LAHORE DEVELOPMENT AUTHORITY

INTEGRATED MASTER PLAN FOR LAHORE-2021

FINAL REPORT

VOLUME -III

SHORT TERM PLAN

NATIONAL ENGINEERING SERVICES PAKISTAN (Pvt.) Ltd.
HEAD OFFICE: NESPAK House, 1-C, Block N, Model Town Extension, Lahore-54700, Pakistan.

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PREFACE

This report is the fourth deliverable required to be presented to Lahore Development Authority (LDA) towards the finalization of Integrated Master Plan for Lahore (IMPL), in accordance with the contract for Consultancy Services and Terms of Reference. The first draft of this report was submitted to LDA in July 1998. Various observations/ comments on the draft report were received and incorporated and the revised version in the form of second draft report was submitted to LDA in November 2002.

A series of presentations made to various government agencies, the technocrats and professionals including town planners, architects, engineers, builders, administrators etc. at various forums to invite their suggestions/ comments which were accordingly incorporated in this document. This report got clearance from the Project Steering Committee on June 23, 2004 and was approved by the Lahore District Council on October 06, 2004.

The published report on 1998 Population Census for Lahore District was available as from February 2001. Since population is the basic parameter for undertaking planning studies, the whole data base of this report was revised/ updated according to the latest census figures. The purpose of this exercise/ assignment is essentially to establish an integrated framework for the development of Lahore by the year 2021 and to create a sustainable working and living environment for its citizens while improving the quality of life.

The preparation of IMPL has been undertaken through a comprehensive process of data accumulation, processing, surveys, field visits, and analytical studies. Extensive discussions with public and private sectors including eminent professionals, civic personalities and special interest groups were also an important element of their participation in the plan formulation. IMPL in essence, therefore, is also intended to serve as a practical working document with sound basis, for the concerned authorities to adopt the proposals and recommendations, and proceed to plan implementation.

This report is divided and submitted into three separate volumes as follows:

Volume-I	Existing Scenario
Volume-II	Analysis and Proposals
Volume-III	Short Term Plan

Volume-I presents a review of existing scenario in Lahore and covers all aspects of the metropolitan area, namely historical background, physical characteristics, socio-economic profile, land development, land use, housing, transportation, community facilities, utility services, environmental issues and urban governance.

Volume-II of the report focuses on the analysis of the above situation and preambles the structure for plan making. It discusses key issues that are to be addressed, the growth components, potentials and constraints of Lahore Metropolitan Area (LMA). This is followed by the proposals for the Integrated Master Plan up to the year 2021. It presents recommendations in all sectors of urban development i.e. land use, land development, housing, transportation, community facilities, public utilities, infrastructure, environment and institutional framework.

Volume-III presents a list of projects identified in various sectors with tentative cost estimates for implementation during the first 5 years.

Apart from the three volumes of the report mentioned above, an Executive Summary is also given in a separate volume which presents the salient features of the three volumes of the Master Plan Report in a summarized form.

NESPAK gratefully acknowledges with gratitude the co-operation of LDA and its associated agencies such as WASA and TEPA including the Ex-Additional Director General (Town Planning) LDA, the Managing Director WASA, the Chief Traffic Engineer TEPA, for their help during formal and informal discussions at various stages of this assignment.

Special thanks are due to Mian Aamir Mahmood, District Nazim; Mr. Akhlaq Ahmad Tarar, Director General LDA; Mr. Khalid Sultan, District Coordination Officer; and Mr. Shaukat Jamal Khawaja, Chief Metropolitan Planner, LDA for their valuable contribution, guidance and help throughout during the preparation of this document.

Last but not the least, are the six Town Nazims of the City District Government, the District Officers (Planning and Coordination) of these Towns, Executive District Officer (Works and Services) and various officials of the City District Government who have directly or indirectly contributed during the Plan preparation. Thanks are also due to various other public agencies like Provincial P&D Department, Housing and Physical Planning Department, Transport Department, Environment Protection Department, Ex-Metropolitan Corporation Lahore (ex-MCL), Lahore and Walton Cantonment Boards, Parks and Horticultural Authority (PHA), Meteorological, Education, Health and Irrigation & Power Departments, Punjab Bureau of Statistics, Water and Power Development Authority (WAPDA), Sui Northern Gas Pipelines Limited (SNGPL), Pakistan Telecommunications Corporation Limited (PTCL), the private sector and numerous individuals who rendered their assistance and guidance on various occasions.

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INTEGRATED MASTER PLAN FOR LAHORE

VOLUME-III: SHORT TERM PLAN

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LIST OF ABBREVIATIONS USED IN THE REPORT

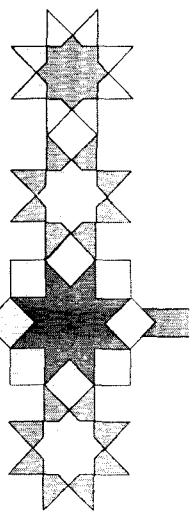
AC	Asbestos Cement
ACSR	Aluminum Conductor Steel Reinforced
ADB	Asian Development Bank
ADP	Annual Development Plan
Amp	Ampere (unit of electric current)
BOD	Bio-Chemical Oxygen Demand
BRB	Bambanwala Ravi Bedian Canal
CADPAD	Computer Aided Distribution, Planning and Design
CBD	Central Business District
CDG	City District Government
CDM	M/s Camp Dressers and Mckee
CDWP	Central Development Working Party
Cfs	Cubic feet per second
CI	Cast Iron
CMP	Chief Metropolitan Planner, LDA
COD	Chemical Oxygen Demand
CTE	Chief Traffic Engineer, TEPA
DG	Director General
DI	Ductile Iron
DMD	Deputy Managing Director
DO	Dissolved Oxygen
DTA	District Transport Authority
DTP	Director Town Planning, LDA
EIS	Environmental Impact Statements
EPA	Environmental Protection Agency
EPD	Environment Protection Department
E&T	Excise and Taxation Department
ft	Feet
GI	Galvanised Iron
gpcd	Gallons per capita per day
Ha	Hectare
HFL	High Flood Level
HIES	Household Integrated Economic Survey
HRT	Heavy Rail Transit
HT	High Tension
HUD&PHED	Housing, Urban Development and Public Health Engineering Department
Hz	Hertz (cycle per second)
IDA	International Development Agency
IMA	Inner Metropolitan Area
JICA	Japan International Cooperation Agency
Km	Kilometre
KV	Kilo Volt
KVA	Kilo Volt Ampere
KW	Kilo Watt
LCB	Lahore Cantonment Board
LCCHS	Lahore Cantonment Cooperative Housing Society
LDA	Lahore Development Authority
LGO	Local Government Ordinance
LHV	Lady Health Visitor
LIT	Lahore Improvement Trust
LMA	Lahore Metropolitan Area
LMC	Lahore Municipal Corporation
LPB	Lahore Protection Bund
Lpcd	Litres per capita per day
Lps	Litres per second
LRT	Light Rail Transit
LSP	Lahore Sanitation Programme
LT	Low Tension

LIST OF ABBREVIATIONS USED IN THE REPORT

LTR	Lahore Telecommunications Region
LUDTS	Lahore Urban Development and Traffic Study
LUTP	Lahore Urban Transport Project
m	metre
m^3/s	cubic metres per second
mcfd	million cubic feet per day
MCH	Maternity and Child Health Centre
MCL	Metropolitan Corporation Lahore
mcmd	Million Cubic Metres per day
MD	Managing Director
MEUAFW	Ministry of Environment, Urban Affairs, Forestry and Wildlife
mgd	million gallons per day
mpn	Most probable number
MTS	Model Town Society
MVA	Mega Volt Ampere
NCS	National Conservation Strategy Project
NEQS	National Environmental Quality Standards
NESPAK	National Engineering Services Pakistan (Pvt.) Limited
NGO	Non-Governmental Organisation
NTRC	National Transport Research Centre
O&M	Operation and Maintenance
ODA	Overseas Development Agency
P&E	Planning and Evaluation
RCC	Reinforced Cement Concrete
PCU	Passenger Car Unit
PDWP	Provincial Development Working Party
PHC	Primary Health Centre
PIHS	Pakistan Integrated Household Survey
PLGO	Punjab Local Government Ordinance
PMDF	Punjab Municipal Development Fund
PRTC	Punjab Road Transport Corporation
PTA	Provincial Transport Authority, Punjab
PTCL	Pakistan Telecommunications Corporation Limited
PUDP	Provincial Urban Development Project
PVC	Polyvinyl Chloride
ROW	Right of Way
Rs	Pakistan Rupees
RTA	Regional Transport Authority
SAP	Social Action Programme
SEC	Shalimar Escape Channel
SNGPL	Sui Northern Gas Pipelines Limited
SWM	Solid Waste Management
TDCP	Tourist Development Corporation Punjab
TDS	Total Dissolved Solids
TEPA	Traffic Engineering and Transport Planning Agency
TSS	Total Suspended Solids
UBD	Upper Bari Doab Canal
UD	Urban Development Wing, LDA
UET	University of Engineering and Technology, Lahore
UNEP	United Nations Environmental Programme
WADPA	Water and Power Development Authority
WASA	Water and Sanitation Agency
WHO	World Health Organisation

VOLUME III

SHORT TERM PLAN



SHORT TERM PLAN

1 GENERAL

The proposed Short Term Plan (first five years) focuses on issues of immediate concern. It gives a list of projects with preliminary cost estimates to overcome the problems of water supply, sewerage disposal, storm water drainage, solid waste management, flood protection, and environmental issues. It stresses on improved road network and an efficient public transport system to overcome traffic congestion in the city. The execution/implementation of these projects will require a strong commitment and collaboration among City District Administration, Town Administrations, LDA and other concerned agencies to prepare detailed designs and execute the projects identified in the Short Term Plan.

2 FINANCIAL ALLOCATIONS

A package of Rs. 58.03 billion has been allocated for the Short Term Plan, entailing an average requirement of about Rs. 12 billion per year. In actual terms, obviously, there are yearly variations. The allocation is minimum for the first year (about 7.99 billion or 13.8% of the total package). In the subsequent years, there is a gradual rise and the allocations are maximum in the 3rd year for which about Rs. 13.5 billion (23.3%) have been set aside. During the 5th year however, the allocations decline to Rs. 10.64 billion (18.33%). Summary statistics are presented in Table 1, and illustrated graphically (in terms of absolute numbers as well as percentages) in Figure 1.

TABLE-I
FINANCIAL ALLOCATION
FOR THE SHORT TERM PLAN

YEAR	ALLOCATION (billion Rs)	%
I	7.992	13.77
II	12.492	21.53
III	13.500	23.26
IV	13.410	23.11
V	10.636	18.33
Total	**58.030**	**100.00**

3 SECTOR-WISE ALLOCATIONS

The Short Term Plan covers 11 sectors enlisting various projects. The projects under each of these 11 sectors are elaborated in subsequent sections. Maximum amount has been allocated for Transportation sector (43.1%), followed by Education (19.7%), Parks and Recreation (10.34%), Sewerage System

(8.1%).and Health (7.1%). The minimum allocation is for establishment of database and improving flood protection facilities (0.09% each). For the remaining sectors, the allocation is between about 2% to 4% (refer Table 2). Figure 2 illustrates the sectoral allocations in the form of a logarithmic graph. The year-wise allocations for each project are given in Table 3.

TABLE-2
SECTORAL ALLOCATIONS
FOR THE SHORT TERM PLAN

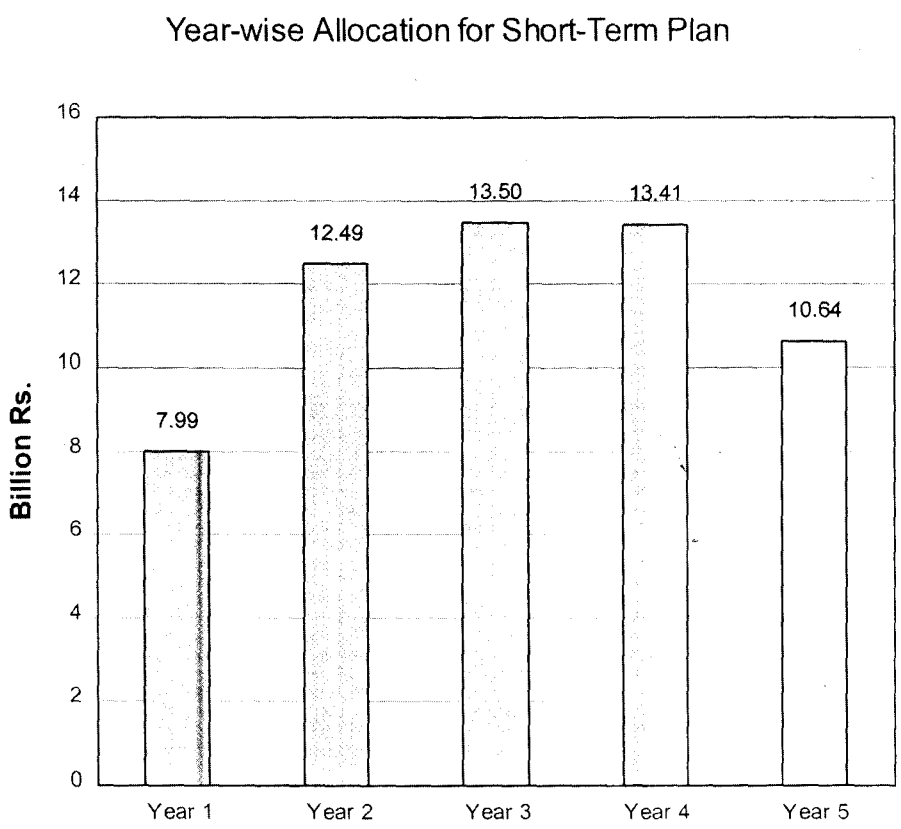
	SECTORS	ALLOCATION (Million Rs.)	%
1	Data Base	50	0.09
2	Drainage System	2,100	3.62
3	Solid Waste Management	1,865	3.21
4	Sewerage System	4,683	8.07
5	Water Supply	1,700	2.93
6	Environmental Protection	1,020	1.76
7	Transportation	24,992	43.06
8	Flood Protection	50	0.09
9	Education	11,440	19.71
10	Health	4,130	7.12
11	Recreation	6,000	10.34
	Total	**58,030**	**100.00**

TABLE 3: LIST OF SHORT TERM PROJECTS (for First 5 Years)
SUMMARY OF COST (FOR TOTAL PACKAGE)

(Cost in Million Rs.)

SR. NO.	PROJECT	PHASING YEARS					TOTAL COST
		1st	2nd	3rd	4th	5th	
1	2	3	4	5	6	7	8
1	DATA BASE	3.0	17.0	17.0	12.0	1.0	50.0
2	DRAINAGE SYSTEM	350.0	400.0	450.0	350.0	550.0	2,100.0
3	SOLID WASTE MANAGEMENT	745.0	760.0	360.0	0.0	0.0	1,865.0
4	SEWERAGE SYSTEM	929.4	929.4	1,065.4	879.4	879.4	4,683.0
5	WATER SUPPLY	374.6	369.6	319.6	318.6	317.6	1,700.0
.6	ENVIRONMENTAL PROTECTION	155.5	304.5	553.5	3.5	3.0	1,020.0
7	TRANSPORTATION	2,434.0	5,362.0	5,715.0	6,936.0	4,545.0	24,992.0
8	FLOOD PROTECTION	20.0	30.0	0.0	0.0	0.0	50.0
9	EDUCATION	2,000.0	2,400.0	2,500.0	2,500.0	2,040.0	11,440.0
10	HEALTH	480.0	920.0	1,020.0	910.0	800.0	4,130.0
11	RECREATION	500.0	1,000.0	1,500.0	1,500.0	1,500.0	6,000.0
	TOTAL	**7,991.5**	**12,492.5**	**13,500.5**	**13,409.5**	**10,636.0**	**58,030.0**
	PERCENTAGE	**13.77**	**21.53**	**23.26**	**23.11**	**18.33**	**100.00**

FIGURE-1: FINANCIAL ALLOCATIONS FOR SHORT TERM PLAN



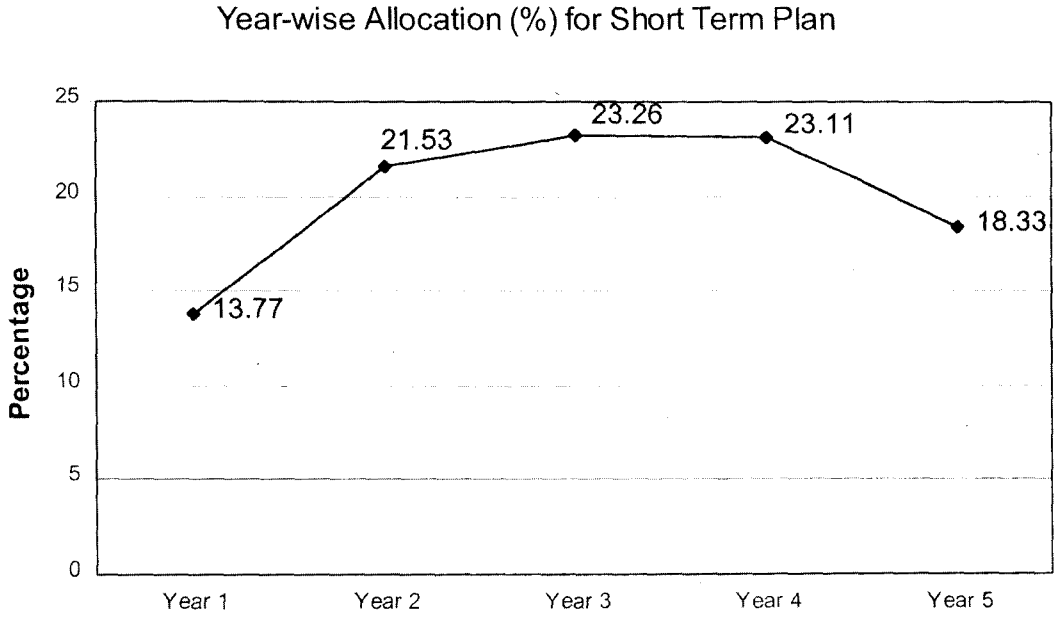
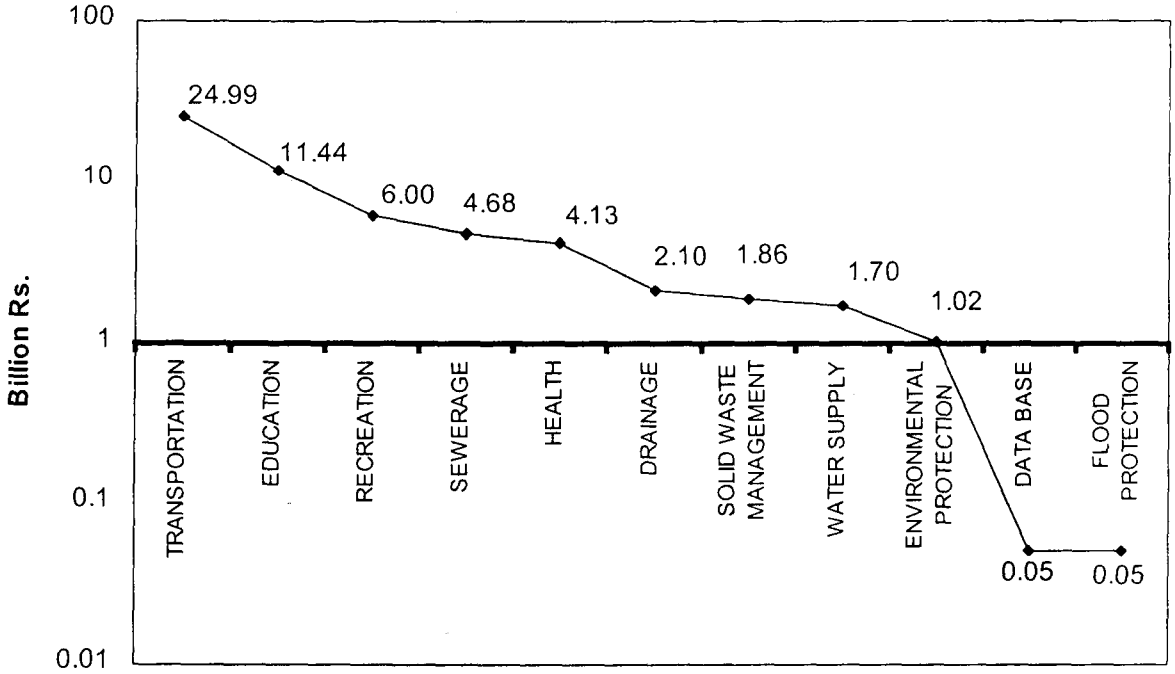


FIGURE-2 SECTOR-WISE ALLOCATIONS FOR THE SHORT TERM PLAN



4 THE IDENTIFIED PROJECTS

The identified projects in the 11 sectors are described in detail in Table 5 and appended at the end of this volume. The Table also gives the details about the agencies responsible for execution along with year-wise allocation for each project. A list/description of these projects is as follows:

4.1 GIS Data Base

The specific components of the project are:

- Establishment of data information centre to keep updated records of data on all sectors and digitized information
- Study and mapping of utility services
- Study to update property revenue base

The Short Term Plan emphasizes the establishment of a computerised database on population, landuse, infrastructure, services and other social and economic data. This database will provide a unified geographic basis for future planning decisions in LMA. The first step has already been initiated by NESPAK in the form of this document.

A digitized base map for Lahore has been prepared using 100 Survey of Pakistan sheets surveyed in 1992-93 at scale 1:10,000. There is however, a need to continuously up-date the map/data bases and establish procedures for regular contacts with other agencies to provide inputs for GIS database. Once the database is complete, it will be a powerful source of a large variety of information for different decision-makers and users. (refer Section 1 of Table 5).

At City District level, all EDOs will have to coordinate and provide the sectoral information for the database. For Master Planning purposes however, the proposed EDO (Spatial Planning and Development) will closely coordinate with the EDO (IT). A MIS Unit within the proposed Department of Spatial Planning and Development has already been recommended (refer Chapter-27 on Institutional Framework). The MIS Unit of Spatial Planning and Development will work as sub-system of a broader network to be established under EDO (IT).

The ultimate goal of this effort is to:

- Provide a broad and reliable base for information/data about physical and human environment at a single source
- Integrate physical, social and environmental data to serve goals of the City District Government and vrious authorities and agencies such as LDA, WAPDA, SNGPL, WASA, TEPA and others
- Ensure easy up-dating of information
- Assist in quick decision-making.

4.2 Upgrading Drainage System

Improvement of drainage system should also be carried out on priority basis. Life of city roads largely depends on an efficient drainage system. LDA and the defunct MCL have been spending huge amounts on the rehabilitation and maintenance of roads, damaged due to inadequate drainage system. The flooding caused by the poor drainage system not only causes inconvenience to the citizens but also results in heavy losses to property and expensive equipment/machinery. It is therefore imperative to place the drainage system on top priority and prepare a comprehensive plan for the city drainage for implementation, which will also provide relief to sewerage system during the monsoon season (for project details, refer Section 2, Table 5). The specific projects include:

- Remodeling of Mian Mir Drain from Lahore Cantonment to Gulshane-Ravi
- Remodeling of Mian Mir Drain (Central Drain and adjoining drains)
- Remodeling of Sukh Nehr
- Remodeling of Allama Iqbal Town Drain from Kharak to River Ravi
- Construction of Tributary drains in various zones
- Acquisition of land and remodeling of Satto Katla Drain
- Procurement of heavy desilting machinary etc.

4.3 Upgrading Sewerage System

The existing sewerage system is inadequate even for the present requirements. The proposed improvement for extension of the system will bring relief to certain city areas and their residents who are facing serious wastewater disposal problems and are living in unhygienic conditions due to overflowing of sewers. The deficient areas and trouble spots should be tackled on priority basis. Additionally, there is need to immediately undertake construction of a sewage treatment plant (refer Section 4, Table 5). The specific projects include:

- Laying of R.C.C. trunk sewers from 1050 mm to 3,000 mm (42 inches to 120 inches)
- Laying of Laterals in sewerage deficient areas as detailed in the Report
- Construction of sewage pump stations at Outfall Road, Multan Road and Johar Town.
- Construction of Sewerage Treatment Plant
- Procurement of Drilling Machinery

4.4 Water Supply

Water supply comes next on the priority list as most of the area (up to 70%) is served with water supply. However there is need to check huge water losses (reported to be 30 to 40%) due to leakages in the distribution network and unmetered connections (for project details refer Section 5, Table 5). The sub-projects of water supply component are:

- Replacement of 46 Nos. old tubewells of varying capacities in various sub-divisions

- Rehabilitation of 30 Nos. old tubewells of varying capacities in various sub-divisions.
- Installation of 98 Nos. new tubewells of 4 cusec capacity each in various sub-divisions.
- Installation of water meters for 300,000 water connections
- Laying of water supply distribution lines in various sub-divisions including replacement of old CI pipes.
- Laying of water supply transmission lines in various sub-divisions including reservoirs.
- Procurement of miscellaneous items including cranes, mobile generators

4.5 Environmental Protection

Environmental protection/aspects cannot be separated from the development package to give these a separate priority. But this issue is the integral part of each and every development project without affecting its inter-sectoral / intra-sectoral priorities (refer Section 6, Table 5). The specific projects identified under Environmental Protection include:

- Air quality and noise monitoring at the busy traffic intersections / industrial estates
- Ground water Quality and water distribution system monitoring.
- Construction of Slaughter House near Village Shahpur along Multan Road
- Surface Water Quality Monitoring

4.6 Solid Waste Management

The solid waste management is equally important and it should be taken up concurrently with storm water drainage. In fact the unmanaged solid waste is the main cause for malfunctioning of city sewers and blocking of the drains. With proper management of solid waste, hygienic conditions and aesthetic looks of the city will also improve (refer Section 3, Table 5). The defunct MCL has already awarded a Solid Waste Management Contract for the city to a private contractor. The projects pertaining to Solid Waste Management identified under the Short-Term Plan include:

- Acquisition and development of additional land at Mahmood Booti.

- Land acquisition and development of 4 landfil sites (located west of Lahore Bypass, along Bedian Road, near Kahna Kachha, and along Narang Road) over an aggregate of 120 hectares, including construction of structures.
- Procurement of vehicles, machinery and equipment (including installation of incinerators and replacing open trucks with covered trucks).

4.7 Transportation

Roads, traffic and transportation aspects are equally important especially the provision of an efficient and comfortable public transport system along with development of transport terminals and the improvement in road network including road junctions, provision of missing links to ensure smooth flow of traffic. There is also a need to constantly monitor road maintenance and check roadside encroachments (refer Section 7, Table 5). The transportation projects identified for the Short Term Plan include:

- Capacity improvement of Ravi Bridge including Ravi Road & Ravi Link Road
- Design and Construction of Lahore Ring Road
- Development of public transport terminals at Railway Station, at Shahpur Village and improvement of Badami Bagh Terminal
- Upgrading GT Road and Multan Road
- Connection of Sagian Bridge with G.T. Road,
- Construction of missing links in the south (7 links with a total length of 41 kms).
- Provision/clearance of approaches to Lahore Airport including grade separation at Bhatta Chowk (Bedian Road), Improvement of Ghazi Road 2 Km from Ferozepur Road, extension of Cavalry Ground Road from Walton Road to Ghazi Road.
- Undertaking supplementary works for LRRP
- Central Area Traffic Management and installation of urban traffic control system including signal operations, junction improvements and construction of bus bays.
- Operation and maintenance of various roads and junctions as detailed in Table 5.

4.8 Flood Protection

The need for protection from river floods is obvious. Protection

measures also need to be taken up on priority basis so that the city becomes safe from possible future flood disasters (for project details, refer Section 8, Table 5).

- Repairing of damages of Babakwal Spur, Shahpur Kanjran Spur, earthwork of Tie Bund and Mahmood Booti Bund.
- Repairing of hockey spurs near Shadiwal Village, stoneworks at Furrakhabad Spur, Flood Protection Bund.
- Carrying out Comprehensive Flood Management Study.

4.9 Community Facilities

The projects pertaining to health, education and recreation identified for the existing deficient areas in the city and for incremental population for the next five years include:

- Construction of 924 primary schools, 184 high schools and 51 colleges.
- Construction of 44 primary health centres, 19 polyclinics, 3 general hospitals.
- Provision of 1,100 additional beds in existing health centres
- Land acquisition and development of 100 mohalla parks, 40 neighbourhood parks, 1 town park and 1 riverside park.

The details of projects are listed in Table 5 in order of priority. It may be noted that most of these sectors/ projects are inter-related and in certain areas / localities, the order of their priorities may have to be changed or implemented concurrently.

5 PUBLIC-PRIVATE FINANCIAL SPLIT

The total package of about Rs. 58.03 billion for the short-term plan includes public sector contribution of Rs. 20.543 billion (35.4% of the total package) and the remaining amount of Rs. 37.487 billion (64.6%) from private sector participation.

The package enlists the identified projects in order of priority in each sector. Both public and private sector projects have been identified on the basis of intra-sectoral as well as inter-sectoral priorities. The intra-sectoral priorities are aimed at rehabilitating the existing systems to improve their current levels of service. This would involve upgradation of the existing infrastructure to a desired level within the service area and also its extension to new areas.

The inter-sectoral prioritisation is trickier as many of the sectors are inter-

related and have to be implemented concurrently. In certain areas roads may be more severely damaged than the drainage network and vice versa.

Sector-wise private and public contributions are presented in Table 4 and illustrated graphically in Figure 3.

6 PHASING

Phasing programme for development is essential so that the capital investments are coordinated with the development of land, roads, utilities and public facilities in a methodical and efficient manner. It is appropriate that phasing is also related to the national Five Year Plan periods and provincial development plans, so that national and provincial budgets and funding can be incorporated for the identified projects. The planning horizon for IMPL is 20 years, which has been divided into the following three phases:

a) Phase-I: Short Term Plan (First Five Years)
b) Phase-II: Medium Term Plan (Subsequent Five Years)
c) Phase-III: Long Term Plan (Last Ten Years)

These are elaborated below:

6.1 Short Term Plan

This phase for development is very crucial as it caters for the basic framework of the plan. Timely accomplishment of the tasks under this phase would streamline the desired development of the city and facilitate the implementation of next phases. In addition to the short term projects, (as detailed in this Report), to be completed during this phase, following tasks should be accomplished during the earlier part of this phase; particularly tasks (i) and (ii) must be completed in the first year.

i) Approval of the IMPL by relevant authority

ii) Notification of extension of LMA boundary covering entire District Lahore plus the existing areas of LMA in Districts of Sheikhupura and Kasur.

iii) Implementation of projects identified for Phase-1

iv) Strengthening City District Government and the Six Towns Municipal Governments and absorbing the staff and assets of devolved line departments in the local governments.

v) Strengthening of local institutions to prepare and implement strategic master planning through authorization of legal measures.

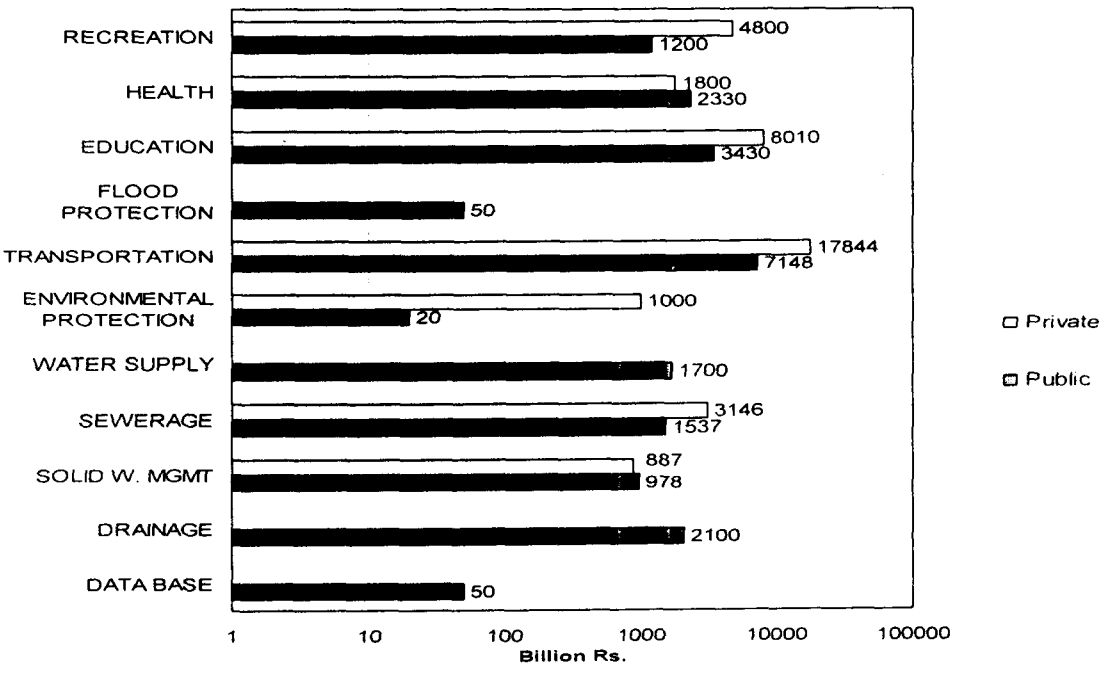
vi) Initiating legal notifications for land reservations for roads and

public uses as proposed in the Master Plan.

TABLE 4 PUBLIC-PRIVATE SECTORS' CONTRIBUTION TOWARDS SHORT TERM PLAN

PROJECTS	PUBLIC		PRIVATE		TOTAL	
	(million Rs)	%	(million Rs)	%	(million Rs)	%
DATA BASE	50.00	100.00	0.00	0.00	50.00	100
DRAINAGE	2100.00	100.00	0.00	0.00	2100.00	100
SOLID WASTE MANAGEMENT	978.00	52.40	887.00	47.60	1865.00	100
SEWERAGE	1537.00	32.80	3146.00	67.20	4683.00	100
WATER SUPPLY	1700.00	100.00	0.00	0.00	1700.00	100
ENVIRONMENT	20.00	2.00	1000.00	98.00	1020.00	100
TRANSPORTATION	7148.00	28.60	17844.00	71.40	24992.00	100
FLOOD PROTECTECTION	50.00	100.00	0.00	0.00	50.00	100
EDUCATION	3430.00	30.00	8010.00	70.00	11440.00	100
HEALTH	2330.00	56.40	1800.00	43.60	4130.00	100
RECREATION	1200.00	20.00	4800.00	80.00	6000.00	100
GRAND TOTAL	**20,543.00**	**35.40**	**37,487.00**	**64.60**	**58,030.00**	**100**

FIGURE-3 PUBLIC - PRIVATE CONTRIBUTION TOWARDS SHORT TERM PLAN LOG GRAPH



vii) There is a need to densify and infill the existing developed (but unoccupied) schemes specially in the south on priority basis so that the services network laid-out years ago is optimally utilised. The continued vacancy of these areas/schemes reflects lack of effective demand and affordability of target groups and the speculation factor. Moreover, these schemes are not yet fully developed and many of these lack adequate road network, water supply, sewerage disposal arrangements, electricity and/ or gas connections, educational institutions, health centres and other amenities. The proposed ring road when constructed, is likely to accelerate the development and habitation process in this corridor.

viii) There is a need to provide trunk infrastructure in the existing/ partially developed housing schemes especially in the south for consolidation, provision of city level services and facilities and missing roads / transport links and ensure development of the proposed trade cum commercial centres. House building incentives such as credits and tax reliefs for the lower income groups should be facilitated. At the same time control measures like buy-back option on land remaining vacant in fully developed areas after a pre-determined equitable period should also be considered.

ix) LDA has already reserved land for establishment of Trade Centre in Johar Town. Notification / reservation of land by LDA for the establishment of Business Districts south of Hudiara Drain and east of Ferozepur Road in the South should also be made. Land acquisition process should be initiated immediately.

x) Infrastructural services are to be provided to housing schemes which have been developed towards south of Hudiara Drain.

xi) Undertaking remodeling / improvement of roads and road junctions and undertaking their construction.

xii) Construction / development of bus transport terminals at identified locations.

xiii) Continuation of checks on encroachments along roadsides and public rights of way and arrangement for their immediate removal.

xiv) Remodeling / improving the existing drainage system in the city.

xv) Replacement of old C.I. water pipelines in various sub-divisions and rehabilitation / replacement / installation of tubewells and connecting water meters as proposed in the Report.

xvi) Improvement of Public Transport System and undertaking road widening/improvement projects.