TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN 2031

JUNE, 2013

ANALYSIS & POLICY RECOMMENDATIONS

Volume 2



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4th DIMENSION CONSULTING
www. 4thdimensionpk.com

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ACRONYMS & ABBREVIATIONs:

ADB	Asian Development Bank
BCR	Benefit Cost Ratio
BFSR	Build Finance Share revenue
BOO	Build Own Operate
BOOT	Built Own Operate Transfer
BOT	Built Operate Transfer
BRT	Bus Rapid Transit
BTO	Build Transfer Operate
C & W	Communication & Works Department
CBD	Central Business District
CCB	Citizen Community Board
CDG	City District Government
CNG	Compressed Natural Gas
DCO	District Coordination Officer
DDO	Deputy District Officer
DDO	Drawing and Disbursing Officer
DFID	Department for International Development
DG	Director General
DO	District Officer
DOC	District Officer Coordination
DOP	District Officer Planning
DRTA	District Road Transport Authority
EDO	Executive District Officer
EPI	Environmental Performance Index
EPD	Environmental Protection Department
ESRI	Developers of ARC GIS Software
EOBI	Employees Old Age Benefit Institutions
F&P	Finance & Planning
GIS	Geographical Information System
GPS	Global Positioning System
GoPB.	Government of Punjab
GoP.	Government of Pakistan
HP&EP	Housing Physical & Environmental Planning Department
HOV	High Occupancy Vehicle
IUCN	International Union for Conservation of Nature & Natural Resources
KPK	Khyber Pukhtoon Khawa
LG&CD	Local Government & Community Development
LRT	Light Rail System
MD	Managing Director
MIS	Management Information Systems
MIT	Murree Improvement Trust
MKDA	Murree Kahuta Development Authority
MKR	Murree Kohala Road
MoE	Ministry of Environment

MoT	Ministry of Tourism
MS	Municipal Service
MSC	Murree Steering Committee
MTDF	Medium Term Development Framework
MOV	Medium Occupancy Vehicle
MVA	Motor Vehicles Act
MVO	Motor Vehicles Ordinance
MVR	Motor Vehicles Rules
MVT	Motor Vehicle Tax
NHA	National Highway Authority
NHSO	National Highways Safety Ordinance
P&D	Planning and Development
PCU	Passenger Car Unit
PEPA	Pakistan Environmental Protection Agency
PHE	Public Health Engineering Department
PHATA	Punjab Housing and Town Planning Agency
PLGO	Punjab Local Government Ordinance
PPA	Pakistan Participatory Poverty Assessment
PPP	Public Private Partnership
PRTB	Punjab Road Transport Board
PTDC	Pakistan Tourism Development Corporation
PTA	Provincial Transport Authority
ROT	Rehabilitate Operate Transfer
ROW	Right of Way
SOV	Single Occupancy Vehicle
SP	Spatial Planning
SPV	Special Purpose vehicle
SWM	Solid Waste Management
TEPA	Traffic Engineering Planning Agency
TDCP	Tourism Development Corporation Punjab
TMA	Town Municipal Administration / Tehsil Municipal Administration
TOR	Terms of References
TOD	Transit Oriented Development
TPU	Transport Planning Unit
UC	Union Council
UIPT	Urban Immovable Property Tax
PUU	Punjab Urban Unit
UN	United Nations
UNEP	United Nations Environment Program
WAPDA	Water and Power Development Authority
WASA	Water and Sanitation Agency
WTo	World Tourism Organization
WWF	Worlwide Fund for Nature

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CHAPTER 1; PAST TO PRESENT: ANALYSIS FOR EXPLORING CHALLENGES & OPPORTUNITIES

This chapter entails a historic context of all previously completed policy / development exercises, prevailing policy / regulatory mechanism to support planned development of urban structure, an institutional hierarchy to execute and manage development segments and finally an analysis of all profiles described in the previous chapters. Discussion in the section primarily focuses on developing a considerate approach towards identification of problems in the study area along with their historic prevalence and overseeing future. The problem assertion eventually helps routing out solution oriented strategic directions in upcoming segments of this report.

1.1. LANDUSE GROWTH IN MURREE:

1.1.1 LANDUSE DEVELOPMENT POLICY FRAMEWORK IN PAKISTAN:

There are three tiers of policy framework of urban development in Pakistan: these are national, provincial and local. The federal level identifies the potential of urban economic centers as a major contributor to the overall national economic development, thus management of urban centers, especially economic activity generating ones like Murree, needs special emphasize on policy development for its land use development complementing the economic activity through tourism.

National Policy Framework:

The main focus of urban development policy at national level is:

- National spatial growth strategy focuses on spatial development action plans for Provincial, District & Tehsil levels.
- Exploring the economic base of small and mid-sized towns by establishing the local resource based industries.
- Community based development of institutions to achieve cohesive, equitable and sustainable growth.
- Promoting private sector investment in development.
- Regional economic planning across entire urban regions enabling stakeholders to formulate comprehensive development plans to support target investment to link cities with rural suburbs.

Mid Term Development Framework (MTDF 2005-10):

The Mid-Term Review of the MTDF 2005-10 notes that urban hyper growth has made cities unlivable besides support infrastructure lacks in many of Pakistani cities such as access to clean drinking water, roads and mass transit system. It also

notes that the importance of integrative planning can save time and money, particularly in developing infrastructures for utilities. It also stresses the need for consultation and coordination between government, civil society, private sector and think-tanks of urban planning is essential to build the vital urban infrastructure.

Provincial & Local Policy Framework:

The Govt. of Punjab aims to exploit the potential of cities by:

- Enhancing efficiency, performance and transparency of urban interventions by improving the prevailing regulatory framework.
- Enhancing the managerial, operational and financial capacity of Local Government Institutions.
- Providing high quality urban infrastructure by employing state of the art technologies.
- Improving livelihood opportunities for urban poor.
- Encouraging private sector on PPP terms to build urban infrastructure thus reducing burden on public sector.
- Harmonizing enforcement of development control regulations at local government levels.
- Developing a comprehensive GIS system for urban management
- Establishing metropolitan planning committees to improve coordination between different operating agencies in urban areas.
- Establishing Urban Commission to regulate municipal services in the province at large.
- Initiating city development strategies to govern local development.
- Providing technical assistance to local governments for modernizing the regulatory framework and efficient land use planning to improve built environment.

Punjab Government's Strategy for Accelerating Economic Growth and Improving Service Delivery, 2009:

The **Punjab Government's vision** described in "A Strategy for Accelerating Economic Growth and Improving Service Delivery, 2009" defines that the previous policies related to urban development has resulted in the unprecedented urbanization in Punjab, that further caused many urban problems like traffic congestion, urban sprawl and economic disparities while focusing on investment in physical infrastructure in already groomed cities and town. The Govt. of the Punjab visions that the small towns and cities be developed in a planned manner and the devolution of powers may be granted to city administrations for making decisions about land use controls and economic development. The Strategy also visions that the Punjab Government will also encourage city and small-town administrations to review their rules and regulations related to zoning and commercialization and to revise them in a direction that would facilitate commercial development.

Punjab Land Use Rules, 2009:

The Govt. of the Punjab promulgated "The Punjab Land Use (Classification, Reclassification and Redevelopment) Rules, 2009 under Section 191 of the Punjab Local Government Ordinance 2001(XIII of 2001) on 1st July 2009" extended to all the District Governments in Punjab except the controlled area or city area in a City District and Development Authorities in Punjab for which separate notifications were issued. These land use rules deal with the urban transformation and land use change within urban and peri-urban areas. The main aim is to regulate conversion of land use for commercial activities in cities. The Rules have given more powers at local level in deciding the land use and zoning of respective cities through an administrative setup under District Planning & Design Committee (DP&DC) headed by the respective Commissioner for the City District Governments or the respective DCO (if the city is declared as City District Government) as a Chairman of the Committee.

As stated the Punjab Land Use (Classification, Reclassification and Redevelopment) Rules, 2009 are the only effective regulatory framework which guides and monitors the legality of land uses and its location criteria as per the planning principles. As per the DPDC Meeting held on 30-06-2011, all the decisions about land use change / conversion of land use from existing to any proposed use is banned till the finalization of Master Plan for Murree 2011-2031.

Functions of District Planning & Design Committee under Landuse Rules, 2009:

- Government constituted a District Planning and Design Committee (DP&DC) under rule 56 of Punjab Land Use (Classification, Reclassification and Redevelopment) Rules, 2009
- The District Planning and Design Committee (DP&DC) shall oversee the land use conversion cases under the rules as categorized permitted, permissible and prohibited land use during its meetings;
- The DP&DC shall approve the Land Use Classification Map under the rules;
- The DP&DC is a responsible body to forward the District Planning Map to Tehsil or District Council for approval under the rules;
- The DP&DC is a responsible body to forward the Peri-Urban Structure Plan to Tehsil or District Council for approval under the rules;
- In order to regularize the cases of temporary and permanent commercialization, the District Planning and Design Committee (DP&DC) shall review the listed roads and shall:

a) Assess the feasibility for continuation of the road as commercial;
b) Assess and decide the suitability for placing the road in a notified category of land use;

Application of Land Use Rules in Murree:

The Consultants have envisaged that application of Landuse Rules 2009 is not justly applicable to Murree due to;

a) There is no clear identification of land use categorization because of abundant presence of heterogeneous mixed use land development.
b) Classification based on parcel use & size is very difficult.
c) There is no segregation in the Land Use Rules 2009 for vertical hierarchy and land use change such as ground floor commercial, hotel and upper floors as housing. There is no hospitality class in Land Use Rules 2009.
d) Further, parking is either on ground floor or on the roof for some residential and commercial properties. Whereas in other parts of Punjab, parking is provided in the front setbacks area and no underground or above ground coverage is allowed at setbacks in the concerned Building Regulations.
e) Most of the ownership in Murree is based on lease and hence application of Land Use Rules 2009 poses implications for practicality.
f) It is difficult to identify any restrictions to be imposed on any of the selected road regarding minimum size of plot, type of commercial activity, building height, building line or any other design parameters.
g) District Planning and Design Committee (DP&DC) shall recommend and approve the
h) List A on form A1 of the listed roads which are permitted for future commercial use with or without any restrictions; and
i) List B on form B1 of the listed roads which are freezed and not allowed for any future commercial use.
j) Setbacks cannot be implemented as is suggested for other cities of Punjab.

Punjab Local Governance Framework 2010 (Draft):

The Draft Punjab Local Governance Framework 2010 proposes to strengthen local service delivery systems and operations though performance bench-marking and standard setting. It is envisaged as a prime focus shift from an input to an output-based evaluation system. Another institution in the form of a District Coordination Committee (DCC) is provided for in the proposed Framework to perform the important function of enforcing service delivery regulations and putting in place an institutional framework for ensuring adherence to minimum service delivery standards for municipal services, as well as health and education. At a practical level this requires redefining the role of the Provincial Government as a policy-maker and facilitator for urban management, rather than a provider of individual services, with a clear mechanism of accountability for service delivery.

TMAs require an enhanced authority over service delivery and governance activities, but with also a clearly-defined parallel regulatory relationship with service providers.

Master Plans in Historical Context:

In Pakistan, the first provision for making Urban Development Plans was made by the Government of Pakistan in the 2nd Five Year Plan (1960-65), to prepare such plans for major urban areas. It envisaged the dire need for preparing the land use development plans for 11 major cities of Pakistan and it termed such land use plans as "Master Plans". Lahore being the provincial capital of Punjab and second largest urban agglomeration of Pakistan was a priority at that time and thus preparation of Lahore's Master Plan was the early start of "Development Planning Era" in Pakistan in 1961. In Punjab, the first provision of preparing Master Plans was given in "Punjab Development of Cities Act 1974". The second attempt was Karachi Master Plan during 1970 to 1974 and Quetta, Peshawar, Rawalpindi, Faisalabad & Multan followed afterwards. However, some mini master plans have also been prepared under the name of Outline Development Plan (ODP). Later on, some other local departments in the Punjab province such as Housing and Physical Planning Department (Recently reorganized as Punjab Housing and Town Planning Agency (PHATA) has prepared around 125 Outline Development Plans (ODPs) for various towns of the Province (Master Plan Murree 1988-2013 was also a part of this exercise). Similarly, the Project Management Unit (PMU) of Housing and Physical Planning Department carried out "Feasibility Studies and Urban Master Planning of Ten Cities of Punjab" Project during 1993-94 through a consortium of foreign and local consultants under World Bank funded Third Urban Development Project .

1.1.2 CONSIDERING PREVIOUS EXERCISES (MASTER PLAN & OTHER STUDIES):

A Review of Master Plan (1988-2013):

Prepared by "The Office of the Deputy Director, Regional Physical Planning Rawalpindi."

Directorate of Physical Planning, Housing and Physical Planning Department, Government of Punjab, June 1988.

SCOPE:

- A description of the situation of Murree Town in 1987 with respect to its location, physiography, climate, demography, historic growth, land use, housing, transportation & communication, industry, commerce, social services and public utilities.
- A Master Plan for the period 1988 to 2013, making proposals for zoning, housing, transportation/communication, industry, commerce, social services, public utilities, tourism and institutional framework for implementation.

4 Master Plan Describing Situation In 1987:

Population:

- Resident Population in 1981 (March) =15928 (decline from 17063 in 1972 Sep (annual growth rate has ranged from -3.9 to 28.8%).
- Projected Population:

  1990 = 49,600
  2001 = 32,708
  2011 = 41,098
  2013 = 42,776
- Sex ratio 616: Females/1000 Males (1981).
- Tourists in 1987 = 431,300 (362,500 day trippers i.e. 84.05 percent of the total)
- Rate of increase in tourists @ 5/per annum,
- Projected tourist volume

  12, 50,000 in 2011 and
  14, 37,650 in 2013 (Re. Tourist Division, Islamabad)
- In 1960 Embassy buildings constructed.

Land Use:

In 1987, Residential land-cover was over 200 acre.

- Commercial was on 30.5 acre.
- Building Condition

  A-43.75%
  B-22.1%
  C-19.2%
  D- 14.9%
- Building Height

  Single 30.75%
  Double 66.33% &
  Triple 2.89%

History of Built-up Murree:

Pre 1900	19.51%
1901-1947	25.98%
1948-1960	16.43%
1960-1975	6.25%
1976-1988	1.92%

Land value:

- Along and around Mall=Rs. 600,000/ kanal
- Sunny Bank, KuldunaChowk, Chita More= Rs. 400,000 to Rs. 600,000/kanal
- Hill Dolu & Malachi=Rs. 100,000 to Rs. 400,000/kanal.

Ownership:

- After Forest Department, biggest ownership is private=29.8%

Parking:

- Total vehicles parked per day=589

- One hour = 149 i.e.25.3%

Commerce:

- 902 Shops – over 30.56 acre.
- Main shopping: Mall (70 non-food shops),
- Lower Mall, Mochi Mandi, Tehsil Bazar: (food grain & vegetables)
- Marhaba Market, Cantt. &Al-Faridia Market: Handicrafts and Gift Items

Housing:

- 4845 Units over 200 acres with 21,800 population;
- 3266 occupied by permanent residents (67.4%)
- 1579 occupied by summer residents (32.6%)

Housing Projections:

- @ 5.8 family size
- Shortage: 493 units
- From additional population = 3616
- Replacement= 15% of the current = 490
- Total = 4599 @ 181 unit/year for 25 years till 2013

Transportation:

- On Regional roads: (PCUs' in 16 hours)

Rawalpindi Murree Road	6059
Burban Murree Road.	1578
Barian Murree Road	1900
Lower Topa (Kohala) Murree Road	1888

- Local roads:
  - Mall road
  - Cart road
  - Aziz Bhatti Road
  - Upper Jikka Galli Road
  - Lower Jikka Galli Road
  - Hall Road
- Important Road Intersections:
  - Bansara Galli
  - Sunny Bank
  - Kulduna
  - Jhikka Galli
  - General Post Office

Parking Identified:

- For buses & wagons:
- At Cart Road: Public 4 buses capacity
  Private: Buses+20 wagons.
- Car Parking Lots: (capacity/number parked in 16 hours)
  - Near Municipal Committee Office 20/120
  - near Cantt. Barrier 30/277
  - Masood Shaheed Road -/104
  - Upper Jhikka Galli Road: Barriers -/138

Recreational Facilities:

- 135.6 acres open spaces.
- Some pockets along Mall Road
- Bagh-e-Shaheedan
- Picnic spots at Burbank, Golf Club, LowerTopa & Kuldana Park.
- Chair lift: BansaraGalli to Pindi Point (Constructed in 1988-by Parks Limited, funded by MMC & MKDA With parking facility at Bansara Galli
- Cinema: 325 seats
- One club
- One public hall
- Arts council and municipal library

Water Supply:

- MMC+PHED responsible for Murree Town
- Joint Water Board takes care of Cantt.
- Source springs @ Donga Galli (18 km), Khani Tak & Masoot
- Water tanks (6): 2 near Kashmir Point Tnoly tank (300,000+700,000 Gallons)
- Pindi Point – 1000, 000 gallons
- Donga Galli (2): 3200, 000+3000, 000 gallons
- Connections: 2000; consumption @ 5 Gallons gpcd.

Sewerage/ Refuse Collection:

- No sewerage; no refuse collection in 1988

Telephones:

- 570 Landline connections; 339 residential.
- 47 public and 33 in public call offices.

Electricity:

- 7000 connections (4500 residential + 2500 commercial)

Sites for Development:

- Murree Brewery: 29 acres & Lower Jhikka Galli: 133 Acres (MIT had proposed housing schemes over these sites; fate to be found out)
- Total 10 sites; 14 to 169 acre; Total area = 767 Acres
  What happened to these sites over 1988-2011???

Proposals Identified:

- Redevelopment of Shawala and Lower Mall
- Small scale industry
- Attractions for tourists
- Housing: An existing housing scheme at Lower Jhikka Galli and a new at Murree Brewery under completion by MIT. (Completed)
- For Tourists: Areas around Bansara Galli (169 acres) and Chitta More (104 acres)
- Housing standards + density: 20 units/acre; room size 100 sqft; minimum 8 feet ceiling heights.
- Cottages, youth hostels and working women hostel
  Bus Terminal Proposal:
  - GBS extension by adding .75 acres available at the back.

- Shifting of GTS bus stand.

Car Parking Proposal:

- Demand projected to be 12650 cars in 2013 from 3796 in 1988.
- Cantonment barriers parking extension & improvements
- 250 q. ft. per parking lot as standard
- New parking lots near Murree Club at 600 meters from GPO and near Gulberg hotel as Cart road; both one acre each.
- Parking lot over one acre at Bansara Galli at the boarding point of chairlift is Pindi Point.

Industry:

- For small, cottage and service industry an estate over 50 acres along GalehraGalli Road, near Lower Topa

Commerce:

- Remove encroachments from exiting bazaars.
- Shops at neighborhood & sub-neighborhood levels.

Open spaces:

- New sites for open spaces proposed at:
  - Lawrence college Bye-pass near Punjab House (105 acres)
  - 2 sites (42 acres and 32 acres) at Kashmir point then vacant.
  - A site near MurreeKaseri and Upper Topa over 66 acres.

TDCP's then On-going/proposed Projects (1988-1993)

- Chairlift between Patriata and Charihan
- Chairlift between Lower Topa and Patriata
- Tourist information centers along Mall Road and Bansara Galli
- A revolving restaurant at Murree
- Tourist huts and restaurants at Bhurban
- Snack bars and toilets at Charah Pani and Ghora Galli.

Wildlife:

- A wildlife park near BansaraGalli

Indoor:

- One more cinema and a community center cum marriage hall

Water supply:

- PHED's master plan for augmentation of water supply at Murree was under preparation in 1988.
- Feasibility of water from Haro River & Jhelum River to be worked out.

Petrol Pumps:

- 3 already existed at PindiMurree Road, at Caurt Road and between Sunny Bank and Kuldana Rd).
- One new proposed at JhikaGalli

Tourists Profile:

- Tourists visit Murree as summer resort and for hiking, riding and picnics.
- Pak day (28th Aug 1987). 38000 tourists.
- Projection for peak day (2013) 126,700.
- Tourists lodging: (Day trippers: 83.04%, 8.00% in hotels, 8.96% in houses/ flats)

- Origin: Lahore Rawalpindi District 34.21%
  Rest of Punjab (then 25 districts) 43.71%
  NWFP & Northern Area 11.84 %
  Sindh 7.2%
- Family & friend accompanied 92.2%;
- Lone Tourists 7.8%
- Motivation:
  92.1% recreation & sightseeing;
  5.27% Business + social and 2.63% official work
- Mode:
  Buses = 40%; cars = 34.7%; wagons = 22.9% and motorcycles = 2.4%

Accommodation:

- 41 hotels with 1216 beds in 637 rooms.
- 7 with parking, 25 with attached baths, 30 with sewerage, and 16 providing hot water.
- On peak day 3040 stayed in 1216 beds.

Projected demand for Hotels:

- There was shortage of 1824 bed on peak day, requiring 46 hotels of 40 beds each.
- By 2013, for additional 7096 hotel stayers 177 hotels + 46 current shortage = 223 hotels over 25 years = 9 hotels/ year is be constructed.

Restaurants:

- 51 with 16 seats on average

Rest Houses:

- 35 Public and private with 159 beds where 9% of the tourists stayed

Houses:

- 1579 homes utilized by 38,817 tourists.
- By 2013, 129,390 tourists would stay in homes.

Problems stated by Tourists in 1987:

- Shortage of parks and playgrounds.
- Shortage of parking spaces.
- Absence of public toilets along Mall, near Kashmir &Pindi points.
- Absence of drinking water facility near recreational places.
- Of those residing in hotels, only 19.8% were satisfied with hygiene & rent.

STATUS:

- The Master Plan was never formally adopted as a legal document.
- In the Master Plan, a Planning Body for its implementation had been proposed, headed by Commissioner Rawalpindi, with Chairman Murree Municipal Committee as secretary and heads of the nation

building departments as members. This body was never notified; as no dedicated effort was made by the government to implement this plan.

- Some proposals were taken up, in a piecemeal manner by relevant departments e.g. most of those listed as proposed projects of TDCP and some by C&W department.
- Plan period wise, it still has a valid period from 2011 to 2013.
- Substantial construction activity has taken place over the past two decades, mostly in violation of the planning standards proposed in the Master Plan.
- Mega projects in the Region, not anticipated in the Master Plan, including construction of PC Bhurban in 1993 and Murree Expessway recently, have changed the local and regional dynamics for development planning.
- Institutional framework for preparing and implementing Master plans has been reformed with recent enactments/ amendments in local governance structure.

Revised Building Regulations by Punjab Urban Unit 2009:

In early 2009 Punjab Urban Unit (as a technical assistance to TMA Murree) framed special building byelaws for Murree. These byelaws were expected to be adopted by TMA soon after but have not been approved so far. Bye laws made are comprehensive regarding restricting heights and setbacks but however missed some concerns like energy efficiency/resource efficiency, building materials to be used, terrain zoning (as the Consultants has envisaged that Murree terrain is diverse having slope ranging from 15 degree to 60° degree (About 30% of the total area is composed of steep slopes >60°, 55% area constitutes moderate slopes (30°-60°) and 15% area is under gentle slopes <30°) and varying strata demands variable terrain sub-zoning and slope classification. Further, these bye laws proposed setbacks, side passages like buildings in normal terrain. The consultants have evaluated that Murree's terrain demands bundling / clustering of structures to enhance earthquake resilience and energy efficiency. These bye laws were presented to Murree Steering Committee for approval in Feb. 2009 and committee members raised some objections and further fate is still unknown as Urban Unit has not been updated on the issue so far and construction ban still continues adding more resentment on the part of builders/property owners.

Master Plan for Development of New Murree:

By: National Engineering Services Pakistan (NESPAK) Ltd.

New Murree Development Authority, Murree, 2005.

SCOPE:

- A project planning document containing feasibility report, spatial planning documents and engineering design of infrastructure services for New Murree.
- The project called for developing the New Murree tourist resort over 4,111 acres in the Patriata Hills forests, 24 kilometers south-east of Murree.

- According to the master plan, a tourist city was to be built, complete with five-star hotels, golf courses, residential apartment complexes, shopping malls and even a monorail.

STATUS:

- In 2004 the Punjab Assembly passed the New Murree Development Authority (NMDA) Act. The NMDA is chaired by the Chief Minister of Punjab and includes the chief secretary and several provincial secretaries.
- NMDA entrusted designing of the New Murree Project to NESPAK.
- An article appeared in daily Dawn in September 2005, entitled 'An environmental disaster in the making' alleging that the New Murree project will be disastrous for environment. It stated that for the project located in over 200 years old Patriata 'reserve forest', hundreds of thousands of coniferous trees will have to be cut. And that the Patriata forests having an annual rainfall around 1,770 millimeters are situated in the catchment area of both Simly and Rawal dams, which provide almost half of the drinking water for Rawalpindi and Islamabad. Further that the project will disturb the water collected by the two dams and will lead to their eventual silting. Other than that, the project will lead to soil erosion, increased risk of landslides, and will eventually end up robbing the whole area of its precious forest cover.
- The Chief Justice Supreme Court of Pakistan took suo moto action against the project.
- WWF Pakistan became a party in the proceedings, so did other environmental lobbyist groups.
- Yielding to pressure by the various campaign groups, the Government of Punjab eventually dissolved the New Murree Development Authority in June 2008.
- The larger bench of 14 judges of Supreme Court in their recent judgment in August 2009 scraped the New Murree Project.

1.1.3 AN ANALYSIS OF LANDUSE GROWTH; EXPLORING CHALLENGES & OPPORTUNITIES:

Institutional Responsibilities:

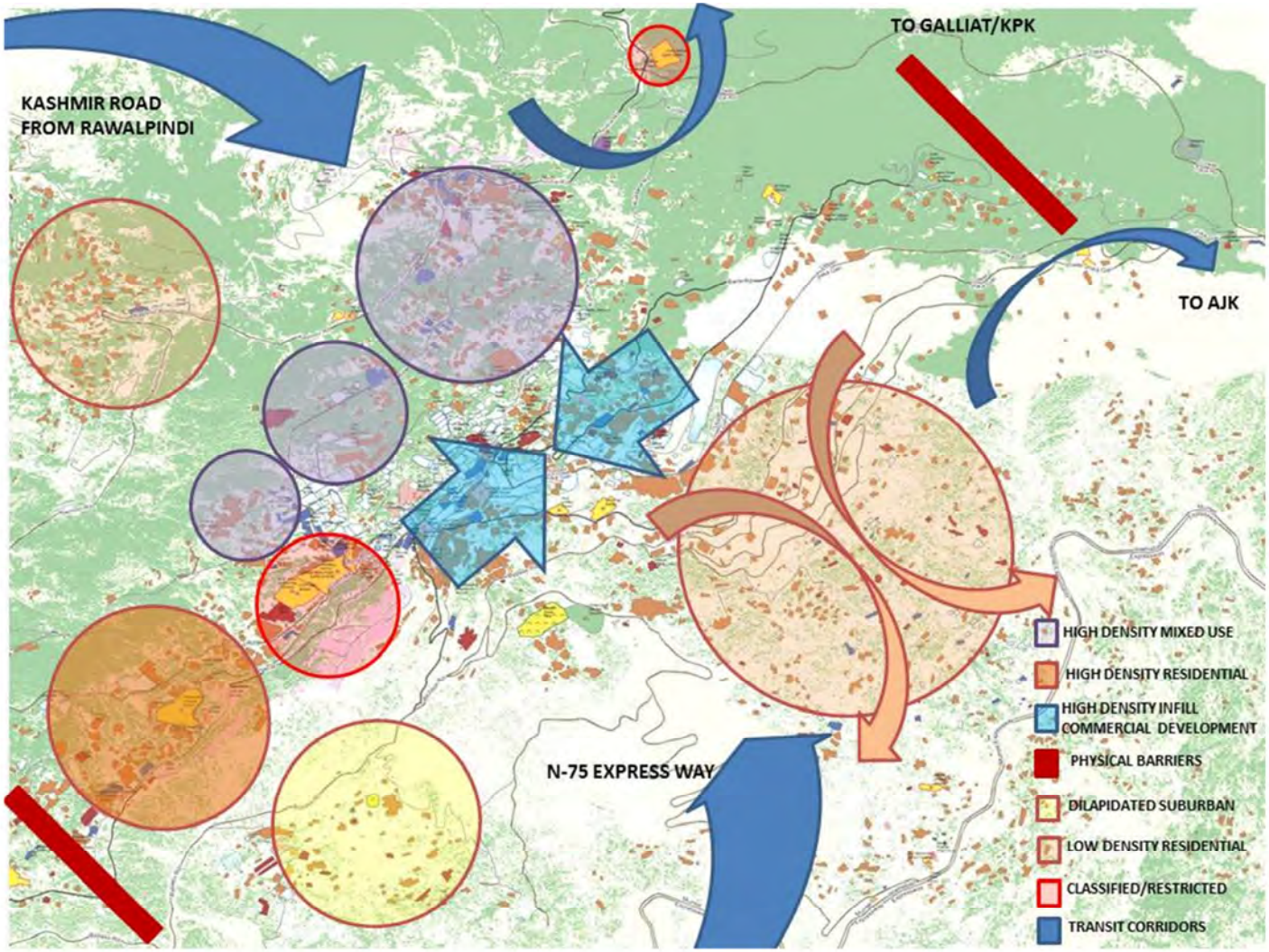
City District Government Rawalpindi owes management, administration, planning functions for its area of jurisdiction as entrusted by PLGO 2001. Murree is one of the eight Towns of CDG Rawalpindi and comprises of 15 UCs (UC is a basic administrative unit delineated on the basis blocks defined in precedent census) out of which one is called Murree Urban though the urban/rural divide has been abolished in current local govt. system. The Consultants however chose their Planning Study area after careful evaluation of Murree Urban Core, which partly bulges out into 3 other UCs namely Bansra Galli, Numbal & Masiari.

CDG operates its urban planning functions in two tiers, one tier is DO Spatial Planning & DPDC (taking care of policy framework of urban spatial development for whole of district such as commercialization policy, Land use policies etc.,) and other is TMA's local setup centered to T.O. (P&C), (local planning & management of Urban Area are dealt by this office, this post is lying vacant since November 2010 and most of the functions entrusted to this office are on hold). Urban planning functions of TMA are governed under PLGO Building Regulations and Land Use Classification Rules 2009. Two other departments are also dealing with landuse planning domain of Murree, one is Punjab Housing & Town Planning Agency PHATA (formerly known as Punjab Housing & Physical Planning Department) and other is Murree Improvement Trust MIT (maintains building control within MIT Scheme in Murree). The PLGO 2001 envisages decentralization to TMAs through entrustment to them of the functions, administration and financial management of the offices of the Local Government and Rural Development and the Housing, Urban Development and Public Health Departments of the provincial government "along with the employees working in these offices." The PLGO provides that water and sanitation agencies ("WASAs") coming into the control of City District Governments "may further be decentralized to the City District Administration or, according to requirements of service delivery, may be decentralized to TMAs.

The functions and powers of the TMA Murree include preparation of spatial and land use plans, executing and management of development plans and exercise of control over land use, land sub-division, land development and zoning by public and private sectors for any purpose, enforcement of municipal laws, rules and bye-laws, provision and management of water, drainage waste and sanitation along with allied municipal services.

The primary functions of TMA can be summarized as;

- Preparation and Adoption of Spatial Plans
- Control over Land use, Land development and Zoning by public and private sector for any purpose
- Building and Development Control
- Prevention of Encroachments
- Regulation of Sign Boards and Advertisements
- Municipal Infrastructure and Services
- Water Supply and Development of Water Resources
- Sewerage System, Treatment and Disposal
- Sanitation
- Solid Waste Management
- Roads and Streets
- Traffic Planning and Management
- Street Lighting
- Fire Fighting
- Parks, Play Grounds, Open Spaces and Arboriculture
- Slaughterhouses
- Sports, Culture, Fairs and Shows
- *Regulation of Markets and Services*



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSUTANTS:

PEPAC Pakistan Environmental Planning & Architectural Consultants

Planning
Architecture
Engineering Design
Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

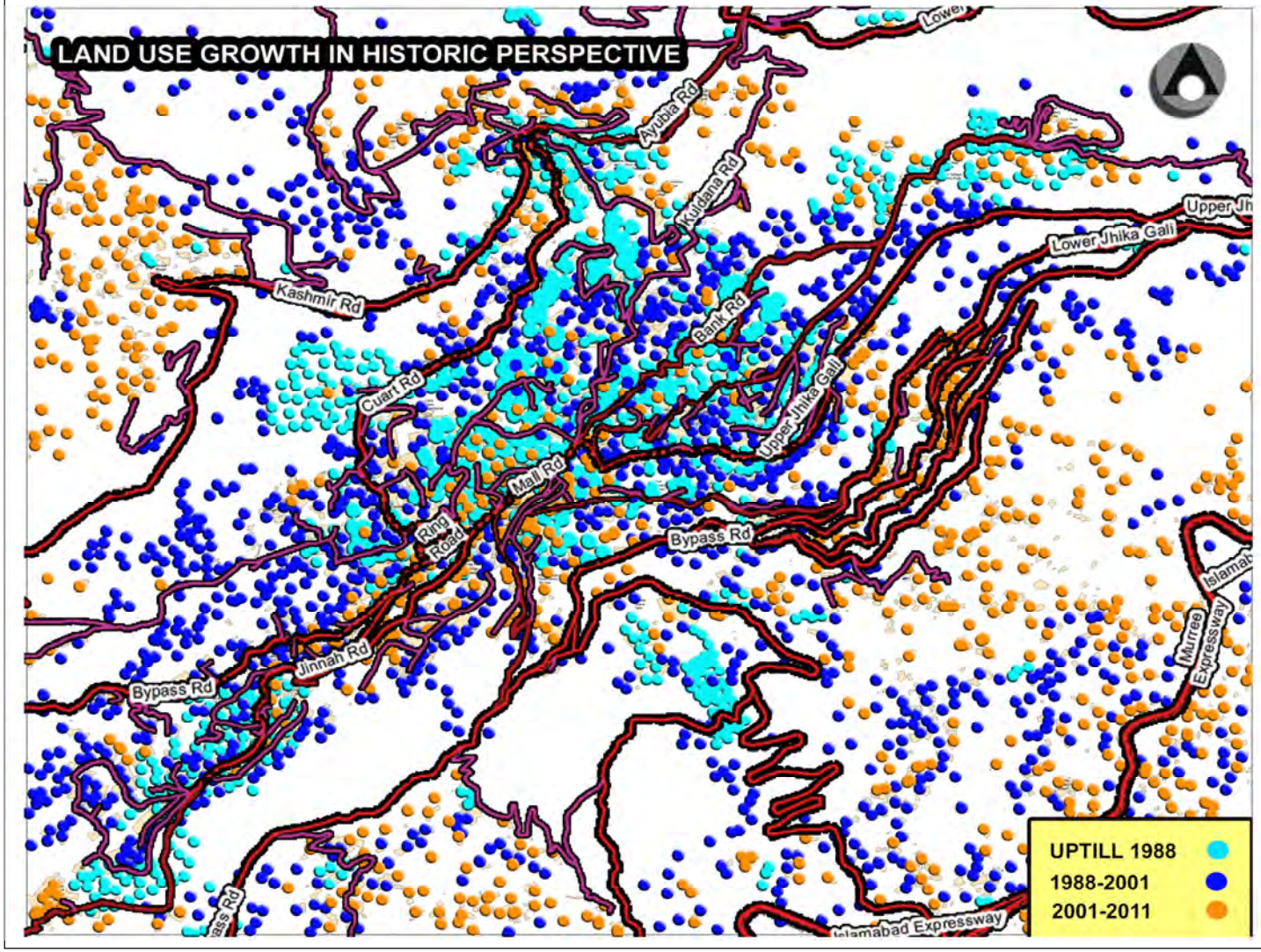
TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN

PAST LANDUSE GROWTH PATTERN OF MURREE

SHEET # -a **SCALE: N.T.S**



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

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CLIENT:

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LANDUSE GROWTH IN HISTORIC PERSPECTIVE

SHEET # -a **SCALE: N.T.S**

The major revenue sources to TMA Murree are property transfer fees, water tariffs, penalties to building violations, building plan approval fees (suspended due to the continuing ban on construction) and income from lease / rental money coming earned through leasing out TMA estate / property. Most of the TMA area lies in khasra 392 comprising of 6645 acre out of which Murree Cantonment holds 1959 acre, forest 3580 (This area was given to the forest department on long term lease in 1988 at the rate of Rs. 120,000 lump sum) and rest of the area is under private / other public ownerships. TMA has its small property / land holdings scattered within its municipal limits and making some revenue out of it. TMA officials complain insufficiency of these income sources and thus TMA manages this gap through special direct grants and schemes from GoPb. This insufficiency further reduces TMA's capacity.

Identifying Patterns of Past LanduseGrowth in Murree:

As Murree has grown sporadically from a small administrative town to a regional tourism hub; the local environmental degradation is assumed to be happening due to the unplanned physical development, environmentally-negative tourism and lack of a viable implementing mechanism to streamline the tourism activities in Murree 1987 onwards. The lack of inadequate urban planning and environmental conservation / management practices in the Murree and around coupled with rampant tourist influx in Murree throughout the season raises the need to plan and manage tourism related activities and land use development at municipal level in a systematic and planned way.

Haphazard unchecked land use growth has damaged the original character of Murree hills to such an extent that local inhabitants see it as "Mall road looks like Raja Bazaar of Pindi". Every available piece of scarce land has been acquired by enticement-oriented real estate sector during the past three decades and converted into linear shops and hotels and eventually putting existing every kind of urban infrastructure to extreme stress. Past & recent studies suggest that geological formation of Murree Hills does not permit construction of tall buildings but it has been ignored until today. Murree lies in close proximity to Pir Panjaal/MBT fault line, 2005 earthquake has left us with many lessons to be learnt but no one did. Local community cognizes traffic congestion & massive commercialization as hard pressing threats to the Murree. Several construction bans have been imposed after 2005 earthquake, building bye-laws revised afterwards allowing only three storeyed high buildings with maximum 70% floor coverage limit but nothing has worked up to the expectations so far. Apparent cause stated by local inhabitants, is political influences and un-regularized buying/selling of residential land and converting into commercial ventures.

Murree ridge has some physical / economic limitations, which pose difficult challenges and driving factors to the existing landuse development. Among these are;

a) 4.5 km long ridge is confined NS by Kashmir Point &Pindi Point, offering physical barriers to the growth; thus offered unidirectional linear growth till late 90's which eventually diverted to vertical expansion;

b) Extending EW, ridge is again confined by terrain / steep slope, roads another challenge / disadvantage;
c) Fragile geology of Murree places another physical disadvantage;
d) All the infrastructure has been confined to the central core (Ridge) area which always attracted more development activities to the core;
e) Open enticement oriented land market always drift more investments to the core;
f) Past commercial development in the core always attracted new investment concentration;
g) Tourism industry being the chief magnetic factor for investments derives the most of the development patterns in Murree;
h) Cantonment bisects ridge and restricts mobility due to security reasons.

While having a look at past land use growth trends in Murree (as shown in the map), one could have a clear impression that up till 1988, the land use development pattern was fairly distributed along the central ridge, from 1988 to 2011 pattern changed to infill mixed use development on the central ridge complimented by loosely packed suburban development of residential clusters around these areas currently known as MIT scheme, Bye pass road, Shawala, upper part of Massiari and Bansra Galli. From 2001-2005, thrust was focused to the central core from GPO to Cantonment limits characterized by non-conforming infill vertical growth (most high rise structures were built in the same period), unchecked encroachments, supplemented by suburban residential development along major roads and a housing scheme (MIT Scheme) has also been developed in the same era. 2005 earth quack, however, had a drastic impact in the whole region and Govt. took a serious notice and imposed a construction ban soon afterwards which is still enforced.Later, demolition for some illegally constructed structure has also been done; however, builders are still waiting for a consistent policy decision to relieve them out.

Present Land use Growth Scenario in Murree can be summarized as;

Commercial / Mixed Use:

- High density commercial / hospitality development has been concentrated in Urban Core (The Mall& surrounding), primarily infill and vertical over last two decades. Illegal enchroachment extending from building lines on both sides have narrowed down thewhole land scape. Undesired conversion of every available piece of land has further aggravated the situation.
- Most of the essential urban infrastructure has been over burdened, improperly designed and lived out. This uni-centric occurrence attracts all the tourist traffic volumes thus causing more congestion on peripheral arteries.
- Physical barriers on both ends of The Mall restricted normal growth to the choked urban core and pushing vertical construction even not supported by geology and thus leaving all existing structure more vulnerable to disasters like earthquake and slope failures. Environmentally degraded and cluttered centre offers another challenge.

- Commercial activity in the tehsil area normally found alongside main corridors like MKR and N 75.
- Other sub commercial districts run parallel to the Mall; these are Lower bazar and Caurt Road section starting from the Mall. Lower bazar is in relatively dilapidated condition.
- Millennium Mall is another recently developed commercial hub on the cantonment end of the Mall; it houses food and fashion chains like KFC and parking in the lower floor. Kiosks along all the major roads are another common scene around. Massive commercialization on the ridge has restricted the scenic view of valley from The Mall, thus ruined the original characteristic of Murree for which most of the tourists are attracted to. Mall has varied size and height of commercial / hospitality buildings.
- Shops and restaurants are generally two storeyed whereas hotels have extended vertically even up to seven floors. Other low profile isolated linear commercial developments are found along Kuldana, Sunny Bank, Jhika Galli intersections and Kashmiri Bazar on Bhurban road.

Residential / Hospitality:

Hospitality buildings mostly constitute Hotels and residential lodges/portions. In house restaurants, Rental Lodges, Clustered Apartments and Independent Lodges / summer houses and personal owned residences by local residents. Most of the hospitality structures are concentrated in the core, rental and personal lodges are scattered in all the town, along all major roads, Cecil complex, Murree Club Estate etc., whereas personal owned residences are clustered around Pindi Point, MIT colony, Kulduna Road (Section extending from TMA office), around Kashmir Point and PIA Park. Suburban residential development is housed around Bansra Galli, Bye pass road and Murre Brewery Scheme (another venture by MIT). Some scattered residential developments are extending onward from Kashmiri Bazar on Bhurban Road all the way to the Bhurban. Cantonment residents are confined inside main cantonment (Jinnah Road), Cliffden Camp, Kuldana Camp, Lower Topa and Upper Topa. Some poor quality low density residential developments are found in Shawala (Lower Bazar) and behind GBS Caurt road which apparently needs to be redone. It has also been envisaged that suburban developments like MIT Colony, Bansra Galli etc. proposed in Master Plan 1988-2013 were developed over the time without complimentary commercial components: a missed opportunity, which has affected the livelihood at large. Every resident (local and transient) has to commute to the central core for daily shopping even unwillingly.

Table 1.1: Landuse Compatibility Matrix (Source: Extracted & Developed by Consultants)

AREA	LAND USE TYPE							
	Mixed Use		Commercial		Hospitality		Residential	
	H	L	H	L	H	L	H	L
Mall Road (GPO to Millennium Mall)	√		√		√			
General Bus Stand To Army Public School	√		√		√			√
Jhika Galli to Improvement Trust								√
Lower Topa Road (Jhika Galli to Kuldana)								√
Ayubia Road (Kuldana to Sunny Bank)		√		√				√
Caurt Road (Sunny Bank to General Bus Stand)		√		√		√		√
Kashmir Road (Sunny Bank to Bansra Galli)						√		√
ImtiazShaheed Road (GPO to Al-Qamar Hotel)					√			√
Caurt Road (APS to Pindi Point)		√						√
Bypass Road (MIT to Abbasi Mohallah)								√
Bank Road (GPO to Kashmir Point)					√			√
Hall Road (GPO to Kashmir Point)		√			√			√
Kuldana Road (GPO to Murree Club)		√		√		√		√
Kuldana Road (Murree Club to Kuldana Chowk)				√	√			
Jinnah Road (Millennium Mall to Pindi Point)					√		√	
Lower Bazar (GPO to Lower Bazar)	√		√				√	
Bhurban Road (Kashmiri Bazar)			√					√
Bypass Road (Abbassi Mohallah to Express Ways)								√
Lower Bazar (Lower Bazar to Mochi Mandi)				√				√
Lower Bazar to Shawala			√					√
Kuldana to Mohrra Sharif								√
Kashmir Point to Upper Jhika Galli					√			
Upper Road (to GPO)					√			
Qasab Market			√					√
ChittaMor				√				√
Bansra Galli							√	
Ghora Galli							√	
Pindi Point Main				√				√
Pindi Point (Khalid Road)								√
Pindi Point (Jeus & Marry Road)				√				√
MIT Scheme (Lower Jhika Galli)								√
Nambal-Scouting Camp								√
JhikaGalli and Kashmiri Bazar			√					
Jinnah Road (Cantt area to Jesus and Marry)								√

H= High Density L=Low Density

Urban Design and Built Heritage:

Urban design of the Murree mostly lacks place-making - a setting that imparts a sense of place to an area is missing. This is because of the fact that the present day Murree is congested and cluttered instead of having identifiable neighbourhoods, unique architecture, aesthetically pleasing public places and vistas, identifiable landmarks and focal points, and a human element established by compatible scales

of development and on-going public stewardship. However consultants have analysed the general framework of urban design on the basis of six main criteria:

In terms of environment**,** one feature which distinguishes Murree from other cities is the diversity of its landscape. Due to the absence of landscape planning this diversity is not maintained in the overall urban development process hence there is a lot of room to make a contribution to environmentally viable urban design.

In terms of pedestrian infrastructure, the amount and quality of open space in the inner Murree is insufficient to cater the ever increasing tourist influx. It seems as if each chunk of land is commercialized and is meant to make profit. The tourists have limited walking, trekking and hiking options in Murree and as a matter of fact, this snag eventually raises automobile dependency.

In terms of architectural value**,** Murree's cityscape is composed of a cluttered mosaic of buildings, each with its own character. Their appearance is defined by the building profiles, their height and roof colour, along with characteristic open spaces between them. The overall cityscape reflects the mushroom growth: each generation have added to this current spatial form, although not consciously.

İn terms of, Vitality and variety of use**,** Murree is now being called raja Bazar of Pindi. A tourist mountainous area must have more to offer than a congested market. With no parking spaces, the cars and pedestrian traffic face difficulties in comfortable flow.

İn terms of the cultural environment, Murree has become the target of Modernization and westernization. In competition with global international brands, the local products lost their market and as a result the culture of local food and handicraft has seen a major setback. Ultimately the local norms and tradition are losing their importance. Handicrafts of Murree hills are an important part of the country's tourism products and there is a lot of potential to develop the local handicrafts industry both to improve the tourism experience and develop local economics.

İn terms of Historic / Heritage conservation, Murree has been neglected badly. There were a total of 16 cemeteries located in and around Murree Hills from British times. Unfortunately, they are in various stages of neglect today. They are irreplaceable landscapes and have been neglected for decades everywhere in this part of the world. They must be included in the threatened monuments and the heritage lists. Names like Carter Road, Cecil Hotel, and Primrose Cottage remind one of the place's British heritages. The major lose in fact began with privatization of Cecil Hotel in 1998. The issue facing us all today -- with planners and executors foremost – why can not all think of ways to absorb the pressures of an expanding population while retaining and preserving our cultural and historical heritage? After all, other countries have done it too, despite growing populations. All we need to do, perhaps, is to kill the instinct for demolition, removal and replacement. It is the easiest approach to implement towards protection of the cities and towns of their history;

1.2 WATER MANAGEMENT:

1.2.1 POLICY FRAMEWORK FOR WATER SECTOR IN PAKISTAN:

National Drinking Water Policy 2009:

Drinking water, as referred to in the Policy, means that the water used for domestic purposes including drinking, cooking, hygiene and other domestic uses. The term "safe water" refers to the water complying with National Drinking Water Quality Standards. Currently over 65% of Pakistan's population is considered to have access to safe drinking water, Huge disparities, however, exist with regard to drinking water coverage between urban and rural areas and provinces/regions. It has been estimated that water, sanitation and hygiene related diseases cost Pakistan economy about Rs. 112 billion per year, over Rs. 300 million a day, in terms of health costs and lost earning. Out of this, the cost associated with diarrheal diseases alone is estimated to range from 55 to 80 billion per year.

Policy Principles:

The key policy principles that will be pursued for implementation of the Policy are as follows:

- Access to safe drinking water is the basic human right of every citizen and that it is the responsibility of the Government to ensure its provision to all citizens;
- Water allocation for drinking purposes will be given priority over other uses;
- In order to ensure equitable access, special attention will be given to removing the existing disparities in coverage of safe drinking and for addressing the needs of the poor and the vulnerable;
- Recognizing the fact that women are the main providers of domestic waters supply and maintainers of hygienic household environment, their participation in planning, implementation, monitoring and operation and maintenance of water supply systems will be ensured; and
- Responsibilities and resources will be delegated to local authorities to enable them discharge their assigned functions with regard to provision of safe water supply in accordance with Local Bodies Legislation.

Pakistan Water Sector Strategy 2002 states:

- Ensuring the provision of water for all is the key objective of the Strategy and essentially all other objectives support this.
- Ensuring water conservation in domestic and irrigation sectors. (Conservation in irrigation will be the responsibility of both the agriculture sector and the irrigation sub-sector by improving irrigation efficiencies).
- Achieving equity in irrigation distribution.
- Arrangements for additional storage to meet the agricultural and other water needs of the future.
- To prepare an Integrated Water Resources Master Plan this will determine the needs and development priorities for conservation, storage, watershed management and water resources development as a whole.
- Providing water allocations.
- Improvement of Institutional and Management Capacity.
- Proposing Water Resources Apex Body for planning, development and management of water resources.

- Proposing a National Water Council (NWC) which would be the major policy and decision making body.
- Providing support for strategic planning to all urban areas, large and small.
- Poverty reduction is targeted mainly through the irrigation and drainage and urban and rural water supply and sanitation sub-sectors.
- The involvement of women is to be improved within the rural water supply and sanitation sub-sector strategy.
- Increasing Equity in Water Distribution.
- Increasing Stakeholder Participation for demand management.
- Improving Public Awareness and Understanding and Information.
- Improving Agricultural Yields and Production.
- Increasing Cooperation between Irrigation and Agriculture.
- Improving Cooperation and Coordination in the Water Sector.
- Ensuring the long-term financial sustainability of all water sector infrastructure and services.
- Involving private sector for both investment and management skills, especially for the urban domestic sub-sector and the hydropower sub-sector.
- Improving water quality water quality, of both surface water and groundwater.

Existing Operational Water Supply Scheme:

- Harrow River Scheme-Connected at Pindi Point (working)
- Donga Galli Spring Scheme-Connected at Pindi Point (working)
- Khani Tank Spring Scheme- (working)
- Shawala Spring Scheme-Connected at Pindi Point (working)
- Masoot Spring Scheme-Connected at Pindi Point (Working)

Proposed River Jhelum Water Supply Scheme:

The Neelam-Jhelum Bulk Water Supply Scheme was launched by PHE department in 2005 and was scheduled to be completed in one year. An amount of Rs 4.5 billion was allocated for the project out of which 2.0 billion rupees has been reported spent (Source: Press & Local Inhabitants) on the project so far. Water has to be pumped from Dhanda on River Jhelum (Part in UC GHEL, Murree). Only about 20 % work has been completed on the scheme and reported suspended so far.

Murree Water Board, TMA Murree and PHE are jointly responsible for water supply & management in the town. Water is pumped up from streams at Bansra Galli and Khani Tak, stored at Pindi Point & Kashmir Point for further supply to urban residents (both civilian and cantonment) through poor quality worn out piped infrastructure. Apparent gap between demand & supply is about 45% (estimated peak demand is 2.25 million gallons/capita/day whereas municipal sources claim to supply 1.0-1.2 million gallons / day / capita and local inhabitants and municipal officials believe that River Jhelum scheme could easily resolve the water shortage issue but consultants have evaluated that pumping and operational cost would be another major challenge for the implementation of the said scheme as water supplying department are already facing financial deficit and leakages / pricing / recovery are major causes for this reported deficit. Quality of supplied water is another point of deep concern. Apparently openly dumped solid waste and sewage is a major cause of water contamination. Water management solutions shall be addressed in next policy framework section, however, the consultants envisaged that Rain Water Harvesting at every building parcel level still remains un-exploited even in proposed building bye laws …….

1.3 TRANSPORTATION SYSTEM MANAGEMENT:

1.3.1 POLICY FRAMEWORK FOR SUSTAINABLE TRANSPORTATION IN PAKISTAN:

Pakistan Transport Plan Study (PTPS) 2006:

States that Pakistan is a large territory (land area of 796,000 sq. km.). The distance between Islamabad (the capital of Pakistan) and Karachi (the provincial capital of Sindh having two important international ports) is about 1,200km in a straight line. The transport system in Pakistan plays an important role in unification of these regions in terms of political and economic activities. The Pakistan road network is approximately 258,000 km in length. Approximately 60% of the network is paved. The length of roads has increased by 50,355km since 1994/95, however, the increase since 1999/2000 has only been 9,660km.In order to realize efficient and effective investment with limited resources, it is necessary to develop a comprehensive transport plan.

- To promote the transfer of knowledge and technology to local levels
- Establishment of multimodal transport system
- Emphasis on asset management of the existing system
- Enhanced private sector participation in transportation systems
- Improvement of transport planning, prioritization and rationalizing public sector expenditure and mobilization of resources from users and private sector
- Reforms of institutions governance
- Adoption of an integrated and holistic approach for more productive, efficient and reliable transport system aiming at lower transport cost
- Emphasizes improvement of existing facilities and better operation, rather than new construction

Policy and Strategy of Transport / Roads Sub-Sectors in MTDF 2005:

- Optimal utilization of the existing capacity with emphasis on rehabilitation and upgrading
- Selective and cost efficient investment in economically viable new roads, including expansion of the rural network
- Development/improvement of road network to facilitate transport and trade with Iran, Afghanistan, Central Asian States and India (N 75 has the same potential)
- Development of innovative financing mechanisms and enhancement of private sector participation
- Priority to roads maintenance and safety
- Effective control of overloading on the roads
- Enhancement of capacity of the road sector agencies

Other Focal Points in Policy

- Supporting economic activities by connecting major economic centers with motorways or national highways
- Establishment of stability by providing alternative mode or route
- Increase of urban bypasses
- Development or improvement of inter-modal facilities
- Management and effective utilization of existing resources
- Harmonization of transport network development with regional development policies and plans
- Network development aiming at alleviation of poverty and regional disparity
- High priority setting on transport projects in poorer areas
- Project implementation by utilization of local materials and procurement of local labour force
- Minimization of transport cost by multi-modal transportation
- Introduction of research works suitable for local conditions
- Preparation of an investment plan according to the national economy
- Expansion of financial sources and proper allocation
- Application of "Beneficiary pay" principle or "Causer pay" principle
- Strict regulation enforcement especially on overloading and transporting hazardous freight
- Establishment of rescue system
- Development a system for traffic accident statistical data
- Traffic safety education to drivers and school childre

Reference:
http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/SOUTHASIAEXT/EXTSARREGTOPTRANSPORT/0,,contentMDK:20699058~menuPK:869060~pagePK:34004173~piPK:34003707~theSitePK:579598,00.html

A Gist of Previous Exercises:

Transportation Related Proposals of MASTER PLAN 1988-2013:

Road Sections Proposals: (Mostly Achieved)

Rawalpindi-Murree road: protect portion from Bansara Galli to Chitta More from landslides.
Murree Bypass (link between Bansra & Jhika Galli): Repair and improvement
Murree Burban Road: Protect from land sliding near Kashmiri Mohalla.
Demolition of buildings obstructs drivers' view at Bansra Galli junction.
Removal of encroachments at Sunny Bank junction.

Bus Terminal Proposal:

Shifting of GTS bus stand.

Car Parking Proposal:

Demand projected to be 12650 cars in 2013 from 3796 in 1988.
Cantonment barriers parking extension & improvements
250 q. ft. per parking lot as standard

New parking lots near Murree Club at 600 meters from GPO and near Gulberg hotel as Cart road; both one acre each.
Parking lot over one acre at Bansara Galli at the boarding point of chairlift is Pindi Point. (Completed)

TDCP's Proposed Projects (1988-1993)

Chairlift between Patriata and Charihan (Completed)
Chairlift between Lower Topa and Patriata (No Fate)

Feasibility Study for the Installation of Ropeway System:

By: Engineering General Services (EGC) Pvt. Ltd.
Feasibility Study for the Installation of Ropeway System, with Supporting Facilities, from Jhika Galli to Commissioner's Office
Tourism Development Corporation of Punjab, Lahore, June 2010
SCOPE:

The report covers background studies (traffic, tourism surveys, environmental, social, geotechnical, hydrological investigations) for the project, its architectural and engineering design, cost estimates and financial appraisal of the project, The project entails installation of modern elevated ropeway system including cable cars and chairlifts and ancillary facilities.

The ropeway system has a horizontal route of 2363 meters, an elevation of 120 meter and 8 persons per car capacity. It is designed to carry 1500 passengers per hour, which is the anticipated peak volume of incoming Tourists in summer season.
The capital cost of the project is estimated at Rs. 1395.287 million; the project Life is assumed to be 20 years and yearly operation and maintenance expenditure would be Rs. 21.00 million.

STATUS:

The project has been conceived and designed to complement another project at Jhika Galli base station, namely construction of parking plaza. The incoming tourists are to park their cars in the plaza at this outer cordon point and board the chairlift to and fro Murree.
Construction of the parking plaza at Jhika Galli has been suspended, due to Problems with land sliding at the site, so the Ropeway project appears on hold for the time being.

N75 EXPRESSWAY; National Trade Corridor to AJK:

Designed by: NESPAK
Status: Completed
Contractors: Hakas
Supervised By: NESPAK
Infrastructure Type: Roads/Highway
Length: 43 Km

Cost: 2949 (In Million)
Construction Start Date: 19 September 1999
Completion Date: May 2008
Location: Islamabad to Kohala to Muzaffarabad

The Project was initially named as "Islamabad - Murree Dual Carriageway" which afterwards changed to "Islamabad-Kohala Expressway (N-75)". The project is 4 lanes, 2 on each side. This project has been identified as a part of National Trade Corridors as it links up AJK to rest of the country. All trade / goods and passenger movement follows through Murree being located in the middle of this strategic corridor and obviously taking a high toll on its internal circulation patterns and physical environment as well. It does have a positive impact on improving accessibility of tourists to Murree and vicinity.

Parking Facility at Jhika Galli:

In 2008, a proposal for the construction of elevated multi-level pilot parking facility at JhikaGalli has been approved by the GoPb to relieve the congestion on Murree roads. Proposed project site has been selected among other five sites due to its proximal location; those were Pindi Point Chair Lift area, two near Dhobi Ghat graveyard, on Dual Carriageway N-75 and General Bus Stand. Project was initiated to house app. 1200 cars at one time on total 8 floors and estimated to consume around Rs. 1259 million for its completion. Proposed project was initiated with the aim to facilitate tourists with an opportunity to park their cars right on the entry (Jhika Galli Intersection) and further boarding to other transfer modes like Cable Cars, dedicated Buses to get to the city core without causing any further congestion. Project approved by the GoPb. and construction work started and halted soon after due to slope failure at site. Project is still on halt and further geological investigations are underway to assess landslide vulnerability. However, local community does have many reservations and opine that this project is not expected to yield anticipated benefits in the long run.

Analysis of Transportation System in Murree; Exploring Challenges & Opportunities:

Institutional Responsibility:

Federal as well as provincial Highway Departments are responsible for the construction and maintenance of highways/ road infrastructure in Murree Tehsil, however, urban area facilities are being managed by TMA Murree. Both departments engage contractors like NLC and FWO for construction / maintenance of their facilities for quality assurance. Traffic management in / around urban area is a responsibility of City Traffic police Rawalpindi and regulating traffic through their inherent legislation. TMA collect parking and road usage toll at different points and this is one of the income sources to TMA. Cantonment board Murree takes care of road network in area under jurisdiction.

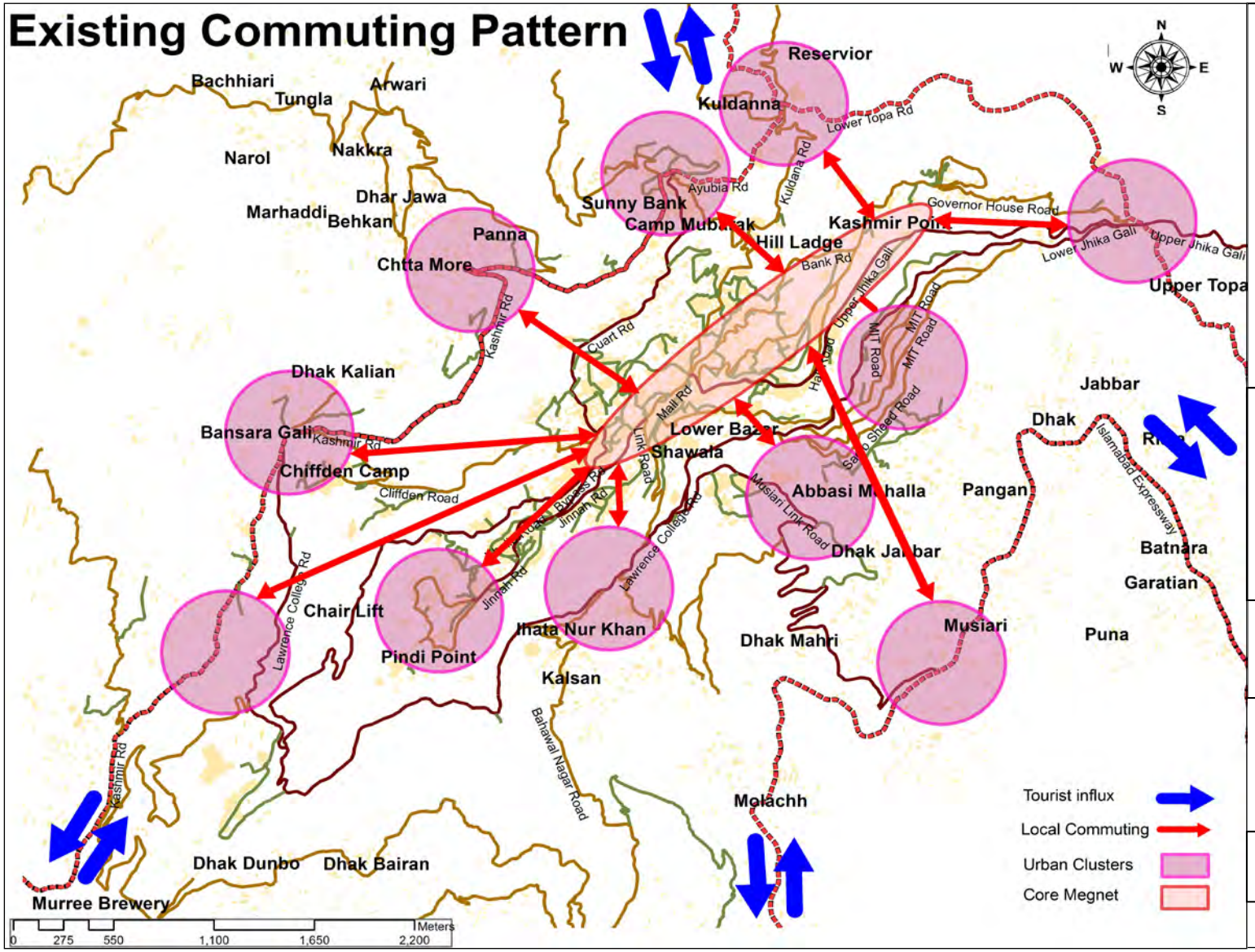
Challenges and Opportunities:

Landuse development in Murree is extremely concentrated in the core, The Mall, appears as a very tightly knit urban fabric with diverse mixed land uses. All the commercial / tourist attracting activities like leisure, shopping, food attractions, hospitality have been concentrated in the core which eventually draw huge volumes of tourists even if they don't want to go there. Road network being steep and narrow offer very feeble mobility options to the commuters.

Walkability is another deficit, thus pushing populace to ride cars to the maximum. Every single looped artery is directed to the GPO and causes more jams during peaks. Rise in car ownership rate in last decade has also made Leisure Tourism a joy ride. Socially and culturally, community is not walk-pro as it used to be in the past. This has eventually turned leisure trips a messy stressful experience. It has also been observed that a large number of tourists had to go back the same day due to higher congestion levels, a sort of forced day tripping….

Most pressing transportation **challenges** are seen as;

- Murree serves as a strategic location on two main corridors leading to AJK, generally named MKR and Expressway and also serves as a transit point for huge population and freight volumes to and fro AJK in addition to its own tourist influx.
- Geology does not permit expansion of right of ways along the ridge.
- High concentration of commercial / hospitality activities around Mall attracts every single tourist to the core.
- Lesser walkability options further intensifies the problem.
- Ever increasing tourist volumes (2.38 Million a year) especially 2001 onwards due to improved accessibility and increased car ownership rates like other urban centers of the country offer even more challenges and stresses
- High density compact urban core offers very less room for vehicles to be parked around.
- Master Plan 1988-2013 estimated cars 34% in 1987, which has risen to around 80% in 2011 (Consultants' field studies) which needs another 40 Acres of physical space to cater for the current parking demand alone and it is still expected to rise at a rate of 7.9% as envisaged through field studies.
- Multi-level parking solutions are no more viable as geology does not permit much to play around (Slope failure in case of proposed Jhika Galli Parking Facility).
- Right of ways even does not allow medium sized public mode vehicles (Vans, Mini Buses etc.)
- Tourist community seems reluctant to park vehicles on outskirts and riding other transit modes like cable cars, community vans etc. Another point of concern
- Local community feels trapped during peak seasons.
- Snow fall / rain fall offer more problems to the commuters especially discouraging walkers.
- Public / private parking spaces are exceptionally inadequate as compared to the other tourism related infrastructure. An additional 40 acres physical space



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSUTANTS:

Pakistan Environmental & Planning Architectural Consultants

Planning
Architecture
Engineering Design
Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN

EXISTING COMMUTING PATTERN

SHEET #

is required to meet present parking demand and 28 acres more in coming five years of our short term plan period.

- Ridge does not allow induction of new routes as well.
- Road user behavior and driving patterns further aggrevates the problem.

An improved transportation infrastructure always expected to create diverse socio-economic as well as cross-cultural opportunities by linking domestic markets & communities. It reduces production and transactions costs in poor regions which further serves as a stimulus for domestic commerce. Connectivity creates bridges between goods & markets, people & places, communities to communities, transforming cultures and extending knowledge / skills. For example Murree Tehsil probably has the highest literacy rate in the country and it obviously owes to its early connectivity with other highly developed centres of learning besides fetching tourism to the place. Tourism does offer ample opportunities to both tourists and the place. Tourists bring along money to spend & cater for their leisure thus contribute to the local economy, which eventually reflected as the rise of local livelihood opportunities; such as local commerce, jobs, construction, learning through social interaction etc.. The consultants have estimated that an average tourist spends as much as Rs. 5300 per day and 2.38 million tourists expected to visit Murree in 2011, thus making a total volume of local economy to be placed around 11,900 Million Rupees a year. On tourist part, they get a time to leisure out of their stress full life patterns, they get relieved, refreshed and go back more motivated. Families get an opportunity to hang out jointly in vacations with parents, grandparents and children together, places another matchless social benefit. Growing children get opportunity to observe nature and thus learning more. So, tourism offers numerous opportunities which should not be missed in any case.

- Murree, serving as a transit point on the one of major trade corridor to AJK, does not offer much to the freight commuting and appears as another point of concern. Infrastructure for heavy transit vehicles is not provided at all, they usually park on outer arteries thus causing more congestion and air pollution on outer skirts. Traffic police has banned overloaded transit goods transportation vehicle on N-75 leading to AJK , so forced them to route through traditional RKM road, they enter Murree bypass road via Bansra Gall leading to Jhika Galli intersection thus eroding the road surface not designed for such excessive loads, however, it is a night time phenomenon.
- Public modes of transportation are in extreme shortage, local community sufferings offer challenges. Poor local spend as much as 25% of their incomes on commuting.
- Terminals / infrastructure for public modes Buses, Vans, Pickups are in a very dilapidated condition.
- In Murree Tehsil, road infrastructure is generally poor other than two high quality main feeders (RKM Road and N-75Expressway). Mode of transport for rural inhabitants largely is Vans, Jeeps like vehicles, always overcrowded even to the life threatening extent. Most of the established rural settlements like Satra Meel; Chara Pani is linked with the RKM road.

- Condition of Urban arteries is somehow a mix of poor, satisfactory to good. Main roads like Jhika Galli Road, Mall road, Jinnah Road, Caurt Road, Bank Road, Kuldana Road is fairly good and maintained while tertiary links like Imtiaz Shaheed Road, Bye Pass Link from Expressway to Lawrence College are in very poor conditions and same is the case with other tertiary network inside Shawala, Lower Bazar etc.
- Geometric design of all intersections is terrain derived, acute radius on elevating turns offers more challenges to the drivers and thus causing stoppage and congestion, intersections and sharp turn need to be redesigned on priority.

1.4 INFRASTRUCTURE DEVELOPMENT & MANAGEMENT:

1.4.1 Policy framework for Public-Private Partnership (PPP) for Infrastructure Development in Pakistan:

Public Private Partnerships (PPP) involve the financing, development, operation and maintenance of infrastructure by the private-sector which would otherwise have been provided by the public sector.

The Government recognizes the importance of improving and expanding infrastructure services for sustaining economic and social development in its Medium Term Development Framework (MTDF 2005). The substantial investment in infrastructure required in Pakistan could be provided through public private partnerships (PPP) and this PPP policy framework will provide the basis for this new approach in Pakistan. In the early 1990s, Pakistan established a policy and regulatory framework for Public Private Partnership (PPP) in the telecom and power sectors. Unregulated sectors like transport and logistics, water supply, sanitation, solid waste management, real estate and social sectors including education, healthcare and housing have yet to benefit from such a framework.

Benefits and Objectives of the PPP Policy:

- Development of more infrastructure on time and within budget
- Encouraging the private sector in innovative design, technology and financing structures and including increased international and domestic investment
- Risk sharing by GOP with private sector partners
- Ensuring good quality public services and their wider availability
- Real financial benefits, and a better utilization and allocation of public funds
- Economic growth and increased and wider employment opportunities

The key objectives of this policy are to:

- Promote inclusive social and economic development through the provision of infrastructure
- Leverage public funds with private financing from local and international markets
- Encourage and facilitate investment by the private sector by creating an enabling environment in PPP in infrastructure

- Protect the interests of all stakeholders including end users, affected people, government and the private sector.
- Set up efficient and transparent institutional arrangements for identification, structuring and competitive tendering of projects
- Develop efficient risk sharing mechanisms such that the party best equipped bears the appropriate level of risk
- Provide viability gap funding where the projects' viability is insufficient to attract private sector funding.

Scope of Public Private Partnership Policy Framework:

- Transport and logistics including federal, provincial and municipal roads, rail, seaports, airports, fishing harbors as well as warehousing, wholesale markets, slaughter houses and cold storage.
- Mass Urban Public Transport including integrated bus systems as well as intra and inter-city rail systems.
- Local Government Services including water supply and sanitation; solid waste management; low cost housing, and healthcare/education and skills development facilities.
- Energy Projects including hydroelectric and captive power generation projects
- Tourism projects including cultural centers, entertainment and recreational facilities and other tourism related infrastructure
- Irrigation projects some of these combined with power generation
- Social infrastructure which includes education, culture, and health infrastructure.

Facilitating Infrastructure Development through PPP:

As a follow-up to above, and with the assistance of the Asian Development Bank, the Government of Pakistan has structured a PPP program that includes;

1. Establishment of a PPP Task Force that is chaired by the Advisor to the Prime Minister on Finance and includes all key stakeholders. The purpose of the Task Force is to formulate a policy, regulatory and legislative structure that is conducive to creating a PPP market in Pakistan;
2. Establishment of the Infrastructure Project Development Facility (IPDF) that serves as the Secretariat to the Task Force, provides 'hands-on' technical assistance to implementing agencies at all tiers of government, builds their implementation capacity, and provides inputs financing, guarantees, subsidies etc.; and
3. Formulating a business plan to establish the Infrastructure Project Financing Facility (IPFF) to provide 'residual' long term fixed rate local currency financing.

Role of PMDFC & Punjab Municipal Services Improvement Project in Developing Infrastructure:

The Government of Punjab initiated Punjab Municipal Services Improvement Project (PMSIP) with the help of World Bank through PMDFC. The objective of the project is to improve the viability and effectiveness of urban

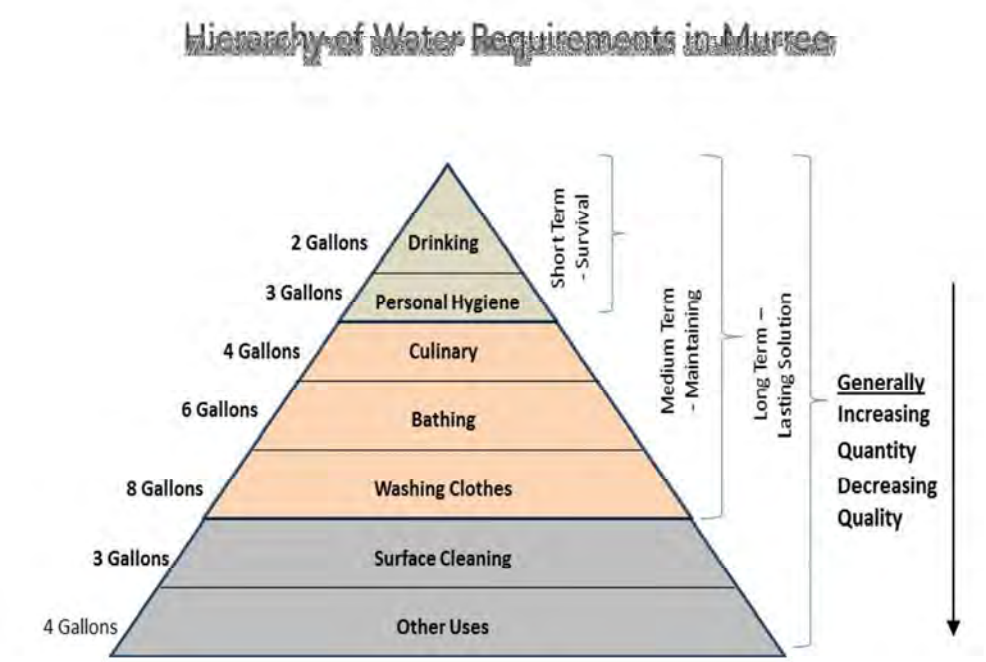
services provided by the participating TMAs and to make such improvements sustainable and replicable in other TMAs through the creating of a performance based management framework at both TMA and Provincial level.

PMSIP has two components; Institutional Development (ID) and Infrastructure Development. Under Infrastructure Development component; design and execution of sub-projects for improvement of municipal services are being undertaken. The Institutional Development component is concerned with implementing a number of ID interventions including establishment of Performance Management System (PMS); Complaint Tracking System (CTS) and Computerized Financial Management System (CFMS); TMA Website Development; introduction of IT culture at TMA offices through provision of basic & advance computer trainings and provision of requisite hardware; Urban Planning and Development of GIS based service delivery maps.

Institutions Responsible for Infrastructure Management:

Following institutions are responsible for infrastructure management in Murree;

1-CDG Rawalpindi and TMA Murree
2-Joint Water Board Murree
3- Public Health Engineering Department Murree
4- PTCL
5-Celluar/Telecom/IT Bandwidth Operators
6-SNGPL
7-Provicial Highways Department
8- WAPDA / IESCO
9- TDCP
10- Cantonment Board Murree



Analysis of Infrastructure Challenges and Opportunities in Murree:

WATER:

Water is being supplied jointly by TMA, PHE & joint Water Board in Murree urban. In urban area most part is being fed (about 60%) through poorly laid leaky and inefficient piped infrastructure (mostly placed open above ground and has been worn out over time and most sections need replacement) whereas in iehsil rural area, major source is springs / streams. Resident's survey shows that only 26% inhabitants of Murree urban area get water during peak season, this lag also reflects inefficiency and leakages in existing water supply system. TMA sources claim that currently 1.2 million gallons/day is being supplied, if we consider peak tourist volume visited Murree (in July 2011) as 70,000 plus local population of Murree urban 30,000, it sums up to 100,000 + while considering WHO/PHE standards of water supply 30-40 gallons/capita/day and rationalising it to 25-30 gallons/capita/day keeping in view local climate and socio-economic factors and conservation approaches applied, we get a demand figure for a high peak day as **2.5 million gallons/capita/day** for the year 2011 and extrapolated peak demand for the year 2031 comes out to be **7.5 million gallons/capita/day** . On the other hand if we consider average normal day (off peak) water demand for both resident + transient population as 30,000+6300=36300 persons, this demand figure reduces to 0.9 million gallons/capita/day. So meeting peek demands appears as a big challenge for TMA, PHE and Water Board. On the other hand worn out inefficient power intensive water

supply system is another big issue. Openly laid pipes are adding visual nuisance as well. Rain water harvesting still remains a missed opportunity which can even solve most of the water shortage issues in Murre if considered and planned wisely.

TELECOM:

Most of the Telecom infrastructure in Murree is PTCL landline network laid both under and over the ground. Above ground disagreeable poles do add a visual nuisance to the surrounding environment and buried infrastructure often offers challenges both to user and service providers during rainy days and lead to excessive faults. Landline phone connections are installed in 90% parcels in Murree urban but usage has been declined in recent years due to the introduction of personally hand held mobile devices. In settlement of Murree Tehsil these services are at limited availability and infrastructure is present along major communication routes. Mobile communication infrastructure is generally localized to the VISIBLE GIGANTIC TOWERS extended above ground levels and give out an alien existence among the indigenous tree filled natural skyline. Efficiency of mobile communication is described well, otherwise, having frequent chocks in peak season.

GAS:

Gas infrastructure was extended to Murree during period 2007-09 and has been extended up to 65% urban residents so far. Introduction of natural Gas has reduced stress on forests and air quality to a considerable extent. Before installation of natural Gas most of heating / culinary use dependence was on firewood and LPG, but LPG being expensive and in short supply, has never been a preferred choice of users.

ELECTRICITY:

Electricity is available to almost 100% residents of urban area and to 80% in rural area. Electricity infrastructure is installed above ground and worn out as well. Adding to visual pollution, its efficiency is also under criticism by the consumers at large. Its most parts need immediate replacement due to higher fault ratios. Weathering affects to installed infrastructure causing break up appears a great challenge for operational staff, however demand is equally being met with currently installed grid station and allied infrastructure. Murree still have a good potential for converting its public power dependant infrastructure to solar solutions.

SEWERAGE & DRAINAGE:

Sewage disposal is being observed as another crucial challenge in Murree. Municipal connected sewerage facility is practically almost non existent. Municipal sewage is further disposed in open runoff nullahs (Kass) which ultimately seek their way through natural channels and become a part of natural watershed / catchment area down the slopes. Rest of the unconnected population dispose their waste water off in open and leaving it to be mixed in streams / springs thus affecting their quality to harmful extents and further making it less worthy to the population in downstream

areas. Run-off / rain water is being drained over surfaces (both manmade and natural) and ultimately leads to the natural routes and again mixed up with sewage water. However, a few segments of roads like Mall Road, Bank Road, Hall Road, partly Upper Jheeka Galli have partly covered runoff drain which finally terminates into a nullah behind TMA office and mixing with the sewage water. Properly planned isolated runoff drains can prove to an asset to the Town by exploiting its ground water/springs recharge potential.

SOCIAL INFRASTRUCTURE:

The overall condition of social infrastructure in Murree is poor; most buidilgings ostensibly are in dilapidated condition. It is evident that in 2005 earthquke most affected structures were of social infrasture like hospitals, public schools, public offices and other buidings. Murree has been famous for the quality of its educational institutions and sanatorium in the past and this strength has also contributed a large to its economic capital in the past. Stringent efforts are required to continue tapping this resource while preserving its premium natural characteristics and addressing hazard vulnerability issues. Quality of façade and internal finishes is also a matter of great concern as most structures give a cluttrered look. The quantity of these services still appears satisfactory to fulfil requirement of local poplution though health and emergency services become inadequate occasionally during seasonal peaks.

1.5 TOURISTS, TOURISM & DEPENDENT LIVELIHOOD:

1.5.1 Tourism- Policy, Regulatory & Implementation Framework:

According to World Resource Institute, Pakistan is one of the poorest South Asian countries in terms of bio-diversity where forests cover as little as 5% of the country and deforestation rates have been high (as much as 2% per annum). This section specifically defines how tourism sector is being administered, managed and promoted through various policies, regulatory and implementation framework at national, regional and local levels in environmentally sensitive tourist location like Murree.

National Perspective

Before 30 June 2011, tourism was managed by the Ministry of Tourism which was responsible for formulating policy, the development, marketing and promotion of foreign and domestic tourism besides coordinating and regulating of all those involved in tourism. However, under the Implementation Commission, constituted under clause (9) of Article 270AA of the Constitution of Islamic Republic of Pakistan, the Federal Cabinet approved to devolve federal Ministry of Tourism and its Division to the respective provinces. The future of tourism industry seems uncertain in the current conditions as the federal ministry and its division was well design need to look after such specific job performed by 40 years PTDC as well. On the other hand, the provincial tourism organizations have not yet developed their capacity and their

job will specifically be (and should be) to develop and promote tourism for their respective provinces.

The defunct Ministry of Tourism took various tourism development initiatives at the federal and provincial governments besides encouraging private sector tourism investment. The Ministry of Tourism looked after the entire public sector interventions including formulation of policies, training and research; overseeing the legal and regulatory framework. The Ministry of Tourism was the administrative custodian of tourism industry in Pakistan headed by a Federal Minister supported by a Minister for State and a Parliamentary Secretary. The Ministry's functions were performed by the Tourism Division administered by Secretary Tourism. At the national level, Tourism sector was regularized through National Tourism Policy 1990; although a Draft National Tourism Policy 2010 is under discussion at different levels for adoption but the 1990 policy is still in vogue. Besides the National Tourism Policy, the tourism sector is planned and managed through a master plan at national level which is called as First Master Plan for sustainable Tourism Development prepared in 1974 for a period of 20 years. The Second Master Plan was jointly prepared by UNWTO, UNDP and Pakistan Ministry of Tourism in 2000. These master plans were aimed at looking the potential of tourism throughout Pakistan. The master plans envisioned different kind of interventions at national level through support departments and private sector investment.

Besides this following supportive legislation also exist which help and streamline the government's vision for the tourism sector and monitors and regulates private sector investment and tourism activities throughout Pakistan:

1. Pakistan Tourist Guides Rules 1996
2. The Hotels And Restaurant Rules 1977
3. The Pakistan Hotels and Restaurants act 1976
4. The Pakistan Tourist Guides Act 1976
5. The Travel Agencies Act 1976
6. The Travel Agencies Rules 1977

The tourism department of the Ministry oversaw five organizations involved in the development of the tourism industry:

1. Department of Tourist Services
2. Pakistan Tourism Development Corporation
3. Malam Jabba Resort (Swat)
4. Pakistan Institute of Tourism and Hotel Management
5. Pakistan-Austria Institute of Hotel and Tourism Management

The fate of these above organizations is still unknown as devolution of powers and assets is still under process from federal to provincial government.

Provincial Perspective:

Punjab Tourism Sector Strategy 2010 (Draft):

Recently tourism sector strategy of Punjab emphasized establishing of "Tourism zones" in Punjab and Murree is declared as tourism zone i (Attock, Rawalpindi, Chakwal) which has a lot of tourism potential. Unfortunately, in the past, Murree's tourism potential remained under-utilized although millions of tourists visit Murree each year. This is because the tourism activity in Murree is largely limited to sight-seeing, roaming in different city streets, photography and hotel staying. But this overall activity is not well integrated and managed due to number of reasons including lack of adequate tourist facilities, transportation and access problems, housing and hoteling shortage, missing infrastructure and problems related to marketing and promotion of tourism in Murree at government and local level.

At the regional / provincial level, the following bodies are involved in tourism development and management:

1. Tourism Development Corporation of Punjab (TDCP)
2. Sindh Tourism Development Corporation.
3. Department of Information and Tourism, Khyber Pakhtunkhwa
4. Department of Information and Tourism Balochistan.

As per the constitutional amendments, the provincial tourism departments will oversee the affairs of previously federally administered Tourism Ministry. There are also two main private sector bodies involved in tourism in Pakistan;

1. Pakistan Hotels Association.
2. Travel Agents Association of Pakistan.

Local Perspective:

Tourism in Murree is mainly supervised, managed and monitored by Tourism Development Corporation of Punjab (TDCP), which is actively involved in the promotion and uplifting of local tourism industry with an objective of preserving local culture, ensuring environmental sustainability and promoting sustainable urban development while enjoying tourism in Murree and its region. Tourism is a service industry, mainly dependent on the integration of physical development of the area with regulatory and policy requirements. Murree experiences multitude of urban governance that regulates tourism sector locally. The Tehsil Municipal Administration Murree is the main civic body that looks after the municipal services provided within the urban area of Murree; although, Punjab Local Government Ordinance 2001, abolishes the rural-urban divide under which the TMA is functioning. Besides this, a relative portion of urban area falls under the jurisdiction of Cantonment Board Murree.

The TMA Murree looks after the urban management as well is the main body entrusted to check / control haphazard growth within the Tehsil jurisdiction. The TMA also looks after the properties transferred to it from Murree Improvement Trust (MIT) Murree. Although Govt. of the Punjab desired to

incorporate a Development Authority for which an act was also, promulgated namely "The New Murree Development Authority Act 2004" but that could not be succeeded due to one or the other reason,

A Gist of Previous Exercises - Tourism Promotion Projects:

Tourism has been remained a key focus area for the federal as well as the provincial government in Punjab. Murree has witnessed many projects in the past initiated on the inspiration to make Murree a jubilant town and a great attraction for domestic as well to the international tourists. A gist of the previous exercises related to tourism is given below:

1. TDCP Sky ride Project – Patriata:
   Patriata is 25 Km from Murree and has become a new tourist place. TDCP has set up a chairlift and cable car system, which takes visitors up to Patriata Ridge in two stages from Gulehra Gali. The first stage is by chair lift up to Patriata Bazaar. From here visitors transfer to cable car gondolas for the ride to Patriata Ridge. A restaurant has also been established. Further plans include development of wildlife-park at the mid-station.

2. New Murree Project:
   The Punjab government, after considering four sites in Ban, Barian, Charihan and Patriata selected Patriata for the development of a tourist city covering an area of 4,111 acres of land and an estimated cost of Rs 40 billion which will cater the needs of 60,000 tourists daily. A body incorporated under "The New Murree Development Authority Act 2004" as New Murree Development Authority announced but the project suffered great loss due to Lahore High Court's decision against the proposed project that ordered the Punjab Government to refrain from initiating this project mainly on environmental grounds.

3. Islamabad-Murree Expressway N75
   The Islamabad-Murree Expressway, which links Islamabad to Muzaffarabad and Chakoti border area of Azad Kashmir is a transportation improvement project that resulted in the reduction of travel-time from the Islamabad to Murree and other adjoin areas of Khyber Pakhtunkhwa and Azad Jammu & Kashmir.

4. Various Urban Design / Tourist Facilities Improvement Projects by TDCP:
   TDCP recently embargoed on various projects that shall result in the improvement of urban tourism infrastructure / urban design etc. in Murree. These projects include Soft wheel Train; provision of sitting places to tourists; kiosks for shopping; toilets; provision of dustbins etc.

5. Amphitheatre at Bank Road by TDCP:
   TDCP's recent new development on Bank Road Murree has added a cultural accent to the town. This development is construction of an amphitheater having capacity of around 1000 persons. Town's many cultural activities have been held here since its opening, it is administered by Murre Arts Council & local administration.

1.5.2 Analysis; Tourism offers both Challenges & Opportunities:

- Murree has a great potential for future tourism development. The previously identified projects have now been implemented partially. It is very much needed that the proposed tourism development projects under Master Plans should be implemented at priority.
- Public & private sector tourism investments can be seen as source of local and national revenue
- Tourism projects build local economies / businesses
- Creates local jobs and human resource development
- Diversified employment portfolios
- Increase economic contribution – the local economic volume is estimated to Rs. 11,900 Million annually.
- New land use improves urban development
- The local community enjoys the provision of new infrastructure, facilities and services at par with tourist community
- Reduce employment-related emigration to other cities
- Culture is a potential marketing tool in tourism industry. The Murree's original culture is diminishing and the local culture is being invaded by the foreign culture. There seems a great need to preserve the local culture.
- Tourism builds mental development – improved infrastructure attracts more tourists. In 1987, Murree was attracting 437,000 tourists annually at a rate of 5% increase per annum; whereas current tourist flow to Murree is estimated as 2.3 Million at a growth rate of 17% annually. However, the tourism infrastructure in Murree is unable to cope with this much volume of tourists. It is very much needed that tourism infrastructure be improved in Murree to meet with the requirements of tourists and local population.
- Realize local benefits from broader tourism market
- Builds cooperation between tourism-oriented stakeholders

Challenges:

- People seem highly dissatisfied with the degradation of scenic value of Murree due to excessive incompatible development.
- As per the QualiTest results 22.75% tourists are satisfied with value for money. This trend is highly alarming as people rate the overall services and hospitality treatment experience do not match with what they are paying for. The tourists are highly interested if the overall quality of services can be improved in Murree.
- The tourism related development is highly concentrated in the city core. Thus everybody rushes towards the central part of the town, creating congestion, pollution and burden on the tourism infrastructure.
- The QualiTest survey results show that 46.4% tourists are dissatisfied with the accessibility and mobility pattern for disables and families with children.
- The water shortage is a biggest problem as termed by Hotels Association in the peak seasons. Water shortage disappoints tourists to visit Murree in peak seasons.

- The hotels in Murree observe almost 85% occupancy rate in the peak season. Sometimes there are rooms still availabe but tourists can't reach their desired hotels in the peak season due to extreme congestion in central city roads.
- Murree lacks efficient and affordable public transport system. Tourists are highly dissatisfied (87.4%) on the availability and quality of Public Transport System in Murree. This sector needs improvement.
- Tourists' concerns and complaints though sometimes registered in local hotels but their grievances are not properly redressed. The Customer Service System in the local hotel industry has to be established.
- The quality of food is also a big concern for the tourists. The QualiTest results show that 74.76% tourists are dissatisfied with the quality of food being served at local hotels and restaurants. They complain that due to higher influx of tourists in the peak season, the hotels and restaurants do not serve the food qualitatively rather they just serve inferior quality food items and service is affected.
- The QualiTest explored that 56.4% of tourists are dissatisfied with the quality and availability of information about the tourism activities and general information about Murree. Information dissemination is very much necessary to promote and manage a tourist destination. Murree being the all seasons' favorite tourist place should be promoted very positively. A Tourists Information System is needed for the Murree.
- There is a great need to introduce standardization and accreditation system to improve the quality of service to meet the tourists' expectations.
- There seems a great burden on natural resources of Murree. Such as most of locals use forest wood to meet their energy needs.
- The new development can cause environmental degradation
- The increased levels of tourism in Murree can significantly affect local cultural and social life such as dominance by outsiders to the local population. Thus a balance and harmony between the tourists and local population is highly needed.
- Tourism is also related with boosting living costs for local population especially the poor ones are at higher risks.
- The local economy is seasonal in nature as it is highly dependent on tourists flow. Economic investment other than tourism is also needed to provide the economic balance.
- The increased tourist volume is a risk to urban security including food security. It has been observed that in peak seasons the shortage of food and consumable commodities is experienced or black-marketing is also practiced. This trend is a negative impression to the tourism development. Street crimes can also be on rise with the increased volume of tourists. Proper security measures are needed to be adopted and necessary administrative and structural changes are required to be done.
- Small-scale local entrepreneurs remain at risk in front of big investments from outsider entrepreneurs.
- Skills of local people may not match with the job requirements of new development and investment. Thus a local training institute is needed which can impart the training and education related to tourism industry, hospitality management and food & beverages.

The livelihood assessment was done of population related to the main economic sectors found in Murree i.e. (i). Tourism industry, (ii) Trade and commerce, (iii) Agriculture and livestock, (IV) Arts and crafts industry, and (IV) other economic sectors usually the informal sector. Tourism is found to be the largest employment sector in Murree (accounting total volume of economy to Rs. 1194 million per annum) that employs 36.4% of local population followed by formal job sector (Govt. /Private Jobs) 32.2%, Commerce & Trade employs 18.3% of population whereas 5.6% population works in the wage labour and services sector, 3.8% population works in agriculture & livestock sector and 3.7% population works in informal sector. The tourism sector employs the locals mainly in accommodation services and transportation services. Most of the locals run small entrepreneurships mainly focusing small scale trade and retail sales. The rural population is highly dependent on agriculture and livestock resources they own. But they find it very difficult to survive just on agriculture and livestock due to natural limitations in the hilly terrain. Outside tourism the locals have limited economic opportunities. The poor economic state of locals is further aggravated with the downfall of physical infrastructure and access to basic urban services such as water supply and clean environment. The monthly income of locals (cumulatively 90.6%) earns less than Rs. 20,000 per month which seems quite less than the required levels of a person to support his living. Similar is the condition with saving whereby 67% of the population is unable to save an amount of even Rs. 5,000 or less.
However it is direly needed that the economic drivers of Murree mainly tourism, trade and retail sales and forestry should be exploited in sustainable manner such as attracting investments from public and private sector to make the local population's livelihood and employment opportunities more viable.

1.6.1 Environment; Policy Framework in Pakistan:

The state of environment in Murree, as in any area is greatly influenced by the previous policy context in which environment is exploited and managed. The relationship between the environment and policy is nevertheless complex. Environmental policies take many different forms and work in different ways. Some for example, are preventive in approach, and endeavor to avoid damage to environment before it happens. These policies however do not work in isolation. Many other policies (transport, forest, energy, agricultural policy) also affect the environment. Indeed, in many instances, environmental policies harness these policies in order to achieve their aims. Thus policies on energy are gradually paying more attention to energy conservation. This section addresses the existing legal planning and policy setting for consideration of environmental impacts associated with urban development. The primary focus is on national and provincial policies and laws describing the sustainable urban development planning and project development structure

Between the policy and action on the ground there is also a lengthy and often complicated chain. To be effective, policy aims must normally be translated into regulations, laws or codes of practice. This may require the definition of quality targets and standards. These must be converted into practical mechanisms and management plans by the agencies responsible.

To promote the adoption of environmentally-friendly policies, for example, may require grants and state aids. Enforcement of a policy requires information and mechanisms of policing, promotion, persuasion and in some cases, prosecution. A wide range of agencies and individuals are thus involved in developing and implementing the policies which affect the environment. Local authorities are one of the most important contributors. They are involved especially in the transition of policy into action at the local level and policing its subsequent application. Local authorities however, are simply a part of a much wider network of policy actors which extends from international and intergovernmental organizations such as United Nations, to national ministries and their agencies (Pakistan Environment Protection Agency), to institutions and companies and ultimately to individual members of the public.

The International Context

In recent years, environmental policy has become increasingly international in scale. Faced with issues such as global warming, biodiversity loss and natural disasters like recent earth quake of Japan, all of which have patently transcended regional or national boundaries in their causes and effects, policy-makers have tried to develop more global action on the environment. The United Nations and its associated bodies such as United Nations Environment Program, IPCC, Global Environment Facility and international donor agencies such as World Bank and IMF have been especially influential in this respect.

One of the most significant events in relation to environmental planning and policy formulation is the series of conferences on environment and development (the Earth Summit), starting from June 1992 in Rio de Janeiro. This summit defined the principles on which sustainable development could be built and to establish the actions necessary to achieve it. The main outcome of this conference was a complex document called ***Agenda 21***, a comprehensive document which set out a series of development and environmental objectives for the world. Some of its key requirements concerned with sustainable urban development are:

- *Promote sustainable human settlement development,*
- *Integrate environmental and developmental decision making,*
- *Develop integrated approaches to planning and management of land resources,*
- *Introduce sustainable systems of mountain development,*
- *Conservation of forests and biodiversity and*
- *Sound management of solid waste and sewage etc.*

The extent to which Agenda 21 is being actively implemented is matter of some debate. Pakistan was among those countries who adopted this agenda quickly and started (at least on paper) necessary actions to meet its targets. A National Conservation Strategy was developed which identified fourteen core priority areas to achieve sustainable development. In 1993, Pakistan launched Sustainable Development Networking Program with stated objective "to promote sustainable development and the implementation of Agenda 21 in Pakistan, through both facilitating access to electronic networking networks, and enhancing access to

information, knowledge and expert advice of relevance to human sustainable development". In Phase 2 (October 1998 through June 2001), a second objective was added that emphasized "strengthening the capacity of organizations in Pakistan to package, access and disseminate information". Though most of the objectives of Agenda21 have not been translated into action, it has had a number of important effects. In particular, it has helped to define the goals and establish a more explicit framework for policies on environment and development. These effects can be seen in the recently adopted national environment policy of Pakistan, in current policies on clean development and millennium development goals etc.

The National Context

National policies on environment have developed over a long period. The Forest Act, for example, which until recently has provided the framework for forest management was adopted in 1927. A wide range of policies have been developed, adopted and a wide range of statutory and non-statutory agencies have been established with responsibility for developing and implementing various sections of environmental policies. In 2005, a major attempt was made to bring National Environment Policy (NEP) within a more coherent framework. This framework was presaged by the publication of National Conservation Strategy (NCS) in 1992 and was laid out in Pakistan Environment Protection Act adopted in 1997. As part of national efforts to consolidate environmental protection in Pakistan, the Environmental Protection Agency of Pakistan was also established. Later on, these agencies were established at provincial level also.

Overall State of Environment in Pakistan

Environment & Energy	
Pakistan's share in total global emissions (%)	0.8
Per Capita CO2 Emissions	1.9 Tonnes
Cost of Environmental neglect & degradation to Pakistan's Economy	Rs. 365 billion
Forest Cover -% of total land area	5.2
Protected Area for Wildlife conservation (% of total land area)	10.3
Per Capita water availability	1090 cubic meters
Largest User of CNG in Asia	In 2007, Pakistan became the largest user of CNG in Asia
Current Status of MDG 2015 Goals on Environment	Govt of Pakistan is likely to meet these targets in time.

* Data sources include Economic Survey of Pakistan 2009-2010 & Global

Table: Key elements of Environmental management in Pakistan

Title	Year	Description
Wild birds and animal protection act	1912	Limiting of hunting to certain areas, in non-breeding seasons etc
The Punjab Forest Act	1913	Sale of timber
The Punjab Forest Act	1927	Forest management
The Factory Act	1934	Management of industrial waste, effluents
The Public Health Ordinance	1944	Management of public health
The Regulation of Oilfields and Mineral Fields act	1948	Regulation of mineral development and related environmental issues
The Punjab Soil reclamation act	1952	Management of land resources
West Pakistan Goats act	1959	Conservation of livestock
The West Pakistan factories canteen Rules	1959	Public health and safety
West Pakistan Prohibition of Smoking in Cinemas act	1960	Protection of air quality
The West Pakistan Fisheries Act	1960	Protection of marine life
The Motor vehicles ordinance	1965	Control of air and noise pollution
The West Pakistan Firewood and Charcoal Act	1964	Forest conservation
The Agricultural Pesticides Ordinance	1971	Hazardous agro-chemicals
The Punjab Wildlife Protection Act	1974	Conservation of wildlife and management of parks
The Punjab Plantation and maintenance of Trees Act	1974	Plant conservation
The Pakistan Plant quarantine act	1976	Control of introduction of invasive alien plants
The Punjab Development of Cities act	1976	Urban development
The Punjab local government ordinance	1979-80	Maintenance of air and water quality, solid waste, parks etc
Environment Protection Ordinance	1983	First legislation to deal environment as a whole
Pakistan Environmental Protection Act	1997	Environmental protection
Environmental Tribunals Procedures and Qualification Rules	2000	Environmental conflict resolution
Hazardous Substances Rules	2000	Control of industrial hazardous substances
National Environmental Quality Standards (NEQS)	2001 (modified later)	Environmental monitoring, control of industrial pollution

Pollution charges for Industry (calculation and collection Rules)	2001	Pollution charges/fines on industries
Environmental sample rules	2001	Sample collection from industries
National Environmental Quality Standards (certification of environmental laboratories) Regulation	2001	Standardization of environmental laboratories
The Punjab Forest Act	2010	Forest management

In NCS and National Environmental Policy of Pakistan, changes in population structure, climate change, environmental pollution, loss of biodiversity and deforestation, urbanization and achievement of millennium development goals are all recognized. As a statement of general policy directions and concepts, NCS and NEP are important documents and initiatives. The recent process of transition to democracy and a people-oriented development has ushered in far-reaching changes in the social, economic and political spheres. Comprehensive regulatory reforms, including environmental regulatory reforms have been initiated. The achievements of these reforms include the creation of a comprehensive legislative framework for environmental protection.

1.6.2 Institutions Responsible for Managing the Environment:

Like other countries, environmental issues are tackled by various public sector institutions at federal, provincial and at local level. In Pakistan, the first department specifically dealing with environment was Environment and Urban Affairs Division (established in 1974) within the Ministry of Housing and Works. A major breakthrough in environmental management was the establishment of an independent and autonomous body, Pakistan Environmental Protection Council and its associated Pakistan Environment Protection Agency in 1983. Similar environmental protection agencies were established in all provinces in 1987. Later on, a separate ministry of environment was established at federal level.

To control industrial pollution, National Environmental Quality Standards were implemented in 1993 and to in 1997, Pakistan Environmental protection Act was promulgated to provide legal support to the implementation of NEQS.

Pakistan has also committed itself to achieve Millenium Development Goals (MDGs) and each of the goals describes different human development related targets measured by certain indicators. For example, the MDG target for forest cover in 2011 is 5.7% and to 6% in 2015. In 2001, National Environment Action Program (NEAP) was initiated to achieve the targets of National Conservation Strategy with particular focus on clean air, clean water, waste management and ecosystem management. To improve environmental management and achieve sustainable development, many

initiatives such as Green Industry Program, National Environmental Information Management System (NEIMS), Poverty Reduction Strategy and different policies (forest, drinking water, solid waste etc) have been taken by Pakistan. It shows that Pakistan has been quite successful in developing a policy framework to tackle its environmental concerns by setting targets and allocating resources to achieve these targets.

At the provincial level, different departments and agencies dealing with environmental conservation and resource management have been established. In Punjab, Environmental Protection Agency (EPA) was established in 1987 and it has developed considerably by establishing its offices at tehsil and district level. With the adoption of 18th Constitutional amendment, the subject of environment has been shifted to provinces.

In the Punjab Planning and Development Department, a section for environment has been established for evaluation of all projects according to environmental considerations. In large cities (Lahore, Rawalpindi, Faisalabad, Multan), local Development Authorities are responsible for urban planning and their agencies deal with issues of water, sanitation and solid waste etc.

In other cities, Public Health and Engineering department provides facilities for sewerage disposal, EPA for pollution control and municipal governments deal with solid waste, public parks etc. After enactment of Local Government Ordinance 2001, district environment departments were established to improve environmental management at local level.

The fact that sustainable development depends upon the actions and efforts of many different organizations and individuals, at many different levels (and all of whom are subject to their own priorities and constraints) also makes it difficult to implement effectively. As a consequence, much of the responsibility for sustainable development at the national level, becomes devolved to those more directly in touch with environment. In this context, local governments (TMAs) clearly have a key role to play.

1.6.3 Need for Integrating Urban Development & Environmental Management Policies:

There are national policies that generally apply to different sectors of urban development but no single holistic policy for environmentally sustainable urban development exists. Urban planning and project development reflect the desires of communities for a better urban life including their harmony with natural environments. Urban development policy includes the activities through which countries, provinces and localities plan their desired urban development systems for periods up to and sometimes exceeding twenty years. Although environmental issues should be addressed in urban planning strategies, there are no mandatory requirements for inclusion of environmental concerns into these plans.

Pakistan's national environmental policy does not include any direct guidelines for sustainable urban development. In recently proposed development strategies for the Punjab, for example, in Vision 2020, a strategy proposed in 2004 by the then provincial Government of the Punjab, an urban development strategy was proposed but it did not include any guidelines for addressing environmental concerns related to urban development.

Besides this, the urban environmental infrastructure owes more input of external resources which leads to the unreasonable waste and increase in pollutant discharge. Facing these difficulties, the urgent matter is to enhance the urban planning and management through amplifying the necessary rules and regulations and improve the financing and management capability.

1.6.4 Analyzing Environmental Challenges & Opportunities:

In the past 20 years, the urban structure of Murree expanded and developed significantly and it has become the largest tourist hill station in Pakistan. However, Murree developed at a great expense that huge investments were put together with high consumption of resources and increasing degradation of ecological environment.

A series of negative environmental impacts were caused by this rapid development:

- *the weak infrastructure in comparison to the rapid development,*
- *shortage of water resources with insufficient water supply,*
- *degradation of environmental resources,*
- *environmental pollution,*
- *habitat loss,*
- *Deforestation, and*
- *Nearly non-existent system for disposal of solid waste.*

These negative outcomes of unregulated growth and development in Murree have degraded its status as a clean and beautiful tourist city. In addition, these impacts have created serious problems for the local inhabitants and tourists.

Institutional Responsibility & Performance:

As described in the previous sections, public sector governing institutions at every level play a leading role in developing and implementing policies on the environment. Nevertheless, responsibility for the environment does not lie with environment institutions alone, all sections of society have a stake in the environment and depend upon it for the quality of their lives. In this section, the dialectic relations among different activity sectors and environmental threats are discussed.

In environmental profiling of Murrree, it was found that three functional sectors are predominantly influencing its sustainable development potential,

- **Tourist industry as a major heir & consumer** (transport, hotels, restaurants, recreation facilities etc),
- **Environmental resources as key opportunities** (like ground water, surface water, land, forests, biodiversity etc), and
- **Environmental threats & challenges both to the community and policy makers** (pollution, resource depletion, habitat loss, deforestation).

Tourist flows affect the environment in tourist destinations in direct and indirect ways. Two distinct approaches can be identified in the discussion of impact on tourist destinations: one focusing on the assessment of physical environment and the other emphasizes the effects on the cultural and social aspects.

The first approach considers environmental problems such as deforestation, air and water pollution, and real estate development without supporting infrastructure of hotels, restaurants, roads and environmental services including sewerage, water supply, and management of waste. However it fails to explain fact why these problems do not deter tourists from tourist destinations such as Murree whose numbers continue to increase.

The second approach, by negating the physicality of the environment and relying on subjectivity of environmental discourses, avoids questions about environmental responsibility and management. Both these approaches do not consider how the environment in a tourist city is created.

The environment of a tourist city is shaped by socio-economic, political, and bio-physical processes that take place within and outside the area. The trajectory of environmental change in Murree has been shaped by broader patterns of changes in political economy, administrative set up, tourist pressures and institutional development. Though comprehensive social, economic, administrative developments from the colonial to post-colonial eras in Murree are linked to some of the contemporary issues of Murree, the institutional efforts to solve them have not been comprehensive and were rather fragmented and isolated in nature. The current situation in Murree is the manifestation of poorly regulated market of tourism industry, transport entrepreneurs, incompetent administrative control and real estate developers driven by the opportunities of short-term economic benefits. The lack of institutions to regulate these activities and the inability to cater to the increased demands of physical infra-structure and environmental services is contributing to the continuous degradation of urban and rural landscape of Murree. This institutional vacuum leads different actors to use contesting attitudes in absolving themselves from their responsibility towards environmental management and articulate discourses that further augment the process of environmental degradation in Murree.

By analyzing the current situation, following issues can create serious challenges towards achieving sustainable urban development & Eco-tourism in Murree and deserve immediate responsiveness.

1. Shortage of water resource, the pollution of surface and ground water:

The water supply situation in Murree is very poor with frequent incidents of shortage of water for houses and tourist related services. The environmental indices of the water quality in the region have exceeded the limits of National Environmental Quality Standards (NEQS). Many water channels and streams have lost their natural functions of water bodies. In dry periods, due to the shortage of rain water, the streams receiving untreated sewage have no dilution mechanism and these become sinks of sewerage water.

The water pollution in Murree has strong correlation with shortage of clean water. The water resource is distributed unevenly not only in space but also in time. River Korang for example has lost its role of source of drinking water for lower side inhabitants due to addition of untreated sewage from poultry farms along Murree-Islamabad expressway. The per capita water availability in Murree is far below the national averages.

Another serious issue is the wasteful practices of water use in homes and in commercial enterprises. No waste water treatment facility or water saving equipments are installed in this area. The old pipes have become the source of metal pollution in the water used for human and domestic needs. All the above factors have caused the unreasonable utilization and depletion of water resources.

The consultants consider the following issues as the main concerns for sustainable water supply in the project area;

- Shortage of fresh water; (During peak tourist season, the total water provided by Municipal sources in Murree meets nearly half of the required demand. In the Ramadhan of 2011, Murree experienced the worst form of water shortage. Even water for Wudhu and toilets was not available and some mosques were closed (Baluchistan Time, 16 August 2011).
- Diffuse and point source water pollution; (The open dumping of domestic and commercial sewage into drains and open fields ultimately drains into natural water bodies and leaches down, polluting surface and ground water reservoirs).
- Negative changes in the hydrology of the area,(The water entering the soil creates conditions favoring increased land sliding and soil erosion. In addition, the chemical composition of the ground water used by 80% of the rural population has deteriorated increasing incidents of water-borne diseases).
- Wasteful patterns of water consumption; (The most of the tourists come from the central Punjab and plains where patterns of water consumption are quite different from those of mountain areas. These tourists use water lavishly in hotels. The current social trends of water use also favor wasteful patterns. In addition, in the areas with piped water supply, leakages are common and 10-20% of water supply is lost).
- Absence of water harvesting facilities; (Despite reasonable annual precipitation figures, the facilities for rain water storage or harvesting are non-existent. In colonial times, it was mandatory to have rainwater harvesting provisions in each building but now these rules are not followed any more).

2. Solid Waste Management

In Murree, increasing tourist population and growing economic activity have generated ever-increasing amounts of solid waste. There is in fact, very poor solid waste collection and disposal system with littering of natural habitats and water channels. The main areas of concern needing immediate attention are:

- Ever increasing amount of solid waste; (In tourist season, daily thirty tons of solid waste are generated in Murree urban area only and this amount is increasing continuously).
- Nearly non-existent system of waste collection; (The TMA Murree has very meager resources to collect solid waste and it mostly

concentrates on collection of waste from the Mall road and from the residences of government functionaries. So the waste from 80% of the households and commercial entrepreneurs remains un-collected and it is being disposed-off indiscriminately into nearby open spaces or water channels).

- Environmentally destructive modes of waste disposal; (Even the small fraction of total municipal waste collected by TMA is just dumped in open without any pre-treatment. So nearly 90% of solid waste in Murree is found scattered around even in the freshwater streams and thus creating bacterial contamination, foul odour, visual and aesthetic pollution, and serious threats to local environment).
- Serious threats of water and soil pollution from indiscriminate littering; (The most serious negative impact of solid waste mismanagement is on already stressed water and soil resources of the area. It causes pollution of these vital resources, choking of water courses, loss of soil fertility, increased soil erosion and disturbance of the hydrology of the area leading to land sliding and soil erosion).

3. Traffic Jams and Vehicular Emissions

Murree has witnessed a tremendous growth in road traffic particularly in private transport vehicles. The frequent traffic congestion incidents have disturbed the transport structure for tourists and the locals. The main issues in this regard are;

- Over burdening of road infrastructure of Murree and its deterioration; (The traffic data collected from this survey shows that the current road network in Murree is insufficient to accommodate heavy burdens of traffic. Traffic jams, delays and shortage of parking places (50% vehicles visiting Murree in tourist season have no parking space) are frequent incidents in the area causing serious problems for commuters).
- Increased emissions causing air and noise pollution; (Traffic jams and long ques of vehicles along roads waiting or moving slowly increase emissions of air pollutants in the area. In addition, the honking of horns causes noise pollution).
- Disturbance of daily life activities of local residents; (With occupation of roads by tourist vehicles and traffic jams, the daily activities of local residents such as students attending schools, offices and commuting for other daily needs is seriously hampered. There are common incidents of fighting between local residents and tourists particularly teenage tourists for teasing local females going to educational institutions and jobs etc).

4. Loss of Biodiversity

The natural habitats of Murree are shrinking or being destroyed by serious anthropogenic pressures. Local flora and fauna are under pressure from growing human population, fragmentation of landscape, degradation of

habitats and introduction of invasive species. Some important issues of biodiversity loss in Murree which may affect its tourist potential are:

- The loss of vegetation types and plant species; (The information collected from local residents and plant surveys indicate that the populations of many plant species (upto 50%) and vegetation types have been reduced facing extinction and it has serious repercussions for local agriculture, wildlife, stability of the soils and sedimentation of downstream water reservoirs).
- Threat of extinction of animal species; (Since animals depend upon plants for their survival, loss of plant cover in the area ultimately results in loss of wild animals. Overhunting and loss of habitats are other causes of their loss. As a result, many beautiful birds and mammals such as bear, fox and dear have become extinct or near extinction in the area).
- Negative changes in landscape of the area; (The loss of plant cover and associated decline of fauna has economic after-effects also. The beautiful natural landscape of Murree is the main factor attracting tourists and its destruction and conversion into urban settlements will decrease the tourist attracting potential of the area).
- Spread of habitat-destroying development activities; (To accommodate growing population and tourist load, urban sprawl and construction of roads, hotels etc at the cost of loss of forests and natural habitats have taken a heavy toll on the natural capital of the area posing serious threats to the survival of local populations, ecology and natural resources).
- Unsustainable changes in ecosystem structure of the area; (The ecosystems of an area have a limited capacity to accommodate and sustain plant and animal life called their carrying capacity. If these are pressurized beyond their carrying capacities, they may crumble down destroying their dependents also. In Murree, the local ecosystems such as forests, grazing areas, crop fields and aquifers are already under great stress and further pressures on them in form of infrastructure development, dumping of wastes, and pollution will have disastrous consequences for entire area. It's early signs in the form of increased incidents of land sliding, soil erosion, loss of fertility, destruction of biota have already starting appearing and if this process of ecosystem destruction is not controlled, the very existence of local human and biological populations will be under serious threat).

5. Deforestation and Landsliding:

Murree is undergoing an alarmingly high rate of deforestation (1.6% to 2.0%) threatening the livelihood of local populations, affecting hydrology and soil erosion in the area, reducing habitats for other plant and animal species, and its tourist attracting potential. Its main causes are:

- Ineffective forest management and conservation policies and strategies; (Unfortunately, despite many changes in forest policies, legal developments and efforts of some honest and dedicated forest

officers, the forest department has failed in winning confidence of common people as a custodian of forests. Rather it is considered as a partner in the process of destruction of forests. This distrust and top based management policies without involving local populations have failed to achieve their targets).

- Increased demand of firewood; (Though provision of natural gas in Murree City and LPG in rural areas have reduced the demand of fire wood up to some extent, but their escalating prices and unsustainable supply patterns have again increased fuel wood demand increasing pressures on fragile forests. The hotels and rural inhabitants use fuel wood for heating of water and rooms in winter. If we look at the monthly influx of tourists in Murree, the ratio of tourists visiting in winter months (20.9%) is the second highest after that of summer visitors. This heavy tourist load puts heavy strains on local resources particularly the demand of fire wood. This large scale logging of trees has caused heavy losses to already reducing forests).
- Common incidents of natural or human-induced forest fires; (In the last decade, thousands of trees have been reported burnt by forest/bush fires causing heavy losses to plant cover and dependent biodiversity (source: news in print media and local inhabitants who witnessed these events). The local forest department has failed to control this loss of precious forest resource due to absence of fire warning, location and fighting facilities. The timber mafia is also blamed for this ever-increasing menace. The visitors visiting these areas also show carelessness in this regard and most of the fires are human induced. This phenomenon has damaged very old and rich forests and this loss is irrecoverable).
- Development of infrastructure such as roads in forest areas, and other human development activities have increased the land sliding phenomenon in Murree at large. Murree is at serious loss of its natural vegetative cover. Loss of vegetative covers and paving the urban surfaces affects natural runoff and absorption patterns. The runoff water accumulates through channels and penetrates into the sub soil strata wherever it finds its way. It then increases disintegration of soil and rocks which eventually splits ways in the form of land slides. (Construction of Expressway & Jhika Galli Parking facility are recent examples)
- Serious environmental repercussions of deforestation. Deforestation has serious negative impacts on ecology, biota, resource cycling, economy and social fabric of the area. These include:
    - Disturbance of local climatic patterns such as increased incidents of droughts,
    - Drying of underground water reservoirs such as springs,
    - Increase in land sliding damaging roads and other infrastructure; (The Murree region is among the most landsliding-prone areas of Pakistan due to steep slopes, rough texture. Murree Formation rocks contain alternating beds of soft (shales) and hard (clay stone) layers. The shaking, swelling

and shearing of these layers cause destabilization and failures, making overlaying sandstone beds unstable. The incidents of landslides have increased in Murree and adjoining Kashmir resulting in closure of roads, destruction of properties, infrastructure and sometime dislocations of human settlements. It may affect tourism in the area also as evident from frequent landslides along Karakoram highway. However many land sliding incidents are the result of human development activities involving excavation, large scale earth moving, forest clearing and pollution. The previous efforts to control this phenomenon have failed due to implementation without proper scientific investigations and pressures for infrastructure development without geological considerations under public or vested interests of influential persons. This issue needs careful technical interventions and dedicated efforts to control this problem which if not tackled properly, may cause serious threats to human populations and the bio-physical structure of the area).

6. Depletion of Fertile Soil Resources

Soil erosion by water resulting from rapid deforestation and infrastructure development is also a serious threat to the ecology, agriculture and hydrology of the area. Another problem is the continuous increase in soil pollution deteriorating its fertility and productivity potential. The major issues in this respect are:

- Removal of fertile topsoil due to loss of plant cover,
- Increased soil erosion,
- Soil pollution due to littering and sewage disposal into open areas, and
- Negative impact of soil erosion on agriculture and ground water storage capacity of the area.

The main reasons of above mentioned environmental issues of Murree include three aspects.

First the developmental layout of the project area is unreasonable and unsustainable. The major pollution enterprises are concentrated in the center of the city region and commercial areas mix with neighboring residential areas. The structure of urban development is unreasonable, the development of tourist industry does not shake off the old management style emphasizing on profit only, and the most technical competencies and facilities to manage environmental pollution are of 50s to 60s periods.

Second there are more environmental outstanding amounts, the area's infrastructure development is relatively slow to the development of tourist-related economy which does not adapt to the need of environmental protection.

Third, the links between environment and development are very weak which can not entirely fulfill the extensive requirements of environment and resource conservation.

To realize the above mentioned sustainable development objectives and reverse the wheel of environmental destruction in the project area, concerted efforts are needed in all fields of sustainable development. But the crucial ones are to strengthen the policy formulation and decision making process with greater involvement of local populations. The aim should be that each of the participating sectors should perform its own duty with the participation of whole society that is required to achieve sustainable development. The departments concerned with urban development, economy, tourism, construction, education, environmental protection and health are required to prepare strategies beneficial to sustainable development and to organize or support their implementation. The municipal development departments are required to improve the infrastructure development activities, i.e.; rain water harvesting by houses, green belts and parks. Those concerned with natural resource management such as forestry, agriculture and water conservation are required to strength the environmental conservation, develop an ecological farming system, protection of habitats and biodiversity, and prevention of soil erosion. Tourism enterprises are required to adopt ecotourism policies, reduce pollutants and conserve local traditions and culture.

The severe environmental deterioration in the project area has sounded alarms for Murree because the current mode of development and management cannot sustain for long. Its signs are already appearing regularly in the form of pollution, loss of biodiversity and disturbance of daily life patterns. We have to reconsider comprehensively the urban and economic development in the project area in combination with the resource, environment, tourism and population. These should be mixed in accordance with requirements of sustainable development. Clean and sustainable environmental conditions must be provided in both urban and countryside construction and development activities. Otherwise, the existing growth patterns in tourist sector and economy will lead to exhaustion of resources and environmental destruction. These shall not only cancel out the current accomplishments but will cause serious long-term and irrecoverable damages.

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The achievement of sustainable development of the project area will be a long-term hard work and it is very difficult due to pressing problems such as weak urban infrastructure, low average environmental quality, serious pollution, wasteful consumption of resources and unjust and inconsistent process of planning and development. It will need a large-scale overhauling of current systems and introduction of new, sustainable policies and action-plans to improve and sustain the tourism potential of the area and increase the living standards of local inhabitants.

CHAPTER 2; MOVING FORWARD: POLICY DIRECTIONS TOWARDS SUSTAINABLE DEVELOPMENT IN MURREE

Murree has witnessed an overwhelming land use growth coupled with environmental degradation over the past few decades. Despite having dire need for planning interventions, no tangible work has been done in the past. However, in recent past many direct brick-mortar interventions like enhancing hard infrastructure in Murree have been made with huge public sector investments without having any comprehensive planning framework. Latest and also the least planning attempt to address landuse issues in Murree was made in 1987 by HP&EP department in the form of a Master Plan for Murree 1988-2013 but unfortunately proposals made by this policy document have partly been materialized. In addition, promulgation of local govt. devolution plan introduced by of LGO 2001 also put aside all previous valuable exercises made all of a sudden.

Lack of articulated Urban Planning has always been a missing component on the part of local governing institutions since long. It has also been observed that present capacity of TMA Murree for planning and development control is limited and ineffective. The apparent reasons for such disregard are the institutional incapacities, limited financial resources, administrative inefficiencies and direct political interventions. On top of that security conditions in other tourist locations of Pakistan have also led to offer a direct impact like unprecedented increase in tourist volumes in Murree during last 5 years. This ever increasing tourist influx obviously is beyond the physical and administrative capacity of the Murree town albeit offering numerous opportunities to the local economy. Lack of community participation in the planning process, weak regulatory backup and implementation mechanisms have also partnered the planning delinquent.

In the following policy section, the consultants have come up with the idea of dovetailing environment & tourism into conventional practices of land use planning in the form of "Master Plan to Develop Murree as a Pollution Free Tourist Town 2031" with a holistic vision to address all the envisaged issues in previous sections. Proposed policy framework spans over a planned period of 20 years as defined in TORs and further fragmented into Short Term (Early First Year), Medium Term (First 5 Years) and Long Term Policy framework expanding plan vision over plan period and even beyond. This proposed framework is equally supported by a comprehensive implementation and review mechanism to ensure performance efficiency, effectiveness and does support a more tangible result oriented approach.


Master Plan Vision
1
• Sustainable Landuse Development
2
• Sustainable Tourism Planning
3
• Sustainable Transportation Planning
4
• Planning for Infrastructure
5
• Environmental Management Planning
6
• Planning for Built Environment
Actions

2.1 SUSTAINABLE LAND USE PLANNING:

The policy objectives for Sustainable Land Use Planning are:

i) To encourage orderly landuse growth and development in appropriate areas of Murree while protecting the distinct serene urban character making efficient use of public services and preserving its inherent characteristic as a tourist destination by achieving a balance of;

- Compact orderly mixed land use development
- Compact energy efficient building design
- Landuse regulations must continue to protect public intrests as well as sustainability
- Primary use of land (forests, urban greens, agriculture for food, water runoff, water ways) should be respected while making decisions on change of use.
- A range of future growth opportunities and choices
- Walk able neighbourhoods and reducing car dependency
- Foster distinctive, attractive communities with a strong sense of place
- Preservance of landscape, open space, ecology, natural beauty, and environmentally sensitive areas
- Provide a variety of transportation choices
- Make development decisions predictable, fair, and cost effective
- Encourage community and stakeholder collaboration in development decisions

ii) Responsible land-use planning for achieving an equitable and sustainable urban/rural development;
iii) Control over land-use, conversions and land allocation;
iv) To guide TMA in making appropriate decisions on all development proposals at local participatory level.

Development Components:

It is suggested that the proposed development precincts (zones/corridors) should be self-sustained with their own neighbourhood level commercial and public facilities within walkable limits to avoid burden on the existing city core. For the brevity of understanding the Consultants have introduced the following terminologies in the land use context:

Augmentation: The development process through which some auxiliary alterations/additions are made within the already provided land use zone such as introducing appropriations for an existing land development and augmenting some support infrastructure.

Revitalization: The development process through which an existing land use pattern is improved by introducing measures which enhance the space liveability especially through appropriation of publically owned land uses, strategic guidline to gradually improve existing privately owned landuses,

Conservation: The development process in which a land use is secured on historic patterns.

Regeneration: The physical development process through which an existing area is socio-economically and physically gets rebirth and enlivened by introducing appropriate ideas with minor/major physical and infrastructure improvements.

Development and re-development of Mixed-use Precincts: The proposals whereby the selected areas are developed/re-developed on mixed use transit oriented neighbourhood development pattern for selective sites by opting any of the above described models urban design interventions, social/economic uplifting and injecting missing infrastructure.

POLICY COMPONENTS:

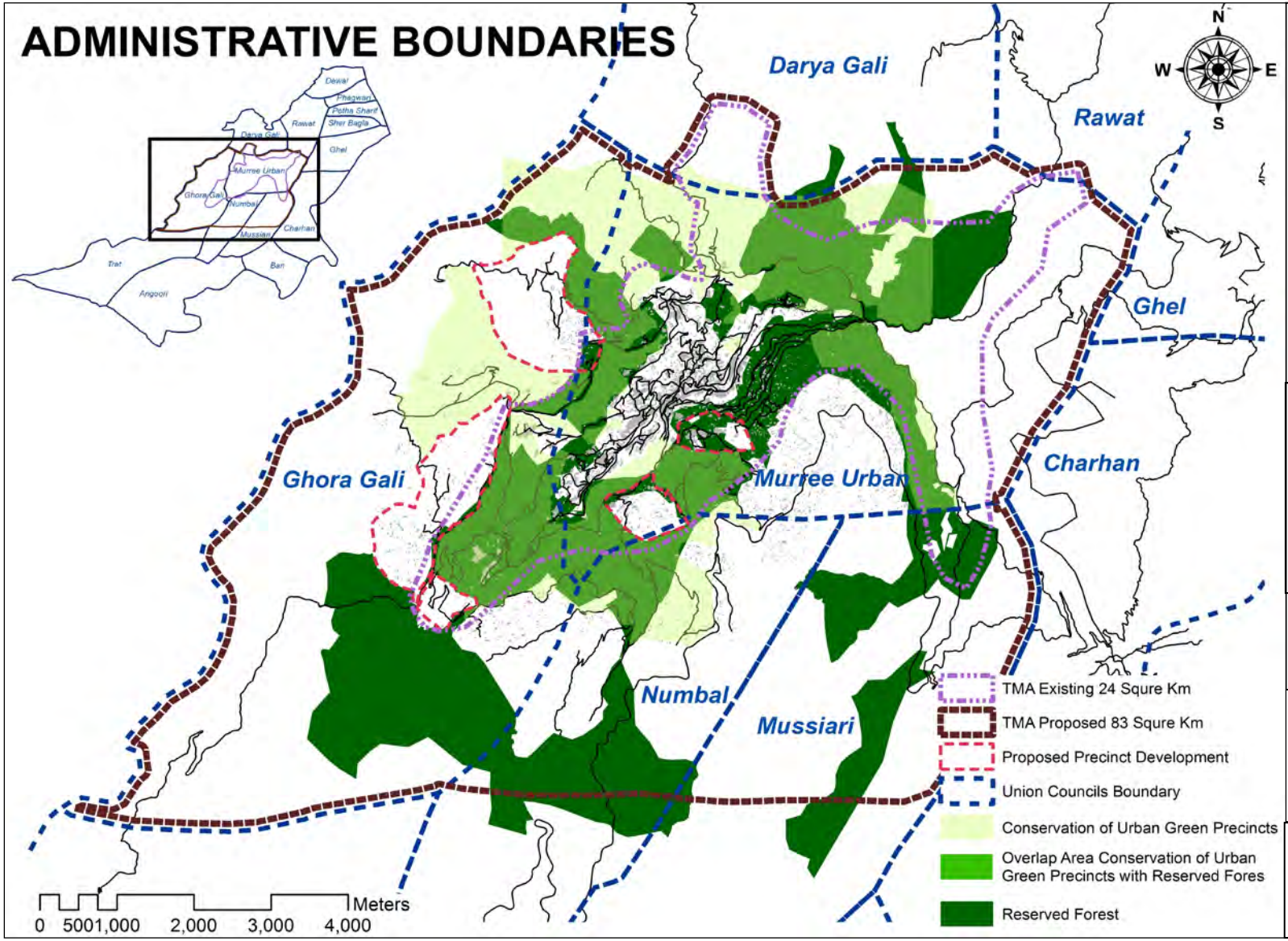
SLP-1 Disaster Risk-Resilient Land Use Planning

1. Developing a hierarchy of planning principles and decision making processes in high risk areas as identified in early sections of the report and further as TMA is expected to identify.
2. Prohibiting certain types of new development including schools, child care centers, and health care facilities on already identified high disaster prone sites;
3. Declaration of risk areas on the basis of micro zonation studies that arise due to geophysical characteristics;
4. The capacity of TMA Murree should be enhanced in terms of disaster preparedness and mitigation in coordination with PDMA.
5. The guidelines provided in Building Code of Pakistan Seismic Provisions 2007 should be consulted before granting planning permission / building plan sanctioning at TMA Murree level.
6. Community should be involved at all levels of framing disaster risk resilient strategies.
7. The Consultants propose that the spatial structure of Murree should evolve a transition from "center-focused" development to "select-precincts" (Urban Precincts where urban form dominates, Sub-Urban Residential Precinct, Natural Precinct, Heritage Precincts) helping in parallel dispersal of economic and devlopment activities concentrated in the existing city core towards growth nodes identified as Jhika Galli, MIT,Chitta Mor, Bansra Galli, Ihata Noor Khan, Dhobi Ghat, Bhurban-Aliyot and Patriata. The new land use pattern will avoid recreating known disaster risks such as frequent building collapses, urban / forest fire hazards, slope-failures, and prevents generating new ones;

POLICY COMPONENTS:

SLP-1 Disaster Risk-Resilient Land Use Planning

8. Developing a hierarchy of planning principles and decision making processes in high risk areas as identified in early sections of the report and further as TMA is expected to identify.
9. Prohibiting certain types of new development including schools, child care centers, and health care facilities on already identified high disaster prone sites;
10. Declaration of risk areas on the basis of micro zonation studies that arise due to geophysical characteristics;
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12. The guidelines provided in Building Code of Pakistan Seismic Provisions 2007 should be consulted before granting planning permission / building plan sanctioning at TMA Murree level.
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15. The capacity building of local authorities especially TMA Murree; Rescue 1122; Public Health Engineering Department; Civil Defence & Forest Department should be enhanced for coping natural disasters and manmade disasters;
16. The role of the community cannot be denied. The citizens should be offered extensive training for disaster risk management thus fostering Community Based Disaster Management Programs at Tehsil level.
17. TMA Murree along with other stakeholders should prepare a Comprehensive Pre & Post Disaster Risk Management Plan as per guidelines given by PDMA and review it regularly;
18. Local Safety Commissions should be established at TMA Level;
19. Community should be educated and involved in the disaster management planning.



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

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Pakistan Environmental Planning & Architectural Consultants

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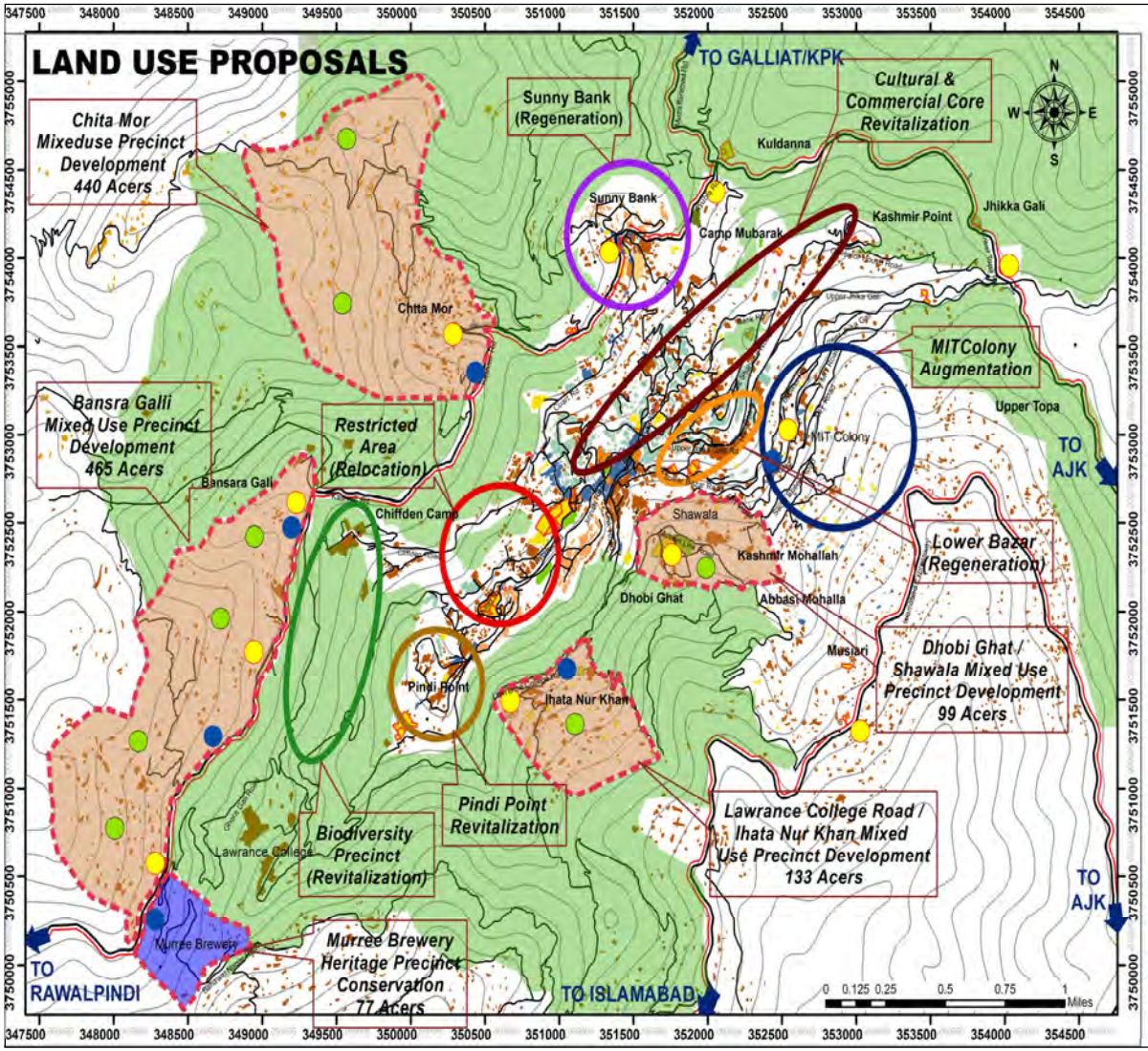
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ADMINISTRATIVE BOUNDARIES



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LAND USE PROPOSALS

SHEET #

SLP-2 Exploring Growth Opportunities / Corridors

Murree's temporal land use growth has been sporadic infill yet concentrated to urban core that encouraged incompatible compact development that was non-conforming to the town's growing needs such as extension of municipal services boundary, spatial development, public facilities and environmental improvements. The Consultants recommend that the direct mixed use growth of already developed areas (wherever possible) should continue with minimal disturbance to the natural environment and must also contain the unnecessary spread of development across the fragile landscape. However, possibilities of new growth corridors and opportunities are also explored. These are briefly discussed below:

1. Bhurban – Aliyot Growth Corridor: It is proposed that the Bhurban – Aliyot is linked to Murree through up-gardation of Alyot-N75 link. Bhurban which supports the high-end tourism services and luxurious residential apartments are proposed. See the proposal in the map presented on next pages. This growth corridor shall link Bhurban to N75, thus increasing direct access to the tourists interested in enjoying high-valued tourist services clustered at Bhurban & Aliyot;

2. Mixed-use intensified development (residential-cum-hospitality) is encouraged at MIT Colony, proposed Dhobi Ghat development in Shawala, Ihata Noor Khan, Ghora Galli and Bansra Galli, Nambal village and its vicinity (See Land Use Proposal Map). However, it should be noted that the Consultants propose that this intensified-infill development (predominantly mixed-use) of the areas defined above shall be developed at a density higher than what currently exists (see the proposed Landuse yield matrix). However commercial development is proposed in precinct center only with allied public and parking facilities. This can occur through:
    - Redevelopment of sites, including the reuse and integration of existing incompatible sites/land uses/structures;
    - Development of vacant and/or underutilized lots within previously developed areas (zones) or further detailing of land use zoning under this Master Plan such as MIT Colony;
    - Incorporating existing environmental reserves/open spaces and urban forests into desired open space component of desired developments.
    - Construction of new developments that combine a mix of uses for a more efficient use of land.

3-The presence of Cantonment Area right in the center of urban core of Murree has proven discouraging and culminating factor for free tourism mobility due to various security threats and subsequent remedial measures in recent years; such as Pindi Point has been remained a key tourist attraction of Murree but due to placement of security barricades in Murree Cantonment, the tourists and even local population is not allowed to access this area. Since Pindi Point is located strategically at one end of the ridge and the Murree Cantonment acts as a physical barrier for tourists. The residential

population is entrapped and highly demotivated. The other link approaching Pindi point is Jesus n Marry link which is not drivable/walk able right now due to poor surface condition. So Pindi Point is practically being cutoff. To restore the original characteristic of this part, it is strongly recommended that arrangements should be done to cluster/consolidate all the three parts of cantonment at one place in the long run (in midterm plan phasing) with due consultation with the ministry of defence. It will eventually ease the mobility as it has been envisaged that almost half of the Murree is being detached due to this physical barriers which further intensifies the traffic / mobility issues.

Primary Selection Criteria for Future Development Precincts:

Following considerations have been taken into account while selecting /delineating fututer development precincts specifically;

- *The basic selection criteria for the development of future development precincts were based on the concept that "every new development in Murree should respect its declared status as an **Environmentally Protected Area/Zone**".*
- *The consultants analysed past and existing land use development pattern in Murree very carefully while considering the environmental priorities on top of everything.*
- *Boundary of reserved and declared forests have been carefully evaluated and consultants committed not to include any parts of this forest land to the maximum possible extent, however, some precincts like Ihata Noor Khan (already development and having habitation) was entrapped physically (like inner core/circle of a donut) was given some relief by giving access and extending its boundary to the nearest main road.*
- *Gelogological hazards such as disaster prone sites/locations, slope insatbility and areas having watershed and runoff catchment were evaluated by ovelaying in GIS layers to have careful judgement. Finally any such areas/sites having such apparent physical negativities to the sustainable development were excluded from the plan.*
- *High gradient and slopes (more than 30%) were also considered negative for development.*
- *Runoff/catchment and channels were also excluded to ensure downstream protection of fresh water cahnnels.*
- *Most of the areas proposed for future development were already under habitation for decades but development pattern is relatively SPARSE (as envisaged in maps).*
- *Areas surrounding proposed precints contain reserved forest/green primarily and focus was to shift development influx towards such suburban area which are already been touched and partially development rather engaging forest/clean area around the town (as shown in eco-urbanism map), so respect for the sensitive physical environment was the prime selection criteria.*

- *Another consideration was availability of some existing road infrastructure in those areas, as it is also evident that fragile geology of Murree does not allow major development acitiviy like road construction if choice was given in favour of all new scratch land.*
- *However, It is strongly suggested that detailed planning of these areas/precincts should be done considering microzonation/hazard area idenfication/declaration and any specific hazard prone areas falling in these precincts/development must be left UNUSED and treated as a part of GREEN/OPEN AREAS.*

A-Residential & Lodging:

It is proposed that for all new development and schemes sponsored by TMA Murree and/or MIT or even by private sector should be designed in such a way that it provides precinct landuse components in following proportions

- *Main precinct/neighbourhood access road right of way should not be less than 40 feet where geology permits otherwise 25-30 feet*
- *Inner service arteries/streets must not be less than 25 feet*
- *Precinct commercial centre not more than 6% including shops, malls, offices with essential parking and transit node. Commercial building shall only be allowed to construct 75% area of the plot, rest 25% shall be left for mandatory spaces and car parking. Commercial buildings/projects shall reserve a complete floor with 8' clearance for parking. Lower or immediate floor shall be reserved for shops/stalls and rest two floors shall house restaurants/food services.*
- *Public Building not less than 4%.*
- *Open terraced Public Parking not less than 5% and located near to transit node and main artery/access road.*
- *Residential not more than 30% with maximum 3 habitable floors or as micro zonation permits. Suggested residential includes local residences, lodges and rental residential spaces. Every residential/lodging structure shall essentially provide 2 car spaces on floor levelled with serving street.*
- *Open space should not less than 30%. (This should essentially include existing forests/green reserves and areas indicated not suitable for construction due to hazards of slope failure). The purpose is to provide maximum green scape to augment slope stabilization and aesthetics.*
- *Neighbourhood block dimensions should be within 500 m X 500m walk able limit and neighbourhood centre should be placed in such a way that it should be at 5-10 minute walk from every approaching side.*

- *Each precinct will have a central commercial/public hub with a transit node and/or ropeway link that will connect proposed precincts to other segments of the town.*
- *Each precinct shall essentially provide a sewage transfer facility built as per guideline provided in Solid Waste Managemnet part of policy. This facility shall be considered as a component of public buildings/use.*
- *Every prospective development / project shall liable to furnish an EIA, Waste Management Plan and EMMP as per EPD regulations.*

i) It is further proposed that the prospective builder / developer should come up with at least three alternative intensification based neighborhood plans for the proposed development. The TMA Murree should sanction the best fit design which augments natural beauty, slope stabilization, walkability, eco-friendliness and minimal disturbance to the natural environment.
ii) It is proposed that all the new development should primarily be having a walk able neighborhood street pattern.
iii) It is further proposed that Murree Special Building Bye-Laws should be reframed in the light of proposed slope classification / terrain zoning. To achieve slope stability it is proposed that permission should not be granted for construction of structure on slopes more than 30 degree.

The proposals for residential precincts are:

i) Shawala, Lower bazar and Kashmiri Mohala for urban regeneration
ii) Dhobi Ghat / Ihata Noor Kahn Lawrence college road, Bansra Galli and Chitta Mor for new self-sustained mixed use precinct.
iii) Bhurban-Alyot as a tourist select up-class mixed use precinct
iv) Patriata as a recreational select precinct while promising its natural characteristic and promoting construction of single storeyed structures using indigenous materials only.
v) Bansra Galli, Ghora Galli, Dhobi Ghat, Nambal and Chitta Mor as suburban mixed (residential+hospitality+services) precinct with allied commercial and transportation infrastructure to achieve self-sustained neighborhood and shall eventually reduce commuting towards central urban core.

B- Commercial & Hospitality:

Murree has experienced a transition from residential to highly commercial occupancies along major roads even the 1988 Master Plan didn't anticipate its compatibility. This was mainly due to the enticement oriented real eastate market forces. Keeping in view the market trends and its propulsive nature, new sites have been earmarked for achieving planned yet cohesive commercial activities. As it has already been discussed that the major commercial areas of Murree are concentrated in the urban core (around Mall) which create accessibility and mobility problems not only for tourists but also

for the local population; it is thus proposed that commercial areas may be decentralized in the urban fringe of Murree. The new mixed use districts should provide sufficient parking spaces. The Consultants propose the following sites for commercial activities:

MIT Scheme: The commercial area allocated originally in the sanctioned plan of MIT Scheme at Bypass Road must be made functional within the short term.

Development/redevelopment of Suburban Shawala, MIT Colony , Bansra Galli , Ghora Galli, Chita Mor and Nambal mixed-use precincts: separate commercial districts should be provided in all the new development precincts discussed in above proposal. It is important to note that "sub-urban village" should be made self-sufficient commercial centres which can serve the limited commercial needs of the immediate neighbourhood. This will decrease extra commuting for the sub-urban population towards the urban core for fulfilment of their daily shopping need.

C- Heritage Precincts:

The historical precincts are identified as:

i) Mall Road: The Mall road is proposed to be declared as historical urban precinct. It is proposed that the any proposed development along Mall road should be compatible to the existing land use with façade and exterior treatment in conformance to some urban design theme. Revitalization of this precinct is advised using urban design techniques.
ii) Lower Bazar / Shawala: The Lower Bazar and Shawala areas should be revitalized through urban regeneration. The proposal is discussed in Urban Regeneration Section.
iii) Murree Brewery Estate, Nambal and other heritage sites: The Murree Brewery Estate is currently lying vacant with reminiscence of the past glory. Illegal possession has been reported. A few residential properties are constructed there. This site should be restored in its original character. The proposal is discussed in Heritage Conservation Section.

D- Natural Precincts:

The plan intends to declare all the green/forest areas in and around (still not affected by anthropogenic activities and human habitation) Urban Murree as Natural Precincts supporting sustainable eco-characteristic of Murree. (Please see maps)

E- Rural / Tehsil Settlements:

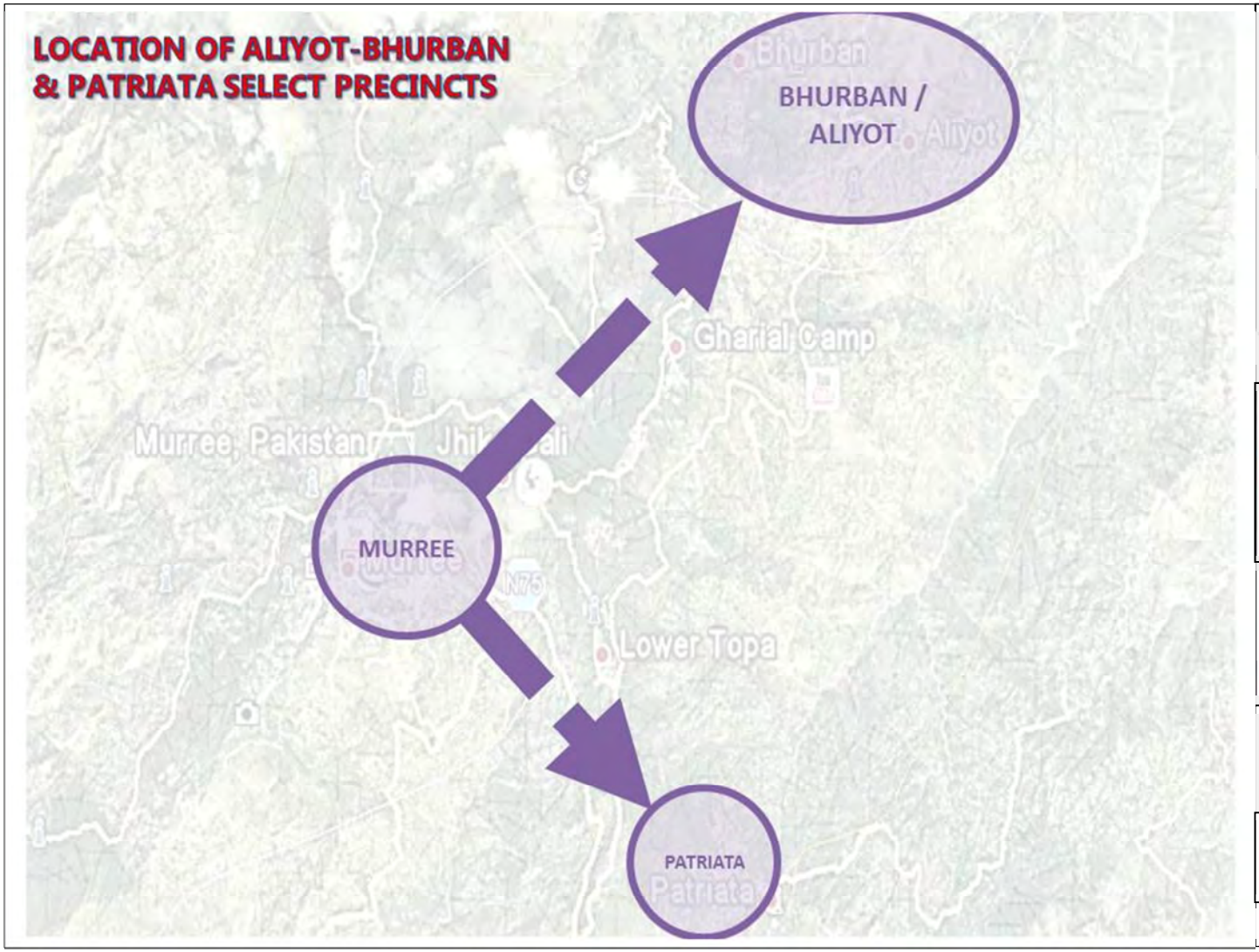
The plan proposes a framework already defined in the Chapter 2 of Punjab Model Buiding and Zonning Bye Laws for TMAs 2007 as "Old Established Built Up Area Regulations" for building & devlopment control in the rural settlements in the whole tehsil Murree other than Urban area. Futher, respect for environmental and forest laws should also be maintained as per

their respective domains. Moreover, PLGO 2001 also empowers TMA to devise and notify its own site/area specific bye laws and regulations as and when required adopting standard procedure. Policy recommends to deal with all such issues pertaining to individual settlements as per their existing specific characteristics which may vary from site to site.

Note: For future land use control in whole of Murree, a detailed framework matrix has been annexed in the end of this volume and it is expected that it shall serve as a guiding principle for devising building and zoning regulations for Murree urban and its semi-urban, sub-urban and rural fringe.

Table 2.1 PROPOSED DENSITY/OCCUPANCY/PARKING YIELD MATRIX

One acre of land	43,560	Sft.
Per Acre Residential Area (30% as suggested Residential Component)	13,068	Sft.
Proposed No. of clustered Residential Units in one acre (each having 1000 sft floor area)	13	Unit
Proposed No. of Storeys	3	Storeys
No. of Occupants per floor	6	Persons
No. of Occupants per residential unit	18	Persons per unit
No of Occupants per Acre	252	Persons Per Acre
Expected Gross Density per Sq. Km	59,774	Persons Per Sq. Km (Resident+Transient)
Existing Gross Density per sq. Km	4,166	Persons Per Sq. Km (Resident+Transient)
Proposed Mixed Use Precincts Area	**Acres**	**Expected Occupancy**
Chita Mor Mixed Use Precinct	440	110,880 Persons
Dhobi Ghatt Mixed Use Precinct	99	24,948 Persons
Ihata Noor Khan Mixed Use Precinct	133	33516
Bansra Galli Mixed Use Precinct	465	117180 Persons
Total Expected Additional Occupancy	**1,137 Acre**	**286,524 inhabitants in 14,781 units**
Expected Reserved Parking Space	**57 Acre**	**9,000 car spaces**
Expected Parking in Commercial Areas	**67 Acres**	**10,600 car spaces**
Expected Parking in Residential Lodges	**2 cars / lodge**	**29562 car spaces**
Expected Commercial Space	**68 Acres**	**6,658,560 sft (with 75% lot coverage)**
Expected Employment Oppourtunities	**1 /100sft**	**39,000 + opportunities**



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LOCATION OF PROPOSED SELECT PRECINCTS

SHEET # -a **SCALE: N.T.S**

From the Table (2.1) it can be concluded that new proposed mixed use precincts will accommodate additional 286,524 persons and would suffice to accommodate projected resident and tourist population in year 2031 as well in addition to existing housing stock and hospitality accommodations.)

SLP-3 Emergent Management Planning for Early Short Term:

1) Managing emergent issues in the urban core should embrace and be achieved within plan early short term (within first year of plan adoption)

    a) Encroachment removal and control;
    b) Appropriation and adoption of building byelaws;
    c) Devising detailed space standards for structures housing residential, hospitality and retail business and their internal sub-uses;
    d) Declaration of Nambal, Missiari and Ghora Galli as Urban UCs.
    e) Enhancing Efficiency and Mobility by inducting/rehabilitation of weather protected walkways along all arteries;
    f) Encouraging Pedestrian Movements through construction of vertical climbs;
    g) Capacity enhancement of TMA by inducting following staff;

        1-Two TO (P&C) Town planner and 4 assistant town planners.
        (Each assistant town planners should be further assisted by four building inspectors. Assistant town planners are proposed to monitor building control and development control independently all urban & rural UCs).
        2-Environmentalist for Waste Management Issues
        3-GIS/IT Manager with support staff
        4-Tourism Specialist
        5-Architect / Urban Designer
        6-Forest Specialist
        7-Structural Engineer
        8-Geologist / Seismic Expert
        9-Community Development Expert
        10-Transportation Planner
        11-Water Management Specialist
        12-Expert to explore Public-Private Partnerships
        13-Planning Law Expert
        14-Estate Manager with support staff

    h) Declaration/development of parking facilities as identified in transportation proposals;
    i) Identify and compound illegally converted land uses;
    j) Declaring the Mall a year round padesternized zone;
    k) Relaxing ban for renovation/maintenance of structures;
    l) Traffic management planning;

m) Up gradation of dilapidated Infrastructure;
n) Creating visual vents – scenic opportunities for all.

Policy for Commercialization:

As stated in early sections of this report, the Punjab Land Use [Classification, Reclassification and Redevelopment] Rules, 2009 are the only effective regulatory framework which guides and monitors the legality of land uses and its location criteria as per the planning principles. As per the DPDC Meeting held on 30-06-2011, all the decisions about land use change / conversion of land use from existing to any proposed use is banned till the finalization of Master Plan for Murree 2011-2031.

The consultants while considering haphazard commercial development in central core suggest;

"Eevery type of further commercialization and/or conversion of existing uses to commercial is suggested to be restricted / prohibited along all major roads (as listed below) within urban core (Note: This does not infer that onging existing commercial activity is being proposed to be suspended, however, Master Plan strategic framework redirects any further commercialization to suburban areas/precincts). Prohibited commercial uses include Shops, Markets, and covered shopping Malls, Workshops, Street Vending, Strip of Shops, Hotels, Food Facilities and Restaurants. However, tourist support facilities like TICs, Paid parking, IT centers, rental lodges having parking space and accommodating not more than two family accommodations per floor may be treated as permissible conforming concerned byelaws may be treated as permissible.

These proposed roads for ban primarily include;

The Mall and its surrounding.
Lower Bazar
Caurt Road
Pindi Point
Kashmir Point
Bank Road
Imitiaz Shaheed Road
Hall Road
Kuldana Road
Upper & Lower Jhika Galli Roads
Along and around Jhika Galli, Kuldana, GPO, Sunny Bank Intersections
Khalid Road
Jinnah Road

Kiosks / stalls should also be removed and banned unless conforms urban design strategy.

2-Declaration of future growth corridors / precincts as proposed along with commercial districts.

3-Potential for converting incomplete building structure into parking should be evaluated.
4-Ban should be relaxed for residential development / up gradation and renovation in the urban core only conforming revised bye-laws in the light of suggested policy directions.
5-Anti-encraochment campaign should be the very first step to recover right of ways and public assets and should continue for plan period.
6-Planning should be done for standardization for hospitality design at local level.
7-Provision for missing public / tourist infrastructure like weather protected walkways, rest/sit areas for elderly, vertical climbs / links to promote walkability, public lavatories, should be implemented on priority in central core the Mall, Caurt Road, Pindi point and Kashmir Point.
8-All the under-construction / banned structure should be brought under review, permission may be granted to convert them as charged parking areas or other charged tourist facilities as described above while conforming structural bye laws.
9. The consultants have envisaged that Murree Urban core is significantly bulges out into the Nimbal and Missiariai UCs, it is therefore proposed to re-delineate the Murree urban boundaries by including Nimbal and Missiari UCs.
10. TMA Murree is highly appreciated to use GIS provided by the consultants for urban management and this should be updated on yearly basis to assist TMA as a change detection tool.

SLP-4 Geology Supported Land Use Development

The Consultants propose the following land use plan and zoning strategies for Murree:

1. Building regulations should be appropriated in the light of proposed hazard avaluation and micro zonation studies.
2. The vegetative cover should not be made clear from site until the building plan is sanctioned. The developers / land owners should consider that the open lands are subtle and subject to slope failure. Those plots where construction has not been started within 1 year of plan sanctioning; the building permit may be refuted;
3. The owner / developer should be made responsible to plant / restore sufficient greenery as a vegetative cover in case he runs out of finances;
4. The consultants propose exercising land use controls such as conservation of agricultural / urban forest land. The forest land is prohibited for any future land use conversion except limited number of walking treks, nature lodges and supporting facilities even built by using indigenous materials like stones, wooden logs. Similarly, agricultural land is prohibited for any land use conversion except the supporting development facilities;

5. The Consultants propose that the TMA Murree should establish a comprehensive Terrain/Geology, Slope Classification and landslide vulnerability based Zoning System by conducting micro zonation studies, in addition to conventional linear and vertical zoning tools that delimit future development at steeper vulnerable/hazardous slopes/areas.(see maps)
6. It is further suggested that Height Zoning should also be applied for new development as per terrain / slope classification/ micro zonation. This will also help in maintaining the natural beauty and scenic value. It is proposed that new development should not exceed triple storeyed buildings to conserve skylines wherever possible. However, the TMA Murree can further evaluate whether a single or double storeyed building serves the purpose if the proposed development overlooks or creates nuisance for scenic value / beauty of the area;
7. Maintenance of long-term slope stability is very important factor, it is proposed that TMA Murree should monitor the newly permitted sites to make sure that cuts and fills are properly engineered and appropriate for the contours of the land and the quality of grading and landscaping needed to prepare sites for development;
8. It is further suggested that the capacity building of TMA Murree should be enhanced in analyzing applications for site development and activities involving structural changes. The planning permission process should oversee the site negativities such as environmental criteria, slope stability, structural stability and urban design and overall land use impact on community and land use traffic interaction;
9. In past, Murree's development was governed by natural buffers such as ridgelines, hilltops, and the foot of slopes. The Consultants propose the respect for same. In fact, the vision is to contain anti-geology development in Murree.
10. The building lines should be defined and original boundaries should be restored at priority. The encroachments in form of physical occupation at public spaces or through informal commercial activities should be discouraged. The TMA Murree should be most vigilant in curbing encroachments.

SLP-5 Built Heritage Conservation:

Heritage places are social, environmental and economic assets that play an important role in defining a community's character and attracting tourism especially international tourists. They help us to understand the events and people that shaped the present, and through their preservation, demonstrate how we value the past. Following strategies are proposed for heritage conservation in Murree:

1. A local Heritage Conservation Commission / Committee may be established comprising of members from Government, TMA, TDCP, NGOs and business community that encourage and support conservation of heritage buildings / precincts;

2. TMA should make an archive of heritage and archeologically significant buildings through enlistment and field surveys. For this purpose the Consultants propose that any building constructed before independence may be treated as historically important building conforming other values such as architectural, monumental, archeological, age/historic value, social value. A list given in early sections of the report should be assessed for declaration.
3. Any proposed development or land disturbing activities within the historical / architectural areas should be immediately reported to the concerned authorities;
4. Permission to commence development or land excavation should be sought from TMA Murree. The TMA Murree should also evaluate the pros and cons of any proposed development before granting permission to start work at or near such heritage sites;
5. If the private sector takes on the preservation projects, they should be supported with tax incentives for investments in preservation;
6. The site planning for new development should minimize the disturbance of sites significant to historical natures;
7. Efforts should be made to maintain early street patterns, building facades in the historical precinct i.e. Mall Road, Lower Bazar areas. However, change of land use is suggested compatible to the existing development;
8. It is ironic that the site of Murree Brewery has been left for neglect and vandalism by the public agencies. It is suggested that the site may be revitalized and conserved in its original shape. The proposal is best discussed in the coming section, Urban Regeneration.

Conservation of Murree Brewery Estate:

Murree Brewery building is a renowned historical building of Murree. Unfortunately, the site has been left for neglect and wear and tear and no concrete action has been taken for its conservation. Currently, FWO is operating a Batching Plant right inside the building remains. The mechanical vibrations and vehicular movements are highly dangerous for the structural safety of the historic remains. Local population is also contributing to its deterioration by unplugging the pitch-stones they use for construction of their houses etc.

It is proposed that the Murree Brewery Estate should be given urban regeneration treatment. The Consultants propose that the estate may be converted into a Theme Park with sufficient parking facilities, restaurants, public toilets, an Art and Craft Display Centre etc. The Murree Brewery building may be restored in its original shape and form through public-private partnership (PPP). The options of reuse for restored / conserved building include a Youth Hostel for Scouts Camp, an exotic hotel accommodation, a traditional European style restaurant etc. to name a few.

SLP-6 Urban Regeneration Strategies:

Urban regeneration is a modernistic land use planning tool which focuses on socio-economic and physical revitalization of blighted areas of the city. This regeneration tier has also been supported in Punjab Land Use (Classification, Reclassification and Redevelopment) Rules, 2009 as ***Redevelopment***. It also helps in heritage conservation. The Consultants propose that urban regeneration should be applied for selected historical buildings which need façade improvement besides conservation in Lower Bazar, Shawala, Caurt Road, Pindi Point and Mall Road of Murree. The identification of sites to be done through TMA Murree and other stakeholders; the projects may be started as Action Area Plans under the Master Plan for Murree 2011-31.

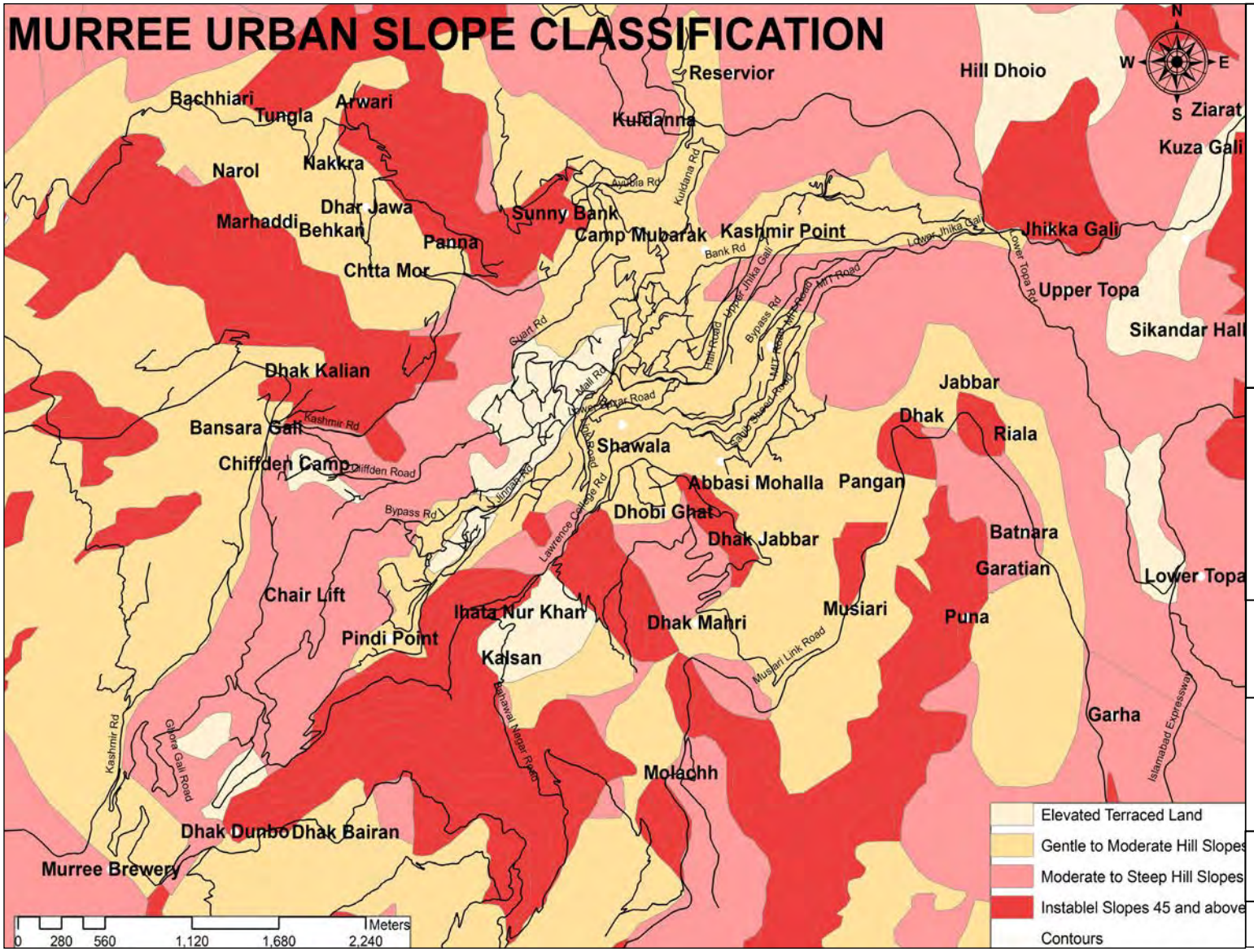
SLP-7 Land Use Growth Policies Complementing Tourism Economy:

Tourism economy is mainly dependent on activities concentrated in urban core. The land use development control should be exercised wisely in such a way to enhance productivity of local tourism economy. It has been envisaged globally that strict landuse development regulations often prove adversative to the local economies. The implementation of proposed strategies should not discourage the real estate sector investments and the users. The economic potential should be diverted to new proposed developments as suggested in MIT, Bansra Galli, Dhobi Ghatt and Chitta Mor rather still engaging in core concentrated incentives. More incentives should be offered to divert all those investment to the proposed future projects. The suburban commercial districts identified in the proposal should be developed in parallel at priority. These parallel developments shall provide alternate choices both to the tourists to go for shopping while enjoying their leisure time thus offloading the existing ones and the business gets more clienteles as well. The new commercial developments thus expected to yield more economic activity resulting sustainability as well as an economic uplift of local population. This strategy may serve as a long term make-shift tool to off-load the central core in the long run.

SLP-8 Land Use Planning & Urban Security:

Tourist security should be a prime focus of any policies made for Murree, for this the consultants propose;

1. Installation of security surveillance network in urban core; it includes installation of CCTV network, community policing, linking all hospitality facilities to central security network, uploading tourist's database to central system through interactive data links to ensure security of guests against criminals.
2. Tourism infrastructure should be designed in such a way to enhance physical security of elderly tourists against slippery events during rain and snow fall.
3. Urban gardening incentives should be made an integral part of landuse regulations as they would also enhance food security while producing subsistence level products in home gardens.



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSUTANTS:

Pakistan Environmental Planning & Architectural Consultants

Planning Architecture Engineering Design Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN

MURREE URBAN SLOPE CLASSIFICATION

SHEET #

SLP-9 Environmentally Sustainable Land Use Planning:

TMA is expected to;

1. Control of environmental degradation in existing landuse structure of the town, for such purposes a comprehensive environmental management / monitoring plan should be exercised across the board. This plan should embrace air quality, waste generation, reduction, recycling and treatment options, water resource and use management and energy efficiency. This plan should be made an integral part of TMAs building bye laws.

2. Direct all proposed developers to furnish project based EIAs as per EPD's laws (as per declaration of Murree an environmentally protected area) and must accomplish environmental monitoring and management plans (EMMP) for both construction and operation phases. This practice should be made an integral part of Building and Site Development Byelaws for Murree.

3. TMA must involve local and tourist communities to promote resource and energy efficiency campaigns through media, workshops, occasional promotional walks and workshops to reduce environmental stresses in Murree as it has been envisaged that policy cannot work in isolation without involving the communities. This further supports consultant's vision of devising policies for both the Place & People.

SLP-9 Local Fiscal Policy for Financial Autonomy:

Property taxation, transfer fees, water tariffs, parking fare, compounds/ penalties, fines, estate lease revenues, and incentives from future PPP projects envisaged as major sources of income to TMA to perform its regulatory functions most efficiently and reduces its dependence on provincial financial assistance / special grants. It is strongly suggested that efforts be made to exploit taxation in TMA limits.

It is also suggested that a certain levy should be imposed on local tourism industry as it has been envisaged that tourism industry is rent seeking and evade taxation, money keeps coming and going out through market mechanism without significant contribution to local livelihood opportunities and development needs. Provincial government keeps on adding infrastructure through special schemes/grants to support tourism industry, so it is advised TMA must have a self-sustained revenue generating system for financial autonomy to support development of its infrastructure rather seeking special grants.

SLP-10 GIS for Urban Management:

Consultants have developed a comprehensive landuse GIS for the urban core, it is expected from TMA to make best use of this exercise over time to manage landuse development in the area, further enhancing it to an interactive GIS on the web and also as a change detection tool. This system may be enhanced to incorporate development of a land ownership cadaster, information on land use

ownership, utilities, topography, water and other resources. GIS developed for Murree proposed to be utilized for

- Preparation of land-use maps for future use.
- Study of urban sprawl over a given time period to understand the underlying driving forces.
- Assessment of land use conversion in different parts of town to help understanding of the impact of the policies pursued.
- Land suitability analysis based on physical, environmental, geological, geographic and accessibility parameters to guide the selection process for opening new land for urban development.
- Accessibility analysis for proposed major development project like parking infrastructure, treatment facility and growth center etc.
- Evaluation of public suggestions and objections on the draft planning proposals.
- Publication of maps at various scales with relevant details.
- Submission of building applications / plans through interactive solution in future.
- Infrastructure Projects Planning.

INSTITUTIONAL & IMPLEMENTATION FRAMEWORK

- Enhancing the capacity of TMA to manage, regulate and encourage environmentally sustainable physical growth of by inducting additional technical staff as special exceptional case for Murree shall be done jointly by TMA Murree and CDG Rawalpindi.

- TMA must incorporate disaster resilience into building bye laws while promoting sustainable land use development through further studies and thereafter in the light of site specific proposals by engaging Punjab Urban Unit, NDMA, PDMA and / or any other technical assistance.
- Role of Murree Steering Committee should by enhanced by inducting representatives of allied departments functioning in Murree as well as local community.

(Note: To have detailed understanding of Policy Segments Implementation Framework and Phasing and Implementing Partners, please refer to the Matrix given in Appendix part 2)

KEY PROJECTS IDENTIFIED FOR SUSTAINABLE LANDUSE DEVELOPMENT:

A- CATALYTIC SHORT TERM PROJECTS:

The intent of these catalytic projects, as reflected in their descriptive title, is to initiate and precipitate change and action in consistent with the overall strategic framework of the Murree Master Plan.

1. Encroachment Removal and recovery of right of ways around Mall Road, Caurt Road, Bank Road, Kashmir Point and Pindi Point
2. Design and construction of Walkways along all roads in urban core.
3. Removal of non-conforming Kiosks/Stalls reinstallation of standardized structures on permissible sites.
4. Space inventory and construction of tourism support structures as identified in Sustainable Tourism section
5. Reassessment of TMA leased properties and review for market based re-lease to improve the financial capacity of TMA
6. Assessing available land parcels under public sector holding for converting them to Parking
7. Reducing Land Use incompatibilities and identifying illegally converted land uses and further compounding them to generate revenues.
8. Appropriation of Building Byelaws as per terrain zoning / micro zonation
9. Assessing incomplete structures for converting them to permissible uses
10. Declaration of new commercial districts as identified in new proposed mixed use precincts and further initiating commercial mixed-use projects either by Public/private sector or PPP in space allocated in MIT colony and in other identified areas in Missiari, Dhobi Ghat, Chitta Mor, Bansra Galli, Nambal and Murree Brewery estate to divert commercial influx. These may acquire the shape of covered Malls with permitted heights as per terrain zoning.
11. Up gradation of Alliyot-Bhurban and Patriata Links
12. Creating visual vents on Mall Road by eliminating illegal structures wherever found as per TMA's registers.
13. Incorporation of disaster resilient regulation into building bye laws while promoting sustainable in the light of proposals given engaging Punjab Urban Unit, NDMA, PDMA and / or any other technical assistance from UN agencies.
14. Re-modeling and reconstruction of Tehsil and Municipal Administration Center (having offices, conference room, public library, e-center and auditorium on First Floor while leaving all space on Ground Floor for Municipal Services Center and official/visitor Parking) at existing site GPO Chowk.
15. Construction of new RESCUE 1122 centers, Model Police Station, Fire Service, Municipal Services Center, and Tourist Information Center in Municipal Complex and a Trauma Center in THQ Murree.

16. Provision for missing public / tourist infrastructure like weather protected walkways, rest/sit areas for elderly, vertical climbs / links to promote walkability, public lavatories and children attractions.
17. Installation of security surveillance network; it includes installation of CCTV network, community policing, linking all hospitality facilities to central security network, uploading tourists database to central system through interactive data links to ensure security of guests against criminals and other anti-social activities.
18. Identification and declaration of parking/freight/transit terminal sites as identified in the transportation proposals and leasing out rights through some appropriate business model. It will benefit both the place and the users while adding some premium on municipal business.
19. Enhancing the capacity of TMA by hiring a management consultant to manage, regulate and encourage environmentally sustainable physical growth of town by inducting following additional technical staff as special exceptional case for Murree, which essentially includes

MEDIUM & LONG TERM PROJECTS:

These projects expected to yield long term desired objectives of the plan and such proposals/projects may be initiated by plan start term and shall span over the whole plan period.

1. Delineating, declaring and conserving Urban Forests as suggested in land use proposals and initiating projects to promote nature lodging and trekking in these precincts
2. Declaration and Rehabilitation of heritage sites such as Murree Brewery to promote heritage tourism.
3. Declaration of new mixed use precincts and initiate/promote mixed use projects as per revised building bye-laws.
4. Declaration of hazard zones as identified and these zones (unsuitable for construction) could only be used as urban gardens/open parks.
5. Leasing out encroachment/building control and monitoring.
6. Protection and long term control for right of ways.
7. IT solution development for property/municipal taxation and linking it to GIS.
8. Promoting/achieving energy efficiency through public facilitation and building bye-laws and gradually imposing fines on inefficient structure and energy use.
9. Promoting Urban Gardening to enhance nature and food security. Such promotion may be incentivized by engaging professional horticulture firm.

10. Standardization for hospitality design at every level from kiosks to hotels and lodges.
11. Standardization of construction industry for Murree.
12. Implementing urban design strategies/plans to bring sense of places with the help of private sector promotional investments.
13. Promoting horticulture and handicrafts as local industry.
14. Hotels, Restaurants and other commercial projects should only be allowed if they provide adequate car parking spaces according to the floor area ratio;
15. Revenue generation by fine imposition and collection on removal of green cover/tree/plant cutting for any non-permitted development.
16. Campaigns to attract investments in Tourism support infrastructure.
17. Plan and implementation of urban regeneration of Shawala, Missiari and Lower Bazar.
18. Construction of state-of-the-art hospital to promote medical tourism.
19. Imposition of tourism levy to support local development.
20. Ensuring environmentally sustainable land use development by employing Environmental Management Practices.
21. Developing a local business model/standardization with the help of environmental management consultants for the promotion of Green Economy. Credits/discredits may add/boost local economy in the long run while still being environmentally sustainable.

2-2 SUSTAINABLE TOURISM PLANNING:

The policy objectives for Sustainable Tourism Planning are:

(a) To improve the quality of the environment on which both the host community and the visitors depend;
(b) To provide well-designed, safe and accessible tourism development, that creates new opportunities for the well being of local population and the regeneration of communities;
(c) To protect and enhance the natural and built environment and safeguard the natural resources;
(d) Encouraging tourism activities in harmony with nature;
(e) Promotion of eco-tourism & responsible tourism practices by involving the community;
(f) Enhancing livelihood opportunities for local population in tourism industry.

The Consultants have tried to subsume the components of tourism planning with other sectors like infrastructure, land use development etc. The components of policy objectives are described below:

POLICY COMPONENTS:

ST-1 Environmentally Sustainable Tourism Product Development: The Eco-Tourism

Murree has a great potential to utilize its environmental resources such as natural scenery, high mountains, lush green landscape, waterfalls, birds and wildlife to gain edge on tourism in an environmentally sustainable manner. The purpose to promote environmentally sustainable tourism product development is to make tourism in Murree, environmentally compliant and user friendly at the same time. At present, the tourism in Murree is only concentrated to urban area with majority of tourists spending leisure time roaming aimlessly on the Mall road or in markets and rest of their time patrolling on neighbouring areas' roads or enjoying meals at local restaurants.

There is a great need to sensitize the touristic community and general public about environmental or eco-tourism that is also known as environmentally responsible tourism. The purpose is to bring people direct in communication with the nature at its best that can enhance environmental awareness and conservation of precious environmental resources of Murree. Ecotourism activities shall be site-specific. Following are some of the recommended ecotourism activities and facilities that the Consultants propose for eco-tourism development in Murree.

ST-1.1 Nature Education and Interpretation Centers: (Medium Term)

It is need of time that younger generation should be inculcated the importance of environment in our daily life and the means to conserve it at early age. This will make mind-sets of school-going children and younger generation for increased environmental awareness. It is proposed that:

i) The curricula of local secondary schools and educational institutions may be updated and the concepts like introduction of sustainable eco-tourism and actions to protect the nature into may be included.
ii) The TDCP in collaboration with Punjab Education Department can further reinforce the concept of sustainable eco-tourism through establishment of eco-tourism clubs in schools.
iii) For interpretation purposes, a demonstration center may be established in Murree at Bansra Gali with allied facilities for practical explanation. The center shall house video library, Cineplex, books, and special guides for eco-tourism.

ST-1.2 Walk-ability & Pedestrianization:

It is highly imperative for a tourist town like Murree that the visitors enjoy free walks and pedestrian movements dominate the streets. Although, the pedestrian traffic is much more in comparison to the vehicular traffic. But the missing infrastructure creates difficulties for pedestrians and hence walk-ability is jeopardized.

The Consultants propose that

- Part of city core, the Mall road, Caurt Road partly, Bank Road, Hall Road and the Lower Bazaar area may fully be pedestrianized;
- Vehicular traffic should be discouraged gradually. Only emergency vehicles (Fire engines, ambulances, police vehicles) may be allowed access;
- Transport service that supply goods to the market and shops may only allowed access for loading/unloading from 6am to 9 am;
- Congestion charges may be applied to discourage entry of vehicular traffic on the Mall road;
- Sidewalks along roads may be constructed (either on one side of the road) to encourage pedestrianization;
- Pedestrian signals and signage may be installed at road junctions and points of crossing along with sufficient time-phasing other than vehicular traffic. The Consultants propose that pedestrian signals at Jhika Gali Intersection, Kuldana Chowk and Cantt. Gate Intersection should be installed on priority;
- Pedestrian scale solar powered treet lighting may be installed at all intersections, points of crossing and blind-areas to increase the sense of safety for pedestrians;
- Wherever possible, road segments may be connected through pedestrian trails and greenways at different contour levels (see the proposal map);
- Traffic calming measures may be adopted by TMA Murree to ensure pedestrian safety throughout the town and newly developed areas.

ST-1.3 Nature Lodging:

Nature lodging may be provided with the help of Forest Department Punjab for the establishment of high-quality accommodation in Bansra Gali and Bhurban forest area in direct interaction with the Mother Nature. The sites need to be very special and unique and provide a range of opportunities for immersive experiences. This type of operation would likely be low volume but providing high yield. This will provide visitors the opportunity to directly experience nature. However, the material for construction should be environmentally friendly like wooden huts are preferred with elevated platforms.

ST-1.4 Biodiversity Watching:

Murree lies between favourable climate as well as unique biosphere, which can attract tourists interested in biodiversity-watching. Since Murree is declared as an environmentally-sensitive zone and a wild-life park is also present at Bansra Gali. It is high time to promote eco-tourism in Murree. The Wildlife Department along with Forest Department can significantly contribute in the breeding, conservation and habitat facilitation of those birds and local wildlife such as monkeys which were once abundant in Murree's pine forests. An area of about 10 to 15 acres of land may be reserved for Bird & Wildlife Sanctuary in Bansra Gali protected with wired mesh to keep the selected species within the environment.

ST-1.5 Camping Grounds:

Camping grounds may be provided at the selected sites in collaboration with Forest Department at Bansra Gali. These should need to be managed campground with ancillary facilities like showers, toilets, BBQs pits. Nominal camping fees may be levied.

ST1.6 Walking Trails:

Walking Trails may be designed around Murree. The Consultants have proposed Ecological Corridor around Murree (i) from Bhurban to Jhika Gali – North-West & (ii) Lower Topa to Ghora Gali - East-South, as part of their Urban Design Policy (See Proposal Map). This corridor is a walking trek which can further be linked to short-maintained tracks in the vicinity of major visitor nodes to remote walking trails of 5-10 KMs long. These should be accessible only from an entrance and exit point and fully guarded and fenced to avoid any mishap of direct connect with animals.

ST-1.7 Adventure Tourism:

Adventure tourism in Murree may be supported, developed and promoted. Following key adventure tourism activities may be developed in Murree on further identification of TMA Murree and TDCP and Forest Department:

i) **Skiing:** the region offers wide range of skiing opportunities in a great variety. The winter-sports activity will make Murree all-seasons destination. The winter resorts at such sites can be developed for providing tourist accommodation at site.

ii) **Extreme-Games Arena:** To add value to the touristic attractions of future Murree, an extreme-games arena may also be developed at Aliyot including a training institution which provides such training to tourists.

The facility can be developed through PPP preferably to ensure sustainability.

iii) **Hiking and Walking:** Such tourism opportunities in the mountains are unlimited and hiking can be practiced during all four seasons of the year. However there is a great need to improve the supported infrastructure. The Consultants have proposed two Ecological Corridors around Murree (i) from Bhurban to Bansra Gali – North-West & (ii) Lower Topa to Ghora Gali - East-South, as part of their Urban Design Policy (See Proposal Map). These corridors / treks will be used by tourist to enjoy nature from naked-eye. It is also anticipated that by developing these Ecological Corridors around Murree will help in bringing nature-conservation and ecological reserves around Murree.

iv) **Horse/Pony Riding:** Horse riding in the region is a unique experience and offers a great fascination to the tourists. However, this is only available in urban Murree. It is proposed that to promote eco-tourism in Murree, dependence on motorized traffic may be limited. The tourists may be encouraged to use horse-back riding and other animal-back riding in the forests to enjoy true nature. A Horse/Pony Riding Club may be established in Bhurban. The proposed equestrian facility will provide livelihood opportunities to the local population in addition to a tourism service in Murree region.

v) **Cineplex:** TDCP may venture in PPP mode to establish a Cineplex in Murree as many tourists have shown interest in watching movies. Existing amphitheatre may be used for such purpose in summer. However, two new high-class cineplexes are proposed at Bansra Gali & Bhurban.

ST-2 Tourism Marketing & Promotion:

Tourism marketing and promotion is very vital for attracting new tourists to a destination and maintaining hospitality standards for the visitors to visit again in future. The tourism marketing and promotion mainly aims at addressing the issue from customer point of view like visitors complains about:-

- Poor attitude towards the visitor from the manager / proprietor
- Poor quality of facilities and services
- Cleanliness
- Poor customer service
- Poor standard of service / food / catering
- Misleading Information
- Overcharging
- Poor public facilities and amenities such as public conveniences

It is very much important that the true image of Murree is promoted in the public. Normally the local hotels or their agents to gain the market share provide misleading information to the customers' in spite of the facilities they claim. To

reduce the customer complaints about Murree, the new marketing and promotion strategy is proposed.

Marketing Strategies:

TDCP in collaboration with TMA Murree and any other stakeholder should:

1. Invite local, national and international media to promote Murree as a pollution free tourist town, it also includes documenting the history of Murree and its potentials. This shall also serve as a source of information for the prospective tourists;
2. Organize "Best of Murree" competitions in the sectors of Hotels, Restaurants, Shops and Tourists Attraction sites. This will help in establishing user rating and competitively good outlets;
3. Create a Brand Murree Tourism Product that markets the tourism industry of Murree. The logo of Brand Murree may be widely circulated, published, pasted in the form of pamphlets, brochures, leaflets and stickers. Besides this, at prominent places of Murree, the same logo may be erected in the form of a huge sculpture. The TDCP may organize a design competition for creating Brand Murree and its marketing slogan. This initiative will definitely will boost up domestic tourism and will send a silent message to the local tourism industry to improve the quality of service and standards;
4. TDCP should organize in collaboration with TMA Murree, local population and other stakeholders, an annual event with the title "Celebrate Murree" in some off-season or peak season as per the management decision. The day can be when Murree was established. The event can also be linked to some popular or important aspect of Murree e.g. 150th Birthday of Murree or just to celebrate that Murree has attracted 2.5 Million tourists in 2012 or any other theme. This will boost Murree's cultural identity, its history and tourism aspects to the tourists and general public;
5. Create tour packages (special themes) with hotels, restaurants and any other tourist facilities;
6. Establish a dedicated web site that includes comprehensive information about Murree, local tourist attractions, hotel and restaurant information with the facility to book / place an order online, Murree tourism map, information about public facilities, public transport modes, weather information and guidance in case of emergency;
7. The role of social media in branding and marketing promotion of Murree tourism can't be denied. Dedicated follow-up pages may be maintained with up-to-date information, discussion forums and response to the general public and members at such websites like Twitter, Facebook, Delicious, Orkut etc. This will definitely help in promotion of Murree's image and its touristic brands across the globe attracting foreign tourists to Pakistan as well;
8. The representation of local stakeholders in promotion and marketing of Murree is very important. It is proposed that TDCP should sponsor tours for the members of Hotel Association and other stakeholders in international / foreign tourism fair and exhibitions. The Brand Murree may be promoted internationally at such forums;

9. TDCP should organize local cultural and tourism events, awareness campaigns, seminars, walks, conferences, photography competition on sustainable environmental tourism in Murree. This will deliver positive image of Murree across the nation;
10. Since Murree developed originally as an army cantonment, TDCP should establish "Murree Museum" at Pindi Point in collaboration with community and TMA. The Museum should display local culture, heritage history and crafts etc. The Museum will be a value addition to Murree's tourism.

ST-3 Standards & Accreditations

To develop a system of standards and quality assurance through standardization and accreditations with clearly identifiable measurement indicators / criteria linked to the sustainable tourism concept.

This will help in regulating quality within the tourism industry through which hotels, restaurants, and products etc. become officially registered and offered to tourists. The tourists' trust shall develop on local products and sense of security would be felt by the tourists while there stay in Murree. It is suggested that TDCP should work on standard development necessary for tourism sector. TDCP may charge an annual fee for accreditation of shops, restaurants, hotels and transportation sector related to tourism. This will boost not only revenue generation for TDCP but also encourage a healthy competition among tourism business sector and service providers.

ST-3-1 Accreditation of Shops, Restaurants & Hotels

Shops: It is proposed that accreditation of shops, restaurants and hotels may be done by TMA Murree in collaboration with TDCP. For this purpose,

1. The shops should display price-tagged items;
2. A procedure may be established and implemented for refund policy / reasonable return;
3. A customer complaint management system may be established;
4. A "Tourism Murree" logo / plaque may be fixed at accredited outlets;
5. The accredited shops are identified on Tourist Information Map of Murree.

Restaurants & Hotels: To increase the competency among the restaurants offering (i) food and drinks and the hotels offering (i) accommodation and (ii) dining services; it is very much needed that both kind of establishments are accredited against a set criteria by TDCP such as on the basis of;

A. Products being offered;
B. Hospitality / Service

C. Value for Money
D. Quality
E. Environmental Responsibility
F. Staff's Knowledge & behavior towards customers
G. Customer Service
H. Authenticity of service on offer

It is suggested that the Accreditation Process for Restaurants & Hotels should be adopted on professional and public recommendation. The accredited establishments may be identified on Tourist Information Map of Murree.

ST-3.2 Accreditation of Public Transport Services

The quality of public transport services may be approved by accreditation. A number of simple strategies can work to improve the system, suggested below are few examples:

1. Passenger-queuing at Transport Terminals may be introduced;
2. Ticketing & Information Desks may be set up;
3. Standard tariffs may be introduced on Rs/KM travel basis;
4. Taxis must be metered and carry tariff cards;
5. Accredited taxis / public transport may be identified with a "Tourism Murree" logo / plaque.

ST-3.3 Price Control:

Price Control is very much needed for provision and continuity of standard tourism services at various commercial establishments. Due to high influx of tourists to Murree, it has been experienced that various services and products are offered to tourists on high-price than the itemed price. It is suggested that TMA Murree should properly check and exercise price control. Participation of Community Based Organizations (CBOs) / NGOs can contribute significant role in this issue.

ST-4 Tourist Information System (TIS):

The Consultants propose that a web-based interactive Tourist Information System must be developed for potential tourists to guide and supply up-to-date and comprehensive information that a tourist is interested to know about. The Tourist Information System should offer facility to the tourists for advance booking at Accredited Hotels & Restaurants besides availability of product information, tourist guide map, information about transport services, Murree's attractions, photographs, information about health facilities and emergency services, weather information and any other relevant information that TDCP determines to be provided. In addition, new Tourist Information Centres are proposed at following locations i.e. Motorway Toll Plaza,

Jhika Gali, Kashmir Point and Pindi Point, Murree Brewery Site to facilitate the ever-growing tourist influx in Murree.

ST-5 Public Facilities / Tourism Infrastructure:

Besides improvement in the existing public facilities / tourism infrastructure, following facilities may be provided in Murree.

1. Install back-lit self-tour signage (information/directions/"you are here") at all tourist points. This may be of sufficient and prominent size (4ft height x 2ft width with 2.5 ft pole height) along road side. The signboards shall help the tourists for self-guidance;
2. Installation of WiFi Towers in Murree for relaying free Internet WiFi signals initially at prominent tourist locations such as Kashmir Point, Pindi Point, Mall Road, Lower Topa, Jhika Galli, Murree Bus Terminal, Murree Brewery. However, WiFi network may be extended to residential areas. This will be a value added service provision by TDCP. The private sector may be motivated for developing this kind of facility;
3. Public Toilets may be provided at all tourist attraction sites with proper facilities. Initially a toilet facility of properly designed ventilated facility having around 500 sft of physical space 10 urinals 5 gents, 5 ladies) must be provided at Kashmir Point, Pindi Point, Mall Road, Lower Topa, Jhika Galli, Murree Bus Terminal, Murree Brewery, all other picnic points, commercial and public buildings; Consultants have envisaged that currently 75 such facilities are required keeping in view tourist volume and this target can be achieved by starting from specified location in plan early short term.
4. Toilets for persons with special needs, disables and nappies changing places may be provided at all public places and tourist attraction sites;
5. As walkability and TOD is proposed for future Murree, it is proposed that toilet facilities may be provided at every half kilometer interval along every road in the urban area and at five kilometer interval for the roads leading outwards from Murree;
6. Drinking water points may be provide at all tourist attraction sites;
7. Accessibility for disables, people with special needs and families with children must be improved at all public places and spaces.
8. Private sector international food chains may be encouraged to open their franchises in Murree. TDCP in coordination wit TMA Murree should focus on facilitating such investments preferably in the proposed new precincts.

ST-6 Facilitating Investment: Public & Private

The investment by public and private sector in tourism development for Murree is imperative. The basic aim of any investment is to gain optimum market gain besides providing facility to the public. The public and private sector can invest largely in tourism infrastructure and tourism facilities besides promotion and marketing. It is proposed that the continuation of federal and provincial government policies in attracting investment in tourism must be kept continued however little improvement may be done like waiver of taxes and facilitation to the private sector investment in availing soft-loans for establishment of tourism projects in Murree.

In order to encourage investment in the tourism industry, the government should introduce sector specific investment incentives for existing projects owned by Government bodies or new projects can also be started with PPP modalities as per the government policies in vogue.

ST-7 Exploring Livelihood Opportunities in Tourism Industry:

- TDCP is proposed to facilitate the establishment of an institution in Murree to extend tourism related education to locals both at degree and diploma levels at Aliyot. This will eventually help local community to increase their capacity to serve and get due share in the local tourism economy. The proposed facility can be established through;
    1. A partnership between TDCP & public/private sector institution.
    2. An independent public sector institution supervised by TDCP.
    3. Degree & diploma level program may be initiated in existing Murree Post Graduate College.
    4. A Craft Training School may be opened in the existing Murree Post Graduate College where local population may be inculcated art & craft education at diploma level. Another branch of Craft Training School may please be opened in the proposed Aliyot Tourism Training Institute.
- A facility to train guides, waiters and tourism industry related staff in joint venture with hotel association Murree may be developed at Aliyot as hotel owners have shown willingness to support any such initiative in stakeholder consultation workshop organized by the consultant.
- Devise regulations for the compulsory induction (minimum quota) of locals in tourism industry.
- Proposed tourism levy may be utilized for any such purpose to improve the livelihood conditions for locals.
- Local community should be encouraged to join education programs through community counseling.
- Local handi-craft industry should be promoted and financial assistance should be given to the local community (micro credits) to increase productivity, especially ladies who can produce local crafts while remaining at homes.

- Accreditation of local handi craft products should be done by TDCP and catalogues / leaflets should be extended to the touring community encouraging them to buy local handi craft products.
- Murree still remains most peaceful scenic tourist destination in the country; potential for international tourists should be exploited by TDCP.
- Local must be given opportunity to get trained / educated in TDCPs institution at Lahore.
- TDCP must further explore the opportunities to engage locals at every level in other projects identified in the report; these may include public transport, tourist guides, construction workers, accredited shop owner on an equity basis.
- TDCP must encourage local commerce to employ them as well. In addition, they must be facilitated by involving financial institutions to give them soft credits to establish their own small scale businesses.

INSTITUTIONAL AND IMPLEMENTATION FRAMEWORK:

It is proposed that

1. As the devolution of Tourism Ministry has been done at federal level and major functions of the defunct ministry has been handed over to the provinces; necessary modalities may be completed at provincial level for taking responsibility of tourism development at Punjab level;

2. It is also envisaged that the necessary legal framework in form of bylaws and regulations and institutional arrangements shall be extended for the successful implementation of the tourism development projects in the course of Murree Master Plan 2011-31;

3. The Proposed Implementation Framework in Section 5.7stresses the need to strengthen the role of TDCP for the successful implementation of Murree Master Plan 2011-31.

(Note: To have detailed understanding of Policy Segments Implementation Framework, Phasing and Implementing Partners, refer to the Policy Matrix given as Appendix 2)

KEY PROJECTS FOR SUSTAINABLE TOURISM PLANNING:

A- CATALYTIC SHORT TERM PROJECTS:

1. Launching an annual Design Competition for "Murree Tourism Branding" concept by focusing on the truly exquisite tourism experience and the immaculate natural environment of Murree.
2. Installation of "Murree Brand Logo" at Toll Plaza Entrance on Motorway, Kuldana Chowk, N75 ByPass and Bhurban-Murree Road facing Murree.
3. Establishment of a Nature Education and Interpretation Center at Bansra Galli with Allied Facilities (Library, Cineplex, Interpreters etc.)
4. Pedestrianization of the Lower Bazaar
5. Installation of Pedestrian Signals at Jhika Galli Intersection, Kuldana Chowk and Cantt. Gate Intersection
6. Installation of Pedestrian Signs and Facilities at different road segments throughout Murree
7. Installation of Solar street lighting and PV panels at Government Buildings (TMA Office, Rescue 1122, Police 15 and TIC at Mall Road)
8. Improving Vertical Linkages at different contour levels for enhanced access and pedestrian mobility through Pedestrian Trails
9. Improvement & Upgrading of Hiking Treks in Murree with Street Furniture (Lighting, Benches, Rain Sheds, Drinking Water Points, Public Toilets etc.)
10. Development of Murree Tourist Information Center at Lahore, Multan, Rawalpindi and Faisalabad by TDCP.
11. Development and Launching of an Exclusive Murree Tourism Web Portal
12. Installation of Murree Tourist Guide-Maps Posts at Motorway Toll Plaza, Jhika Galli, Kashmir Point, Pindi Point, Bhurban and Kuldana Chowk
13. Announcement of Murree Hotel / Restaurant of the Month Nomination Competition to increase the tourists' value for money concept
14. Improving Murree Tourism Image by the use of Social Media – Setting up Murree Tourism Information Pages on Twitter, Facebook, Delicious
15. Virtual Spaces – Installation of Wi-Fi Boosters at Jhika Galli, Kashmir Point, Pindi Point, Kuldana Chowk and at Mall Road from GPO Chowk to Cantt. Limits
16. Construction of Public Toilets at Jhika Galli, Kashmir Point, Pindi Point, Mall Road, Kuldana Chowk, Bansra Galli, Murree Bus Terminal, Murree Brewery
17. Installation of Drinking Water Points at Jhika Galli, Kashmir Point, Pindi Point, Mall Road, Kuldana Chowk, Bansra Galli, Murree Bus Terminal, Murree Brewery

18. Improvement of Accessibility for Disables, People with Special Needs and Families with children at Pindi Point, Kashmir Point, Mall Road from GPO Chowk to Cantt. Limits
19. Design/Construction of state of the art medical facility at already designated site (Dog Center Vicinity) between Sunny Bank and Kuldana Chowk to promote medical tourism.

B- MEDIUM & LONG TERM PROJECTS:

1. Design & Construction of Nature Lodges / Huts in Murree Forests in Bhurban and Bansra Galli
2. Development of a Biodiversity Park at Bansra Galli
3. Development of Camping Grounds with allied facilities at selected forest points for promotion of Eco-Tourism and Local Livelihood Promotion - Bansra Galli
4. Development of Guarded Ecological Corridor (5-10 km long Walking Trails) around Murree with allied facilities
5. Facilitation of Horse / Pony Riding for Nature Observation in Bhurban
6. Construction of a High Class Multi-Cineplex in Murree in MIT commercial area.
7. Promotion of Murree Brand through Local & International Print & Electronic Media
8. Development of Murree Tourism Documentary / Commercial Ads in National & International Electronic Media to attract International Tourists
9. Organizing Annual Murree Tourism Gala / Festival and decorating city buildings for the occasion
10. Annual Photography Competition for Sharing Murree's Tourism History & Unique Experiences
11. Accreditations of Shops. Restaurants, Hotels and Public Transport Services for Standardization of Services and Ensuring Value for Money
12. Development of an Extreme Games Arena (Rock-climbing, Mud-motto-biking and allied activities) at Aliyot including a training institution which provide such training to tourists
13. Development of a Tourism Training Institute at Aliyot for enhancing and developing the level of skills of the tourism workforce

2.3 TRANSPORTATION MANAGEMENT PLANNING:

A sustainable transportation system enhances mobility and accessibility even without compromising / affecting the physical environment of the area. While talking mobility in Murree, we essentially mean providing the transportation facilities (road network, modes of transportation like public bus/van routes, personal vehicular movement etc.) to get people from one part to their destinations in other parts, no matter the distances and terrain involved. In contrast, emphasizing accessibility means planning the town to bring people closer to their destinations and making it easier for people to reach jobs, services, education and recreation.

Considering Murree's case, consultants confronted two distinct problems while addressing mobility / accessibility, one is addressing relatively a larger part of transient population and other is maintaining less demanding mobility / accessibility of local residents. Consultants aim to resolve the all evident issues of mobility and accessibility by proposing a holistic policy approach integrating two tiers, place centered and people centered policy framework preferred over already in practice solutions like improving, augmenting and remodeling physical infrastructure in isolation. Proposed policy framework enhances the responsible use of space and mobility modes at the same time.

Planning for the transportation system in Murree should essentially incorporate the components like physical transport infrastructure (roads / arteries, parking, walkways, terminals etc.), the users, the operators, the modes (like cars, buses, vans, cycles, animal driven modes etc.), the places / land uses intended to be accessed by the users (houses, commercial areas, leisure space, work places, school, health facilities etc.) and last but not least, by all means is the fragile physical environment hosting all. Sustainable transportation planning involves making optimum use of all components while placing minimal impact on environment. Physical environment gets damaged in two ways, directly by development of physical infrastructure like roads / highways which consumes scarce physical land resources and in this process of development, land definitely gets deprived of its natural capital like trees, vegetative cover, biodiversity loss etc., others are evident during operational phase when vehicles burn fossil fuels and exhaust harmful emissions like CO_x, SO_x and NO_x which collectively, are responsible for deteriation of local air quality & further progressing global warming which world has already witnessed during last few decades. Consultants have been assigned the tough task of addressing transportation problems of Pakistan's prime natural capital rich tourist destination, which has already suffered with extreme loss of its natural capital during the past three decades (discussed at length in previous sections).

Tourism in areas like Murree is largely due to the improvement of regional transportation network in past (M1, M2, M3, N75 & MKR) that has expanded tourism enormously. The impacts of rampant tourism in Murree had been drastic on local ecology. In biodiversity-rich areas like Murree, opening up of new sensitive and fragile areas through improved infrastructure and service may further prove detrimental to the ecology of the place. In the light of such issues, it is important to re-think the role of transportation system expansion in areas such as these. Though careful planning of the components of the destination is desired to ensure sustainability, transportation is seldom considered in the planning process and due to this a number of biodiversity-rich areas have been destroyed due to enhanced accessibility but at the same the economic & socio-cultural impacts of tourism cannot be denied.

In past investments in transportation sector of this region was socially & politically pushed without any coherent transportation planning of the region. Here arises a question, what actually is desired?

Tourism based socio-economic development?
or
Conservation of scenic sites?

The Consultants believe; both; by achieving an optimal solution, a careful wise policy elucidation to bridge the undesired gaps. One simple approach to address the stated problems is augmenting infrastructure but the role of management practices such as transport demand management (TDM), transportation system management, tour / route planning and distribution over time, creating new fringe clusters of tourist's interest, and local traffic management has always been appreciable over the time.

These strategic directions for Murree Master Plan (2031) have to account for both challenges and opportunities asserted in the previous analysis section and future demand areas propelled by ever increasing tourist influx. The problems asserted are;

- Murree's undermined role as strategic location on two main trade & strategic corridors leading to AJK,
- Undesired concentration of commercial / hospitality activities around the Mall,
- Lesser walkability options for populace,
- Ever increasing vehicular influx at a rate of 7.9% per annum,
- High density compact town center offers very less venting space,
- Parking inadequacy, Murree needs 40 Acres of physical space to cater for the current parking demand alone and another 28 acres by 2016
- Multi-level parking solutions are no more viable as geology does not permit,
- Right of ways even do not allow medium sized public transit mode vehicles operability,
- Social Issues; Tourist community seems reluctant to park vehicles on outskirts and riding other transit modes like cable cars, community vans etc.,
- Snow fall / rain fall offer more problems to the commuters especially discouraging walkers,
- Ridge does not allow induction of new routes as well,
- Road user behavior and driving patterns further aggravates the problem,
- Lack of facilities for Freight Commuting to AJK,
- Public modes of transportation are in shortage for local community,
- Terminals / infrastructure for public modes Buses, Vans, Pickups are in a very dilapidated condition,
- Poor condition of roads / arteries; both in urban & rural UCs,

Considering above stated grave transportation concerns, the Consultants intend to propose a Sustainable Transportation Policy Framework as a sub-component of Murree Master Plan 2031 that identifies the transportation policies, facilities and services that needed to put both **the place & people** on track over the

next two decades, in order to meet the travel / parking needs of Murree's residents & transient population at the same time. This also aims to promote tourism industry in Murree and to support the proposed landuse development pattern identified in the relevant section. The transportation policies will guide the operation of the town's highly variable transportation demands and provide a basis for developing the short term, mid-term and long term strategies. While, in doing so, the proposed policy framework does not establish design or operating details, it will identify the need for separate guidelines that will give detailed support to policy objectives. However, some detail planning shall be covered in Action Plans separately for any designated sections identified later.

Policy Objectives:

Sustainable Transportation Policy Framework aims to provide Murree's resident as well as transient population with an efficient and congestion free transportation system enhancing their mobility and accessibility without further tumbling the "carrying capacity" of this tourist destination. Policy framework aims to;

- Enhance the efficiency system through better management practices, improved flow / circulation, route planning, redefining circulation patterns, distribution of peak flows over time, introducing economic disincentive/incentives to the users during peaks,
- Extend community traffic education, introduce intra-urban eco-friendly modes (Park and ride, mass ropeway system, Jitneys, community vans etc.), system demand management and information dissemination to the transient population to enable them to plan their tours upfront.
- Improve the capacity of existing system by augmenting essential infrastructure like parking spaces, clearing right of ways, terminal space allocation and other allied opportunities.
- Improve the efficiency of the system by educating the road user and community about traffic regulation.
- Improve the walkability options in the urban core to reduce undesired stresses on the current system.
- Promote decentralization by improving building regulations to make existing and future landuse development coherent, pedestrian friendly and reducing concentration of activities in the urban core.
- Create supportive land use policies, by regulating location, scale, density and design of activities, which have an impact on traffic flows
- Ease the entrapped local community during peak seasons
- Ease and clear the network of all undesired permitted and/or illegal encroachments as an Emergent Plan and encouraging its continuance throughout the planned period. This will eventually recover right of ways and walk able spaces to enhance the system efficiency.
- Enhance the stock and efficiency of inter-city modes by introducing incentives for private sector investment through PPP framework to facilitate urban and rural communities at large. Commuting.
-

POLICY COMPONENTS:

T-1 Demand Management:

- Policy aims a comprehensive Transport Demand Management (TDM) Plan devised and adopted by TMA as part of its ongoing long-term advocacy efforts to reduce personalized automobile dependence. Management measures can reduce transportation infrastructure demands, congestion and pollution by minimizing the dependence on personal travel modes (SOVs like cars & Jeeps) and encouraging people to change travel mode at outskirt parking lots proposed at Satra Meel, MIT, Dhobi Ghatt, N75-Byepass Intersection, Bansra Galli and Chitta Mor parking/transit nodes. It further includes encouraging travel time management as it has been observed that 70% of tourist volume enters Murree between 11 am-1pm.
- Demand management program will involve individual actions, regulatory measures, introducing incentives like parking on outskirt facilities, partnerships with the private sector (PPP) for inducting eco-friendly intra-urban commuting/transit modes like Jitneys and Vans. All this together, will eventually off load the inner parking demand and subsequently overall system.
- It is further expected by the TMA Murree & traffic police to engage local / transient community, CBOs and NGOs through print & electronic media to promote sustainability agendas. This campaign should be coupled with incentives / disincentives to reduce car usage in urban core and promoting walkability. To
- demonstrate commitment to the place, it is further expected that TMA, TDCP and other public sector officials will act as a role model for the implementation of Park-n-Ride transfer modes and walkability at their best.

T-2 Transportation System Management:

- TMA should implement a comprehensive Transportation System Management Program. Management refers to strategies that can be implemented to make more efficient use of existing infrastructure like right of ways/intersections through improved management and operation. Management strategies focused on optimizing the use existing infrastructure, for example, adjusting traffic control in time to maximize efficiency.
- System management also involves system regulation mechanism like traffic laws, community / traffic policing, fines, flow regulations and management practice through geometry. Policing should be complimented by an efficient mobile / onsite fine collection support for the transient population as it has been observed fines could not be imposed in Murree due to non-availability of collection mechanism at different nodes.

- Signage, signals, way-findind system and road marking are considered as crucial regulatory tools for an efficient management of local system. Murree lacks all these components mostly, either worn out, misleading or miss placed. It is highly desired to have a grading of signage to support fleeting users.
- Existing infrastructure system in Murree envisaged as incapable of even managing 2011 peak traffic demands, demand expected to rise by 7.9% annually, however, management solution expected only to support system for over a long plan period with augmentation support as proposed in sub-urban precincts. To deal with such an enoroumous escalating patterns the town needs to adopt other parallel strategies;

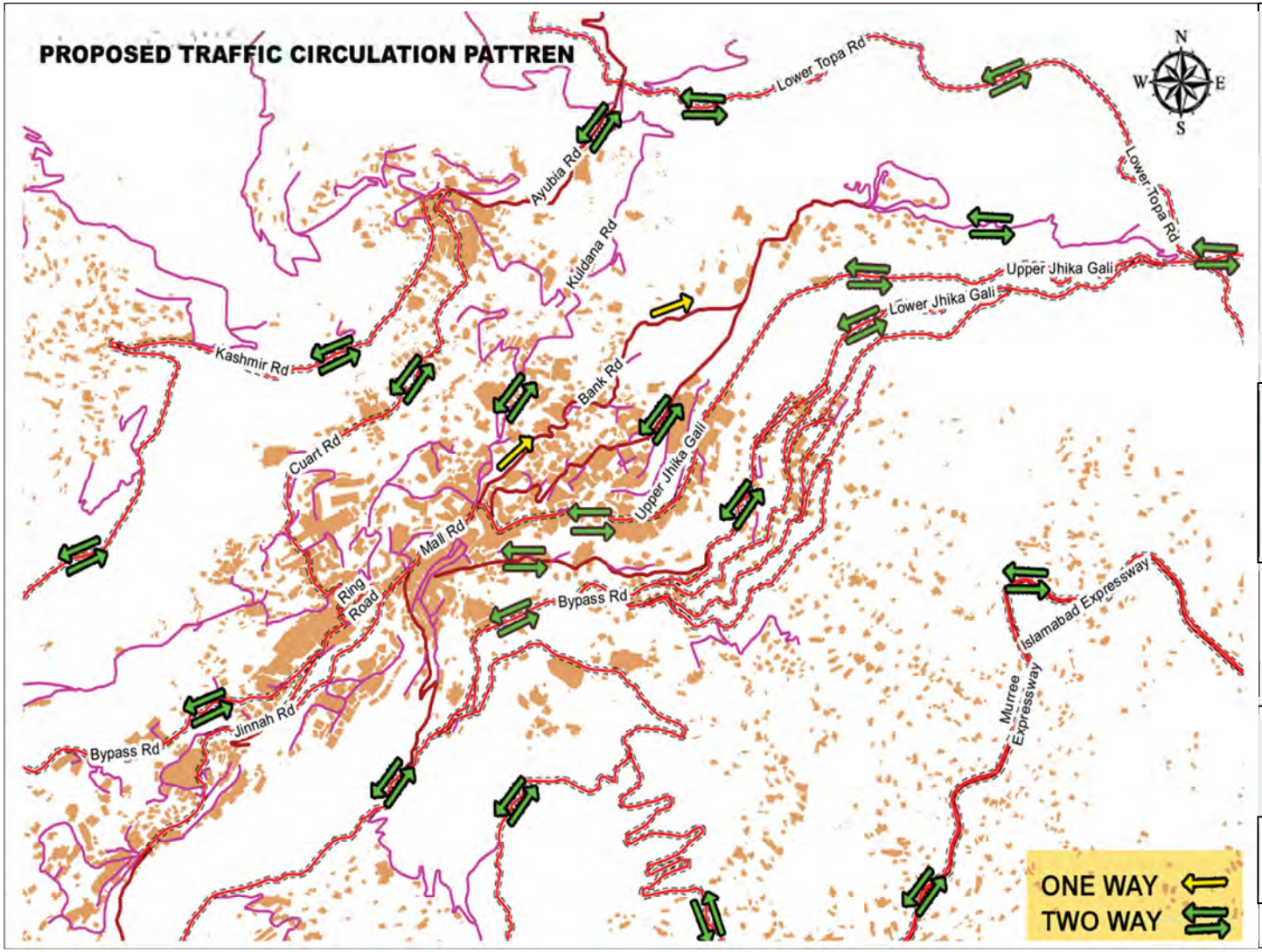
A-Widening, augmenting walkways and extension of existing infrastructure to the extent geology permits;

B- Other workable solution envisaged as off-Loading the existing system that eventually include diversion of visitor main or part influx to other identified clusters such as Bhurban_Alyot region and Patriata. This can also be supported by opening up of new potential "Tourism Zones" proposed in Punjab Tourism Sector Strategy 2010.

T-3 Walkability:

It is expected that proposed land-use plan will emphasize the creation of pedestrian-friendly spaces and environment.

- Master plan implementation must ensure that all new proposed development/redevelopment provide walking facilities. This includes, providing safe, user friendly, weather sensitive, direct and attractive pedestrian access between public sidewalks and building entrances. Especially in the areas like the Mall, Caurt Road, Imtiaz Shaheed Road and Bank Road
- To support walking through promotion and education initiatives that address issues such as personal security; safe behavior by vehicle drivers, cyclists and pedestrians; and promotion of the health and environmental benefits of walking and cost comparison of the private and public travel choices.
- To prepare a Pedestrian Plan within one year of plan adoption, which will outline guidelines and standards for pedestrian facilities and circulation, identify discontinuities in the pedestrian network, and develop a network implementation strategy. The plan will guide the TMA in the development and implementation of new programs and facilities to encourage tourists to walk and to reduce their dependence on the automobile.
    - To improve vertical climbing links between major urban arteries to enhance walkability and reducing looped travel distances.



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TRAFFIC CIRCULATION PATTERN

0 0.5 1 2 Km

T-4 Multi Modal Mobility Option:

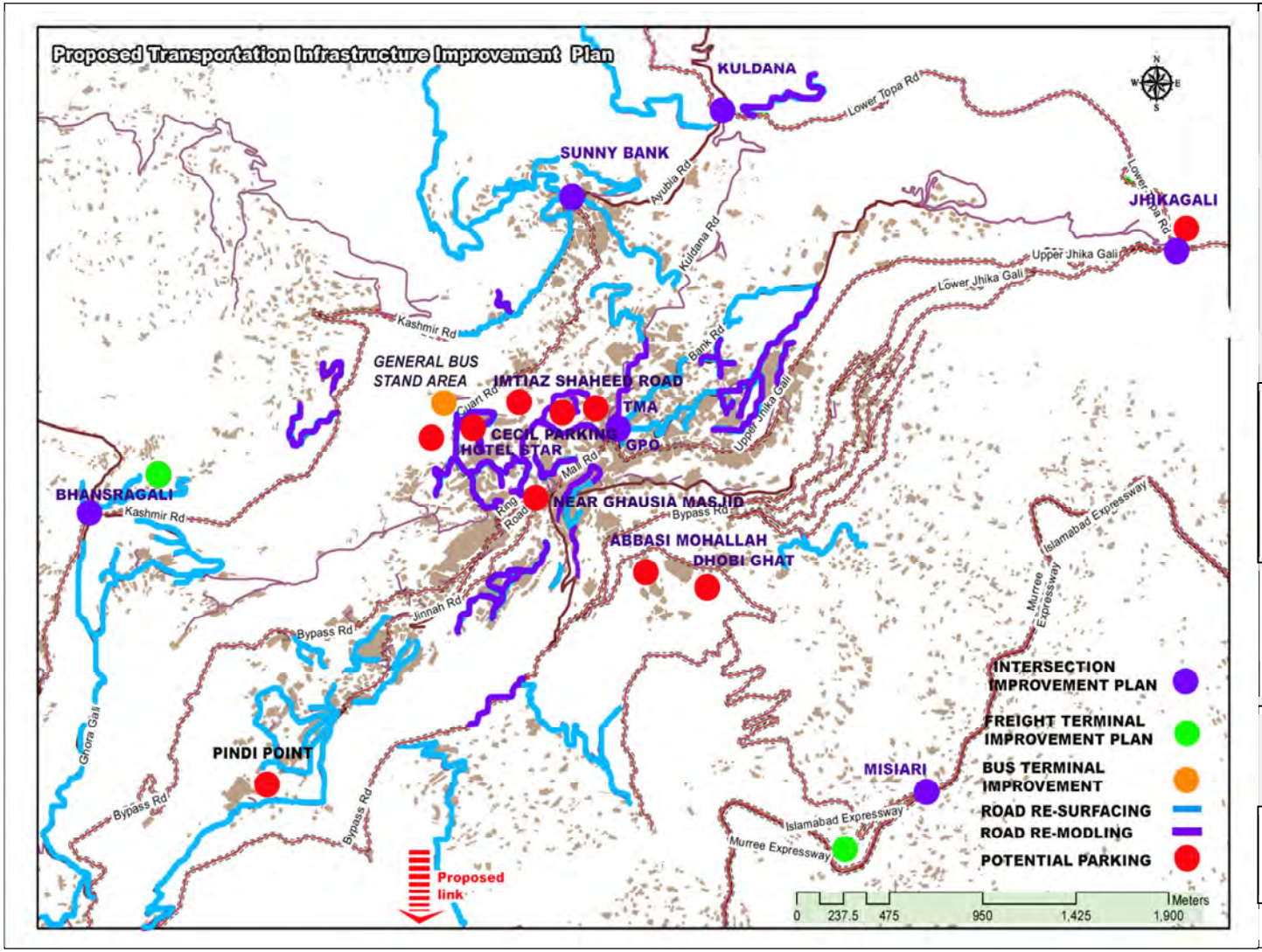
- It has to be ensured that land use planning and development must integrate with the provision of multi-modal transportation network linking highways / outer arteries to the outskirt parking facilities (as already identified and proposed around Jhika Galli, Dhobi Ghat etc.) and further urban core and vice versa.
- Town must have a variety of inter-connected transportation choices as alternatives to the automobile (transit, jitneys, medium sized eco-friendly modes like vans /mini-buses having capacities not more than 15 persons, bicycle and pedestrian pathways). This layered system should form a functional and efficient network measured by the total number of person trips.
- It is evident that MOV like a airconditioned bus can accommodate as much as 45 passengers and occupies only 2.5 times space of a car whereas its carries 15 times more passengers.

  During the past decade some inter-city bus services has established their network service countrywide and having terminals in every major city of Pakistan. It is, therefore, proposed that TDCP in collaboration with any such inter-city operator can initiate a shuttle service from Rawalpindi terminal (after every 30 minute in peak season and after every one hour in off-peak) to Murree. As the Consulatants have already proposed improvement of Murree GBS and this upgraded facility could be handed over to the selected operator for the proposed mass commuting service. If this service generates 36 trips (after every 30 minutes for 18 hours a day) with 40 passengers per trip, it is expected to carry 1440 tourists to Murree each day and thus replacing 480 cars. Such initiatives can also be taken up with the help of other local and international transport operators (fulfilling certain pre-qualification criteria) and those could be facilitated on other transit terminal site proposed on N75-Bypass Road intersection (see transportation proposal map). This solution will help in reducing SOVs like cars in the long run.
- This proposal can be implemented for early mid-term, however, in the long run suburban parking nodes shall be operationalized and public transit shall replace the mobility of cars in central core

T-5 Parking Demand Management:

The TMA Murree is advised to develop a Parking Management Strategy on earliest while following strategic directions, these solution are expected to counter the current demands and expected to serve the pupose till the time public transit modes and improvements for pedestrian infrastructure get done, these are;

- Identify the rise in parking demand on regular periodic basis and study demand variations / sensitiveness to regulation impositions and strategic revisions
- Declaration, design and construction of vital infrastructure on identified parking potential sites in close proximity to the outer junctions like Jhika Galli, Bye pass road, Bansra Galli, Sunny Bank etc. It is expected that proposed dedicated parking facilities in suburban precincts (MIT, Bansra Galli, Murree Brewery, Chitta Mor, Dhobi Ghatt and Bhurban) alongwith mendatory parking spaces in commercial / residential/ lodging structures will add another accumulative parking space for around 35000 car spaces (as shown in table 5.1 above). It is also hoped that intercity MOVs, itra-city transit modes and enhanced pedestrian infrastructure will reduce car dependency and eventually reducing parking demand as well.
- Identify the potential of converting TMA / Govt. Institutions owned properties located in the central core for their conversion to parking where feasible (only till the time public transit modes and walkability improves). Ground can be used for charged parking whereas First floor may be allocated for already intended uses. TMA's central office at GPO chowk may be taken as a pilot project.
- Carry out a comprehensive study of existing incomplete structures within the urban core, which have been halted due to violations and shall further explore the potential of these structures / lots for their conversion to the parking owned by the current owners.
- Identify other public sector owned un-built parcels available within the urban core for their conversion to the open terraced parking lots without tempering geology.
- Management of peak hour demands through strategies like timed parking, priority / peak commuting/parking pricing and off peak incentives.
- Strive for increasing the potential of existing lots through redevelopment / redesign for early short term.
- Identify and register existing parking stock to impose an equitable / uniform parking charge policy as it is envisaged that hospitality owners tend to reduce parking charges to attract more customers.
- On street parking has been envisaged the biggest impediments to smooth traffic flow, it is suggested that TMA Murree to reduce this phenomenon as much as possible in short term and gradually restricting it as soon as peripheral parking facilities get operationalized.
- Exploring design for geology supporting parking arrangements like open terraced parking to prevent slope failures.



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PROPOSED TRANSPORTATION INFRASTRUCTURE IMPROVEMENT PLAN

T-6 Freight Movements & Terminals:

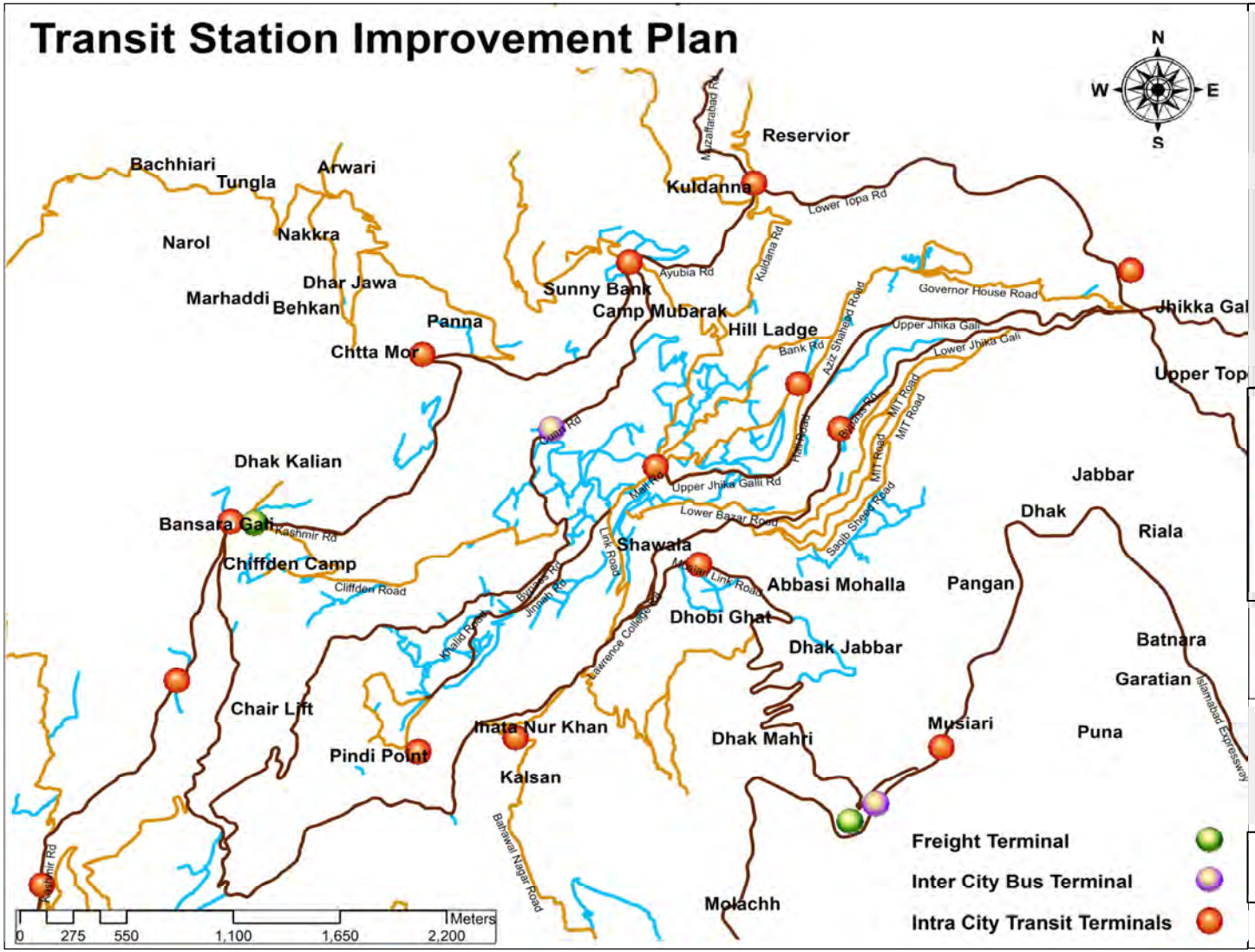
- Reduce /restrict the impact of heavy freight truck traffic movement in urban core (especially on Bansra Galli-Lawrence college/bypass section), however small and medium sized transit vehicle shall be allowed to deliver goods at off-peak night hours only.
- Movement of freight movement to AJK and other areas shall be encouraged to en-route through N75 reducing their impact on core urban arteries.
- The TMA will make arrangements to provide Terminal / parking facility along with other allied infrastructure to the freight traffic on outskirts to minimize their environmental and congestion impacts on urban core on proposed sites at N75-Byepass intersection. However, it is intended that such projects preferably be done in PPP tier and commuter must pay for added benefits to make such ventures economical sustainable in the long run.

T-7 Intercity Transit Terminals:

- The Policy aims to facilitate all inter-city traffic, vehicles / passenger movements by providing adequate vehicles parking bays (for Buses, Mini Buses, Vans and Taxis), waiting areas, food and services areas and other allied facilities at existing GBS and other proposed sites as shown in maps.
- Eco-friendly transit modes like medium sized vans (having capacity not more than 15 passengers and occupying not more than 2 PCUs should be encouraged to operate from transit terminals / parking lots to central urban core.

T-8 Enhancing Efficiency through Right of Ways Protection & Rehabilitation:

- The policy aims to enhance efficiency of Transportation System in Murree through protection of right of ways against physical damages caused by routine traffic operation, damages caused by natural hazards like snowfall, rainfall/lansliding and on-street parking. TMA and /or highways department jointly or independently expected to devise a comprehensive periodic mitigation plan for physical protection of right of ways.
- It is also desired to protect right of ways against physical encroachments like kiosk, stalls, building extensions beyond legal boundaries etc. TMA building regulation must include clauses for compounding such developments which restricts smooth flow of vehicles. A continuous monitoring mechanism is also recommended.
- TMA must execute the repair / re-surface roads / streets within the urban core to enhance mobility and accessibility especially in Pindi Point, Shawala, Imtiaz Shaheed Road, Khalid Road, Jesus & Merry Road, Bye Pass and Lower bazar vicinity in short term plan phase and continue this practice over the entire plan period.



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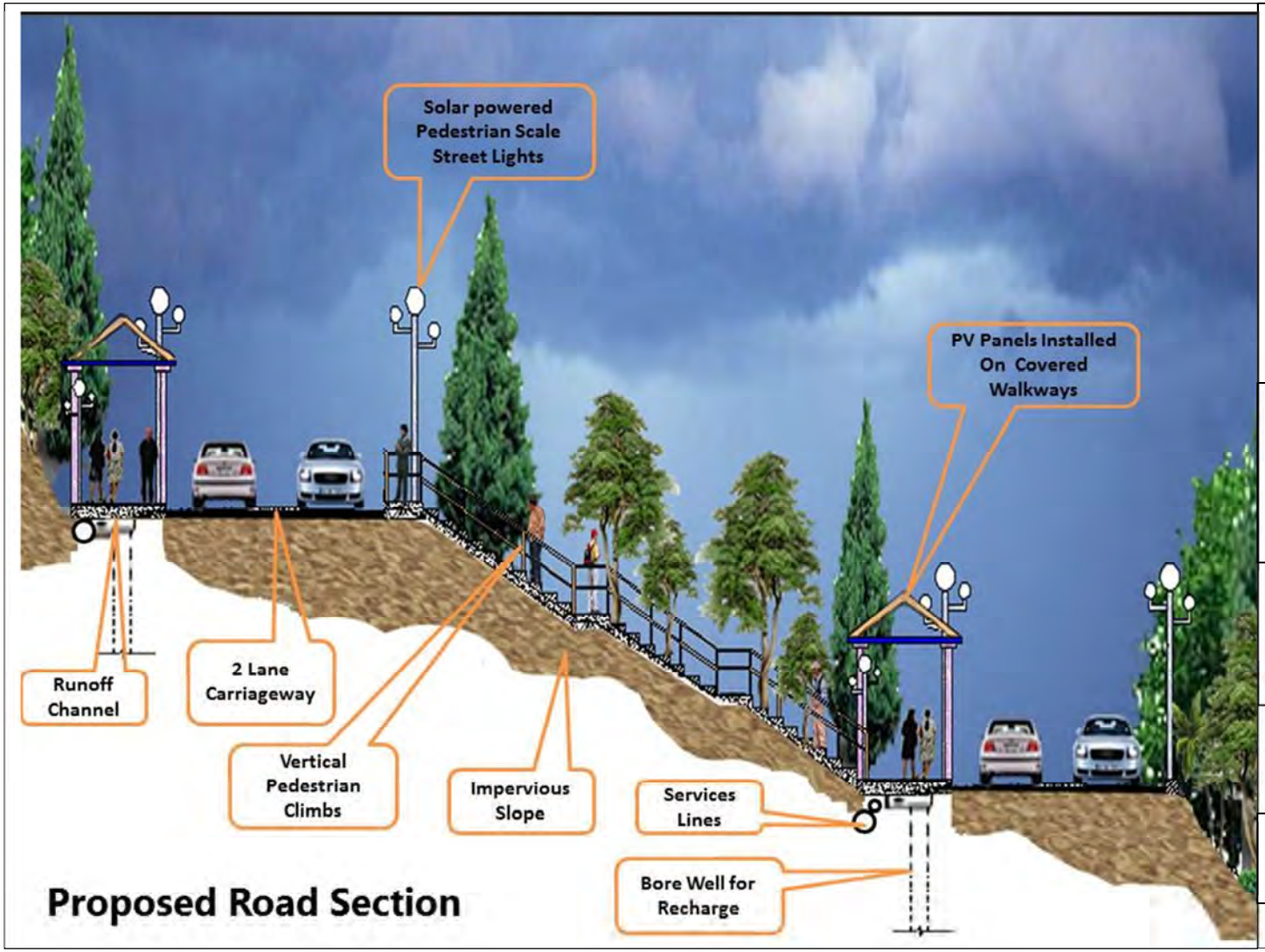
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TRANSIT STATION IMPROVEMENT PLAN

SHEET #



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WASTE MANAGEMENT PROPOSALS

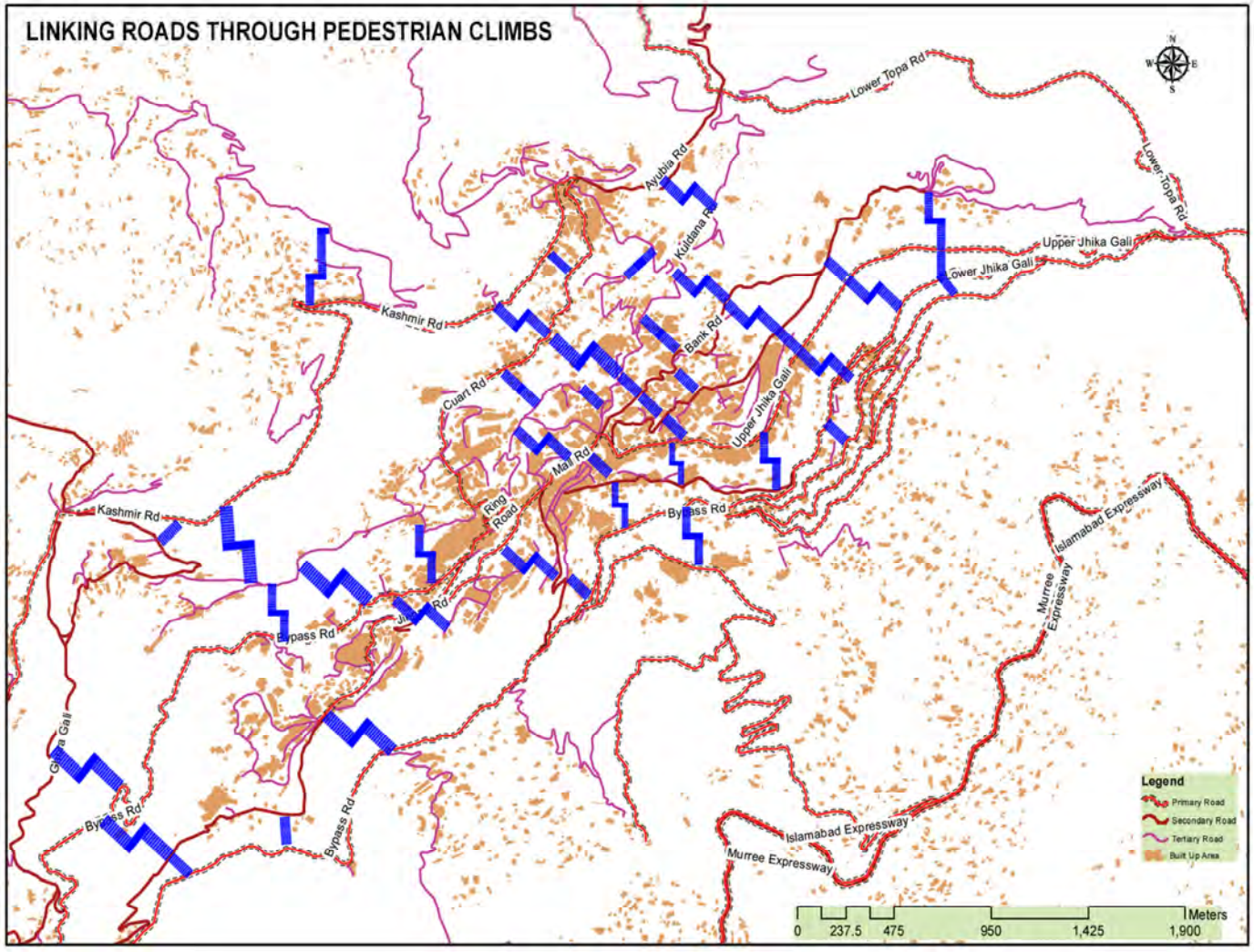
T-9 Ropeway System & Elevated Cable Cars:

- Efforts should be made to materialize proposals for the installation of eco-friendly ropeway systems, cable cars and allied projects already evaluated as feasible in the past and further identified in this report. These can evidently serve both leisure and shuttling purposes without any environmental impacts.
- It is also recommended to encourage private sector for the execution of such projects in PPP tier.
- Regular maintenance / up gradation of already installed facilities at Pindi Point & Patriata should be done on regular basis to ensure commuter's physical safety against mechanical failures.

T-10 Transit Oriented Development; an Option for Mobility in Murree:

- In its simplest terms, Transit Oriented Development (TOD) is defined with its most common features such as being compact, mixed-use development near transit facilities and high-quality walking environments. Murree will continue to grow spatially along the proposed growth corridors and precincts. The Consultants propose that the new development should be directed along the public transportation nodes thus reducing the private car dependency. The locals and transient population is encouraged to use the mix of public transport (special mini-buses/vans with mid sized cargo-carriers; coasters; ropeway system). The transit stations / nodes could be surrounded with compact, mixed-use, pedestrian-friendly neighborhoods, or office / commercial clusters. Although such development would not eliminate the need for cars, it would increase the opportunity and the feasibility of taking transit for some people, particularly for the commute to work / exploring Murree from tourists' point of view and thus enhancing pedestrianization.

- It is very important to foresee that Murree's spatial growth stemmed from a smaller tourist town with village settlements in its surrounding. Over the period of time these villages like Misiari and Nambal have now become the part of main urban fabric. The new transit roads will be spreading the built-up area of Murree town; however, the utmost care should be taken in strengthening / revitalizing existing urban villages and parts. TOD can be seen as an opportunity to serve such settlements and making mobility and accessibility the prime focus of transportation system in Murree. (See illustration for major transit stations).



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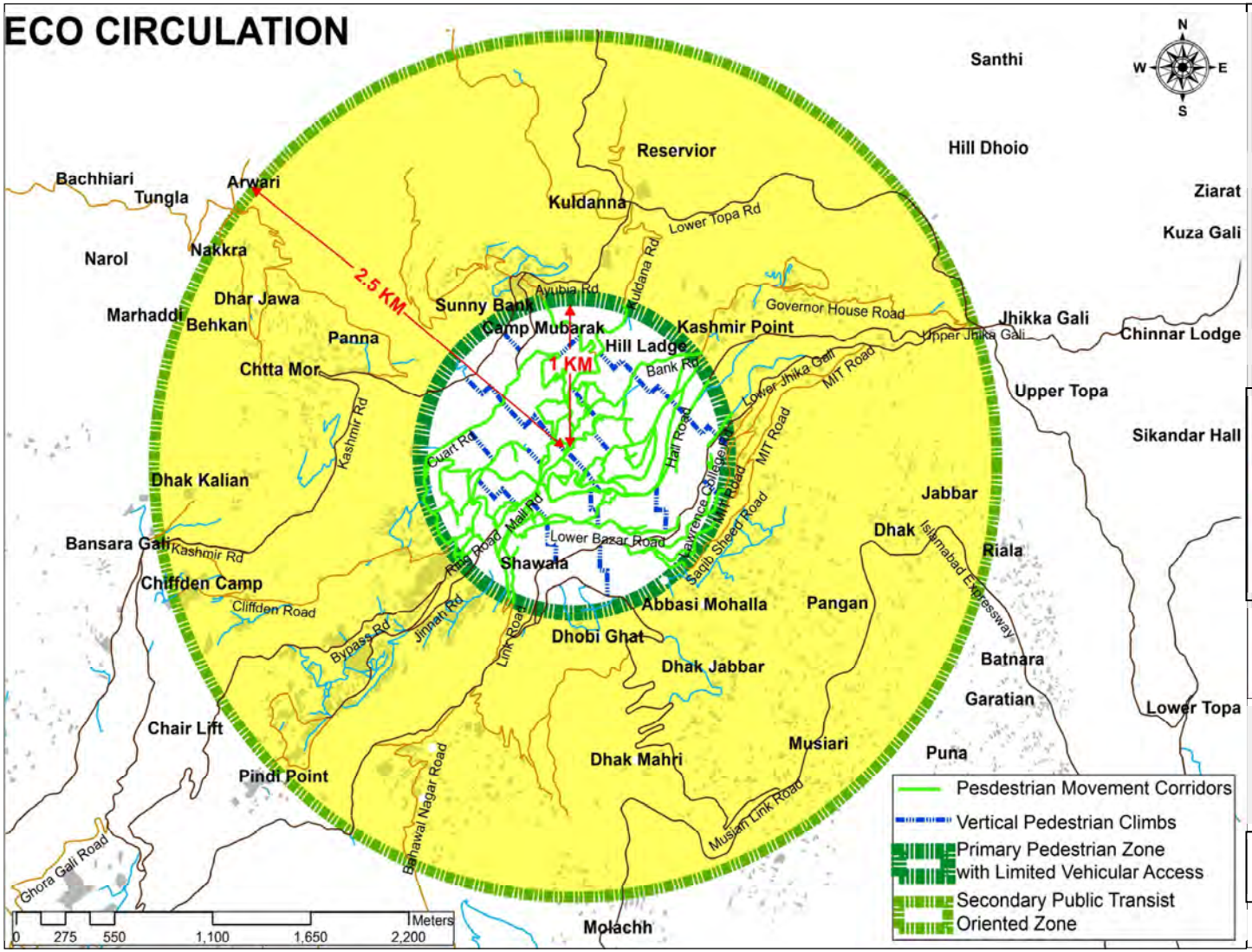
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LINKING ROADS THROUGH PEDESTRIAN CLIMBS

SHEET # -a **SCALE: N.T.S**



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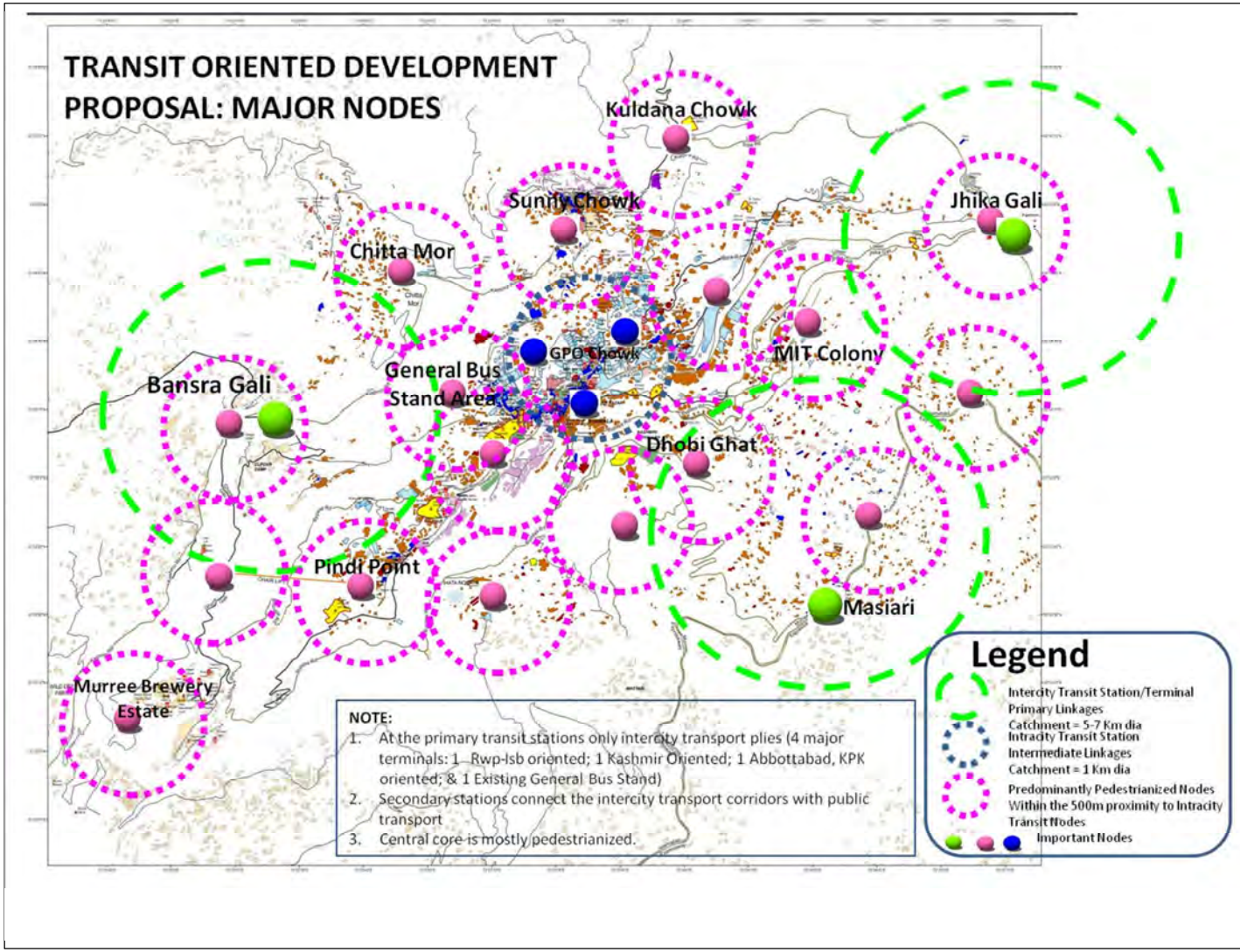
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ECO CIRCULATION

SHEET #



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Murree Transit Oriented Development Proposal

SHEET # -a **SCALE: N.T.S**

INSTITUTIONAL AND IMPLEMENTATION FRAMEWORK:

All the proposed policy directions are expected to be implemented by and through the following arrangements;

- Transportation infrastructure management shall remain a prime responsibility of TMA in urban core. TMA shall also take up additional responsibilities assigned as policy components in above sections and shall supplement bye-laws to support these proposed additional functions.
- Federal and provincial highways departments shall remain responsible for the management of two main strategic corridors i.e. MKR & N75.
- CDG Rawalpindi shall continue supporting management / augmentation of infrastructure in Murree Tehsil.
- Traffic management is a prime responsibility of City Traffic Police through its inherent laws / regulations.
- Tourist traffic awareness campaigns are expected to be initiated jointly by TDCP, City Traffic Police and the community (CBOs & NGOs).
- Building control, registration of transportation related infrastructure both in private & public sector , protection of right of ways and other transportation facilities against physical damages & encroachments, identification of prospective future sites etc., all still remain a prime responsibility of TMA Murree.
- TDCP is expected to initiate future development projects through PPP tier preferably (as a prime focus shift is being envisaged largely from Public to Private); however, TMA, TDCP & Provincial Tourism Minitry shall still desire to hold their prime responsibility as regulators / supervisors. Such projects may include development of parking facilities, induction of eco-friendly transit mode operation, installation of ropeway system and any other identified in future.
- TDCP shall encourage private sector to start shuttle service between Lahore-Murree and Rawalpindi-Murree using eco-friendly medium sized community / public transport vehicles (to support terrain / geology limitations of Murree road infrastructure), this will eventually reduce the use of personally owned vehicles for tourism.

(Note: To have detailed understanding of Policy Segments Implementation Framework and Phasing and Implementing Partners, refer to the Matrix given in Appendix 2)

KEY PROJECTS FOR SUSTAINABLE TRANSPORTATION:

A- Catalytic Short Term Projects:

1. Re-surfacing of Primary and Secondary Road network.
2. Design/Construction of all tertiary roads identified in road condition map. TMA must execute the repair / resurfacing of roads / streets within the urban core to enhance mobility and accessibility especially in Pindi Point, Shawala, Imtiaz Shaheed Road and Lower bazar vicinity in short term plan and continue this practice over the entire plan period (it further includes the rehabilitation of Jesus & Marry Road, Khalid Road, Bypass Road etc.).
3. Enhancing walkability through
    - Augmenting ancillary walkways along all primary, secondary and tertiary roads.
    - Plan to curb on street parking by imposing fines, parkers must be encouraged to park at outskirts terraced facilities as identified. These facilities shall be initiated parallel to the development of walkways.
    - Declaring The Mall, Caurt Road, Bank Road and all new proposed suburban commercial development year round pedestrian zones.
    - Improvement of exiting treks and augments new.
    - Provision of all-weather walkways. Surfaces provided should reduce slippage in rain and snow. Covered walkways are advised.
    - Design/construction of vertical walk able climbs/ links as proposed in maps.

4. Re-construction of two storeyed General Bus Stand building with bus parking bays, car parking,parking for intra-city transit vehicles and ticketing counters on ground floor and passenger waiting lounges and allied facilities on first floor.
5. Installation of safety fences/grills on slope side of every road.
6. Design/construction of freight terminal with allied facilities on site proposed on Expressway near Missiari Bypass link.
7. Design/construction of open terraced parking facilities at proposed Bypass Road, Dhobi Ghatt, Missiari, Bansra Galli, Chitta Mor, MIT Scheme, Murree Brewery and Ghora Galli sites identified in proposal.
8. Construction of intra-city mass transit terminals for medium occupancy vehicles (12 passenger capacity vans) with allied facilities on Bansra Galli, Jheeka Galli, Chitta Mor and Dhobi Ghat proposed sites.
9. Design/installation of illuminated signage, guide maps, signals on all roads / intersections. It include walk/don't walk signals as well.
10. Redesign and improving geometry of Jheeka Galli, Chitta Mor, Sunni Bank, Kuldana intersections on priority.

11. Implementation of traffic management plan with route planning for transient population and intercity mass transit system.
12. Online public facilitation and information system design for transportation demand management and route planning at tourist end.
13. Construction of Alliyot-Bhurban link and site declaration for commercial and hospitality projects as identified.
14. Design/construction of vertical links/climbs as proposed.
15. Installation of meters in all new proposed parking facilities.
16. Identify the potential of converting TMA and Govt. Institutions owned properties located with the central core for their conversion to parking where feasible. Ground can be used for metered parking whereas remaining floors proposed to be used for already in practice use.

B- Medium & Long Term Projects:

1. Mass transit system will be initiated by injecting terminals, out skirt parking and terrain friendly vehicles on selected routes in early short term and expected to take over all Murree Urban displacing car rides within a period of 2 years onwards.
2. Maintenance plan for all Primary, Secondary and tertiary Road network.
3. Soil stabilization along all right of ways to prevent slope failures using proposed bio-engineering techniques on priority basis.
4. Initiating TDCP bus service from Lahore, Multan and Rawalpindi. This will eventually help decreasing car influx.
5. Plan for enhancing efficiency of Transportation System in Murree through protection of right of ways against physical damages caused by routine traffic operation and damages caused by natural hazards like snowfall, rainfall and land sliding. TMA and /or highways department jointly or independently expected to devise a comprehensive mitigation plan for physical protection of right of ways.
6. Installation of proposed ropeway system to facilitate and lift outskirt parkers to central core. These alignments include Dhobi Ghat / Misiari to Qasab Market, Bansra Galli-Pindi Point, Dhobi Ghat-Pindi Point, Chita Mor-Caurt Road, Lower Topa-Patriata and Jhika Galli-Kashmir Point.

2.4 SUSTAINABLE ENVIRONMENTAL MANAGEMENT PLANNING:

The future of Murree's tourism is inextricably linked with the quality of its inherent environment. Its scenic landscape, forests, biodiversity and historical heritage are the bedrock upon which local tourism has been built. The economic viability and competitiveness of local tourism industry can only be sustained if the quality of these resources is restored and maintained. Now, more than ever, Murree's tourism potential and its survival rely on strong and appropriate environmental urban policies.

As a common property resource, the environment is vulnerable to damage and exploitation because people can benefit from it without any sense of payment to any other owner (tragedy of commons principle). This misuse and overexploitation of resources results in conflicts and environmental disasters which have to be avoided and resolved through a variety of policy interventions including laws, regulations, agreements, charges, and right allocation and other such measures.

Tourism and Environment

In the Qualitest Survey, the visitors repeatedly confirm that Murree is prized by thousands of tourists every year for its clean and green image.

- 90% of the visitors mentioned Murree's scenery as an important reason for visiting Murree,
- 68% of the tourists stated that they were attracted by the natural unspoilt environment.

In the past, Murree has successfully benefitted from its positive environmental image for decades but unprecedented economic and urban growth in recent years has put the quality of this core tourism product under increasing pressures.

These "strategic environmental assets" which are vital for the sustainable growth of tourism and livelihood of local inhabitants, should be safeguarded from encroachment and damage by inappropriate development. These assets include forests, beautiful landscapes, good water quality, and clean air, the setting of historical buildings and monuments and biodiversity.

The future of Murree as an ***attractive tourist destination*** depends upon the continuing credibility of its clean and beautiful environmental image. It is therefore, mandatory that Murree lives up to its reputation as a tourist station with:

- Great natural beauty,
- Distinctively neat and clean environment and dwellings,
- High-quality facilities, and
- A superb, un-spoilt environment for out-door activities.

Environmental Challenges:

The unregulated and unprecedented rate of development over the past 20 years has brought many benefits to local economy. However, this tourism growth is closely linked with environmental degradation, often resulting in many negative impacts on the quality of tourism potential of the area. The negative effects of these developments have been described in the previous chapter.
The main environmental challenges which need to be addressed to ensure continued benefits to tourism in Murree include:

- *Ensuring sustainable and coordinated management of development in the area,*
- *Managing threats to forests and biodiversity,*
- *Managing the increasing generation of waste,*
- *Controlling litter in urban and rural areas,*
- *Controlling environmental pollution (air, water, soil etc),*
- *Promoting the principles and practices of sustainable tourism and urban development,*
- *Minimising the environmental impacts of tourism related activities,*
- *Improving energy efficiency, waste management, and water conservation within the area and*
- *Dealing with traffic congestion and damage to infrastructure and their environmental impacts.*

POLICY COMPONENTS:

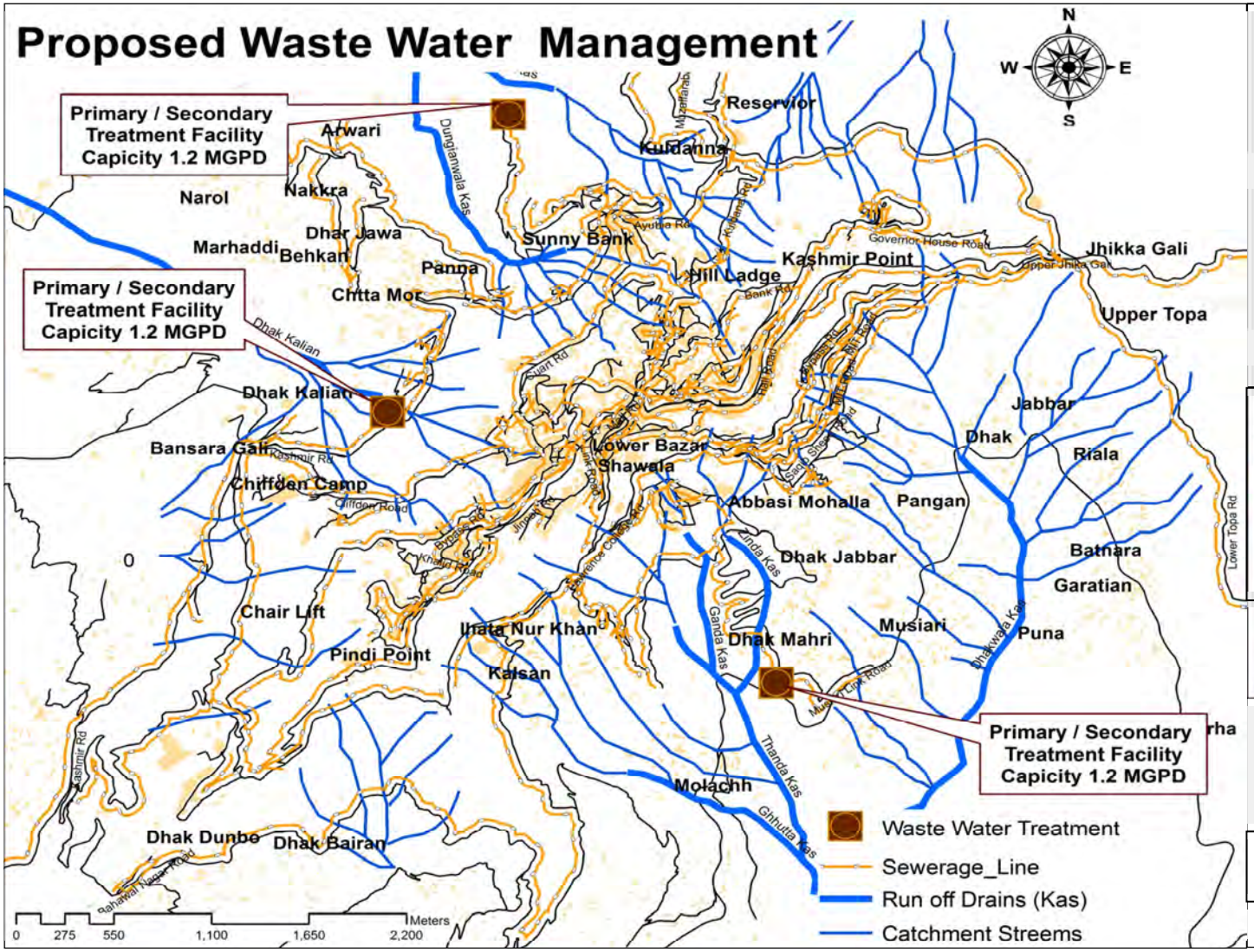
E-1. Solid Waste Management;

Policy/Knowledge/Information Gaps

- There is no well-defined integrated waste management strategy for Murree.
- There is lack of reliable data/information on solid waste generation, its types and disposal methods etc.

Policy Recommendations

Achieving 'perfect' solid waste management is a challenging goal, and it involves the collection, storage, transportation, processing, treatment, recycling and final disposal of waste. The strategy should be simple, affordable, sustainable, (financially, environmentally and socially) and should be equitable, providing collection service to poor as well as wealthy households. SWM should aim to improve the environment,



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PROPOSED WASTE WATER MANAGEMENT

SHEET #

provide direct health benefits, support economic productivity, and provide safe, dignified and secure employment.

- E.1.1. Stoppage of open dumping of domestic and commercial waste and provision of adequate facilities (bins, biodegradable plastic bags) for temporary storage of waste
- E.1.2. Gradual segregation of recyclable and non recyclable waste at source
- E.1.3. Introduction of hygienic methods of storage of waste from vegetable markets and slaughter houses
- E.1.4. Use of standard methods for storage and disposal of hospital/clinical waste
- E.1.5 Placement of liter bins at public places and along roads to curb public littering
- E.1.6. Introduction of appropriate system of waste collection ensuring collection of waste from doorstep and from the community bins on regular basis
- E.1.7. Synchronization of waste collection system with storage/segregation system
- E.1.8. Improving current sweeping of roads/commercial areas by providing extra-manpower, improving management and mechanical sweeping
- E.1.9. Establishment of bulk storage depots for temporary storage of waste collected from neighbouring areas
- E.1.10. Regular transport of waste from temporary depots to disposal site
- E.1.11. Phased replacement of manual loading/handling of waste by mechanical handling to avoid spillage of waste
- E.1.12. Development of a proper facility for treatment and disposal of waste
- E.1.13. Gradual introduction of Three R's System of resource management (reduce, recycle, reuse), *(Public education and awareness campaigns should be launched to adopt three R's system of urban resource management)*.
- E.1.14. Introduction of system of taxes/fines to sustain financially, waste management system and discouraging unhealthy habits such as open littering, dumping of waste etc
- E.1.15. Improvement of organization of solid waste management in TMA Murree through induction of professionals (environmental engineers), training of workers/supervisors and purchase of new vehicles (dumpers, pickups, mechanical sweepers)
- E.1.16. Information, education and propagation activities to create awareness and educate public about healthy civic activities through special awareness campaigns/programs, putting up hoardings and other publicity methods

<u>Technological Interventions</u>

Collection of waste,

- An immediate measure to revamp the existing inefficient collection service is to provide community waste bins conveniently placed for the people to deposit waste especially at public places (Kashmir Point, Pindi Point, Jhika Galli, Sunny Bank, Patriata etc). These waste bins should be placed on easily visible/accessible places and be painted with bright colours to attract visitors

to use these bins.

- In residential areas, two types of bins may be introduced gradually to the segregation of biodegradable and non-biodegradable waste at source.
- All hotels and large restaurants in busy areas such as Mall Road, Kashmir Point and Pindi Point be encouraged to store their waste in sturdy containers with 100-200 liters capacity,
- In vegetable/fruit market, the traders should be advised to keep large metallic containers with lids for the storage of waste,
- The slaughterhouse and meat/poultry shops be directed to store their waste in special containers and TMA will collect this waste in specially designed collectors for safe disposal of this waste. .
- All the business centers/hotels may be charged according to ***Polluter Pays Principle*** for their waste collection and transport.
- Sweeping of roads and streets by human labour or mechanical sweepers should be arranged by TMA Murree on daily basis particularly in areas of tourist pressures such as Mall road, Kashmir and Pindi Point, Jhika Galli, Sunny Bank and Kuldana.
- At present, TMA has only 146 sanitary workers. Their number should be increased and each sweeper should be assigned a specific length of road/street or area for sweeping and collection of solid waste.
- The management of solid waste collection/sweeping should be decentralized and Murre City should be divided into wards. The ward office shall look after the primary collection of solid waste and sweeping in its jurisdiction.
- On the roads with heavy traffic load (Cuart road, Upper & Lower Jhika Galli roads, Mall road, Bank road, Kuldana road) and commercial activities, it is not possible to do proper sweeping in day time. These roads should be cleaned at night when traffic density is low.

Transportation of Waste

- Improvement of waste transport facilities*,(At present, TMA has only two old vans for transport of collected solid waste in Murree which is insufficient to cater to the needs of the proper solid waste transport)*.
- Transportation schedule of solid waste should be divided for different wards.
- Provision of at least 5-10 covered, waste transporting vehicles to TMA Murree to collect waste from local containers and transport it to temporary storage.
- To meet the deficiency of infrastructure, these vehicles could be utilized in two shifts.
- With passage of time, motorized small vehicles should be introduced for transport of waste from small and narrow streets.
- Private sector can be involved in transport of solid waste to temporary depots.

Treatment and disposal

- At least 3-4 temporary depots/transfer stations (Dhobi Ghat, Sunny bank, Chitta Mor, Lower Jhika Galli Road, Thanda Jungle) for temporary storage of collected solid waste should be designated and developed for temporary storage of waste).
- At the places where temporary storage depots cannot be established, covered, metallic containers (4-5 Cubic m) may be placed at regular distance or near large hotels/markets.

- Imposition of waste collection fees/taxes on marriage halls, building contractors, large hotels and homes to meet financial requirements of an appropriate solid waste management system

- Adoption of modern waste reduction methods such as Material Recovery Facility. By this technique, re-useable material from the waste can be separated and it reduces the amount of waste to be disposed by 60-70%. Material Recovery Facility should be established near a composting site along Express Way (Fig. 218.a)
- Since organic materials constitute the major component of municipal waste, composting/biomethanation may be adopted as a sustainable solid waste management option to use solid waste as a resource.

E-2. Water Resource Management:

Policy/Information/Knowledge Gaps

The lack of a comprehensive water management system in Murree has caused many adverse impacts among which the following stand as significant:

- A proper legal framework for regulating withdrawal of water from ground and its disposal,
- Lack of efficient use of water resources,
- Frequent incidents of water shortage,
- Continuous deterioration of water quality
- Prevalence of unrealistic and unattainable plans,
- Non-objective oriented programs and policies,
- Lack of operation and maintenance activities of water schemes, and
- Adhoc development practices lacking coherent objectives and continuity.

The overall goal of water resource policy is to enhance and promote all local and regional efforts towards the efficient, equitable and optimum utilization of the available water resources for regular socio-economic development on sustainable basis.

Policy Recommendations

E.2.1. Sustainable supply of water on equitable basis to all residents through inextension in current piped water network to all areas of Murree, *(Due to financial constraints, poor local residents can not afford to buy clean water. This parity should be removed by putting some levy on tourists and rich people and water supply for poor sections should be subsidized).*

E.2.2. Conserving existing water resources through:

1. Rainwater harvesting *(Murree has reasonably good potential for increasing its water supply by adopting conservation measures such as rain water harvesting. The consultants have estimated that Murree urbanites can collect and store millions of gallons of rain water (upto 370 million gallons) per year if old system of*

rain water harvesting by each building is adopted).

2. Building small reservoirs in rural areas, *(In rural areas, small dams/reservoirs may be built to store and use rain water for various* purposes).
3. Protecting aquatic habitats
4. Reducing water runoff through reforestation.*(Increasing tree and plant cover and maintaining the present forests can help in reducing run off, increase infiltration, and reduce soil erosion*).

E.2.3. Managing and combating drought and other associated slow on-set disasters through ***interalia,***

1. *Efficient allocation,*
2. *Redistribution,*
3. *Transfer*
4. *Storage and*
5. *Efficient water use.*

E.2.4. Collection and disposal of sewerage water in hygienic manner to achieve 100% sanitation coverage to Murree to minimise threats to local environment and health risks to inhabitants of Murree and downstream areas

E.2.5. Phased introduction of separate networks for collation and disposal of sewerage and runoff water from rains

E.2.6. Regular cleaning of waterways/drains to avoid clogging and overflow

E.2.7. Achievement of open defecation-free city by providing public toilets in all areas of city

E.2.8. Establishment of environmentally sound waste water treatment facilities

E.2.9. Revision of the present governance and implementation sanitation framework to achieve sustainable sanitation services and attain financial and operational sustainability

Technological Interventions

- Separate collection of sewage water *Most of the sewage water from homes and hotels is disposed off indiscriminately into open spaces which makes its way into different channels, sub-soil and drains. To collect sewage, all the roads and residential areas should be provided with roadside drains and piped-water collection facilities in residential areas. It is an expensive option and should be implemented in phases with site-based analysis of each scheme.*

- Treatment and disposal *Provision of properly designed and environmentally-safe waste water treatment facilities,(The most of the sewage water in Murree is drained thourgh 3-4 small drains into 1-2 large drains called KAS in North-West of old Murree-Rawalpindi Road. There is possibility of establishing 2-3 primary waste treatment plants (one along Kashmir road between Sunny Bank & Chitta Mor) and other along the express way. (At these sites, sufficient space is available for establishing facilities for physical and primary treatment of*

waste water).

- Cleaning of drains. Cleaning of drains should be carried out regularly to permit free flow of water in these drains. This is particularly necessary for drains collecting sewage and runoff water from high-density areas such as main urban core, MIT colony, Sunny bank, Chitta Mor and Kuladana.

E-3. Air Pollution Control

Though Murree is famous for its clean and pure air, recent influx of automobiles and vehicular traffic has put its air resources in stress in form of higher levels of air pollutants. Air pollution control must be a core area for development of Murree as an environmentally safe tourist city.

Policy/Information Gaps

- Lack of proper land use planning and its implementation leading to unplanned settlements and traffic growth affecting public health,
- No separate transport policy exists and there is lack of coordination between various government agencies in this sector,
- Poor system for collection and dissemination of transport-related data.

Policy Recommendations

E.3.1. Implementation of Motor vehicle emission standards in the city,

E.3.2. Regular appointment of special traffic police and EPA squads to control violation of air quality standards by vehicles,

E.3.3. Management of diesel using goods-carrying vehicles on old Pindi-Murree road and N-75 express way

E.3.4. Promoting mass transit public transport system,

E.3.5. Establishment of an air quality monitoring facility at Murree for regular monitoring of air quality.

E.3.6. Greening of all roads in Murree with trees/plants to reduce impacts of pollution and create a clean and green atmosphere

E-4. Conservation of Biodiversity:

The one of the main attractions for tourists visiting Murree is its unique flora and fauna. This natural wealth however is under severe stress. The Master plan for Murree should aim to conserve nature and ecological processes in Murree by:

- Conserving habitat, species and ecosystem diversity of the area,
- Ensuring that the use of renewable natural resources (soil, forest, water, wildlife etc) is sustainable both now and in future, and
- Supporting activities reducing environmental pollution, wasteful exploitation and consumption of resources and energy.

Policy/Information gaps

- Lack of initiatives for protection of flora, fauna and important habitats of the

area,
- Poor implementation of forest and wildlife protection acts,
- Inadequate participation of local inhabitants/NGOs and other organizations in various government schemes,
- Inadequate information base for local biodiversity.

The objectives of any policy aimed at conserving biodiversity in the area should include following interventions:
The objectives of any policy aimed at conserving biodiversity in the area should include following objectives:

E.4.1. Introducing sustainable development practices there by linking conservation with human needs,
E.4.2. To maintain and enhance the biodiversity and ecological health of Murree region with particular focus on the conservation of threatened animals (leopard, red fox, black bear, barking deer) and decreasing vegetation types (moist temperate forest, herbaceous communities)
E.4.3**.** Regular monitoring of ecosystems, communities and populations of plants and animals in the region
E.4.4**.** Development of an environment management information system for Murree
E.4.4. Reducing environmental threats to local biota such as pollution, habitat destruction by influencing development and the practices of consumers and tourist community etc
E.4.5**.** Protection of the intact/undisturbed natural habitat patches in their natural condition,
E.4.6. Reintroduction of native species of plants into forest habitats where decimating factors have eliminated them and the natural recovery of these species is difficult
E.4.7**.** Continuous removal and control of invasive plants especially with high quality forest areas
E.4.8. Designate special habitat areas/reserves including unique habitats, plant communities or wild animals, with restrictions on their hunting/harvesting in these areas,
E.4.9. Promoting environmental education to increase awareness among masses about conservation of biological resources,
E.4.10**.** Celebrate a Forest/biodiversity Conservation Week in Murree on yearly basis to create awareness among tourists and general public.
E.4.11**.** Introduction of capacity building programs to train members of public and private organizations and departments to enable them to understand and tackle conservation issues of the area.

E-5. Forest Conservation in Murree:

E.5.1. Consolidating and expending the forest resources in Murree for their maximum sustainable yield,
E.5.2. Conserving forest by protecting other environmental resources such as soil, water and biota for effective sustained use,

E.5.3. Provision of fencing and other suitable protective facilities to protect high-value forest areas

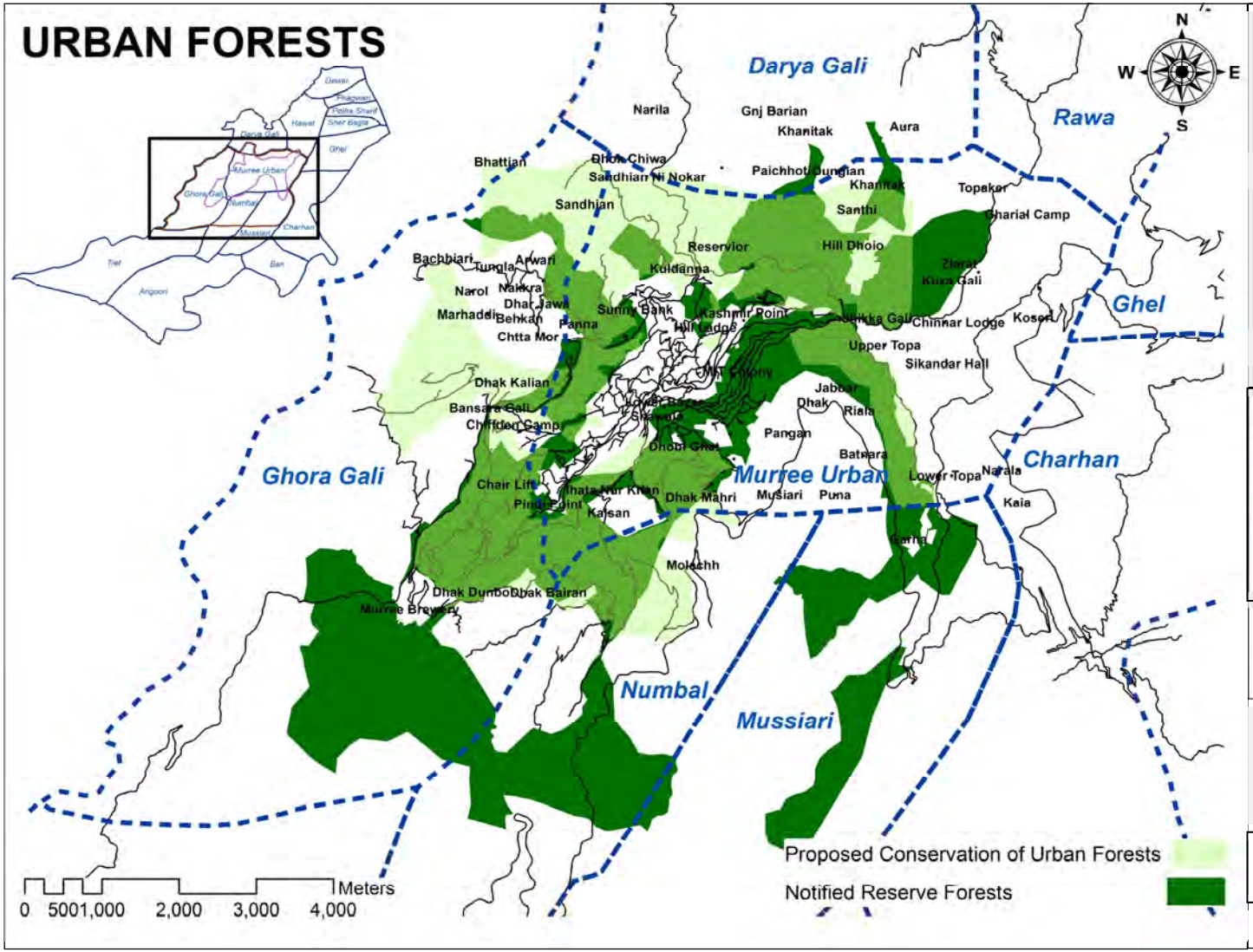
E.5.4. Clearing of plant-parts/pine-needles along roads/pedestrian paths in dry summer months to decrease the chances of forest fires
E.5.5.Regenerating the forest at a rate higher than that of exploitation. In this regard, special tree-planting days and weeks should be arranged by the Forest Department to involve public in forest conservation.
E.5.5.Periodic assessment of the Forest Working Plan (1995-2024) for Murree and Kahuta Tehsils to evaluate its results and suggest new recommendations
E.5.6. Encouraging agro-forestry by promoting necessary incentives and extension guidelines,
E.5.7. Developing special forest conservation areas. (Two wildlife parks/nature reserves should be established at Bhurban and Patriata.)
E.5.8. Capacity building of the Forest Department personnel through extensive training to improve their knowledge and expertise to protect and develop forests of the area,
E.5.9. Strengthening of the Forest Department by provision of latest equipment for fire control, monitoring and reforestation etc.
E.5.10. Creation of a Murree Forest/Biodiversity Advisory Board including representative from all stakeholder groups to advise on forest/biodiversity related issues.

E.5.11. To meet the future challenges of climate change, a pilot project to introduce REDD+ initiative/program for Murree forests should be launched.

E-6. Control of Soil Erosion and Landsliding:

Serious soil erosion problems exist in Murree due to long term anthropogenic activities and its erosion-prone land forms and climate. A diversity of soil erosion types throughout the area are caused by forces from water, gravity, water and wind mixture and freezing.

The role of indigenous soil erosion control techniques and slop stabilization have immense potential. Following soil erosion control techniques have great potential:
E.6.1. Bio-engineering Techniques: It involves use of wood or plant materials for slope stabilization. It may include dry seeding, hydro-seeding and use of standard seed mixtures (including grasses/herbs and legumenous herbs) for freshly exposed slopes such as newly cut surfaces or freshly created roadside verges.



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URBAN FORESTS

SHEET #

E.6.2. Terracing. Farmers can use hill terracing by cultivating crops on steep slopes.
E.6.3. Grass/herb planting. Maintenance of grass/herb cover on soil can hold the soil surface and protect it from erosion.

E.6.4. Reforestation. Increase in forest cover is the best option to mitigate soil erosion and reducing run off losses.
E.6.5. Live fencing. Fencing of crop fields by hedges/bushes can reduce the speed of runoff water and reduce soil erosion.
E.6.6. Selection of soil-binding plant species. Indigenous plant species such as Alnus, grasses and shrubs should be grown in erosion-prone areas.
E.6.7. Control of sewage and runoff water.If rain run off water or sewage water is spread evenly on the surface and slopes and it leaches down into lower strata on even basis, it will have little or no disturbing effect on the geological layers of the rocks. If however, its infiltration into soil is uneven and it continuously accumulates underground at certain points, it may seriously disturb the structure of underlying strata of soil leading to accelerated erosion and land sliding. It is therefore, imperative to manage the water (rain water, domestic sewage etc) keeping in view its effects on stability of soils and slopes in the area.

E-7. Floriculture

Despite having a strong resource base (favourable climate, cheap labour) for flower production, Murree lags behind in reaping benefits from flower production. The people of Murree have small landholdings where flower production is a viable option for improving the economy of rural areas and increasing employment opportunities. Floriculture in Murree can make an important contribution to modernization of local agriculture and strengthening national flower industry.

Policy Recommendations

E.7.1. Establishment of model flower nurseries by PHA and Horticulture department in Murree region to provide planting material and guidance to prospective flower growers
E.7.2. Study of potential of cultivation and marketing of popular flower species such as Rose, Carnation, Statice, Marigold, Gladiolus, Narcissus, Freesia, tuberose and lily
E.7.3. Provision of cold-chain storage facilities for farmers to avoid loss of harvested flowers
E.7.4. Efficient extension facilities including training/financial assistance and help in marketing for flower growers
E.7.5. Study of cultivation and marketing potential of medicinal herbs/shrubs found in the area

INSTITUTIONAL FRAMEWORK FOR ENVIRONMENTAL MANAGEMENT:

In Murree, the responsibility for environmental protection lies with the Environmental Protection Agency but various functions of urban environment are regulated by the District Government or Tehsil Government (TMA). The following are departments/agencies whose jurisdictions are relevant to various environmental issues;

- ***Tehsil Municipal Administration***, (land use development, building by laws, solid waste/water management etc)
- ***Tourism Development Corporation of Punjab***, Tourism development, recreational facilities, parks etc
- ***Environmental Protection Department of Punjab***, Pollution monitoring and control, hazardous waste management
- ***Department of Agriculture***, agriculture, horticulture,
- ***Livestock and Dairy Development*****,** live stock, poultry etc
- ***Forest Department*****,** Custodian of forest resources, management of logging, reforestation etc
- ***Wildlife Department*****,** Conservation of wildlife,
- ***Highway Department*****,** roads,
- ***PHATA and Public Health Engineering*****,** housing,sewage disposal etc**,**
- ***Transport*****,** transport,
- ***Local Government and Community Development*****,**
- ***Health Department*****,** hospitals**,** health centers**,** vaccination campaigns etc.

While each department/agency has a legal mandate to address specific issues or to manage specific resources, in Murree, TMA and District Government have the mandate to develop inter-sectoral coordination between these departments. As an operational strategy, each department is expected to establish special regulations and plans to ensure environmentally sustainable development in Murree keeping in view its unique geographical and tourist-station characteristics. The local government ordinance 2001 also provides local (district & tehsil) governments with powers to integrate environmental concerns in plans and projects of local development formulate bylaws and coordinate all development activities of various sectors. The tourism-related development issues may be tackled by the TDCP and conservation of forests and biodiversity should be entrusted with Forest and Wildlife departments.

(Note: To have detailed understanding of Policy Segments Implementation Framework and Phasing and Implementing Partners, refer to the Matrix given in Appendix part 2)

KEY PROJECTS FOR SOLID WASTE MANAGEMENT

A. Catalytic Short Term Projects:

1. Banning of open dumping of waste in Murree
2. Provision of littering bins for all homes and commercial areas such as public parks, shopping centers and offices etc.;

3. Pursuing hotels/shop owners to have separate waste collecting bins/bags for recyclable (paper, glass etc.) and non-recyclable waste;
4. Purchase of pickups (with covering facilities of waste) for improving waste-collecting capacity of TMA
5. Increase in daily sweeping of main roads, lanes, markets by recruiting extra sweepers with gradual shift to mechanical sweeping
6. Construction of intermediate waste transfer facilities on identified sites for temporary storage of collected waste from different areas initially at Sunny bank, Dhobi Ghat, Lawrence College road, Lower Jhika Galli road, Bansra Galli, Chitta Mor, General Bus stand, Lower bazaar, and Kashmir and Pindi point.
7. Provision of covered, metallic containers (4 cum^3) for areas without temporary storage facilities at regular distance along main roads or near large hotels/markets.
8. Purchase of 2-3 5 cum waste collecting/transporting trucks
9. Purchase of vehicles for supervisory staff

B. Medium And Long Range Projects

1. Gradual imposition of fines/administrative charges against public littering and open dumping of waste
2. Purchase of a long boom drain cleaning machine for mechanical cleaning of drains.
3. Imposition of waste collection fees/taxes on marriage halls, building contractors, large hotels and homes to meet financial requirements of an appropriate solid waste management system
4. Gradual introduction of POLLUTER PAYS PRINCIPLE in solid waste management
5. Phase-wise implementation of 5R hierarchy of waste management; Reduce, Reuse, Recycle, Recover and Residual management.
6. Launching of a community involvement/awareness plan to increase efficiency of solid waste management programs,
7. Installation of an Integrated Waste Processing Plant near Expressway. It may convert solid waste into compost, Eco bricks and green pellets,
8. Identification and development of a Landfill site for non-processed waste,

9. Disposal of hospital waste/slaughter house waste in a scientific manner
10. Involvement of private sector in solid waste management plans to decrease financial burden on government
11. Establishment of a solid waste management monitoring/research cell.

KEY PROJECTS FOR BIODIVERSITY CONSERVATION

A. CATALYTIC SHORT TERM PROJECTS:

1. Preservation of plant communities in lower altitude habitats (*Acacia modesta near Tret & Kathar; Oleaferroguinea on north facing slopes)* and on higher altitudes(*Pinus roxburghii & Pinus wallichiana* on highest places
2. Change unique habitat areas (e.g; forests in Patriata, streams, corridors in croplands) into special enclosures for wildlife species with greater protection from poaching, hunting etc.,
3. Strengthen concerned departments for their capacities to conserve biodiversity
4. Celebrate a Forest/biodiversity Conservation Week in Murree on yearly basis to create awareness among tourists and general public.

B. MEDIUM AND LONG RANGE PROJECTS

1. Establishment of a center for documentation and analysis of changes in biodiversity of the area
2. Protection of native plants from overharvesting, cutting, and
3. Initiation of a research program/Centre to evaluate the effects of climate change on local environment, flora and fauna.
4. Creation of a Murree Forest/Biodiversity Advisory Board including representative from all stakeholder groups to advice on forest/biodiversity related issues.

KEY PROJECTS FOR FOREST CONSERVATION

A. CATALYTIC SHORT TERM PROJECTS:

1. Reforestation of badly deforested areas with artificial sowing and planting with suitable indigenous and exotic species,
2. Provision of fencing and other suitable protective facilities to protect high-value forest areas,
3. Improvement and maintenance of boundaries of forests (repair/construction of boundary pillars),

4. Clearing of plant-parts/pine-needles along roads/pedestrian paths in dry summer months to decrease the chances of forest fires,
5. Plantation of trees along roads/channels in urban areas to create green corridors,
6. Provision of training and necessary equipment to the forest department to increase its capacity for forest fire control.

B. MEDIUM AND LONG RANGE PROJECTS

1. Regular scientific studies of forests in Murree to monitor any negative (disease attack, fires, illegal cutting) and positive (reforestation),
2. Periodic assessment of the Working Plan (1995-2024) for Murree and Kahuta Tehsils to evaluate its results and suggest new recommendations,
3. Vacation of encroached forests and development of these vacated areas into fresh forest settlements,
4. Strengthening of forest department in terms of trained staff, latest equipment and infrastructure.
5. Establishment of Protected Forest areas in all types of forest (Chir, Kail,etc) to have a representative forest area of each type without any human intervention,
6. Study of possible effects of climate change on forests
7. Introduction of new forest management programs such as $REDD^{+}$ to conserve forests according to international standards.

KEY PROJECTS FOR CONTROL OF SOIL EROSION AND LANDSLIDING

CATALYTIC SHORT TERM PROJECTS

1. Identification of the areas liable to greater chances of soil erosion/land sliding,
2. Re-vegetation of these areas with suitable grass and herbaceous species,
3. Ban on removal of trees/plants from slopes, road verges,
4. A pilot project to assess the suitability of Bio-engineering techniques for erosion control and land sliding,
5. Replanting verges of all newly built roads such as N-75 and filling the gaps on old roads, and
6. Establishment of hedges along crop fields/roads to control soil erosion.
7. Terracing of crop fields,

INSTITUTIONAL FRAMEWORK FOR ENVIRONMENTAL MANAGEMENT:

In Murree, the responsibility for environmental protection lies with the Environmental Protection Agency but various functions of urban environment are regulated by the District Government or Tehsil Government (TMA). The following are departments/agencies whose jurisdictions are relevant to various environmental issues;

- ***Tehsil Municipal Administration***, (land use development, building by laws, solid waste/water management etc)
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- ***Department of Agriculture***, agriculture, horticulture,
- ***Livestock and Dairy Development*****,** live stock, poultry etc
- ***Forest Department*****,** Custodian of forest resources, management of logging, reforestation etc
- ***Wildlife Department*****,** Conservation of wildlife,
- ***Highway Department*****,** roads,
- ***PHATA and Public Health Engineering*****,** housing, sewage disposal etc**,**
- ***Transport*****,** transport,
- ***Local Government and Community Development*****,**
- ***Health Department*****,** hospitals**,** health centers**,** vaccination campaigns etc.

While each department/agency has a legal mandate to address specific issues or to manage specific resources, in Murree, TMA and District Government have the mandate to develop inter-sectoral coordination between these departments. As an operational strategy, each department is expected to establish special regulations and plans to ensure environmentally sustainable development in Murree keeping in view its unique geographical and tourist-station characteristics. The local government ordinance 2001 also provides local (district & tehsil) governments with powers to integrate environmental concerns in plans and projects of local development formulate bylaws and coordinate all development activities of various sectors. The tourism-related development issues may be tackled by the TDCP and conservation of forests and biodiversity should be entrusted with Forest and Wildlife departments.

(Note: To have detailed understanding of Policy Segments Implementation Framework and Phasing and Implementing Partners, refer to the Matrix given in Appendix part 2)

KEY PROJECTS FOR SOLID WASTE MANAGEMENT

C. Catalytic Short Term Projects:

10. Provision of littering bins at all public places such as public parks, shopping centers and offices etc.;

11. Pursuing hotels/shop owners to have separate waste collecting bins/bags for recyclable (paper, glass etc.) and non-recyclable waste;
12. Purchase of 4x4 **6 pickups** (with covering facilities of waste) for improving waste-lifting capacity of TMA
13. Increase in daily sweeping of main roads, lanes, markets by recruiting extra sweepers with gradual shift to mechanical sweeping
14. Construction of intermediate waste transfer facilities on identified sites for temporary storage of collected waste from different areas initially at Sunny bank, Dhobi Ghat, Lawrence College road, Lower Jhika Galli road, Bansra Galli, Chitta Mor, General Bus stand, Lower bazaar, and Kashmir and Pindi point.
15. Provision of covered, metallic containers (4-6 cum^3) for areas without temporary storage facilities at regular distance along main roads or near large hotels/markets.
16. Installation of an incinerator at Kuldana Road
17. Provision of one tractor with one bucket
18. Purchase of vehicles for supervisory staff

D. Medium And Long Range Projects

12. Gradual imposition of fines/administrative charges against public littering and open dumping of waste
13. Purchase of a long boom drain cleaning machine for mechanical cleaning of drains.
14. Imposition of waste collection fees/taxes on marriage halls, building contractors, large hotels and homes to meet financial requirements of an appropriate solid waste management system
15. Gradual introduction of POLLUTER PAYS PRINCIPLE in solid waste management
16. Phase-wise implementation of 5R hierarchy of waste management; Reduce, Reuse, Recycle, Recover and Residual management.
17. Launching of a community involvement/awareness plan to increase efficiency of solid waste management programs,
18. Installation of an Integrated Waste Processing Plant near Expressway. It may convert solid waste into compost, Eco bricks and green pellets,

19. Identification and development of a Landfill site for non-processed waste,
20. Disposal of hospital waste/slaughter house waste in a scientific manner
21. Involvement of private sector in solid waste management plans to decrease financial burden on government
22. Establishment of a solid waste management monitoring/research cell.

KEY PROJECTS FOR FOREST CONSERVATION

C. CATALYTIC SHORT TERM PROJECTS:

1. Reforestation of badly deforested areas with artificial sowing and planting with suitable indigenous and exotic species,
2. Identification of special forest areas with greater diversity/ecological value,
3. Provision of fencing and other suitable protective facilities to protect high-value forest areas,
4. Improvement and maintenance of boundaries of forests (repair/construction of boundary pillars),
5. Clearing of plant-parts/pine-needles along roads/pedestrian paths in dry summer months to decrease the chances of forest fires,
6. Plantation of trees along roads/channels in urban areas to create green corridors,
7. Provision of training and necessary equipment to the forest department to increase its capacity for forest fire control.

D. MEDIUM AND LONG RANGE PROJECTS

8. Regular scientific studies of forests in Murree to monitor any negative (disease attack, fires, illegal cutting) and positive (reforestation),
9. Periodic assessment of the Working Plan (1995-2024) for Murree and Kahuta Tehsils to evaluate its results and suggest new recommendations,
10. Vacation of encroached forests and development of these vacated areas into fresh forest settlements,
11. Strengthening of forest department in terms of trained staff, latest equipment and infrastructure.
12. Establishment of Protected Forest areas in all types of forest (Chir, Kail etc) to have a representative forest area of each type without any human intervention,

13. Study of possible effects of climate change on forests and
14. Introduction of new forest management programs such as REDD to conserve forests according to international standards.

KEY PROJECTS FOR BIODIVERSITY CONSERVATION

C. CATALYTIC SHORT TERM PROJECTS:

1. Identification of special forest areas which are intact and can provide habitat to wildlife in Bhurban, Patriata, and other areas,
2. Change these areas into special enclosures for wildlife species with greater protection from poaching, hunting etc.,
3. A comprehensive survey of flora and fauna of Murree to determine the population status of species of plants and animals,
4. Strengthen concerned departments for their capacities to conserve biodiversity
5. Celebrate a Forest/biodiversity Conservation Week in Murree on yearly basis to create awareness among tourists and general public.

D. MEDIUM AND LONG RANGE PROJECTS

1. Establishment of a center for documentation and analysis of various threats to biodiversity
2. Establishment of protective areas to provide habitats to wildlife in Bhurban, Patriata and other suitable areas,
3. Protection of native plants from overharvesting, cutting, and
4. Initiation of a research program/Centre to evaluate the effects of climate change on local environment, flora and fauna.
5. Creation of a Murree Forest/Biodiversity Advisory Board including representative from all stakeholder groups to advice on forest/biodiversity related issues.

KEY PROJECTS FOR CONTROL OF SOIL EROSION AND LANDSLIDING

CATALYTIC SHORT TERM PROJECTS

1. Identification of the areas liable to greater chances of soil erosion/land sliding,
2. Re-vegetation of these areas with suitable grass and herbaceous species,
3. Ban on removal of trees/plants from slopes, road verges,
4. A pilot project to assess the suitability of Bio-engineering techniques for erosion control and land sliding,

5. Replanting verges of all newly built roads such as N-75 and filling the gaps on old roads, and
6. Establishment of hedges along crop fields/roads to control soil erosion.

2.5 PLANNING FOR INFRASTRUCTURE:

As plan vision recognizes Murree to grow in an efficient sustainable manner and achieve the objectives set out in this Plan. It is essential that land use planning and infrastructure policies be "pulling & complementing" in the same direction.Generally infrastructure is known as "the substructure or underlying foundation, especially the basic installations and facilities on which the continuance and growth of a community depends." When they hear the term infrastructure, most people think of roads, sewers, utility lines, and other *gray infrastructure;* or hospitals, schools, prisons, and other *social infrastructure*. Taken together, these types of facilities are often referred to as *built infrastructure*.

Infrastructure can also be stated as "the physical framework of facilities through which essential municipal services like water, waste water, electricity and gas runs and provided to the public. The extent of infrastructure affects not only production and consumption directly but also will have an impact on every sector of economy as well as environmental quality of any area". Infrastructure development planning strategy for Murree must embrace;

POLICY COMPONENTS:

I-1 Fresh Water:

- A fair pricing mechanism to enhance the efficient use of supplies, speedy delivery of services and enhancing environmental sustainability with fewer or no negative impacts.
- Discourage inefficient use and abuse through regulatory, pricing and incentives / disincentive measures.
- Replacement of worn out / rusted municipal water supply, sewerage and electricity should be done on short term basis in areas mentioned in particular and whole Murree in general to reduce functional inefficiencies. (Especially in Shawala, Abbasi Mohala, Kashmiri Mohala Lower Bazar and MIT colony)
- TMA should endure for introducing measures to incorporate rain water harvesting regulation in building bye laws and should be adopted at each level in Murree TMA area. Every building shall have an underground water storage tank having minimum capacity of meeting all buiding residents water needs for 3 days. These tanks shall be connected to roof ruoff drains/spouts after having met enviromenatally safe design guidelines/specifications.
- TMA must improve the efficiency of existing supply sources of water at Harrow River, Donga Galli, Khani Tak, Shawala and Masoot schemes by replacing existing pumping stations by energy efficient system in first phase and ultimately going for solar powered solution wherever possible. It will help reduce TMAs financial burden of electricity cost significantly.

- Review and revival of River Jhelum water supply scheme must also be considered, to cut its huge operational pumping costs, it is also recommended that it should only be operationalized during the peak (June-August) months.
- Periodic routine up gradation, cleaning and maintenance of water storage tanks at Donga Galli, Ayubia, Kashmir point and Pindi Point on regular basis to ensure quality supply throughout the year. This also includes disinfection procedures. Cleaning/maintenance are proposed to be done on quarterly basis.
- Most desirous goal is immediate replacement of all existing worn out exposed water supply GI lines. This includes burying all the water supply lines under suitable sub soil depths wherever possible & where space/terrain does not allow, suitable above the ground (aerial) laying pattern arrangements conforming international standards should be followed to ensure safety, efficiency and aesthetics. It will also ensure safety of lines against physical/weathering damages and avoiding visual nuisance as well. This is also proposed that all connections should be metered and time supplied. To enhance water consumption incremental metering and rates are advised to be introduced.
- Adding water supply infrastructure especially water lines to all the areas which have been left out of service (only 5 sq km area out of TMA's existing 24 sq km is being served and this service area primarily covers existing Central Core along the Mall) particularly in Missiari, Jhika Galli, Chitta Mor, Bansra Galli, and Bansra Galli in emergent term and extending it to proposed new development precincts in medium and long terms.
- Revising tariffs, installation of water meters and adopting a fair pricing mechanism (a cost based reverse pricing on incremental basis) for water supply to reduce inadequacies between commercial abuse and residential use.
- Introduction of water usage guidelines to local as well as transient population to promote water usage efficiency and conservation at large.
- Periodic water quality tests should be conducted to ensure quality supply of water to the household thus reducing the water borne disease burden.
- Incorporate rain water harvesting regulation in building bye laws and should be adopted at each level in Murree TMA area. Every building shall have an underground water storage tank having minimum capacity of meeting all building residents water needs for 3 days. These tanks shall be connected to roof runoff drains/spouts after having met environmentally safe design guidelines/specifications.

I-2 Storm Water:

- TMA must focus of providing sustainable green infrastructure like pervious runoff channels in the town is to enhance efficiency through maximum exploitation of existing assets and optimal induction of additional resources, Promotion of green infrastructure suggested as it proves a life line to the environment through which it runs, improve quality of life of inhabitants being served and support reuse / recycling.
- Design and construction of isolated runoff drains under walkways along all roads in Murree urban as proposed in the main text, these channels should be linked to the recharge bore wells (design & construction by TMA) proposed at average distance of 200-300 meters, further additional runoff water being left after recharging of wells should be collected in downhill storage/collection/primary treatment facilities (to be constructed at appropriate places as shown in the map). This water is recommended to be re-used again after appropriate treatment for both irrigation and domestic uses.
- Stabilizing beds of runoff drains (these include Dhak Kass, Kalian Kass, Dungian Wala Kass, Nala Kass, Dhak Wala Kass, Zinda Kass, Thanda Kass, Ghutta Kass & Gandda Kass) by adopting such techniques to facilitate discharge of excess runoff after even recharge and restricting bulk penetration of runoff water as it has been found out that bulk penetration is a prime cause of strata/slope failure.
- All the runoff drains/kass are to be connected to primary treatment facilities (method and design of such facilities shall be done by TMA). This treated runoff is further proposed to be supplied back to inhabitants in Murree urban after suitable treatment.
- Impervious surfaces increase polluted runoff, strategies should be focused to provide maximum of pervious run off channels in the city. This will enhance recharge boost to subsoil aquifers.
- Design and construction of bore wells is proposed connecting improved runoff channels alongside all the roads in Murree urban. These bore wells will boost an even recharge of sub surface aquifer and ultimately yielding more supply through springs.
- Measures to expose hidden drains / runoff channels to DAY LIGHT and stabilization of channel surface. It will enhance water quality, eradication of pathogens, increasing the action

of aerobic micro-organism to convert harmful complex organic molecules to simpler nutrients for plants and other ecology.

- Design and construct isolated Rain water runoff from urban pavements and should not be mixed to sewage.

I-3 Waste Water:

- A comprehensive integrated planning for the collection of sewage water be adopted, this system must be further coupled with primary level treatment facilities proposed on KAS crossing MKR (Bansra Galli-Chitta Mor and Bypass Road Sections), these facilities would serve a small reservoirs too and treated/filtered volume further may be supplied to rural inhabitants down the slopes through gravity to irrigate their agriculture holdings. This is the most pressing issue as most of the un-channelized runoff / sewage bulks get it ways into sub soil strata and aggravating land sliding / slope failure issues.
- Design and construction of a comprehensive integrated system for the collection of sewage water from every building parcel is to be initiated on top priority throughout the Murree urban area.
- Design and construction of 3 primary/secondary/tertiay level treatment facility at RKM road and N75 each having capacity of 1.25 mgpd and it is expected that these facilities shall sufficiently serve uptill mid plan period and could be enhanced afterwards.
- Treated volume further may be supplied to rural inhabitants downstream to irrigate their agriculture holdings. This is the most pressing issue as most of the channelized runoff / sewage bulks get its ways into sub soil strata and aggravating land sliding / slope failure issues and also pollutes downwards water sttiary ream.
- Immediate disconnection of sewage from storm drains s. Regulatory measures should be taken on open disposal of sewerage of any form and type. The polluter should be heavily fined.
- Every household is desired to construct septic tanks if not connected to the sewerage network.
- Consideration must be paid for the future sewerage network coverage connection and future provision (plan and design) for the new proposed Development Precincts.

I-4 Gas:

- It was evident from field studies that in many localities the gas lines are laid above ground thus posing health and environmental hazards. The Sui gas network should be laid underground to avoid any mishap and to make the town's image better.

- TMA in collaboration with SNGPL should survey the installed network and where some leakage points exists, its proper insulation of the network is proposed.
- The areas which are not under-service should be provided with gas supply.
- The GI pipes installed for supply of gas are not suitable in Murree; they should be replaced with proper material to prevent leakages and subsequent fire hazards.
- Due to shortage in gas supplies, TMA Murree in collaboration with SNGPL should do a mass communication plan for general awareness raising campaign for energy conservation.
- Consideration must be paid for the network coverage connection and future provision (plan and design) for the new proposed Development Precincts.
- Gas supply is desired to reach at least every urban inhabitant by the year 2016 as it reduces environmental stresses and financial burden. This extension must be supported with energy efficiency campaign at all levels and energy efficiency must be a part of building regulations of TMA.

I-5 Telecommunication Services:

- Measures to enhance / improve the quality of cellular communication services as tourist population face serious congestion and service droppage in peaks further WiFi hotspots should be provided in whole Murree urban.
- The communication network wires (electricity cables etc.) should be put underground.
- Mobile network service congestion should be solved in peak hours.
- Consideration must be paid for the network coverage connection and future provision (plan and design) for the new proposed Development Precincts.

I-6 Electricity:

TMA must endeavour to install pedestrian scale street lighting, road marking, guide maps, traffic signage and digital information signage system on priority in early short term. PPP model may be adopted.

- The installed IESCO aerial distribution/ electrification network is poor; it should be gradually upgraded and preferably go underground in short term.
- Electricity Meters should be visually protected.
- Human scale solar powered street lamp posts should be installed in conformance with the urban design on the Mall road, Kashmir Point and Pindi Point.

- Consideration must be paid for the network coverage connection and future provision (plan and design) for the new proposed Development Precincts. It has been estimated that proposed future development precincts would be requiring another 125 MW grid.

I-7 Social Infrastructure:

- Buiding used by most of the public services in Murree (social infrastructure) such as hospital, schools, public offices and other services are in poor condition. Most of these buildings were badly hit during 2005 earth quake. It is suggested that all such buiding should be thouroughly investigated/surveyed by TMA to ensure structural stability on immediate basis.
- Health, safety guideline should be made an integral part of building regulations and enforced on priority basis.
- Delipadated structures should be demolished and reconstructed through special grants from concerned deparments.
- All building should follow emergency safety and rescue procedures specially building serving for public gatherings.
- All new facilities proposed in development precincts should be developed considering engineering standards for hazard risk areas.

INSTITUTIONAL AND IMPLEMENTATION RESPONSIBILITIES:

- TMA is expected to upgrade / augment sewage collection network on priority to increase under service area. (It should be taken up in plan short term period 21011-16).
- IESCO to replace poor quality / worn out electrical infrastructure in plan short term and gradually go underground.
- Extension of infrastructure to the proposed future development precincts and other left out area shall be planned by TMA in coordination with IESCO, PHE, PTCL and Cellular Operators accordingly for the plan period of 20 years gradually.
- TMA, PHE and Murree Water Board to make water supply system more efficient, existing rusted / worn out above ground infrastructure should be replaced and buried in short term plan period (2011-2016).
- TMA to construct an isolated runoff system as proposed to enhance efficiency of runoff from pavements and this network shall be extended/connected to recharge bore wells and further to natural runoff channels.
- A sewage treatment facility (primary treatment only) shall be installed by the TMA (at one of the sites identified by the consultants in Action Plan) in plan short term period and this treated water shall be provided to the

rural inhabitants through service drains on gravity to satiate their agriculture needs.

- Tele-communication networks (both wired & wireless) are anticipated to reach every inhabitant of Murree Tehsil by the end of 2016. This will enable both local and transient population to have access to global knowledge and information super highway.

(Note: To have detailed understanding of Policy Segments Implementation Framework and Phasing and Implementing Partners, refer to the Matrix given in Appendix part 2)

KEY PROJECTS FOR INFRASTRUCTURE DEVELOPMENT:

A- CATALYTIC SHORT TERM PROJECTS:

1. Immediate replacement of all existing worn out exposed water and sewerage lines and burying it as per standard design parameters.
2. Adding more infrastructure specially water lines to all the areas which have been left out of service area in Missiari, MIT, Jheeka Galli, Bansra Galli.
3. Provision of Wi-Fi service in all urban area through PPP model. However Virtual Hubs proposal identified under Sustainable Tourism Projects is different and free-of-charge value added service by TDCP.
4. Street lamps and decorative illumination.
5. Design/construction of Runoff drain systems to collect and use runoff water for recharge from urban pavements without letting it go unused into sewage. Recharge soak pits/bore wells intended to be constructed at designated intervals along roads on suitable places to boost evenly distributed sub-surface aquifer recharge.
6. Induction of Green Infrastructure such as pervious urban soft surfaces, walkways and runoff channels.
7. Maintenance and consolidation of main KAS/channels to prevent bulk penetration of runoff water into the lower strata which eventually triggers land-sliding.
8. Design and construction of a comprehensive integrated system for the collection of sewage water from every building parcel is to be initiated on top priority. This system must be further coupled with primary level treatment facility and treated volume further may be supplied to rural inhabitants down the slopes through gravity to irrigate their agriculture holdings. This is the most pressing issue as most of the channelized runoff / sewage bulks get its ways into sub soil strata and aggravating land sliding / slope failure issues and also pollutes downwards water stream.
9. Metering and fair pricing for water supply. Cheaper for residential and charging more for commercial usage. This will help ensuring conservative use and ultimately demand management.
10. Water usage guidelines to local as well as transient population to promote water usage efficiency and conservation at large.

11. Rain water harvesting techniques should be explored and made compulsory as a part of building regulations as well.
12. Design and construction of small reservoirs on rain water drains/KASS passing on MKR and bye-pass road. Water volume stored in such reservoirs may be filtered/treated and further supplied to meet the irrigation needs of downstream rural inhabitants.
13. Enhancing telecommunication/mobile communication infrastructure to meet the need for at least early 5 years of plan period as visitors face communication jams/chocks in peak season.

B- Medium & Long Term Projects:

1. Management planning of water source, supply, and distribution over plan period.
2. Management planning for sewage collection, treatment and disposal system over plan period.
3. Management planning for all infrastructures such as public buildings, offices, schools, hospitals, mosques, emergency services, buried/exposed infrastructure and road network.

2.6 REVITALIZING / CONSERVATION OF URBAN, NATURAL AND HERITAGE PRECINCTS:

The history and location of Murree have given it a distinctive character, though much of which is derived from buildings and other structures. Arguably it is the early buildings which do most to define the city's unique architectural identity, but the contributions of all periods have helped to shape Murree's character that has made it all times favourite place to be. It is a general responsibility with the tourists and residents as well as administration to safeguard its cultural heritage for present and future generations. Its attraction as a cultural and tourist centre is due in part to its architectural, historic and scenic attractions. Murree's future economic development as a significant tourist destination is therefore, to some extent, dependent on conservation of its heritage buildings, places and objects.

POLICY COMPONENTS:

The policy directions for Revitalization / Conservation for Murree have been proposed for the following precincts:

1-Urban Precincts
2-Heritage Precincts
3-Natural Precincts

Urban Precincts:

Urban design policy operates at three levels, namely the region, the neighbourhood and the street. Murree needs an Urban revitalization today more than any other time in the history. It should emphasizes the essential relation between a building and its setting, the necessity of protecting the aspect of the approaches, the desirability of grouping buildings into harmonious ensembles, of the architecture, public spaces, monuments, urban design, and landscape of a city with following objectives;

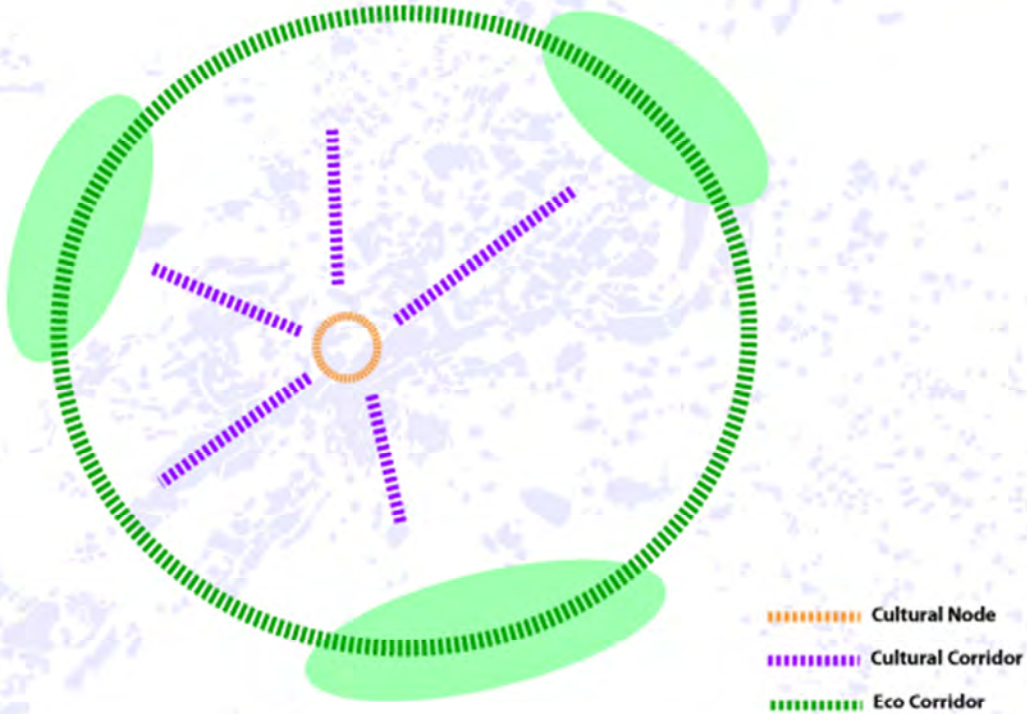
UP-1 To aim at making connections between people and places, movement, urban form, nature and the built fabric

UP-2 To identify unharmed areas and take action to conserve their original character.

UP-3 To draws together the many strands of place-making, environmental stewardship, social equity and economic viability into the creation of places with distinct beauty and identity.

CONNECTIONS...

ECO-CULTURAL URBANISM



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSUTANTS:

PEPAC Pakistan Environmental Planning & Architectural Consultants

Planning
Architecture
Engineering Design
Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN"

ECO-CULTURAL CONNECTIONS

0 0.5 1 2 Km

UP-4 To draw these and other elements together creating a strategy for Murree and then deploying the resources and skills needed to bring the vision to life.

UP-5 To ensure community consciousness towards cultural and social up gradation.

Proposals:

1. Development of public places and spaces and connecting them through a cultural pedestrian corridor.
2. Proposal for the development of Murree Cultural Auditorium at the Mall Road/GPO cultural node.
3. Creation of ecological corridors to connect green structure around Murree.
4. To promote indigenous materials and techniques of construction for future development in Patriata.
5. Murree skyline needs an identity of its own, like the one which gives a sense of recognition at first sight. A landmark structure placed rightly will serve the purpose well.
6. Connecting Bhurban, Allyot and N75 through a new development corridor to canalize the select tourists groups direct to five star hotels (consultants analyzed that select group constitutes about 30% of the car volume), instead of passing within the city. Moreover, the development of other STAR facilities is proposed in this proposed select urban precinct.
7. The passive green spaces should serve as visual breaks/vent in built-up areas, the site seeing places along roads, close access to birds and trees. They may include any of the features; fountain, tree shaded gazebo seating, reflecting pond, aviaries or maze.
8. While Green Spaces serve as breathing holes in the urban fabric, the leisure spaces would serve as the target areas, attracting the tourists, with their close proximity to commercial areas. These may include rides, chair lifts, skiing, bowling and other entertainment in practice.
9. The significant sites having unique features would attract the inquisitive tourists. For example, the natural features like aged tree or a cave could be utilized to add enrichment to the place.
10. The leisure spaces may be connected to each other or with featured sites, with signage. They may include the following; walking tracks, hiking trails, cycling tracks or horse riding tracks. The countryside areas may also be marked to take the added advantage.
11. Townscape is the large view of the town's configuration of built forms from various heights. This is a factor particular to mountainous area. The proposal for painting roofs with earthy tones of colors is actually for adding richness to the townscape. Also there should be a similar strategy for treating facades of buildings and giving them character and quality.

List of Priority Sites:

1. The Mall Road and its surroundings
2. Tomb of Marry (A.S)
3. Kashmir Point
4. Pindi Point
5. Bansara Galli Water Fall
6. New commercial districts in MIT Colony & Dhobi Ghat vicinity

Implementation Framework

The proposed policy directions are made in accordance with the following definations,

"Urban open space" includes gardens, parks, playgrounds, walled spaces, playfields, recreational areas and open spaces available to public;

"Urban Fabric" includes monuments, ordinary buildings, streets, urban open spaces, urban patterns defined by land parcels and streets, street pavement, elements of the utility infrastructure, street furniture, signage, and public facilities;

"Cultural activities" includes the customary practices, representations, expressions, knowledge, lore, skills, traditions, festive events, traditional craftsmanship, performing arts as well as the instruments, objects, artefacts associated therewith and also includes the evolution thereof;

The main features of framework are as follows:-

- Planning for the development for mixed use precincts in Dhobi Ghat, Bansra Galli, Ghora Galli and Chitta Mor.
- Development of Bhurbun-Alliyot and Patriatta select precincts will be initiated and hosted by TDCP.
- Students and institutions will be motivated to take active part in identification of development ideas. The aspirations of concerned local people will be given due importance and the representatives of different sections of community will be coordinated by TMA
- Design for the landmark icon for Murree, to become the symbol of the town, will be initiated after funds arrangement and the ideas will be invited through open design competition throughout Pakistan.
- infrastructure development or improvement scheme to be supervised and implemented by TMA
- scheme to promote cultural activities, sport activities and festivals to be supervised and organized by TDCP
- the schemes to promote the visual and temporal arts and revitalize crafts has to be managed by TDCP

Heritage Precincts

Buildings such as churches, schools and other public buildings in Murree have a historic value in terms of an important reflection of social patterns of its time. Their architectural and craftsmanship qualities are incredibly unique. The nature and use of materials, finishes and/or constructional methods which were innovative for the specific period are of noteworthy quality. Archaeological remains are also worth mentioning. Proposed policy aims to address issues with following objectives;

HP-1 To adopt and promote nationally and internationally accepted conservation principles.
HP-2 To identify heritage buildings, places and objects.
HP-3 To prepare conservation plans for all appropriate listed heritage buildings, places and objects in Council ownership and to promote them.
HP-4 To retain the historic integrity of heritage places by doing 'as much as necessary' to preserve their fabric but as 'little as possible' to alter it.
HP-5 To workout project specific feasible situation, considering the ownership and investment and facilitating economic generation through PPP.
HP-6 Authentic and Precise documentation of the whole process should be made part of the record.

Policy Proposals:

- The shared public and private interest in sustaining significant places, demands mutual co-operation and respect between owners or managers and regulators. The best use for a significant place – its 'optimum viable use'– is one that is both capable of sustaining the place and avoids or minimizes harm to its values in its setting. It is not necessarily the most profitable use if that would entail greater harm than other viable uses.
- The predicted long-term or permanent consequences of proposals (in terms of degree, and whether positive, negative or neutral) on each of the identified heritage values of a place, and thus on the significance of the whole, should provide the reasoned basis for a decision, where necessary taking other interests into account.
- Where there are options for the conservation management of change, or reconciling conservation and other interests, 'heritage impact assessment' can be used to compare the predicted effects of alternative courses of action (including taking no action) on the values of a place, in order to identify the optimum solution. The approach can be refined by weighting different values to reflect their relative importance for the place and its significance. Heritage impact assessment can be particularly useful if applied at the conceptual stage of a proposal, and refined at each successive step towards making a decision.
- If some negative impact or loss of fabric is unavoidable, mitigation should be considered to minimize harm. This will normally include making records and archiving parts of significant elements, including archaeological deposits, that will be removed or altered prior to and during the work. Mitigation should not

be confused with compensation – non-essential benefits to other aspects of the place, or to other heritage interests.

- Restoration to a significant place should normally be acceptable if:
  - the heritage values of the elements that would be restored decisively outweigh the values of those that would be lost;
  - the work proposed respects previous forms of the place;
  - The maintenance implications of the proposed restoration are considered to be sustainable.

- New work or alteration to a significant place should normally be acceptable if:
  - there is sufficient information comprehensively to understand the impacts of the proposal on the significance of the place;
  - The proposal would not materially harm the values of the place.
  - the proposals aspire to a quality of design and execution which may be valued now and in the future;
  - The long-term consequences of the proposals can, from experience, be demonstrated to be benign, or the proposals are designed not to prejudice alternative solutions in the future.

List of Priority Sites

- Mandir
- Government High School, Murree
- Jaima Masjid Hanfia, Mochi Mandi Murree
- Assistant Commissioner Office Building
- G.P.O. Building: The Legendary Landmark
- Hbl Jinnah Road
- Red Onion
- The Holy Trinity Church
- Al-Saud Hotel
- Presentation Convent School Murree
- Lintott Cafe
- Thana Police Station
- Cecil Hotel: Sold / Destroyed Heritage
- Jesus- N- Marry
- Bright Land Hotel & The Chambers Hotel Near Bus Stand
- Catholic Church
- Sindh House
- St. Deny High School
- Lawrence College, Ghora Galli
- St Denys High School Church
- Murree Brewery
- Lady Roberts Guest House

INSTITUTIONAL AND IMPLEMENTATION FRAMEWORK:

The proposed policy directions are made in accordance with the following definition,

"Building" includes any structure, house, dwelling, depot, godown, hall, wall, gate, monument, grave, tomb, minaret, shrine, shop, shelter, hut, porch, shed, dome, edifice, colonnade, gallery, fountains, public baths, business place, place of worship, and includes any urban open space, covered streets, passages and paths connected to any building or any other site notified as such from time to time by TMA;
"Conservation" means any activity undertaken to conserve the Heritage or Heritage Value and includes identification, preservation, protection, regeneration, redevelopment, revitalization, rehabilitation, reconstruction maintenance, restoration, adaptation, structural consolidation, for the purposes of the transmission of heritage value;
"Encroachment" means any unauthorized structure on a public area, public crossings, public passage or urban open space, or unauthorized use of public area, public crossings, public passage or urban open space;
"Heritage" shall mean architectural, archaeological, monumental, historic, artistic, aesthetic, cultural or social aspects, reflections, elements, features, of a building, group of buildings, structure, building fabric, urban fabric, urban open space, public area, public crossings or public passage and environment of the Murree and includes Intangible Heritage;

Policy Proposals

1. Immediate Identification, assessment and authenticity of Heritage
2. Establishment of ownership of the heritage property
3. No building or structure located within the Murree shall be demolished, damaged, destroyed or removed by any person in any manner whatsoever except with previous sanction of the Authority in a prescribed manner.
4. For the purposes of conservation of a Heritage Property, the Authority may guide the owner or occupant of such property, by an order in writing, to take such measures for conservation of the Heritage Property.
5. The Authority may, after being notified as may be considered reasonable, remove such
6. Encroachment with such force as may be necessary.

Natural Precincts

The nature conservation policy should regulate, protect and manage natural resources that are important for the conservation of biological diversity of Murree in a sustainable manner, taking into account social and economic considerations, for the benefit and enjoyment of the present and future generations of the community.

KEY PROJECTS FOR URBAN DESIGN

A- CATALYTIC SHORT TERM PROJECTS:

1. Urban Revitalization of Mall Road
2. Façade improvement of the buildings at Mall Road, Bank Road, Caurt Road, Kashmir Point and Pindi Point with unique independent themes.
3. Theme Colorization of Building Roofs, facades, logos/signs in Murree (Pilot Projects – The Mall)
4. Design & Erection of a Site Memoir at Pindi Point and Kashmir Point (Based on a Design Competition)
5. Enhancing the value of Tourist Sites by adding tourist street furniture at Pindi Point, Kashmir Point, Jhika Galli, Mall Road, Kuldana Chowk, Bansra Galli and Murree Brewery
6. Adding Graffiti / Wall-Murals and Painting Artistic Values / Façade Regeneration to add value throughout Murree
7. Green Urbanism Initiative at Pindi Point, Kashmir Point, Jhika Galli, Mall Road, Kuldana Chowk, Bansra Galli and Murree Brewery by adding natural elements like trees, flower-beds etc.
8. Making Road Sections into Thematic Flooring Tiles at different intervals with certain color themes to enhance road surprises and eliminating monotony throughout Murree
9. Enhancing Street Visualization through a mix of themed Lighting at Pindi Point, Kashmir Point, Jhika Galli, and Mall Road from GPO Chowk to Cantt. Limits, Kuldana Chowk, Bansra Galli and Murree Brewery
10. Adding Sculptures at different locations (Pindi Point, Kashmir Point, Jhika Galli, GPO Chowk) in Murree
11. Advertisement control to reduce visual clutter throughout Murree

B- MEDIUM & LONG TERM PROJECTS:

1. Conservation of Historical Buildings in Murree like Churches, Schools, and Old Masjids as listed in proposals.
2. Conservation and Reuse of Murree Brewery Building / Site as a mixed use Theme Park with allied facilities
3. Development of a Murree Cultural Center (a mixed-use commercial-cum-cultural node) at Amphi-theatre.
4. Urban Regeneration of Shawala, Lower bazar and Kashmiri Mohala
5. Urban Regeneration of Lower bazaar: Walking Through Time – Murree from 1860to 2031 (Architectural Design Competition for an Emporium at Lower Bazaar)
6. Design & Construction of a "Grand Stand/Multipurpose Sports Ground/Sports Garden" near Bansra Galli Chowk. The seating pavilions can be arranged terrace-ways on slopes and a Garden/Grand Stand/Multipurpose Sports Ground / Congregation Place comes downwards giving a scenic view to the spectators. A partial space can also be used as commercial.

2.7 PLAN IMPLENTATION, EVALUATION & REVIEWS:

2.7.1 RATIONALE BUILDING FOR MASTER PLAN IMPLEMENTATION:

Murree Master Plan 2031 envisages a strong inter-departmental & inter-agencies coordination for its successful implementation at every stage throughout the plan period. Currently the Consultants recommend that the responsibility of Master Plan Implementation should lie with TMA Murree and CDG Rawalpindi as being plan custodian with proactive inter-departmental coordinating role-play following proposed implementation hierarchy. The proposed Master Plan Implementation Setup has been discussed in detail during plan consultation and feedback process with various stakeholders largely invited by the Client, TDCP; a few of them opined to propose a separate Development Authority for Murree Master Plan implementation. The Consultants discussed the feasibility and viability of having a separate institution vs existing TMA setup (upgraded with proposed Institutional Arrangement – largely capacity building of TMA Murree).

Given below is a comparative analysis if the master plan implementation is handed over to "a proposed Development Authority for Murree"; what scenario is most feasible for plan implementation and sustainability of the exercise.

Functions	Core Implementing Agency		Remarks
	TMA Murree	Proposed Development Authority	
Incorporation	Already Incorporated.	Only can be incorporated through an act passed by Provincial assembly in purview of Punjab Development of Cities Act, 1976 or a new enactment which requires a cumbersome legislative procedure.	It is apprehended that plan implementation will get delayed unnecessarily and will have to wait for the formation of any such institution to carry out implementation. Further the New Murree Development Authority case must also be taken into consideration.
Coordination	Easy	Relatively difficult	It is noteworthy that due to overlapping functions of TMA & DA, coordination with line departments and partners will

			still remain difficult (as already experienced with 5 DAs in Punjab); as no DA in Punjab having operated the functions of Tourism Development, Forest, Environment, Wildlife, Highways/Roads besides exercising physical planning alone. If proposed authority has to take over all such functions, line departments shall have to be made defunct in Murre. Otherwise DA shall still need Coordination mechanasim / committee for plan implementation which in case of TMA has already been proposed.
Financial Arrangement	Moderate	Difficult	TMAs are financially independent as per the law. To kick start various short/medium term projects, financial arrangement will be highly difficult in case of a Development Authority.
Existing Human Resources	Moderate	Low	A whole new setup is required which again is a time-intensive exercise. Whereas, the Consultants propose capacity building of TMA for efficient and effective implementation of proposed Master Plan for Murree.
Project Management	Moderate	Difficult	Both need arrangements and capacity building.
Mandate for Implementation	High	Moderate	Only a fully established DA will be effective for various projects implementation. In current scenario, TMA has an upper hand as the current PLGO 2001

			empowers TMAs for local development and project implementation.
Public Outreach	High	Low	TMA Murree has a greater public outreach and communication links which in case of a new Development Authority will be difficult initially to develop the peoples' trust.
Ease of Town/District related Decision Making	High	Low	In case of DA, co-ordination between CDG Rawalpindi (managing the regional issues) and Murree DA seems difficult.
Local Community Support	High	Low	During field studies and stakeholders meetings, it was revealed that local community has a greater trust on the role and functions of TMA as compared to some new setup in Murree.
Use of Town-Owned Property	High	Low	TMA already has a huge estate.
Preparation & Promulgation of various Town Byelaws	High	High	Most have already been framed in favour of TMA's financial sustainability under the PLGO 2001.
Built Assets	High	Low	It will be easy for change / reuse / redevelopment of municipal assets belonging to TMA.
Legal Support for Plan Preparation & Implementation	Facilitated in PLGO 2001	Facilitated by DAs Acts	Sections 40 and 54 a of PLGO 2001 explicate that CDGs can **1-*''Approve Master Plans, Zoning, land use plans.....''*** **2- *''Review implementation of rules and bylaws governing land use''*** **It further assigns TMAs to**

			1-*''Prepare Spatial [Master] plans for the towns in collaboration with the district and union councils including land use plans and zoning. . .''* ***2-''Exercise control over land use, land subdivision, land development and zoning by the public and private sectors for any purpose.''***

The Consultants conclude and highly recommend avoiding complexity and having an ease of plan implementation to further the capacity building of existing TMA Murree rather to go for creating all new separate institution. The case of other five Development Authorities in Punjab does not speak favorable when it comes for plan implementation in respective cities in various times due to lack of institutional barriers besides lack of coordination and communication has always been experienced.

2.7.2 PLAN IMPLEMENTATION

In order to attain the optimal results of Murre Master Plan 2011-31, it is really necessary that the Master Plan must be implemented in its true spirit. A comprehensive mechanism is proposed for the Master Plan monitoring, reviewing and updating in Fig. 2.7.1.

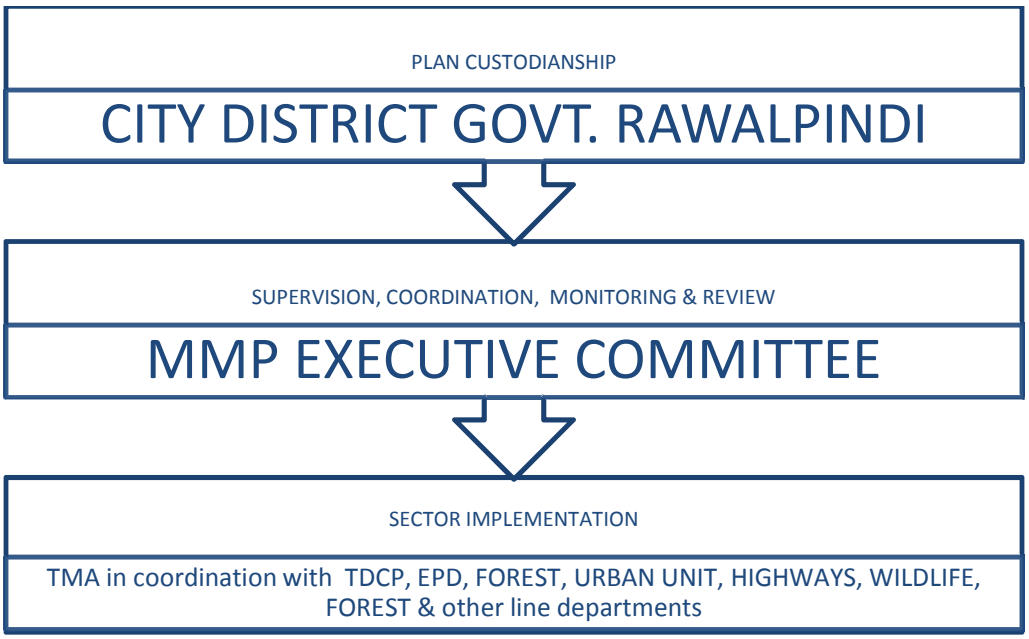


Fig. 2.7.1 PLAN CUSTODIANSHIP & IMPLEMENTATION HIERARCHY

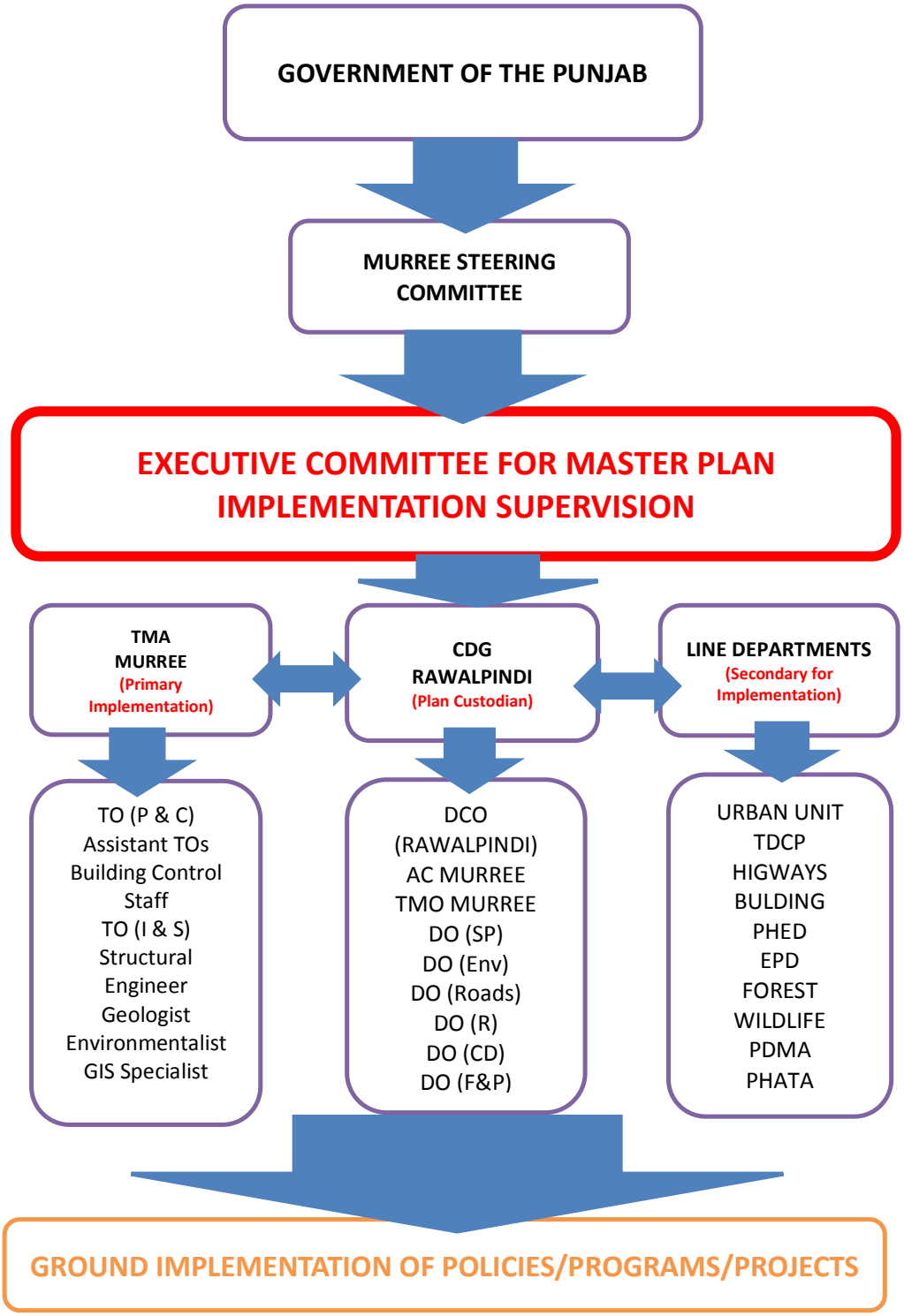


Fig. 2.7.2 OVERALL MURREE MASTER PLAN IMPLEMENTATION ORGANIZATION

A) Murree Steering Committee:

The Murree Steering Committee (MSC) being chaired by Mr. Shahid Khaqan Abbasi (MNA from Murree NA 50) and other members including Members of provincial assembly's representative, Commissioner Rawalpindi, Assistant Commissioner Murree, TMO Murree, TO (P&C) Murree and inter alia. The Murree Steering Committee (MSC) shall be a primary responsible body which would be envisaged to oversee the overall development of the town through Master Plan Implementation. It is proposed that the Commissioner Rawalpindi Division shall act as Secretariat who shall be responsible for the coordinative functions tasked to oversee physical planning activities and ensuring development control under the Master Plan and PLGO. Please See Table 2.2 for functional details. The Committee shall be empowered to grant and oversee budgetary and administrative approvals besides Master Plan implementation, reviewing and updating progress monitoring at the top level. The MSC shall also comprise of members from line government departments, private sector representatives and community stakeholders who meet quarterly to review the issues concerning Murree Master Plan 2011-31. The Committee is entrusted to recommend and forward appropriate measures to the government as proposed from line departments. Other line departments and community stakeholders act as members of the Steering Committee responsible for providing necessary sector-wise technical inputs and give preliminary recommendations on issues related to their particular sector.

B) Executive Committee for Master Plan Implementation:

The role of the Executive Committee for Master Plan Implementation shall be secondary in downwards hierarchy as a liaison office for the projects decision making, project coordination and primary/supervisory for the master plan implementation monitoring/evaluation. It is proposed that the DCO Rawalpindi shall act as a chair for this committee and District Officer Spatial Planning DO (SP) CDG, Rawalpindi shall act as Secretary. Members from line departments at provincial level and Assistant Commissioner Murre, Tehsil Nazim Murree, TMO Murree, TO (P&C) Murree, all Do's of CDG Rawalpindi (Plan Custodian) and a community representative shall represent as local members from TMA Murree & CDG Rawalpindi. The committee shall be entrusted to co-op any other additioanal members as deem necessary. The committee is proposed to meet quarterly or on need basis.

C) Core Implementation Partners:

The line departments and agencies at the district level are tasked for the projects implementation and progress updating (project level budgeting, cost reporting & monitoring) and are considered an integral part of the Core Implementation Team. They shall play primary role for the on-ground execution of projects identified under the Murree Master Plan. All the department heads at district level shall report progress updates (planned vs actual scenarios) and any operational level issues, problems to the TMO Murree who shall act as chair of this committee.

The report shall provide an accounting of goals achieved (in the form of Projects), the status of goals (in the form of Projects) being worked on, and the status of those goals (in the form of Projects) that have not been achieved. For any goals / projects that have not been achieved, an explanation shall be provided as to the impediments to implementation. In cases where a determination has been made that a particular goal/ project cannot be implemented, that information shall be provided to the Executive Committee for Master Plan Implementation. The Core Implementation Team is expected to meet on monthly basis or as and when desired.

Table 2.2 Responsibility Matrix for Murree Master Plan Implementation

PARTNER	RESPONSIBILITY LEVEL	TASK	FREQUENCY OF MEETING	COORDINATION
Murree Steering Committee	Primary for all decision making	• Decision Making • Budgetary / Financial Approval & Allocation • Administrative Approvals • Master Plan Implementation Supervision & Progress Evaluation • Master Plan Updating & Reviewing • Upward Coordination	Twice a year or as desired	Commissioner Rawalpindi
Executive Committee for Master Plan Implement-ation	-Secondary for decision making -Primary for direct plan supervision	• Project Decision Making • Project Coordination • Implementation Monitoring as per plan • Upwards & Downwards coordination	Quarterly or as desired	DCO Rawalpindi / DO (SP) CDG, Rawalpindi
Core Implement-ation Partners	-Tertiary for decision making -Primary for local actions	• Projects Implementation & progress updating (budgeting, cost reporting, project monitoring)	As and when desired	Line Departments & Agencies Heads at District Level through TMO Murree

2.7.3 PLAN EVALUATION, UPDATING & REVIEW

The expected evaluation and revisions are proposed as;

1-Quarterly evaluation for early short term emergent policies (First 5 years)
2-Yearly evaluation for both short & medium term policies (First ten years)
3- Five yearly evaluation and revisions for long term policies (Plan period)

This will not only help checking planning vision and its implementation but also validating progress and suggests corrections if necessary. The Consultants recommend that the Master Plan is reviewed and updated after **every five years** of its notification. The activity may be carried out with the help of in-house planning team or the services may be outsourced externally to planning consultants.

It is presumed that the plan updating and review process would consider the components of the master plan and the factors that the land uses and development changes which might have emerged over that period in an integrated manner. Thus it is very much necessary that the plan custodians and stakeholders must keep record of all the factors and processes in form of a database such as population dynamics, base-map review and updating, land use changes and physical implementation of the projects designed under the Master Plan 2011-2031. It is further suggested that the concerned agencies responsible for each sector under the Master Plan should send report to the TDCP on annual basis against the policies and actions taken by them for Master Plan Implementation. This will help out the overall planning process for plan monitoring, reviewing and updating.

2.7.4 LAND USE CHANGE PERMISSIONS:

The matters related to land use issues / permission to change the land use should be referred to the District Planning & Design Committee (DP&DC) constituted under the Punjab Land Use Rules, 2009 for taking appropriate measures. Operational and technical issues/conflicts shall be decided upon by the DP&DC locally. However, the *Core Implementation partners* should elevate the proposals/ recommendations to the Government through Executive Committee for Master Plan Implementation & Murree Steering Committee for deliberation and decision where DP&DC is unable to offer solution / recommendation.

2.7.5 COORDINATION & INTEGRATION:

It is envisaged that the MPSC shall ensure coordination and integration of all the stakeholders for achieving the goals of the Murree Master Plan 2011-31. The MPSC shall also ensure that annual monitoring report is submitted to the CDG Rawalpindi (as CDG also acts as Plan Custodian) to facilitate Master Plan updating and policy revision. This will not only help checking planning vision and its implementation but also validating progress and suggests corrections if necessary. The Consultants recommend that the Master Plan is reviewed and updated after **every five years** of its notification.

2.8 FORESEEING MURREE: 2016 & 2031 SSCENARIOS

Sector	Scenarios	
	2016	**2031**
1. Sustainable Land Use Development	• Having comprehensive disaster resilient building control and urban development system in place • Iproved city scape without enchroachment and cluttered development. • Safe and healthy communities with a diverse oppourtunities in sustainable precincts. • Transit oriented development patterns. • Increased walkability choices and conducive freedom for all weathers. • Heritage and cultural activities to grow • Free and un-obstructed roads, walkways are emerging in Murree • With improved Pedestrian infrastructure. • Improved mobility and walkability options.	• Sustained institutional and legal frameworks for planning control, building control & disaster management • New Mixed Use Precincts will result into planned zoned areas, integrated & enlivened streets and self-sustaining neighborhoods • Conserved urban forests will result in enhancing more green space of Murree and enhancing eco-cultural links • Conserved of Heritage Sites resulting in preservation of built heritage and enhancing heritage tourism • Hazard zones are identified mitigating the impacts of natural hazards • d form a functional and efficient lping improve the city image • Adoption of sustainable energy use and reduction in use of fossil fuels • Standardization of tourism services will help 80% quality assurance for the tourism products • Promoted handicrafts as local industry will help in meeting 20% of livelihood opportunities for local population • Protected urban roads shall be covered through pedestrian walkways with improved pedestrian. • Opening of New approach road links to be Murree, Bhurban • Safe and resilient city streets • Urban regeneration projects to improve 90% of socio-economic and physical development of core economic zones of Murree

2. Sustainable Tourism	• Expected 80% improvement of tourism infrastructure will be done through private sector investments • Murree's Tourism web portal launched enhancing efficiency of tourism sector services, saving 1000s hours of precious time in waiting and aimless roaming • Use of Social Media for the promotion of tourism in Murree will bring public next to TDCP to have a firsthand feedback • Business competitions like Hotel/Restaurant of the Month helping in 75% improvement of tourists' trust and value for money • Annual Tourism Festivals & Photography, Video Documentary competitions will bring tourists trust in Murree as a destination • Development of standards and accreditation system for tourism services increases buyer's confidence and bringing back maximum value for their monies being spent. • Eco-tourism guidelines will ensure sustainability and natural protection • Provision of missing public / tourist infrastructure such as weather protected walkways, sit areas; public lavatories will improve 90% tourists trust and interest in Murree.	• Greater participation of private sector in providing high standard tourist services such as package tours, development of heritage hotels, health resorts and conference centers • Design competitions and promotions such as "Murree Tourism Branding" increasing community participation and tourism development • Electronic transactions and virtual traffic increased and saving million hours of precious time • Social corporate responsibility and increased level of participation is ensured • Value for money and product standardization is ensured • New cultural activities to emerge • Standardized tourist services to emerge • Establishment of eco-tourism activities such as nature lodging, nature care in Murree to help protection of nature • Missing public / tourist infrastructure facilities are improved

2. Sustainable Tourism (Cont.)	• Construction of hospitals will promote medical tourism • Information signs, pedestrian signals and way finding maps installed and improving accessibility and mobility patterns • Care for Nature to increase • Development of vertical linkages will improve 50% pedestrian accessibility & mobility • Improvement & upgrading of hiking treks will improve walking and accessibility • Construction of new Tourist Information Centers (TICs) will improve information dissemination. • Installation of WiFi boosters in Murree will improve the information dissemination and will save million hours of time • Eco-tourism products launched • Development of a Tourism Training Institute to produce 100% trained tourism sector employees & increasing 50% livelihood opportunities	• Modern and efficient healthcare facilities to attract specialized tourist draw. • Overall pedestrian safety, accessibility and mobility is increased • Interaction with nature is increased and people are more aware now for nature protection • Murree tourism infrastructure increased • Tourism information sharing made easy • Tourism options & activities increased • Trained tourism services staff produced increasing product quality

3. Urban Design Interventions	• Improved cityscape through Inclusion of Urban Design parameters in Building Regulations. • Advertisement control to help reduce visual clutter. • Urban revitalization to help upgrade Murree's infrastructure. • Façade improvement of buildings to enhance city image and sense of place • Erection of Sculptures and landmarks to increase site memoir • Removing of Wall Chalking / Graffiti to improve city image • Conservation of historical buildings to sustain architecturally important buildings • Urban Regeneration Projects to optimize socio-economic & physical infrastructure of core areas by 100% • Design & Construction of a Grand Stand / Multipurpose Sports Ground to improve sports competitions and leisure activities	• Restored and maintained image of Murree reflecting it a world class eco-tourism city. • All improved skyline and city's aesthetic appearance • Improved street scape and furniture. in the project areas • Sense of place is enhanced and city image built • Sculptures are added to cityscape • Street visualization improved • Murree's history conserved • New cultural activities are injected in Murree's tourism • Socio-economic and physical infrastructure is improved in targeted areas through urban regeneration projects • New sports facilities to promote sports tourism in Murree

4. Sustainable Transportation Planning	• Design, Construction and rehabilitation of primary, secondary & tertiary roads in Murree to enhance mobility & accessibility by 100% • TOD based development patterns to enhance walkability, mobility and efficiency • Improvement of pedestrian facilities to enhance 100% pedestrian safety and accessibility • Development of new parking facilities to address parking problems by 100% • Intra-city mass transit terminals with allied facilities shall improve public transport sector by 80% • Installation of illuminated signage and signals to increase pedestrian & vehicular safety. • Implementation of traffic management plan to improve system efficiency. • Launching of online public facilitation and information system to help the tourist to manage and plan their routes shall reduce local traffic problems. • Initiating TDCP bus service to off-load traffic from Murree roads • Intosuction of transit modes like ropeway system and jitneys to reduce traffic congestionAdoption of traffic calming measures to improve pedestrian and vehicular safety and increased mobility/accessibility	• Better roads, walkways and transit means of communications supporting eco-friendly commuting values. • Murree will have an efficient and cheap mobility networks to connect citizens with major employment areas, places of learning and cultural and recreational destinations • Pedestrian & vehicular safety is ensured • Parking problems are addressed • Freight transport management improves city congestion • Affordable and efficient public transport system with gradual reduction in need for individualized motor transport • Traffic problems addressed • Traffic demand management through electronically public participation • Linkages improvement & reduction of Murree bound traffic • Pedestrian safety is ensured • Alternative form of passenger movement system in place • Pedestrian safety ensured

5. Infrastructure Development	• Replacement/augmentation of all existing worn out exposed water and sewerage lines to improve efficiency and service delivery in the early short term. • Extending infrastructure network lines to left-out areas will improve the physical conditions of areas by 100% • Installation of pedestrian scale solar powered Street lighting to improve safety, walkability and energy conservation. • Development and construction of runoff drains system to improve collection and reuse of runoff water for the surface recharge • Development of green infrastructure to improve local environment. • Maintenance and consolidation of main KAS/channels to prevent bulk penetration of runoff water into lower strata thus reducing land sliding • Design and construction of construction of sewerage system to reduce pollution of streams and other surface sources. • Installation of water supply meters to help achieve water conservation and enhancement of municipal revenues. • Application of rainwater harvesting techniques to improve water conservation and efficiency.	• Infrastructure lines are protected resulting in adequate supply and efficient use of water resources to meet the needs of growing population and tourists • New Infrastructure network is added. • Public safety and street vision enhancement. • Better storm water management system is in place resulting in improvement of quality of water channels and water bodies • Protection of local biological, natural and human resources from the dangers of climate change • Land sliding mitigation measures adopted and reduction of natural land sliding hazards • Environmental conditions improved • Water conservation measures in place adding to municipal revenue generation • Water conservation being practiced through community participation • Rainwater harvesting improves water conservation and bridging gap between demand and supply in the long run.

6. Sustainable Environment Management	▪ Promotion of green economy to help local business development by 40% ▪ Introduction of agro-forestry in rural areas by growing indigenous trees for fodder and fuel will improve the livelihoods of rural communities and reduce pressures on forests ▪ Revegetation and management of verges of newly built roads (N-75) to control land sliding and erosion and enhance aesthetic profile of the area ▪ Increase in number of littering bins at public places to improve cleanliness and hygienic conditions ▪ Provision of bins in residential and commercial areas will help in mitigation of the problem of solid waste and solve the problem of littering and unhygienic neighbourhooods ▪ Establishment of temporary storage depots for solid waste will solve the problem of dumping of hazardous solid waste in open spaces and water channels thereby improving the solid waste management regime in the area ▪ Development of drains along roads to channelize run off water will save the pollution of surface water channels due to mixing of sewage and rain water ▪ Introduction of hedges/fences along crop fields/road verges by using local fruit trees will solve the problem of soil erosion/land sliding thus protecting fertile croplands and at the same time increasing the income of farmers	1. Local businesses get strengthened through green economy 2. Achievement of the aim of forest conservation and improvement of the environmental profile of Murree by strengthening forest department 3. Improvement of management/conservation of biodiversity by the establishment of forest/biodiversity research and monitoring center in biodiversity park at Bansra Galli 4. To support achievement of local food security and economic prosperity through fruit/vegetable cultivation on commercial lines in rural areas 5. Achievement of sustainable solid waste management to use municipal waste as a resource rather than a liability by gradual introduction of at-source segregation of waste and composting. 6. Significant reduction (upto 60%) in amount of disposable solid waste by establishing a Material Recovery Facility to remove reusable materials from solid waste 7. Increase in soil fertility and soil stability by promotion of backyard composters in rural areas/large houses 8. Establishment of a waste processing plant (50-100 t/day capacity) by involving private sector on BOT basis between Murree and Rawalpindi will improve the municipal waste treatment potential of Murree 9. Transformation of present solid waste management system into financially self-sustaining system by employment of the Polluter Pays Principle 10. Conservation of fresh water resources by a separate piped sewage collection system from hotels/commercial centers and homes 11. Minimization of water pollution by establishment of waste water treatment. 12. Maintain Clean and Green image of Murree by reducing vehicle based air pollution through better monitoring

CHAPTER 3; LONG RANGE PLANNING: 100 YEARS SUSTAINABILITY VISION FOR MURREE

This chapter includes vision, goals and suggestions for an integrated long-range land use and environmental management plan with a mission to build Murree as a more sustainable city. It starts by setting a 100-year vision for a more sustainable city structure for Murree and the infrastructure parameters needed to achieve it. Then it presents recommendations for managing future growth and change, natural resource management and land use development decisions.

3.1 WHY A 100-YEARS VISION?

This 100 years plan seeks to influence the future direction of urban development of Murree to ensure that it is healthy and sustainable by design and helps make its communities more liveable and closer knit while preserving and protecting its diverse natural assets. The long-term outcomes of this vision are:

- *More liveable and safer city,*
- *Better connected*
- *More efficient and productive*
- *More memorable and distinctive*
- *More sustainable*.

3.2 SECTORWISE VISION AND GOALS:

Housing

The residents of Murree have a choice of housing options that are affordable, accessible and eco-efficient and that support a variety of life styles. Housing represents local culture, environmental conditions and resources and is adaptable overtime to reflect changes in technology, demographics, economy and climate.

Transportation

Murree has a transport system that is easily accessible and meets commuting demands of all residents/tourists with a choice of convenient, comfortable, affordable and efficient transportation modes. It provides efficient connectivity at local, regional and national levels for people and commercial enterprises. All these targets are achieved in a safe and environmentally sustainable manner.

Communication

The residents of Murree are connected to each other and the rest of the world. Murree has an all-season reliable communication system that supports the involvement of all people, information dissemination, social cohesion, entertainment and economic growth.

Energy

Murree provides energy to its residents from a wide resource base with emphasis on renewable resources. The energy needs of all residents are adequately met in all seasons with minimum negative impacts on environment and positive contribution to the economy and tourism. Murree residents use energy in an efficient and responsible manner.

Waste Management

Gradually Murree has moved towards zero-waste situation with adoption of 3Rs (Reduce, Recycle, Reuse) methods for use of materials. Its residents use materials responsibly and minimize consumption. Murre adopts an efficient system of waste collection and disposal without harming its natural ecosystems and environment.

Water

Murree has an equitable, efficient and secure water supply which is adaptable to changing circumstances and conditions. The water management system aims at regular supply of high-quality water to its residents and protection of hydrological resources of the area. The people value water as a precious natural resource and guarantee equitable access to it for all living organisms.

Soil Conservation

The soil and land resources of Murree are conserved to maintain life-supporting systems including forests, crops, water channels and other habitats. The people use land and soil resources wisely to ensure their sustainability.

Biodiversity

Murree is rich in biological resources such as diverse flora and fauna. These act as foundation stone for the tourist status of the area. Murree conserves its biodiversity by ensuring intact ecosystems and habitats. Its built environment and infrastructure are developed with integration into natural landscapes and avoiding damage to environment.

Air

Clean and fresh air is considered as a basic human need. Murree manages its economic, transport and other activities to ensure provision of healthy air indoors and outdoors. The air shed of Murree is protected from harmful emissions and measures are taken to protect its ecology, landscapes and people from the impacts of climate change.

Forests

Forests of Murree are preserved, restored and protected through awareness, better management and enforcement of relative legislations. It utilizes its treescape to make it's urban areas beautiful, attractive and profitable for tourist industry, commercial and residential communities.

Livelihood Enhancement

Murree is expected to develop into an economically resilient, vibrant and environmentally sound urban center that supports provision of opportunities for individual economic prosperity.

Development of Tourist Friendly Image of Murree

Murree has arrangements to facilitate ever-growing number of tourists to provide them standard facilities of accommodation, transport, parking, guidance and recreation. The tourist products are attractive and of international standards to maintain the image of Murree as prime tourist destination.

Improvement of Tourist Industry

The local tourist industry has adopted the principles of sustainable tourism and is striving to achieve energy efficiency, waste management and water conservation within the sector. It has established many well-managed recreation centers to increase entertainment facilities for visitors.

Environmentally Sustainable Tourism

Many initiatives have been taken to encourage sustainability in tourism sector with an aim to minimize negative impacts of tourism on environment. Murree has protected and improved its clean and green image by conserving its forests, landscapes, and

dealt successfully with problems of littering, use of energy and water resource management.

Protection of local/traditional culture

The inhabitants of Murree recognize and protect their traditions, cultures, aesthetic values and distinctive characteristics. They protect Murree's natural and built assets.

Safety and Security

People in Murree feel safe, united and live in ways that reflect their respect and consideration for all life forms. The tourists feel secure and safe in hotels and in the area.

Health and Wellness

Murree supports and promotes healthy life styles to sustain physical, social and mental well-being of its residents. It promotes a way of life involving interconnected economic, social and ecological services for prosperous and happy communities.

3.3 STRATEGIES TO ACHIEVE OBJECTIVES OF 100-YEAR VISION:

In this section, some strategies and initiatives are suggested to identify potential ways to achieve targets of 100-year plan. This is not a final list and it only mentions examples of few, possible actions that could be taken. New and further initiatives can be suggested by individuals and organizations to move towards the targets of this plan.

Housing:

Goal	*The residents of Murree have a choice of housing options that are affordable, accessible and eco-efficient and that support a variety of life styles. Housing represents local culture, environmental conditions and resources and is adaptable overtime to reflect changes in technology, demographics, economy and climate.*
Strategy 1	**Increase the mix-use housing/buildings within communities** • Promote existing mixed-use development in Murree • Revision of by laws and regulations that discourage mix use development • Develop standards and guidelines for mix use
Strategy 2	**Create incentives for introducing eco-efficient, green land use and homes** • Introduction of financial incentives for eco-efficient buildings & land use development • Create awareness and start capacity building programs to support local companies to adopt green construction technologies and products • Improve current building by laws and develop standards to enforce all to participate in green housing and community designs
Strategy 3	**Introduce initiatives to eliminate slums and homelessness** • Introduce a comprehensive plan to gradually change the current temporary/congested homes/slums into organized residential communities • Support the development of hostels and boarding houses to

	provide cheap accommodations for tourists
Strategy 4	**Improve provision of public and semi-public amenities** • All buildings provide viable amenities (rain water harvesting, accessible courtyards) to utilize rain water, create opportunities for domestic food production and floral gardens
Strategy 5	**Research and develop building codes/laws to cater to Murree's specific geography, geology and climatic conditions** • Introduce regular research & development programs to protect buildings/structures from the dangers of land sliding, seismic disasters, torrential rains and soil erosion.

Transportation:

Goal	*Murree has a transport system that is easily accessible and meets commuting demands of all residents/tourists with a choice of convenient, comfortable, affordable and efficient transportation modes. It provides efficient connectivity at local, regional and national levels for people and commercial enterprises. All these targets are achieved in a safe and environmentally sustainable manner.*
Strategy 1	**Establish community designs that foster mixed-use development consisting of residences, offices and shopping centers** • Encourage land use policies that support commercial and retail activities near residential areas to reduce commuting needs • Integrate land use and transportation development schemes • Create awareness among masses of benefits of living in mixed-use areas
Strategy 2	**Promote the use of alternative modes of transportation** • Educate residents/tourists about the benefits of using alternative transportation and the facilities available • Provide an extensive walkway and bikeway system • Improve maintenance of walkways/footpaths (removal of snow and encroachments etc) • Provide public transport vehicles that are as comfortable and convenient as private vehicles
Strategy 3	**Promote medium occupancy and eco-friendly public transport vehicles** • Introduce energy efficient, low emission and medium-sized vehicles for public transport • Increase funding to ensure Murree has sufficient number of public transport vehicles to meet the demand in peak tourist season and busy hours
Strategy 4	**Improve the construction/maintenance of roads in all seasons** • Ensure well-built and well-maintained road network in all seasons

	• Improve signage and traffic markings on roads • Introduce green-roads by planting trees/shrubs along roads where permissible
Strategy 5	**Develop education/enforcement programs on traffic safety, public transport e** • Review parking fees in urban areas to discourage private cars • Educate the public of relative costs of different modes of commuting • Support flexible office/school hours to avoid traffic congestion • Encourage car-sharing among residents
Strategy 6	**Improve parking facilities** • Introduce terraced parking in accordance with local geography for vehicles

Communication:

Goal	*The residents of Murree are connected to each other and the rest of the world. Murree has an all-season reliable communication system that supports the involvement of all people, information dissemination, social cohesion, entertainment and economic growth.*
Strategy 1	**Develop communication infrastructure to support tourists and residents** • Encourage the development of communication infrastructure to efficiently disseminate information to public (electronic messages on roads, web-based information) • Ensure new buildings and commercial centers have necessary facilities of latest communication technologies for their users
Strategy 2	**Introduce public-education programs to provide people with necessary skills to access modern communication** • Introduce public awareness campaigns to increase skills of people to use modern communication technologies • Increased use of easy and plain language in public communication • Support the resource-limited communities and poor households to access Modern communication facilities
Strategy 3	**Encourage the use of communication technologies to decrease the commuting needs of public** • Introduce and adopt technologies that can reduce the commuting needs of people (teleconferencing, online shopping etc) to reduce driving needs and traffic congestions
Strategy 4	**Increase communication facilities to promote human interaction and social cohesion** • Ensure that communication infrastructure supports the education/teaching and social development at local level • Use modern communication technologies to enhance arts and promote cultural activities • Use communication technologies to popularize the concepts/methods of sustainable tourism and living

	• Support communication programs that can improve local identity and inform national/foreign tourists about the culture, traditions and tourism potential of Murree
Strategy5	**Use of communication in emergencies/disasters** • Develop and communicate information about emergency warning systems that alert residents about possible disasters

Energy:

Goal	*Murree provides energy to its residents from a wide resource base with emphasis on renewable resources. The energy needs of all residents are adequately met in all seasons with minimum negative impacts on environment and positive contribution to the economy and tourism. Murree residents use energy in an efficient and responsible manner.*
Strategy 1	**Support alternative energy produced from low-impact renewable resources** • Provide adequate funding and support for development of alternative energy resources • Explore the production/use of biogas for cooking and heating in homes • Promote commercialization of low impact, renewable energy resources
Strategy 2	**Support policies/initiatives to reduce the use of energy** • Promote energy efficient products to reduce energy consumption • Implement energy efficiency standards for products/services • Improve building regulations to reduce energy wastage in buildings • Impose higher rates of fees/penalties on high energy using vehicles/businesses • Improve traffic management to avoid traffic jams/congestions resulting in higher fuel consumption by vehicles • In public sector, encourage green procurement policies to prefer energy efficient products
Strategy 3	**Introduce measures to conserve energy** • Encourage construction of buildings with improved solar orientation • Develop a pricing mechanism to discourage higher levels of electricity consumption • Encourage the use of public transport instead of private vehicles • Provide funding for research and development concerning energy efficiency
Strategy 4	**Encourage urban infrastructure that supports energy conservation and use of renewable energy resources** • Encourage infrastructure supporting walkability and discouraging vehicle use • Encourage more compact forms of development that are more energy efficient

	• Explore financial mechanisms to support infrastructures that reduce energy consumption

Waste Management:

Goal	*Gradually Murree moves towards zero-waste situation with adoption of 3Rs (Reduce, Recycle, Reuse) methods for use of materials. Its residents use materials responsibly and minimize consumption. Murree adopts an efficient system of waste collection and disposal without harming its natural ecosystems and environment.*
Strategy 1	**Establish programs to encourage people to consume less goods** • Increase the practice of reuse of materials to reduce waste generation • Promote the practice of sharing of materials/tools etc among neighbours • Launch regular campaigns to encourage citizens to sustainable consumption
Strategy 2	**Help in development of markets/business ventures using waste as a resource** • Support using organic waste for biogas generation • Create accessible composting facilities throughout the area • Develop *energy from waste* schemes as technologies for these become available • Encourage communities and businesses to adopt recycling practices • Explore opportunities for waste-related industrial projects on regional scale
Strategy 3	**Encourage commercial and business centers to minimize generation of waste** • Support public/private organizations to adopt green procurement policies to reduce their waste generation • Promote products that have long life spans
Strategy 4	**Improvement of waste collection, transportation and disposal systems** • Strengthening of TMA Murree in its capacity to collect, transport and dispose waste in a sustainable manner • Introduction of material recovery facilities from solid waste • Gradual introduction of 3R system of waste management (reduce, recycle, reuse) through legal and administrative plans • Identification of suitable landfill sites for waste disposal
Strategy 5	**Develop education and awareness programs for public to reduce waste generation** • Introduce educational programs and campaigns that encourage public to reduce waste production • Introduce training programs to prepare manpower for employment in composting/biogas production projects • Promote adoption of standards like LEED and GLOBE 21 in construction and hotel industries to minimize waste generation

Water:

Goal	*Murree has an equitable, efficient and secure water supply which is adaptable to changing circumstances and conditions. The water management system aims at regular supply of high-quality water to its residents and protection of hydrological resources of the area. The people value water as a precious natural resource and guarantee equitable access to it for all living organisms.*
Strategy 1	**Introduction of water-conserving infrastructure designing to minimize impacts on local hydrology, decreased consumption and improved ecology** • infrastructure development emphasizing recycled water • Designate a reasonable permeable land surface for surface recharge • Introduce measures for soil erosion controls and decrease impermeability • All development initiatives must accompany hydrological impact assessments
Strategy 2	**Reduce all forms of water and stream pollution** • Control entry of wastes into water channels • Disconnect impervious surfaces from the drainage system so that runoff does not flow directly into stream/waste water channels • Establishment of water treatment and recycling facilities to ensure high level treatment of waste water • Reduce sediment loading into streams through erosion control
Strategy 3	**Restore natural water quantity and quality to improve hydrological cycling** • Promote rain water harvesting techniques and water retaining gardens in houses/buildings • Increase native tree planting and landscaping • Encourage on-site rainwater storage and use particularly in rural areas • Develop plans for natural restoration of aquatic channels • Introduce policies reducing imperviousness and increase permeability • Support the ecologically sound forms of irrigation in crop fields • Apply full cost accounting to water quality and quantity to ensure that water extraction rate does not water recharge rate
Strategy 4	**Conserve water through reduced waster consumption and recycling** • Reduce water consumption through minimization of wastage by use of water efficient instruments in bathrooms, kitchens etc • Improve the current water supply system to reduce leakage and wastage • Apply full scale water metering in homes, hotels and businesses • Promote water conservation ethics and practices in common people • Encourage construction and development activities using recycled water
Strategy 5	**Develop a strategy for water shed protection** • Develop a system of continuous monitoring and inventorying of water balance of the area

	• Control deforestation to minimize soil erosion and land sliding

Land and Soil:

Goal	*The soil and land resources of Murree are conserved to maintain life-supporting systems including forests, crops, water channels and other habitats. The people use land and soil resources wisely to ensure their sustainability.*
Strategy 1	**Incorporate sustainable land use planning into all infrastructure plans and schemes** • Promote mixed use development to reduce the demand of land resources
Strategy 2	**Restore degraded lands through ecological and green infrastructure designs** • Introduce reforestation/revegetation of degraded lands • In urban areas, use small, open lands for community gardens and vegetable production • In highly disturbed areas, use chemical and biological methods to restore soils
Strategy 3	**Reduce soil pollution, soil erosion and land sliding etc** • Reduce open dumping/discharge of solid waste, sewage and pollutants into soils • Improve embankments of water channels through ecological means to control soil erosion • Increase vegetation cover in the area to control soil erosion and land sliding • Introduce effective measures to control floods and runoff water to avoid land sliding and erosion

Biodiversity:

Goal	*Murree is rich in biological resources such as diverse flora and fauna. These act as foundation stone for the tourist status of the area. Murree conserves its biodiversity by ensuring intact ecosystems and habitats. Its built environment and infrastructure are developed with integration into natural landscapes and avoiding damage to environment.*
Strategy 1	**All development plans/policies are committed to sustainability of natural capital of Murree** • Integrate biodiversity conservation into development planning • Incorporate ecosystem services (natural cleaning of air/water, biogeochemical cycling, carbon sinks) into development plans
Strategy 2	**Improve health of habitats and promote resilient ecosystems** • Protect and improve health of ecosystems through water management, reforestation, control of erosion etc, • Encourage use and growth of native plant species in home gardens • Secure sufficient lands/forest areas for wildlife animals • Reserve sufficient wide areas along water channels for riparian corridors

Strategy 3	**Create new parks/protected areas for conservation of wildlife** • Establishment of protected areas • Introduction of *in situ* and *ex situ* conservation programs • Protect forests and landscapes to conserve biodiversity
Strategy 4	**Create public awareness about the significance of conservation of flora and fauna** • Increase public participation in decision making that can affect ecosystems • Introduce campaigns/education programs to increase support for local conservation initiatives • Improve public access to information about local ecosystems, forests and biodiversity • Introduce ecologically sound nature based tourist activities such as bird watching, eco-lodging to create awareness and resources for biodiversity conservation
Strategy 5	**Develop research and analysis facilities for continuous monitoring of biodiversity** • Establishment of a biodiversity/wildlife study centre for inventory, population monitoring, habitat change, and conservation strategies • Regular assessment of impacts of climate change on local habitats

CLEAN AIR:

Goal	*Clean and fresh air is considered as a basic human need. Murree manages its economic, transport and other activities to ensure provision of healthy air indoors and outdoors. The air shed of Murree is protected from harmful emissions and measures are taken to protect its ecology, landscapes and people from the impacts of climate change.*
Strategy 1	**Improve transportation to reduce emissions** • Promote fuel efficient vehicles to reduce emissions • Implementation of motor vehicle emission control measures
Strategy 2	**Increase greenery to improve air quality** • Promote planting of trees/plants along roads, in open spaces
Strategy 3	**Promote energy efficient public transport system** • Encourage public transit and transport to discourage private vehicle use
Strategy 4	**Monitoring of air quality** • Establish a mechanism for regular monitoring, data collection of air quality

FORESTS:

Goal	*Forests of Murree are preserved, restored and protected through awareness, better management and enforcement of relative legislations. It utilizes its treescape to make it's urban areas beautiful, attractive and profitable for tourist industry, commercial and residential communities.*
Strategy 1	**Introduce long term effective legal and management measures to control deforestation** • Improve current legal/management tools to stop illegal logging, unauthorized harvesting etc • Improve the capacities of the forest department in terms of manpower, equipment and training etc
Strategy 2	**Regular monitoring of forests through data collection, scientific research, and inclusion of new areas under forests** • Establishment of research and development facilities for regular monitoring of forests • Provision of alternate energy options in rural areas to decrease pressures on forests
Strategy 3	**Developing special forest conservation areas such as national parks, wildlife sanctuaries etc** • Establishment of special forest conservation areas with no external interventions • Identification and protection of forests with high diversity of plants and animals • Conservation of forests with unique combination of plants or endangered animals
Strategy 4	**Implement reforestation programs at higher rates to compensate the loss due to deforestation** • Launch special reforestation campaigns to restore deforested areas
Strategy 5	**Create public awareness and support for forest conservation programs** • Introduce forest conservation programs among masses to generate public support • Increase public participation in all forest management policies/programs

Livelihood Development:

Goal	*Murree is expected to develop into an economically resilient, vibrant and environmentally sound urban center that supports provision of opportunities for individual economic prosperity.*
Strategy 1	**Enhance programs and supports that help unemployed and low income people achieve economic self sufficiency** • Initiate a shared and collaborative investment approach to develop and implement education, professional training, skills development and job placement services • Introduction of tourism-related job skills training
Strategy 2	**Explore and promote indigenous, innovative wealth generating strategies** • Communal gardens • Local handicrafts • Adventure tourism
Strategy 3	**Increased sharing of tourism based income by local institutions/people** • Introduction of rules and laws to increase the share of local government and people to provide better civic services to improve their standards of life

Development of Tourist Friendly Image of Murree:

Goal	*Murree has arrangements to facilitate ever-growing number of tourists to provide them standard facilities of accommodation, transport, parking, guidance and recreation. Its landscapes, tourist products and facilities have made it a prime tourist destination.*
Strategy 1	**Provision of adequate facilities for tourists** • Improved transport facilities with minimum traffic jams/congestions • Proper guidance and signage facilities • Efficient water supply, sanitation and waste water disposal system • Urban security
Strategy 2	**Spruce up recreation/heritage sites** • Improve the tourist attracting sites with proper signage, civic amenities and environmental improvement
Strategy 3	**Celebrate tourism weeks/ fairs** • Institute and celebrate Tourism Promotion weeks/fairs with the active participation of local communities • Organize seminars/conferences on tourism development and invite prominent personalities to encourage responsible tourism in Murree
Strategy 4	**Marketing Murree as a tourist station** • TDCP has marketing programs to project tourism friendly image of Murree • Heighten and elaborate the tourism potential of Murree • Advertise Murree as a prime tourist destination

Eco-Tourism Promotion:

Goal	*The local tourist industry has adopted the principles of sustainable tourism and is striving to achieve energy efficiency, waste management and water conservation within the sector. It has established many well-managed recreation centers to increase entertainment facilities for visitors.*
Strategy 1	**Improvement in hotels/restaurants** • Improvement of the quality of private hotels/restaurants up to international standards • Standardization/Accreditation of hotels/restaurants
Strategy 2	**Introduction of economical and quality package tours** • Operation of quality package tours for groups
Strategy 3	**Gradual adoption of eco-tourism principles by tourist industry** • Adoption of principles of sustainable tourism for efficient resource use, minimum waste generation, water resource management • Promotion of healthy and nature-oriented tourist activities such as bird watching, trekking etc
Goal	*Many initiatives have been taken to encourage sustainability in tourism sector with an aim to minimize negative impacts of tourism on environment. Murree has protected and improved its **clean and green** image by conserving its forests, landscapes, and dealt successfully with problems of littering, use of energy and water resource management.*
Strategy 1	**Placement of environmental issues at the core of tourism development policies** • Lead, promote and facilitate local Agenda 21 process • The tourism development plans will focus on environmentally sustainable tourism
Strategy 2	**Protection of key environmental and tourist assets** • Conservation of forests, landscapes, heritage sites and other tourist attractions by increased cooperation among different departments • Studies to evaluate the economic importance of tourism resources • Regular review of tourism resources for their conservation and upgradation • Devise plans to protect tourism in Murree from impacts of climate change
Strategy 3	**Promote good environmental practices within tourism sector** • Better management of water, waste and energy • Reducing the level of litter • Reducing Green House Gas emissions • Conservation of built, cultural and natural heritage and • Implementation of environmental standards in the development of tourism products

Protection of local traditions/culture:

Goal	*The inhabitants of Murree recognize and protect their traditions, cultures, aesthetic values and distinctive characteristics. They protect Murree's natural and built assets.*
Strategy 1	**Protection and creation of aesthetically beautiful places to provide greater opportunities** • Development and promotion of beautiful habitats, landscapes and sites • Inclusion of stringent aesthetic requirements in all development plans
Strategy 2	**Documentation and protection of local poetry, traditions, foods and festivals** • Raise public awareness about the richness and significance of local cultures and traditions through print and electronic media • Organize festivals on quarterly or annual basis to promote local arts, poetry, foods among tourists • Establishment of a local arts/crafts center
Strategy 3	**Implementation of design performance standards in all new development schemes to ensure aesthetic improvement** • Adoption of local arts in all new developments • Sustain and celebrate environmental features in each neighborhood • Bring beautiful public places into view for the aesthetic enjoyment

Physical & Urban Security:

Goal	*People in Murree feel safe, united and live in ways that reflect their respect and consideration for all life forms. The tourists feel secure and safe in hotels and in the area.*
Strategy 1	**Improvement and monitoring of resident's perceptions of security and frequency of crimes** • Strengthening of police and law enforcement agencies • Introduction of community crime prevention initiatives • Creation of community based services and businesses to increase social inclusion and cohesion
Strategy 2	**Identification and prevention of risk factors leading to criminal behavior in teenagers and youth to prevent crime** • Help parents to develop better parenting skills • Provide counseling to families having children with difficult temperaments and personalities • Help families suffering from stresses of unemployment, low income and housing issues • Help children suffering from abuse, beating and neglect in families • Introduction of positive life skills programs for youth
Strategy 3	**Increased security facilities in tourist attracting areas**

	• Display and provide information about emergency services at all tourist centers • Implementation of monitoring programs and facilities to prevent crimes at public places • Provision of special security facilities for ladies/children and old people

Health and Wellness:

Goal	*Murree supports and promotes healthy life styles to sustain physical, social and mental well-being of its residents. It promotes a way of life involving interconnected economic, social and ecological services for prosperous and happy communities.*
Strategy 1	**Provision of clean drinking water to all residents** • Develop environmentally sustainable methods of water harvesting and sewage treatment • Introduction of modern water conservation measures to sustain water supplies
Strategy 2	**Improve education facilities** • Increase in number of institutions for providing education to increase employment and higher education opportunities • Develop innovative, market oriented educational programs that meet the needs of changing future job markets
Strategy 3	**Health facilities for all particularly women, children and the poor** • Provision of adequate health facilities for local residents and visiting tourists • Promotion of healthy habits of cleanliness, exercise and sports among residents
Strategy 4	**Increase investments in health related infrastructure** • Make strategic investments to improve hospitals, health information system and provision of medical personnel etc

CHAPTER 4; STRATEGIC ENVIRONMENTAL ASSESSMENT OF MURREE MASTER PLAN

4.1 INTRODUCTION:

This part presents the results of a strategic environmental assessment (SEA) of the Murree Master Plan that has been proposed for the Development of Murree as a Pollution Free Tourist Town.

Purpose of Strategic Environmental Assessment

This account is a brief overview of SEA to clarify objectives of this report because it is not appropriate to give a detailed account of the nature, purpose and methodology of SEA in this report.

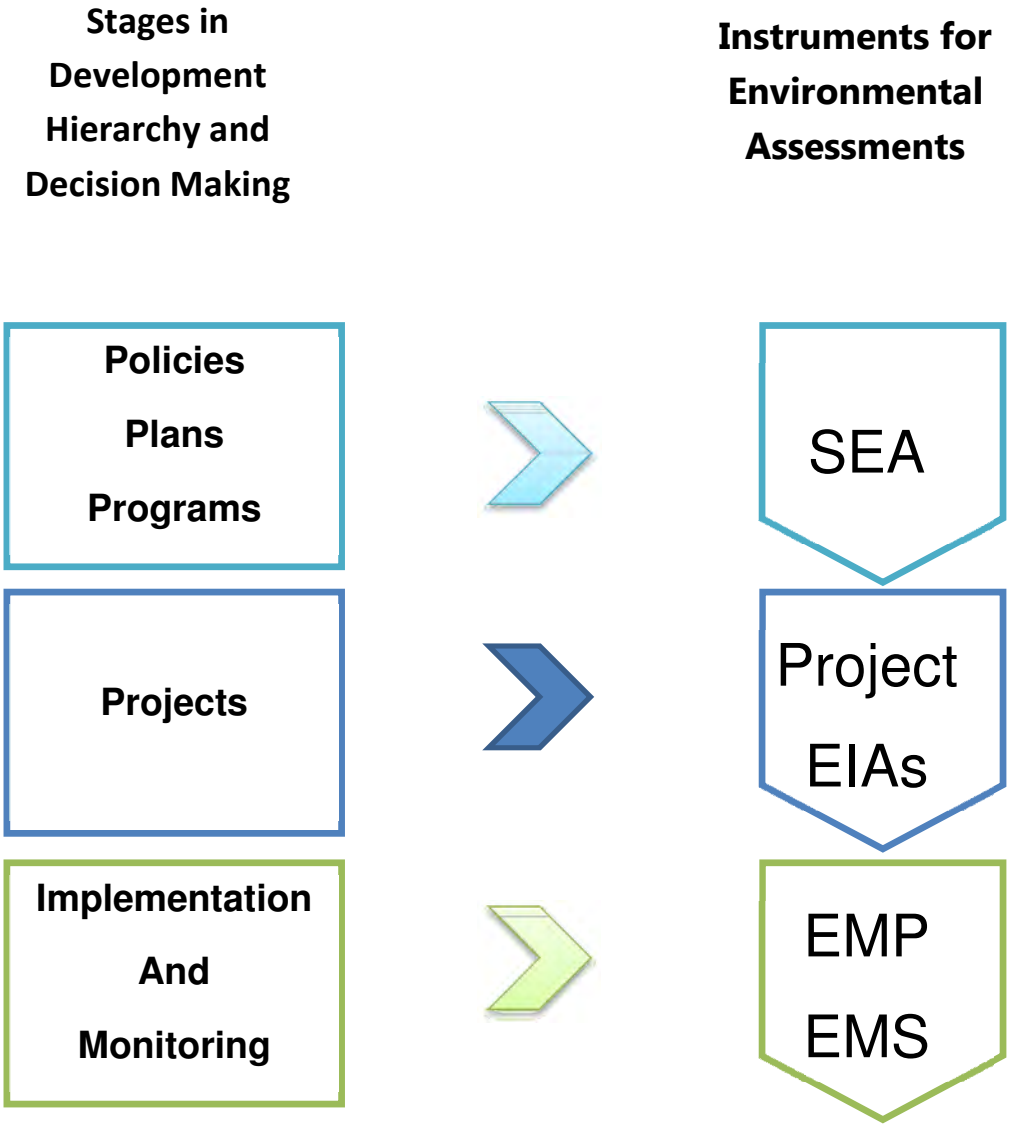
Strategic Environmental Assessment (SEA) is a relatively new tool for incorporating environmental considerations into decision making. It is generally applied for assessing the documents including plans/policies for future development and even the legislations if feasible.

SEA is a form of Environmental Impact Assessment (ElA), but has a different emphasis compared with project-based EIA. Project-based EIAs carry out a detailed analysis of the proposed projects in order to make specific projections about the possible impacts of that project on the the biophysical, socio-economic and cultural environment. This information helps in making final decisions about the project and it can lead to modification, postuponnment, or even cancelation of the intended activity with the objective of reducing, mitigating or avoiding significant harmful environmental impacts. The main aim of SEA is also the same as of EIA (i.e., prediction of adverse environmental impacts) but its level of application is higher that of EIA. SEA is used to evaluate policies, programmes, and plans, rather than specific project proposals..

Benefits of SEA

- The most important benefit of SEA is that it allows a comprehensive and integrated overview of a set of plans/policies that may possibly have implications for the same geographical area and/or the same environmental parameters. It is particularly useful when the time span of a plan is spread over many years or decades as it allows an appraisal of the overall beneficial/harmful environmental impacts of the plan, away from the detail of specific project proposals. Therefore, SEA is an opportunity to step back and review the policy, programme, or plan under consideration before its implementation to ensure that the basis of the plan is environmentally sound.

Figure. 4.1 SEA, EIA, EMP and Their Relation To The Development Hierarchy



Source: WOOD AND DJEDDOUR, 1992; SADLER AND VERHEEM, 1996

- Usually SEAs are based on the basic principles and concepts of sustainability. These concepts are used in formulating criteria for evaluation of the proposal and forecasting the future changes in the environment which are likely to occur after the proposal has been implemented. The aim of sustainability concept is to seek a balance between the demands of economic development, improvement of living standards of communities and protection of the environment. SEA is therefore a fundamental tool to promote sustainable development as it emphasizes incorporating environmental considerations into formulation of plans and policies before their implementation. In this way, SEA improves the planning and decision-making process to incorporate environmental costs and trade-offs at the earlier stages of decision making.
- It is important to mention that the term "environment" in SEA includes not only the natural environmental components but also the human communities affected by the proposed policy or plan. The socio-economic profile of the local communities, cultural values, traditions and health are seen as part of the overall environment that might be influenced by the plan or policy. In terms of the concept of sustainability, the support of local communities for the plan or programme is given a high weighting, which makes the avoidance of adverse impacts particularly important.
- Another important issue in planning for sustainable development is the significance of creating diverse and new opportunities for future resource users to enhance the chances of improved standards of living. This means that careful thought must be given to the consequences of proposed actions to ensure their impacts do not unintentionally constrain such future options.
- SEA is very appropriate to the evaluation of planned activities in Murree. The combination of all the proposed activities constitutes a major change in the character of the town and its role, not only in Murre but in the country as a whole. Murree receives the largest number of tourists than any other site in Pakistan and it is of major regional and national importance as the prime tourist destination. Equally, unintended consequences of the proposals, particularly if they affect the economic and social base of the local area or region, will be of great importance. It is an effort to determine in totality the broad environmental impacts of all aspects of the Murree Master Plan.
- This report also marks the first attempt in Pakistan by the consultants to apply environmental assessment to policies and plans.

4.2 LEGAL & STATUTORY REQUIREMENTS FOR SEA:

There is an emerging framework of international and national legislations on SEA in both developed and developing countries.

- **International legislations**. Two important international legislations/protocols now recommend the use of SEA. Firstly, the European Directive (2001/42/EC) on

the *Assessment of the Effects of Certain Plans and Programmes on the Environment*, known as the SEA Directive, came into effect in 2004 and applies to all 25 member states of the European Union. It requires an environmental assessment for certain plans and programmes at various levels (national, regional and local) that are likely to have significant effects on the environment. Secondly, a similar provision is contained in the SEA Protocol to the Espoo Convention (UNECE Convention on EIA in a Transboundary Context), agreed in Kiev in May 2003. The Protocol includes a separate article encouraging the use of SEA in the context of policies and legislation.

- With increasing popularity of SEA, donor agencies are increasingly demanding from their developing country counterparts to streamline their procedures and requirements in this area. The *Paris Declaration on Aid Effectiveness,* adopted on 2 March 2005, commits the donor community to reforming the ways in which aid is delivered and to working in closer harmony to enhance development efficiency and effectiveness. The Paris Declaration calls upon development agencies and partner countries to develop common approaches to environmental assessment generally, and to SEA specifically (*www.oecd.org/dac*):

National Legislations

Many developed and developing countries have either national legislative or other provisions for SEA, *e.g.* statutory instruments, cabinet and ministerial decisions, circulars and advice notes. Following are some of the legislations at national level in Pakistan, which effectively envisaged the importance of meeting global environmental sustainability criteria for policies and plans at all levels.

- *Clean Development Mechanism (CDM) of Ministry of Environment, Pakistan*
- *Pakistan National Environmental Policy 2005*

4.3 OBJECTIVES OF SEA:

Background of the issue

In the past, the development of tourism-related infrastructure has resulted in environmental degradation and negative socio-cultural impacts. If this development follows the path of brown economy ignoring environmental considerations in the economic development, both local and national tourist industry will be affected by negative environmental impacts and Murree will lose its status as the prime tourist destination in Pakistan. To avoid this, future development in Murree should proceed on the principles of green economy and eco- tourism, leading to sustainable development. There is a need to balance economic and tourism development with environmental conservation. Previously, two master plans have been prepared for Murree, (1977 &

1988) but due to various reasons, these plans could not achieve their objectives. In these periods, the structure of Murree has undergone drastic changes deteriorating its geography, ecosystem health, demographic characteristics and tourism potential. Recently, Government of the Punjab took a serious note of this crisis and initiated many reforms including preparation of a new master plan.

The Case Study: Objectives

Strategic Environmental Assessment (SEA) is a form of environmental impact assessment used to evaluate plans, policies and programs rather than individual project proposals. It is an analytical and participatory tool for up-streaming and mainstreaming environmental issues into the decision-making process. The main advantage of SEA is that it allows a coherent overview of a set of proposals that may possibly have effects on the same area or same environmental parameters.

The main objectives of this SEA are:

- *To summarize how environmental considerations are integrated into the plan*,
- *To provide recommendations for environmental optimization and modifications of the Murree Master Plan*; and
- *The experience gained by TDCP in piloting SEA will provide an example for other institutions/departments in adopting SEA in future planning process*

Murree Master Plan:

- The first step of the SEA process is to identify the main points of the plan under assessment.
- The "**Master Plan to Develop Murree a Pollution Free Tourist Town (2011-31)"** is envisioned to help meet the needs of current and future tourists by developing Murree to sustain and improve its cherished and unique recreation assets. The environmentally sustainable development-driven plan establishes a clear direction to guide the city administration, provincial government, tourism ministry, TDCP and local inhabitants in their efforts to enhance the area's natural resources, recreation services and facilities. The Master Plan also provides guidelines to improve the livelihood conditions of the local residents according to the principles of sustainable development.

Master Plan Vision Statement:

Master Plan's strategic vision focuses on;

1-Promoting eco-tourism by developing "an eco-friendly urban tourism Niche" with a "pragmatic policy vision" to appropriate rich ecological, Cultural, heritage and inherent exquisite scenic characteristics of the town.

2-Planning for the residential / commercial, leisure, heritage and green precincts while catering for the needs of permanent / transient residents as well as biodiversity, in an environmentally sustainable manner.

Objectives of the Plan:

The Murree Master Plan sets its development strategy by evaluating the current situation and assessment of opportunities for socio-economic development, improvement of infrastructure, and conservation of biological resource base and promotion of sustainable tourism. The goal of the master plan is "to create an Eco-Tourism niche in Pakistan as well as global tourism market, by establishing Murree as a four season tourist destination, by restoring its rich cultural and historical heritage". The main objectives of the Plan are:

- To maintain and improve existing tourism activities / facilities and make tourism an instrument for generating employment, alleviating poverty and increasing foreign exchange earnings, by addressing the core issues;
- To incorporate environmental considerations into planning of development activities on this hill station with due considerations to the future projections;
- To regulate development activities in a way to minimize unnecessary adverse impacts on the natural landscapes, surrounding areas and the environment ;
- To facilitate the local population to get employment in tourism and tourism related business, by engaging local manpower in development and promoting the techniques of local craftsmanship;
- To improve the existing built environment by applying the knowledge of visual design elements, thus giving the place a character of its own;
- To improve levels of visitors' satisfaction in the Murree region, by transforming it from a nostalgic Murree to the gifted Murree i.e. bring back the original charms;
- To enhance and conserve the region's natural, heritage and cultural assets so as to make the region diversified in attractions and take the benefit of avoiding visitors' congestion on few places only;
- To encourage the productivity of the local crafts and small industries, by proposing flower, local crafts and other hawker's items displayed at properly planned but economically feasible ways;
- To enhance coordination between public and private sectors and upgrade resources to ensure desired standards of quality services;
- To plan to cater/accommodate increasing number of domestic and foreign tourists by channelizing traffic without disturbing the natural beauty and tranquility of the area;
- To protect the local communities from adverse impacts of increasing tourist population in social, environmental and economic terms;
- To make use of the feasible landscape strategies to attain the target of developing leisure areas with a desired level of spaciousness, accessibility and visual pleasantness; and

- To tackle spatial inefficiencies so as to avoid long travelling distances and times which negatively impact the area and cause urban densification with more efficient public transportation.

Master Planning Process:

This project team conducted out land use, transportation studies to ascertain challenges & opportunities. This exercise does include livelihood assessments of local residents and a comprehensive 'QUALITEST' to evaluate the tourist facilities available to tourists. It also prepared environmental profile of the area regarding current situation of environmental pollution, municipal sewage, solid waste and biological resources. The project team also consulted representatives of different public departments and agencies, NGOs, press, hotel owners and transport companies etc. This collaborative effort creates a plan that fully utilizes the consultant's expertise and incorporates the local knowledge, community participation and inputs from various institutions making it a comprehensively developed plan. The project aimed to deliver following tasks:

- *Development of an integrated GIS based Master Plan of Murree including land*
  - *use patterns, geological features, terrain, public facilities, transport etc.*
- *Formulation of Master Plan policy framework for eco-tourism planning, sustainable transport management, solid waste management, sewage treatment, improving local livelihoods and conservation of natural resources etc.*
- *Developing sectoral action plans for local environmental action planning, community based eco-tourism and resource management and sustainable livelihoods etc.*
- *Strategic environmental assessment of master plan policy framework.*

4.4 SEA APPROACH AND METHODOLOGY:

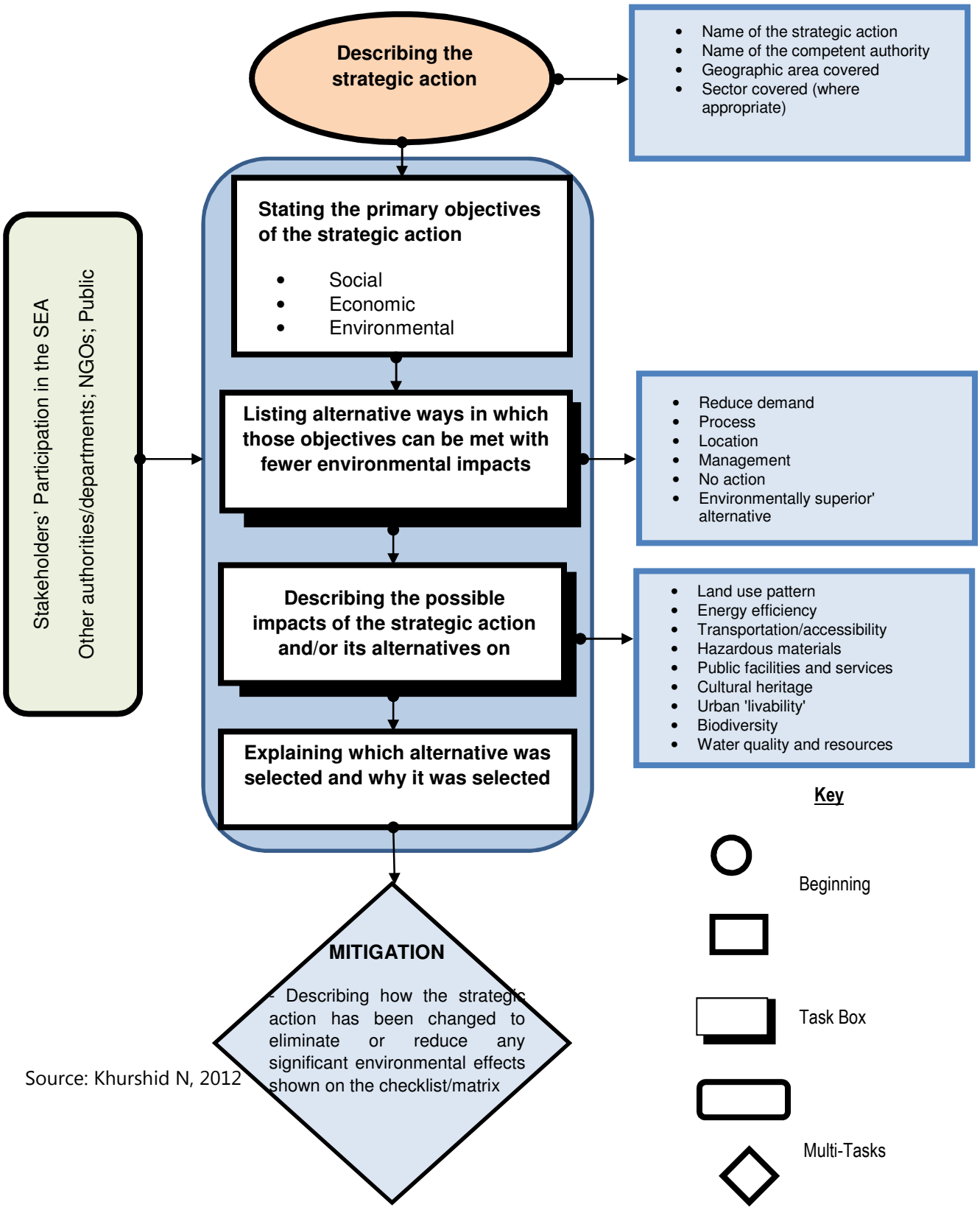
This SEA is based on Murree's proposed draft master plan. Table 1 presents the main steps of the method used to carry out SEA. They are shown as being linear, but actually they are iterative because their content was updated retroactively throughout the process.

- The assessment process was adapted to fit the circumstances and time constraints. Murree Master Plan (MMP), the focus of this assessment, has been discussed in early chapters.

The SEA was undertaken through the following tasks:

- ***Task 1:*** *Literature review and screening;*
- ***Task 2:*** *Scoping;*
- ***Task 3:*** *Development of analytical framework;*
- ***Task 4:*** *Consultation;*
- ***Task 5:*** *Impact assessment*
- ***Task 6:*** *Recommendation and conclusions.*

Figure 4.1 : SEA PROCESS



Source: Khurshid N, 2012

Aspects / Master Plan activities	Ecosystem, nature conservation	Physical landscapes	Solid Wastes	Water resource management	Infrastructure	Carrying capacity of tourist sites	Poverty alleviation	House hold income	Built heritage	Traditional livelihoods	Tourism potential
Land use development											
Mixed-use Transit Oriented Development	-	+/-	+	+	+	+	+	+	+	+/-	+
Upgrading/Provision of Transport Infrastructure	-	+	+	+/-	+	-	+	+	-	+	+
Upgrading/Provision of Tourist Infrastructure (e.g. shops, hotels, restaurants)	-	-	-	+/-	+	-	+	+	+/-	+	+
Activities of tourism development plan											
Nature/eco-tourism	+/-	+/-	+	-	+/-	+	+	+	+/-	+/-	+
Heritage/recreation	-	-	+/-	+/-	+/-	-	+	+	+/-	+/-	+
Externalities											
Solid Waste	-	-		-	-	-	-	-	-	-	-
Wastewater	-	-	-	-	-	-	-	-	-	-	-
Environmental pollution	-	-	+/-	-	-	-	-	-	-	-	-

Note:
"+" indicates a benefit
"-" indicates an impact
"+/-" indicates both a benefit and impact

Scoping

Scoping is a process which helps determine the direction and focus of the SEA. Scoping sets the limits of the SEA and directs it towards the main environmental concerns, including the stress factors, issues, and fundamental values at stake. It is used to establish an assessment framework tailored to the Plan's potential consequences. Scoping was carried out during the preliminary stages of SEA in order to identify interactions between the proposed development plans and environmental aspects. In scoping, particular emphasis was laid on the types of activities to be implemented as suggested in the Plan. In scoping it was tried to ensure that SEA focuses on those issues that are most important for design and decision making. Three categories of aspects, infrastructure, environmental and socio-economic were found to be of prime importance.
These interactions have been drawn in a matrix.(Table 2).

Consultation

For a better SEA, it is helpful to involve stakeholders in the process of SEA through consultation. To achieve this, a public meeting including representatives from hotel industry, tour operators, social action groups, academia, politicians and government departments was arranged to review the Master Plan. The representatives from different walks of life presented their points of view regarding development planning, tourism management and infrastructure development and environmental management in Murree. To solicit the opinions and views of tourists, a questionnaire survey was also conducted.

4.5 DEVELOPMENT OF ANALYTICAL FRAMEWORK

Selection of Specific environmental objectives:

Specific environmental objectives for MMP were selected based on the results of studies of the current environmental situation, forecasts, city development prospects, environmental issues presented in MMP. The selected issues are those which will most likely have negative consequences on the environment, tourism and livelihood. These objectives are:

- *Managing water resources rationally, reducing water pollution,*
- *Protecting and restoring land cover,*
- *Protecting and restoring landscapes, green areas and forests, greening of new areas and reforestation,*
- *Managing solid wastes,*
- *Reducing air pollution,*
- *Protecting against natural and geological disasters, and*
- *Reducing negative impacts on human health.*

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- *Managing solid wastes,*
- *Reducing air pollution,*
- *Protecting against natural and geological disasters, and*
- *Reducing negative impacts on human health.*

To evaluate the effects of policies of MMP on the achievement of these objectives, a set of Sustainability Criteria were selected which form the basis of sustainability appraisal of this plan. In the course of the carrying out of the appraisal, the Sustainability Criteria were refined, combined and clarified in order to avoid duplication and ensure a clear, focused set of criteria against which to evaluate the Master Plan.

Impact assessment:

The environmental assessment of the objectives and policies of the Master Plan constitutes a major focus of this SEA. The assessment was carried out by employing a series of matrices, the filling in of which led to a refinement and refocusing of the objectives and policies of the Master Plan. The objectives and policies were assessed against a set of previously defined Sustainability Criteria. The Sustainability Criteria consist of a set of strategic objectives, with a strong environmental/sustainable focus. The Sustainability Criteria were devised taking into consideration the findings of the community consultation process carried out to date as part of the Master Plan Review and the scoping exercise carried out as part of the SEA process.

Bio diversity/Flora and Fauna
B1 - Manage protected areas
B2- Conserve local forests
B3- Conserve wildlife/flora
Population
P1 - promote the creation of a healthy and high quality environment in which to live and work.
P2 - promote the strengthening and diversification of the local economy.
Soil
S1 - promote reclamation of degraded soils and conservation of land resources
Water
W1 - ensure adequate good quality water supply.
W2 - maintain/improve water quality of water channels/bodies
Air/Climate
C1 - maintain/promote improvement of air quality.
C2 - promote minimisation of greenhouse gas emissions to the atmosphere.
C3 - reduce trip frequencies and the need for motorized transport.
C4 - promote public transport and attraction of walking/cycling.

Cultural Heritage
H1 - safeguard Protected Structures and sites of historical/cultural value
H2 - enhance townscape and general landscape/environmental quality.

H3 - ensure adequate provision of open space/maintain and improve access to open space areas.

Tourism

T_1-Promotion of eco-tourism

In the filling out of the matrices, the impact, if any of the Strategic Objectives or of selected policies of the Plan, was recorded. The matrices record the following; no effect, positive effect, degradation of environmental quality or negative effect depending on the nature of the matrix.

Recommendations and Conclusions

These include mitigation measures, proposals for monitoring and recommendations.

4.6 CASE STUDY BASELINE:

Baseline data was collected (from secondary sources) based on reference indicators belonging to, population, biodiversity human health, fauna, flora, soil, water, air, heritage and landscape. It was found necessary to combine some indicators in order to avoid unnecessary duplication. In addition human health was not considered separately but arises under a variety of indicators – population, water, air.

At the end of each section, comments are also given on the likely evolution of it in the absence of implementation of the Master Plan.

Population

- The Murree City consists of Murree urban union council and two cantonments whereas Murree tehsil comprises of fifteen union councils. In 1998, its population was 176426 and in 2011, it is estimated to be around 200,000.
- The major part of its population is rural spread loosely in villages within the area. The annual growth rate is 0.68% and it is expected to increase up to 230,000 at the end of this plan's period (2030).
- In Murree town, with the development of hotels/lodges and restaurants, the residential profile of the area has been strengthened considerably. The number of residential units in Murree town is 6295, out of which 4400 are occupied by locals and 1273 units are available for tourists.
- Reflecting the national economic growth of recent years and increased participation in employment, a total of 32.2% of Murree residents are engaged in employment and 18.3% are working in trade and commerce.
- Reflecting the close proximity of Murree to Islamabad, Lahore and Pehsawar and security issues in Swat and Gilgit, there has been a phenomenal increase in tourists volume in recent years. Tourism has therefore emerged as the most important sector for employment in the area, which accounted for 36.4% of employment among local residents.
- In Murree, 32.9% population earns Rs. 5001 to Rs. 10,000 per month followed by

- 27.7% population that earns Rs. 15,001 to Rs. 20,000 per month. 26% population earns
- Rs. 10,001 to Rs. 15,000 per month followed by 9.4% population that earns Rs. 20,001 and above per month.

Biodiversity/Flora and Fauna

- Murree possesses areas of diverse character including forests, wildlife areas and water channels which have unique significance in terms of richness of flora and fauna.
- Biological resources represent one of Murre's most abundant natural resources. These resources also provide Murree with its tourist-attracting character. Murree and its adjoining areas are rich in biological resources such as flora, wildlife, forests and crop lands.
- The vegetation of Murree includes temperate and sub-tropical forests types, more than 200 herbaceous plants and large number of mushrooms, mosses and ferns.
- Murree also has rich diversity of faunal resources particularly mammals and birds. These include mammals like leopard, Rhesus monkey, grey goral, wild cats and more than 200 species of birds.
- Deforestation, habitat loss, forest fires, illegal hunting of animals and overharvesting of wild plants are the major stresses affecting the loss of biodiversity in the area.
- Agriculture is an important subsistence activity for rural population and main crops are maize, potato and vegetables. Some fruits such as apples, cherries and walnuts are also grown commonly. Livestock rearing is another significant activity in villages.

Soils/Geology

- Much of the Murree area is made up of sedimentary rocks (sandstone and siltstone) which are arranged in a layered pattern. These rocks have springs and seepage of water which sometimes lead to land sliding.
- The major mass wasting process in Murree area is land sliding, triggered mainly due to combined effects of natural causes such as inherited lithological and structural weaknesses and high precipitation rate, and manmade effects such as deforestation, large scale construction activities and poor drainage
- The area lies in a seismically active zone with higher chances of earth quakes.
- The soils are rich in organic matter but due to leaching and erosion, other nutrients such as phosphorus, potassium and zinc are deficient.
- Due to unplanned, extensive development, deforestation, inefficient drainage and heavy precipitation, the incidents of land sliding and soil erosion are common. These phenomenons pose a serious threat to local infrastructure, roads and biodiversity of the area.

Water

- Murree receives sufficient amount of precipitation (rain fall & snow , 1790mm/annum) and its richness of forests, wildlife and beautiful landscapes are dependent on hydrological characteristics of this area. But due to geomorphic problems and absence of adequate water resource management system, most of the water flows out into lower regions. This creates a serious problem of water shortage for local residents and tourists.
- During peak tourist season, local water supply system can meet 53% of the demand and there is shortfall of 47%. This shortage is met by supply through water bowsers which are expensive, unhygienic and are unreliable. In addition, quality of water is another issue which is generally contaminated with biological contaminants leading to frequent incidents of gastro-intestinal diseases among residents.
- The area has two rivers and many streams which constitute its surface water system. Deforestation, land clearing, infrastructure development and wide scale construction have disturbed the natural drainage system of the area.
- The discharge of sewage from homes, hotels and other commercial centers into water channels is polluting fresh water channels and even ground water.
- Open dumping of solid waste by hotels and poultry farms also adds to the problem of water pollution.

Heritage/Landscape

- Murree comprises of an area of unique character and opportunity. The area is not homogenous in nature and is characterized by a mix of high quality urban areas, traditional village communities, major utility and amenity uses, wildlife areas and underutilized/derelict sites. The material assets/cultural heritage of the area are outlined under the categories detailed below:
- (i) Historical heritage
- (ii) Protected Structures/Conservation Areas

(i) **Historical heritage**

- The colonial past of the area has left a legacy of buildings and other features, many of which contribute to the Area's unique character. These buildings are widely dispersed throughout the area which are of historical significance. These include Murree Brewery, Holy Trinity Church, GPO building and Lady Roberts Guest house and others. In general, however the number of protected heritage structures in the area is relatively low, reflecting the fact that the area underwent large scale commercialization, a large proportion of which was subsequently used for hotels and business centers.

(ii) ***Protected Structures/Conservation Areas***

- Many hiking tracks, a wildlife park in Bansra Galli and some parks constitute conservation areas. However, considering the natural diversity of the area and potential threats to biodiversity, the number and extent of protected areas is not sufficient.

Air Quality

- In general, air quality is Murree is pleasant, but at some points with traffic congestion, localized air pollution may occur. The shifting of most of the vehicles on CNG has also reduced the impact of vehicle-induced air pollution.
- On the Mall road, sometimes, burning of coal in restaurants for Bar-B-Q creates local smoke pollution.
- Another source of air pollution in the area is the release of pollutants by goods-carrying trucks running on diesel. These trucks release large amount of NOx and SOx emissions causing air pollution along the roads.

Solid Waste

  - In Murree, the issue of solid waste management has become one of the most urgent environmental problems in the area. Ever-increasing generation of waste, nearly non-existent system of waste collection and disposal, lack of suitable sites for disposal of wastes and problems of pollution from solid waste have all focused attention on the need to reduce levels of waste generation and improve management methods.
- In peak tourist season, 20-30 tons of solid waste is produced and only 20% of it is collected by TMA to be disposed in an open place. The remaining waste is dumped in open places causing pollution of soil and water channels.
- This indiscriminate dumping creates stinking neighbourhoods, choking of drains and an ugly urban landscape.

Toursim

- Murree is Pakistan's prime tourist destination and each year 2-3 million tourists visit Murree.
- The annual growth rate of tourists is 7 +% per annum.
- There are 266 hotels and 1400 apartments for short-term and long-term tourists in Murree.
- The busiest months regarding tourist pressure are June, July and August followed by December and January.
- Most of the tourists are day-trippers and the resident tourists on average, stay for 2-3 days in Murree.

- The Mall road, Kashmir Point, Pindi Point, Bhurban and Patriata are the most visited sites by tourists in Murree.

4.7 ASSESSMENT OF MASTER PLAN POLICY OBJECTIVES:

This section presents assessment of the objectives and policies of the Master Plan. The assessment method follows that of Prendergast (2003) with modifications. The assessment was carried out in three ways.
(a) The inter-objective compatibility of the objectives of the Master Plan was evaluated against each other. This evaluation was aimed at identification of any tensions between the objectives that could create conflict and disparities.
(b) The objectives of the Master Plan mentioned in the section 4.4. of the Plan were evaluated for compatibility against the selected sustainability criteria.
(c) Selected policies of the Master Plan from following sectors were assessed against the sustainability criteria:

- *Sustainable land use planning*
- *Sustainable tourism planning*
- *Transportation management planning*
- *Sustainable environmental management planning*
- *Planning for infrastructure and*
- *Urban regeneration.*

4.8 COMPATIBILITY OF STRATEGIC OBJECTIVES MATRIX

Legend: Compatible **+,** No effect **0,** Incompatible **-,**

	OBJECTIVES											
A	Maintain and enhance existing tourism activities	**A**										
B	Incorporate environmental dimension into planning of development activities	**+**	**B**									
C	Regulate development activities to minimize unnecessary adverse impacts on the natural landscapes	**+**	**+**	**C**								
D	Facilitate the local population to get employment in tourism and tourism related business,	**+**	**+**	**+**	**D**							
E	Improve the existing built environment by applying the knowledge of visual design elements	**+**	**+**	**+**	**+**	**E**						
F	Improve levels of tourist's satisfaction in the Murree	**+**	**+**	**+**	**0**	**+**	**F**					
G	Enhance and conserve the region's natural; heritage and cultural assets	**-**	**+**	**+**	**+**	**+**	**+**	**G**				
H	Encourage the productivity of the local crafts and small industries	**+**	**+**	**+**	**+**	**+**	**0**	**+**	**H**			
I	Enhance coordination between public & private sectors	**+**	**+**	**+**	**+**	**+**	**+**	**+**	**+**	**I**		
J	Plan to cater/accommodate increasing number of domestic and foreign tourists	**+**	**+**	**+**	**+**	**+**	**+**	**-**	**+**	**+**	**J**	
K	Make use of the feasible landscape strategies to attain the target of developing leisure areas	**+**	**+**	**+**	**0**	**+**	**+**	**+**	**0**	**+**	**+**	**K**
L	Tackle spatial inefficiencies so as to avoid long travelling distances and times	**+**	**+**	**+**	**0**	**+**	**+**	**0**	**0**	**+**	**+**	**0**	**L**

4.9 SUSTAINABILITY CRITERIA USED IN ASSESSMENT:

Bio diversity/Flora and Fauna

- B1 - Manage protected areas
- B2- Conserve local forests
- B3- Conserve wildlife/flora

Population

- P1 - promote the creation of a safe, healthy and high quality environment in which to live and work.
- P2 - promote the strengthening and diversification of the local economy.

Soil

- S1 - promote reclamation of degraded soils and conservation of land resources

Water

- W1 - ensure adequate good quality water supply.
- W2 - maintain/improve water quality of water bodies.

Air quality/Climate

- C1 - maintain/promote improvement of air quality.
- C2 - promote minimisation of greenhouse gas emissions to the atmosphere.
- C3 - reduce trip generation, trip length and the need for motorized transport.
- C4 - promote public transport and attraction of walking/cycling.

Heritage/Cultural assets

- H1 - safeguard Protected Structures and sites of archaeological value
- H2 - enhance townscape and general landscape/environmental quality.
- H3 - ensure adequate provision of open space/maintain and improve access to open space areas.

Tourism

- T_1-Promotion of sustainable eco-tourism

LEGEND: *Non significant change:* **0**

Positive impact: **+** *Moderate positive impact***:+1** *High positive impact:* **+2**

Negative impact: **-** *Moderate negative impact:* **-1** *High negative impact:* **-2**

4.10 ASSESSMENT OF STRATEGIC OBJECTIVES ACCORDING TO SUSTAINABILITY CRITERIA

	OBJECTIVES	SUSTAINABILITY CRITERIA															
		B_1	B_2	B_3	P_1	P_2	S_1	W_1	W_2	C_1	C_2	C_3	C_4	H_1	H_2	H_3	T_1
A	Maintain and enhance existing tourism activities	-1	-1	-1	0	+2	0	-1	-1	-1	-1	-1	-1	+1	+1	+1	+1
B	Incorporate environmental dimension into planning of development activities	+1	+2	+2	+1	+1	+1	+1	+1	+2	+1	+1	+1	+1	+1	+1	+2
C	Regulate development activities in a way to minimize unnecessary adverse impacts on the natural landscapes	+1	+2	+2	+1	+1	+1	+1	+1	+2	+1	0	+1	+1	+1	+1	+2
D	Facilitate the local population to get employment in tourism and tourism related business	-1	0	0	+1	+2	0	0	0	0	0	0	0	+1	+1	+1	+2
E	Improve the existing built environment by applying the knowledge of visual design elements	+1	0	0	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+2
F	Improve levels of visitors' satisfaction in the Murree region, to	0	+1	+1	+1	+2	+1	+1	+1	+1	+1	+1	+1	+2	+1	+1	+2

	improve its image																
G	Enhance and conserve the region's natural; heritage and cultural assets	+2	+2	+2	+1	+2	+2	+2	+2	+1	+1	+1	+1	+2	+2	+1	+2
H	Encourage the productivity of the local crafts and small industries	+1	0	0	+1	+2	0	0	0	0	0	+1	0	+1	+1	+1	+2
I	Enhance coordination between public & private sectors	0	0	0	+2	+2	+1	+1	+1	0	0	+1	0	+1	+1	+1	+2
J	Plan to cater/accommodate increasing number of domestic and foreign tourists	-2	-1	-1	+1	+2	-1	-1	-1	-1	-1	-2	-1	+1	+1	+1	+1
K	Make use of the feasible landscape strategies to attain the target of developing leisure areas	+1	+1	+1	+1	+2	+1	+1	+1	+1	-1	-2	+	-1	+1	+1	+2
L	Tackle spatial inefficiencies so as to avoid long travelling distances and times	0	0	0	+1	+2	+1	+1	+1	+1	+2	+1	+1	+1	+1	+1	+2

4.11 SUSTAINABLE LAND USE PLANNING

	POLICIES	SUSTAINABILITY CRITERIA															
		B_1	B_2	B_3	P_1	P_2	S_1	W_1	W_2	C_1	C_2	C_3	C_4	H_1	H_2	H_3	T_1
A	Develop a hierarchy of planning principles to guide development and decision making processes in high risk areas	+1	+1	+1	+1	+1	+1	0	0	+1	+1	+1	+1	0	0	0	0
B	Encourage mixed-use development (commercial-cum-residential-cum-hospitality) in new sub urban areas	+1	+1	+1	+2	+2	+1	+1	+1	+1	+1	+1	+1	0	+2	+1	+1
C	Upgrade the potential and opportunities for future development of corridors, buildings and under-construction / banned structure by proper planning	+1	+1	+1	+2	+2	+1	0	0	0	+1	+1	+1	+1	+1	+1	+1

	and implementation of laws																
D	Reducing Land Use incompatibilities and identifying illegally converted land uses	+1	+1	+1	+1	+1	+1	+1	+1	0	+1	+1	+1	+1	+2	+1	+1
E	Measures to encourage and support conservation of heritage buildings /precincts	0	0	0	+1	+1	0	0	0	0	0	0	0	+2	+2	+1	+2
F	Propose urban regeneration strategies and techniques	0	0	0	+1	+1	0	+1	0	+1	0	0	0	+1	+1	0	+1
G	Enhance productivity of local tourism economy to control land use development	0	+1	+1	+2	+2	+1	-1	-1	-1	-1	+1	-1	0	0	+1	+1
H	decentralization of commercial and public facilities	0	0	0	+2	+2	0	0	0	0	0	+1	0	0	0	0	0
I	Control environmental degradation in existing	+2	+2	+2	-1	-1	+1	+1	+1	+1	+1	+2	+1	+1	+1	+1	+2

	land use structure of the area by proper management and monitoring plan																
G	Discourage anti-geology development	+1	+1	+1	-1	-1	+2	+2	+2	+1	+1	0	0	+1	+1	+1	+2
K	Preparation of land-use maps for future urban management	+1	+2	+2	0	+1	+1	+2	+2	+1	+1	+1	+1	+1	+1	+1	0
L	Development to improve security for tourists	0	0	-1	+1	+1	+1	0	0	0	0	0	0	+1	+1	0	+2
M	Implementation of environmental impact assessment for all future development activities	+2	+2	+2	+1	-1	+1	+1	+2	+1	+1	+1	+1	+1	+1	+1	+1

4.12 SUSTAINABLE TOURISM PLANNING

	POLICIES	SUSTAINABILITY CRITERIA															
		B_1	B_2	B_3	P_1	P_2	S_1	W_1	W_2	C_1	C_2	C_3	C_4	H_1	H_2	H_3	T_1
A	Develop an environmentally sustainable tourism product	+2	+2	+2	+1	+1	+1	+2	+2	+1	+1	+1	+1	+1	+1	+1	+1
B	Promote and popularize the sustainable eco-tourism	+1	+1	+1	+2	+2	+1	+1	+1	+1	+1	+1	+1	+1	+2	+1	+2
C	Promote eco-friendly tourist activities such as bird watching, eco-lodging etc	+2	+2	+2	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+2	+1	+2
D	Develop a system of standards and quality assurance through standardization and accreditations for tourism related services/businesses	0	0	+1	+1	+2	0	+1	+1	+1	+1	0	0	+1	+1	+1	+1
E	Improve tourist-information and guidance system	0	0	0	+1	+1	0	0	0	+1	+1	+1	+1	0	+1	+1	+1
G	Encourage investment in the tourism industry by the introduction of	-1	0	0	+2	+2	0	-1	-1	-1	+1	+1	+1	0	0	0	0

	government sector specific investment incentives for existing projects.																
H	Provision of tourism-based professional education/training to prepare qualified man power	+1	+1	+1	+2	+2	0	0	0	0	0	0	0	+1	0	+1	+1
I	Improve tourist facilities such as signage, toilets	0	0	0	+1	+1	+1	+1	+1	+1	+1	0	0	0	0	0	+2
J	Increase opportunities for local residents in tourism industry	+1	+1	+1	+2	+2	0	0	0	0	0	0	0	+1	+1	+1	+1

4.13 TRANSPORTATION MANAGEMENT PLANNING

	POLICY	SUSTAINABILITY CRITERIA															
		B_1	B_2	B_3	P_1	P_2	S_1	W_1	W_2	C_1	C_2	C_3	C_4	H_1	H_2	H_3	T_1
A	Engage local / transient community, CBOs and NGOs through print & electronic media to promote sustainable transport by the local government & traffic management	+1	+	+1	+1	+1	0	0	0	+2	+2	+2	+2	0	0	0	+1
B	Improvement of traffic control System	0	0	0	0	0	+1	0	0	+1	+1	+1	+1	0	0	+1	+1
C	Ensure that all new proposed development or Re-development provide walking facilities in new land use plans	0	+1	+1	+1	+1	0	0	0	+1	+1	+2	+1	0	0	0	+1
D	Ensure that land use planning and development must integrate with the provision of multi-modal transportation network	0	0	0	+1	+2	+1	+1	+1	+2	+1	+2	+1	0	0	0	+1

E	Identify the parking potential of sites in close proximity to the outer junctions like Jhika Galli, Bye pass road, Bansra Galli, Sunny Bank etc.	0	0	0	+1	+1	+1	+1	+1	+2	+1	+2	+1	+1	0	0	0
F	Make arrangements to provide Terminal / parking facility along with other allied infrastructure to the freight traffic on outskirts	0	0	0	+1	0	0	0	0	+1	+1	0	0	0	0	0	0
G	Facilitate all inter-city traffic, vehicles/passenger movements by providing adequate vehicles parking bays waiting areas, food and services areas and other allied facilities	0	0	0	+1	+1	+1	+1	0	+1	+1	+1	+1	+1	+1	+1	+1
H	Enhance efficiency of Transportation System in Murree	0	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	0	0	0	+1

	through protection of right of ways against physical damages caused by routine traffic operation and damages caused by natural hazards like snowfall, rainfall and lansliding.																
I	Policing should be complimented by an efficient mobile / onsite fine collection sytem for the transient population.	0	0	0	+1	+1	0	0	0	+1	+1	+1	+1	0	0	0	+1
J	Installation of eco-friendly ropeway systems, cable cars purposes without any negative environmental impacts	+1	+1	+1	+1	+2	+1	+1	+1	+2	+2	+2	+2	0	0	0	+1

4.14 SUSTAINABLE ENVIRONMENTAL MANAGEMENT PLANNING

	POLICIES	SUSTAINABILITY CRITERIA															
		B_1	B_2	B_3	P_1	P_2	S_1	W_1	W_2	C_1	C_2	C_3	C_4	H_1	H_2	H_3	T_1
A	Improvement of waste collection and management facilities by improving primary collection system	+1	+1	+1	+1	+2	+1	+2	+2	+1	+1	+1	+1	+1	+1	+1	+1
B	Improvement of waste transport and disposal facilities	+1	+1	+1	+2	+2	+1	+2	+2	+1	+1	+1	+1	+1	+1	+1	+1
C	Gradual introduction of Three R's system for solid waste management	+2	+1	+2	+1	+1	+2	+2	+2	+1	+1	+1	+1	+1	+1	+0	+1
D	A micro-basin level approach to integrate all aspects of water management including water allocation, pollution control, protection of water resources	+1	+1	+1	+2	+2	+1	+2	+2	+1	+1	+1	+1	+0	+0	+0	+1
E	Conserving existing water	+1	+2	+2	+2	+2	+1	+2	+2	+1	+1	+1	+1	+0	+0	+1	+2

	resources through rainwater harvesting, building small reservoirs and reducing run off																
F	Efficient sewage disposal and treatment facilities	+1	+1	+1	+1	+1	+1	+2	+2	+1	+1	+1	+1	+0	+0	+1	+1
G	preventing water pollution and water quality degradation through mitigation, pollution control, and rehabilitation of water courses	+1	+1	+1	+1	+1	+1	+2	+2	+1	+1	+1	+1	+0	+0	+1	+1
H	Control air pollution through regular air quality monitoring and enforcing emission control regulations	0	0	0	+1	+1	0	0	0	+2	+2	+1	+1	0	0	0	+1
I	Conserve local biodiversity by supporting the introduction	+2	+2	+2	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+2

	and implementation of conservation-oriented plans and legislations																
J	Creating and maintain systems of effective and sustainable protected areas	+2	+1	+2	+1	+1	+1	+1	+1	+1	+1	+1	+1	0	0	0	+2
K	Protecting forest resources from illegal logging, forest fires, poachers and promoting reforestation in deforested area	+2	+2	+2	+1	+1	+1	+1	+1	+1	+1	+1	+1	0	0	+1	+2
L	Conservation of land resources by control of soil erosion/land sliding by adopting environmentally sound techniques	+2	+2	+2	+1	+1	+1	+2	+2	0	0	0	0	0	0	+1	+2

4.15 INFRASTRUCTURE PLANNING

	POLICIES	SUSTAINABILITY CRITERIA															
		B_1	B_2	B_3	P_1	P_2	S_1	W_1	W_2	C_1	C_2	C_3	C_4	H_1	H_2	H_3	T_1
A	Provide a sustainable green infrastructure in the town to enhance efficiency	+1	+1	+1	+2	+2	+1	+1	+2	+1	+1	+1	+1	+1	+1	+1	+1
B	Replacement of worn out / rusted municipal water supply, sewerage and electricity system	0	0	0	+1	+1	+1	+2	+2	+1	+1	+1	+1	+1	+1	+1	+1
C	Develop isolated system of natural runoff channels to enhance efficiency of runoff from pavements and this network	+1	+1	+1	+1	+1	+1	+2	+2	+0	+0	+0	+0	+0	+1	+1	0
D	Strengthening of TMA Murree in its operations through capacity building, extra-	+1	+1	+1	+2	+2	+1	+2	+2	+1	+1	+1	+1	+1	+1	+1	+1

	budgeting																
E	Gradual introduction of public-private partnership (PPP) in infrastructure development and management	0	+1	+1	+2	+2	+1	+1	+1	+1	+1	+1	0	0	0	+0	+1

4.16 URBAN REGENERATION

	Policies	SUSTAINABILITY CRITERIA															
		B_1	B_2	B_3	P_1	P_2	S_1	W_1	W_2	C_1	C_2	C_3	C_4	H_1	H_2	H_3	T_1
A	Creation of ecological corridors to connect green structure around Murree	+1	+1	+1	+1	+1	+1	+2	+2	+1	+1	0	0	+1	+1	+1	+1
B	The leisure spaces may be connected to each other or with Featured sites, with signage such as walking tracks, hiking trails, cycling tracks or horse riding tracks.	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+2
C	Significant sites having unique features would attract the inquisitive tourists.	0	0	0	+1	0	0	0	0	0	0	0	0	+1	+1	+1	+1
D	Promote use of indigenous materials and techniques of construction for development/construction where feasible	0	0	0	+1	+1	0	0	0	0	0	0	0	+1	+1	+1	+2
E	To increase community consciousness towards cultural and social up gradation.	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+2

4.17 INTER-OBJECTIVE COMPATIBILITY:

A set of 12 strategic objectives have been described in the Section 1.4 of the Master Plan. As part of the SEA, these objectives were tested for compatibility with each other. Most of the Objectives (8 out of 12) were found to be compatible with each other with few cases of neutral-relations and a only two cases of incompatibility indicating a good fit between the Plan's objectives. For example, objective A (Maintain and enhance existing tourism activities) was found to be compatible with objectives B, C, D, E, F, H, I and K (with full compatibility or only single neutral relation). There are only two cases of incompatibility in the matrix. Objective A (Maintain and enhance existing tourism activities) and J (plan to cater/accommodate increasing number of domestic and foreign tourists) exhibited incompatibility with objective G (Enhance and conserve the region's natural; heritage and cultural assets). This is evident because any increase in tourist influx is expected to exert some pressure on natural resource base of the area. In conclusion, it can be inferred that the selection of objectives in the Plan was appropriate and their achievement will result in positive development and environmental impacts.

4.18 EVALUATION OF PLAN OBJECTIVES ACCORDING TO SUSTAINABILITY CRITERIA:

The objectives of the Master Plan were assessed against the sustainability criteria and were found to be largely compatible. Most of the objectives had positive impacts according to sustainability criteria and their fulfilment therefore will have significant positive impacts on overall development and environmental conservation of the area.

Some deterioration in environmental quality in terms of degradation of biological resources (sustainability criteria B1, B2, B3), water resources (W1, W2, W3, W4) and air quality (C1, C2, C3) will arise in the course of the increase in number of tourists (objective J) and improvement of facilities for them (objective A).

Additional ecological problems can be generated at the development activities and expansion of existing opportunities for tourism development and infrastructure development. Similarly, the expansion of employment opportunities in tourism and related enterprises (objectives D) could lead to some pressures on ecological resources in the area. This however, may be balanced by the incorporation of environmental dimensions into planning of development activities (objectives B & C).

The achievement of a number of objectives aimed to improve socio-economic and tourism profile of the area may create some minor tensions with sustainability criteria. However, these impacts are unavoidable in any development activity and can be mitigated by adopting remedial measures linked with other objectives in the plan supporting sustainable development interventions.

4.19 COMPATIBILITY OF PLAN POLICIES WITH SUSTAINABILITY CRITERIA:

In this section, the main sectoral policies contained in the Master Plan were tested against the devised Sustainability Criteria by means of matrices. The completed matrices are illustrated in Figures. Only the most relevant and important policies were tested for compatibility. The findings of the exercise are summarized below.

Sustainable land use planning

In this section, fifteen policies were tested for compatibility with the Sustainability Criteria and were found to be compatible. Some policies such as B (mixed use development), D (Reduction in land use incompatibilities), I (control of environmental degradation) and M (use of EIA) seem to be most beneficial as they have positive impacts on nearly all suitability criteria.

Policy G (Enhance productivity of local tourism economy to control land use development) is likely to have negative impacts on qualities of water and air resources of Murrree. This matrix points to the need to implementation of policies number I (control of environmental degradation) and M (EIA) to mitigate the negative impacts of the policy G.

Sustainable tourism planning

All the nine policies in this sector were found to be generally compatible with sustainability criteria. Out of these, three policies, A (develop an environmentally sustainable tourism product), B (Promote and popularize the sustainable eco-tourism) and C (Promote eco-friendly tourist activities such as bird watching, eco-lodging etc) had the highest level of compatibility with sustainability criteria.

Policy G (enhanced investment in tourism sector in existing projects) had some negative impacts on air and water quality because these interventions are expected to increase material and energy consumption during development leading to environmental pollution.

Transportation management planning

Transport management is an important sector because traffic jams and shortage of parking facilities are key management issues during tourist season in Murree. All the ten policies suggested in the Plan for transport management showed good fit with the sustainability criteria. In that matrix, even a single incompatibility is not observed though there are some neutral relationships.

Out of these policies, increased public participation (A), facilitation of increased walkability (C), improvement of transport efficiency (G) and use of ecofriendly not-motorized transport methods such as cable cars, ropeways (J) have maximum compatibility with sustainability criteria.

Sustainable environmental management planning

All the twelve policies exhibited 100% compatibility with the sustainability criteria as these policies are aimed at sustainable development. Among various environmental issues confronting Murree, water shortage, water pollution, solid waste management and biological conservation are the top most concerns for any planner. In the matrix, the policies aimed at solving these issues have highest levels of compatibility with sustainability criteria. These compatibilities confirm the appropriateness of these policies in mitigating environmental problems of Murree.

Infrastructure planning

Since some aspects of infrastructure development have been dealt with in the policies dealing with land use planning, transport and environmental management, only five policies are analyzed in this section for their compatibility with sustainability criteria. Out of these, the policies proposing green infrastructure (A), strengthening TMA Murree (D) and adoption of public-private partnership (E) exhibited strong linkages with sustainability criteria.

This matrix supports the gradual introduction of new norms of governance and development to meet the challenges of sustainable development and sustainable tourism in Murree.

Urban regeneration

In this matrix, five policies were analyzed and three policies exhibited good fit with the sustainability criteria. Two policies showed positive interaction or neutral relations with sustainability criteria with no negative interaction. The policies suggesting development of green corridors (A), increased connectivity of recreation centers (B) and increased involvement of public in urban upgradation (E) had the highest levels of positive impacts regarding sustainability.

4.20 ENVIRONMENTAL CONSEQUENCES OF NON- IMPLEMENTATION OF PLAN:

- In the event that the Master Plan is not implemented, the status quo is likely to prevail. Redevelopment and renewal would be likely to occur in a piecemeal fashion, rather than in the comprehensive manner.
- Under the 'do nothing' option, Murree would lose its current physical and socio-economic characteristics with ultimate loss of its status as the most favourite tourist destination. Development would be market-dependent and would occur at a slower pace and in a less co-ordinated manner.
- Investment by the private sector would be absent. Adopting the 'do-nothing' option would mean that parts of the area would remain derelict and under-utilised with little physical, social or economic enhancement.

- Absence of planned transport flow management, road traffic optimizing network and enhancement of parking facilities will further aggravate the problem of traffic congestion and jams, and inaccessibility of different areas for tourists.
- Failure to improvement of city sewage networks and wastewater treatment, prevention of discharges of unregulated municipal wastes to surface watercourses, will result in high levels of water resource pollution and the degradation of the quality of surface waters. In the case of not changing the current condition of sewage network, the risk of epidemics will remain high because of discharge of sewage water into the water supply system. It will create serious dangers for the stability and integration of local landscapes and geological structures.
- It is expected that land contamination with municipal waste will be reduced in parallel with planned management of the sources causing contamination. Failure to carry out activities aimed at proper disposal of solid waste, will result in serious environmental pollution causing serious dangers to health, ecology and water resources of the area
- Failure to carry measures on restoration of green areas and retaining the existing conditions, the negative impact on environment will be increased including degraded microclimate, reduction of landscape status of the area, loss of vegetation cover and loss of biodiversity.
- In the absence of introduction of conservation measures for forests, protected areas and parks, the natural landscape of Murree will further deteriorate causing a gradual decline in the tourist-attracting potential of Murree.
- Lack of engineered protection and standardized redevelopment of city areas, buildings, infrastructure and population will increase the susceptibility to natural disasters such as floods, landslides, soil erosion and other geo
- From the above, it can be concluded that to meet the demand of ever-growing tourist population and improve the living standards of local residents, Murree is in need of planned development and the do nothing is not a viable option.

4.21 ENVIRONMENTAL BENEFITS OF PLAN IMPLEMENTATION

Following matrix describes the possible environmental impacts of the implementation of MMP with reference to main environmental objectives.

Directions / Priority Of MMP / Environmental Objectives	**Improving the planning structure to achieve sustainable urban environment**	**Improving tourist related infrastructure**	**Improving mobility, transport and parking**	**Improving living conditions for the residents/tourists**	**Restoring/enhancing natural beauty and conserving forests/biodiversity**	**Protecting historical and cultural heritage**
Reduction of environmental pollution	1	2	3	2	1	0
Sustainable water resource management, controlling water pollution	1	2	1	3	3	0
Conserving and restoring natural landscapes, forests, flora/fauna	3	1	1	1	3	1
Protecting and restoring land resources	1	1	2	1	3	0
Better solid waste collection and disposal system	0	1	1	3	2	1
Reducing landslides, soil erosion,	2	2	3	2	2	1
Controlling health hazards of tourism and improving health services	2	2	1	3	0	0

Linkages of the main directions of MMP with plan's environmental objectives

Legend: 0 no linkage; 1 weak link; 2 strong link; 3 very strong link

The results of assessments given in the table above illustrate that implementation of the main directions of the Murree Master Plan will have positive impacts on achieving the major environmental objectives.
Some of the expected benefits of the implementation of MMP are summarized here.

- Safe and healthy communities with a variety of housing choices, employment opportunities, local retail and services and mobility options.
- Improved education facilities and learning institutions.
- Modern and efficient healthcare facilities.
- Adequate supply and efficient use of water resources to meet the needs of growing population and tourists.
- Reduction in water, soil and air pollution.
- Protected and restored landscapes and green areas.
- Conservation and enhancement of forests and development of Murree into a bio-diversity rich area of Pakistan
- Adequate and sustainable supply of clean fresh water to all residents of Murree
- Improvement of quality of water channels and water bodies

The cumulative benefits of the implementation of this plan will be:

- *A city attractive to people that will provide a good quality of life for its citizens and will have the financial capacity to support existing and future generations.*
- *A prosperous city with sustainable urban growth and financially strong local government.*
- *Murree will have affordable, efficient and environmentally balanced infrastructure and facilities.*
- *A city popular for its cost-effective, tourist-friendly and standard facilities and activities for tourists*.
- Murree will have efficient and cheap mobility networks to connect citizens with major employment areas, places of learning and cultural and recreational destinations.
- *A city attractive to business that will protect and enhance the key drivers of local economy and support on-going investment and expansion.*

4.22 MONITORING

To monitor the environmental effects of the implementation of policies of the Plan for preventing or mitigating their unforeseen negative effects at early stage, and to take relevant measures, it is necessary to develop and monitor an environmental monitoring program.
For this purpose, the Environmental Protection Department in Murree should coordinate the collection and analysis of monitoring data. It is proposed that:

- Each year, an annual monitoring report on the implementation of the Plan should be prepared and submitted to the concerned authorities,

- Arrangements should be made for undertaking scientific surveys and collection of data for effective monitoring of the impacts of the Plan.
- Since Murree has been declared an Environmentally Sensitive Area by the Environmental Protection Department, all the projects/schemes resulting from the policies of the Plan should be subjected to appropriate environmental impact assessment (EIA) before their approval.

4.23 CONCLUSION

The Strategic Environmental Assessment of Murree Master Plan provided very useful information about the Plan;

- In total, the Plan has a sustainable thrust and focus as all its objectives and policies were found to be compatible or non-confronting with the Sustainability
    - Criteria devised for assessment of the Plan.
- In general, all the objectives and policies had no conflict with each other.
- The Master Plan is a comprehensive, robust and clearly formulated document that will serve a strategic framework and guideline for the sustainable development of tourism in Murree and in other tourist destinations of Pakistan.
- Though a plan of this magnitude which has to cover a number of sectors with a wide variety of applications and constraints, inadequacies may arise from the application of some policies. In particular, these tensions may arise in socio-economic sectors in short term phase of the Plan creating resistance from the public towards appropriate implementation of its policies. Such tensions and inadequacies are inevitable and their effects are mitigated by taking adequate measures to protect local environment from adverse impacts.
- The land use policy, if it could be implemented, would have social and economic repercussions which need to be considered if the policy is to be implemented;
- This assessment showed that the Plan includes many policies for dealing with the various environmental problems experienced in Murree in the context of sustainable development.
- For the local communities in Murree, the early identification of social problems resulting from the policies and adoption of their mitigation measures would be useful for increasing level of acceptance of the policies of the Plan among the masses.

References:

Govt. of Pakistan. (2005). *Pakistan National Environmental Policy*. Ministry of Environment Islamabad.

Khurshid, N. (2012). *"Environmental Sustainability Appraisal of Landuse Development Plan"A case of Integrated Lahore Master Plan (2001-21),* M.Phil. Thesis. GC University, Faisalabad.

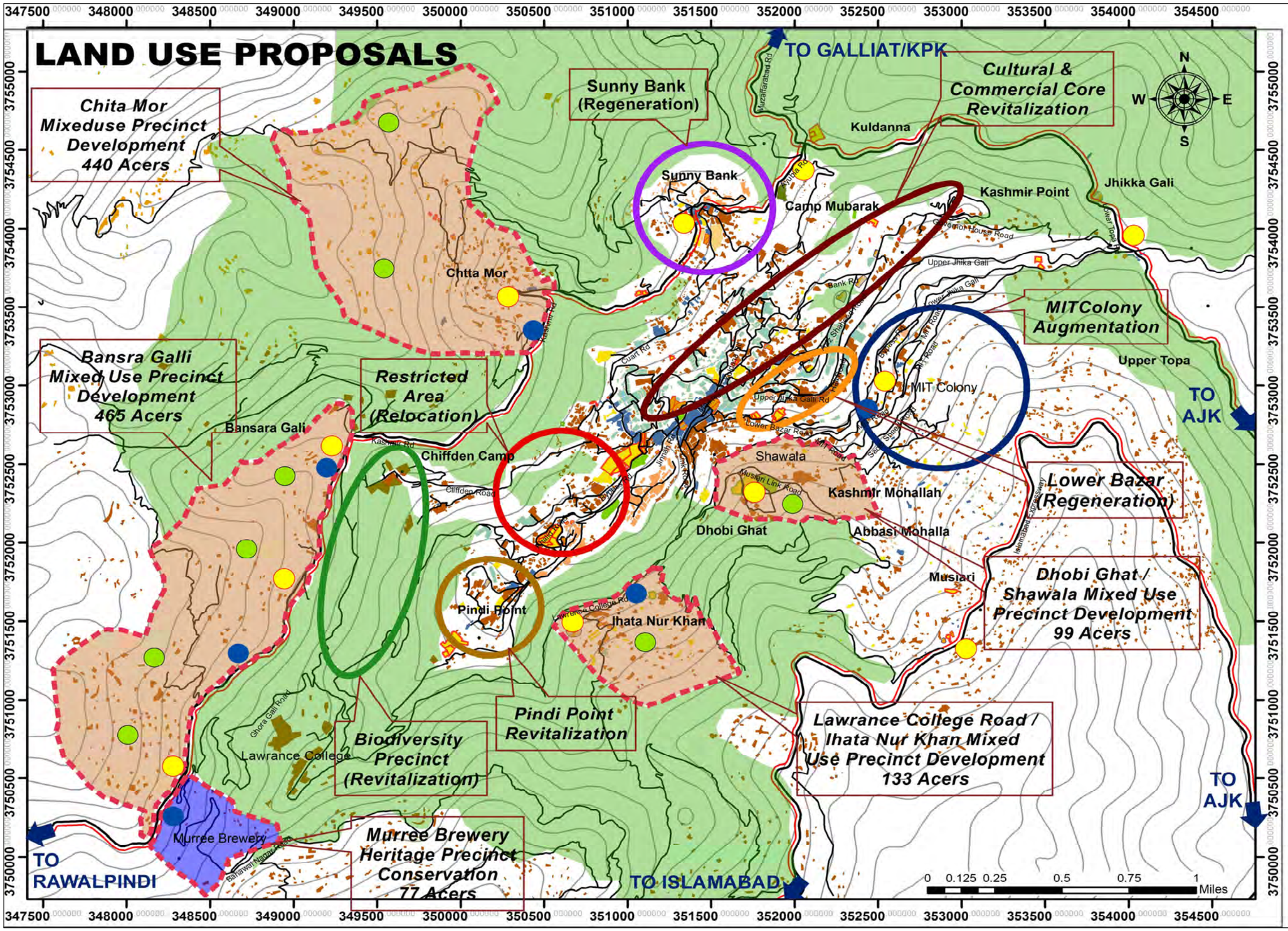
Prendergast,T. (2003) *Strategic Environmental Assessment of the Draft Master Plan: Dublin Docklands Area*. Dublin Docklands Development Authority.

Sadler, B. and Verheem, R. (1996) *Strategic environmental assessment: status, challenges and future directions*. Ministry of housing, spatial planning and the Environment, The Hague, The Netherlands.

Wood and Djeddour., (1992) *Impact Assessment Bulletin*, Environmental Impact Assessment: a Comparative Review. Longman Group, Harlow.

APPENDIX:

LAND USE PROPOSALS



Existing

- Cantt Area
- Commercial
- Education
- Graveyard
- Health
- Hospitality
- Hotel
- Mixed
- Park
- Parking
- Plant
- Police Station
- Public Building
- Religious
- Residential
- Transport
- Union Council Boundary
- Intera City Roads
- Inter City Roads
- Contours 50 Meters

Proposed

- MITColony Augmentation
- Pindi Point Revitalization
- Restricted Area Relocation
- Cultural & Commercial Core Revitalization
- Biodiversity Precinct Revitalization
- Sunny Bank Regeneration
- Lower Bazar Regeneration
- Conservation of Urban Green Precincts
- Proposed Precinct Development
- Proposed Parking Facility
- Proposed Commercial / Hospitality
- Proposed Green Inserts

PROPOSED LAND USE CONTROL FRAMEWORK MATRIX:

Use Classes	Type of Development / Land Use Sub-Class	Precincts (Existing & Proposed)																		Compliance				
		Established Built-up surrounding Core		Central Core Surrounding The Mall		Chitta Mor		Bansra Galli		Dhobi Ghatt /Shawala/Ihata Noor Khan		Bhurban / Aliyot		Rural/ Suburban		Natural / Green		Heritage		Intercity Corridor (N75 & MKR)		• IEE/EIA	•TIA	•SIA	Energy Audit	Building Regulations
		Permitted	Prohibited	Permitted	Prohibited	Permitted	Prohibited	Permitted	Prohibited	Permitted	Prohibited	Permitted	Prohibited	Permitted	Prohibited	Permitted	Prohibited	Permitted	Prohibited	Permitted	Prohibited					
1-Residential/ Lodging & Ancillary use	a-Exclusively Self-owned or Self-used Residential Houses & Lodges	✔		✔		✔		✔		✔		✔		✔			✔		✔		✔				✔	✔
	b-Residential Houses & Lodges rental	✔		✔		✔		✔		✔		✔		✔			✔		✔		✔				✔	✔
	c-Exclusively Self-owned or Self-used Residential apartment building	✔		✔		✔		✔		✔		✔		✔			✔		✔		✔		✔	✔	✔	✔
	d-Rental Residential Apartment building	✔		✔		✔		✔		✔		✔		✔			✔		✔		✔				✔	✔
	e-Housing schemes / land-subdivisions (public/private sector) with standardized facilities		✔		✔	✔		✔		✔		✔			✔		✔		✔		✔	✔	✔	✔	✔	✔
	f-Mixed use Commercial cum Residential	✔			✔	✔		✔		✔		✔			✔		✔		✔		✔	✔	✔	✔	✔	✔
	g-Guest House	✔			✔	✔		✔		✔		✔			✔		✔		✔		✔	✔	✔		✔	✔
	h-Pharmacy & Drug Store	✔		✔		✔		✔		✔		✔		✔			✔		✔		✔					✔
	i-Daycare Center	✔		✔		✔		✔		✔		✔		✔			✔		✔		✔					✔
	j-Pre-school Uses (Kindergarten & Nurseries etc.)	✔		✔		✔		✔		✔		✔		✔			✔		✔		✔		✔			✔
	k-Old-age Home	✔		✔		✔		✔		✔		✔		✔			✔		✔		✔		✔	✔		✔
2-Hospitality	a-Hotel		✔		✔	✔		✔		✔		✔			✔		✔		✔		✔	✔	✔	✔	✔	✔
	b-Motels		✔		✔	✔		✔		✔		✔		✔			✔		✔		✔	✔	✔	✔	✔	✔
	c-Inns		✔		✔	✔		✔		✔		✔					✔		✔		✔	✔	✔		✔	✔
	d-Resorts or Tourist Homes	✔			✔	✔		✔		✔		✔		✔			✔		✔		✔	✔	✔	✔	✔	✔
	e-Cafés & Bars	✔			✔	✔		✔		✔		✔		✔			✔		✔		✔	✔	✔		✔	✔
	f-Restaurants	✔			✔	✔		✔		✔		✔		✔			✔		✔		✔	✔	✔	✔	✔	✔

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		Established Built-up surrounding Core		Central Core Surrounding The Mall		Chitta Mor		Bansra Galli		Dhobi Ghatt /Shawala/Ihata Noor Khan		Bhurban / Aliyot		Rural/ Suburban		Natural / Green		Heritage		Intercity Corridor (N75 & MKR)		• IEE/EIA	•TIA	•SIA	Energy Audit	Building Regulations
		Permitted	Prohibited	Permitted	Prohibited	Permitted	Prohibited	Permitted	Prohibited	Permitted	Prohibited	Permitted	Prohibited	Permitted	Prohibited	Permitted	Prohibited	Permitted	Prohibited	Permitted	Prohibited					
3-Community Facilities - Medical	a-Nursing Homes	✔		✔		✔		✔		✔		✔		✔			✔		✔		✔	✔	✔	✔	✔	✔
	b-Private Hospitals	✔		✔		✔		✔		✔		✔		✔			✔		✔		✔	✔	✔	✔	✔	✔
	c-Government Hospital	✔		✔		✔		✔		✔		✔		✔			✔		✔		✔	✔	✔	✔	✔	✔
	d-Health Clinics (Government)	✔		✔		✔		✔		✔		✔		✔			✔		✔		✔	✔	✔	✔	✔	✔
	e-Health Clinics (Private)	✔		✔		✔		✔		✔		✔		✔			✔		✔		✔	✔	✔	✔	✔	✔
	f-Emergency Response Centers	✔		✔		✔		✔		✔		✔		✔		✔			✔	✔		✔	✔		✔	✔
4-Community Facilities - Religious	a-Masjid	✔		✔		✔		✔		✔		✔		✔		✔			✔		✔	✔	✔	✔	✔	✔
	b-Religious Institute (Madrissa)	✔		✔		✔		✔		✔		✔		✔			✔		✔		✔	✔	✔	✔	✔	✔
	c-Church	✔		✔		✔		✔		✔		✔		✔			✔		✔		✔	✔	✔	✔	✔	✔
	d-Other places of worship	✔		✔		✔		✔		✔		✔		✔			✔		✔		✔	✔	✔	✔	✔	✔
5-Community Facilities - Public	a-Government Offices	✔		✔		✔		✔		✔		✔		✔			✔		✔		✔	✔	✔	✔	✔	✔
	b-Multiuse Sports Hall	✔		✔		✔		✔		✔		✔		✔			✔		✔		✔	✔	✔	✔	✔	✔
	c-Multiuse Community Hall	✔		✔		✔		✔		✔		✔		✔			✔		✔		✔	✔	✔	✔	✔	✔
	d-Boarding Houses	✔			✔	✔		✔		✔		✔		✔			✔		✔		✔	✔	✔	✔	✔	✔
	e-Museum / Art Gallery etc.	✔		✔		✔		✔		✔		✔		✔			✔		✔		✔	✔	✔	✔	✔	✔
	f-Library	✔		✔		✔		✔		✔		✔		✔			✔		✔		✔	✔	✔	✔	✔	✔
	g-Tourist Information Center	✔		✔		✔		✔		✔		✔		✔			✔		✔		✔		✔		✔	✔
	h-Public Toilets & Drinking Water Points	✔		✔		✔		✔		✔		✔		✔		✔		✔		✔		✔				✔

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		Permitted	Prohibited	Permitted	Prohibited	Permitted	Prohibited	Permitted	Prohibited	Permitted	Prohibited	Permitted	Prohibited	Permitted	Prohibited	Permitted	Prohibited	Permitted	Prohibited	Permitted	Prohibited					
6-Community Facilities - Public	a-Police Station	✔		✔		✔		✔		✔		✔		✔			✔		✔	✔		✔	✔	✔	✔	✔
	b-Rescue & Fire Station	✔		✔		✔		✔		✔		✔		✔			✔		✔	✔		✔	✔	✔	✔	✔
	c-Private Offices	✔			✔	✔		✔		✔		✔			✔		✔		✔		✔	✔	✔	✔	✔	✔
	d-Post Office	✔		✔		✔		✔		✔		✔		✔			✔		✔	✔		✔	✔	✔	✔	✔
	e-Court / Tribunal	✔		✔		✔		✔		✔		✔		✔			✔		✔		✔	✔	✔	✔	✔	✔
	f-Health Club / Gymnasium	✔			✔	✔		✔		✔		✔		✔			✔		✔		✔	✔	✔	✔	✔	✔
	g-Social & Community Club	✔			✔	✔		✔		✔		✔		✔			✔		✔		✔	✔	✔	✔	✔	✔
	h-Graveyards & Burial Grounds	✔			✔	✔		✔		✔		✔		✔			✔		✔	✔		✔		✔	✔	✔
7-Commercial & Retail	a-Departmental Stores / Super Markets	✔			✔	✔		✔		✔		✔			✔		✔		✔		✔	✔	✔	✔	✔	✔
	b-Mohalla Level Retail Shops	✔			✔	✔		✔		✔		✔		✔			✔		✔		✔	✔			✔	✔
	c-Commercial cum Residential	✔			✔	✔		✔		✔		✔		✔			✔		✔		✔	✔	✔	✔	✔	✔
	d-Service Shops	✔			✔	✔		✔		✔		✔		✔			✔		✔	✔		✔	✔	✔	✔	✔
	e-Bakery / Confectionary	✔			✔	✔		✔		✔		✔		✔			✔		✔		✔	✔	✔	✔	✔	✔
	f-Private Offices & Business Facilities	✔			✔	✔		✔		✔		✔			✔		✔		✔		✔	✔	✔	✔	✔	✔
	g-Banks	✔		✔		✔		✔		✔		✔		✔			✔		✔		✔	✔	✔	✔	✔	✔
	h-Fashion & Clothing Stores		✔		✔	✔		✔		✔		✔		✔			✔		✔		✔	✔	✔	✔	✔	✔
	i-Fast Food Outlets & Eateries	✔		✔		✔		✔		✔		✔		✔			✔		✔		✔	✔	✔	✔	✔	✔
	j-Building Material & Hardware Stores	✔			✔	✔		✔			✔	✔		✔			✔		✔		✔	✔	✔	✔	✔	✔

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7-Commercial & Retail	k-Automotive Showrooms	✔			✔	✔		✔			✔	✔			✔		✔		✔		✔	✔	✔	✔	✔	✔
	l-Gas Selling Point	✔			✔	✔		✔		✔		✔		✔			✔		✔		✔	✔	✔	✔	✔	✔
	m-Petrol Pump & Filling Stations	✔			✔		✔		✔		✔	✔		✔			✔		✔	✔		✔	✔	✔	✔	✔
8-Parks & Recreational	a-Neighborhood level Parks and Playgrounds	✔		✔		✔		✔		✔		✔		✔		✔			✔		✔	✔			✔	✔
	b-Hiking Treks & Trails	✔			✔	✔		✔			✔	✔		✔		✔			✔	✔		✔			✔	✔
	c-Camping Grounds	✔		✔		✔		✔		✔		✔		✔		✔			✔	✔		✔			✔	✔
	d-Tourist Parks	✔		✔		✔		✔			✔	✔		✔		✔			✔	✔		✔		✔	✔	✔
	e-Pocket Parks	✔		✔		✔		✔		✔		✔		✔		✔			✔	✔		✔			✔	✔
	f-Parks & Open Spaces	✔		✔		✔		✔		✔		✔		✔		✔		✔		✔		✔	✔	✔	✔	✔
	g-Local Recreational Uses	✔		✔		✔		✔		✔		✔		✔		✔			✔		✔	✔	✔	✔	✔	✔
	h-Zoo or Wildlife Park		✔		✔		✔	✔			✔	✔		✔		✔			✔		✔	✔	✔	✔	✔	✔
	i-Indoor Games (Bowling, Swimming Pools, Billiard, Tennis	✔		✔		✔		✔		✔		✔		✔		✔			✔		✔	✔	✔	✔	✔	✔
	j-Cinema / Theater	✔		✔		✔		✔		✔		✔			✔		✔		✔		✔	✔	✔	✔	✔	✔
9-Educational	a-Govt. Schools	✔		✔		✔		✔		✔		✔		✔			✔		✔		✔	✔	✔	✔	✔	✔
	b-Private Schools	✔		✔		✔		✔		✔		✔		✔			✔		✔		✔	✔	✔	✔	✔	✔
	c-Colleges & Higher Degree Institutes	✔		✔		✔		✔		✔		✔			✔		✔		✔		✔	✔	✔	✔	✔	✔
10-Transportation	a-Intercity Bus Terminal	✔			✔		✔		✔		✔		✔		✔		✔		✔	✔		✔	✔	✔	✔	✔
	b-Local Transit Station	✔		✔		✔		✔		✔		✔		✔		✔		✔		✔		✔	✔	✔	✔	✔
	c-Freight Terminal		✔		✔		✔		✔		✔		✔		✔		✔		✔	✔		✔	✔	✔	✔	✔

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		Permitted	Prohibited	Permitted	Prohibited	Permitted	Prohibited	Permitted	Prohibited	Permitted	Prohibited	Permitted	Prohibited	Permitted	Prohibited	Permitted	Prohibited	Permitted	Prohibited	Permitted	Prohibited					
10-Transportation	d-Taxi Stand	✔		✔		✔		✔		✔		✔		✔		✔		✔		✔		✔	✔	✔	✔	✔
	e-Surface Parking	✔		✔		✔		✔		✔		✔			✔		✔	✔		✔		✔	✔	✔	✔	✔
11-Community Infrastructure Facilities	a-Solid Waste Transfer Station	✔		✔		✔		✔		✔		✔		✔			✔		✔	✔		✔	✔	✔	✔	✔
	b-Sewerage Treatment Plant		✔		✔		✔		✔		✔	✔		✔		✔			✔	✔		✔		✔	✔	✔
	c-Water Storage Reservoir	✔		✔		✔		✔		✔		✔		✔		✔			✔	✔		✔			✔	✔
	d-Water Treatment Plant	✔		✔		✔		✔		✔		✔		✔		✔			✔	✔		✔		✔	✔	✔
	e-Electricity Grid Station	✔			✔	✔		✔			✔	✔		✔		✔			✔	✔		✔	✔	✔	✔	✔
	f-Electricity Substation	✔			✔	✔		✔		✔		✔		✔		✔			✔	✔		✔	✔	✔	✔	✔
	g-Communication Towers	✔			✔	✔		✔		✔		✔		✔		✔			✔	✔		✔		✔	✔	✔
	h-Cable Car & Ropeway System	✔		✔		✔		✔		✔		✔		✔		✔			✔	✔		✔	✔	✔	✔	✔
12-Others	a-Non-commercial urban gardens and horticulture nurseries		✔		✔	✔		✔		✔		✔		✔		✔			✔	✔						✔
	b-Auto Workshop / Garage	✔			✔	✔		✔		✔		✔		✔			✔		✔	✔		✔			✔	✔
	c-Agricultural Uses		✔		✔	✔		✔		✔		✔		✔			✔		✔	✔						
	d-Scrape yard	✔			✔	✔		✔		✔		✔		✔			✔		✔		✔	✔				✔
	e-Godown / Warehouse	✔			✔	✔		✔			✔	✔		✔			✔		✔		✔	✔	✔	✔		✔

- EIA=Environmental Impact Assessment IEE=Initial Environmental Examination
  SIA=Social Impact Assessment TIA=Traffic Impact Assessment

SECTORAL SITUATIONAL ANALYSIS MATRIX:

	SECTOR	EXISTING POLICY FRAMEWORK	INSTITUTIONAL RESPONSIBILITY	CHALLENGES	OPPORTUNITIES
1.	**LANDUSE GROWTH**	▪ **National spatial growth strategy** focuses on spatial development action plans for Provincial, District & Tehsil levels ▪ Promoting private sector investment in development ▪ Exploring the economic base of small and mid-sized towns by establishing the local resource based industries ▪ Provincial policy framework of urban development in Pakistan ▪ Enhancing the managerial, operational and financial capacity of Local Government Institutions ▪ Improving livelihood opportunities for urban poor ▪ Local policy framework of urban development in Pakistan ▪ Initiating city development strategies to govern local development ▪ Establishing Urban Commission to regulate municipal services in the province at large ▪ **Mid Term Development Framework (Mtdf 2005-10)** ▪ **Punjab Government's Strategy for Accelerating Economic Growth and Improving Service Delivery, 2009** ▪ **Punjab Land Use Rules, 2009** ▪ **District Planning & Design Committee** ▪ **Punjab Local Governance Framework 2010** ▪ **Master Plans** ▪ **Revised Building Regulations by Punjab Urban Unit 2009**	▪ City District Government Rawalpindi owes management, administration, planning functions for its area of jurisdiction as entrusted by PLGO 2001 ▪ DO Spatial Planning & DPDC taking care of policy framework ▪ TMA's local setup centered to T.O. (P&C), (local planning & management of Urban Area ▪ Urban planning functions of TMA are governed under PLGO Building Regulations and Land Use Classification Rules 2009. ▪ Punjab Housing & Town Planning Agency PHATA ▪ The PLGO 2001 envisages decentralization to TMAs ▪ Urban Development and Public Health Departments of the provincial government ▪ Water and sanitation agencies coming into the control of City District Governments. ▪ The functions and powers of the TMA Murree include, the preparation of spatial and land use plans, executing and management of development plans and exercise of control over land use, land sub-division, land development and zoning by public and private sectors for any purpose, enforcement of municipal laws, rules and bye-laws, provision and management of water, drainage waste and sanitation along with allied municipal services.	▪ The local environmental degradation ▪ Haphazard unchecked land use development has declined the original characteristic of Murree ▪ 4.5 km long ridge is confined NS by Kashmir Point & Pindi Point, offering physical barriers to the growth ▪ Extending EW, ridge is again confined by terrain / steep slope, roads ▪ Fragile geology of Murree has put forward another challenge to development activities at large. ▪ All the infrastructure has been confined to the central core (Ridge) area ▪ The amount and quality of open space in the inner Murree is insufficient to cater the ever increasing tourist influx ▪ Limited options for tourists of trekking and hiking ▪ The overall cityscape reflects the mushroom infill growth ▪ Cityscape is composed of a mosaic of buildings, each with its own character ▪ Retaining and preserving our cultural and historical heritage ▪ Shortage of parks and playgrounds ▪ Absence of public toilets ▪ Poor quality worn out hard infrastructure. ▪ Tourism industry being the chief magnetic factor for investments derives the most of the development patterns in Murree. ▪ TMA lacks on both human and financial resources to run management affairs efficiently. ▪ Local inhabitants see it as "Mall road looks like Raja Bazaar of Pindi". ▪ TMA lacks capacity to cope natural hazards like earthquake, lansliding and forest fires.	▪ Sub-urban mixed used development. ▪ Huge volume of tourism economy can be directed to support planned land use development. ▪ Land use development complementing the economic activity through tourism ▪ Small scale handicraft industry.

SECTORAL SITUATIONAL ANALYSIS MATRIX:

	SECTOR	EXISTING POLICY FRAMEWORK	INSTITUTIONAL RESPONSIBILITY	CHALLENGES	OPPORTUNITIES
2.	**WATER MANAGEMENT**	**National Drinking Water Policy 2009** ▪ Provide access to safe and sustainable drinking water supply to the entire population of Pakistan by 2025 ▪ Promote measures for treatment and safety of drinking water **Pakistan Water Sector Strategy 2002** ▪ Achieving equity in irrigation distribution ▪ Increasing Equity in Water Distribution ▪ Increasing Stakeholder Participation	▪ Murree Joint Water Board ▪ TMA Murree ▪ Public Health Engineering Department	▪ Apparent gap between demand & supply i.e. *45%* ▪ Peak demand is 2.25 million gallons/capita/day ▪ Quality of supplied water is below the national standards ▪ Openly dumped solid waste and openly drained sewage is a major cause of water contamination ▪ Rain Water Harvesting at every building parcel level still unaddressed ▪ Highly concentrated landuse development in core area	▪ River Jhelum scheme could easily resolve the water shortage issue ▪ Water management and conservation strategies. ▪ Rain water harvesting is as an unexploited source ▪ Major source of drinking water is springs / streams ▪ Recycling / treatment for sewage to be used for agriculture use.
3.	**TRANSPORTATION SYSTEM MANAGEMENT**	▪ **Pakistan Transport Plan Study of Pakistan (PTPS) 2006** ▪ Establishment of multimodal transport system ▪ Enhanced private sector participation in transportation systems ▪ Emphasis on asset management of the existing system ▪ **Policy and Strategy of Transport / Roads Sub-Sectors in MTDF 2005** ▪ Priority to roads maintenance and safety ▪ Effective control of overloading on the roads ▪ Enhancement of capacity of the road sector agencies **National Trade Corridor Improvement Program / Policy**	▪ Federal Highway Departments ▪ Provincial Highway Departments ▪ TMA Murree ▪ City Traffic police Rawalpindi	▪ Huge volume of tourists and vehicles directing towards core. ▪ Road network being steep and narrow ▪ Deficit Walk ability, pushing populace to ride on cars ▪ Due to congested traffic, tourist go back on the same day ▪ Geology does not permit expansion of right of ways ▪ Less room for vehicles to be parked around ▪ Right of ways even do not allow medium sized public mode vehicles ▪ Public modes of transportation are in shortage ▪ Terminals / infrastructure for public modes Buses, Vans, Pick ups are in a very dilapidated condition	▪ Murree serves as a strategic location on two main corridors ▪ MKR and Expressway serves as a transit point for huge population ▪ JhikaGalli Road, Mall road, Jinnah road, Caurt Road, bank Road, Kuldana Road is fairly good and maintained.
4.	**INFRASTRUCTURE DEVELOPMENT & MANAGEMENT**	▪ **Public-Private Partnership (PPP) for Infrastructure Development in Pakistan** ▪ Development of more infrastructure on time and within budget ▪ Risk sharing by GOP with private sector partners ▪ **PMDFC & Punjab Municipal Services Improvement Project** ▪ Institutional Development ▪	▪ TMA Murree ▪ Joint Water Board Murree ▪ Public Health Engineering Department Murree ▪ PTCL ▪ Celluar Telecom Operators ▪ SNGPL ▪ Provicial Highways Department ▪ WAPDA / IESCO ▪ TDCP ▪ Cantonment Board Murree	▪ Municipal connected sewerage facility has only been extended to 23% residents ▪ Rest of the unconnected population dispose their waste water off in open ▪ Run-off / rain water is being drained over surfaces ▪ Occasional chocks in mobile network in peak season ▪ Gas infrastructure only in 65% urban	▪ Sui Gas has reduced stress on forests and air quality Sui Gas has reduced stress on forests and air quality ▪ Telecom / Mobile communication networks are expanding and giving state of the art data services

SECTORAL SITUATIONAL ANALYSIS MATRIX:

	SECTOR	EXISTING POLICY FRAMEWORK	INSTITUTIONAL RESPONSIBILITY	CHALLENGES	OPPORTUNITIES
5.	**TOURISTS, TOURISM & DEPENDENT LIVELIHOOD**	▪ **Pakistan Tourist Guides Rules 1996** ▪ **The Hotels And Restaurant Rules 1977** ▪ **The Pakistan Hotels and Restaurants act 1976** ▪ **The Pakistan Tourist Guides Act 1976** ▪ **The Travel Agencies Act 1976** ▪ **The Travel Agencies Rules 1977** ▪ **Punjab Tourism Sector Strategy 2010**	▪ Ministry of Tourism Punjab ▪ Tourism Development Corporation Punjab ▪ TMA Murree	▪ Degradation of scenic value of Murree ▪ The quality of food is a big concern for the tourists ▪ Poor quality of tourism infrastructure. ▪ The tourism related development is highly concentrated in the city core ▪ As per the QualiTest results only 22.75% tourists are satisfied with value for money ▪ 46.4% tourists are dissatisfied with the accessibility and mobility pattern for disables and families with children. ▪ Water shortage disappoints tourists to visit Murree in peak seasons. ▪ Murree lacks efficient and affordable public transport system ▪ 74.76% tourists are dissatisfied with the quality of food being served at local hotels and restaurants. ▪ 56.4% of tourists are dissatisfied with the quality and availability of information about the tourism activities and general information about Murree. ▪ great need to introduce standardization and accreditation system to improve the quality of service ▪ The local economy is seasonal in nature as it is highly dependent on tourists flow. ▪ The increased tourist volume is a risk to urban security including food security. ▪ Shortage of food and commodities in peak season.	▪ Great potential for future tourism development ▪ Public & private sector tourism investments can be seen as source of local and national revenue ▪ Reduces employment-related emigration to other cities
6.	**ENVIRONMENTAL MANAGEMENT**	▪ Environment and Urban Affairs Division ▪ To control industrial pollution ▪ Pakistan Environmental Protection Council ▪ To improve environmental management and achieve sustainable development ▪ Pakistan Environment Protection Agency ▪ Sewerage disposal, solid waste and public parks etc	▪ Tourist industry as a major heir & consumer ▪ Environmental resources as key opportunities ▪ Environmental threats & challenges both to the community and policy makers	▪ Shortage of water resource, the pollution of surface and ground water ▪ Solid Waste Management ▪ Vehicular Emissions ▪ Loss of Biodiversity ▪ Deforestation and Land sliding ▪ Depletion of Fertile Soil Resources	▪ Rain water harvesting by houses ▪ Green belts and parks ▪ water conservation ▪ Develop an ecological farming system ▪ Prevention of soil erosion

POLICY IMPLEMENTATION FRAMEWORK MATRIX:

	POLICY AREA		SUB- COMPONENTS	PLAN TERM				POLICY OBJECTIVES	PROPOSED INSTITUTIONAL / IMPLENTATION FRAMEWORK
				E	S	M	L		
1	**SUSTAINABLE LAND USE PLANNING**	SLP-1	• Disaster Risk-Resilient Land Use Planning ○ Developing a hierarchy of planning principles to guide development and decision making processes in high risk areas			√	√	• To encourage orderly landuse growth and development in appropriate areas of Murree • Responsible land-use planning for achieving an equitable urban and rural development • Control over land-use and land allocation • To guide TMA in making appropriate decisions on all development proposals at local level • Enhancing the capacity of TMA to manage, regulate and encourage environmentally sustainable physical growth • Encroachment Control • Efficiency and Mobility • Pedestrian movement • Parking facilities • Appropriation of building Byelaws – incomplete structures • Commercialization policy • Circulation • Up gradation of dilapidated infrastructure • Creating visual vents-scenic opportunity for all • Urban regeneration • Murree; a tourism oriented landuse pattern seek slight modifications are needed in Land Use Rules 2009 in case of Murree keeping in view the ground realities	• TMA Murree • TO (P&C) Town planner and two assistant town planners • Environmentalist for Waste Management Issues • GIS/IT Manager with support staff • Tourism Specialist • Architect / Urban Designer • Forest Specialist • Structural Engineer • Geologist / Seismic Expert • Community Development Expert • Transportation Planner • Water Management Specialist • Expert to explore Public-Private Partnerships • Planning Law Expert • Estate Manager • Hazard & Disaster Risk Management Expert • Local Safety Commissions • Local Heritage Conservation Commission / Committee
		SLP-2	• Exploring Growth Opportunities / Corridors ○ Mixed-use development is encouraged at MIT Colony, proposed Dhobi Ghat development in Shawala, and BansraGali			√	√		
		SLP-3	• Emergent Management Planning for 2011-12 Early Short Term ○ Exploring opportunities for future growth corridors / precincts	√	√				
		SPL-4	• Geology Supported Land Use Planning / Zoning ○ Limited number of building permits may be allowed within Residential Zones		√	√	√		
		SLP-5	• Built Heritage Conservation ○ The site planning for new development should minimize the disturbance of sites significant to historical natures		√	√			
		SLP-6	• Urban Regeneration Strategies		√	√	√		
		SLP-7	• Land Use Growth Policies Complementing Tourism Economy						
		SLP-8	• Land Use Planning & Urban Security			√	√		
		SLP-9	• Environmentally Sustainable Land Use Planning			√	√		
		SLP-10	• GIS for Urban Management			√	√		
2	**SUSTAINABLE TOURISM PLANNING**	ST-1	• Environmentally Sustainable Tourism Product Development		√	√	√	• To improve the quality of the environment on which both the host community and the visitors depend • To provide well-designed, safe and accessible tourism development • To protect and enhance the natural and built environment and safeguard the natural resources • Encouraging tourism activities in harmony with nature • Promotion of eco-tourism & responsible tourism practices by involving the community • Enhancing livelihood opportunities for local population in tourism industry • Ensure pedestrian safety by traffic calming • Sidewalks along roads may be constructed to encourage pedestrianization.	• Tourism Ministry necessary modalities may be completed at provincial level for taking responsibility of tourism development at Punjab level • **"Murree Tourism Development Agency/Cell"** may be established within TDCP having its local office in Murree • The MTDA shall also be entrusted for the preparation of annual project budgets; advising and facilitiatingTMA for private sector investments • 3) Necessary legal framework in form of bylaws and regulations and institutional arrangements shall be extended for the successful implementation of the tourism development projects in the course of Murree Master Plan 2011-31

		ST-2	• Exploring Options for Eco-Tourism Development
			  ○ Nature Education and Interpretation Centers
			  ○ Walk-ability & pedestrianization
							√		

		ST-3	• Tourism Marketing & Promotion ○ Create tour packages with hotels, restaurants and any other tourist facilities			√	√		
		ST-4	• Standards & Accreditations ○ Accreditation of Shops, Restaurants & Hotels		√	√	√		
		ST-5	• Tourist Information System ○ A web-based interactive Tourist Information System must be developed for potential tourists		√	√	√		
		ST-6	• Public Facilities / Tourism Infrastructure ○ Public Toilets may be provided at all tourist attraction sites with proper facilities		√	√	√		
		ST-7	• Facilitating Investment: Public & Private ○ the government should introduce sector specific investment incentives for existing projects						
		ST-8	• Exploring Livelihood Opportunities in Tourism Industry		√	√	√		

POLICY IMPLEMENTATION FRAMEWORK MATRIX:

	POLICY AREA		SUB- COMPONENTS	PLAN TERM				POLICY OBJECTIVES	PROPOSED INSTITUTIONAL / IMPLENTATION FRAMEWORK
3	**TRANSPORTATION MANAGEMENT PLANNING**	T-1 T-2 T-3 T-4 T-5 T-6 T-7 T-8 T-9	• Demand Management o Policy aims a comprehensive Demand Management plan • Transportation System Management o Signage, signals and road marking • Walkability o To improve vertical climbing links between major urban arteries to enhance walkability • Multi Modal Mobility Option o Town must have a variety of inter-connected transportation choices as alternatives to the automobile o • Parking Demand Management o Strive for increasing the potential of existing lots through redevelopment / redesign • Freight Movements & Terminals o Reduce /restrict the impact of heavy freight truck traffic movement in urban core • Intercity Transit Terminals o To facilitate all inter-city traffic, vehicles/passenger movements by providing adequate vehicles parking bays • Enhancing Efficiency through Right of Ways Protection& Rehabilitation o Enhance efficiency of Transportation System in Murree through protection of right of ways against physical damages • Ropeway System & Elevated Cable Cars o To encourage private sector for the execution of such projects in PPP tier		√ √ √ √ √ √ √ √ √	√ √ √ √ √ √ √ √ √	√ √ √ √ √ √ √ √ √	• Enhance the efficiency system through better management practices • Extend community traffic education, introduce intra-urban eco-friendly modes • Improve the capacity of existing system by augmenting essential infrastructure • Improve the efficiency of the system by educating the road user and community about traffic regulation • Improve the walkability options in the urban core to reduce undesired stresses on the current system • Promote decentralization by improving building regulations • Create supportive land use policies, by regulating location, scale, density and design of activities • Ease the entrapped local community during peak seasons • Ease and clear the network of all undesired permitted and/or illegal encroachments as an Emergent Plan and encouraging its continuance throughout the planned period • Enhance the stock and efficiency of inter-city modes by introducing incentives for private sector investment through PPP framework • Enhances mobility and accessibility even without compromising / affecting the physical environment of the area • Planning the town to bring people closer to their destinations • Create supportive land use policies, by regulating location, scale, density and design of activities, which have an impact on traffic flows	• Transportation infrastructure management shall remain a prime responsibility of TMA in urban core • Federal and provincial highways departments shall remain responsible for the management of two main strategic corridors i.e. MKR & N75 • CDG Rawapindi shall continue supporting management/ augmentation of infrastructure in Murree Tehsil • Traffic management is a prime responsibility of City Traffic Police through its inherent laws / regulations • Tourist's traffic awareness campaigns are expected to be initiated jointly by TDCP, City Traffic Police and the community (CBOs & NGOs) • TDCP is expected to initiate future development projects through PPP tier • TDCP shall encourage private sector to start shuttle service between Lahore-Murree and Rawalpindi-Murree using eco-friendly medium sized community / public transport vehicles • Building controls, registration of transportation related infrastructure both in private & public sector • TMA, TDCP & Provincial Tourism Ministry shall still desired to hold their prime responsibility as regulators / supervisors
4	**SUSTAINABLE ENVIRONMENTAL MANAGEMENT PLANNING**	E-1 E-2 E-3 E-4 E-5 E-6	• Solid Waste Management o Improvement of waste collection facilities by establishing primary collection system in commercial and residential areas • Water Resource Management o Development of water resources of the area for economic and social benefits of the people • Air Pollution Control o Implementation of Motor vehicle emission standards in the city • Conservation of Biodiversity o Creating and maintain systems of effective and sustainable protected areas • Forest Conservation in Murree o Protecting forest resources from illegal logging, forest fires, poachers and unauthorized grazers etc • Control of Soil Erosion and Land sliding o Farmers can use hill terracing by cultivating crops on steep slopes		√ √ √ √ √ √	√ √ √ √ √ √	√ √ √ √ √ √	• Ensuring sustainable and coordinated management of development in the area • Managing threats to forests and biodiversity • Managing the increasing generation of waste • Controlling litter in urban and rural areas • Controlling environmental pollution (air, water, soil etc.) • Promoting the principles and practices of sustainable tourism and urban development • Minimizing the environmental impacts of tourism related activities • Improving energy efficiency, waste management, and water conservation within the area • Dealing with traffic congestion and damage to infrastructure and their environmental impacts • Distinctively neat and clean environment and dwellings • High-quality facilities • A superb, un-spoilt environment for out-door activities • Great natural beauty • Setting targets for waste reduction • Preparation of inventory to identify and quantify municipal solid waste and hazardous waste	• TMA, (land use development, building by laws, solid waste/water management etc) • Tourism Development Corporation of Punjab, Tourism development, recreational facilities, parks etc • Environmental Protection Department of Punjab, Pollution monitoring and control, hazardous waste management • Department of Agriculture, agriculture, horticulture • Livestock and Dairy Development, live stock, poultry etc • Forest Department, Custodian of forest resources, management of logging, reforestation etc • Wildlife Department, Conservation of wildlife • Highway Department, roads • PHATA and Public Health Engineering, housing, sewage disposal etc, • Transport, transport • Local Government and Community Development • Health Department, hospitals, health centers, vaccination campaigns etc.

E-Emergent Phase (2011-2012) S- Short Term (2011-16) M-Medium Term (2011-21) L- Long Term (2011-31)

POLICY IMPLEMENTATION FRAMEWORK MATRIX:

	POLICY AREA		SUB- COMPONENTS	PLAN TERM				POLICY OBJECTIVES	PROPOSED INSTITUTIONAL / IMPLENTATION FRAMEWORK
5	**PLANNING FOR INFRASTRUCTURE**	I-1	• Providing sustainable green infrastructure in the town		√	√	√	• 13Public Private Partnerships (PPP) is appreciated to improve the provision of environmentally sustainable infrastructure as per vision of IPDF • Transfer of expertise and technology, capacity-building and innovation through strengthening of local institutions like TMA & PHE • Measures to expose hidden drains / runoff channels to DAY LIGHT and stabilization of channel surface • Tele-communication network will enable both local and transient population to have access to global knowledge and information super highway • Enhance water quality, eradication of pathogens, increasing the action of aerobic micro-organism • Water supply to rural inhabitants down the slopes through gravity to irrigate their agriculture holdings • To enhance recharge boost to subsoil aquifers • To convert harmful complex organic molecules to simpler nutrients for plants and other ecology • Reduces environmental stresses and financial burden on local inhabitants as well as tourists • A fair pricing mechanism to enhance the efficient use of supplies, speedy delivery of services and enhancing environmental sustainability	• TMA is expected to upgrade / augment sewage collection network on priority • Replacement of poor quality / worn out electrical infrastructure is proposed to be replaced by electric supply company in plan short term • Extension of infrastructure to the proposed future development precincts shall be planned accordingly for the plan period of 20 years gradually • To make water supply system more efficient, existing rusted / worn out above ground infrastructure should be replaced in short term plan period (2011-2016) • An isolated system shall be developed to enhance efficiency of runoff from pavements • A sewage treatment facility (primary treatment only) shall be installed by the TMA • Tele-communication networks (both wired & wireless) are anticipated to reach every inhabitant of Murree Tehsil by the end of 2016. • Gas supply is expected to reach at least every urban inhabitant by the year 2016 as it reduces environmental stresses and financial burden • Energy efficiency campaign at all levels and energy efficiency must be a part of building regulations of TMA
		I-2	• Promotion of green infrastructure suggested as it proves a life line to the environment		√	√	√		
		I-3	• Discourage inefficient use and abuse through regulatory, pricing and incentives / disincentive measures		√	√	√		
		I-4	• Strategies should be focused to provide maximum of pervious run off channels in the city		√	√	√		
		I-5	• Replacement of worn out / rusted municipal water supply, sewerage and electricity		√				
		I-6	• Strategies to conserve / enhance watershed should be evaluated and adopted		√	√	√		
		I-7	• Strategies to exploit rain water harvesting should be adopted at each level in Murree TMA area		√	√	√		
		I-8	• Rain water runoff through urban pavements should be collected in isolation and should not be mixed to sewage		√	√	√		
		I-9	• A comprehensive integrated planning for the collection of sewage water to be adopted						
		I-10	• TMA must Endeavour for an integrated solid waste management practice in the town by involving local and transient community	√	√	√	√		
		I-11	• Measures to expose hidden drains / runoff channels to DAY LIGHT and stabilization of channel surface		√	√	√		
		I-12	• Transfer of expertise and technology, capacity-building and innovation through strengthening of local institutions and PPP		√	√	√		
6	**REVITALIZING / CONSERVATION OF URBAN, NATURAL AND HERITAGE PRECINCTS**	UP-1	• Making connections between people and places	√	√	√	√	• Development of public places and spaces and connecting them through a cultural pedestrian corridor • Proposal for the development of Murree Cultural Auditorium at the Mall Road/GPO cultural node • Creation of ecological corridors to connect green structure around Murree • To promote indigenous materials and techniques of construction for future development in Patriata • A landmark structure placed rightly will serve the purpose well • A new development corridor to canalize the select tourists groups direct to five star hotels • Access to birds and trees • The significant sites having unique features would attract the inquisitive tourists • The proposal for painting roofs with earthy tones of colors is actually for adding richness to the townscape • New commercial districts in MIT Colony & Dhobi Ghat vicinity	• EPA& TMA to initiate pilot project for identification of natural resources to be harnessed • EPA& TMA to establish platform to take all stake holders on board to mitigate the problems of waste management and pollution • TDCP to include universities all over Pakistan to take part in active campaigns for environment related awareness • TMA to Prepare, implement and enforce schemes for environmental improvements. • TDCP to initiate program for developing nature pristine sites for tourists attraction • infrastructure development or improvement scheme to be supervised and implemented by TMA
		UP-2	• To identify & conserve unharmed areas		√	√	√		
		UP-3	• To dovetail many strands of place-making		√	√	√		
		UP-4	• Drawing elements together creating a strategy		√	√	√		
		UP-5	• To ensure community consciousness		√	√	√		
		HP-1	• To adopt and promote conservation principles			√	√		
		HP-2	• To identify heritage buildings, places and objects		√	√	√		
		HP-3	• To prepare conservation plans		√	√	√		
		HP-4	• To retain the historic integrity of heritage places		√	√	√		
		HP-5	• To workout project specific feasible situation		√	√	√		
		HP-6	• Authentic and Precise documentation		√	√	√		
		NP-1	• promote the protection of habitats		√	√	√		
		NP-2	• identify, monitor and assess activities		√	√	√		
		NP-3	• Rehabilitate degraded environment		√	√	√		
		NP-4	• Promote the sustainable use of natural resources		√	√	√		
		NP-5	• Promote public awareness of nature conservation		√	√	√		
		NP-6	• Promote nature conservation			√			
		NP-7	• co-operate with and participate			√			