brought significant changes in local economy and employment. Livestock keeping is another economic activity that plays a significant role in people's livelihoods by providing income, employment and manure for agriculture. The area has more pastures and forests than agriculture land (Table 4) that have attracted people to raise livestock as a major source of livelihoods. Moreover, most of the TMJ area belongs to cold and arid mountains, where livestock keeping has no alternative. Local farmers rear cattle, goat, sheep, pig and poultry of native varieties, whose output is high with very low input.

Besides agriculture and animal husbandry, NTFPs including medicinal and aromatic plants (MAPs) are another source of income for local people. The area is rich in NTFPs. As a matter of fact, *Basantapur* in *Tehrathum* has been serving as one of the road-head trading towns for NTFPs in the area (**Edwards 1996**). More than 170 species of plants are used in foods, spices, medicines, tannins, gums, resins, incenses, oil, fibers, fuels, dyeing and construction materials. *Taxus baccata*, of the family *Taxaceae* is a high value medicinal plant found here. Similarly, *Swertia chirayito* (*Chirayito*), *Nardostachys jatamasi*, *Dactylorhiza hatagirea* (*Panchaunle*), *Lycopodium clavatum*, (*Nagbeli/sunthagne*) etc. are some other high-value NTFPs found in the area.

Table 4: Land use pattern in the TMJ Area

| Land use type | 2001 | | 1984 | | Change % |
|---|---------------|------------|---------------|------------|----------|
| | Area (sq.km) | % | Area (sq.km) | % | |
| Agriculture land | 140.97 | 24.09 | 137.51 | 23.9 | +0.6 |
| Forests | 346.13 | 59.14 | 292.28 | 49.94 | +9.2 |
| Shrubs | 30.03 | 5.13 | 75.23 | 12.85 | -7.72 |
| Grasslands | 619 | 11.2 | 76.15 | 13.01 | -1.01 |
| Other (water bodies, rocks, landslides) | 2.59 | 0.44 | 4.09 | 0.70 | -0.37 |
| Total | 585.26 | 100 | 585.26 | 100 | |

Sources: *Oli 2002*

Infrastructure: Drinking water, health and education are the basic services. The TMJ area does not have adequate drinking water supply. The problem is acute particularly in *Panchpokhari*. There are 12 sub-health posts but the services provided by them are very poor due to the lack of trained personnel, limited medicine supplies and lack of equipment. There are three government-managed hospitals, one health centre, three

primary health care centres, 18 health posts, Six ayurvedic and 90 sub health posts in Taplejung, Tehrathum and Sankhuwasabha districts. The TMJ area has 12 subhealth posts. The services provided by the sub health posts are very poor due to the lack of trained personnel, limited medicine supplies and the lack of diagnostic equipment. The incidence of water-borne diseases like cholera, typhoid, gastroenteritis, dysentery other diseases is a clear indicator of water pollution in the area. The problem gets worse during the monsoon when more than 30 percent of people in TMJ report problems associated with contaminated drinking water. The area has more than 91 schools (71 primary, 18 secondary and two higher secondary schools) but most of them lack basic physical facilities. Adult literacy rate is high (44.55%) with female literacy rate of 29.92%. Road network, an important component of infrastructure development to bring changes in people's lifestyle, economy and environment is poor. There are several trails that connect important tourist sites in the area. They include; a) the main trail from Basantapur connecting to Sabhapokhari via Tute Deurali, Panchpokhari, Tinjure Deurali, Chauki, Mangalbare, Lampokhari and Gupha, b) a side trail from Basantapur connects Guphapokhari and then Taplejung, Pathivara via Gorja, Change, and Dovan, c) a trail from Dovan leading to Olangchung Gola and Tibet. Communication facility is limited with 14 post offices and telecommunication services concentrated mainly in the business towns of the district.

Although, people depend on firewood for all household purposes, alternative energy sources like peltric sets are becoming increasingly popular. They have been installed in Madimulkharka, Guphapokhari and other areas providing electricity to more than 625 households. Similarly, improved cooking stoves have been well-accepted in the area. Micro-hydro projects with a combined capacity of >1600KW and 1500 KW provide electricity to many households in Tehrathum and Sankhuwasabha districts respectively. The central electricity grid has already connected the area. There is potential for macro and micro hydro electricity generation in all districts. There are two micro-hydro projects with a combined capacity of 1600 kilowatts (KW) which provide electricity to 1800 households of 12 VDCs in Tehrathum. In Sankhuwasabha, two micro-hydro projects produce 1500KW and provide electricity to 2760 hh of four VDCs. There is a good potential for hydro-electricity generation from the Koya Khola and Lubu Khola in Tehrathum and the Hinwa Khola, Maya Khola, Piluwa Khola and Apsuwa Khola in Sankhuwasabha.

Tourism and tourism products: With spectacular natural and cultural landscapes, the TMJ area has a great potential for ecotourism development. Some of the natural landscapes include rich physical and biological diversity such as unique rhododendron forests, rare and endangered wildlife and bird species, medicinal and aromatic plants and panoramic views of the Kanchenjunga, Makalu, and Kumbakarna. The composition of local ethnic groups reflects a diverse socio-culture of the area. Moreover, the area lies en-route to the KCA and the MBNP and serves as a connectivity corridor for tourists and also for wildlife. The road linkage (Biratnagar-Dharan-Basantapur) has made the destination easily accessible to domestic and international tourists. The rhododendron bloom in spring and snowfall in winter serve as natural tourism products for both domestic and international tourists. Diversification of tourism products is one of the best ways of attracting quality tourists. Agro-tourism can be a new avenue of tourism diversification in the area, which is visited by international tourists from Europe, America, Australia and India and domestic tourists mainly from Dharan, Biratnagar and Jhapa. The present flow of tourists is likely to increase in the future and be an alternative source of income for local people. See annex B for road network and accessibility in the TMJ Area.

Scene and scenery: There are several places of natural beauty and aesthetic values in the TMJ area with potential tourist destinations. They include the Tinjure, Milke and Jaljale ridges with rhododendrons, the Jaljale Himal, Tamor and Arun Rivers and valleys, Hyatrung fall and unique biodiversity of the cloud forests in the area. Among other areas, the ridges connecting Goth Khola in the north and Dhankuta in the south seem to be the best preserve of rhododendron forests in Nepal (*Milleville 2002*). Spectacular views of the Kanchenjunga and the Makalu Range can be seen from several vantage points along the Tinjure, Milke and Jaljale ridges. Excellent views of sunrise and sunset are seen from the Tinjure and Menchayan ridges. Besides, Pathivara temple on the Tinjure hilltop (2800 m) and Sabhapokhari, there are also other attractions for the tourists.

IV. Obstacles to Achieve Conservation Goals

Major Problems and Issues: The primary purpose of a protected area is to conserve and manage both natural and cultural resources in a way that local communities can have access to use them sustainably. Since the sub-systems (or basins) are inter-connected to one another, the conservation of the area at the landscape level is the most pragmatic and effective way as far as the livelihood of the local community is concerned. That is the reason why the present concept of the protected area is based on landscape level planning along with active, informed and responsible participation of local and indigenous peoples. The integrated conservation and community development program (ICDP) and ecotourism have been considered as means of achieving the conservation goals of natural resource management, cultural heritage and community development in the TMJ area, which is proposed as the *Rhododendron Community Conserved Conservation Area* following the example of the KCA. Major obstacles to achieve the conservation goal in the TMJ area are briefly presented below.

1. Lack of legal institutional arrangement
2. Lack of boundary demarcation
3. Loss of habitats and their resources
4. Inadequate preservation of cultural heritage
5. Lack of livelihood options
6. Infrastructural constraints to tourism development
7. Poor services in the community

Lack of legal institutional arrangement: The TMJ area needs an institutional model and administrative set up to manage and meet its conservation goals and objectives. A community-based organization that represents stakeholders of respective districts is ideal to manage the area. It is essential to create a legal organization of the organized groups of local community and responsible for the TMJ area. An example of such organization is shown in Annex A. Presently, the TMJ's status as Environmental Conservation Area under the Environmental Protection Act of 1997 imposes restrictions on using available natural resources by local people.

Lack of boundary demarcation: Since the area covered by the proposed protected area is not determined, deforestation and encroachment are taking place, particularly from Basantapur to Gupha Pokhari. The lack of the boundary, regulations, basic information and funds has led to rapid degradation of forests and forest resources in the area.

Loss of habitats: Biodiversity of the TMJ area is unique and characterized with high diversity of species and their habitats. Mammals and birds are the most explored groups of wildlife with more than 30 and 274 species respectively. The area is also known for globally threatened pheasants. However, records of herpeto-fauna, fish and invertebrates are poor. Similarly, other aspects of wildlife species as well as domestic animals and their interactions are poorly understood. For example, during the meetings, local participants complained about the issue of livestock and crop depredation by wildlife. The area is also rich in floral diversity (particularly rhododendron) with sub-tropical, temperate and alpine components. Out of over 250 species of plants, more than 170 species belonging to 60 families are of timber, food, medicine and religious values. Forests, pastures and associated ecological phenomena are more than 50 plant species were found to have food value, mostly fruits and vegetables. *Berberis aristata* (Chutro), *Mahonia napaulensis* (Keshari) and *Rubus ellipticus* (Ainselu) are the major edible fruits of this region. Under serious threat due to expanding human settlements, infrastructure development, particularly road, unregulated and unsustainable harvesting practices, deforestation and overuse of resources. However, due to increased human disturbances,

wildlife depredation, poaching and over-exploitation of resources and encroachment of common land for community forestry has led to the widespread destruction and degradation of habitats in the area, thereby causing the loss of palatable species.

Inadequate preservation of cultural heritage: Cultural heritage and religion play important role in biodiversity conservation because of their co-evolution for thousands of years. Requirement of plant or animal species in any cultural or religious practices may ensure better protection of those species because a) they get protection directly from the associated ethnic group or community and b) indigenous knowledge is available for conservation. Therefore, ethnic and cultural diversity of the area are valuable assets, not only for sustainable conservation and management of natural resources but also for the promotion of cultural tourism. However, the conservation of resources has been set back because of the lack of preservation of socio-cultural heritage, maintenance of aesthetic area, inadequate attention to indigenous knowledge, skills, practices and languages and ambiguity in ownership of the property such as the *kipat* system of land tenures.

Lack of livelihood options: The area is based on subsistence economy, mainly agriculture and livestock keeping. There is a very little opportunity to engage in off-farm employment. However, traditional agriculture and livestock farming are not enough to meet all the basic needs because a) agricultural land is limited (around 24%) and fragmented in small landholdings, b) most of the lands belong to the cold alpine region and c) it is remote along with poor infrastructure like road, communication, irrigation facilities and technology. Moreover, the risk of pests and disease is high. In this context, improvement of the traditional practices and diversification of income sources are essential. Recently, tourism and NTFPs, rising cardamom and cash crop cultivation, beekeeping and cottage industries have brought significant changes in local economy and employment. The 10th Plan and the National Agricultural Policy and Agriculture Perspective Plan recognize the potential and proposed commercial agriculture development as the main strategy for rural poverty reduction. NTFPs of the area can be a strong source of income particularly generating hard cash if they are managed properly, harvested systematically and monitored effectively. However, the traditional rain-fed subsistence agriculture system in small and fragmented lands and animal husbandry, exotic species threatening local crops, natural disasters (such as flood, drought, landslide, soil erosion, snow etc.) are some of the hurdles in improving livelihoods of local communities.

Infrastructural constraints to tourism development: Tourism is regarded as a development tool, not just in promoting environmental awareness and education but also in reducing poverty particularly in the rural areas. It can provide multiplier benefits to the local community. Ecotourism in Nepal is based on three premises a) promoting people's participation in planning and management, b) increasing cross-community development, nature conservation and tourism linkages and c) using incomes from tourism to safeguard resources on which community life is based. The area has a great potential for ecotourism because of its physical, biological and socio-cultural setting. Spectacular views of the majestic mountains, rhododendron bloom, sighting of rare wildlife species like snow leopard and cultural heritages like Pathivara temple are just some of the many attractions of the area. Even the traditional subsistence agriculture and local life style can be tourism products. With all these products, the area can be one of the most attractive tourist destinations. However, the structures for sustainable tourism are not yet in place. The area used to be one of the popular routes for trekkers and mountaineers visiting to the KCA and MBNP but the number of tourists has dramatically declined due to various reasons such as insurgency in the country and the lack of tourism information. Inadequate and poor infrastructures (hotel, communication etc.) have been limited only to organized groups with their own equipment. The open camp sites lack even the basic facilities such as toilets, rubbish pits and drinking water. Tourist destinations and activities have not been diversified and tourism related services (guide, food serving etc.) are really poor. This indicates that local communities do not get

much benefit from the organized group trekking. It is important that tourism is developed properly along with the enhancement of local capacity.

Poor services in the community: The principle of the ICDP is that conservation and community development go hand in hand. Conservation is concerned with biodiversity, human welfare and cultural values. Community development is a package of social services, infrastructure development and livelihood opportunities and is directly targeted to poverty alleviation without any significant impact on the environment. Basic social services like education, health and drinking water are adequate only for 50% of the total inhabitants. All the sub-health posts lack trained personnel, medicine supplies and proper equipment. Water pollution and contamination have been increasing and more than 30% population is exposed to water-borne diseases like cholera, typhoid, and dysentery. Similarly, infrastructure like transportation and communication systems is not well developed. The consumption of firewood is high without any alternative source of energy (such as solar power, wind energy, biogas etc.) Governmental and non-governmental organizations that facilitate community development and livelihood are mainly concentrated in the district headquarters or business centers. Deforestation is one of the major problems that can be addressed with an extensive introduction of alternative sources of energy. High level of environmental awareness and high adult literacy can be an important asset to community development.

V. Outline of the Suggested Strategy

This section is to present the priorities in relation to the objectives set in the first chapter in the beginning of the document. It also considers possible ways for further development of the area and the plan. The following are the suggested priority actions, which are in conformity with its major goals and objectives presented in the first chapter.

1. Objectives, priorities and outputs

Objective 1: Develop the TMJ area as the center for management, conservation and sustainable development of rhododendron

Priorities

1. Change the present status of the TMJ from the Environmental Conservation Area under Environmental Act 1997 to the TMJ Rhododendron CCCA under the NPWC Act 1973
2. Promote the management and conservation of biodiversity at the landscape level
3. Adopt pragmatic measures to control wildlife poaching, illegal harvesting, trade, deforestation and encroachment
4. Develop effective law enforcement and monitoring schemes together with conservation awareness activities
5. Develop species management schemes for the protection of endangered and critical species
6. Reduce livestock grazing in major wildlife habitat areas
7. Identify degraded forests and open areas for plantation
8. Establish a biodiversity research center

Outputs

1. Framework for landscape level planning developed
2. TMJ area established as a hub of rhododendron study
3. Community-based multi-stakeholder forum institutionalized

Objective 2: Formulate mechanism for the identification and preservation of cultural heritage

Priorities

1. Prepare an inventory of cultural heritage (both material and non-material) and heritage sites
2. Protect, restore and maintain the integrity of heritage sites
3. Mount demonstration project based on local collaboration and people participation
4. Prepare in partnership with local stakeholders a manual for managing cultural heritage sites.
5. Link cultural heritage sites with ecotourism development
6. Generate funds for sustainable development of the area
7. Undertake action research on heritage sites

Outputs

1. Inventory of heritage sites prepared
2. Fund for managing heritage sites established
3. Manual for managing heritage sites prepared

Objective 3: Develop livelihood alternatives for reducing poverty, particularly women, poor and socially excluded groups.

Priorities

1. Identify livelihood options (beekeeping, NTFPS, MAPs etc.) for alleviating poverty and catalyzing sustainable environment
2. Improve traditional and subsistence agriculture system
3. Develop management plans and strategies for ecotourism development in collaboration with local communities
4. Develop the capacity of local stakeholders for joint-management of the area
5. Introduce alternative sources of energy to reduce pressure on rhododendron forests
6. Adopt environmental friendly approaches and technologies in developing infrastructures
7. Establish community-based financial institutions for supporting local development work

Outputs

1. Community-based organizations and financial institutions established
2. Sustainable tourism as an option for alternative livelihoods to local people in place
3. Policy for the conservation and management of pastures in operation

Objective 4: Promote ecotourism for management and conservation of natural resources

Priorities

1. Prepare an ecotourism management plan in collaboration with local communities
2. Develop infrastructure and facilities needed for tourists based on standard code of conducts
3. Diversify and promote tourism by identifying new products and destinations
4. Promote livestock and poultry production and marketing
5. Develop a mechanism of strong coordination among the stakeholders
6. Develop research, monitoring and evaluation plan, particularly its impact on wildlife and socio-economic status of local communities

Expected outcomes

1. Management plan of ecotourism prepared and implemented
2. Tourism activities, products and destinations diversified
3. Ecotourism based livelihood options developed and practiced

2. Principles

The four objectives are the basic pillars of the strategy for sustainable development. Local communities are its ultimate target. In order to catalyze conservation of resources and sustainable development of the TMJ area, the following principles should be adopted.

1. Make the full use of existing institutions, organizations and capabilities
2. Facilitate active, informed and responsible participation of the stakeholders
3. Reflect the socio-cultural values and felt-needs of people in the program
4. Keep options open as much as possible.

3. Strengthening conservation for development

The success of the implementation of the strategy depends on numerous factors. The conservation and sustainable development are expedited if the following elements are taken into consideration while implementing the plan in the area.

1. Develop a multi-stakeholder forum
2. Strengthen the role of NGOs and CBOs
3. Determine the conservation priority in partnership with relevant stakeholders
4. Emphasize more on conservation practices
5. Develop sustainable finance mechanism
6. Build on, and strengthen, the existing institutions and organizations
7. Promote extension education technique for conservation and sustainable use

The summary of activities, outputs and timeframe, according to the objectives, are presented below in Table 5.

Table 5: Summary of priorities, outputs and timeframe

| Objectives | Priorities | Outputs | Time frame |
|---|--|---|------------|
| 1. Develop the TMJ area as the center for management, conservation and sustainable development of rhododendron | <ol style="list-style-type: none"> 1. Change the present status of the TMJ from the Environmental Conservation Area under Environmental Act 1997 to the TMJ Rhododendron CCCA under the NPWC Act 1973 2. Promote the management and conservation of biodiversity at the landscape level 3. Adopt pragmatic measures to control wildlife poaching, illegal harvesting, trade, deforestation and encroachment 4. Develop effective law enforcement and monitoring schemes together with conservation awareness programs 5. Develop species management schemes for the protection of endangered and critical species 6. Reduce livestock grazing in major wildlife habitats 7. Identify degraded forests and open areas for lantation 8. Establish a biodiversity research center | <ol style="list-style-type: none"> 1. Framework for landscape level planning developed 2. TMJ area as a hub for rhododendron established 3. Community-based multi-stakeholder forum institutionalized | 5 years |
| 2. Formulate mechanism for the identification and preservation of cultural heritage | <ol style="list-style-type: none"> 1. Prepare an inventory of cultural heritage sites 2. Protect, restore and maintain cultural heritage sites 3. Mount a demonstration site on the principle of local collaboration 4. Prepare in partnership with local stakeholders a manual for managing cultural heritage sites. 5. Link cultural heritage sites with ecotourism development 6. Generate fund for sustainable development of the TMJ area 7. Undertake action research on heritage sites | <ol style="list-style-type: none"> 1. Inventory of heritage sites prepared 2. Fund for managing heritage sites established 3. Manual for managing cultural heritage sites prepared | 5 years |
| 3. Develop livelihood alternatives for reducing poverty, particularly women, poor and socially excluded groups. | <ol style="list-style-type: none"> 1. Identify alternative livelihood options such as (beekeeping, NTFPs and MAPs) for alleviating poverty and catalyzing sustainable environment 2. Improve traditional and subsistence agriculture system 3. Develop capacity of local stakeholders for joint management 4. Introduce alternative sources of energy to reduce pressure on rhododendron forests 5. Adopt environmental friendly approaches and technology in developing infrastructure 6. Establish community-based financial institutions for supporting local development work | <ol style="list-style-type: none"> 1. Community-based organizations and financial institutions established 2. Sustainable tourism as an option for alternative livelihoods in place 3. Policy for the conservation and management of pastures in operation | 5 years |
| 4. Promote ecotourism for management and conservation of natural resources | <ol style="list-style-type: none"> 1. Prepare an ecotourism management plan in collaboration with local communities 2. Develop infrastructure and facilities needed for tourists based on standard code of conducts 3. Diversify and promote tourism by identifying new products and destinations 4. Promote livestock and poultry production and marketing 5. Develop a mechanism of strong coordination among the stakeholders 6. Develop research, monitoring and evaluation plan, particularly its impact on wildlife and socio-economic status of local communities | <ol style="list-style-type: none"> 1. Management plan of ecotourism prepared and implemented 2. Tourism activities, products, and destinations diversified 3. Ecotourism based livelihood options developed and practiced | 5 years |

VI. Implementing the strategy

Conservation is a dynamic process, not an end-point; it is a long-term commitment; it needs support and cooperation from all sides; its successful implementation depends on active, well-informed and responsible participation of stakeholders including local communities; in deed, it needs the cooperation and collaboration of the whole communities. Therefore conservation depends, to the extent, on the involvement of local communities, stakeholders and partners in all phases of planning, implementing and benefit-sharing processes.

The proposed strategy for the TMJ area is a consensus-based framework designed to achieve the goal of sustainable development. As such it is ambitious in nature and it is a long-term vision. All of its objectives may not be achievable. And it would not possible to achieve all in the stipulated time. Therefore, the activities targeted to achieve the goal should be planned thoroughly in collaboration with the relevant stakeholders so that its systematic implementation is possible.

The purpose of the section is to set the groundwork for the implementation of the strategy on the ground. The groundwork is critically important to mobilize resources, obtain support of relevant stakeholders and put the strategy on the ground. Below are the suggested actions to be taken after the Strategy is approved by the relevant government agencies and endorsed by local communities for implementation on the ground.

1. Priority actions

Priority actions suggested for the smooth implementation of the strategy are summarized below.

1. Get the endorsement of the Strategy by the Government within the year “*Nepal Nature Conservation Year 2009*”. This will set the stage to implement the Strategy on the ground.
2. Continue engaging local communities and stakeholders for the reconfirmation of their respective role, responsibilities and commitment for the strategy.
3. Designate an implementing organization including an apex body in consultation with local communities and stakeholders as there is a lack of local body to take the responsibility to manage the TMJ area as community-conserved area. See Annex A for the proposed management structure of the TMJ area.
4. Undertake capacity building activities for the implementing agency as well as other stakeholders.
5. Undertake community awareness activities on the importance of strategy
6. Develop action plans for each objective in partnership with local stakeholders. The action plan should also include a monitoring and evaluation plan.
7. Develop a sustainable finance mechanism for programmatic support in the area.

2. Roles and responsibilities of stakeholders

Major stakeholders that are directly engaged in the management and conservation of the TMJ area are presented in Table 6.

Table 6: Stakeholders, interests, roles and responsibilities

| Stakeholders | Legitimate Interest | Roles and responsibility |
|---|---|---|
| End users (local people tourists, researchers, etc) | Livelihood, recreation, education/knowledge | Safeguarding natural resources, management and promotion |
| Government organizations and line agencies | Leadership, conservation and development | Security, providing services, developing policies and promotion |
| Non-government organizations/Donors | Conservation and development | Financial and technical support and facilitation |
| Private organizations (e.g. tourism entrepreneurs) | Business | Providing services, employment generation and promotion |

Many stakeholders are interested and engaged in the conservation and development of the area. The list ranges from the central to grassroot levels and includes government, non-government organizations and community-based organizations. At the local level, local governments such as district line agencies, DDC and VDC are there along with local NGOs such as NORM, Society Development Centre (SDC) and Gupha Pokhari Samrakchan Club. Some INGOs like IUCN Nepal are already engaged in the area. There are some projects run under UNDP assistance. Financial institutions like Agriculture Development Bank and Rastriya Banijya Bank are providing their services from the district headquarters. All of these organizations should be engaged at all stages of the implementation to ensure that the relevant stakeholders and socially excluded groups are in the loop of communication and information.

Conclusion: The management policy of the TMJ area should come under national conservation act and be guided by Nepal's development policies, biodiversity strategy and related regulations. The NPWC Act and its amendments have made various arrangements for the protection of wildlife and consumptive and non-consumptive uses of biodiversity for which government can create a protected area with delineated boundaries, manage it and promote tourism through local communities. The Conservation Area Management Regulations (CAMR) 1996 legitimize the Management and Conservation of Natural Resources by non-governmental organizations through active participation of local people. This has provided an opportunity to local people for the preparation of conservation area plan and its implementation. A good example is the Conservation Area Management Rules, 1996 framed under the authority of National Parks and Wildlife Conservation Act, 1973 is one of the progressive rules which legitimizes the management and conservation of Natural Resources by non-governmental (NGO) sector through active participation of local people. This rule has provided the opportunity to the local people for the preparation of conservation area plan, its implementation and management of the area. The most important aspect is that there is strong component of benefit sharing by the people. The legal opportunity provide Annapurna Conservation Area Project(ACAP), which is the first community-based conservation area implemented by the National Trust for Nature Conservation (NTNC). The KCA is more advanced in the sense that it is co-managed by local community with the support of an international NGO. It was handed over to the local community organization following the provision of the NPWC Act 1973. For the TMJ Area, CAMR 1996, Soil and Watershed Conservation Act 1982, Forest Act 1993 and Local Self-Governance Act 1999 may be employed for its management with the provision of making it a **community-conserved conservation area** guided by the principles such as the recognition of private and community forests, recognition of traditional rights and empowerment of local people.

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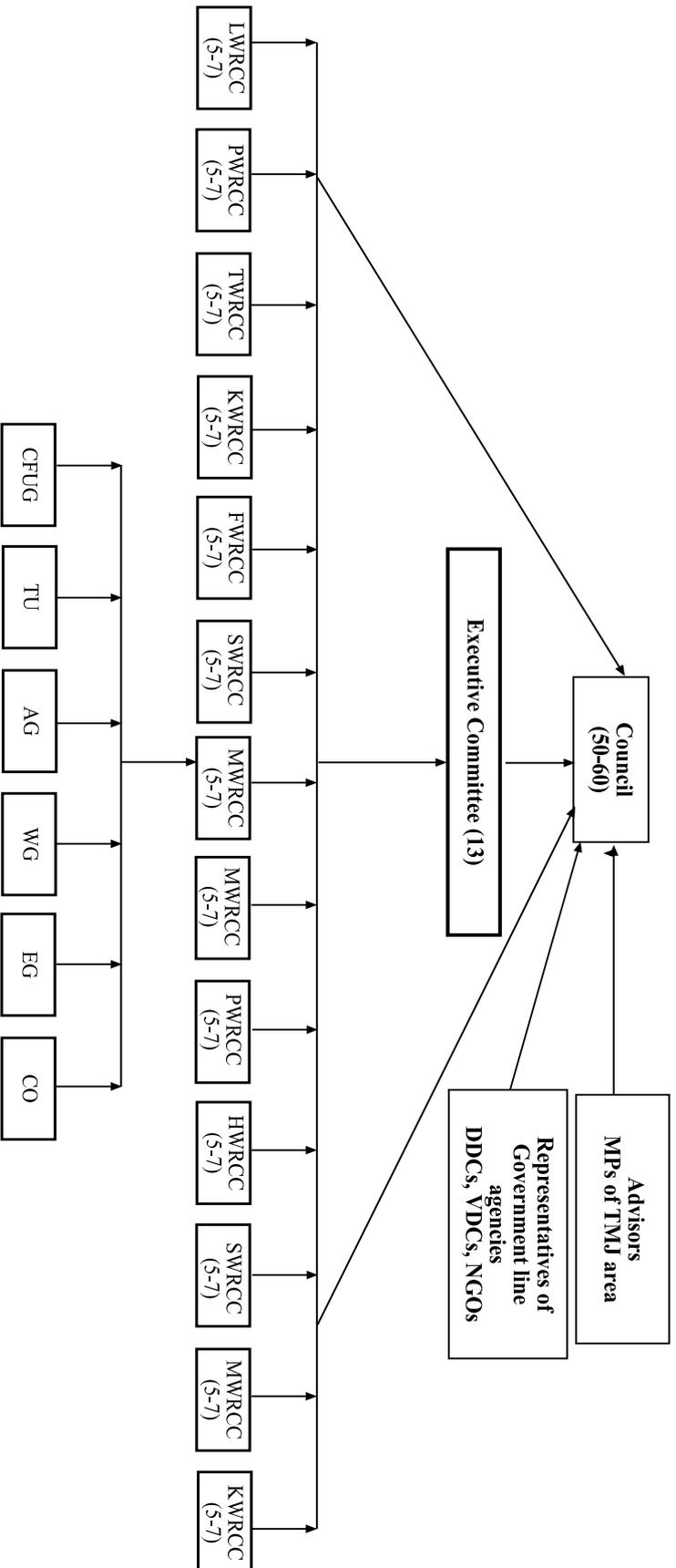
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Annex

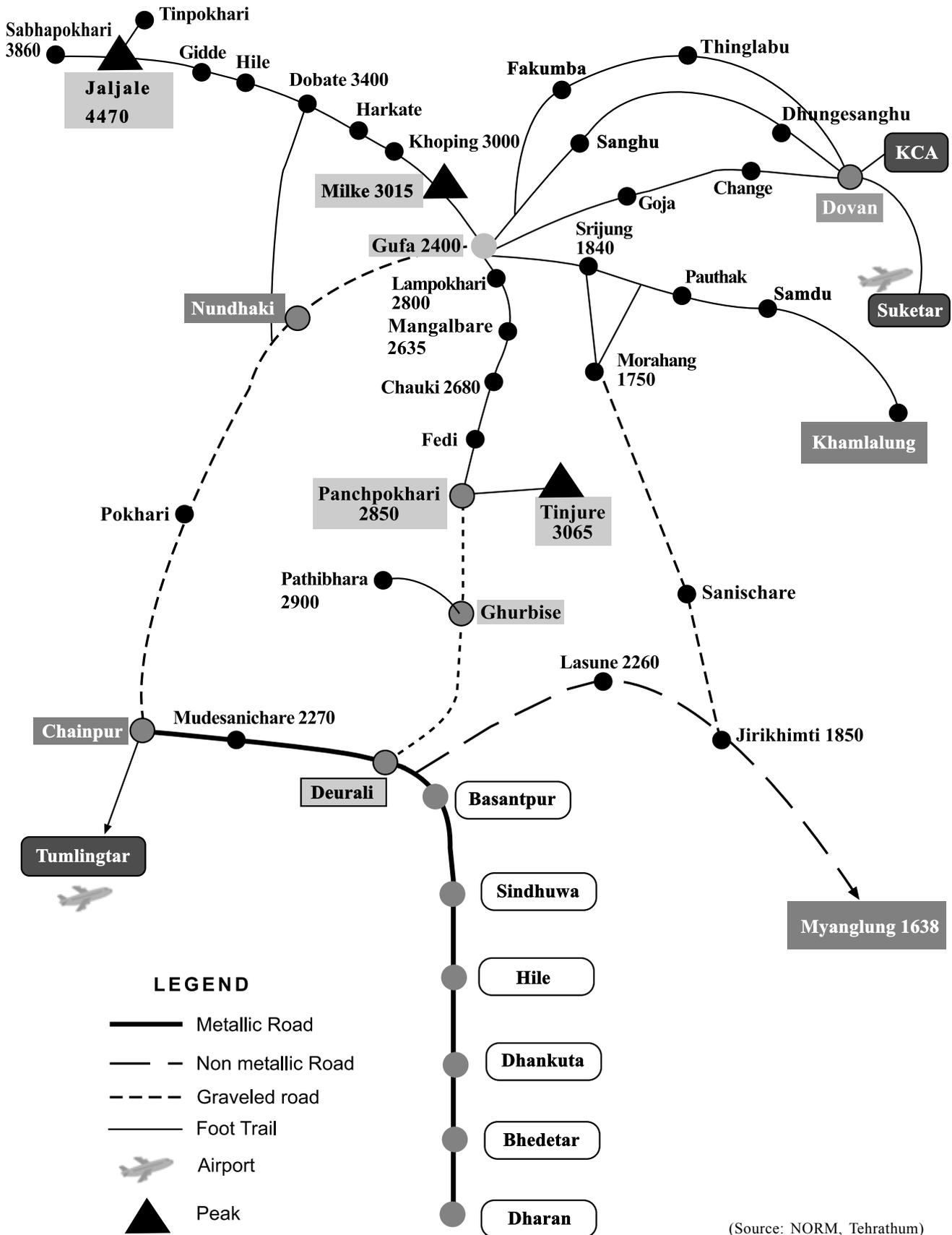
Annex A: Management structures of the TMJ area



Note:

1. LWRCC: Lamhu Watershed Rhododendron Conservation Committee
2. PWRCC: Pingba Watershed Rhododendron Conservation Committee
3. TWRCC: Tongmaya Watershed Rhododendron Conservation Committee
4. KWRCC: Koya Watershed Rhododendron Conservation Committee
5. FWRCC: Furing Watershed Rhododendron Conservation Committee
6. SWRCC: Sobuwa Watershed Rhododendron Conservation Committee
7. MWRCC: Maiwa Watershed Rhododendron Conservation Committee
8. MWRCC: Maya Watershed Rhododendron Conservation Committee
9. PWRCC: Piwa Watershed Rhododendron Conservation Committee
10. HWRCC: Hewa Watershed Rhododendron Conservation Committee
11. SWRCC: Saba Watershed Rhododendron Conservation Committee
12. MWRCC: Mangmaya Watershed Rhododendron Conservation Committee
13. KWRCC: Khorungga Watershed Rhododendron Conservation Committee
14. CFUG: Community Forestry Users Group
16. TG: Tourism Group
17. AG: Agriculture Group
18. WG: Women Group

Annex B: Road network and accessibility in the TMJ area



(Source: NORM, Tehrathum)
 Note: The sketch is not in scale