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NEPAL
Urban Development Assessment

United States Agency for International Development

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N E P A L

URBAN DEVELOPMENT ASSESSMENT

Prepared for

Office of Housing and Urban Programs
Agency for International Development
Washington, DC

and

USAID/NEPAL
KATHMANDU, NEPAL

Prepared by

PADCO, INC.
1834 Jefferson Place, NW
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PREFACE

The essential purpose of this Urban Development Assessment mission to Nepal was to broadly investigate at the national level the future prospects and problems that will be associated with continued urbanization.

From the outset, the team was aware of the serious capital resource constraints in Nepal, the necessity of improving performance in the agricultural sector as the first priority, and the serious development problems to be addressed at the national level.

The team was impressed with many aspects of HMG's efforts at guiding urbanization and, hopefully, the identification of problems and the recommendations suggested here will be viewed in the light of furthering these objectives.

REPORT ORGANIZATION

This report contains a significant amount of data and descriptive material upon which the conclusions and recommendations were based. It was decided that—since urban conditions in Nepal have not been extensively studied—providing a baseline of available data, organized from the urban perspective, would be of value for those who will follow on with future work.

There is a separately bound Executive Summary Report which has been prepared for those persons wishing only to review the highlights of the analysis and the recommendations for future national urban policy direction.

This report is divided into four Parts plus supporting Appendices:

PART ONE
Presents the general national overview of development.

PART TWO
Presents the urban context and recommendations.

PART THREE
Presents the urban implications of the major sectoral development programs and issues.

PART FOUR
Presents an analysis of the urban strategy recommendations of Part Two using a computer-based modeling technique.

APPENDICES
Present additional descriptive material.

SUMMARY CONCLUSION

The overwhelming conclusion of this Urban Development Assessment is that Nepal faces accelerated rates of urban development in the future. This urban growth, if well planned and managed, presents a unique opportunity for Nepal to avoid many of the problems which other developing countries have encountered.

Furthermore, a policy which encourages orderly urban growth should prove to be desirable as a means of relieving over-population in the Hills, given the limited capacity of the Terai rural areas to absorb future population. In the longer term, the development of urban jobs and economic activity should help diversify and strengthen the national economy.

On the other hand, Nepal has limited resources and urgent problems in agricultural development which must be addressed. Therefore, in the short-term, the national urban strategy must be concerned with establishing urban policies, decentralized management, and planning capacities which will guide urban growth in positive directions yet not seek a massive reallocation of capital investment from other sectors or programs. This will place a high priority on selecting only those urban capital projects that offer very high benefits to economic growth.

ACKNOWLEDGEMENTS

The UDA team wishes to thank the many officials in HMG ministries and agencies that gave so generously of their time to meet with us. The team also benefitted enormously from the full cooperation and support of USAID/Nepal and the donor community. Without the full support of these groups which made secondary materials available, this report would not have been possible. The UDA team is particularly indebted to the DHBPP, the CBS, CEBA, the IBRD/WSSB Fourth Water Supply Project; (Proctor and Redfern), the UNDP, and GTZ (Bhaktapur project).

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Team Leader
February 28, 1984

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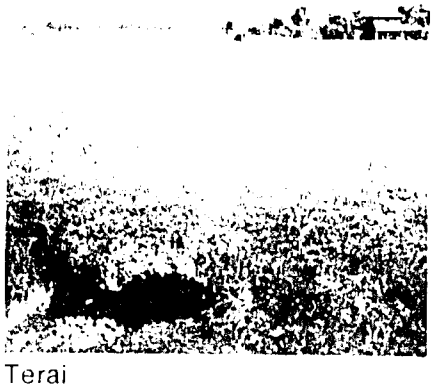
GLOSSARY

ADB	-	Asian Development Bank
CDO	-	Chief District Officer
CDR	-	Central Development Region
CEDA	-	Center for Economic Development and Administration
CSP	-	Crop System Program
DHBPP	-	Department of Housing, Building and Physical Planning
DP	-	District Panchayat
DWSS	-	Department of Water Supply and Sanitation
EDR	-	Eastern Development Region
FWDR	-	Far Western Development Region
GDP	-	Gross Domestic Product
GNP	-	Gross National Product
GTZ	-	German Bilateral Assistance
HMG	-	His Majesty's Government
IBRD	-	International Bank for Reconstruction and Development
IDA	-	International Development Agency
ILO	-	International Labor Organization
IRD	-	Integrated Rural Development
ISC	-	Industrial Services Centre
K-BIRD	-	Karnali-Bheri Integrated Rural Development
KHARDEP	-	Koshi Hills Integrated Rural Development
KSK	-	Karmachari Sanchaya Kosh (Provident Fund)
LDC	-	Least Developed Country
LDO	-	Local Development Officer
MPLD	-	Ministry of Panchayat and Local Development
MWDR	-	Mid Western Development Region
MWT	-	Ministry of Works and Transport
NEC	-	Nepal Electricity Corporation
NGO	-	Non-governmental Organization
NIDC	-	National Industrial Development Corporation
NPC	-	National Planning Commission
RD	-	Road Department
RIRD	-	Rapti Integrated Rural Development
Rs.	-	Rupees
SADP	-	Small Areas Development Program
SATA	-	Swiss Agency for Technical Assistance
TAG	-	Technical Assistance Group
TFM	-	Task Force on Migration
TP	-	Town Panchayat (Council)
TPIC	-	Town Planning Implementation Committee
UDA	-	Urban Development Assessment
UNCTAD/ESCAP	-	United Nations Conference on Trade and Development/Economic and Social Commission for Asia and the Pacific
UNDP	-	United Nations Development Program
UNICEF	-	United Nations Children's Fund
USAID	-	United States Agency for International Development
USM	-	Urban Sector Memorandum
WDR	-	Western Development Region
WHO	-	World Health Organization
WSSB	-	Water Supply and Sanitation Board

Landscape

Hill Landscape

Hill Landscape



Terai

Dharan Valley

Hill Valley

Nayarani

PART ONE

COUNTRY CONTEXT AND DEVELOPMENT ISSUES

Nepal's physical setting and geographical configuration must be understood to comprehend its historical and future development potential. A foldout map provided in a pocket to this report is a useful reference (Figure I.1).

Nepal is a landlocked country which is necessarily closely tied to India for trade, transport, and communications. Because Calcutta serves as the principal port of entry and exit for Nepal third country trade, its physical orientation to the southeast has led to the development of the eastern and central portion of Nepal more rapidly than the western regions.

Figures I.2 to I.4 show the nature of Nepal's physical configuration and its development regions.

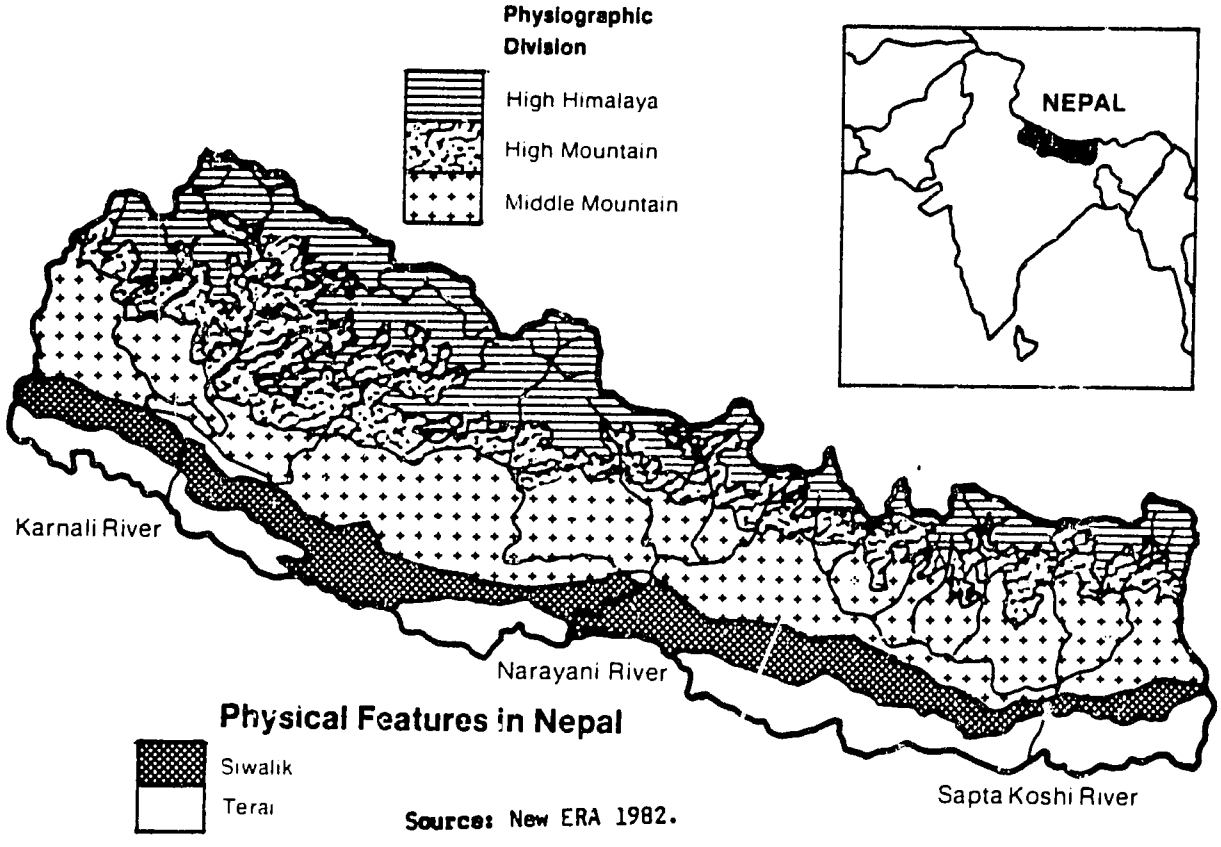
A. POPULATION TRENDS

Nepal's rising national population—due largely to high fertility and reduced mortality—is a major development concern. Historically, Nepal's economic growth and per capita income has been unable to keep pace with the increase in population. The national population increased at rates of 2.1 and 2.7 percent per annum during the periods 1961-1971 and 1971-1981 respectively. However, during the period 1976-1981 a rate of 3.2 percent per annum was registered. On the other hand, annual GNP growth between 1975/76 and 1979/80 was only 2.1 percent. Thus, standards-of-living have actually been declining despite sustained development efforts.

Nepal's dramatic rise in population began from a relatively stable population of six million in the 1930s. As Figure I.5 indicates, population growth has been steadily accelerating, reaching a population of 15.02 million in 1981. Furthermore, at current rates of growth, Nepal will reach a population of approximately 25 million by the year 2000. Thus, for the next two decades, coping with population increases, while striving to improve standards-of-living, will remain Nepal's most formidable task.

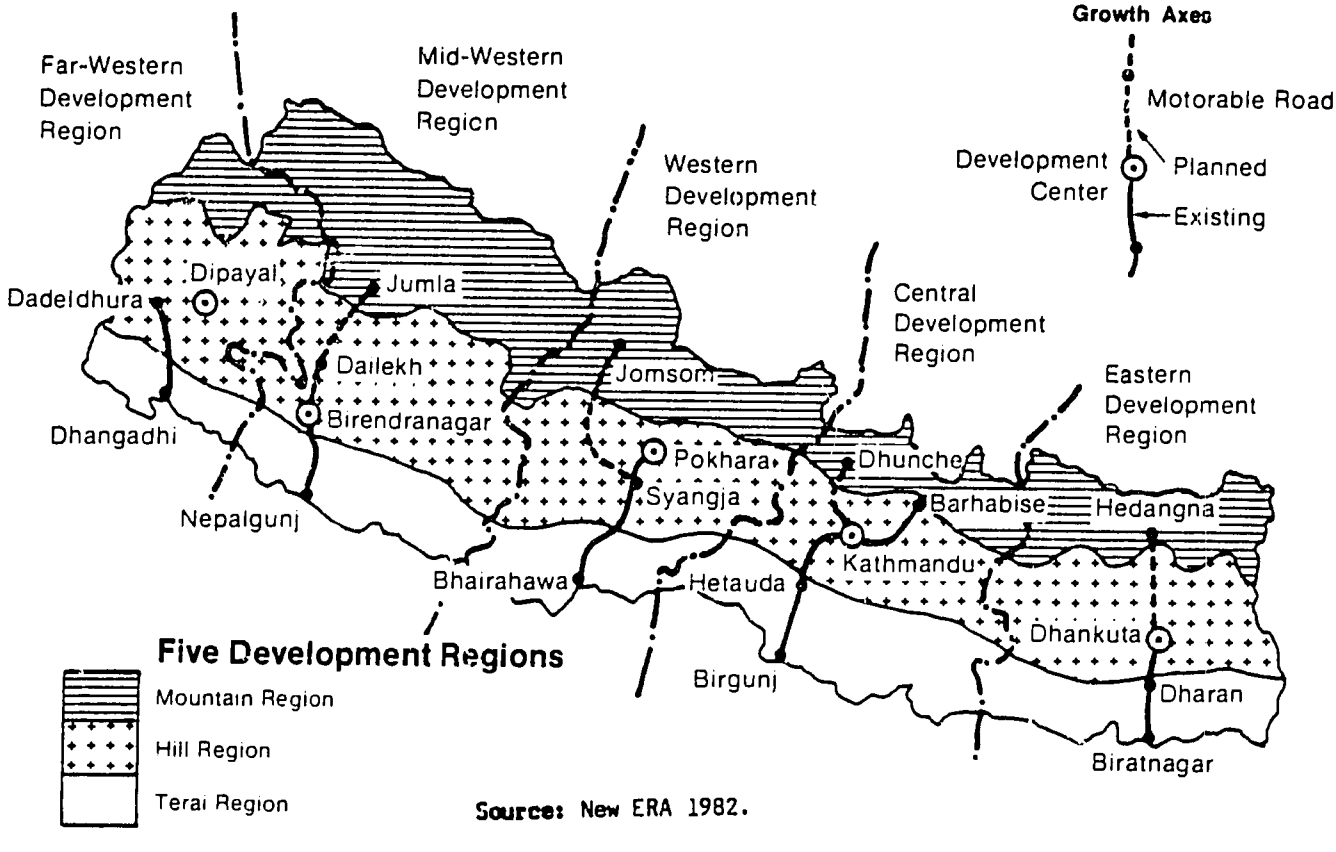
Table I.1 composes population data for the periods 1971-76 and 1976-81 according to geographical and development regions. The Terai is the principal reception area for migrants. This was brought about by malaria eradication and deforestation which began in the 1960s. In 1964 about 5.4 percent of the Terai's forests had been cleared, and by 1977 this increased to 65.7 percent. Densities in the Terai increased from 140.5 to 212.8 persons per square kilometer between 1971 and 1981.

FIGURE I.2



Source: New ERA 1982.

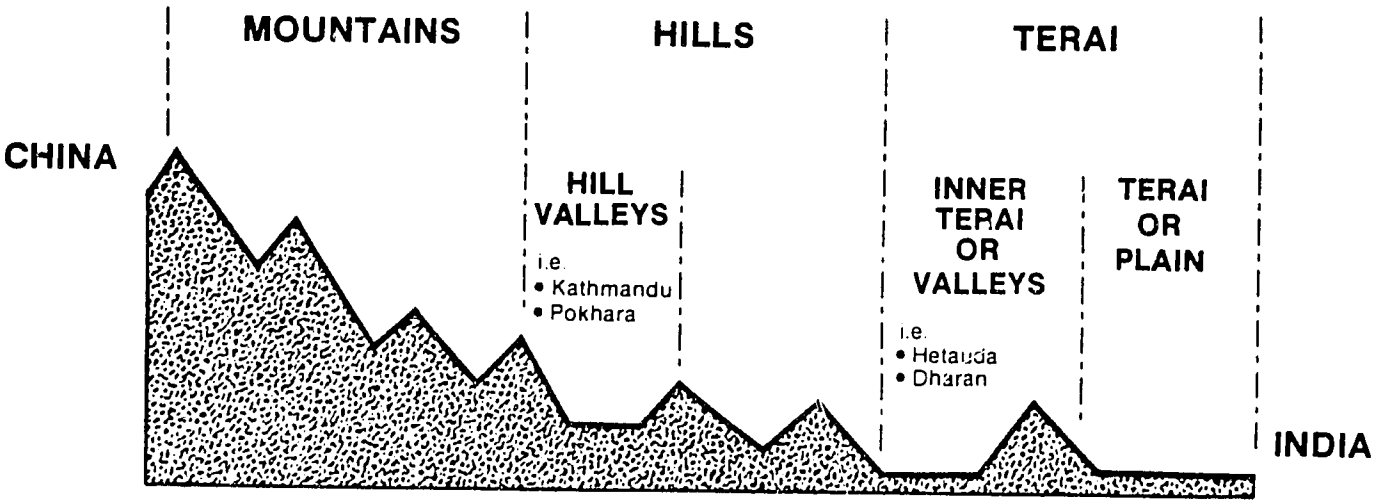
FIGURE I.3



Source: New ERA 1982.

FIGURE I.4

KEY PHYSICAL CHARACTERISTICS

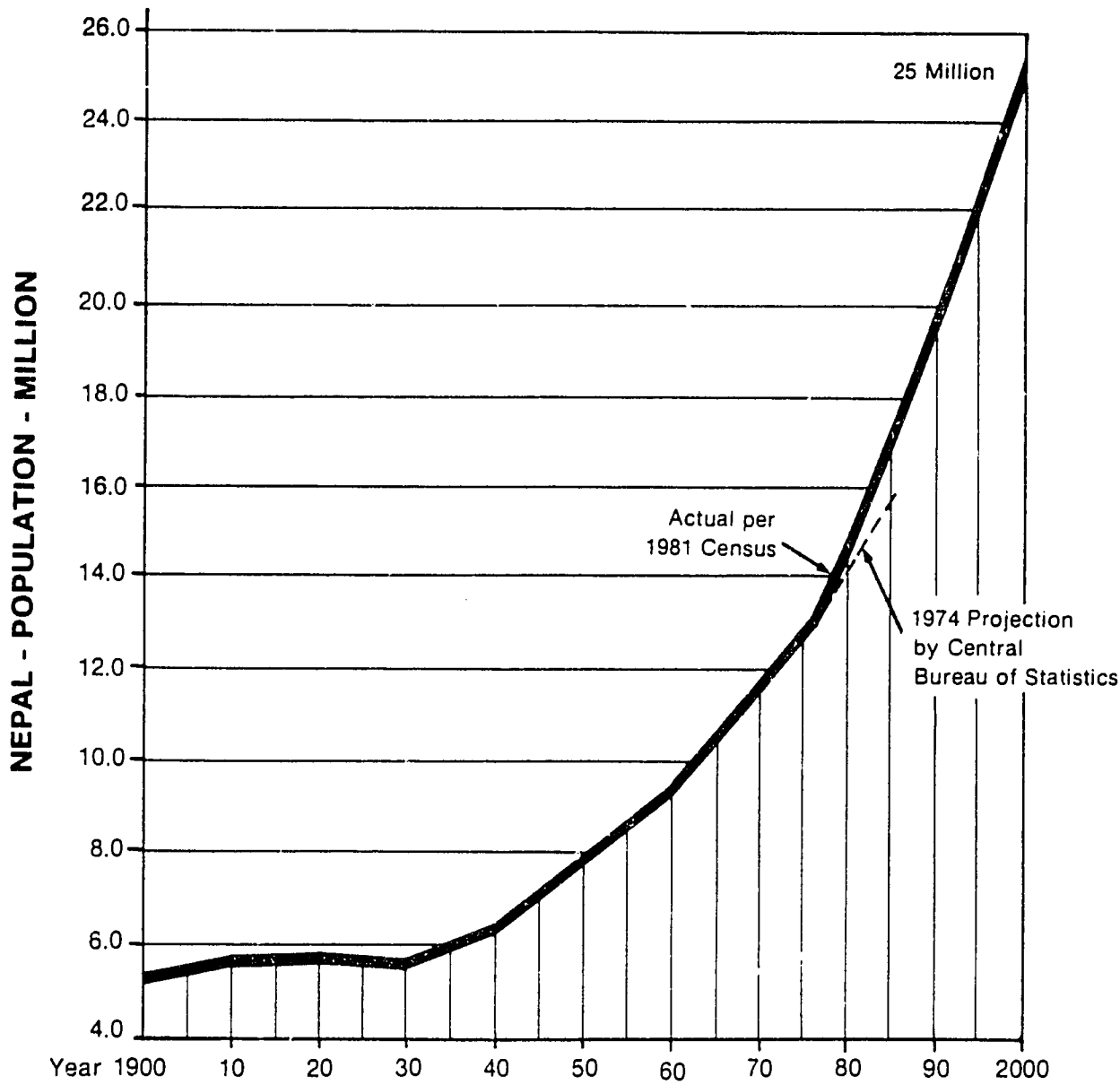


POPULATION: (1981)		
1.3 Million	7.4 Million	1.3 Million - 5.8 Million
Area: (Km^2) 34,000 Km^2	88,000 Km^2	25,000 Km^2
Percent of Total Area: 23%	60%	17%
Density: 10 - 150 p/Km^2	50 - 300 p/Km^2	50 - 300 + p/Km^2
Altitude: 2,000 - 9,000 Meters	600 - 3,000 Meters	750 - 1,500 Meters
Width: 25-60 Kilometers	60 - 80 Kilometers	25 - 40 Kilometers
Climate: Tundra	Temperate	Tropical

Source: PADCO

FIGURE I.5

National Population Growth and Projection



Source: IBRD/WSSB 4th Water Supply Project PADCO

TABLE I.1

REGIONAL POPULATION ANALYSIS 1971, 1976, 1981 NEPAL

	NEPAL		% TOT	FAR WEST		% TOT	MID WEST		% TOT	WEST		% TOT	CENTRAL		% TOT	EAST		% TOT
MOUNTAINS	*P71	1,138,610	9.87	P71	236,833	2.07	P71	207,122	1.80	P71	34,380	0.30	P71	353,923	3.07	P71	304,352	2.63
	*P76	1,218,494	9.49	P76	259,753	2.02	P76	221,231	1.74	P76	36,389	0.28	P76	378,990	2.94	P76	322,131	2.51
	*P81	1,291,073	8.59	P81	286,687	1.91	P81	238,873	1.59	P81	18,609	0.12	P81	413,063	2.75	P81	333,841	2.22
	**AG %	71-76	1.37	AG %	71-76	1.69	AG %	71-76	1.33	AG %	71-76	1.14	AG %	71-76	1.38	AG %	71-76	1.14
	**AG %	76-81	1.16	AG %	76-81	1.99	AG %	76-81	1.55	AG %	76-81	-12.55	AG %	76-81	1.74	AG %	76-81	0.72
HILLS	P71	6,230,838	54.04	P71	521,721	4.52	P71	885,562	7.68	P71	1,816,940	15.75	P71	1,916,238	16.62	P71	1,091,377	9.47
	P76	6,913,856	53.84	P76	573,985	4.47	P76	981,818	7.65	P76	2,000,359	15.57	P76	2,158,626	16.81	P76	1,199,078	9.34
	P81	7,427,085	49.45	P81	600,781	4.00	P81	1,042,151	6.93	P81	2,157,748	14.77	P81	2,371,618	15.74	P81	1,254,787	8.36
	AG %	71-76	2.10	AG %	71-76	1.93	AG %	71-76	2.09	AG %	71-76	1.94	AG %	71-76	2.41	AG %	71-76	1.92
	AG %	76-81	1.44	AG %	76-81	0.92	AG %	76-81	1.20	AG %	76-81	1.53	AG %	76-81	1.90	AG %	76-81	0.91
TERAI	P71	4,162,322	36.09	P71	197,740	1.71	P71	395,322	3.43	P71	595,110	5.16	P71	1,586,592	13.76	P71	1,387,558	12.03
	P76	4,708,669	36.67	P76	231,987	1.81	P76	472,786	3.68	P76	676,033	5.26	P76	1,781,986	13.88	P76	1,545,877	12.04
	P81	6,302,193	41.96	P81	424,863	2.94	P81	672,285	4.48	P81	859,197	6.34	P81	2,131,226	14.19	P81	2,115,220	14.08
	AG %	71-76	2.50	AG %	71-76	3.25	AG %	71-76	3.64	AG %	71-76	2.58	AG %	71-76	2.35	AG %	71-76	2.18
	AG %	76-81	6.00	AG %	76-81	12.83	AG %	76-81	7.29	AG %	76-81	7.25	AG %	76-81	3.64	AG %	76-81	6.47
TOTAL	P71	11,531,770	100.00	P71	958,294	8.30	P71	1,488,006	12.91	P71	2,446,430	21.21	P71	3,856,753	33.45	P71	2,782,267	24.13
	P76	12,841,019	100.00	P76	1,065,725	8.30	P76	1,675,825	13.07	P76	2,712,781	21.11	P76	4,319,602	33.63	P76	3,067,086	23.89
	P81	15,020,351	100.00	P81	1,311,733	8.73	P81	1,953,309	13.00	P81	3,135,554	20.88	P81	4,915,907	32.73	P81	3,703,848	24.66
	AG %	71-76	2.17	AG %	71-76	2.15	AG %	71-76	2.41	AG %	71-76	2.09	AG %	71-76	2.29	AG %	71-76	1.97
	AG %	76-81	3.18	AG %	76-81	4.24	AG %	76-81	3.11	AG %	76-81	2.94	AG %	76-81	2.62	AG %	76-81	3.84

* P71 - Population 1971; P76 - Population 1976; P81 - Population 1981

** AG % - Average Growth Percentage per Annum

Source: IBRD Fourth Water Supply Project 1983

Nepal borders two of India's poorest provinces: Uttar Pradesh and Bihar. In the East, 94.4 percent of the Indian migrants are from Bihar; while in the West, 88.2 percent of the migrants are from Uttar Pradesh.

Emigration from Nepal is a second popular avenue of Hill people.

The HMG has given population programs high priority and set up the National Population Commission (NPC) to deal with population growth. In 1983, the NPC prepared a National Population Strategy. The goal of the National Planning Commission is to attain a replacement level by the year 2000 which corresponds to a fertility rate of 2.6 percent and an annual growth rate of 1.2 percent per annum. Its targeted year 2000 population is 21 million.

B. ECONOMIC SETTING

Economic development in Nepal is constrained by its physical setting and characteristics, rapid population growth, narrow resource base, and the dependence of agricultural performance on good weather conditions. Nevertheless, agriculture—which contributes about 57 percent of GDP and employs 93 percent of the labor force is the mainstay of Nepal's economy.

Development prospects are also beset with troubles. Nepal's rising population has increased demand for arable and grazing land and led to large-scale deforestation of the Hills and Terai. In the Hills, this has led to general environment degradation, landslides, loss of life, soil erosion, silting of rivers, downstream flooding and general loss of agricultural productivity. Deforestation of the Terai and its subsequent cultivation served as a "safety net" for excess Hill population and provided an opportunity to increase agricultural productivity and per capita income. Recently, however, food and grain surpluses in the Terai (that traditionally have met Hill deficits and permitted merchandise exports) have been eroding as the Terai reaches its carrying capacity. Thus, there is a grave danger that the Terai will no longer be able to support food deficits, and seriously low incomes and levels of consumption may further decline.

Some Economic Development Issues

- Economic Growth
  During the last two decades, growth in domestic product has been on the order of 2.3 percent per year, or roughly equivalent to the population growth. On the other hand, during the period 1970-1980, GDP grew at a rate of 2.1 percent while population increased at a rate of growth of 2.7 percent; thus, per capita income declined.

- **Agriculture**
  Gross food grain production in 1981/82, a year of normal rainfall, still fell about 10 percent below the minimum caloric needs of the population for that year. In addition, growth in food grain production has averaged only about 1.5 percent per year--far below population growth.

  In normal rainfall years, Nepal has not as yet had to rely on food grain imports. However, a trend for import consumption and intermediate use with no corresponding increase in output and tradeables is progressively weakening its balance of payments situation. During the non-drought years of 1974/75 and 1981/82, the ratio of foreign exchange receipts to payments on current account declined from 85 percent to 73 percent.

- **Industry**
  Industrial development in Nepal is severely handicapped by its own narrow market, lack of raw materials, and dependency on the Indian transportation network for imports and exports.

  Proximity to the large Indian market is an advantage that Nepal has had difficulty in exploiting. Its industry is constrained by trade treaties, and it has difficulty competing with India's larger and more efficient industrial sector. Nepal's comparative advantages over India's industry are largely related to inadequate Indian industrial incentives and bureaucratic entanglements rather than identifiable economic factors.

  Industrial growth potential is largely dependent on gains in agriculture. About 70 percent of manufacturing industries in Nepal are agro-based. Nevertheless, the performance of manufacturing has been quite good. With the exception of 1980/81, growth in manufacturing has been quite stable. During that year shortages of raw materials and power led to a decline but completion of the Kulekhani I hydroelectric project eased this situation. In 1981/82 and 1982/83, production and capacity utilization also increased among some key industries. In addition, the Industrial Enterprises Act and the Foreign Investment and Technology Acts of 1981 provided industrial incentives to local and foreign private investors, thereby simplifying industrial and licensing procedures, liberalizing foreign investment regulations and providing fiscal incentives. The result has been the creation of a number of joint public/private ventures.

- **Infrastructure**
  Nepal's vast hydroelectric power potential depends on its ability to mobilize financial resources and success in negotiating beneficial export agreements with neighbors—particularly India.

  Difficulties in the establishment of an internal transport and communications network are overwhelming. Implementation of these systems in the Hills will prove slow, difficult, and extremely costly.

Nepal's landlocked position, long open border, and dependence on overseas trade transit through India is a severe disadvantage. It was estimated that indirect transport costs for physical infrastructure, hauling, handling, storage, damage and losses, and other factors was on the order of $200 million annually or 8 percent of GDP in 1982.

- **Trade**
  Trade position with India which has traditionally shown large deficits has been improving and there is a general trend for greater trade with third countries.

  In March 1978, Nepal instituted a dual exchange system that liberalized imports from third countries and had a positive effect on the balance of payments.

  Nepal's ability to pursue an independent economic policy in prices, interest rates, etc., has proved difficult due to its dominant trade relations with India and open border

- **Revenues and Expenditures**
  Government revenues as a percentage of GDP are relatively low, however by 1981 they represented 8 percent of GDP.

  Increases in consumption and investment are most desirable, but increases in aggregate expenditures can cause macro-economic instability. The outcome of increased investment for the period 1980/82 shows that increases in expenditures in absence of faster growth in output and the efficient deployment of resources lead to erratic macro-economic behaviour.

  In 1974/1975 one fourth of total budgetary expenditures (regular and development) was financed by donors. This increased to about 40 percent by 1979.

- **Human Resources**
  Nepal's human resources consist largely of unskilled labor in the agricultural sector. About 80 percent of the adult population was illiterate in 1982 with a life expectancy of only 44 years.

- **Development Administration**
  As Nepal emerged from virtual isolation in the 1950s, weaknesses still exist in its development administration systems despite significant improvements.

Main indicators of economic performance during the period 1978/79 to 1982/83 are presented in Table I.2. The period coincides with two drought periods (1979/80 and 1982/1983) and their impact on gross domestic product is quite noticeable--the economy and their impact on gross domestic product is quite noticeable--the economy registered a negative rate of growth. Favorable weather produced a dramatic improvement in growth in 1980/81.

TABLE I.2

MAIN ECONOMIC INDICATORS
(Percent change over the previous year)

	1978/79	1979/80	1980/81	1981/82	1982/83*	First Nine Months 1981/82	First Nine Months 1982/83*
1. Gross Domestic Product (at 1974/75 prices)	2.4	-2.3	5.6	3.8*	-1.3 †		
2. Major Agricultural Production	3.4	-12.4	16.6	4.0	-9.7		
a. Foodgrains Production	3.1	-13.5	19.0	4.0*	-12.1		
b. Cash Crops Production	5.4	-6.1	3.5	4.0	5.1		
3. Industrial Production	1.3	6.1	-3.1	14.8	18.8		
4. Consumer Price Index	3.5	9.8	13.4	10.4	-	4.6††	7.8††
5. Money Supply	21.6	13.0	13.3	12.6	-	15.8	17.3
6. Imports	16.8	20.6	27.2	11.3	-	7.0	28.7
7. Exports	24.0	-11.3	39.8	-7.3	-	8.6	-32.9
8. Trade Deficit	11.6	46.7	21.0	22.0	-	6.3	58.5
9. Foreign Exchange Reserves	30.8	-0.9	12.4	25.9	-	23.4††	-10.0††

* Provisional
† Estimates
†† On a point-to-point basis.
Source: Ministry of Finance

As is evident in the table, agricultural production has had a significant impact on the main economic indicators. Poor agricultural performance led to an increase in imports and decrease in exports; this, in turn, created increased trade deficits and lower foreign exchange reserves. Finally, an increase in domestic borrowing resulted in an increase in money supply.

The consumer price index has increased steadily between 1978/79 and 1981/82. In the first nine months of the 1981/82, it rose by only 6.4 percent but was followed by an increase of 7.8 percent in 1982/83. Price increases in imported foodstuffs, food grains and commodities have contributed to recent rises in this index.

In 1982/83, agricultural production declined by 9.7 percent in comparison with the previous year. This was caused primarily by a poor performance in food grain production which fell 12.1 percent from the preceding year due to poor paddy and maize yields. Cash crops production, on the other hand, have been steadily increasing since 1980/81.

Industrial production was the sole indicator that showed relative stability and growth though its primarily agro-base is obviously affected by poor agricultural performance in out years (i.e. 1980-81).

C. DEVELOPMENT PLAN OBJECTIVES, POLICIES AND TRENDS

The HMG has prepared six development plans and will soon embark on its seventh. In Figure I.6, cumulative planned outlays are presented by sector for the first through sixth Plans. Despite some changes in sectoral priorities during each of the Plans, first priority was given to transport and communications (34.8 percent of total Plan outlays). Agriculture has generally been a second priority concern and was to receive 29.2 percent of total planned investment. Industry and social services have been given significantly less priority with total planned investment commitments of 18.3 and 17.7 percent respectively. The social services sector currently includes education, health, potable water, panchayat programs, housing and town planning, information, and administrative reforms.

In the initial three Plans, transport and communications--particularly roads--were given very high priority in order to establish a foundation for development efforts. However, in subsequent plans this sector's share of planned outlays declined to last priority in the Sixth Plan.

Agriculture received second priority emphasis in the first, third and fourth Plans but was a low priority in the second Plan. Over the last two Plans, however, the recognition of stagnation in the sector and poor performance in the economy led to stressing agriculture as the number one priority.

With respect to realized outlays, investment generally equalled or exceeded the Plans but actual targets were consistently unachieved. Though some important sectoral gains have been made, growth in the economy has been irregular and it is gradually losing ground to population growth.

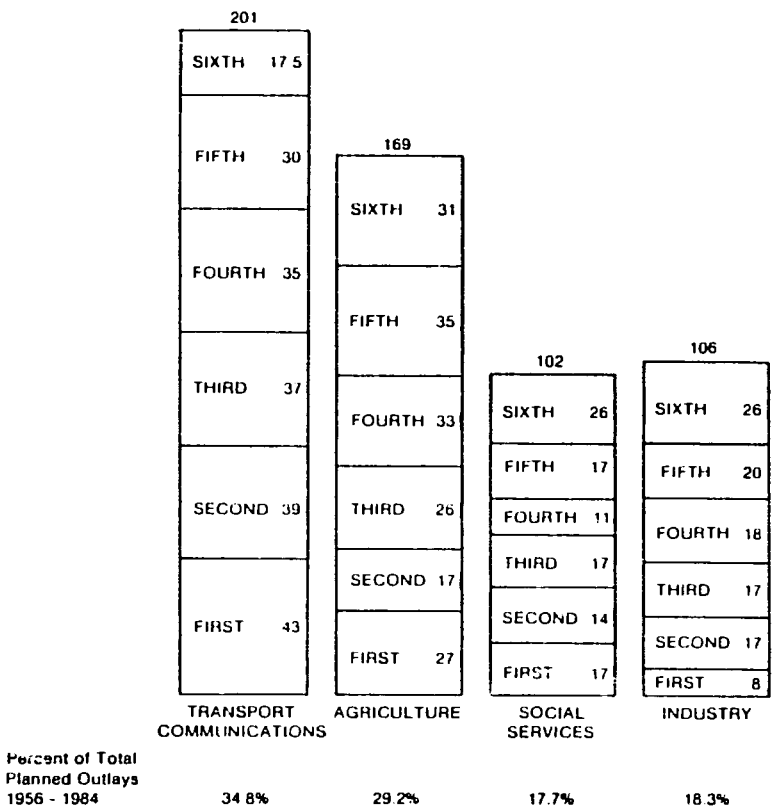
Per capital income in 1975 was on the order of Rs.1,302. By 1980, it had declined to Rs.1,298. A decline of agricultural production by 1.1 percent during the Fifth Plan occurred despite its increased priority and development expenditures. During the Fourth and Fifth Plans development expenditures increased at an annual rate of 15.8 and 19.4 percent respectively. To do so, the HMG increased domestic savings and came to rely heavily on foreign assistance that increased by more than three-fold.

The HMG recently completed a mid-term evaluation of the Sixth Plan. Though the results have yet to be published in English, they are not expected to be encouraging.

The failure of the Plans to result in an improvement of living standards is a deep concern of the Government. It recognized that difficulties in domestic resource mobilization, increasing demand to supply basic needs among a growing population, limited absorptive capacity for development projects, and its serious environmental problems are causing a poverty cycle from which it is increasingly difficult to escape.

FIGURE I.6

CUMULATIVE PLANNED INVESTMENT BY SECTOR
First Through Sixth Plans
(In Percent of Planned Outlays)



	Transport Communications	Agriculture	Social Services	Industry
Percent of Total Planned Outlays 1956 - 1984	34.8%	29.2%	17.7%	18.3%

PLANNED SECTORAL INVESTMENT
First Through Fifth Plans
RELATED OUTLAYS

Priority	1956-61 First Plan	%	1962-64 Second Plan	%	1965-69 Third Plan	%	1970-74 Fourth Plan	%	1975-79 Fifth Plan	%
1	Transportation & Communication	(43)	Transportation	(39)	Transportation	(37)	Transportation	(35)	Agriculture	(35)
2	Agriculture	(27)	Industry	(17)	Agriculture	(26)	Agriculture	(33)	Transportation	(30)
3	Social	(17)	Social	(14)	Industry	(17)	Industry	(20)	Industry	(18)
4	Industry	(8)	Agriculture	(14)	Social	(17)	Social	(11)	Social	(17)
Planned Outlay NRs(m):										
Public	330		670		1,740		2,550		7,540	(max)
Private	--		--		760		990		3,860	(max)
TOTAL	330		670		2,500		3,540		11,400	(max)
Percent Outlay Realized	65%		100%		100%		131%		117%	

SECTORAL PLANNED INVESTMENT
SIXTH PLAN

	Public	Panchayat	Private	Total	Percent
Agriculture, Irrigation, Forest	6,260	490	3,820	10,570	(31.1)
Industry, Mining, Power	5,280	30	3,500	8,810	(26.0)
Transport and Communications	4,230	540	1,100	5,870	(17.3)
Social Services*	4,720	740	3,230	8,690	(25.6)
TOTAL	20,490	1,800	11,650	33,940	(100.0)

*The Public Sector Social Services Sector (25.6% of total) covers: education (7.6%); health (4.9%); drinking water (4.6%); panchayat programs (5.0%), housing and town planning (1.1%); information and broadcasting (0.5%); and administrative reforms, etc. (0.7%).

Source: IBRD/WSSB Fourth Water Supply Project; Proctor and Redfern

1. **Resource Mobilization**[1]

In recent years, the rapid rise in public expenditures in a poor economic setting has led to a widening resource gap and increasing reliance on foreign savings to overcome deficits.

Over the Six National Plan periods, domestic resources financed only 40 percent of the total projected outlay of Rs.36 billion. The remainder was financed by foreign savings. Reliance on foreign aid dropped during the Fifth Plan (47 percent of total) due to a rapid growth in domestic resources, but increased to 64 percent of projected outlays in the Sixth Plan. Between 1970/71 and 1978/79 domestic resources increased fourfold rising from Rs.460 million to Rs.1812 million.

According to G.R. Agrawal, a number of paradoxes in resource mobilization exist. These include:

- Poor economic growth and declining per capita income despite significant growth in development expenditures.

- Heavy reliance on foreign aid despite improvements in domestic resource mobilization.

- Poor tax efforts despite a rising resource gap.

  During the period 1972/1976, the tax/GDP ratio in Nepal was only 5.96 percent while the average for 47 other developing countries is on the order of 15.8 percent. Although this ratio increased from 4.6 percent in 1970/71 to 8.5 percent in 1979/80, the expenditure-revenue resource gap rose from Rs.310 million to Rs.1,795 during the same period, and the net resource gap (gross resource gap minus foreign aid) rose from Rs.7 million to Rs.453 million. Thus, there is a significant need for more domestic resource mobilization.

- Growing dependency on indirect taxes despite underexploited opportunities for direct taxation.

  Though agriculture accounts for two-thirds of GDP, it is essentially outside the tax net. Only land taxes at fixed rates apply. Non-agriculture taxes produce most revenues. Indirect taxes (custom duties, sales tax, excise duties, etc.) which accounted for 75 percent of total tax revenues during the period 1968/78 increased to 84 percent in 1978/79. This represents an increase of 13 percent per annum primarily due to increases in sales taxes.

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[1]Sources include: the CEDA publication Current Issues in Nepalese Development, 1982; "Domestic Resource Mobilization in Nepal: Paradoxes and Prospects," G.R. Agrawal.

Direct taxes, on the other hand, grew at only 4.8 percent per annum during 1974/75 and 1979/80 because of declining revenues from income and land taxes. Property tax revenues also remained stable despite significant rises in property values. Agrawal notes that despite obviously growing pockets of affluence, poor performance in income and urban property taxes suggests that the wealthy are outside the tax net. Direct tax rates on urban property and income exempt many eligible taxpayers as is evident in the following table:

Urban Property Tax Rates		Income Tax Exemptions	
Rs. Value	Tax Rate	Rs. Value	Tax Rate
100,000	Exempt	15,000	Singles Exempt
200,000	Owner Occupants Exempt: 1% otherwise	20,000	Couples Exempt
300,000	1.5%		
400,000	2.5%		
Maximum	3.5%		

According to Agrawal, there were only 944 taxpayers with assessable incomes over Rs.100,000 in 1978/79 including public enterprises. Since 1980/81, the HMG has instituted some measures to tighten the income tax net. As a result, income and profit tax increased from Rs.115 million to Rs.255 million in 1982/83. However, arrears of Rs.260 million were estimated.

- Poor performance of public sector enterprises despite rising expenditures:

Public sector enterprises, a dominating force in the economy, increased in number from 34 to 59 during the period 1970/71 and 1978/79. During the same period public expenditures in this sector rose from Rs.637 million to Rs.2,863 billion. On the other hand, returns on investment declined from 5.9 percent in 1970/71 to 2.6 percent in 1978/79 and the cumulative deficit rose from Rs.19 million to Rs.310 for the same periods.

Public enterprises engaged in trade and utilities registered the largest deficits: Rs.200 million and Rs.79 million respectively. While public enterprises in trade are doing poorly, the private sector is doing extremely well. Agrawal suggests that the HMG withdraw from areas where the private sector is successfully operating.

The Nepal Food Corporation and Agricultural Inputs Corporation account for 92 percent of the Rs.148 million public subsidies in 1982/83. The enterprises contributing the most to public revenues are the Nepal Oil

Corporation and Janakpur Cigarette factory which account for 87 percent of public enterprises contribution to the budget in 1980/81. The generally poor performance of public enterprises led to some reforms in August 1982 in which more autonomy regarding personnel and pricing was granted.

Agrawal notes that resource mobilization in Nepal requires both reforms in tax and non-tax measures and more efficient use of mobilized resources.

With respect to direct taxation, the following is recommended:

- Introduction of a capital gains tax on land, buildings, and other assets.
- Levy of urban property tax by town panchayats (the central government has failed to mobilize resources in this area despite the recent boom in construction). Town panchayats are seriously in need of additional revenue and would, in its best interest, mobilize additional resources. Cadastral and tax maps need improvement.
- Land tax in rural areas: progressive introduction of land tax within selected districts will improve the rural resource base.
- Professionalization of tax administration: recruitment of personnel with tax-oriented qualifications and training.

Indirect taxes could be reformed through:

- Progressivity in rates of indirect taxes, particularly sales taxes.
- Correction of anomalies in custom duty rates for imports. Indian [illegible] advantages should be reconsidered.
- Streamlined indirect taxes. Indian import prices should be comparable to equivalent Nepalese goods.

Non-tax revenues grew at a faster rate than tax revenues (12.7 percent) during 1970-75. This merits further research.

Public enterprise profit targets must be set and management should operate on private sector principles--particularly cost consciousness. The HMG should not open new industries where the private sector is doing well and pricing policies need streamlining.

Agrawal finally notes that effective use of resources leads to increased productivity and reduced pressure on resource mobilization. Resource mobilization alone is insufficient in closing the resource gap.

2. Employment[2]

Employment generation has been a concern of all six development plans, but actual progress in meeting employment targets appears to have been limited. According to R. Suwal, the principal thrusts of the plans regarding employment generation included:

- The First Plan stated employment generation as a priority but no concrete plans or programs were developed.
- The Second Plan emphasized labor intensive techniques in agriculture to generate employment.
- The Third Plan called for a transfer of the labor force from agriculture to other productive areas (notably industry).
- The Fourth Plan noted that 6.07 million new jobs were needed but provided no specifics on job creation.
- The Fifth Plan noted that one million would be added to the labor force and but noted that there would be no scope for 0.6 million of these. Employment generation was emphasized in agriculture, through improved inputs and production, and in the nonagricultural sector. Use of interest and tax rates, and other means to assist in employment generation, were proposed. Of the new jobs to be created, 25 percent were in agriculture, 49 percent in transport and communications, 15 percent in industry, and 11 percent in social services, but apparently these targets were not achieved.
- The Sixth Plan states that a fundamental objective of the Plan would be to improve employment opportunities through agriculturally-related projects and cottage and small-scale industries.

There is insufficient data to fully assess the impact of the development Plans on employment generation. Employment data to date consists of 1971 census data, a survey of employment and income distribution carried out by the NPC in 1976, and the 1981 census.

The active population by industry and occupation for 1971, 1976, and 1981 are presented in Table I.3. However, it is unknown how consistent the data is. For example, 1981 data lists a category of "Industry/Not Stated"; it is not carried in data for the other two base years. Nevertheless, some broad conclusions can be made. Active population engaged in agriculture as an industry and occupation dominates all other classifications. In each case, more than 90 percent of the active population is engaged in agriculture. All

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[2]Principal source: CEDA Publication Current Issues in Nepalese Development, 1982, "Employment Generation: Easier Said Than Done," R. Suwal.

other classifications comprise less than five percent of the active population. The percent of active population engaged in personal and community services, and financial and business services, has generally increased over the base years while the percent of those in utilities, construction, transport and communications has decreased. The share of active population in manufacturing also appears to be declining but this may not be the case due to the number of population in the "Industry/Not Stated" category and the percent rise of those occupied as production and labor workers.

TABLE I.3

ECONOMICALLY ACTIVE POPULATION† CLASSIFIED BY INDUSTRY, OCCUPATION, AND EMPLOYMENT STATUS

	1981 Persons Engaged ('000)	% of Total	1971 Persons Engaged ('000)	% of Total	1976 Persons Engaged ('000)	% of Total
Industry						
Agriculture, Forestry & Fishing	6,244	91.15	4,579	94.35	5,572	89.90
Manufacturing	33	.49	52††	1.07	42	.68
Electricity, Gas & Water	3	.04	2	.04	2	.03
Construction	2	.03	5	.10	5	.08
Commerce	109	1.60	64	1.32	283	4.57
Transport & Communications	7	.11	10	.21	6	.10
Financial & Business Services	10	.14	3	.06	8	.13
Personal & Community Services	314	4.50	138	2.84	280	4.52
Industry not stated	127	1.86				
Occupation						
Professional & Technical	64	.94	25	.52	229	3.69
Administrative	6	.10	1	.02	4	.06
Clerical	49	.72	47	.97	55	.89
Sales	85	1.24	60	1.24	70	1.13
Services	16	.24	34	.70	21	.34
Farming & Fishing	6,259	91.36	4,579	94.37	5,490	88.58
Production & Labor Workers	214	3.12	106	2.18	329	5.31
Not stated	156	2.28				
Employment Status						
Self-Employed			4,170	85.93	4,286	69.16
Employee			453	9.33	763	12.31
Unpaid Family Workers			208	4.29	1,083	17.48
Employer			22	.45	65	1.05

† Ten years of age and over.
†† Includes 36 persons in mining and quarrying sector.

Source: Central Bureau of Statistics.

In the occupational classifications, the percent of active population engaged in farming and fishing declined overall, but rose to higher levels in 1976. The percent of production and labor workers increased but were highest in 1976. In all other occupational classifications, except administration, the percent of active population between 1971 and 1981 declined.

Though data was not obtained on the employment status of the active population for 1981, it is clear from Table I.3 that there was a general decline in the percentage of active population that was self-employed and an increase in the percent of employees, unpaid family workers and employers. Other data also suggests that between 1971 and 1976, skilled workers increased from 3.5 to 6.9 percent of the labor force. However, the large percentage of unskilled workers is a serious handicap. (Table I.4)

TABLE I.4

SKILLED AND UNSKILLED LABOR FORCE

Labour Force	1971	1976
Skilled	167,540	429,470
Unskilled	4,684,984	5,768,373
Total	4,852,524	6,197,843
Percent of Skilled to Total	3.45	6.93

Source: NPC, Draft Sixth Plan

At the inception of the Sixth Plan 4.3 million persons were found to be unemployed or under-employed. As Table I.5 indicates, unemployment and under-employment affects about two-thirds of the total population and is more severe in rural than urban areas. The employment opportunities that were to be generated by the Sixth Plan are presented in Table I.6. About 1.8 million person/years of employment opportunities were to be generated although requirements were set at approximately 3.5 million. As the table indicates, the anticipated role of government in job generation is substantial.

TABLE I.5

ESTIMATES OF UNEMPLOYMENT & UNDEREMPLOYMENT AT THE BEGINNING OF THE SIXTH PLAN
(In Millions)

	Rural	Urban	Total
Labor Force	5,755	765	6,520
Unemployed/ Underemployed	3,950	399	4,349
Percent Unemployed/ Underemployed	68.64	52.16	66.7

Source: NPC, Draft Sixth Plan

TABLE I.6

ESTIMATES OF EMPLOYMENT GENERATION
DRAFT SIXTH PLAN

Sector	In Labor Years	In Percent
Government	1,094,826	61
Panchayat	119,049	7
Social Services	559,964	32
Total	1,733,839	100

Source: NPC, Draft Sixth Plan

On the government sector, the opportunities will come from the following as indicated below:

Sector	In Labor Years	In Percent
Agriculture/Forest	414,062	38
Industry/Power	60,132	5
Transport/Communications	372,130	34
Social Services	248,503	23
Total	1,094,827	100

Source: NPC, Draft Sixth Plan

In recent Plans, emphasis was placed on a structural modification of education which would place more emphasis on vocational training. Apparently, these efforts have not been very successful. A recommitment to these goals on an unprecedented scale, both in and outside of schools, is viewed as a fundamental prerequisite for national human resource development.

Renewed efforts in skill training must be accompanied by enhanced job creation, as is indicated by anticipated increases in active population between 1976-2000 (Tables I.7 and I.8).

A more detailed discussion of manpower can be found in Appendix IV.

TABLE I.7

CHANGE IN ECONOMICALLY ACTIVE POPULATION
(In Millions)

Characteristics of Population	1976	1980	1985
1. Total Population	12.84	14.17	16.03
2. Population: 10 Years and Above	9.31	10.15	11.48
3. Economically Active Population	6.20	6.75	7.64

Source: NPC, Draft Sixth Plan

TABLE I.8

POPULATION AND LABOR FORCE PROJECTION
(In Millions)

Year	Population	Population Above 10 Years	Economically Active Population
1981	14.8	12.6	8.4
1986	16.8	14.4	9.6
1991	19.1	16.4	10.9
1996	21.9	18.8	12.5
2001	25.0	21.5	14.3

Source: Based on Kansakar V.B. "Population Projections for Nepal 1970-2001" CEDA, Kathmandu, Nepal

3. Education

In its report "Nepal: Development Performance and Prospects", 1979, the IBRD notes that recent studies in Nepal have found a positive relationship between the level of education and "attitudinal and behavioral characteristics" which are conducive to national development. These elements include: higher agricultural productivity, lower fertility rates, and improved health and nutrition. The IBRD's report showed that 20 independent studies found that farmers with at least four years of schooling are more receptive to new ideas and technologies. In addition, farmers in the Terai with four years of schooling produced 20.4 percent more annually than those without a similar level of education.

Furthermore, reflecting the strong relationship between education for females and reduced fertility, the World Fertility Survey in 1977, showed that Nepalese women who were literate had a 20 percent lower fertility than those who were not.

The HMG has long recognized that education is a vital element in the development process and substantial strides have been made. Since 1950, when the literacy rate was only 2 percent, the HMG has given education a high priority. By 1979, a literacy rate of about 20 percent was achieved despite the inaccessibility of many rural areas. During the Fifth Plan, enrollment in primary, lower, and upper secondary schools at least doubled. In 1981, school enrollment rose to:

- 1,388,000 in primary schools
- 169,560 in lower secondary schools
- 144,330 in upper secondary schools
- and 60,300 in universities

Despite these improvements, however, Nepal still ranks poorly in comparison to the educational achievement of neighboring countries. Furthermore, the rapid growth of the educational system resulted in some problems including: underqualified teachers, a high dropout rate, inadequate curriculum, lack of success in vocational education efforts, and the general quality of education. All these issues are of concern to urban development in Nepal. However, as discussed in sections dealing with employment and manpower, it is critical that vocational education be given additional emphasis so that they are more qualified to compete for urban jobs (with immigrant labor).

The Sixth Plan addresses some of these problems by consolidating the educational facilities and placing greater emphasis on efficiency, quality, and equity. Areas of emphasis also include: primary education, extension of science and technical education, non-formal education, job-oriented adult and vocational programs and encouraging community participation.

4. Health

Nepal is beset with the prevalence of disease and nutritional problems that are among the highest in the world. According to the IBRD's World Development Report, in 1979 the life expectancy was only 45 years at birth and its infant mortality rate (154 deaths per thousand) and child mortality rate for children aged 1 to 4 (23 deaths per 1000) were still dangerously high.

Health like education, has been improved considerably over the past three decades however. Successful malaria and smallpox campaigns and improved nutrition are examples of progress. Nevertheless, the problems of overpopulation and irregular food supply impede efforts to improve the general well-being of the population.

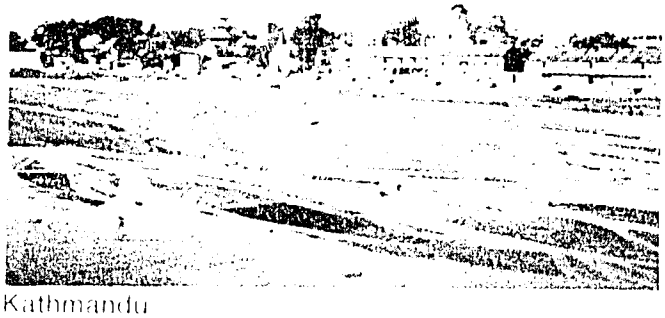
Most health problems are associated with malnutrition, environmental pressures and communicable diseases. Overpopulation appears to be the key issue. It puts undue pressure on the food supply system. In urban areas, the concentration of population in a setting without proper water supply, sanitation, and solid waste systems causes communicable diseases to be spread more rapidly.

Among the measures that the HMG is adopting to improve this situation include a comprehensive and integrated effort in education, family planning and health (as well as other sectors: see National Population). Essentially, the strategy is that better education and health will lead to lower fertility, and that reduced population will lead to greater gains in these sectors.

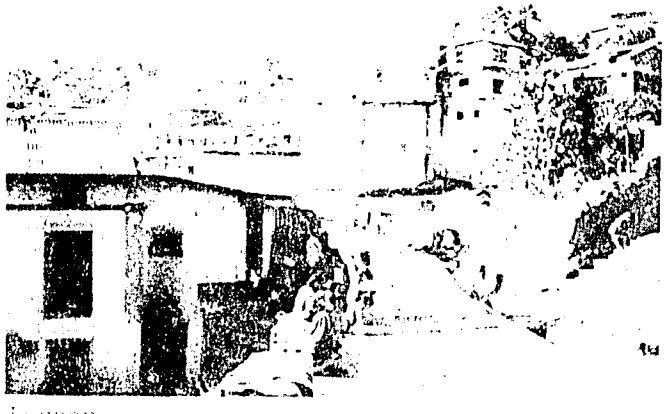
Efforts to reduce malnutrition are to be addressed through improvement in food supply and distribution. Smaller scale efforts such as the introduction of family vegetable plots, and improved iodine and iron intake (to combat goiters and anemia) are also planned.

The foundation for the HMG's efforts to provide basic health and population services for an increasing share of population are its health posts and family planning and maternity/child care centers. These units are being established throughout the country (many are in urban areas) with the goal of introducing better curative and preventative disease control, better nutrition, reduced infant mortality, and broader introduction of family planning techniques.

Urban Landscape

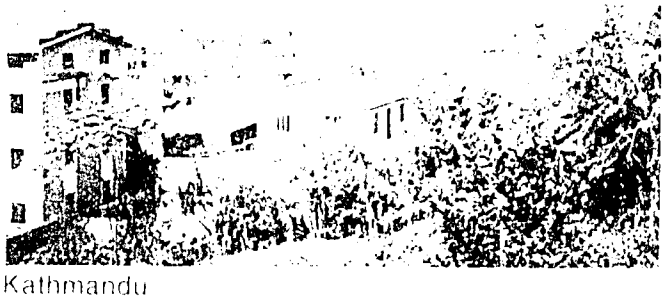


Kathmandu



Tansen

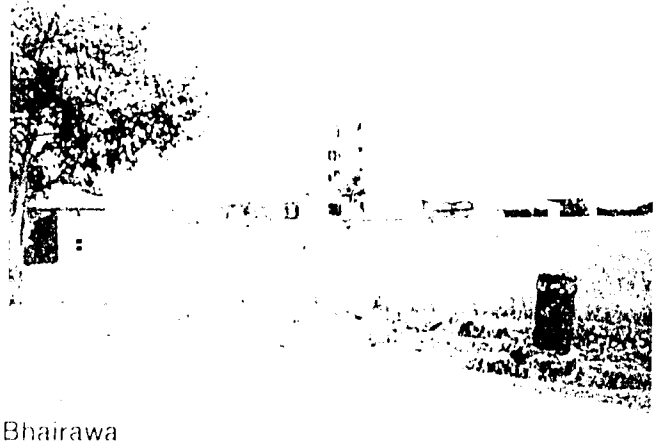
Bhaktapur



Kathmandu

Kathmandu

Pokhara



Bhairawa

PART TWO

THE URBAN SITUATION AND PROSPECTS

I. URBAN CONDITIONS AND TRENDS

A. URBAN POPULATION

1. Share of National Population

Due to political concerns regarding decentralization and increasing settlement population, the number of town panchayats have increased from 16 to 23 from 1971 to 1981. There are presently 29, many of which have other administrative functions, as is indicated in Table II.1. The urban share of national population is relatively small in comparison with regional norms. The 23 town panchayats in 1981 represented only 6.4 percent of national population while settlements over 5,000 housed about 20 percent. Yet the town panchayats, or urban-defined population, grew at a rate of 8.6 percent between 1971 and 1981 while the national annual growth rate was 2.7 percent. As Table II.2 indicates, in 1971 eight or one-half of the town panchayats had populations less than 30,000 and four with less than 10,000. By 1981, 12 had populations exceeding 30,000, seven had populations between 40 and 100 thousand.

Rapid urbanization is a recent phenomenon in Nepal and it is struggling to cope with its newfound growth. Furthermore, whether due to a deliberate policy to relieve rural population pressure or simply a manifestation of economic forces, urbanization will meet or exceed current trends for the foreseeable future. At current trends, the 23 town panchayats defined in 1981 will have a population on the order of 5 million, or 20 percent of the total population. By that time, the number of villages exceeding 10,000 population will have increased—further increasing the proportion of urban residents.

2. Urban Migration

According to the TFM, migration to urban areas is increasing: 41.5 percent of the migrants surveyed reside in urban areas, 32.7 and 25.8 percent in northern and southern rural areas respectively. Urban areas have been attractive to immigrants: one-half of whom are found in urban centers.

The TFM study indicates that the the principal urban destinations of migrants include the Kathmandu urban complex and the Terai towns.

About 10,000 families are migrants in Kathmandu of which two-thirds are Nepalese. Of the immigrants, about 72 percent are Indian in origin. Nepalese and foreign migrants by vocational category include respectively: administrative (20.1 and 3.0); professional (15.0 and 7.2); skilled (11.3 and 17.1); semi-skilled (10.3 and 6.6) and unskilled (1.7 and 7.7). Thus Nepalese migrants to Kathmandu are primarily in the administrative and professional categories while foreign migrants are skilled and unskilled workers. Overall migrants to Kathmandu are primarily skilled, administrative or professional workers.

TABLE II.1

29 NAGAR PANCHAYATS - NEPAL 1983

Far West	Mid West	West	Central	East
Mahendra N* (D)	Birendra N* (R)	Bhairawa* (D)	Bharatpur* (D)	Lahan*
Dhangadi* (D)	Nepalganj* (Z)	Pokhara* (R)	Birganj* (D)	Rajbiraj* (Z)
Dipayal (R)	Tribhuvan N* (D)	Butwal* (Z)	Hetauda* (Z)	Dhankuta* (R)
		Tansen (D)	Kathmandu* (C&R)	Dharan* (Z)
		Taulihana (D)	Bhaktapur* (D)	Biratnagar* (D)
			Patan* (D)	Damak
			Banepa	Ilam* (Z)
			Kalaiya (D)	Bhadrapur*
			Jaleswar (D)	
			Janakpur* (D)	
(3)	(3)	(5)	(10)	(8)
2*	3*	3*	7*	7*

(C) Capital; (R) Regional HQ; (Z) Zonal HQ; (D) District HQ.
* Under study by IBRD'a Fourth Water Supply project

TABLE II.2

TOWN PANCHAYATS BY SIZE OF POPULATION - 1971, 1981

Population	1971	1981
5,000 - 9,999	4	2
10,000 - 19,999	5	6
20,000 - 29,999	3	3
30,000 - 39,999	-	4
40,000 - 49,999	2	5
50,000 - 99,999	1	2
100,000+	1	1
Total	16	23

(excludes 6 new town panchayats)

In the Terai, most Nepalese migrants are engaged in agriculture (69.2 percent). Footloose migrants are concentrated in urban areas of which about 39 percent are engaged in business and 56 percent as laborers. Nepalese migrants are primarily farm workers, timber loggers, and porters while foreign migrants are skilled in masonry, carpentry, plumbing, electrical fitting and business.

Migration is closely related to information from family relatives and friends. About 68 percent migrated because of these contacts.

B. URBAN POPULATION PROJECTIONS

Population forecasts for urban settlements in Nepal were made by the IBRD's Urban Sector Memorandum. These were also analyzed by the IBRD/WSSB Fourth Water Supply Project in its 1983 Interim Report. Two hypotheses were used for these projections:

Hypothesis I:

- Annual net national growth rate of 2.62 percent between 1981-1990.
- Growth rates of 1.43 percent and 1.62 percent in the Mountains and Hills for the same period (resultant density 1,400 persons/km2; reduction of arable land per capita of 15 percent).
- Constant migration to the Terai with densities rising from 400 to 600 persons/km2.

On the basis of this hypothesis, 1981 rates of growth for Hill and Terai settlements (5.1 and 7.15 percent per annum) would be reduced to 4.6 and 6.45 percent respectively.

Hypothesis II makes the same global assumptions as Hypothesis I, but assumes that the number of rural to rural migrants will diminish by 10 percent per year due to a diminishing supply of vacant land. This results in a Hill town growth rate of 6.07 percent per annum, and a Terai town growth rate of 8.53 percent.

Of the two Hypotheses, the Water Supply project concluded that the second was most likely and the UDA team supports this view. It notes however, that the national growth rate may be low as during the period 1976-81 the rate of growth was on the order of 3.2 percent.

In Table II.3, population projections for water supply project towns are presented. The towns are grouped by Hill and Terai classifications. Historic regional, district and town growth rates are provided as reference. Projections between 1991 and 2001 for each town are based on the above plus improvements in regional infrastructure, in the Mid-West and Far West Regions after 1990. The UDA has also done another set of estimates on the basis of job creation costs as elaborated in Part Four.

On the basis of the water supply studies projections, the fastest growing settlements between 1981-91 are expected to be Birgunj, Lahan, and Janakpur, but several settlements are expected to grow at rates of 8 percent per annum including two Hill towns: Birendra Nagar and Hetauda. (Note the UDA interprets these towns to be Inner Terai towns.)

For the period 1991-2001, the fastest growing settlement is projected to be Birgunj. In terms of absolute population, the largest towns are expected to be Kathmandu, Birgunj, and Biratnagar with populations on the order of 577,000, 528,000, and 399,000 respectively. At the anticipated rate of growth, Birgunj would eventually overtake Kathmandu as the primary city. The share of urban population to national population is expected to increase from 6.3 percent in 1981 to 13.8 percent in the year 2001 (an absolute increase of 2,622,000 persons). Sixty-two percent of this is expected to be in the Terai. The UDA team considers Butwal, Dharan, Birendra Nagar, Tribuvan Nagar, Bharatpur, and Hetauda to be Inner Terai and Foothill towns. If this definition is used, in the year 2000 about 30 percent of the urban population will be in the Hills, 51 percent in the Terai, and 19 percent in Inner Terai and Foothill settlements. Interestingly, Kathmandu would account for more than one-half the Hill urban population and, together with Bhaktapur and Lalitpur settlements in the Kathmandu Valley, would represent 75 percent of total Hill urban population.

TABLE II.3

POPULATION PROJECTIONS -- PROJECT TOWNS TO 2001

DEMOGRAPHIC REGION Fig. 2.10 & 2.11	Dev Reg	AG(1) 71-76	AG(1) 76-81	DISTRICT (Fig. 2.01) Name	AG(1) 71-76	AG(1) 76-81	NAGAR PANCHAYATS Name	Note (4)	Population ('000) 61	71	81	AG(1) 61-71	AG(1) 71-76	AG(1) 76-81	AG(1) 71-81	Ass'd AG(1) 81-91	Population ('000) 1991	Ass'd AG(1) 91-01	Population ('000) 2001	Previous Projection Assumptions AG'S(1) Assumed in Second Project Studies (1979) (3) LOW	MED	HIGH
NEPAL									9,413	11,532	15,020	2.07	2.17 3.18			2.62	19,453	2.62	25,194			
HILLS TOWNS(2)		2.10	1.44						?	6,230	7,427				1.77							
	HW	2.09	1.20	Surkhet	2.18	7.23	Birendra Nagar	(R)	?	?	14				?	8.00	30	9.00	71			
	W	1.94	1.53	Kaski	1.90	6.97	Pokhara	(R)	5	21	48	14.31			8.90	7.00	94	6.00	168	4.0	5.0	6.0
	W	1.94	1.53	Palpa	1.92	-1.58	Tansen	(D)	5	6	12	2.23			6.54	7.00	24	7.00	47			
	C	2.41	1.90	Kathmandu	2.29	1.31	Kathmandu	(C)	120	150	235	2.27			4.57	4.60	368	4.60	577)			
	C	2.41	1.90	Lalitpur	3.55	1.08	Lalipur (Patan)	(D)	48	59	81	2.15			3.20	3.20	111	3.20	152)	2.5	3.0	3.5
	C	2.41	1.90	Bhaktapur	2.17	5.56	Bhaktapur	(D)	34	40	50	1.70			2.32	2.30	63	2.30	79)			
	C	2.41	1.90	Makwanpur	2.15	5.85	Hetauda	(Z)	?	16	32	?			7.08	8.00	69	8.00	149	5.0	7.0	8.0
	C	2.41	1.90	Chitwan	3.20	3.66	Bharatpur	(D)	?	7	27	?			14.41	6.00	48	6.00	86			
	E	1.92	.91	Dhankuta	1.63	1.96	Dhankuta	(R)	?	4	13	?			12.33	4.00	19	3.50	27			
	E	1.92	.91	Ilam	1.29	3.58	Ilam	(Z)	?	7	9	?			2.51	4.00	14	3.50	20			
Hill Population in Nagar Panchayats									212	311	522	2.68			5.32	4.87	840	5.06	1,376			
Hill Population in Nagar P. Percent Hill Population										5.00%	7.03%											
TERAI TOWNS(2)		2.17	3.18						?	4,167	6,302				4.24							
	FW	2.15	4.24	Kanchanpur	3.64	15.06	Mahendra Nagar	(D)	?	6	42	?			20.79	4.00	62	8.00	134			
	SW	2.15	4.24	Kailali	3.04	11.53	Dhangadi	(D)	?	?	26	?			?	4.00	38	8.00	32			
	MW	2.41	3.11	Banke	3.48	6.65	Nepalganj	(Z)	16	24	34	4.05			3.73	4.00	50	8.00	108	2.3	3.3	3.8
	MW	2.41	3.11	Dang	3.49	5.97	Tribhuvan Nagar	(D)	?	5	19	?			13.87	7.00	37	8.00	80			
	W	2.09	2.94	Rupandehi	2.62	6.18	Butwal	(Z)	?	13	23	?			5.97	8.00	50	8.00	108	4.5	5.0	5.5
	W	2.09	2.94	Rupandehi	2.62	6.18	Bhairawa	(D)	?	17	30	?			5.71	8.00	65	8.00	140	2.5	3.0	3.5
	C	2.29	2.62	Dhanusha	2.60	2.84	Janakpur	(D)	9	14	35	4.82			9.45	10.00	91	9.00	215	2.5	3.0	3.5
	C	2.29	2.62	Parsa	2.47	4.45	Birganj	(D)	10	13	46	1.90			13.44	14.00	170	12.00	528	2.5	3.0	3.5
	E	1.97	3.84	Siraha	2.29	2.15	Lahan	(-)	?	5	13	?			10.46	12.00	40	9.00	95			
	E	1.97	3.84	Saptari	1.87	2.14	Rajbiraj	(Z)	?	8	16	?			7.62	8.00	35	7.00	69			
	E	1.97	3.84	Sunsari	1.63	6.36	Dharan	(Z)	14	21	43	3.89			7.61	8.00	93	7.00	183	2.5	3.0	3.5
	E	1.97	3.84	Morang	2.21	9.71	Biratnagar	(D)	35	45	94	2.46			7.61	8.00	203	7.00	399	2.5	3.0	3.5
	E	1.97	3.84	Jhapa	2.20	11.69	Bhadrapur	(-)	?	7	15	?			7.10	8.00	32	7.00	63			
Terai Population in Nagar Panchayats									85	178	436	3.21			8.69	8.45	967	8.59	2,204			
Terai Population Nagar P. Percent Terai Population										4.27%	6.91%											
Hills and Terai				Hills & Terai Population in Nagar P. (None in Mountains)					297	489	958	2.84			6.95		1,807		3,580			
				Nagar Panchayat Pop. as Percent Nepal Population					3.1%	4.2%	6.3%						9.3%		13.8%			

Source: IBRD/WSSB Fourth Water Supply Project; Proctor and Redfern

Notes

(1) AG is annual average growth rate calculated on a geometric (eg. compound interest) basis. Information not available.

(2) The classification of Nagar Panchayats as in the "Hills" or on the "Hills" or on the "Terai" is in accordance with the Census Bureau classification of districts per Fig. 2.10. It is not necessarily the same as the geographic classification per Fig. 2.01, according to which Birendra Nagar, Hetauda and Bharatpur are on the (Inner) Terai.

(3) Master Plan updates for Kathmandu Valley, Pokhara, Birganj and Biratnagar; and Feasibility Studies for Hetauda, Nepalganj, Butwal, Bhairawa, Janakpur and Dharan by Engineering Science, Inc., 1979.

(4) C - Capital; R - Regional HQ; Z - Zonal HQ; D - District HQ.

C. URBAN INCOME

The main sources of urban and rural household incomes information for Nepal are the Nepal Rastra Bank's Household Budget Surveys carried out in 18 localities (1973-75); and the National Planning Commission's Survey of Employment, Income Distribution and Consumption Patterns in Nepal that was conducted during the period 1976-1977 in 10 Town Panchayats and 128 Village Panchayats located in 37 districts throughout the country.

Analysis of the National Planning Commission incomes data gives a median urban family income of Rs.6053 per annum, or Rs.504 per month (1977). In comparison, the median annual rural family income was Rs.3556 and Rs.296 per month (Table II.4). Thus, the median urban income was over 40% greater than the median rural income. The difference in urban and rural incomes becomes even more striking when **average** family incomes are examined: the average urban family income is 56% higher than the average annual family income. Table II.5 shows the relative difference between the rural and urban areas for annual average per capita income.

The distribution of wealth is very uneven between urban and rural areas. This is indicated in Table II.6 by the huge difference in the average urban income Rs.12,000 and the median urban income Rs.6,053. The difference is not so great in the rural areas, but important nevertheless: Rs.5,569 (average annual income) and Rs.3,556 (median family income).

Incomes vary by development and geographical region too. Urban per capita incomes are higher in the Eastern Region (represented by the Terai towns of Bhadrapur, Biratnagar, and Rajbiraj). Second highest are incomes in the Central Region towns of Janakpur, Birgunj, Hetauda, and Kathmandu, the capital city (Table II.6). Of these towns, only Kathmandu is in the Hill Region and the rest are in the Terai and Inner Terai. According to the findings of the Nepal Rastra Bank, Kathmandu families had an average monthly income of Rs.645 (median Rs.498) in 1973, while Bhadrapur and Biratnagar families had average monthly incomes of Rs.677 and Rs.624 respectively (medians Rs.467 and Rs.435), which corresponds with the Planning Commission's findings. Overall, according to the Bank's studies, urban dwellers in the Terai towns were better off than those in the Hills. The Planning Commission study shows that rural family incomes were highest in the Terai followed by the Hills, and lastly, the Mountain Regions.

Lacking additional up-to-date information on household incomes, the urban median income has been updated from 1977 to 1982/83 according to the rise in the Consumer Price Index (Urban Areas), giving a monthly urban median income of Rs.807. Although this is only a rough method of estimating present median income levels, current daily wage rates for (eg.) construction laborers in Kathmandu of Rs.30 per day (Rs.780 per month) indicate that an urban median income of between Rs.700-800 per month is not unreasonable in the larger, more thriving Nepalese towns.

US $1.00 = 14.80 Rs. - Dec. 1983

TABLE II.4

URBAN INCOME DISTRIBUTION - 1977

Annual Average Income (Rs.)	No. of Families	Percent	Cumulative Percent
≥2,500	126	13.5	13.5
2,500 - 5,000	265	28.5	42.0
5,000 - 8,000	212	22.8	64.8
8,000 - 10,000	80	8.6	73.4
10,000 - 25,000	111	11.9	85.3
≤25,000	138	14.7	100.0
Total	932	100.0	

Median urban income = Rs. 6,053 Monthly = Rs. 504
Average urban income = Rs. 12,771 Monthly = Rs. 1,064

Rural Income Distribution - 1977

Annual Average Income (Rs.)	No. of Families	Percent	Cumulative Percent
≥2,500	1,207	32.9	32.9
2,500 - 5,000	1,221	33.3	66.2
5,000 - 8,000	553	15.1	81.3
8,000 - 10,000	189	5.2	86.5
10,000 - 25,000	370	10.1	96.6
≤25,000	124	3.4	100.0
Total	3,664	100.0	

Median urban income = Rs. 3,556 Monthly = Rs. 296
Average urban income = Rs. 5,569 Monthly = Rs. 464

Nepal - Income Distribution - 1977

Annual Average Income (Rs.)	No. of Families	Percent	Cumulative Percent
≥2,500	1,333	29.0	29.0
2,500 - 5,000	1,486	32.3	61.3
5,000 - 8,000	765	16.7	78.0
8,000 - 10,000	269	5.9	83.9
10,000 - 25,000	481	10.5	94.4
≤25,000	262	5.7	100.0
Total	4,596	100.0	

Median Income, Nepal Total = Rs. 3,916 Monthly = Rs. 1,326
Average Income, Nepal Total = Rs. 5,914 Monthly = Rs. 493

Source: Nepal Rastra Bank

TABLE II.5

ANNUAL AVERAGE PER CAPITA INCOME IN NEPAL
RURAL INCOMES AS PERCENT OF URBAN INCOMES
BY DEVELOPMENT REGION - 1977

Region	Annual Average Per Capita Income (Rs.)			
	Rural	Rural as a % of Urban (Percent)	Urban	National
Eastern	971	40.8	2,377	1,024
Central	988	47.3	2,088	1,074
Western	929	46.6	1,992	945
Far. Western	880	51.1	1,723	907
Nepal	950	45.4	2,094	1,002

Adapted from National Planning Commission, Survey of Employment, Income Disbribution and Consumption Patterns in Nepal, p.85.

TABLE II.6

AVERAGE AND MEDIAN FAMILY INCOMES
PANCHAYATS SURVEYED BY NEPAL RASTRA BANK, 1973-75

Panchayat	Average Annual Income - Rs.	Average Monthly Income - Rs.	Median Monthly Income - Rs.
HILLS			
Illam	7,464	622	486
Dhankuta	6,084	507	375
Orhaldunga	6,768	564	476
Bhaktapur	4,404	367	313
Lalitpur	6,516	543	411
Kathmandu	7,740	645	498
Pokhara	5,832	486	357
Baglung	7,032	586	492
HILLS: Total	6,216	518	N/A
TERAI			
Bhadrapur	8,124	677	467
Birendranagar	7,488	624	435
Janakpur	7,296	608	415
Hetauda	5,052	421	326
Birgunj	7,224	602	405
Bhairawa	5,232	436	352
Ghorahi	5,664	472	873
Nepalganj	5,316	443	327
Mahendnanagar	7,512	626	497
TERAI: Total	6,540	545	N/A
TOTAL: Urban	6,384	532	N/A

Note: This Table has been adapted from information contained in the Nepal Restia Bank reports referred to above. It follows the Bank in equating total consumption expenditure with income.

II. THE SETTLEMENT SYSTEM

The period 1971-81 witnessed a major expansion of settlements particularly in the Terai, Inner Terai, and foothill areas as the Plain became the principal breadbasket for the country, and inter-urban infrastructure and industry were constructed in these areas. Yet population and urban growth in these areas were not limited to these factors alone. Proximity to India, as the key trading partner, and access to India's ports and infrastructure for international trade also contributed to this growth. Figure II.1 shows the settlement system in the road (and rail) network.

In effect, the principal settlements of the Terai serve as "land ports" and their respective growth is closely related to the location, access, and quality of these networks. Transportation is the key sector, though Indian power (Biratnagar, Nepalganj) are also important. Foothill and Inner Terai cities are serving primarily as marketing and distribution centers for the Hill regions. Basic necessities—such as textiles, soap, containers, rope—are distributed to the Hills in these areas while grains, fruits, and vegetables are sent off in return. At the same time, these settlements appear to be the Hills' principal service centers (including major health, higher education, administration, finance, and repair—such as transportation).

The creation of districts and nagar panchayats throughout the country and related government employment and investment in building have stimulated development in smaller settlements and provided a wider network for administration and services. However, rapid growth in these settlements may subside when construction and government employment requirements have been met—primarily due to the limited economic potential of their hinterland and the high costs of infrastructure and job creation.

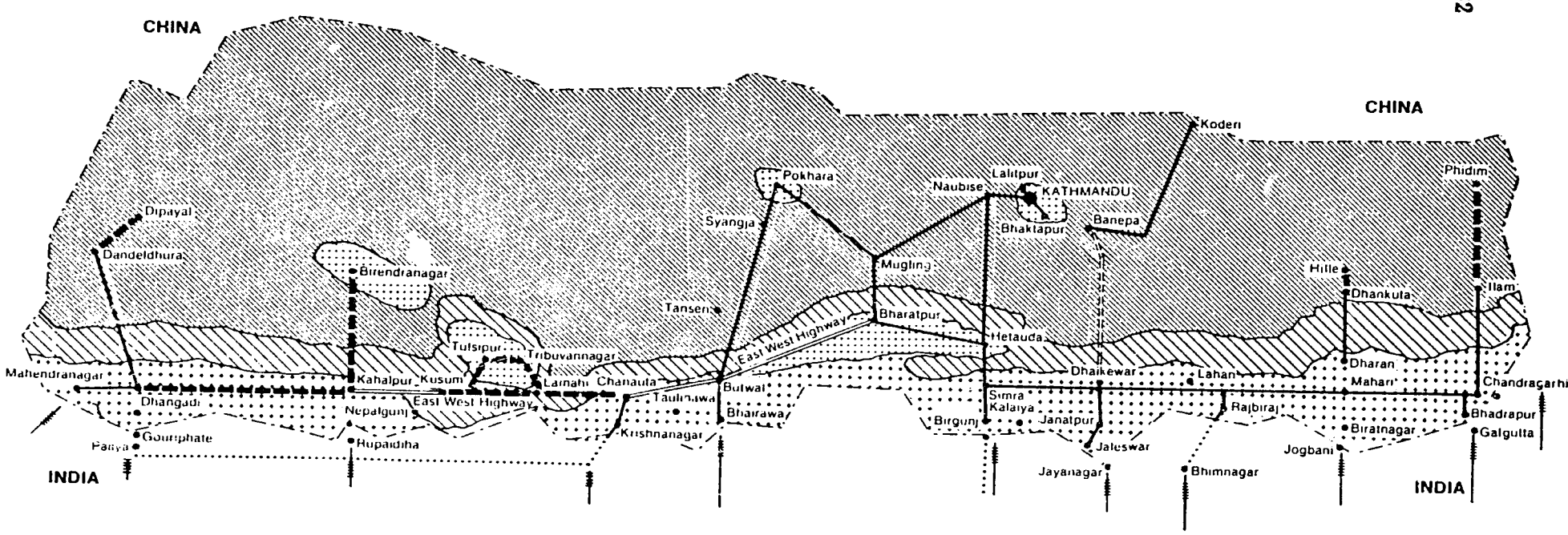
A full description of the existing Settlement System is presented in Appendix II.

A. EVOLUTION OF SETTLEMENT SYSTEM

CEDA published a study entitled "Kathmandu Valley Town Planning and its Impact" in November 1979. In addition to addressing planning issues in the valley itself, it sheds some interesting light on the evolution of the settlement system in Nepal. Among the key observations of the study include:

- When unification of the country took place, the towns of the Kathmandu Valley extended their trading influence over the country and a number of trading and administrative centers inhabited by emigrants from Kathmandu sprung up. (Pokhara, Bandipur, Tansen and others)

FIGURE II.1



SETTLEMENT SYSTEM & ROAD NETWORK

Legend

- East West Highway
- All Weather Road
- Fair Weather Road
- Roads in India (All Weather)
- Railway
- International Borders
- Hills & Mountains
- Foothills
- Plain
- Valleys

Source: PADCO

- Embryonic urbanization did not get underway in the Terai until the 1920s when trade relations with India improved. Thus began the urbanization in Biratnagar, Birganj, Nepalganj, and Janakpur (border points at Indian railheads).

- Initially, these towns did not have direct communication with Hill towns, but in the East, Hill settlements gradually interacted more with eastern Terai towns than Kathmandu.

- A similar pattern did not occur in the Western and Far Western Hills where Hill activities interacted more closely with Indian market towns across the border and physical distances between the Terai and Hill points were greater.

- Increasing north-south trade with India led to the increasing importance and multiplication of Terai commercial centers. At breakpoints between the Hills and Terai settlements emerged such as Butwal and Dharan.

- Terai/Hill transactions led to decreasing dominance of the Kathmandu Valley towns over trade in the country.

- Agro-industrial development in the Terai in the 1930s and 1940s further enhanced growth in the Terai towns of Biratnagar, Birgunj, and Nepalgunj.

- The eradication of malaria in the Terai, subsequent habitation, and the introduction of transportation and power networks over the past few decades have had a dramatic impact on urbanization.

- Kathmandu has emerged as the primary city with the expansion of government activities and expansion of transport networks, though its primacy appears to be eroding due to the acceleration of numerous settlements in the Terai.

- The multiplication of small towns and bazaars throughout the country is another feature of recent developments.

With respect to the current urban network, the study concludes that small towns and Kathmandu dominate the settlement system but that a number of sub-systems can be observed. It notes a pattern of association between a large town, a few small urban settlements and a large number of trading centers. It notes that the regional sub-systems observed are dominated by the larger towns of: Biratnagar, Janakpur, Birgunj, Bharawa, Nepalgunj, Pokhara, Lalitpur, Bhaktapur, Butwal and Dharan.

The North-South characteristics of the settlement systems include large towns in the Terai (i.e. Biratnagar and Bhairawa), less large towns at breakpoints between the Terai and Hills (Dharan, Butwal), and trading centers and small (market) towns in the Hills (i.e. in the West Pokhara, Tansen and Syangji).

The study concludes that the settlement system is largely influenced by Indian trade and transport costs. It further notes that the overall integration of urban settlements is weak due to the lack of transport facilities and seasonal exchange of people and goods. The central and eastern regions are recognized as the most urbanized while urbanization in the west is in process.

B. SETTLEMENT POPULATION

Nagar Panchayats have been selected as the means for urban definition. Statistics from the 1981 census are available for the 23 Nagar Panchayats at that time, although since then six additional Nagar Panchayats have been added.

In Table II.7, the urban population as a percentage of the total population of geographical regions is presented. It is noteworthy that:

- 12 of the 23 settlements are in the Terai that account for 43 percent of the "urban" population. Their regional share of national population is 38.3 percent.
- When coupled with Inner Terai settlements, the Terai comprises 16 of the 23 settlements and 53 percent of the "urban" population. Their regional share of national population is 46.8 percent.
- The three Kathmandu Valley settlements alone account for 38 percent of the "urban" population, but the regional share of population is only 5.1 percent.
- Other Hill settlements account for only 8.3 percent of the urban population, while their regional share of total population is 39.2 percent.
- Urban population exists in the Mountains.

Thus, the heaviest concentrations of urban population lie in the Terai, Inner Terai, and Kathmandu Valley.

A ranking of settlement sizes in 1971 and 1981 is presented in Table II.8. On the basis of this table, the following observations can be made:

- Four of the five largest settlements are in the Hills for both periods.
- Three of five smallest settlements are in the Hills.
- All intermediate-sized settlements are in the Terai and Inner Terai.
- The settlements with the highest absolute increase in population include: Kathmandu, Biratnagar, Mahendranagar, Birgunj, and Pokhara.

- Settlements with the least absolute increase include: Ilam, Bhadrapur, Rajbiraj, Bhaktapur, and Tansen.

- Settlements with the largest percent increase in size include: Mahendra Nagar, Bharatpur, Birgunj, Janakpur, and Pokhara.

- Settlements with the least percentage increase include: Bhaktapur, Bhadrapur, Ilam, Lalitpur, and Kathmandu although the latter two are due to existing population size.

- Settlements with the largest annual growth rate include: Mahendranagar, Bharatpur, Ghorahi, Dhankuta, and Lahan although this is largely due to boundary changes.

- Settlements with the least high annual growth rates include: Bhadrapur, Illam, Bhaktapur, Lalitpur, and Nepalganj.

- Of the ten fastest growing nagar panchayats only two are in the hills: Dhankuta and Pokhara.

- Those that improved their ranking the most include: Mahendranagar, Tansen, and Bharatpur.

- Those that declined the most in size ranking include: Nepalganj (6 points) and Bhairawa.(3 points).

- The largest five settlements make up about 53 percent of the urban population.

- Intermediate settlements ranging from 22,000 to 44,000 in size make up about 32 percent of the urban population.

- While the 8 nagar panchayates with less than 20,000 make up 15 percent of the urban population.

Regarding individual settlements, the growth of Mahendranagar stands out; however, it is spread over a wide area and not genuinely urban. Kathmandu continues to grow substantially, while Lalitpur and particularly Bhaktapur have been increasing less rapidly. Biratnagar took over Lalitpur in size and is growing at a relatively rapid growth rate for a settlement over 90,000. Dhankuta and Pokhara had the highest rate of growth among Hill settlements. Nepalganj and Bhairawa's declining importance is surprising given the rate of increase of population in the western Terai.

TABLE II.7

URBAN POPULATION (23 TOWN PANCHAYATS) AS PERCENT OF TOTAL POPULATION OF DEVELOPMENT REGION--1981

Nepal Population - 15,022,839 Total Percent Urban = 6.4

	Town Panchayat		
Eastern Development Region			
Population 3,708,923 (% total population = 24.7)	Illam	9,773	
	Bhadrapur	9,761	
	Dharan	42,146	
	Biratnagar	93,544	
	Dhankuta	13,836	
	Lahan	13,775	
	Rajbiraj	16,444	
	Total	199,279	% urban = 5.4
Central Development Region			
Population 4,909,357 (% total population = 32.7)	Janakpur	34,840	
	Lalitpur	79,875	
	Bhaktapur	48,472	
	Kathmandu	235,160	
	Hetanda	34,792	
	Birgunj	43,642	
	Bharatpur	27,602	
	Total	504,383	% urban = 10.3
Western Development Region			
Population 3,128,859 (% total population = 20.8)	Pokhara	46,642	
	Jansen	13,125	
	Bhairahawa	30,084	
	Butwal	22,583	
	Total	112,434	% urban = 3.6
Mid-western Development Region			
Population 1,955,611 (% total population = 13.0)	Ghorahi	19,271	
	Nepalgunj	34,015	
	Birendranagar (Burkhet)	13,859	
	Total	67,145	% urban = 3.4
Far Western Development Region			
Population 1,320,089 (% total population = 8.8)	Dhangadi	27,274	
	Mahendranagar	43,834	
	Total	71,108	% urban = 5.4
	Grand Total	954,349	

Source: 1981 Census

TABLE II.8

TOWN PANCHAYATS

NEPAL: Population Size (1981, 1971), Rank (1981, 1971), Absolute & Percentile Increase, Annual Growth Rate (1971-1981)

Annual Growth Rate Percent	Town Panchayat	Location[1]	Size (1981)	Rank (1981)	Size (1971)	Census Rank (1971)	Absolute Increase	Percent Increase
4.6	Kathmandu	H	235,160	1	150,402	1	84,758	56.35
7.6	Biratnagar	T	93,544	2	45,100	3	48,448	107.42
3.1	Lalitpur	H	79,875	3	59,049	2	20,826	35.27
1.9	Bhaktapur	H	48,472	4	40,112	4	8,360	20.84
8.5	Pokhara	H	46,642	5	20,611	6	26,031	126.30
(20.8)	Mahendranagar	T	43,834	6	6,921	98	36,913	533.35
(13.44)	Bingunj	T	43,642	7	12,999	14	30,643	235.73
7.5	Dharan	T	42,146	8	20,503	7	21,643	105.56
9.3	Janakpur	T	34,640	9	14,294	12	20,546	143.74
7.9	Metanda	IT	34,792	10	16,194	11	18,598	114.84
3.7	Nepalgunj	T	34,015	11	23,523	5	10,492	44.60
5.7	Bhairahawa*	T	30,084	12	17,272	9	12,812	74.18
14.4	Bhoratpur+	T	27,602	13	6,942	70	20,660	297.61
?	Dhangadi+	T	27,274	14	-	-	-	-
5.8	Butwal	T	22,583	15	12,815	16	9,768	76.22
(13.9)	Ghorahi*+	IT	19,271	16	-	-	-	-
7.6	Rajbiraj	T	16,444	17	7,832	37	8,612	109.96
?	Birendranagar+	IT	13,859	18	-	-	-	-
(12.3)	Dhankuta+	H	13,836	19	-	-	-	-
(10.5)	Lahan+	T	13,775	20	-	-	-	-
7.3	Tansen	H	13,125	21	6,434	92	6,691	103.99
3.0	Illam	H	9,773	22	7,299	53	2,474	33.89
2.8	Bhadrapur	T	9,761	23	7,499	49	2,262	30.16

Main Sources: Census 1971, 1981; CBS

[1] Location: H = Hills, IT = Inner Terai; T = Terai

Annual Growth Rate: Figs. in ( ) are from Water Resources Report

* These 2 Town Panchayats not included in 1981 Census Print-Out. Figs. taken from Hanka Gurung - Pop. Increase in Nepal, 1971-1981.

\+ Became Town Panchayats in 1975

Total Nepal Annual Growth Rate 1971-1981 - 2.7%
(71-76 - 2.17%; 76-81 - 3.18%)

III. URBAN PLANNING MANAGEMENT AND INFRASTRUCTURE

The framework for urban planning, management and provision of urban services in Nepal involves a host of national and local groups as is illustrated in Figure II.2. The complexity of these arrangements is such that coordination and clarification of responsibilities for the purposes of planning, finance, and implementation is poor.

A. ADMINISTRATION[1]

1. **Nagar Panchayats (or Town Councils)**
In general, Nagar Panchayats are autonomous elected bodies with wide-ranging powers including the ability to raise taxes and construct and maintain basic infrastructure services. Nagar Panchayats "report" to the District Panchayats which are also responsible for the smaller village Panchayats. However, UDA field visits revealed that the districts are largely preoccupied with "village" concerns and that the current "chain-of-command" probably gives inadequate attention to Nagar Panchayat issues. Several Nagar Panchayats expressed the desire for a more direct representation at the national level. As Table II.1 indicated, the 29 current Nagar Panchayats may also be the seats of Zonal, Regional and District Administration.

2. **District**
The District is the local arm of the national government represented at the Zonal level by the Zonal Commissioner. The Chief District Officer (CDO), an official of the Home Ministry, directs line ministry and other HMG activities at the district level. The Local Development Officer (LDO) of the MPLD, is responsible for investment programming at the local level. Coordination of these parties is the additional responsibility of the CDO.

3. **Urban Planning and Implementation**
Under the overall policy guidance of the NPC, urban planning in Nepal is the domain of the Department of Housing, Building and Physical Planning (DHBPP) which is an arm of the Ministry of Works and Transport. Ten of the 19 ministries are responsible for the management and supply of social and physical services. Coordination of planning and provision of infrastructure is the responsibility of the newly created Urban Planning Central Coordination Committee, chaired by the Minister of Works and Transport. (See Figure II.2) An organization chart for the DHBPP is presented in Figure II.3

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[1]**Sources:** IBRD Urban Sector Memorandum, 1982; IBRD/WSSB Fourth Water Supply Project; DHBPP. See Appendix I for a detailed description of the Administrative Framework and Appendix III for the Status of DHBPP Plans for Selected Settlements.

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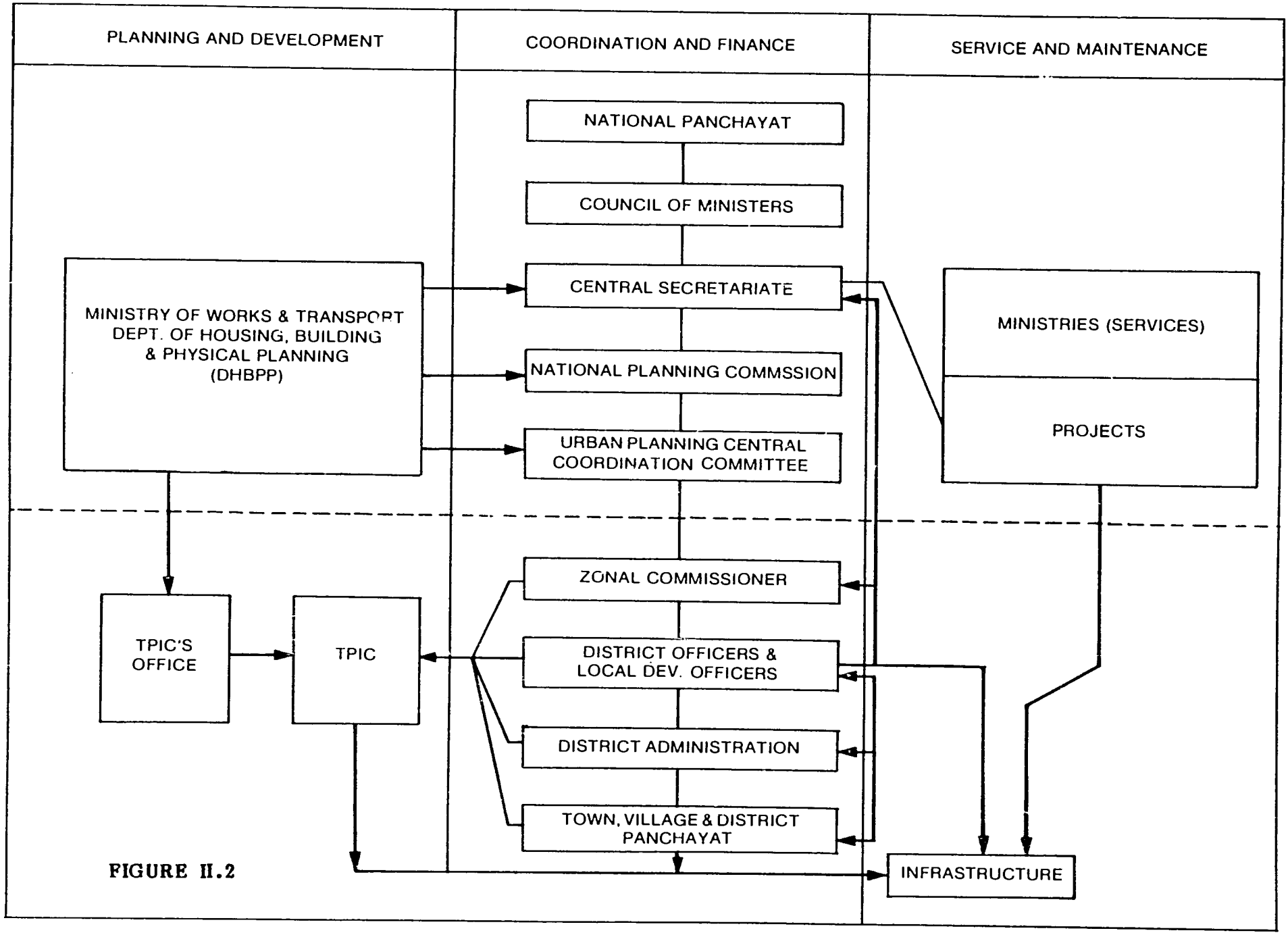
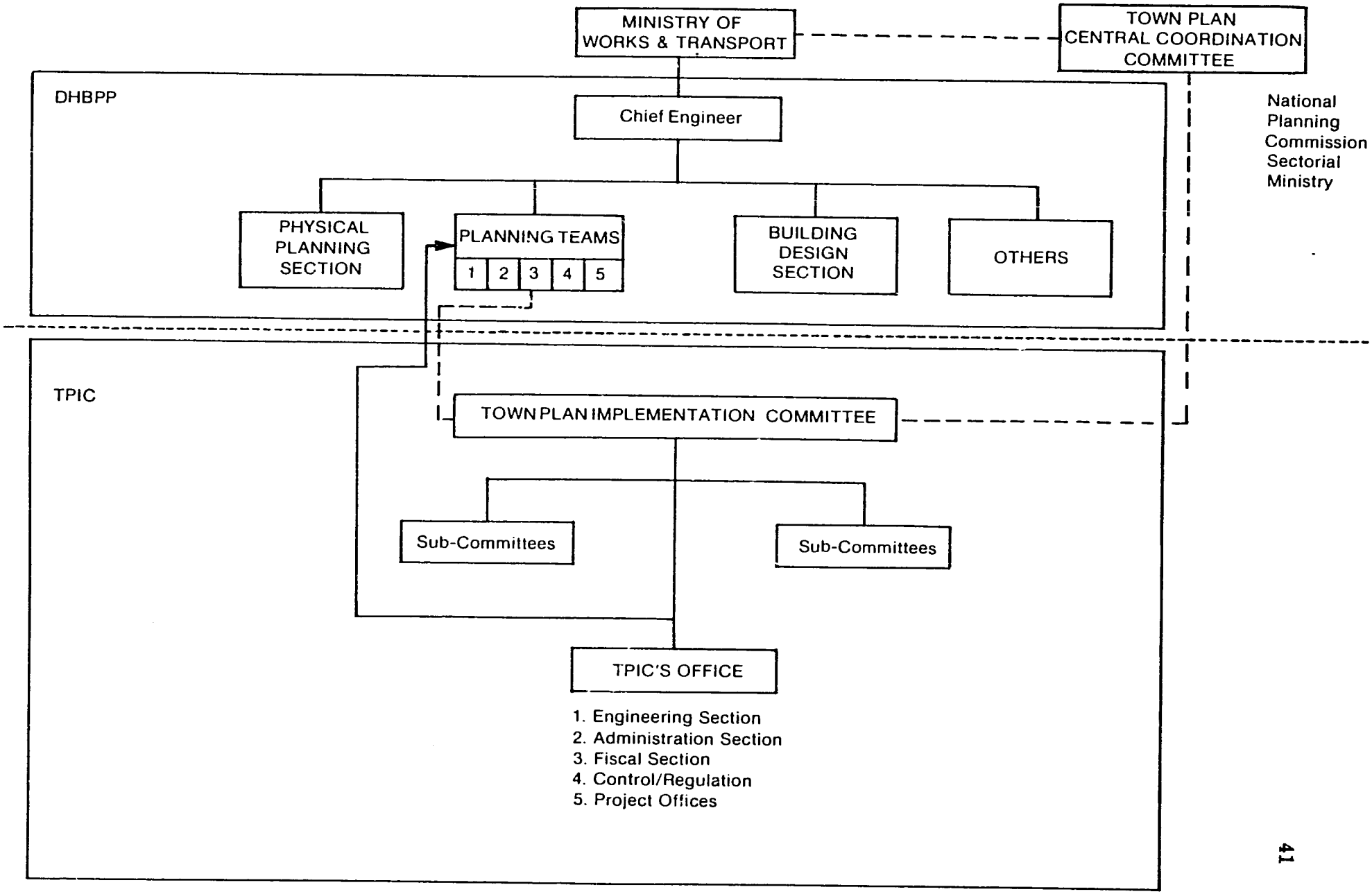


FIGURE II.2

Source: DHBPP

FIGURE II.3



Source: DHBPP

B. URBAN PLANNING POLICY ISSUES

In Nepal, many elements contribute to the physical state of urban development and planning which are outside the control of the physical planning bodies. These are primarily of a political, organizational and legal nature and include:

- **Lack of priority for urban development**
  Urban development in Nepal has been a low national priority and planning seems to be more associated with the passive production of colorful maps rather than the a foundation for active development programs.

  The scope of urban planning must be more closely tied with the broader economic and social efforts of the HMG. It is essential that the Under-Secretary for Town Planning at the NPC and the DHBPP work toward this end. The elaboration of an urban policy or national development role will help in this regard.

- **The lack of planning and investment coordination among key public sectors**
  The locational characteristics of infrastructure (particularly inter-urban and urban roads), industry, and other public facilities can have a major influence on the pattern of urban growth. The poor coordination of these elements has contributed to inordinate and inefficient growth—particularly in the Kathmandu Valley.

- **The lack of political will to enforce planning guidelines and regulations**
  Repeated violation of planning guidelines and regulations by both private and public vested interest groups has also resulted in inefficient urban growth and a sense of futility in the planning effort. However, part of this problem is due to a lack of clear, simple, and positive guidelines of where development is both desired and undesired. In the case of Kathmandu, for example, an inventory of the most valuable arable land should be made and every effort should be made to preserve it. Other areas, such as the hilly areas to the north should be declared development zones. The introduction of roads and access to the ring road in this area will help foster desirable growth.

- **Lack of integration of such instruments as taxation in the planning process**
  Low-density development inter-mixed with large vacant area, as is the case in Kathmandu, leads to inefficiency and the costly provision of urban services. Instruments such as vacant land taxes should be used to encourage more compact growth. In addition development regulations such as density restrictions and set-backs should be compatible with this objective.

- **The lack of an adequate planning capacity**
  There are an insufficient number of planners to cope with the number of settlements that need assistance. Clear priorities should be established and an effort should be made to mobilize local consulting firms in the planning process. The largest and fastest growing settlements should be the first to receive planning assistance.

Physical planners at the nagar panchayat level do not have to be university graduates but could consist of para-professionals from engineering schools. World experience in LDCs indicates that this group is preparing most official and unofficial subdivision plans. The DHBPP should provide training and planning guidelines for the local planning effort and all planning improvements.

C. PLANNING EVALUATION

In the view of the UDA team, the principal weaknesses of physical planning in Nepal include the following:

- **The lack of a sound analytical or statistical basis to prepare plans**
  Data bases appear to be virtually non-existent at the DHBPP even for those settlements which have benefitted from long-term planning support. Planning data is a crucial component of urban planning: it helps monitor the efficiency of urban development trends and provides the basis for making better physical and urban investment plans.

- **The lack of a systematic approach to planning**
  Part of this problem is due to the lack of a statistical basis for making planning decisions. Nevertheless, the DHBPP needs to establish planning guidelines to be followed by its own staff and local consulting groups when called upon for assistance.

- **The lack of neighborhood plans**
  Detailed neighborhood plans are what the TDICs and Nagar Panchayats need most. At the present time, these groups are making decisions pertaining to the location (and right-of-ways) of roads, and many important physical structures without a planner's long-term perspective on potential impact. These decisions set patterns for urban and residential development which are essentially irreversible.

  Some neighborhood planning has been done in "infill" areas between the built-up and ring road in Kathmandu and in Sirket. Much more of the same is needed and this should be primarily a local planning function.

  The HMG has not had much success with land development schemes (primarily due to land acquisition problems) thus the emphasis should be on planning in cooperation with landowners. This has been done with some success in Birendra Nagar (Sirket).

- **The lack of development standards**
  Only a few efforts have been made in residential (land) development schemes (Kathmandu, Bhaktapur, and Sirket) as a consequence there are no "packages" of appropriate development standards which Nagar Panchayats can use as guidelines. The DHBPP should conceive of standard packages for different settlement types in the Hill and Terai.

- **Unapplied development generators and inhibitors**
  The introduction of urban services such as roads, power, water, schools, other public facilities and employment opportunities are more instrumental in determining future urban configurations than plans that ignore the impact of these elements. The ring road in Kathmandu (and other cities) acts as a powerful force to generate urban growth. Yet due to a desire to preserve arable land and, control urban development, and maintain the ringroad as a freeway the TDIC must constantly struggle to restrict access to it. The UDA team also saw a proposal for another outer-ring road in the valley. If such a proposal were implemented, preservation of the valley's valuable arable land would be nearly impossible. The trolley to Bhaktapur, location of Tribuvan University, and industry in the valley are other elements with positive development influence. Elements like these should be used to encourage growth in desirable areas.

  Some functions can be used to inhibit growth in areas that should be protected. Satellite stations and some military facilities, for example, need to be surrounded by large vacant areas. Agricultural research stations (on private land) can also be used to restrict growth in undesirable growth areas.

D. URBAN SERVICES AND CONDITIONS

Urban settlements in Nepal are presently relatively small, but their rapid growth is taxing the abilities of Nagar Panchayats and HMG institutions to cope with this newfound growth. In most settlements physical development is virtually out of control, but with the exception of Kathmandu, the associated problems and cost of congestion and inefficient physical development are not yet overwhelming due to the modest size of the settlements. However, it is crucial that growth management issues be addressed since trend projections indicate that an additional 2.62 million population will be added to 23 Nagar Panchayats alone between 1981 and 2000.

Urban services are inadequate in most settlements already. General observations made by the the IBRD's Urban Sector Memorandum of 1982 and those of the UDA team are as follows:

Water Supply (and Health)

- About one-third of all cases treated in hospitals result from waterborne diseases; though 50 percent of the urban population (23 Nagar Panchayats) is served by standpipes and 30 percent have individual connections.

- Service is intermittent and the average consumption is only about 50 liters per capita.

- Urban water supply (and sanitation) requirements for the larger settlements are being addressed by a series of IBRD/WSSB projects. They represent one of the few comprehensive urban development efforts by the donor community.

Sanitation

- Only 5 percent of the urban population is served by waterborne sewerage systems (Kathmandu Valley) and this system suffers from lack of maintenance and is generally inoperable.

- Most households have no sanitation facilities at all and relatively few households have pit latrines or septic tanks.

- The HMG and UNDP have sponsored a few pilot projects in low-cost alternative sanitation techniques. However, projects have not yet been conceived on a community or urban scale.

Drainage

- Due to the lack of a responsible party for storm water drainage, poor road design, and adequate drainage systems, large pools of stagnant water collect within urban fabrics leading to inefficient land use and a high incidence of waterborne diseases.

Solid Waste

- Solid waste collection and disposal is a grave problem in most cities which has also contributed to health problems.

- The removal of solid waste is traditionally the responsibility of the lower castes. As urban areas have increased in size, the traditional systems have broken down, leading to uncollected debris in streets, and in drainage systems.

- Recent efforts to introduce "appropriate technology" in solid waste collection have been undertaken in Kathmandu with German Bilateral assistance. The project has had significant success to date, but cost recovery is

proving difficult. Nevertheless, the model should be applied to other settlements as well.

Roads and Traffic

- The location and rights-of-way of most urban roads are not based on planning criteria. They often follow property lines and footpaths and rights-of-way are restricted to preserve privately held land.

- Principal urban roads are constructed above grade leading to infill by adjacent property owners and poor drainage of inner areas.

- Traffic congestion is a problem primarily in Kathmandu due to the nature of the road network, and poor separation of vehicular, parking, and pedestrian activities. Conflicts in public open space is a particularly severe problem.

Literacy

- The urban literacy rate varies from 27 to 65 percent and is substantially higher than the national level (19 percent). Nevertheless, there is considerable scope for improvement.

Construction and Housing

- In contrast to urban services, construction in urban areas is generally of good quality.

- Traditional housing construction techniques (several storeys) permit compact densities on the order of 600 persons per hectare; however in recent years some settlements such as Kathmandu and Pokhara have been growing at inefficient densities on the order of 100 persons/hectare largely because of large vacant areas within the built-up area. This has caused strain on existing services and increased development costs.

- Currently land development and construction is occurring in an ad hoc fashion. There are no specific instruments for creation of subdivision nor provision of housing finance place. In the principal settlements of the Hills, this has led to overcrowding in traditional housing and squatting in Terai towns (squatting has also occurred in Kathmandu and Pokhara).

Power

- An adequate and reliable supply of power is critical to the development of commerce and industry. But only CDR settlements have a reasonably adequate supply. Planned extension of the national grid to principal settlements in the EDR, WDR, MWDR, and FWDR is critical.

The UDA team has provided a further discussion of housing at the end of this section. In addition, urban power, water supply, roads and drainage and telecommunications have been dealt with in Part Three of this report under sectoral consideration. In each case, they have been treated as components of the national networks.

Provision of services

One of the key problem issues regarding the provision of urban services is the large number of actors involved. An inventory of actions and functions prepared by the IBRD's urban memorandum is presented in Table II.9. Among the key issues identified by the IBRD's study were:

- unclear definition of responsibilities
- lack of financial and management resources in the local authorities; and
- inadequate cost recovery

A principal concern of the IBRD study, which is supported by the UDA team, is the general weakness of the Nagar Panchayats to address more of their own urban service requirements. In most cases, the Nagar Panchayats do not have the staff and resources to do more than general maintenance, street cleaning, and administration. At the present time, Town Panchayats must depend on line ministries for the provision of many vital services. However, the Town Panchayats feel their interests are not being adequately addressed. The UDA has observed that in places where both finance and skills were in place some very innovative projects have been carried out. Thus, there is a need to improve both the resource base for Nagar Panchayats and improve the quality of management through training.

E. MUNICIPAL FINANCE

The UDA team did not conduct an exhaustive survey of municipal finance issues. However, it is clear that Nagar Panchayat revenues are primarily generated locally and that most expenditures are for general administration, operation, and maintenance.

The UDA team was also unable to determine the Nagar Panchayats' share of HMG allocation to Panchayats. However, the entire panchayat sector received 2.8, [illegible] 5.0 percent of total HMG expenditures in FY1980/81 and 1981/82. For the [illegible] fiscal years, panchayats' share of regular expenditures was 1.8 and 2.1 percent, while its share of development expenditures was 3.3 and 7.3 percent respectively.

Panchayat allocations were expected to fall off somewhat during FY1982/83, however, its share of HMG expenditures has generally been increasing over recent years.

TABLE II.9

URBAN SERVICE AGENCIES

	REGULATION NORMS STANDARDS	PLANNING	CAPITAL FINANCING	CONSTRUCTION IMPLEMENTATION	CAPITAL COST RECOVERY BY: / FROM:	MAINTENANCE	MAINTENANCE COST RECOVERY BY: / FROM:
INFRASTRUCTURE							
Roads	-Town Development Committee -MWPT (DHBPP) DOR -MWPT	MWPT	MWPT	MWPT	NONE	Town Panchayat	Panchayat Octroi
Water supply and distribution	WSSB/D	WSSB/D	WSSB/D	WSSB/D	WSSB Tariff	WSSB/D	WSSB Tariff
Public stand pipes	WSSB/D	WSSB	WSSB/D	WSSB/D	NONE	WSSB	WSSB
Sewerage	WSSB	WSSB	WSSB	WSSB	WSSB Tariff	WSSB	WSSB Tariff
Public latrines	TDC	TDC	TDC	TDC	NONE	Town Panchayat (Bhaktapur)	Panchayat Octroi Government
Drainage	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Electricity	NEC	NEC	NEC	NEC	NEC Tariff	NEC	NEC Tariff
Street lighting	NEC	NEC	NEC	NEC	NEC Tariff	NEC	NEC Tariff
Refuse disposal	Town Panchayt Solid Waste Board	TDC Town Panchayat	TDC/MWPT Town Panchayat	TDC/MWPT Town Panchayat	NONE	Town Panchayat Solid Waste Board	Panchayat Octroi
PUBLIC SERVICES							
Parks	TDC	TDC	TDC Town Panchayat	TDC Town Panchayat	-	Town Panchayat	-
Schools	Min. Ed	Planning Unit Ministry of Education	School Committees Ministry of Education	School Committees Ministry of Education	School Committees -	School Committees Ministry of Education	-
Health centers	Min. Health	Planning Unit Ministry of Health	Ministry of Health	Ministry of Health	-	Ministry of Health	-
Religious & historical buildings	TDC/Town Panchayat	TDC	TDC	TDC	-	TDC	-
Markets	TDC/Town Panchayat	TDC	TDC Town Panchayat	TDC/MWPT	Town Panchayat	Town Panchayat	Town Panchayat TDC Market fees
Traffic management	Police KVTDC	Police KVTDC	Police KVTDC	Police KVTDC	- DOR/MWPT	Police	-
HOUSING							
Residential land development	Dep. H.B.P.P. KVTDC	Dep. H.B.P.P. Private Sector	KVTDC Dep. H.B.P.P. Private Sector	KVTDC Private Sector	KVTDC/TDC		
Housing construction	Dep. H.B.P.P. Town Panchayat KVTDC	Private KVTDC/TDC	Dep. H.B.P.P. Private Sector	Private Sector	KVTDC/TDC	- -	- -

MWPT Ministry of Works and Public Transport
DHBPP Department of Housing Building and Physical Planning (in MWPT)
WSSB Water Supply and Sewage Board
WSSD Water Supply and Sewage Department (in MWPT)
MWPI Ministry of Water, Power and Irrigation

TDC Town Development Committee
NEC Nepal Electricity Corporation
DOR Department of Roads (in MWPT)
The Solid Waste Board operates in Kathmandu and Lalitpur only
KVTDC Kathmandu Valley Town Development Committee

The UDA team obtained Nagar Panchayat budgets from Bhairawa, Pokhara, and Biratnagar. We also found that a GTZ-sponsored team concerned with drainage and roads had obtained budget data from the settlements of Kathmandu, Biratnagar, Dharan, Birgunj, Hetauda, Lalitpur, and Bhaktapur.

Using findings in Bhairawa as an example, it was noted that its principal internal revenues come from a rest house tax, fixed tax, fire brigade and rural bazaar tax. Its total revenues are on the order of Rs.5.1 million of which Rs.500,000 was from HMG grants and Rs.25,000 from the District.

Its total expenditure budget was also Rs.5.1 million that was almost entirely consumed by administration, operation, and maintenance. Few capital expenditures were made. About Rs.910,000 was expended on salaries and allowances.

In general, HMG grants to the Nagar Panchayats are on the order of Rs.500,000. These are generally supplemented with a District allowance of about Rs.50,000; however, these represent less than a third of total revenues. It is interesting to note that taxes on trade and commerce represent substantial shares of total revenues in places such as Kathmandu, Biratnagar, Birgunj, Dharan, and Hetauda. This is consistent with their roles as commercial, marketing, and trade.

There is quite a disparity in the revenues among the Nagar Panchayats. Kathmandu, Biratnagar, and Birgunj have revenues on the order of Rs.18.5, 16.3, and 8.7 million; Pokhara, Bhairawa, and Lalitpur have about Rs.5 million each. The lowest revenues are generated in Hetauda (Rs.1.7 million).

Expenditures largely match revenues. As noted above, most expenditures are made on salaries and allowance, maintenance, and operation. A significant share is for salaries and allowances with relatively few capital investments.

There is also quite a difference in expenditures per capita among the settlements. For example:

Settlement	Per Capita Investment
Kathmandu	Rs.73
Biratnagar	Rs.164
Dharan	Rs.79
Birgunj	Rs.211
Hetauda	Rs.32
Lalitpur	Rs.56
Bhaktapur	Rs.55
Bhairawa	Rs.170
Pokhara	Rs.113

All revenues and expenditures are for the fiscal year 1982/83, and 1981 population data (thus per capita investment is actually less). Expenditure data does not include line ministry and other HMG investment. (See Appendix I.B; Table API.2a)

Part Two

F. HOUSING

1. Introduction

Study or analysis of the housing sector in Nepal has been limited; therefore, there is scanty basic data and information with which to formulate housing policy.

The last census to publish housing data was in 1961. The 1971 census did not attempt to gather housing data; the 1981 census gathered data, but found it inadequate for processing.

The 1973-1975 Nepal Rastra Bank Study of Household Expenditures in 18 urban centers is the most authoritative source of housing data. Between 1973-1976, with United Nations short-term assistance, the DHBPP prepared a series of housing studies on five towns. In 1977, DHBPP published a study of "Housing Conditions In Nepal." This study was based largely upon the results of the 1952/54 census, the 1961 census, the Nepal Rastra Bank Household Expenditure Study, and its own investigations. In 1977, there was also a generalized study published by the National Planning Commission. These are the last significant housing studies produced and they are for the most part based on data 10 or more years out-of-date.

The age of housing data is particularly important since the real onset of accelerated urban growth has been over the last 10 years and, therefore, its impact is not reflected in the data base available.

2. Housing Conditions In Nepal

A report by Haruaiko Ando, "Research on Local Building Materials and Housing Styles in Nepal," DHBPP, November 1983, contains a series of useful summary diagrams of the Nepal Rastra Bank household expenditure data by Nagar Panchayat divided between the Terai and Hill regions. This material is reproduced in this report in its original form in Figures II.4 to II.6.

As a further indication that housing conditions are deteriorating, it was noted by several sources that squatting has now begun in the most rapidly growing urban areas. The UDA team heard reports of squatting in Pokhara (where the local government attempts to control it by granting tenure (Sukhambasi Scheme for the landless) and charging a nominal land rent. The UDA team visited a squatter settlement in Kathmandu which was located on the banks of the Bisrumati River between the two bridges. The settlement started on the higher banks of the river and these houses have progressed to a higher quality than the expansion on the lower banks (which may be subject to flooding). The process was reported to be that a family would move in and construct a temporary shelter with roof "overnight" in order to be left undisturbed. After about five years, the family feels secure enough to start improving the shelter. There were approximately 30-40 dwelling units in the settlement. The environmental conditions were appalling with uncollected garbage and human excreta in evidence.

Housing and Places

Dharan

Dhankuta

Kathmandu Old City

Hill Hamlet

Pokhara Valley

Biratnagar

Terai Hamlet

Kathmandu

FIGURE II.4

Housing Conditions in Nepal (1973-75)

(From "Household Budget Survey" By Nepal Rastra Bank)

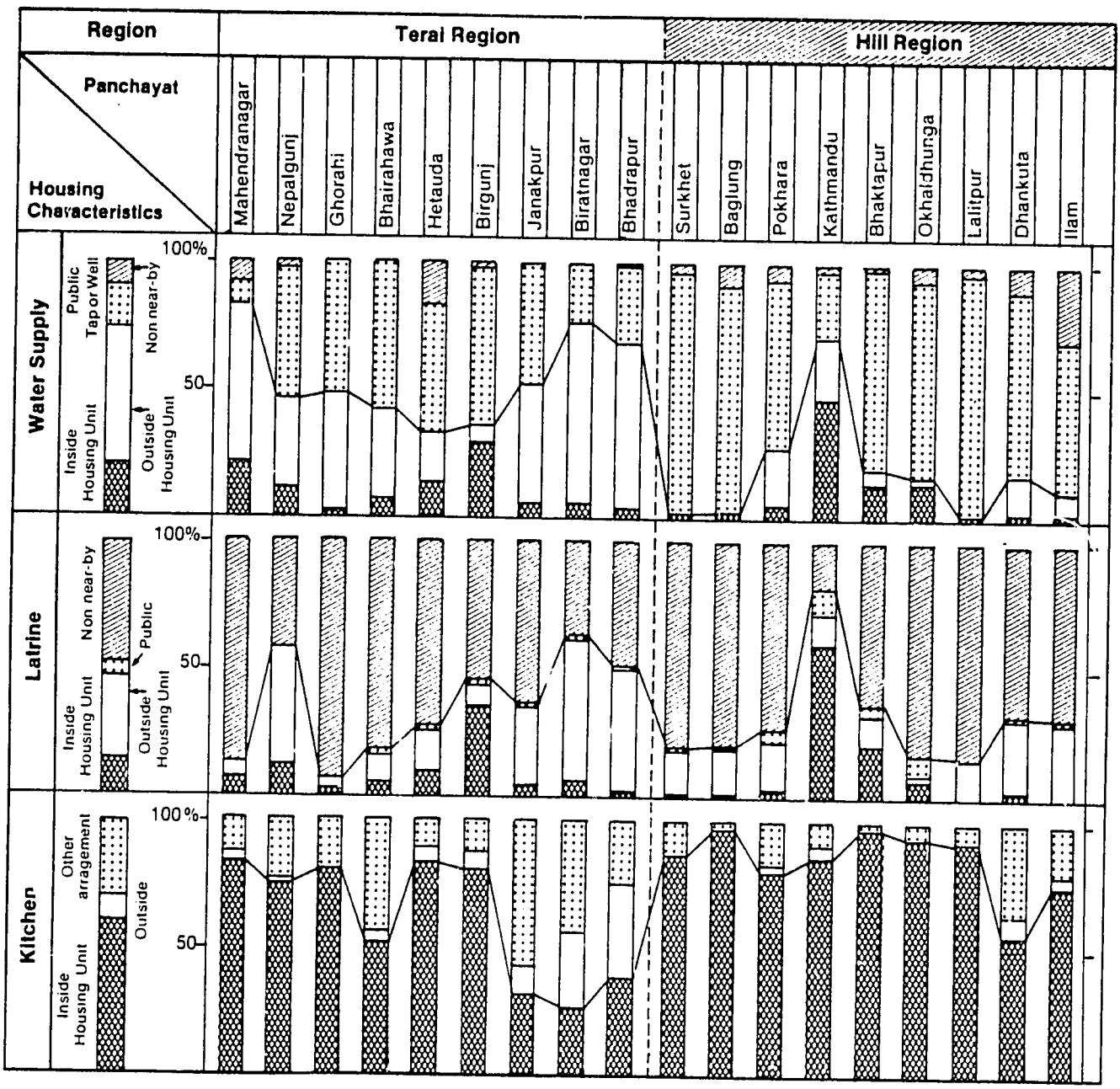


FIGURE II.5

Housing Conditions in Nepal (1973-75)

(From "Household Budget Survey" By Nepal Rastra Bank)

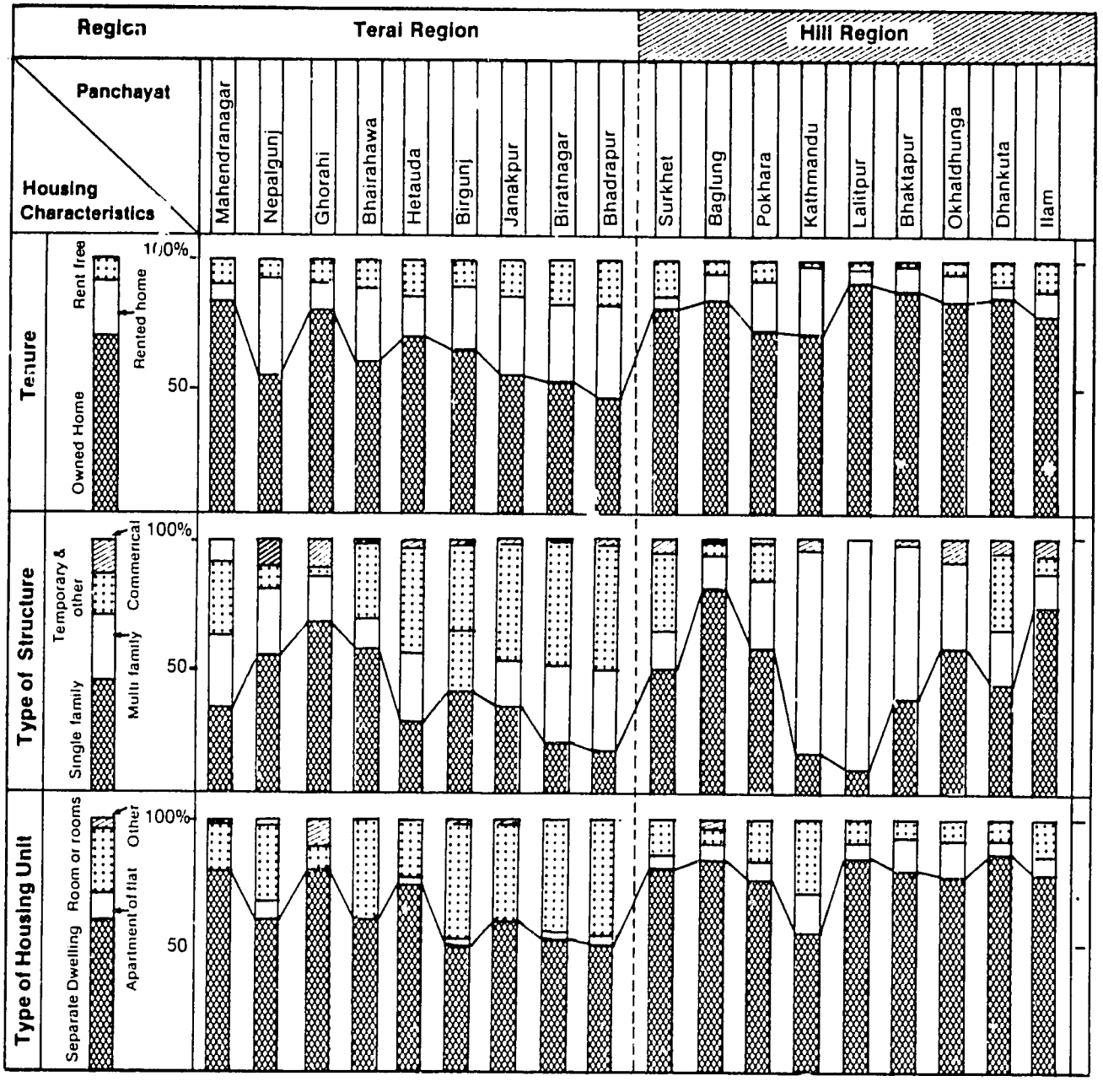


FIGURE II.6

Housing Conditions in Nepal (1973-75)

(From "Household Budget Survey" By Nepal Rastra Bank)

	Housing Characteristics / Panchayat	Average Household size (Person) (1 3 5)	Number of rooms (1 3 5)	Person per sleeping room (2 4)
Hill Region	Ilam	5.2	2.7	3.1
	Dhankuta	5.7	3.1	2.8
	Okhaldhunga	5.3	3.1	2.9
	Bhaktapur	5.9	3.0	2.9
	Lalitpur	5.8	3.7	2.7
	Kathmandu	5.7	3.6	2.4
	Pokhara	4.7	2.8	2.9
	Baglung	5.3	3.6	2.5
	Surkhet	5.3	3.1	2.9
	Average	5.4	3.2	2.8
Terai Region	Bhadrapur	5.3	2.3	2.9
	Biratnagar	5.2	2.4	2.8
	Janakpur	4.1	2.3	2.5
	Hetauda	5.3	2.4	2.9
	Birgunj	5.4	2.8	2.8
	Bairahawa	4.5	1.5	3.4
	Ghorahi	5.9	2.4	3.0
	Nepalgunj	5.3	3.0	2.5
	Mahendranagar	5.4	2.8	3.0
	Average	5.2	2.4	2.9
	Total Average	5.3	2.8	2.8

3. **Typical Housing Projects**
The Government has built a limited number of dwelling units for civil servants, and has experimented with a variety of small-scale demonstration projects that deserve full study and consideration for future application. A brief description of some of the housing projects include:

- **Bhaktapur:** An overall upgrading program has been underway for about ten years with German donor assistance. The work has provided for environmental upgrading of water and sanitation, restoration work on houses of tourist interest, and efforts at sites and services on the city fringes. The work has developed considerable community participation. The project documentation reports that there is no formal construction industry in the city and that work is done by local craftsmen and the people themselves. Approximately 70 percent of all new housing units cost under Rs.20,000.

- **Pokhara:** An innovative land assembly and redistribution project was undertaken whereby the Government assembled small tracts of land and the original landowners received urbanized plots amounting to one-third the area originally held. The balance was used for urban infrastructure (roads and facilities) up to one-third and half the remaining third was auctioned off to pay for the project. The remainder of the land was kept by the Government for its own use.

- **Kathmandu:** Two sites and services projects have been undertaken, but both have been substantially undeveloped in almost ten years since their inception. The Kuleswar Project (715 plots) and the Dallu Project (778 plots) both involved the taking of land through eminent domain (compensation was reported to be well below the market price at the time). A plot plan was developed and the plots were sold to civil servants before any infrastructure was in place. Numerous problems have been encountered with dwelling units previously on the site. In general, serious problems have developed and the confidence of the intended beneficiaries has been destroyed. This type of project should be a useful prototype in urban centers, but the process and procedures will have to be substantially improved before future initiatives are undertaken.

- **Private Sector Project in Kathmandu:** There is presently underway a significant private sector housing project sponsored by the Tashi Nepal Co. (Pvt) Ltd. This company is controlled by Bhutan interests. The firm is licensed by the Ministry of Industries. The firm bought five ropani of land outside the ring road near the airport (previously agricultural land). The cost was approximately Rs.250,000 (approximately Rs.147 per square meter). No market study was undertaken, but the building program was determined to consist of 24 units of 450 square feet; 30 units of 650 square feet; and 10 units of 1,000 square feet. The middle-size flats are estimated to cost Rs.200,000 each. Only part

of the project is under construction because of land title disputes. This is a very important project for the future of housing in Nepal and deserves close study. It will be the first effort at commercial building on a project scale by the private sector. It will be the first major project providing three-story walk-up flat solutions. The downpayment will be 50 percent, but the company will provide the balance of the financing (with title transfer upon completion of the loan repayment).

The firm reported that the following problems have been encountered: difficulties in getting plan approvals because of unclear regulations and laws; many trips required to government offices to obtain water and sanitation approvals; delays in getting permission from the National Trading Co. in order to obtain construction materials at controlled prices (the open market is reported to be 20-25 percent higher); and difficulties in maintaining construction schedules because of short work days (10 AM-4 PM), high absenteeism, frequent holidays (the project is using only Nepali labor as a policy decision of the firm). The firm reported that, once approval is obtained, the Nagar Panchayat has no on-site inspection capacity. The firm also indicated that Nepali investors have shown no interest in the project as a possible investment concept.

4. Housing Finance

There are very few financial institutions offering housing finance. The largest institution is the Provident Fund. A few loans are made by the commercial banks. The sources of housing finance, therefore, are largely out of personal savings, loans from relatives, and loans from friends.

The Provident Fund is a significant source of housing finance for its participating members; but, overall, its activities in this area have been surprisingly modest. Some Rs.46.84 million have been disbursed in housing loans that represent only six percent of the total investment portfolio of the Fund. The terms of the housing loans are for 25 years and carry a 12 percent interest. Only contributing members of the Provident Fund are eligible for real estate loans.

The Provident Fund includes real estate loans in its category of "Service Feature Loans" (the other types of loans to participants include medical loans and social loans for weddings and other social obligations). Overall, this type of lending to participants represents Rs.194.37 million, or 23 percent of the portfolio.

Out of the total investment portfolio of Rs.828.31 million, some 72 percent is simply placed with commercial banks in the form of certificates of deposit. Direct development loans for hotels or industries represent only two percent of the portfolio, and HMG bonds, three percent.

The Provident Fund explains the limited amount of participant lending, in part, because repayment experience with these kinds of loans has been very poor. Provident Fund policy is not to attempt to collect bad loans or deduct the amounts due from the participants' individual accounts. Instead there is a deduction of the amount due from their final lump sum settlement at the time the participant retires. Meanwhile, the participant accumulates the full deposits and interest on their accounts. This policy would naturally stimulate defaults and might usefully be reviewed.

There are over 200,000 participants in the Provident Fund: the military, civil service, teachers, and a limited number of other private organizations that have elected to join. The employees contribute 10 percent of their salary and the employer (chiefly the Government) contributes 10 percent. These higher rates of contribution are relatively recent and therefore the Fund balances are increasing rapidly. Payments are made in lump sum to the participant at the time of their retirement (usually 60 years of age), death, or termination from service. No counseling is provided to the retiree on the management of their lump sum payment. This might be a useful service since the cash payment probably will represent the largest amount of cash the individual has ever had and the potential for its mismanagement (for other than retirement income maintenance) could be quite high.

Inasmuch as commercial bank lending is primarily for consumer loans and the financing of trade activities, it would seem possible that a more aggressive policy in the use of the Provident Fund could both stimulate more investment into the directly productive sectors for job creation and increase the flows of housing finance available to participants.

5. **Housing Policy**

The Sixth Plan places little or no emphasis on housing as a public sector responsibility or subject for investment. The Plan calls for the construction of a limited number of civil servants housing units, and calls for the application of land use policies and rules on a strict basis.

Housing is recognized as an important aspect of urbanization and a basic need of the population. In the report of the seminar on "Urbanization and National Development" held on September 18, 1983, the conclusion was reached that housing construction was an important generator of jobs. It claimed that housing construction provided more jobs per unit of investment than any other sector except agriculture (pp.14).

The seminar concluded that the basic issues of concern to the housing sector were:

- **Land tenure, and the incidence of multiple-occupancy of dwelling units**
  Overall, there has been an increase in the number of families living in rental housing. The multiple occupancy of dwellings has increased from 21 percent in 1961 to 79 percent in 1977.

- **The tendency toward slum formation in urban areas**
  In Kathmandu, some 53 percent of the housing stock is over 50 years old. There is a severe problem of maintenance.

- **Overall shortage of housing stock**
  It was reported that the existing shortage of housing in Kathmandu and Lalitpur was in the range of 10,000 units. It was estimated that approximately 680 dwelling units a year were being constructed in the two urban centers.

- **The affordability of housing to low-income groups**
  There is a substantial gap between the housing being produced and household affordability. It was estimated that 90 percent of the households could afford a dwelling unit costing no more than Rs.40,000 (US$2,660). Squatter settlements are beginning to form in the larger urban centers.

- **Efficiency of land use and the workings of the land market which foster land speculation**
  Urban densities in Kathmandu, Pokhara and other settlements are very low. Land represents one of the most attractive forms of savings in Nepal; therefore, land speculation in urban areas is a significant problem.

- **The supply and use of labor, materials, and selection of appropriate technology**
  The major problems identified include the excessive dependence on imported materials (for example, brick production is dependent on imported coal; yet brick as an alternative to wood is growing), erratic supplies of building materials and wide price fluctuations, little research in the use of local materials, lack of skilled labor, and inefficient use of labor because of deficiencies in tools and equipment, as well as construction management.

- **The overall problem of mobilizing housing finance**
  Housing construction is largely self-financed resulting in delay of the start of construction while household savings are mobilized which extends the average length of construction to between 3-5 years. A few financial institutions make a small number of housing loans but the repayment history has not been good. There has been a very disappointing history of Government supported efforts at sites and services projects for all income groups.

The seminar proposed a series of recommendations deserving of serious consideration by the Government:

- The Government should undertake only those actions that otherwise cannot be done by individuals.

- Government actions must encourage existing individual initiative in housing, and must not replace it by custom-made supply of housing.

- Supply and maintenance of land and services lie within the domain of the Government. As far as it is politically feasible, blanket subsidies must be curtailed.

- Financial institutions designed to aid land procurement and development, material production, and financing for shelter construction should be established with a clearcut mandate for such actions.

- Physical land use developed by private individuals must conform to well-conceived "social norms." Legal measures to force petty land adjustments--for eventual supply of services--should be established and enforced.

- Up-grading and maintenance of existing housing stock--particularly in city cores, should be encouraged and supported by providing financial loans, tax incentives, appropriate zoning regulations, technical services and adequate and timely supply of services and facilities.

- Realistic and socially acceptable standards of services must be developed and adopted to reflect constraints on resources. A judicious selection of standards (private connection vs. public taps, private vs. public transportation, etc.) will enable the nation to provide facilities to a wider area at reasonable costs.

- It is desirable and possible to encourage adoption of realistic space norms (size of dwelling and land) through progressive taxes and introduction of space-saving designs and production of standardized building elements.

- Private developers can play an important role in carrying out the above mentioned strategies. They should be encouraged in the land-development activities for high and higher middle-income groups.

The UDA team finds itself very much in support of the direction of these policy recommendations. Clearly, the emphasis of the Government should be not on public investment in dwelling unit construction, but rather on land assembly and infrastructure provison. It would be desirable to follow up on these recommendations by developing a clear housing policy to be included in the Seventh Five-Year Plan now under preparation.

6. Urban Land Policy

The Constitution of Nepal guarantees the right of Nepalese citizens to "acquire, use, and sell property." The sovereign right of the State is limited to taxation, police power regulation, and eminent domain.

Current law limits the amount of urban land to 25 ropanis (approximately .84 hectares) that can be owned by one household. The law also provides that actual tillers are granted permanent tenancy rights. Permanent tillers are also to be awarded 25 percent of the land, or its market value, before it can be converted to non-agricultural uses.

Legal basis for public land acquisition and control is well established in a variety of Acts and rules. Among the most important are:

- Land Reform Legislation with Land Act, 1964
- Town Development Committee Act, 1963
- Town Development Plans Act, 1973
- Regional Development Execution Act, 1956
- Town Panchayat Act, 1962
- Guthi Corporation Act, 1976
- Town Development Plan (Implementation) Rules, 1976
- Land Rules, 1964

A cursory review of these legislative Acts indicates that they provide very broad powers for land acquisition. Compensation rates for land taking is, however, quite vague, and there have been instances of compensation awards considerably below the market price. This has contributed to public resentment of the process. Recent awards have been more reflective of market conditions, and new processes have been instituted to ensure fairness.

Overall, the procedures for taking land are complicated and require the approval of many agencies, committees, and in some cases the Cabinet. (For a more detailed explanation of land law in Nepal, see "Land Acquisition for Public Purposes in Nepal," Ute Muller, Bhaktapur Project, September 1981.)

Land values are reported to be rising at around 20 percent per year in the Kathmandu Valley. Land is looked upon as a particularly attractive form of savings by many wealthy Nepalis. There is no tax on vacant land nor are there any instruments for collecting part of the increased values created by public improvements. There is considerable scope for improving the revenue generated from land in urban areas. The only instrument currently in use is a fee levied at the time of title transfer (which is frequently undervalued).

The efficient use of land is also a matter of considerable concern, particularly in the Kathmandu Valley, but also in other urban centers. There are several related issues:

- The conversion of productive agricultural land to urban uses is of major importance in the Kathmandu Valley. The Valley produces 3.5 percent of the total rice crop and 10 percent of the wheat crop. This productivity is threatened by the rapid low-density urban sprawl.

- The irregular agricultural property boundaries when converted to urban plot boundaries for a house is usually done with little or no concern for with the problems of overall access to the land, the efficiency of infrastructure installation, or the drainage problems associated with improper grades and lack of run-off facilities. This will have the effect of greatly increasing service costs--or even to make the ultimate installation of adequate infrastructure and services impossible.

- Property registration procedures are complicated, and land title disputes are common.

- There is no strong institutional basis for handling land matters at either the local or national level.

IV. RECOMMENDED URBAN STRATEGY CONCEPTS

The Urban Development Assessment team recognizes that it is beyond the scope of its mission and time and resources available to specifically outline the kind of urban development strategy needed in Nepal. This should, however, be a task to which the National Planning Commission gives full consideration during the preparation of the Seventh Development Plan.

All of the data and analyses points directly to the conclusion that Nepal is on the threshold of rapid urban population growth which is unavoidable given the overpopulation of the Hills and the limited capacity for continued rural development and agriculture in the Terai. The opportunity exists, because urbanization is just starting, for Nepal to adopt a positive urban policy and strategy which can overcome many of the enormous problems faced in other developing countries which did not focus on their urban problems until they had reached crisis proportions.

The need is for a dynamic strategy which will both encourage and guide urban development in the national interest and facilitate the transition of the rural to urban migrants in their adoption of new life styles and skills.

This opportunity in urban Nepal is, however, constrained by the present development realities which include:

- For the immediate future agricultural expansion and productivity must be given the highest priority in investment (though recognizing that agricultural output is the major source of industrial growth in urban areas which means the growth of the agricultural sector will have a positive economic effect on urban development as well).

- The continuation of the development of national networks of transportation, power, and telecommunications which is essential for both urban and rural development and therefore also requires priority.

This means that Nepal's urban policy and investment strategy must be capital resource conserving and such investments as are made must be targeted carefully by both location in the settlement system and by sector. The role of the HMG should be primarily that of the facilitator of sound urban development through private initiative and responsive public regulation and planning. The guiding principles of an urban strategy of this kind might include:

- The adoption of a positive national urban policy which will encourage urban growth and rural/urban migration in response to the overpopulation in rural areas (particularly the Hills).

- Assist potential rural/urban migrants to adopt to urban life styles and learn urban skills. The specifics of such a program require further study, but are

likely to include establishing equitable procedures for selling rural land holdings (when sub-marginal in size) and obtaining urban plots, job skill training programs, literacy training, and essential basic health care (including family planning and nutrition).

- Encourage urban job creation through the private sector (particularly the small-scale private sector). It will be much more efficient to seek the "non-farm" employment creation (called for by most observers) in urban centers rather than rural places. Credit programs could usefully be expanded to small-scale entrepreneurs tied to skill training and the use of Nepali labor. The construction sector (not studied in any detail by the UDA team) is in particular need of technical assistance in order to improve efficiency, conserve materials, and develop Nepali skills (construction jobs are particularly well-suited for the introduction of unskilled rural people to the urban job market under planned conditions).

- Facilitate private sector and individual development of the housing stock of Nepal. The HMG is correct not to attempt any kind of mass public sector housing program, but a much more efficient system of providing urban plots with basic infrastructure is needed given the recent poor experience in several projects.

- There is no alternative to Government providing the basic infrastructure required in cities and towns. The first priority should be on water supply and sanitation (wherever possible using technologies which do not depend on waterborne sewage systems). Selective investments in infrastructure at appropriate minimum standards should be focused on those settlements which have the highest potential for sustained economic growth.

- Urban land issues should be addressed through legislation, regulation, and improved public management procedures in order to ensure an adequate supply of non-arable urban land for expansion at prices which are affordable to the majority of the population. Means should be sought to increase Government recovery of increments in land value increases caused by related public investments (such as roads, water supply, etc.) and improved land tax policy.

- As part of the overall decentralization effort now underway, a specific task should be to fully recognize the role and function of the Nagar Panchayats in urban development by ensuring that they have the appropriate powers (including taxing and revenue mobilization power), administrative capacity, and ability to take on much more of the urban development burden than they now absorb. The Kathmandu Valley should be studied as to the suitability of adoption of a Kathmandu Valley Development Authority based on the work already underway.

- A revitalized urban planning capacity should be developed in the DHBPP which can effectively provide planning direction for the urban development

strategy. This should include much more stress on detailed plans for specific sections of cities, new sites and services projects, and the build-up of a more substantial data base and analytical approach.

A. THE NATIONAL URBAN SPATIAL STRATEGY

The key elements of the national spatial strategy were spelled out in the Fourth Plan. The spatial strategy is essentially sound in principle and, with further development along the lines suggested below should provide the base for the Seventh Plan proposals.

In summary, the spatial strategy aims at the economic and social integration of the five development regions through the establishment of an East-West transport and communications network in the Terai, and North-South corridors to selected locations in the Hills. Each North-South corridor is to culminate at a regional "growth pole" in the Hills. These poles were originally identified as follows:

- Dhankuta (Eastern Development Region)
- Kathmandu (Central Development Region)
- Pokhara (Western Development Region)
- Birendra Nagar (Mid-Western Development Region)

Dipayal was defined as a fifth regional pole in the Far Western Development Region at a later date.

Considerable progress has been made in implementing this strategy and the major development projects in transportation, power, and telecommunications are underway.

Other urban centers were selected to be "development models" in their respective regions. There has not yet been any real effort to provide functional definitions of the roles of various centers and establish a development hierarchy of cities and towns. In fact, there appears to be some confusion that an administrative hierarchy (which is well-established) is somehow the same as a development function hierarchy. This needs to be clarified.

B. UDA TEAM'S PRELIMINARY SUGGESTIONS FOR A REVISED NATIONAL SPATIAL STRATEGY

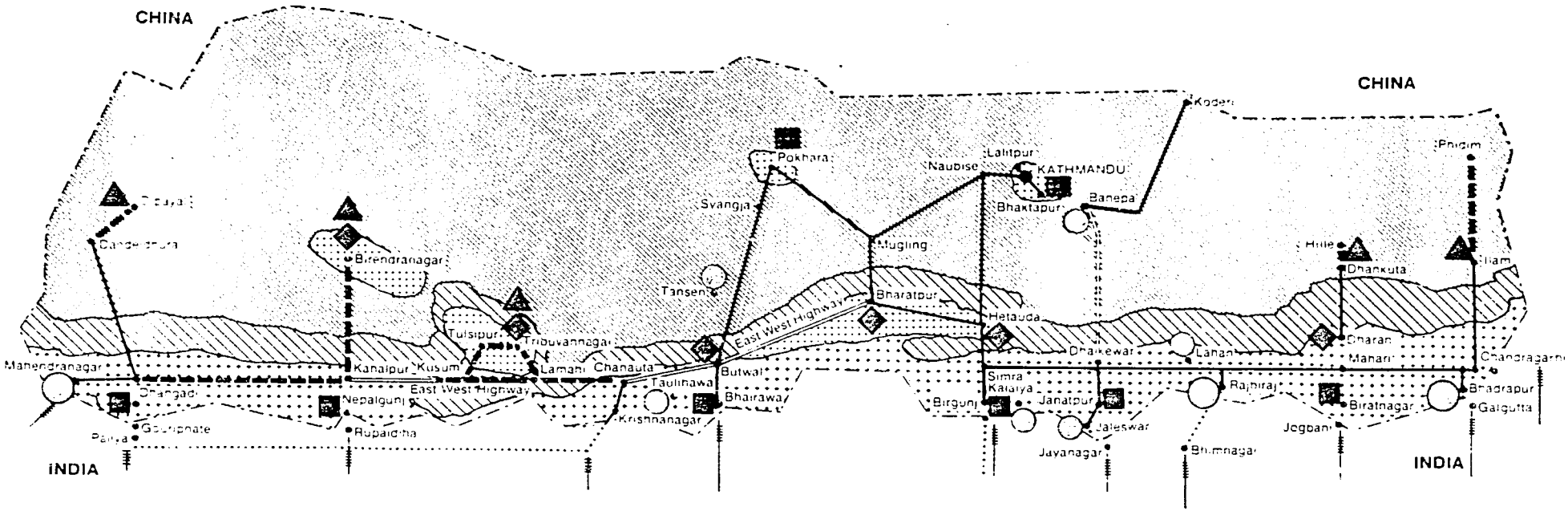
Settlement systems maintain a high degree of inertia regarding their functional characteristics and the roles of individual settlements. By the year 2000, no radical changes in the structure can probably be envisaged. The principal tools that Government has at its disposal to bring about desirable changes in the settlement system include investment in industry, administration, social services (particularly major health and education facilities such as hospitals and campuses), and inter-urban infrastructure such as bulk water, transport, and power.

In addition, the Government can use a variety of techniques and incentives to influence locational choices for investment by the private sector. However, the private sector's investment choices will be governed by economic considerations. Private sector investment can generally be stimulated in places where economic growth potential exists through provision of adequate services. But, if there is no economic justification for private investment, incentives and provision of services will be of no avail. Thus, the HMG will have a greater chance of success by facilitating private investment through the provision of services in places where the private sector has already demonstrated interest.

A functional definition of settlement roles within the settlement system will help clarify investment priorities for urban and regional programs.

Nepalese planners have indicated a need for role definition along the lines of growth poles, growth centers, growth points, market centers, and service centers. The UDA team feels it is premature for it to attempt a definition along these lines. Furthermore, on the basis of a single short-term visit to Nepal, and secondary source research, there is too much room for error. Nevertheless, on the basis of a review of the current settlement system, the national spatial strategy, analyses of Nepalese planners, and the results of PADCO's urban investment model, a schematic functional structure of the settlement system was developed as shown in Figure II.7. The principal elements of this structure include:

- Treatment of Kathmandu and Pokhara as special regional centers within the Hill area (though Kathmandu has an obvious national role).
- Treatment of the Principal Terai settlements as the urban economic motors of the settlement system.
- Treatment of Foothill and Inner Terai settlements as "transition areas" between the Hill and Terai economies and population.
- Treatment of tertiary Hill settlements such as Dhankuta, Ilam, and Dipayal as regional public administration/service centers with some trading and marketing functions. These are not viewed as major growth points.
- Treatment of secondary Terai settlements (i.e. Rajbiraj) as secondary economic centers with related service and market functions.
- Treatment of tertiary Terai towns as primarily rural service centers and market towns.



UDA SETTLEMENT SYSTEM PROPOSAL: NAGAR PANCHAYATS

TERAI

- Principal Economic Centers
- Secondary Economic Centers
- Tertiary Centers

INNER TERAI & FOOTHILLS

- "Transition" Centers
- Joint Public Service & Transition Centers

HILLS

- Special Regional Centers
- Public Service Centers
- Tertiary Centers

Legend

- East West Highway
- All Weather Road
- Fair Weather Road
- Roads in India (All Weather)
- Railway
- International Borders
- Hills & Mountains
- Foothills
- Plain
- Valleys

Thus, conceptually the principal Terai settlements would provide the economic foundation of North-South corridors; between the Hill and Terai; Foothill settlements would serve as transition areas; and Hill settlements; with the exception of Kathmandu and Pokhara, would serve primarily as administrative, service, and trading centers for the Hills. The principal Terai settlements would continue to dominate their respective regional economies in the Eastern and Western Terai.

This conceptual structure is not radically different from what exists, nor from proposals made by Nepalese planners. Furthermore, it does not imply that urban growth and employment should only be created in selected settlements.

Unlike many countries, Nepal has a unique opportunity for [illegible]alized settlement system. However, given the higher costs of job creatic [illegible]rting infrastructure in the Hills, the HMG will be more successful in fo [illegible]rban growth in the Terai and Inner Terai towns.

During this study, the UDA team concentrated on Nagar Panchayats, and was thus unable (due to time constraints) to gain an appreciation for the functional relationships of village and towns. This issue merits further consideration.

The following provides more specifics regarding the proposed functional roles of settlement types:

Kathmandu Metropolitan Area
The Kathmandu Metropolitan Area will continue to serve as the penultimate center of Government and related functions and as a specialized service center. Its primacy and role as an industrial center is expected to decline but certain types of light industry to serve its important urban market is appropriate. Much greater attention needs to be given to the Kathmandu Metropolitan Area as a functional unit unto itself and its regional (rather than national role). Key areas of concern are preservation of the Valley, historical monuments, and more compact and orderly development.

Principal Terai Settlements
The principal Terai settlements of Biratnagar, Janakpur, Birganj, Bhairawa, Nepalgunj, Dhanghadi, and (Mahendra Nagar) are in varying degree economic centers that have demonstrated growth potential. These settlements have (or will have) locational advantages with respect to:

- Transport linkages with India, Hill areas on a North-South axis, each other on an East-West axis, and their own agricultural hinterlands.
- Access to power (though Biratnagar and Nepalgunj will not be served by the national grid until 1988, and Mahendra Nagar and Dhangadi until a later date).
- Access to skilled and unskilled labor force (including national, regional, and international sources).

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In addition, they have existing internal service networks which, though inadequate, are being upgraded (i.e. water supply networks, power, telecommunications, etc.).

Every effort should be made to ensure that these centers are provided with the support (particularly planning and infrastructure) they need in order to blossom into organized urban centers.

The HMG is understandably concerned with large urban development so close to the border, but the narrowness of the Terai suggests that the "in-land" displacement of economic activities would serve no particular purpose. Rather, it is important to take advantage of the possibilities of agglomeration which these existing settlements provide.

Foothill and Inner Terai Settlements
There is some differentiation between Dharan and Butwal as Foothill settlements and the Inner Terai settlements in the Central and Mid-Western regions. In keeping with a Hill/Terai transitional role the settlements of Dharan, Hetauda, Bharatpur, Tribuvan Nagar and Birendra Nagar are good candidates for such functions as major social service centers such as regional education and health facilities. In keeping with a principal strategy recommendation, vocational training centers should be located in each of these settlements. The location of labor supply centers in Hetauda and Butwal are indicative of the need for such facilities. However, the scope and quality of training should be increased substantially. The transition centers, should also serve as the principal marketing, distribution, and service centers of their "Hill" hinterlands. Potential for this activity is already demonstrated in Dharan, Hetauda, Bharatpur, and Butwal. The transition centers generally have demonstrated important economic growth potential. Birendra Nagar and Tribuvan Nagar have indicated less growth potential and are consequently also considered as Public Service Centers.

In general, job creation and infrastructure costs are higher than in the principal Terai settlements but substantially less than in Hill settlements. Thus, there is also scope for substantial urban growth. Water supply is a constraint as ground water is not known to exist in these areas and surface water would require expensive treatment.

Tertiary Hill Settlements
Settlements such as Dhankuta, Ilam, Tansen, and Dipayal cannot realistically become economic growth centers. Furthermore, within their respective development regions, they are likely to be superseded by the "transition" centers as principal marketing and distribution points for their respective Hill regions. Dhankuta, Dipayal, and Ilam have been designated as primarily public service centers. Other tertiary settlements such as Tansen and Banepa are indicated as primarily trade and marketing towns. But Tansen does have some regional and administrative functions.

Secondary Terai Settlements
These settlements include Dhanghadi, Rajbiraj, and Bhadrapur. Each of these settlements could become important in their own right as they are situated on North-South corridors. However, they have not reached sufficient size to be considered "principal" Terai settlements and they are likely to be superseded by the larger Terai settlements in regional functions.

Tertiary Terai Settlements
These settlements include Lahan, Taulihana, Jaleswar, and Kailaiya. These settlements are expected to remain rural service and marketing centers. Lahan is somewhat of a special case because of its location on the East-West Highway.

C. SUMMARY OF URBAN STRATEGY RECOMMENDATIONS

The UDA report has dealt with a variety of national and sectoral issues that require integration into an overall strategy. The foundation for such a plan should be a well-conceived spatial strategy. In the previous section, the UDA team has elaborated a tentative scenario based upon its brief experience in Nepal. This section attempts to knit together and summarize some of the key sectoral elements into the overall plan (details may be found in respective sections). Many of the elements are applicable regardless to modified strategies as well.

1. **Population**
The National Population Commission's program for reducing population growth by expanding family planning programs and education via numerous channels is crucial. The NPC also recommends planned urbanization in select locations within Hill and Terai regions (to relieve population pressure in the Hills). The UDA strategy would focus efforts on principal and secondary economic centers as defined previously. However, all settlements will play a role.

Hill rural to Terai rural is also expected to reduce population pressure in the Hills. The ADB Agricultural sector study suggests migration on the order of 500,000 persons. However, it is unclear how much carrying capacity still remains there.

One of the recommendations of the TFM study was discouragement of growth in the Kathmandu Valley. This has been addressed in the UDA strategy and supporting urban investment model in Part Four.

Another recommendation of the TFM study is the economic integration of the Hill and Terai regions. The UDA settlement strategy supports the previous spatial strategy and North/South corridor concept. Finally the TFM study urges greater development of the Mid-Western and Far Western Terai. Growth emphasis in Dhanghadi, Mahendra Nagar, and Nepalgunj are proposed in the UDA strategy supporting this suggestion.

2. Economy and Productive Sectors

Development and urban development in general depend on improving the general state of the economy. In essence, the principal economic concern is the deterioration of per capita income and the need to overcome Nepal's poverty cycle. The recommended strategy aims at assisting in the reduction of Hill population pressure so that rural development efforts can have a greater impact. Much will depend on how successful the HMG is in creating urban jobs, however, urban incomes are substantially higher than in rural areas.

Agriculture

As Agriculture is the mainstay of the economy, much will depend on the HMG's capability to improve agricultural production. The settlement system plays an important part in the distribution of inputs and outputs as well as agro-processing. These linkages need to be more closely defined and improved. In the primary sector, it is hoped that greater production can be generated through improved agricultural inputs, the adoption of cropping system programs, better utilization of existing irrigation and infrastructure facilities, land reform, and greater price incentives. A key issue that must be addressed is the assignment of investment priority between rural areas in the Hill and Terai. On one hand, the Terai offers the best hope for increasing agricultural production. On the other, the Hills are in desperate need of more equitable assistance. A balanced program is necessary but current trends suggest that production efficiency should be aimed at in the Terai and key areas of the Hills. Boosting Terai production will also increase the agro-related industries in the economic centers of the Terai. The UDA team also emphasized a balanced urban development with growth emphasis on primary and secondary economic centers in each development region.

Industry

Industrial development, generally an urban function, is closely tied in Nepal to agricultural production. Thus, its potential will be more fully realized if agricultural production can be expanded. However, industry can also provide a vehicle for further diversification of the economy to help offset irregular agricultural performance. The HMG has taken several positive steps to attract private and foreign investment in industry. Current emphasis is on export products, though it appears that all opportunities for import-substitution have not been fully exploited. With respect to the urban spatial strategy, it is important that the HMG integrate policies regarding the location of industries where they can be most beneficial. The location of industries, in settlements designated as primary, secondary, and transition centers appear most appropriate according to UDA analysis. A principal tool, that the HMG has at its disposal, is the ISC which should focus strictly on infrastructure development in its estates. It is also preferable to turn

the ISC into a a self-financing development authority (this also implies locational emphasis in settlements that will be attractive to private investors). Cottage industries, a key recommendation of the Sixth Plan, is an urban scenario that will be appropriate in all settlements. However, items such as handicrafts are most appropriate for Hill towns.

Trade and Foreign Exchange

Export trade and tourism development are needed to remove trade imbalances and service foreign debt. It is hoped that further industrial development in principal and economic centers coupled with increased agricultural production will lead to improved exports. Infrastructure for tourism development appears adequate in areas that are currently popular. Though opportunities in "remoter areas" are apparently under-exploited, Hill settlements such as Pokhara and Dhankuta may possibly still have some scope for development, but it appears that the greatest need is for overseas promotion and marketing. This also applies to tourism related products such as handicrafts.

Resource Mobilization

Increased resource mobilization is needed to finance the HMG's future development portfolio. Pertinent proposals were discussed in Part One, and include more efficient use of existing resources, introduction of a capital gains tax, levy of an urban property tax, a rural land tax, and progressivity in indirect taxes. It is also clear that Nepal will have to continue to rely on heavy foreign assistance for some time to come. In urban areas, the development of an improved property tax system is critical to improve the resource base of Nagar Panchayats.

3. Employment

Most added rural employment is anticipated in agriculture, however, these jobs will be insufficient to satisfy the growing needs of the rural labor force.

Rural non-farm employment generation should be stressed (including cottage industry). It appears that about 75-100 thousand jobs could conceivably be created per year; but at tremendous costs. According to the analysis in Part Four, the urban labor force could be increased by 1,335,000 between 1985 and the year 2000 with about 670,000 urban jobs in manufacturing, services, commerce and power. Trade-offs between non-farm rural and urban jobs, however, need to be more fully analyzed in terms of what Nepal can afford. The creation of job opportunities in urban areas is critical to the UDA strategy. Manufacturing must provide the basis for growth in related sectors. A foundation is already in place but new opportunities need to be explored. Services and commerce have already demonstrated a good deal of dynamism in these settlements and there is good reason to believe this trend will continue.

4. **Human Resource Development**
The HMG has already recognized the need for training the rural labor force for non-farm jobs but efforts are still in an embryonic stage. Of particular concern to the recommended urban strategy is the ability of rural migrants to successfully compete with immigrants for manufacturing and other urban jobs. It is critical that urban job skill training be given greater priority and expanded to be commensurate with anticipated needs. It appears that institutional modifications are required if this is to come to pass (i.e. reconstitution of a Ministry of Labor and Employment). In the urban spatial strategy, the transition centers are particularly good locations for vocational development centers.

5. **Infrastructure**
Inter-urban infrastructure systems are a key component of the national and suggested urban strategy. In the past, the settlement system has been very responsive to introduction of roads, power, and other facilities. The suggested urban spatial strategy is partly based on the existing network and planned expansions. However, the introduction of new elements such as a major cargo airport in the Terai, use of broad gauge rail to any of the Terai towns, the introduction of new North-South roads, such as that proposed between Kathmandu and Janakpur, will have a major impact on the settlement system. Wherever possible, these elements should be introduced as part of a comprehensive strategy.

The key areas that require improved inter-urban infrastructure include the Mid-Western and Far-Western Regions. Programs for roads, power, and water supply are already underway and should be kept on their respective timetables. The Eastern Development Region's principal priority is the provision of power.

The principal inter-urban infrastructure networks through the Terai, and development of North-South corridors that the HMG is currently implementing should provide the foundation for development efforts through the rest of this century. Care should be taken to exploit the potential benefits of these networks before embarking on additional major inter-urban infrastructure efforts in the Hills (i.e. the midland East-West highway, etc.). It is now critical that the HMG adopt an overall development strategy between 1985 and the year 2000 so that trade-offs in investment requirements are put into a proper perspective.

D. KATHMANDU VALLEY TOWN DEVELOPMENT COMMITTEE (KVTDC)

The most critical immediate urban problems in Nepal are centered in the Kathmandu Valley in the three cities of Kathmandu, Lalitpur, and Bhaktapur. The HMG has established the Kathmandu Valley Town Development Committee (KVTDC). Membership of the KVTDC, shown on Figure II.8, represents a body of officials

from the central government as well as the three Nagar Panchayts. The Chairman is the Minister of Works and Transport.

The KVTDC has very wide powers for conducting urban planning and regional planning in the Valley. A special unit of the Department of Housing, Building and Physical Planning of the Ministry of Works and Transport, has been established within the KVTDC for this purpose. The KVTDC also has broad powers to regulate physical development within the Valley; however, major development works are handled through the respective national government ministries or agencies. The KVDTC's actual capital works program has always been small and, in recent years, has been declining.

The KVTDC was reviewed in 1979 by the Centre For Economic Development and Administration of Tribhuvan University. The key findings of this report coincide with the conclusions of the UDA team during its meetings with the KVTDC.

These can be summarized as:

- The Valley Development Plan is inadequate, sketchy, and without clear objectives or priorities.
- The Plan was prepared without adequate data collection and analysis.
- There is a lack of detailed zoning plans which make it difficult to enforce the regulations in specific situations. There is also a lack of clear definitions of many of the regulations.
- The KVTDC has generally followed ad hoc approaches to its development activities, and has given little consideration to operation and maintenance issues.
- The KVTDC is only one amongst many agencies working in the Valley on development activities and regulations, and there is little actual coordination in spite of the representative committee membership.
- In reality the KVTDC is totally dependent on other implementing agencies to execute any significant development projects.
- The KVTDC has no clear divisions of responsibility within its units, has generally poor coordination, and has very severe limits on professional staff capacity.

Problems with the present operation of the KVTDC are widely recognized both inside and outside of the KVTDC. As a result, a small team was established at the request of the Minister of Works and Transport to study the potential of creating a Kathmandu Valley Development Authority (KVDA) patterned after the Indian models (particularly the Delhi Development Authority). A preliminary report has been prepared and is now in circulation for comment.

The KVDA proposal would establish under the Minister of Works and Transport a much stronger body than the present KVTDC. It would have its own professional staff rather than a mainly secunded staff. The KVDA would be given almost total authority to regulate all aspects of Valley development. The KVDA would have the power to directly acquire land, and it would conduct land planning.

Most importantly, the proposed KVDA would be given broad financial powers and would be directly designated as the executing agency for all development investment now undertaken through the various budgets of the presently responsible agencies.

The KVDA proposal makes clear that the diverse responsibilities of the many agencies currently active in Valley development would cease their activities and transfer them to the KVDA.

The UDA team believes that the overall concept of a KVDA type organization offers significant promise in addressing the diverse urban, rural, and regional problems of the Kathmandu Valley. It is worthy of full review and analysis. Such a major decision will need much more complete elaboration, however, before it should becoming operational.

Among the issues that need further consideration are ways the financial responsibilities and resource mobilization requirements can be met. The target should be to ensure that the KVDA is a self-financing institution that has borrowing power (both domestic and international) and, therefore, demonstrated "credit worthiness." There must be more careful analysis of how the operations and maintenance functions would be conducted after a KVDA project is constructed, and how this function would be shared with local governments in relation to their own revenue mobilization. The professional staffing issues must be considered with the need to provide competitive salaries to ensure the caliber of staff required to execute the responsibilities of the KVDA.

FIGURE II.8

ORGANIZATION

KATHMANDU VALLEY TOWN DEVELOPMENT COMMITTEE

Chairman	-	Minister, Works & Transport Ministry
Vice-Chairman	-	Vice-Chairman, National Planning Commission
Member	-	Home Secretary
Member	-	Finance Secretary
Member	-	Works & Transport Secretary
Member	-	Water Resources Electricity Secretary
Member	-	Communication Secretary
Member	-	Forest Secretary
Member	-	Bagmati Zonal Commissioner
Member	-	Chief Engineer, Dept. of Housing
Member	-	Chief Planner
Member	-	Chairman, Kathmandu District Panchayat
Member	-	Chairman, Lalitpur District Panchayat
Member	-	Chairman, Bhaktapur District Panchayet
Member	-	Pradhan Pancha, Kathmandu Town Panchayat
Member	-	Pradhan Pancha, Lalitpur Town Panchayat
Member	-	Pradhan Pancha, Bhaktapur Town Panchayat
Member	-	Legal expert, Attorney General Office
Member-Secretary	-	Joint Zonal Commissioner, Bagmati Zonal Commissioner's Office

BAGMATI ZONAL COMMISSIONER'S OFFICE

JOINT ZONAL COMMISSIONER

Town Development Planning Implementation Committee Kathmandu

Chairman	-	Joint Zonal Commissioner
Vice-Chairman	-	C.D.O.
Member	-	Chief Planner
Member	-	Legal Officer
Member	-	Town Controller
Member	-	Town Panchayat Pradhan Pancha
Secretary	-	Section Officer

Town Development Planning Implementation Committee Bhaktapur

Chairman	-	Joint Zonal Commissioner
Vice-Chairman	-	C.D.O.
Member	-	Chief Planner
Member	-	Legal Officer
Member	-	Town Controller
Member	-	Town Panchayat Pradhan Pancha
Secretary	-	Section Officer

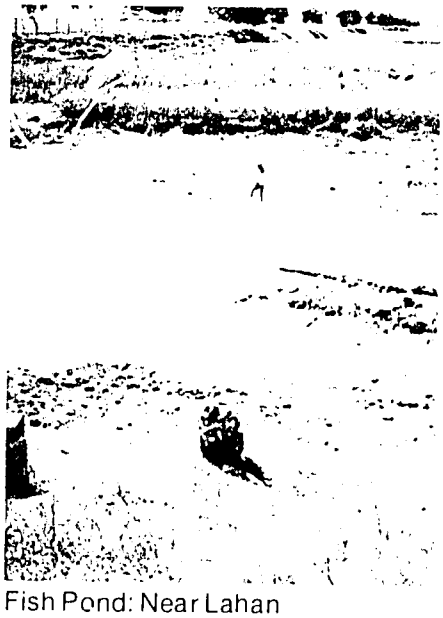
Town Development Planning Implementation Committee Lalitpur

Chairman	-	Joint Zonal Commissioner
Vice-Chairman	-	C.D.O.
Member	-	Chief Planner
Member	-	Town Controller
Member	-	Town Panchayat Pradhan Pancha
Secretary	-	Section Officer

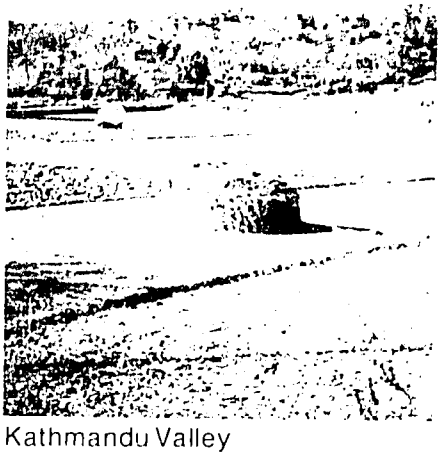
The Production Cycle

Appropriate Technology: Terai

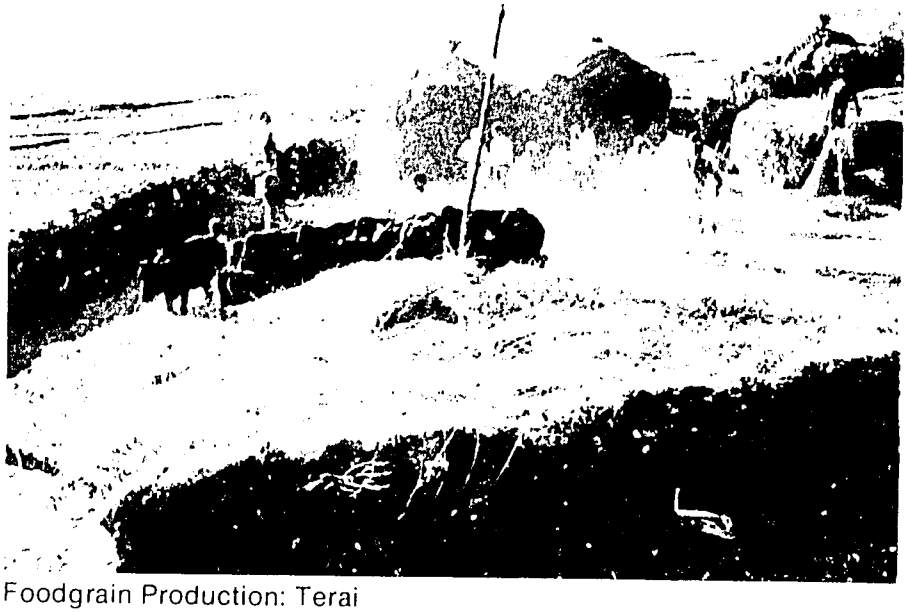
Terai Harvest



Fish Pond: Near Lahan



Kathmandu Valley



Foodgrain Production: Terai

Pokhara-Butwal Road

Bhaktapur

Kathmandu

PART THREE

SECTORAL CONSIDERATIONS

I. AGRICULTURE: IMPLICATIONS FOR URBAN DEVELOPMENT

A. INTRODUCTION

Agriculture is the mainstay of the Nepal economy. It is essential that agricultural production be increased during the coming years as part of an overall national economic development strategy. It is not the purpose of this UDA to summarize or analyze the agricultural sector and the feasibility of achieving the ambitious development targets. The UDA review of available information on agriculture and rural development has been to assess their implications for future urban development trends and opportunities.

It is interesting to note that urbanization has not been recognized as a component part of agricultural development in Nepal. Yet, there are clearly important urban/rural linkages in terms of markets, transportation of inputs and outputs, the location of agro-industrial development, and the loss of arable land to urbanization (particularly in the Kathmandu Valley). Most importantly, there has been no consideration of planned urban/rural migration as an alternative to overpopulation in rural areas.

Most observers have concluded that agriculture in Nepal is faced with very difficult development problems. The agricultural sector is very directly responsive to weather conditions and, in years of poor monsoon, yields are dramatically lower. Overall, recent performance of agriculture has been marked by growth rates below national population growth indicating declines in real incomes of farmers and equally important a deterioration in the Kingdom's food self-sufficiency. Because agricultural commodities are also central to the Kingdom's export potential and industrial development, short-falls in the agricultural sector growth have a negative impact on other sectors of the economy as well.

Terai agriculture is clearly the most promising for future rapid growth in production. The Terai benefits from its larger and more efficient land holdings, more existing and potential irrigation areas, easier access to markets both domestic and and international, and better access to essential inputs. The locational advantage of the Terai gives it a substantial comparative advantage over Hill agriculture.

Hill agriculture potential is hindered by widespread erosion, deforestation, and declining soil fertility. The physical isolation of the Hill valleys makes the extension of services difficult and expensive. Economies of scale are not possible. Transportation costs are many times higher (and not economic without large subsidies) than in the Terai, the lack of road access creates major difficulties in provision of essential inputs and the marketing of outputs, regardless of cost.

TABLE III.1

SIZE OF LANDHOLDINGS, NUMBER OF HOUSEHOLDS AND AREA COVERED IN 1961 and 1971

1961

Size of Holdings	Number of Households	Percent	Area Covered (ha)	Percent	Average Holding (ha)
0.10 ha - 0.41 ha	738,647	48.7	148,499	8.8	0.20
0.42 ha - 2.67 ha	658,945	43.4	712,542	42.3	1.08
2.68 ha - 10.00 ha	104,684	6.9	526,514	31.2	5.03
10.00 ha and above	15,726	1.0	297,870	17.7	18.94
Total	1,518,002	100.0	1,685,425	100.0	1.11

1971

Size of Holdings	Number of Households	Percent	Area Covered (ha)	Percent	Average Holding (ha)
0.10 ha - 0.41 ha	953,531	55.8	201,623	11.8	0.21
0.42 ha - 2.67 ha	644,578	37.8	755,316	44.3	1.17
2.68 ha - 10.00 ha	96,552	5.7	537,505	31.6	5.57
10.00 ha and above	12,670	0.7	208,595	12.3	16.46
Total	1,707,331	100.0	1,702,939	100.0	1.00

Source: Sample Census of Agriculture, 1961, Central Bureau of Statistics.
Sample Census of Agriculture, 1971, Central Bureau of Statistics.

As published in the Nepal Agricultural Section Strategy Study, December 1982, Appendix 4.1.

Of particular concern is the submarginal size of land holdings in Nepal, but particularly in the Hills. Table III.1 indicates the change in land holdings between 1961 and 1971. The trend has been toward the reduction in size of land holdings and this trend is believed to be continuing. In 1971, 56 percent of the land holdings were between .10 hectares and .41 hectares (with an average of .21 hectares for the group). The Asian Development Bank, concludes that such a small average land holding cannot support the household above the subsistence level even if all of the necessary agricultural inputs were available.

The ADB report concludes that 41 percent of rural households are living below the poverty line.

B. RURAL MIGRATION POTENTIAL

The ADB study concluded that migration from the Hills should be an essential part of an overall development strategy:

> "...the overall capacity of the Hills is such that further increases in population cannot be absorbed and an actual reduction in population is required in the most seriously affected areas." (pp 37)

The report suggests that 500,000 persons should migrate from the Hills to the Terai. However, the absorption capacity of the Terai in agriculture and rural areas is limited, and the report did not deal with how the migrants could find productive jobs or land.

The ADB report also indicated that there is a need to create between 150,000 and 200,000 non-farm jobs annually in rural areas to provide employment for surplus rural labor and increase incomes. The ADB report's proposals (discussed below) could generate only about 50 percent of the job requirements even with very favorable investment levels and performance.

The possibility of an urban alternative for migration and non-farm job creation was not discussed in the ADB report, but clearly should be fully considered in the preparation of a national development strategy.

C. ADB AGRICULTURAL TARGETS

The ADB report considers it feasible to obtain a four percent annual growth rate in agriculture over the period 1982-2000, but does not feel it "probable" to achieve that average during the period to 1990. (see pp.179)

The report elaborates the strategy necessary to achieve these growth rates and estimates the capital costs, production effects, and employment. The capital cost estimate is given on the basis of "low" and "high" estimates as shown in Table III.2. The differences between the low estimate and high estimate reflect different levels of population to be served and different investment levels achieved in irrigation and institutional capacity.

Substantial increases in investment are envisioned in both the high and low estimates over the revised estimates of the Sixth Plan. The Seventh Plan estimates are 25 percent higher for the low estimate and 95 percent higher for the high estimate than the revised Sixth Plan total. As the ADB report points out, these capital cost estimates do not include all of the expenditures necessary to achieve the targets.

TABLE III.2

SUMMARY OF PROJECTED DEVELOPMENT
COSTS AND PAST EXPENDITURES
(In Constant 1980 Prices)

Item	Fifth Plan Expenditure (1975-80) Actual	Development Costs ($ million) Sixth Plan (1980-85) (Estimate) Plan Target	Revised Esti-mate†	Additional Requirements up to Year 2000† 198'-1990 Low	High	1991-2000 Low	High
A. General Agriculture Livestock and Fisheries	105.0	201.2	na	192.5	217.0	360.5	518.1
B. Irrigation Development	93.6	267.8	162.0	161.0	366.0	457.0	1,194.0
C. Forestry and Resettlement							
1. Forestry		80.5	na	84	108	318	515
2. Resettlement		8.7	na	15	20	150	400
D. Land Reforms, Cooperatives and Survey	18.8	19.3	na	20 ††	30 ††	40 ††	50 ††
Total (A-D)	255.0	577.5	380.0	472.5	741	1,325.5	2,677.1

† World Bank estimate.
†† Cost estimates in Appendices 4-11 have been adjusted for price increase between 1980 and 1982 and for additional non-capital expenditures not included in the cost estimate; both items were found to be roughly equal in extent.
†††Rough estimate.

The report also recognizes that the recurrent expenditures for maintenance and agricultural inputs such as fertilizer and seeds will have to be dramatically increased. The report states, for example, that fertilizer and seed expenditures for the production of major cereals will have to be increased tenfold. However, it did not discuss the implications of the heavy subsidies accruing with present policies on the ability of the government to achieve the needed tenfold increase.

The estimated production associated with the high/low investment strategies are presented in Table III.3.

The employment effects of a high level of investment are shown in Table III.4. It can be assumed that any short-falls in achieving the high level of investment would

result in less agricultural employment and, therefore, add to the needs for non-farming jobs. The report estimates that even with full achievement of the high investment strategy, jobs will be created for only half to two-thirds of the expected increase in the rural economically active population.

D. AGRICULTURE RESOURCE MOBILIZATION

There will, of course, have to be substantially increased resource mobilization to finance the agriculture sector strategy as outlined by ADB. The report contains suggestions for how this could be achieved.

Domestic resource mobilization could be increased by Rs.1.6 billion by 1984/85, according to World Bank estimates referred to in the ADB report. This is approximately six percent of GDP. The sources for this increase would include:

- New income taxpayers
- A widened urban property tax base
- Increased indirect taxes and road user taxes
- Additional taxes in agriculture
- Elimination of fertilizer, irrigation, and public utility subsidies
- Reduction of rice subsidies

The HMG is reported to be considering these and other proposals; however, the political implications and enormous impact of such sweeping changes on farmers and other citizens would suggest that the achievement of the Rs.1.6 billion target will be difficult.

External assistance will, under any circumstances, continue to play a major role in the success of development strategy in Nepal. The high investment scenario of the ADB report would require a more than proportionate share increase in foreign assistance for agriculture during the implementation period.

The proposal calls for agriculture to be allocated 35 percent of the development expenditures (up from 30 percent proposed in the Sixth Plan). Foreign assistance, as a percentage of the agriculture development expenditure, would be increased from 53 percent in the Sixth Plan to 65 percent in the Seventh Plan and 70 percent in the decade 1991-2000. Implied in these increases is a substantial overall increase in foreign assistance to Nepal in general.

E. THE CONCLUSIONS OF THE UDA TEAM

The UDA team is not in a position to analyze the feasibility of achieving these substantial increases in domestic and external resource mobilization, nor whether or not the allocation of such a significant portion of foreign assistance to agriculture versus other productive investments is warranted.

It is clear that this fundamental split in investment resources is of the utmost importance to overall national economic development and ultimately will greatly affect

the level of investment available for industrial development, the creation of nonfarm employment in urban centers, and the essential supporting infrastructure. In preparing for the Seventh Plan, the HMG will need to have much better information available on the urban alternatives for achieving sustained economic and social development in order to make the best decision on the basic split of investment resources.

Among the strategic decisions that will have to be made are the following:

- Since the Terai offers much greater potential for rapid increases in agricultural production than the Hills, what should be the investment split between them? This is a trade-off issue between economic efficiency of investment and inter-regional social equity objectives (agricultural investments in the Terai will have a much more positive effect on the stimulation of agro-industry, exports, and markets—all of which are urban-based functions).

- It will be much more costly and less productive, in economic terms, to attempt to create nonfarm jobs at the scale required in rural areas—as opposed to urban areas—particularly given the major constraints on administrative capacity, access to credit institutions, markets, and transportation facilities. What should be the emphasis between job creation in urban centers versus nonfarm job creation in rural areas? (Obviously, if the Government's priority is urban job creation, it will have a major impact on urbanization trends in the future.)

- If it becomes public policy to encourage the migration of Hill people to the Terai and urban centers, it will have a major effect on future urban growth rates. In order to achieve the economic benefits of reduced population pressure (such as higher per capita income for the remaining Hill population) and the environmental benefits, it will be necessary to have a well-worked out concept as to how migration can be facilitated at the minimum economic and social costs to the migrants. This will have to include programs for the preparation of Hill people for migration such as by the improvement of education and health, preparation for urban living, means of facilitating their sale of land at fair prices, and the identification of the essential land development, social and economic programs required to facilitate their absorption into the urban centers of Nepal.

TABLE III.3

PROJECTED PRODUCTION OF MAIN SUBSECTOR ITEMS

Item	Units	Base Level	Projected Production in 2000 Low	High
A. Cereal Crops†	'000 mt			
1. Major cereals		2,205	3,300	4,500
B. Livestock Products	'000 mt			
1. Milk and milk products		579	1,400	1,700
2. Meat and eggs		72	170	250
C. Fish Production	mt	2,900	10,350	26,800
D. Forest Products	'000 cm			
1. Fuelwood		-	10,000 ††	16,200 ††
2. Industrial timber		255	550	700

† In edible form.
†† On sustainable basis.
Source: ADB

TABLE III.4

ESTIMATED EMPLOYMENT CREATION IN THE MAIN AGRICULTURAL ACTIVITIES

Item	Additional Employment in Year 2000 † (million mandays)
Production of Main Cereals	
Annual Requirement	60
Irrigation Development	
For New Construction and Operation and Maintenance of Existing Systems ††	40
Afforestation	
For Establishment, Maintenance and Harvesting †††	115
Livestock, Fisheries, Cash Crops and other Forestry Programs	35
Total	225

† Corresponding to high investment alternative.

†† About two-thirds in construction activities.

†††The major portion is for harvesting of fuelwood and fodder.

Source: ADB

II. INDUSTRY IN NEPAL

OVERVIEW

Industrial growth is a leading motor of urban development. At the earliest stages of economic development, agriculturally-based industries dominate the non-farm economy. Some of these industries may locate in rural areas, close to their sources of inputs. Others will locate in urban centers to take advantage of proximity to services, transportation links, or a non-farm labor force. In the early stages of national development, then, the growth of cities depends in large part on the growth of agriculture in their surrounding regions, as cities function mainly as agriculture processing centers and providers of services to rural populations. As national economic development progresses and industry becomes more diversified, agglomeration economies attract most new industrial development to urban centers. Industrial employment supports employment in a wide variety of services; because of this, industrial development is usually seen as the key to self-sustaining urban economies.

The location of industry has a profound effect on the urban settlement system as implicit and explicit industrial location policies influence urban growth patterns. In addition, public sector investment to support private industry in both industrial enterprises and in infrastructure will help determine the distribution of urban growth.

Nepal's industrial sector is only beginning to emerge. According to official statistics, manufacturing accounts for about four percent of GDP, about two-thirds of which is "modern" and one-third cottage industry. The mining, manufacturing, utilities, and construction sectors altogether comprise about 12 percent of GDP. From 1974-75 to 1980-81, real industrial GDP grew at an average annual rate of only 1.4 percent. Physical production in most industries has declined or stagnated in recent years.

Part of the reason for the stagnation of industry is the lack of agricultural growth. In keeping with Nepal's early level of development, industry is predominantly agriculture-related. The processing of agricultural commodities--mainly rice, wheat, sugar, jute, and tobacco—accounts for about 70 percent of industrial output and 50 percent of industrial value added. The 1976-77 Census of Manufacturing found that 75 percent of Nepal's formal sector industrial establishments were oil and grain mills.

Public enterprises dominate formal sector (registered) industry. These enterprises contribute over 70 percent of formal industrial value added; however their performance has been poor. Average capacity utilization was less than 70 percent in recent years (see Table III.5). Public sector industrial development has been disappointing in all national economic plans since 1951. Many planned public enterprises have failed to materialize, and existing ones have not increased output or productivity. The private part of the formal sector is made up of several thousand small firms (around 3,500 in 1978).

Table III.6 presents time series data on the structure of formal sector industry. While the share of output in food and allied industries declined slightly from 1965/66

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to 1977/78, the share of employment in this sector rose marginally. The data also suggest that the importance and labor productivity of the textile subsector are increasing. The wood, paper, and allied industry subsector is gaining importance as well.

Capital-labor ratios for industry in Nepal are low by international standards. Data from the 1976-77 Census of Manufacturing show that fixed capital per worker overall was about Rs.21,700, or around US$1,750. A 1974-75 estimate by the World Bank put the figure at about Rs.14,000 (US$1,300). On the other hand, an industrial sector plan done by the government in 1981 employs an overall ratio of Rs.101,500:1 (about US$7,800:1).[1] For large-scale industrial projects, the same study used a capital-labor ratio of Rs.215,750:1 (about US$16,600:1). Cottage industry employment projections were based on a ratio of Rs.7,600:1 (US$585:1)[2].

While formal sector industry (public and private) employs only around 50-60,000 persons (less than one percent of the labor force), informal cottage and small-scale industry is estimated to employ over one million people, mostly on a part-time basis. According to HMG agencies working in the cottage industry field, the vast bulk of these enterprises are temporary, family-run units set up during the slack agricultural season to produce goods for direct household use.

Numerous studies have analyzed the constraints that have limited Nepal's industrial development.[3] These constraints, familiar to students of Nepal's economy, are:

- Scarcity of exploitable natural resources other than agricultural land and hydropower;
- Inadequately educated/trained labor force;
- Small domestic market and low per capita incomes;

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[1]Industrial Services Centre, "Industrial Sector Plan Study 1980/81-90/91," March 1982.

[2]These include: Dr Bijaya B. Pradhan, "Industrialization in Nepal: Problems and Prospects", in Current Issues in Nepalese Development, Tribhuvan University, December 1982; (Author unknown), Preliminary Report on Non-Agriculture Private 1983; World Bank, Recent Developments and Selected Issues in Trade Promotion, October 1983; World Bank, Policies and Prospects for Accelerated Growth, 1982; and World Bank, Development Performance and Prospects, December 1979.

[3]See Footnote 2.

TABLE III.5

Capacity Utilization of Some Selected Industries
(In percentage)

	1978/79	1979/80	1980/81	1981/82
Sugar	121	63	53	94
Cigarettes	58	46	50	68
Beer	98	109	122	106
Matches	54	52	46	56
Leather Shoe	61	77	90	68
Cement	44	61	67	63
Jute Goods	78	75	82	79
Tile and Bricks*	31	83	63	52

* Public Sector only.

Source: Ministry of Finance, from Department of Industry

TABLE III.6

Structure of Industry, Sub-Sector Shares
(Formal Sector)

	1965/1966			1972/1973			1977/1978		
	Employment	Gross output	Value added	Employment	Gross output	Value added	Employment	Gross output	Value added
Food and Allied	31.6%	81.2%	62.0%	36.8%	76.7%	52.4%	35.8%	73.5%	57.4%
Alcoholic Drinks and Tobacco	4.2	3.8	4.9	14.2	4.86	5.7	14.9	5.1	5.6
Textiles and Allied	25.2	7.2	7.8	17.4	4.36	2.9	16.7	8.3	12.3
Wood, Paper, Printing and Allied	9.5	3.3	5.1	9.3	4.16	9.8	13.5	6.6	12.1
Chemicals	0.2	0.3	0	0.3	0.15	0.1	1.4	0.8	2.1
Non-metallic Mineral Products	8.1	1.5	3.4	12.8	2.63	11.1	14.3	3.6	7.0
Metals, Fabrication	2.3	1.7	NA	2.0	1.25	2.3	3.0	2.0	3.4
Jewelry, Curios	1.1	0.1	0.4	0.5	0.15	0.5	0.3	*	*
Miscellaneous	17.8	9.8	16.4	6.2	6.86	14.2	0.1	0.1	0.1

Source: Nepal Industrial Development Corporation

* Less than 0.1 percent.

- Nepal's landlocked position, which makes it difficult and costly to import raw materials and export to countries other than India;
- Difficulty of competing with Indian industry, which has developed scale economy advantages; and
- The long open border with India, which makes protection of domestic industry difficult.

Throughout the 1970s, Nepal's industrial policy was geared basically toward import-substitution through development of relatively capital-intensive public enterprises. So far, this approach has not yielded good results because of the constraints mentioned above, poor management of the public enterprises, and lack of complementary pricing policies and investments.

The Sixth Plan (1980/81-1984/85) does not represent a radical departure from past policies but does recognize the need for fresh approaches in the industrial sector. For example, the Plan takes a realistic view of the limitations to large-scale industrial development, observing that "...wisdom seems to lie in developing cottage and small-scale industries in the country for the time being." The Plan also recognizes the need to allow public enterprises to function "on the basis of commercial principles," implying openness to a series of needed policy and administrative reforms. Finally, the Plan has as a key objective improvement of the quality of the labor force through education and training.

The Plan allocates approximately Rs.1,050 million (79-80 prices) to public sector investment in medium- and large-scale industry. New public enterprises proposed under the Plan include an agricultural tool factory, an agricultural lime plant, a sugar factory at Birgunj, a cigarette factory at Janakpur, a leather and shoe factory, and several brick and tile plants. This investment represents about five percent of total Sixth Plan public investment. Cottage industry's allocation of investment under the Plan is Rs.500 million, which is intended to result in the creation of approximately 50,000 jobs.

Nepal's Industrial Services Centre recently prepared a ten-year investment plan for the industrial sector. Out of a total investment of Rs.3,057 million, 96 percent (Rs.2,931 million) would be targeted to large-scale industry, while the remainder would go for cottage industry The cottage industry investment would, however, cover 90 percent of all projects in the program (1,786 of 1,987) and generate 55 percent of all new jobs (16,539 of 30,127). The bias toward large public enterprises is evident here: only 24 of the projects are public sector, but these would require Rs.1,742 million, or 57 percent of total investment.

In terms of subsectors, non-metallic minerals account for 44 percent of overall investment, while textiles and clothing account for 47 percent of total employment generated. Finally, the ten-year plan allocates 59 percent of all industrial investment to the Central Region.[4]

As the World Bank and others have observed, Nepal's lack of opportunities for industrial development means that its economy will depend essentially on agriculture for many years to come. In the short to medium run, an overall industrial strategy for Nepal should, according to the Bank, be limited and selective and should include:

- Promotion of agro-processing industry in the Terai;
- Further development of tourism;
- Limited promotion of modern industry to build up labor skills;
- Improvements in policy needed to attract foreign and domestic private investment (e.g. simplifying the tax system, more liberal repatriation allowances, special tax incentives, simplifying government procedures for licensing and obtaining loans);
- Additional power generation capacity after 1990;
- Promotion of cottage industry for the Hill population;
- Improving the efficiency of public enterprises;
- Diversifying exports to countries other than India while pursuing joint ventures with India.

Long-run industrial growth will depend on finding labor-intensive approaches, better infrastructure, more efficient transport of imports and exports, and sustained agricultural growth to boost national incomes.

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[4]If grain mills had been included in the data, the Terai's preponderance of agro-industry would have been much less evident. The spatial distribution of grain mills is very close to that of other agro-industries (according to the three regions in Table III.9); however, they are so numerous and so dominant in the Terai that, if added to the data base, they would distort the location quotients by sharply increasing the denominator for the Terai and decreasing them for the other two regions. This would have the effect of making agro-industry appear much less concentrated in the Terai than it really is. It would also make the other industry types seem to be much more concentrated in the Kathmandu Valley and the other Hill Districts than they actually are.

The most recent HMG industrial policies (the Industrial Enterprises Act and Foreign Investment and Technology Act of 1981) open the door more widely to private enterprise than ever before in Nepal's history. The traditional reliance on public enterprise, stemming from a lack of private entrepreneurial tradition, social equity concerns, fear of foreign control over the economy, and the attraction of using public enterprise as a tool of national planning, is now giving way to a policy of promoting private investment in all industrial sectors except defense. The components of these new policies are:

- Encouragement of foreign investment;
- Liberalization of administrative regulations and procedures governing private investment;
- Clarification of tax and other incentives;
- New incentives for specific industries;
- Establishment of an export promotion zone;
- Integrated packages of assistance to cottage industry.

It remains to be seen whether these policies will be adequately implemented.

The Government of Nepal has a variety of institutions involved in the development of the industrial sector. These include:

- **Department of Cottage and Village Industries** (skills training, pilot projects, exhibitions);
- **Industrial Services Centre** (management training, feasibility studies, information dissemination, management of industrial districts, industrial policy analysis, research);
- **Department of Labour** (data collection; studies);
- **Department of Industry** (data collection, policy analysis, regulation and licensing);
- **Nepal Industrial Development Corporation** (industrial development loans, equity participation in joint ventures with private sector);
- **Nepal Bank Ltd. and Rastriya Banijya Bank** (former 51 percent government owned, latter wholly government owned—provide working capital to industries);
- **Security Marketing Centre** (marketing of industrial shares, bonds, etc.);
- **Department of Commerce** (formulation and implementation of foreign trade regulations);

- **National Trading Limited** (importation and sale of construction materials and other commodities);
- **Trade Promotion Centre** (general promotion);
- **Cottage and Small Industries Development Board** (coordination of credit, raw materials, training, technical assistance; cooperate with Department of C&VI);
- **Cottage & Handicrafts Sales Emporium** (sale of raw materials and purchase of handicrafts for sale).

Nepal has six Industrial Districts in operation, under the control of the Industrial Services Centre. The Districts, all of which are located in or near cities, provide land, infrastructure, and factory sheds at subsidized costs. The Districts also assist firms in obtaining materials for plant construction and operation. The Industrial Districts are cataloged in Table III.7.

As Table III.7 shows, the Industrial Districts have been quite successful in attracting establishments. The principal problem with the program is that the Districts are not self-financing. Charges levied on enterprises for land, services, and building rent are well below the levels required to cover costs and provide a surplus to the ISC for further development. One may also raise the question of whether it is necessary for the District to provide the building shell. It may be more efficient for industries to provide their own structures, from the point of view of both the ISC, which would have lower development costs, and the industry, that would be able to build a building to its own specifications.

TABLE III.7

INDUSTRIAL DISTRICTS IN NEPAL
(1983)

	Number of Industries	Size (ha)
Balaju (Kathmandu)	47	35.4
Hetauda	26	132.0
Patan (Lalitpur)	53	13.7
Dharan	9	10.2
Pokhara	13	25.2
Nepalgunj	16	9.1
Butwal	(under construction)	15.2
TOTAL	164	240.8

Source: Industrial Services Centre

A major effort to promote the development of Cottage Industries has been launched through a World Bank loan. Initiated in 1982, this project involves a US$13 million loan and a US$2 million UNDP grant. The project focuses on products with strong market prospects: carpets, woolen and cotton handloomed garments, metal crafts, forest products, and selected agro-industries. The key components are: loans to cottage and small industries, related market agents, and input suppliers and training and technical assistance to credit institutions, export promotion agencies, the CI Board, and the Emporium. The project covers the Kathmandu Valley and the Gandaki Zone (Pokhara). It expects to reach about 2,400 cottage industries, plus 100 organized small industries and 50 contractors, agents, and suppliers.

Regional and Urban Industrial Structure

Before reviewing the regional and urban distribution of industry, it is worth noting that in Nepal most industrial activity is located outside of what are officially designated as urban areas. Urban settlements are defined as those having over 10,000 population. Under this definition, urban employment in manufacturing totalled approximately 13,300 in 1981 (according to Census figures on the economically active population). We also know, however, that total industrial employment nationally (in the formal sector) was around 50,000 as far back as 1976-77, according to that year's Census of Manufacturing Establishments. Assuming no significant growth since 76-77 in manufacturing employment (a not unreasonable assumption given the stagnation of output in the sector), this means that almost three-quarters of formal sector manufacturing employment is located in settlements of under 10,000 and in rural areas. This is not particularly surprising, considering the overwhelmingly agricultural orientation of Nepalese industry.

The data on industry by development region show that industry is concentrated in the Central Region (Table III.8).

TABLE III.8

DISTRIBUTION OF INDUSTRY BY DEVELOPMENT REGION

	East	Central	West	Far West
Establishments (%)	21	51	19	9
Employment (%)	31	44	16	9

Source: Census of Manufacturing 1976-77.

This distribution does not tell us very much that is relevant to national urban strategy. A more useful spatial breakdown for the purposes of this study is a three-region division consisting of 1) the Kathmandu Valley, 2) the Other Hill districts, and 3) the Terai. Each one of these areas has characteristic physical features, resources, infrastructure levels, and settlement patterns (see other sections of this report). To learn about the distribution of various industry types, we have divided enterprises into five groups:

1. Agro-processing (including food, cigarette, footwear, and jute, but excluding grain mills, which constitute 75 percent of all industrial establishments and are concentrated in the Terai);

2. Wood and wood processing (including paper and matches);

3. Textile and clothing;

4. Brick and tile; and

5. Other manufacturing (printing, drugs, soaps, metal fabrication, repair shops, jewelry, etc.).

Table III.9 presents the spatial distribution of manufacturing establishments in Nepal according to the above categories, based on data from the 1976-77 Census of Manufacturing. The data are presented as location quotients, which show how a region's share of a particular type of industry compares with its share of all industries.

Table III.9 shows that the Terai has a very strong concentration of agro-industry (leaving aside grain milling).[5]

TABLE III.9

REGIONAL DISTRIBUTION OF INDUSTRIAL ESTABLISHMENTS
(Location Quotients*)

	INDUSTRY TYPE				
	Agro**	Wood	Textile/ Clothing	Brick/ Tile	Other
Kathmandu Valley	0.27	1.34	0.81	0.85	1.41
Other Hill Districts	0.66	0.84	2.55	0.97	0.62
Terai	1.75	0.61	0.28	1.14	0.88
No. of Establishments	180	210	111	65	199

*Location quotient = $\frac{\text{Percentage of industry "x" in region}}{\text{Percentage of all industry in region}}$

**Does not include grain mills, which constitute 75 percent of all establishments; almost three-quarters of the mills are in the Terai. See footnote 3.

Source: Calculated from data in Census of Manufacturing 1976-77.

[5]Our principal source was a series of urban household budget surveys conducted in 1973-75 by the Nepal Rastra Bank. These surveys covered 16 of the "town panchayats" in our analysis. For the other 13 cities, we estimated industrial employment from 1981 census "urban" figures.

The Terai's industrial base also includes a slightly higher than average share of brick and tile factories. Industry in the Kathmandu Valley is characterized by strength in "modern" industry, a reflection of its political/administrative status and its relatively high levels of infrastructure. The Kathmandu Valley also serves as a center for the wood and wood products industry of the entire Hill area of the country.

For an appreciation of the spatial distribution of industry among urban areas one must rely on employment data.[6] We estimate that for the 29 town panchayats, approximately nine percent of employment is in mining, manufacturing, and construction. Manufacturing alone is around two-thirds, or about six percent of all urban employment. According to this, about 31,700 people were working in manufacturing in urban areas in 1981. It is difficult to determine how much of this employment is cottage or informal industry. The 1981 Census for urban areas shows a total of 13,334 persons engaged in manufacturing. Assuming all of this is formal sector manufacturing employment,[7] one may conservatively peg informal industry at about 60 percent of total urban manufacturing employment. Informal industrial employment in urban areas generally consists of small-scale mechanical and repair work, clothing production, artisan work, food production, and the like.

The largest cities in Nepal have the highest proportions of industrial employment. Kathmandu, Lalitpur, and Bhadrapur, the principal cities of the Kathmandu Valley, account for 29 percent of national urban employment but 37 percent of industrial urban employment. Biratnagar, Janakpur, Nepalganj, Birganj, and Bhairawa, five of the seven principal Terai cities, have 22 percent of national urban employment but 36 percent of industrial urban employment. The cities with the highest proportions of industrial employment are: Biratnagar (17.9%), Lalitpur (14.9%), Janakpur (14.6%), Birganj (12.9%), Bhadrapur (12.5%), Nepalganj (12.1%), Bhaktapur (11.8%), Bhairawa (10.8%), Rajbiraj (10.7%), Kathmandu (10.0%), Hetauda (10.0%), and Pokhara (9.1%).

Small-scale and cottage industry is spread widely among urban and rural areas in Nepal. There is relatively little regional variation in the nature of this type of industry, except that textile production is probably more concentrated in the Hills.

Because industrial employment in Nepal accounts for such a small part of urban employment by international standards, and because a majority of this employment is

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[6]This appears to be a reasonable assumption because the household budget surveys upon which most of our city employment figures are based pick up quite a lot more industrial employment than the census. Census employment figures have a large percentage of "unspecified" employment.

[7]Development of Labour Market Information, Supervisory Skills and Managerial Skills in Nepal, ILO, 1981; Labour Market Reports: Kathmandu, Butwal, Hetauda; ILO/Ministry of Industry and Commerce; Department of Labour, Employment Research and Development Centre, February 1981.

in small-scale and cottage industries whose composition does not vary too much spatially, Nepal's urban industrial structure is difficult to characterize spatially. The settlement system is essentially still agrarian-based, and there is relatively little diversity in the economic bases of cities. Nevertheless, some degree of industrial specialization is beginning to emerge among the largest cities in Nepal.

The most diversified and modern industrial bases belong to Kathmandu and Hetauda. Kathmandu has the greatest number and variety of industries, with an emphasis on consumer goods such as textiles, clothing, food, and beverages. Hetauda is developing as a major industrial center, in part because of its central location and accessibility. Hetauda's industrial base covers a wide range of agricultural and non-agricultural enterprises. Pokhara is the only other Hill city with a significant amount of larger-scale industry. Its principal base is in textile and clothing production.

The other cities with identifiable industrial bases are principal centers in the Terai. Biratnagar is the site of an agro-industrial complex which includes rice mills, jute factories, match factories, solvent plants, and textile and clothing operations. Janakpur has an important cigarette factory and a paper plant. Birganj and Bhairawa each have a sugar refinery and a number of non-agricultural industries. Nepalganj is a major center for milling of rice and other grains.

Strategy for Urban Industrial Development

With the adoption of new industrial policies favoring domestic and foreign private investment, Nepal may be poised for renewed growth in the industrial sector. One positive sign is that industrial production appears to have increased in 1982-83 after declining the previous year. If industry is entering a period of real growth, now is the time to begin preparing a strategy to coordinate industrial and urban development.

What is needed is a location-specific industrial investment strategy. This would have the following elements:

- Identification of those cities and subregions which have the greatest industrial development potential;
- Identification of the principal impediments, in terms of infrastructure, human resources, and services, to industrial development in each city or region;
- Preparation of location-specific public investment programs in both productive enterprises and supportive infrastructure/services.

By itself, the above process is nothing new. In order to make it part of an overall urban development strategy, the industrial development endeavor must:

- Be coordinated with other national urban development priorities. For example, certain cities or regions may be singled out for urban investment for reasons other than industrial potential. Cities which are the most efficient locations for industry may not necessarily have the highest investment priority if other objectives, such as regional equity, have more importance.

- Be based on a philosophy of concentrating investments in certain places in order to exert truly significant developmental stimuli. This requires comprehensive regional and urban planning that goes beyond the traditional land use orientation. The planning needed here involves cooordination of all major sectors and the introduction of coordinated programming and budgeting.

- Be carried out as part of a participatory process, in which local officials and private sector leaders take major responsibility for analyzing their urban and regional development problems and proposing solutions.

What guidelines may be offered for starting an industrial planning process for urban areas? The point of departure is the reality that, for the medium term, only a modest and selective investment program for industry will be possible. The promotion of cottage and small-scale industry offers the best potential for absorbing large numbers of low-skill workers. Beyond this, investments, incentives, and promotional efforts should be directed toward development of industry meeting the following criteria: labor intensity, low import content, high potential for employment growth, and strong linkages to other productive and support sectors. Table III.10 shows industry types meeting these requirements.

Nepal is already developing its industrial base in these industries. This orientation should continue for at least the next one or two decades. In the longer run, Nepal may be able to develop light engineering industries producing high-value/low weight goods such as electronic components, jewelry, and toiletries.

From the standpoint of national development, the optimal locations for industry are those regions and cities which have the strongest economic potential. This potential may lie in agricultural growth, availability of raw materials such as timber or minerals, or tourism. Localities may also have economic development potential because of the functions they perform (e.g. ports, entrepots, or government centers). From the standpoint of economic and financial efficiency, the optimal locations for industry are those which offer proximity to suppliers, markets, labor, and necessary services. When these elements are grouped in cities, they are known as agglomeration economies.

We have made a start at identifying the cities in Nepal which offer the best opportunities for industrial development. Table III.11 presents a matrix relating cities with attributes appropriate for industrial growth.

The Kathmandu Valley cities have skilled labor forces, good transport linkages, and probably the highest urban infrastructre levels in the nation. These cities have not been nearly as dynamic, however, as the Other Hill and Terai settlements. The cities in the Other Hill regions are generally fast-growing, but many lack skilled labor forces, transport links, and adequate urban infrastructure. Among them, Pokhara and Hetauda are the strongest industrial locations. The Terai cities are promising, generally. Most of them have skilled labor and good transportation access. Industrial development potential appears to be strongest in Biratnagar, Rajbiraj, Janakpur, and Birganj.

TABLE III.10

APPROPRIATE INDUSTRIES FOR MEDIUM TERM DEVELOPMENT

	Labor-intensive	Low-import content	High employment growth	Strong linkages
Textiles	X	X	X	X
Clothing	X	X	X	X
Wood	X	X	X	
Metal fabrication			X	X
Food		X	X	X
Building materials	X	X		
Paper & products		X		X
Chemicals				X

TABLE III.11

CITIES BY INDUSTRIAL LOCATION CRITERIA

	Highest % of Industrial Employment (1)	Fastest Growing (2)	Best Links to Trans-Port Network (3)	Adequate & Reliable Power by 1990 (4)
Kathmandu Valley				
Kathmandu	X		X	X
Lalitpur	X		X	X
Bhaktapur	X		X	X
Other Hill				
Dhankuta	X	X		X
Pokhara	X	X	X	X
Tansen		X	X	
Hetauda	X	X	X	X
Bharatpur		X		X
Ghorahi		X		X
Birendranagar		X		X
Dharan		X	X	X
Butwal			X	X
Terai				
Bhadrapur	X		X	X
Biratnagar	X	X	X	X
Rajbiraj	X	X	X	X
Lahan		X		X
Janakpur	X	X	X	X
Birganj	X	X	X	X
Bhairawa	X		X	X
Nepalganj	X		X	X
Dhangadi		X	X	
Mahendra Nagar		X	X	

Notes: (1) Cities with over 8% employment in mining, manufacturing, and construction. This is an indicator of the availability of a relatively skilled labor force.

(2) Cities with 1971-81 growth rates of over 7% per year. This is an indicator of overall economic dynamism and strong economic base.

(3) Cities located on the major highway network or near border rail heads.

(4) According to World Bank report, Water Supply and Sewerage Studies (Interim Report), 1983. These cities are scheduled to be connected to the national power grid by 1990.

It should be noted that there are other criteria that may be applied to this type of evaluation, depending on the industry in question and the availability of data. Examples include the availability of telecommunications, the local availability of water, and access to local offices of key governmental agencies.

III. TOURISM

Nepal's magnificent landscape and rich cultural heritage attracts thousands of tourists annually. Growth in the sector has diminished somewhat due to the world-wide recession but it is still Nepal's most important source of foreign exchange.

According to the Sixth Plan, "special emphasis will be laid on the promotion of the tourism industry as it adds to the foreign exchange earnings, and creates employment opportunities in tourism-related industries and helps develop the remote areas." Nepal has been quite successful in expanding its tourism industry. Tourist arrivals increased at an annual rate of 16 percent between 1970 and 1979 (from 46,000 to 160,000 arrivals). By 1982, the number of tourist arrivals was on the order of 175,448, an increase of 8.5 percent over the previous year.

The average stay of tourists also increased from 12 to 13.3 days during this period (an increase of 10.8 percent).

Unfortunately, despite an increase in the number of arrivals in 1982, foreign exchange earnings fell off by 19.1 from those in 1981 (Rs.493.8 million vs. 616.8 million respectively).

Net foreign exchange earnings from tourism are about two-thirds of gross earnings. According to the IBRD, this proportion could be increased if closer relationships were established between local industries and the hotel industry. Links already exist with local food processing establishments but could be expanded to include building materials, furniture, and textile industries. It is not anticipated that tourism will have a major impact on job creation if these linkages are not exploited—tourism in Nepal is nearly three times as capital-intensive as manufacturing.

The concentration of tourist arrivals during the winter months (best mountain viewing) results in inefficient operation and under-utilization of tourist facilities. In 1978, the ratio between the highest month and the average was 6:1. There is also a problem with the concentration of tourist facilities in Kathmandu during the high season. Promotion of Nepal's cultural heritage, as well, and integration of tourism in other parts of the country is needed to increase tourist arrivals in the off-peak season. This is expected to foster more efficient use of existing facilities.

The total number of hotel beds available in 1982 was 6,782. It is felt that the number of rooms plus planned facilities will be adequate, for now, to accommodate potential growth in the tourist trade.

Tourism has been an attractive area for private investment (most NIDC loans have been made for tourism development). It has also fostered needed job creation in the Hill and Mountain areas. In settlement terms, the major beneficiary has been Kathmandu, though Pokhara also benefitted. In addition to hotel and guest house facilities, employment has been created in cottage industry/handicrafts. Given the nature of investment costs in the Hills and Mountains for manufacturing, tourism is a

major sector to be exploited in the Hills. Places like Dhankuta/Hille now have sufficient access to be promoted as resort areas. Fundamental to improving tourism development outside of Kathmandu is the provision of better and more reliable air service. As things presently stand, it is easy to get bumped, and impossible to make roundtrip reservations out of Kathmandu. Most tourists traveling to areas outside of Kathmandu are low-budget trekkers. The private sector has responded to this market with a good deal of small enterprises. However, if cottage industries/handicrafts are to cater to these groups, post offices or hotels must be able to arrange reliable air shipment of goods out of the country.

IV. ENERGY

A. GENERAL

Energy has been and will remain a key sector in Nepal. In the past, Nepal's vast forests met domestic requirements and provided a principal source of foreign exchange. Now that the forests are getting depleted, Nepal is looking to tap its vast hydro-electric power potential estimated at 20,000MW. However, at the present time it does not have sufficient energy resources to meet its needs; it is suffering from the consequences of deforestation; and it lacks the resources and export agreements to fully exploit its hydroelectric potential.

Most energy in Nepal is used for household cooking and heating. In 1981, about 94 percent of overall energy was derived from fuelwood and other traditional sources while only 6 percent came from modern commercial fuels including coal, oil, and electricity.

Most of the fuelwood requirements are met by Nepal's remaining 4.3 million hectares of country. However at the present rate of use, the equivalent of 100,000 hectares of land are being cleared each year. Moreover, if current trends continue, all forests will be depleted by the year 2000.

The depletion of forests has already led to serious environmental degradation and loss of agricultural productivity. As a consequence, the HMG is carrying out several afforestation schemes. A UNDP/IBRD study in 1983 indicated that the demand for fuelwood requires a planting rate of 50,000 hectares per year by 1990 after which 100,000 hectares per year would be required. Other recommendations to conserve fuelwood include the use of more efficient stoves, and substitution of other forms of energy such as biogas. The study notes that if 10 percent of national users adopted an improved cooking stove, the savings in energy would be equivalent to 100,000 hectares of forest. Biogas is recommended as a good energy alternative in the Terai. Nepal already has about 1,000 small plants, but the study recommends the creation of plants on a community scale.

The growth of urban areas has helped reduce fuelwood demand requirements through greater reliance on kerosene and electricity but fuelwood still meets about 83 percent of urban energy requirements.

The UNDP/IBRD energy sector study also notes that shortages of energy have contributed to its economic stagnation. In rural areas, the lack of energy has slowed the development of non-farm activities while in urban areas insufficient and unreliable supply of electricity has constrained the development of industry and commerce. The high distribution costs of imported energy has been a major factor contributing to this situation.

The principal consumers of various types of energy include transport (60 percent of petroleum products); industry/commerce (93 percent of coal; 48 percent of electricity); households (98 percent of fuelwood; 49 percent of electricity).

Coal is primarily used by industries in the production of cement and bricks. Coal is also viewed as a potential energy alternative to oil consumption and the UNDP/IBRD study recommends that import opportunities be researched fully. At the present time, most imports are provided by India.

B. ELECTRICITY

1. Potential

Nepal's long-term energy strategy is to develop its hydro-electric power for domestic and export purposes. So far, only small- and medium-sized high/cost projects have been developed. Projects greater than 500MW are economically unfeasible unless export agreements with India are reached (India's annual growth requirements are on the order of 2,000 MW). Though export discussions are underway, including possible Indian financing, no agreement has yet been reached. Thus, major projects at Chisapani (3,500 MW) and Pancheswar (2,000 MW) have have not yet been undertaken. Furthermore, even if agreements are reached it would be about 30 years before Nepal received any benefits. In the interim, medium-sized projects are being planned for implementation.

2. Current generating capacity

Nepal's installed electricity generating capacity was only 138 MW in 1982. Urban areas are the primary beneficiaries that include 4.7 percent of the national population. Domestic supplies are supplemented with imports from India which account for 20 percent of total consumption. Ninety-percent of this, however, is consumed in the eastern and western regions where the national grid is not in place.

3. Domestic electric power

Domestic power is generated primarily by the Kulekhani I power plant near Hetauda, small local thermal (diesel) and mini-hydro plants.

With respect to the installed generating capacity, it is noteworthy that 86.2 percent of power is distributed in the Central (71.6) and Western (14.6) development regions. Provision is particularly poor in the Mid-Western and Far Western regions. In Table III.12, the existing and planned power generation in Nepal's national grid is presented. It notes existing and proposed plants as well as those under construction. According to the plan, a power deficit is anticipated between 1985 and 1990. To cope with demand, the Sixth and Seventh Plans expect to provide US$337.5 and US$555.6 million respectively for the development of domestic power generation and transmission between 1981 and 1990.

TABLE III.12

EXISTING AND PLANNED GENERATION - NEPAL INTEGRATED POWER SYSTEM

(not including non-integrated regions, non-dependable capacity or privately owned plants)

Name	Capacity(MW)	Region	River	River Basin	Project Status (planned completion)
Existing					
Trisuli	21.0	Central	Trisuli	Gandak	In operation
Sunkosi	10.0	Central	Sunkosi	Sapta Kosi	"
Gandak	5.0	West	Narayani	Gandak	"
Kulekhani I	60.0	Central	Kulekhani	Gabmati	"
Small Hydro	3.5	-	Various	Various	
Subtotal Hydro	99.5				
Diesel(1)	18.0	Central	N/A	N/A	"
A. Total Existing	117.5				
Under Construction (or planned)					
Devighat	14.1	Central	Trisuli	Gandak	Const'n (Early '84)
Kulekhani II	32.0	Central	Kulekhani	Bagmati	Const'n (Sept. '86)
(Marsyangdi)	66.0	Western	Marsyangedi	Gandak	Planned (July '88)
B. Subtotal U. Const.	112.1				
A + B	229.6				
Prospective by late '80s early '90s					
Kankai Multi-Purpose	38.0	East	Kankai	Kankai	Feas '79 (89-90?)
Mulghat	68.4	East	Tamur	Sapta Kosi	Feas '82 (88?)
Sapta Gandaki 3 @ 75	225.0	Central	Narayani	Gandak	Feas '83 (91?+)
C. Subtotal	331.4				
A + B + C	561.0				
Other Future					
Kali Gandaki	60-90	West	Kali Gandaki	Gandak	Feasibility
Mugling	90	Central	Trisuli	Gandak	Unknown
Jhimruk	10-15	Mid West	Jhimruk	W Rapti	Reconnaissance
Seti	50-100	Far West	Seti	Karnali	Pre Feas: French Feas Proposed
Bagmati MPurp	140-210	Central	Gabmati	Gabmati	PhI Feas Comp'd (FRG)
W Rapti MPurp	200-300	Mid West	W Rapti	Rapti	Reconnaissance
Burbi Gandaki	300-500	West	Gandaki	Gandaki	Reconnaissance
Other Future With Export Orientation					
Chisapani	3600	F.M. West	Karnali	Karnali	Unknown
- Karnali Bend	250-300	F.M. West	"	"	Unknown
- Bheri Storage	200-300	Mid West	"	"	
Pancheswar	1000	Far West	Mahakali	Mahakali	Joint project in India?

(1) 15.0 MW in Hetauda

Source: IBRD/WSSB Fourth Water Supply Project, Proctor and Redfern.

4. **Demand and Consumption**
In Table III.13, national energy supply and growth (to 1979) is presented. The table also indicates energy amounts consumed by industry and commerce according to development region. General analysis suggests:

- The bulk of energy is consumed in the Central and Eastern Regions (73 and 16 percent respectively).
- The highest proportion of industrial and commercial consumption is in the Eastern Region (65 percent).
- And energy growth for industrial and commercial purposes, is higher than total energy growth—particularly in the West and Central Regions. This indicates a spurt of economic growth that is directly related to introduction of the national grid in these areas.

5. **Future power demand**
Forecasts for future power demand are presented in table III.14. These forecasts are assumed to be indicative of future urban and industrial requirements. As the Central region currently has the best overall system, higher rates of growth are anticipated in the other regions. However, after the grid is in place, growth rates are expected to be similar.

6. **Urban Power**
Power is one of the key sectors influencing the growth of urban settlements. Lack of dependable power in Nepal, has been a major constraint for many industries. Presently, supply of electricity is adequate only for the CDR. As a consequence, settlements such as Biratnagar, Janakpur, Nepalgunj, Dhangnadi, and Mahendra Nagar have to depend on their own (inadequate) systems or import Indian power. While in Janakpur and Biratnagar, for example, the UDA team witnessed several complete black-outs. In addition although Kathmandu has probably the best system, black-outs and brown-outs are also common.

Table III.15 shows the current power supply for most urban settlements, the amount imported from India, and requests for additional power. It also indicates when the settlement will be connected to the national grid. The settlements with the largest power supplies include: Hetauda, and Biratnagar (though Biratnagar's is highly irregular).

The lowest levels of power supply are Mahendra Nagar, Dhanghadi, Birendra Nagar, Dhankuta and Ilam.

By 1985, it is anticipated that Butwal and Bhairawa will be connected to the grid, followed by Janakpur, Lahan, Rajbiraj, Dharan and Biratnagar in 1986. Central power should be distributed to Nepalgunj, Birendra Nagar, and Tribuvan, and Bhadrapur by 1987. Only Mahendra Nagar, Dhanghadi, and possibly Ilam will be served after 1990. (Table III.15)

TABLE III.13

HISTORIC GROWTH:
TOTAL ENERGY AND INDUSTRIAL/COMMERCIAL ENERGY UTILIZED

	National (100%)	Mid W Far W	% Tot	West	% Tot	Centr	% Tot	East	% Tot
Total Energy '79 (MWh '000)	152.0	5.7	4%	10.1	7%	110.9	73%	24.5	16%
dnd/Comm* '79 (MWh '000)	65.9	1.9		3.7		44.4		15.9	
Ind/Comm* - % Total Energy	43%	33%		34%		40%		65%	
% Growth/Yr - Total Energy (70/71 - 78/79)	18%	35%**		42%		15%		23%	
% Growth/Yr - Ind/Comnd (70/71 - 78/79)	22%	35%**		45%		20%		24%	

* Ind/Comm - Industrial/Commercial
** 74/75 - 78/79 for the Mid West/Far East Regions

TABLE III.14

ELECTRICITY DEMAND FORECASTS

Power Requirements:	National (100%)	Mid West Far West	% Tot	West	% Tot	Central	% Tot	East	% Tot
79/80 (GWh)	257.8	10.8	4%	17.5	7%	190.7	74%	38.8	15%
89/90 (GWh)	1077.5	76.8	7%	103.7	10%	667.3	62%	229.7	21%
99/00 (GWh)	2942.2	210.2	7%	294.2	10%	1786.2	61%	651.6	22%
% Grcwth/Ann :									
79/80 - 89/90						13%			
89/90 - 99/00	11%	11%		11%		10%		11%	

Source: IBRD/WSSB Fourth Water Supply Project

TABLE III.15

PROJECT TOWNS - EXISTING AND PROSPECTIVE POWER SUPPLY
POWER IN MEGAWATTS (MW)

	Town Panchayats	(1) Existing Power Supply	(2) Avail From India	(3) Subtotal (1)and(2)	(4) Additional Requested from India	(5) Total if(4) Met	(6) Prospective Date of Connection to Nepal Grid
1	Mahendra N	0.025(D)	0.500	0.525	1.000	1.525	1989/90 (or later)
2	Dhangadi	0.025(D)	0.300	0.325	1.500	1.825	1989/90 (or later)
3	Birendra N	0.365(D*)	-	0.365	-	0.365	132 kV Nepalganj 1986-87
4	Nepalganj	0.528(D)	1.000	1.528	3.000	4.528	" "
5	Tribhuvan N	0.050(D)	-	0.050	-	0.050	" "
6	Bhairawa	0.500(D)	0.500	1.000	3.000	1.000	132 kV to Butwal 1985: Ex 33 kV tran's Butwal/Bhairawa.
7	Butwal	1.505(D**)	-	1.505	-	1.505	Ex 33 kV=transmission to Butwal. See above 1985.
8	Pokhara	2.068(D***)	-	2.068	-	----------	132 kV to Pokhara from Bharatpur 1983.
9	Bharatpur	0.600(D)	-	0.600	-	----------	Connected 132 kV.
10	Birganj		-			----------	Connected by 66 kV to Bharatpur.
11	Hetauda	14.470(D)	-	14.470	-	----------	Connected 132 kV.
12	KTM Valley	3.218(D)	-	3.218	-	----------	Connected 66kV to 3 HE Gen Plants.
13	Janakpur	0.032(D)	1.000	1.032	2.000	3.032	132 kV Connection planned 1986.
14	Rajbiraj	?	-			ex 33 kV to Biratnagar	132 kV Connection planned 1986.
15	Dhankuta	0.240(H)	-	0.240	-	0.240	Connection via ex 33 kV in 1986.
16	Dharan	?	-	?	-	ex 33 kV to Biratnagar	Connection via ex 33 kV in 1986.
17	Biratnagar	6.913(D)	-	6.913	-	ex 33 kV to Dharan/ Dhankuta	Connection via ex 33 kV in 1986.
18	Ilam	0.200(D)	-	0.200	?	?	?
19	Bhadrapur	0.346(D)	1.000	1.346	3.000	A.346	Connection by 132 kV planned 1987/88.

(D) Diesel (H) Hydro
D* Hydro 0.345 Diesel 0.020 Total 0.365
D** Hydro 1.280 Diesel 0.225 Total 1.505
D*** Hydro 1.000 Diesel 1.068 Total

Source: IBRD/WSSB Water Supply Study
Proctor and Redfern

Implementation of this network should have a decidedly positive impact on future urban growth.

7. **Tariffs**

The Nepal Electricity Corporation raised tariffs by 60 percent in 1983 in order to offset deficits. For its services in the Central and Western Regions, it charges Rs.0.80 per kilowatt hour. In the Mid-West and Far West Regions, on the other hand, the Electricity Department charged (1983) Rs.0.50 and Rs.0.25 per kilowatt hour respectively for single and three phase supply.

V. WATER

A. WATER RESOURCES

Nepal's principal natural resource is water. The annual estimated runoff of Nepal's rivers is 200,000 million cubic meters. On the average, Nepal receives 100mm to 1,600mm of rainfall per year primarily during the June-September monsoon season. However, springs, melting snow and ice also contribute to its run-off.

1. River Systems

The principal river systems in Nepal, whose basins cover about 75 percent of the country, include the Sapta Kosi, Narayani, and Karnali Rivers. These rivers originate in the snow and glaciers of the high Mountain region. As a consequence, river flows are high even in the dry season.

Secondary rivers include the Bagmati, Rapti, Kamala, Mechi, Kankai and Babai Rivers. These rivers are fed by groundwater and springs and originate in the Mahabharat Range below the snowline. They do not dry up during the dry season.

Tertiary rivers include the Tilawe, Vangeri, Sirsia, Manusmara, Hardinalli, Sunsari, and Banganga. Origins of these rivers are in the Churia or Siwalik Range. These rivers have low-stream flows and do dry up during the dry season. (Note settlements on river systems.)

2. Groundwater

Groundwater is most prevalent in the Terai. Main aquifers are found in the Bhabar zone. Aquifers in the Middle Area are under artesian conditions. These aquifers are recharged through direct infiltration and precipitation as well as seepage from the Churia Hills and rivers.

Groundwater is used extensively for irrigation and drinking water in the Terai including the main Terai settlements. Service is generally provided by hand-pumps. High levels of iron and manganese exist in some locations, and construction of wells in the northern Bhabar zone has proved difficult.

Table III.16 summarizes groundwater supply potential by geographic and settlement location. In the middle and high Mountain region where Dhankuta and Ilam are located, virtually no groundwater is available. Water supply may be derived from springs and possibly deposits near streams.

In the Dun valleys and Churia Hills—where Birendra Nagar, Tribhuvan Nagar, Bharatpur, and Hetauda are located—little is known about groundwater resources.

In the Kathmandu and Pokhara Valleys, groundwater potential exists. Wells are being constructed in Pokhara as part of the IBRD's Third Water Supply Project and several wells provide service in Kathmandu.

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TABLE III.16

GROUNDWATER SUPPLY POTENTIAL

LOCATION AND SETTLEMENTS	CHARACTERISTICS	POTENTIAL GROUNDWATER SUPPLY
MOUNTAIN/HILLS		
- Dhakuta - Ilam - Dipayal - Dimak	Hard rock, steep slopes, high runoff, limited recharge.	Springs from fissured rock (Limestone). Springs from pockets of soil/alluvium. Wells in local alluvium near rivers. Wells in fractured rock.
HILL BASINS		
- Kathmandu - Lalitpur - Bhaktapur - (Banepa) - Pokhara	Basian with fluvial and lacustrine sediment. Sand and gravel aquifers. Recharge in periferal areas. Flowing wells in central areas. (Kathmandu). Poor quality centre valley (Kathmandu).	Drilled wells (up to 2800 l/m (Kathmandu). Springs in periferal areas. Shallow wells in granular materials near rivers.
CHURIA SIWALIK HILLS		
- Tansen - (Dharan)* - (Butwal)*	Steep to moderate slopes. Possibly moderate infiltration with deep water table.	Unexplored. Possibly drilled wells in middle and upper sandstone and conglomerate where fractured. Probably rough drilling.
DUN VALLEYS		
- Hetauda - Bharatpur - Tribuvannagar - Birendra Nagar	Tectonic valleys in Churia. Variable possibly limited alluvium. Possibly source of deep seepage.	Unexplored. See Churia. Possibly wells in granular alluvium near rivers.
TERAI		
- Biratnagar - Janakpur - Birgunj - Bhairawa - Nepalgunj - Dhangadi - Mathendranagar - Jaleswar - Kailaya - Bhadrapur - Rajbiraj - Lahan - Taulihawa	Flat terrain, thick alluvium. Aquifers interbedded with clay. Recharge by direct infiltration, seepage from Siwaliks, and river beds. Flowing artesian conditions in middle areas.	Variable but overall abundant groundwater. Drilled wells with known yield of 1000-2500 l/m. Locally reported poor well yields not necessarily reflecting potential. Rough drilling in north (Bhabhar zone).

* Adapted from IBRD Fourth Water Supply and Sewerage Study, Proctor and Redfern

B. WATER SUPPLY SANITATION[8]

These sectors are essentially components of the broader "urban" sector including urban planning, land use regulation, physical infrastructure and social services, urban land development and the related areas of organization, management, law and finance for urban communities.

Among the key problems include:

- Lack of integrated planning and implementation
- Lack of policy; overlapping of responsibilities
- Lack of an appropriate tax base for public financing
- Inadequate private sector financing

Such issues have implications for the economy of the provision of public water supply, sewerage (and surface water drainage) services. The interests of economical provision of these services lie in an orderly, planned, staged evaluation of **compact** urban development, and the "infill" of vacant areas surrounded by urban development.

1. Institutional Framework

a. Decade Plan

In response to the 1981-90 UN declared "Water and Sanitation Decade", HMG has proposed a **Decade Plan.** Concerning **water** supply in the Mountains and the Hills, some 2,266 gravity piped water supply systems are planned to provide at least one scheme in each village panchayat by 1990. On the Terai, a 100% coverage with 32,000 shallow tubewells and hand pumps is planned at the density of one unit per 200 people within a walking distance of not greater than 150 m. Overall, realization of the plan would provide 94% coverage of urban populations and 67% coverage of rural populations by 1990. Overall coverage would be 12.2m people, or about 60% of the 1990 projected population of 17.6m. The plan is recognized to be very ambitious.

Concerning **sewerage and sanitation**, the Decade Plan provides for sewerage systems in the urban core areas of 12 towns, serving 215,000 people and individual systems serving another 125,000, for a total of about one-third of the population in these towns. There is no specific sanitation objective for the remaining population of these towns, In the rural communities, 286,000 latrines were proposed to serve about 13% of this population. Emphasis was given to the Terai, where low-cost sanitation was believed to be most needed and most socially acceptable.

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[8]Adapted from the IBRD/WSSB 4th Water Supply Project, Proctor and Redfern.

A recent reappraisal of capital requirements for the Decade Plan was US$478m, an increase of some 217% over the original plan. These adjustments reflected inflation and cost experience in the plan to date. Of this total, the Government expects to provide about 25% from internal resources and is seeking.the remaining 75% (or about US$350m) in external aid. However, at the year end 1982, only about 17% of this external aid had been committed.

The distribution of the capital requirements under the Decade Plan among the agencies involved is:

- **35% to WSSB** for urban systems.
- **46% to DWSS**. This is for "intermediate" systems.
- **19% to MPLD**. This is generally for rural schemes with populations of less 1,500.

Under the Fifth Plan (1975-80) the reported achievement at the end of the plan period was 10.9% of the total population served with water supply, as against targets in the range of 12.2%-13.1%. The Sixth Plan (1980-85) target is to achieve a service level of water supply to 30% of the population. (This is a combination of 25.8% of the rural population and 87.2% of the urban population.) To this end, the Sixth Plan allocates Rs.1 billion or 4.6% of its public sector development expenditure; this compares with Rs.620 million, or 2.9% of the public development expenditure in the Fifth Plan.

It seems to be generally recognized that both the Decade Plan and Sixth Plan are ambitious, and that the targets may not be realized under the prevailing conditions of both international and domestic finance, and in view of certain development constraints which exist in Nepal.

To coordinate activities under the Decade Plan and to facilitate interagency cooperation, a "**National Group**" has been formed. Its membership includes each of the sector agencies (WSSB, DWSS, MPLD) and representatives of the Ministry of Finance and the National Planning Commission.

b. **The Sector Agencies**

There are three HMG agencies concerned with the provision of water supply and sanitation services in Nepal. The first is the Water Supply and Sewerage Board (**WSSB**), which presently has jurisdiction over the provision of water supply in 13 (out of 29) of the larger nagar panchayats. This figure includes three in the Kathmandu Valley. An extension of jurisdiction to include the further ten nagar panchayats, which are the subject of these studies, is contemplated in 1985. The second agency is the Department of Water Supply and Sewerage (DWSS) (under

the Ministry of Water Resources), which has jurisdiction in the remaining nagar panchayats. Broadly it also assumes the responsibility for the provision of **water supply** in communities with population projects (regardless of population) where pumping and deep tubewells are involved and also for shallow tubewell rural programs in the Central, Mid-West and Far West regions. The third agency is the Ministry of Panchayat and Local Development **(MPLD)**, which assumes the responsibility for village water supply where the population is less 1,500 people, except where DWSS has assumed jurisdiction as noted.

All of these agencies are also involved in **sewerage and/or sanitation.** Sanitary sewerage in Nepal is limited to systems which serve a (small) portion of the urban populations of the Kathmandu Valley towns of Kathmandu and Lalitpur, financed with IDA assistance under the First, Second and Third Projects, and a combined sewerage system (sanitary waste and surface runoff), which serves the Kathmandu Valley town of Bhaktapur and which was financed with assistance from the Federal Republic of Germany. These sewerage systems are under the jurisdiction of WSSB.

Elsewhere in Nepal, a small proportion of the people may have various kinds of septic tanks, cesspits or latrines for human waste disposal, but the overwhelming majority of the people, both urban and rural, have no sanitary facilities at all. In recognition of the health risks that such practices entail, **low-cost sanitation** programs have been initiated in recent times by both DWSS and MPLD.

The DWSS program is being implemented under the guidance of the "TAG" (Technical Assistance Group) mission, operating out of Delhi under the "UNDP Global Project". It is, in concept, a "pilot" project in eight towns, and intended to form the basis for longer-term strategic planning of sanitation in Nepal (including these studies). The town are: Mahendra Nagar, Doti, Birendra Nagar, Bhairawa, Pokhara, Kirtipur, Janakpur, and Ilam.

MPLD programs in sanitation have been undertaken with strong financial and technical support from UNICEF. These projects contain rural water supply and sanitation components. They are, in sequence, near Birendra Nagar, Tribhuvan Nagar, Lahan and Rajbiraj, and Dhankuta. Additionally, there are several programs receiving support from various non-governmental organizations (NGs), whose efforts are channelled through MPLD.

The **panchayats** have had a limited role in water supply and sanitation. In the towns under WSSB jurisdiction, it is the intention that WSSB construct, manage, operate and maintain the water supply facilities (and where applicable, sewerage facilities) and in all respects operate as an integrated utility organization. In the case of DWSS and MPLD

schemes, the underlying principle historically, and receiving recent emphasis under the Decentralization Act, is that completed systems should be turned over to the panchayats for operation and maintenance. However, the experience seems to have been that the panchayats have not been able to operate and maintain such systems effectively; one result is that DWSS and MPLD continue to operate and maintain more than half of the projects which they have constructed.

Similarly, only one panchayat has taken its own initiative in sanitation (Banepa).

c. **WSSB (Water Supply and Sewerage Board)**
WSSB was created under the "Drinking Water Supply and Sewerage Board (Constitution Order 1973)". Historically, it has been the institutional vehicle for the implementation of the World Bank assisted First, Second, Third Projects. The basic concept and long-term objective is that it would operate as a financially self-sufficient utility organization, in which the revenues from the provision of water (and sewerage) services would meet operating and maintenance costs (including interest and depreciation) and profits would be reinvested again in system improvements.

Overall sector studies and intensive detailed studies of the water supply and sewerage needs of urban communities in the Kathmandu Valley were conducted under the auspices of UNDP/WHO technical assistance. Separate studies were conducted directly for the water supply and sewerage needs of Pokhara, Birganj and Biratnagar.

IBRD (IDA) Water Supply Projects include:

First Project: (IDA)
Estimates US $10.4m; IDA Credit US $7.8m; 60% Cost Overrun;
Additional US 4.0m IDA Credit.
Included:
Kathmandu Valley Water Supply and (limited) Sewerage Pokhara Water Supply
Scheduled completion: December 1977. At September 1983 some local sewer construction outstanding.

Second Project: (IDA)
Estimates US $11.0m; IDA Credit US $8.0m and EED Special Action Credit.
Included:

Kathmandu Valley Water Supply and (limited) Sewerage
Pokhara Water Supply
Birganj Water Supply
Biratnagar Water Supply
Master Plan Update Studies - 4 communities above
Feasibility Studies for 6 additional towns (see Third Project)

Original scheduled completion: March 1981; almost completed at September 1983

Third Project: (IDA)
Estimates US $33.3m; IDA Credit US $27.0m.
Included:

Further works in the four communities per Second Project.
Water supply improvements for Nepalganj, Bhairawa, Butwal, Hetauda, Janakpur and Dharan.

Original scheduled completion: July 1985; at least one year behind schedule at September 1983

The Fourth Project Studies are a sequence to the preceding chain of events. They embrace:

(1) A review and update of the Second Project Studies (dated 1979).
(2) New feasibility studies concerning water supply, sanitation, and surface water drainage in the communities of Mahendra Nagar, Dhangadi, Birendra Nagar, Tribhuvan Nagar, Bharatpur, Lahan, Rajbiraj, Dhankuta, Ilam and Bhadrapur. All of these communities have existing water supply systems, which are presently under the jurisdiction of DWSS, with the exception of Bhadrapur, where the system has been operated by the Jhapa District Panchayat after construction by DWSS. It is expected the system will be transfered to WSSB jurisdiction in 1985.

A tariff study was conducted in 1979 which determined revenue requirements according to both economic criteria and financial performance criteria. These studies also concluded that the ceiling of ability and willingness to pay was about 3 percent of an average family income. In addition to customer billing, revenues are provided by an agreed charge to HMG for **public standposts** at the present rate of Rs.145 per standpost per month.

Tariffs for the WSSB and DWSS are presented in Table III.17.

TABLE III.17

TARIFFS - WSSB AND DWSS

WATER SUPPLY AND SEWERAGE BOARD (WSSB)
CURRENT WATER TARIFFS (EFFECTIVE SEPTEMBER 1982)
(Figures in parentheses are previous tariffs effective April 1975)

METERED

(1) Connection Size (in.)	(2) Minimum Charge NRs/Mo.	(3) Consumption for Minimum Charge Litres/Month	(4) Charge per 1,000 litres (excess (3) NRs)	(5) Connection Charge up to 100 ft. NRs	(6) Connection Charge/ft. (excess (5) NRs)
½	7 (5)	10,000 (10,000)	1.2 (0.8)	100	0.75
3/4	28 (20)	27,000 (29,000)	1.2 "	200	1.00
1	56 (40)	50,000 (54,000)	1.2 "	400	2.00
1½	168 (120)	140,000 (154,000)	1.2 "	600	3.00
2	280 (200)	235,000 (254,000)	1.2 "	800	4.00
3	840 (600)	700,000 (754,000)	1.2 "	1,200	6.00
4	1,680 (1,200)	1,400,000 (1,504,000)	1.2 "	1,600	8.00

UNMETERED

Connection Size (in.)	Mainline Monthly Charge NRs	Additional Branch Monthly Charge NRs			
½	13 (9)	4 (3)			
3/4	45 (30)	9 (6)			
1	90 (60)	10 (12)			
1½	270 (170)	45 (30)	n/a	—above—	—above—
2	450 (340)	75 (50)			
3	1,350 (930)	150 (100)			
4	2,800 (1,930)	340 (235)			

STANDPIPE

145 (100) - paid by HMG.

PROPOSED SEWERAGE TARIFF

Surcharge of 25% of the water charges to any water customer with a sewer connection.

DEPARTMENT OF WATER SUPPLY AND SEWERAGE (DWSS)
WATER TARIFF 1982 (in effect since January 1975)

UNMETERED

(1) Connection Size (in.)	(2) First Tap NRs/Mo.	(3) Additional Tap NRs/Mo.
½	5	3
3/4	30	6
1	90	12
1½	170	30
2	340	50
3	930	100
4	1,930	235

d. DWSS (Department of Water Supply and Sewerage)

DWSS has constructed 15 **urban** (nagar panchayat) water systems, of which ten are proposed for transfer to WSSB in 1985. DWSS also operates these systems except in Bhadrapur, where the system is operated by the District Panchayat Office with DWSS assistance. DWSS also operates and maintains **rural** water systems in communities with design populations ranging from 200 to 8,700 as follows:

	TOTAL	REGIONS				
		FW	MW	W	C	E
No. of Communities	62	8	6	24	18	6
Design Population ('000)	234.6	23.0	22.9	84.5	68.8	35.4

DWSS has constructed water systems which are operated by the district panchayats with assistance from DWSS as follows:

	TOTAL	REGIONS				
		FW	MW	W	C	E
No. of Communities	17	2	2	1	3	9
Design Population ('000)	42.5	6.0	5.9	0.3	5.3	25.2

In the period 1975/76 to 1981/82, DWSS completed 38 rural water systems, or an average of 5.4 per year. However, 18 of these were completed in 1981/82.

During the period of 1982/83, DWSS had under construction some five urban water systems and some 93 rural water systems and a further 21 rural water systems were planned for commencement, for a grand total of 119 systems. Of these 29 were planned for completion during the period. Additionally, some 1,200 shallow tubewells were planned for construction on the Terai, of which 800 were UNICEF assisted (in the Central Region), and the remaining 400 were divided equally between the Mid and Far West Regions.

DWSS has not, as yet, actually constructed either sanitary, storm or combined sewers. However, with the improved water supply of recent years in many of the towns of Nepal, there is a corresponding increasing amount of wastewater. In the absence of plumbing and sewers, this "wastewater" (eg.

from bathing, dishwashing, laundry, etc.) together with "runoff" from rainfall form "surface water".

The jurisdictional responsibility for such problems is presently far from clear. But in the meanwhile, DWSS has responded to some of the drainage concerns expressed by nagar panchayats by preparing some plans for surface water drainage systems. The drainage structure in these systems is typically a rectangular section with a concrete floor and brick masonry sides. These may, or may not, be covered with concrete slabs (which have an opening at their junctions to permit surface water entry), depending upon the location of the drain.

DWSS procures materials from both domestic and foreign sources. Most construction is undertaken by domestic contractors, although foreign contractors (eg. well construction in Lahan) are sometimes employed for specialized work, and some work (eg. water treatment plant in Mahendra Nagar) is undertaken by direct labor.

e. **Ministry of Panchayat and Local Development (MLPD)**
The general jurisdiction of MPLD covers schemes for communities with less than 1,500 people (provided the schemes do not involve pumping or deep wells) and shallow tubewell programs in the Central and Eastern Regions.

MPLD's water supply program in the last few years is summarized as follows:

Year	Projects Initiated (No.)	Projects Completed (No.)	Expenditure (NRs. mill)	No. People Served ('000)	Feasibility Reports (No.)	Detailed Reports (No.)
1980-1	122	120	24	153	140	122
1981-2	107	100	13	124	110	107
1982-3	140	70*	26	162	150	150
	369	290	63	439	400	369

*First six months.

In addition to water supply, MPLD has initiated a low-cost sanitation program. The achievements for 1981-82 were:

Household latrines (demonstrations) — 293
School latrines — 33
Latrines for health posts, etc. — 12

In the first six months of 1982-83, a semi-urban pilot project had installed 20 units.

MPLD schemes are provided as a public service for the sake of the health and convenience benefit. Typically, there is no cost-recovery from the beneficiaries, although there is a policy that the benefitting panchayat must assume simple routine maintenance.

VI. TRANSPORTATION

A. INTERNATIONAL TRANSIT TRANSPORT[9]

Nepal's landlocked position has led to heavy dependence on second country transit transport facilities for its trade; namely, with India and to a lesser extent Bangladesh. Almost all merchandise trade is handled via India. Nepal's internal transport flows and networks are closely related to those in India as Figure III.1 indicates and its own inefficiencies are magnified by deficiencies in neighboring systems.

The IBRD estimates the direct and indirect costs to Nepal of these difficulties to be enormous: equivalent to $US 200 million annually or 8 percent of GDP in 1981/82. Costs of goods arriving in Nepal via Calcutta are generally 6-7 percent higher than at the port, but costs increase by as much as 60 percent for some items (i.e., cement).

Transport flows within India are primarily handled by rail and the principal transhipment point in India is Barauni. Within Nepal, about three-quarters of exported goods are transported through Biratnagar while an equivalent amount of imports arrive at Birgunj.

Combined travel time via the Calcutta port, Indian railway system and Nepal's transport network typically is measured as 3 to 8 weeks.

Principal transport problems relating to Indian rail include:

- Lack and unavailability of wagons: real capacity exists for only about one-half of Nepal's freight, and peak demands for bulk items in India coincide with those in Nepal (i.e., transport of jute).
- Transhipment between broad gauge and meter gauge rails (no broad gauge rail exists from the Calcutta port to the Nepal border).
- Cargo may be handled 10-12 times during shipment. This leads to important delays, pilferage, losses, and leakage which is accentuated by manual handling.
- Losses, leakage, and smuggling enroute have led to stiff duty insurance rates at values 9 times the value of goods in Calcutta and heavy indemnification to India.

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[9]Sources include Recent Developments and Selected Issues in Trade Promotion, IBRD, 1983. Direct Transit Costs of Nepal's Third Country Traffic, UNCTAD/ESCAP, 1981.

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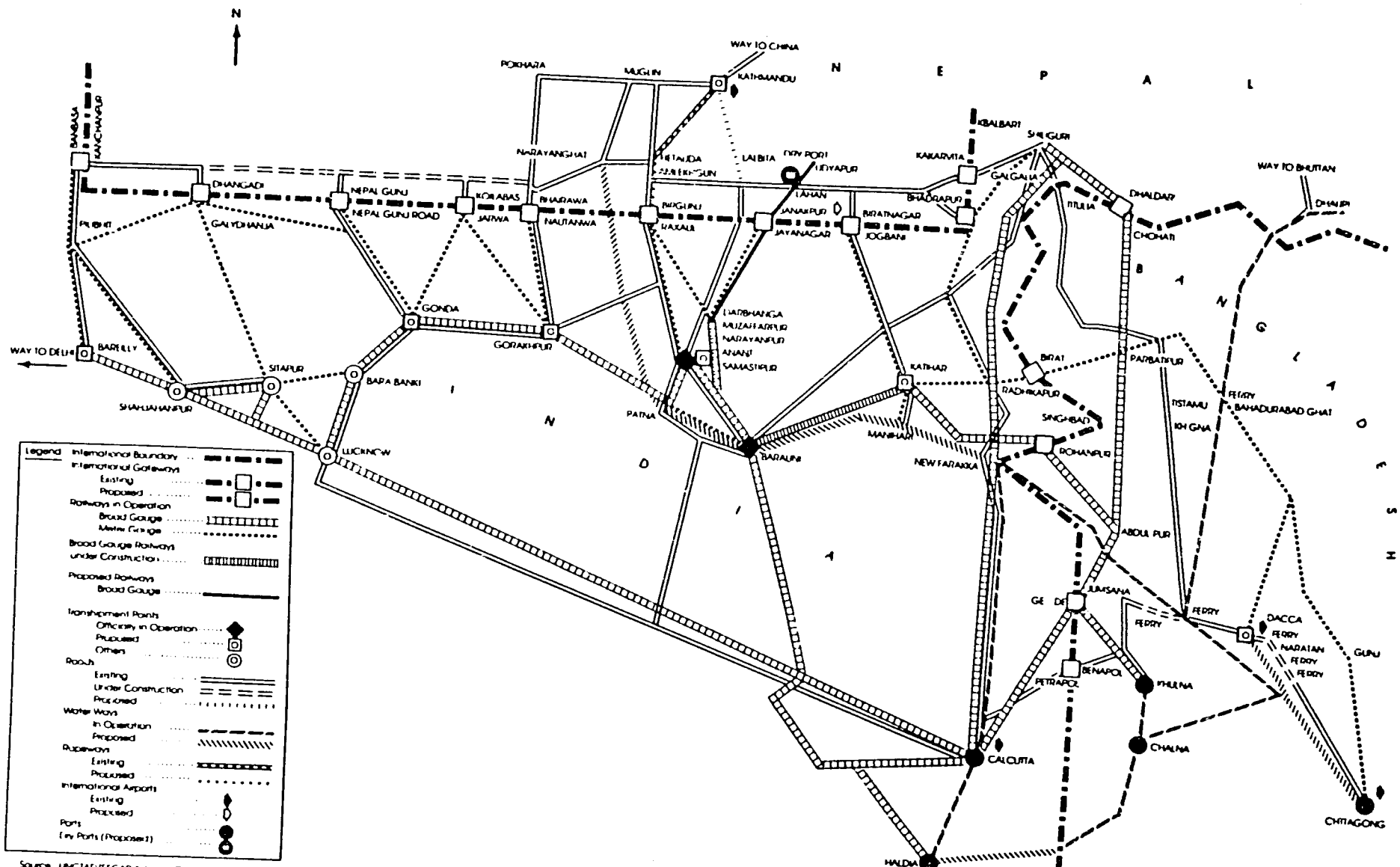
FIGURE III.1

NEPAL TRANSIT TRANSPORT NETWORK (SCHEMATIC)



Source: UNCTAD/ESCAP Advisory Group, Kathmandu

World Bank – 25484

- The Chittagong port handles a limited amount of Nepalese third country trade. Goods shipped by rail must travel 187 kilometers further along this route than via Calcutta, though the UNCTAD/ESCAP group feels it is comparable to the port-of-call. Due to the poor quality of Bangladesh's highway network, all goods are handled by rail. The principal problems with the Bangladesh route include the need to ferry goods across the Janurna river, the lack of wagons along the Indian portion of the route. (Bangladesh is reluctant to permit its wagons to enter India), and the larger number of formalities involved.

Road Transport

Most general cargo by road is handled via Calcutta and Birgunj. The Nepal corporation handles some shipments in sealed containers direct from Calcutta to Kathmandu which can take as little as three days. Costs are higher per ton but goods are carried more swiftly and securely. The principal problems with road transport are the weak bridges, steep grades and narrow pavements within the Nepalese network.

Air Cargo

Due to deficiencies in surface transport, air cargo could play an increasingly important role. However, at Kathmandu's Tribuvan airport, storage and handling capacity is extremely limited. This has resulted in embargos of 66 days per year and a maximum capacity of 2,000 tons. Associated problems include carrier restrictions on the number of flights and capacity.

Storage

Storage is also a major problem. Storage facilities for only 11,500 MT of freight exist at the Calcutta port while Nepal's total freight there is on the order of 400,000 MT. The result is that freight is left in the open and losses are incurred. A similar problem exists at incountry transhipment points: Birgunj and Biratnagar.

Bureaucratic formalities are also a major problem, particularly with customs. Seven separate forms are required for each shipment. Lack of information and coordination regarding trade has also been a problem but the creation of the Transit coordination unit within the Ministry of Commerce and the Transit Information bureau have helped.

International transport has also been complicated by insufficient and untrained manpower and poor facilities. Needs are particularly acute in equipment operation and maintenance, warehouse management, handling and supervision, clearance, forwarding and other procedures. Working facilities also need improvememt.

Among the improvements, which the UNCTAD/ESCAP and IBRD recommend include:

Short-Term

Use of alternative transhipment points for goods transported by rail: these could include Gorakpur, Katihar, and New Jalpaigur.

Medium-Term

Use of Indian inland waterway from Haldia port (Calcutta) to and beyond (if

locks are implemented) the Farraka barrage. There is some question whether use of Indian waterways will be permitted and transit treaties for their use and the Haldia port are required. More extensive use of Chitigong port is also needed.

Long-Term
Indian broad gauge rail could be extended from a number of points to the Nepalese border. No feasibility studies have been conducted but discussions between India and Nepal have been held.

In addition, the IBRD has suggested the following elements:

- Addition to the handling and storage facilities at Tribhuvan airport to improve cargo carrying capacity;
- Additional, separate and rental of locationally concentrated storage and handling facilities for Nepalese goods at Calcutta;
- Investments, training and procedural reforms to permit intermodal containerization of road transport;
- Possible creation of a joint Nepalese-Indian transit transport corporation to assist in organization, management maintenance and improved facilities at the Calcutta port and customs points, and streamlining of transit procedures.

Urban Development Impact
Future investment and improvement in international transport and internal transport systems will inevitably have a major impact on urban development in Nepal, as they have in the past, i.e., the rapid growth of the principal Terai settlements at Indian rail heads. Thus, future transport plans and investment must be duly considered before other sectoral investments are made.

Among the international programs which could have a major impact on urban development include:

- The creation of an international air cargo airport in the Terai (possible locations: Birgunj-Simra, Bhairawa, and Biratnagar).
- Changes in transport flows caused by use of alternative routes and ports, introduction of broad gauge rail, use of waterways.
- Development of warehousing and trade facilities in association with transport flows at so-called dry ports within Nepal.

B. NATIONAL TRANSPORT NETWORK[10]

In 1981, UNCTAD/ESCAP estimated that to reach a motorable road 50 percent required a one-half days walk from a motorable road while 18 percent had to walk at least a weeks time. This speaks more for the immense difficulty in implementing transport networks within Nepal rather than any lack of development efforts. Over Nepal's six National Plans, transport and communication has received top cumulative priority and significant strides have been made. Figure III.2 shows the existing and planned road network.

In contrast to the Hill areas where development of highways and other networks proves costly and tortuous, the Terai or Southern Plain has proved more readily servicable—though many bridges and crossings have had to be constructed. In keeping with its national spatial stragegy to integrate its five development regions, Nepal embarked upon the construction of an East-West highway in the Terai as a first priority, followed by a number of North-South Corridors. To date, the East-West Highway has been constructed to the Western Development Region and is passable to Nepalgunj in fair weather. The full length (1,048 kilometers) of the highway should be completed to Mahendra Nagar by 1990. Nepal's Highway network consists of the following segments:

1. Road Network

Kathmandu/Birgunj
The Tribuvan Highway (181 kilometers), completed in 1967, is a winding route with steep grades that must maneuver several high passes. Nevertheless, because most imports arrive through Birgunj it has traditionally carried about 250 vehicles per day.

Arniko Highway: Kathmandu-Koderi
This route, constructed with Chinese assistance in 1967, is largely a single lane route (114 kilometers) to the Chinese border. It was severely damaged during flashfloods in 1981. Passenger traffic is limited though commodity flows have been on the increase.

Siddartha Highway: Pokhara-Sunauli
The road was constructed with Indian assistance in 1972 linking India with Pokhara. It is 184 kilometers long and 70 percent is in hilly areas. Passenger and cargo traffic has risen steadily.

Prithivi Highway: Kathmandu-Pokhara
This segment includes part of the Tribuvan Highway to Birgunj. It covers a distance of 200 kilometers and was constructed with Chinese assistance. The road has contributed to the development of tourism in Pokhara.

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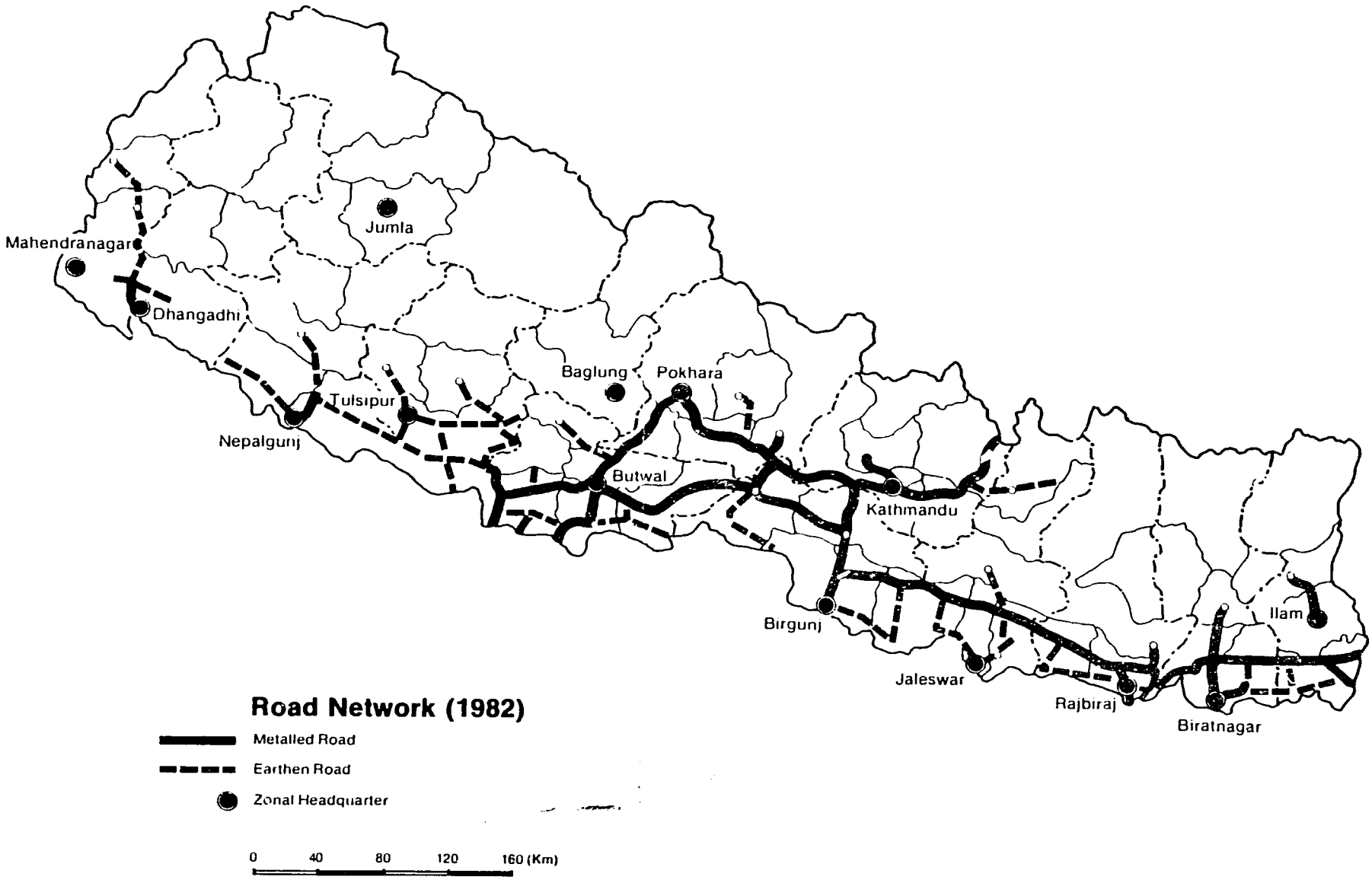
[10]Sources include The Transport Network of Nepal, UNCTAD/ESCAP, 1981; The Road Department (MWT).

FIGURE III.2


Mahendranagar
Dhangadhi
Jumla
Tulsipur
Nepalgunj
Baglung
Pokhara
Butwal
Kathmandu
Birgunj
Jaleswar
Rajbiraj
Biratnagar
Ilam
Road Network (1982)
Metalled Road
Earthen Road
Zonal Headquarter
0 40 80 120 160 (Km)

Gorkha (Mugli)-Narayanghat (Bharatpur)
This 61 kilometer road link was opened in 1982 and constructed with Chinese assistance. The Mugli/Bharatpur segment permits a short cut for traffic between Kathmandu and Bhairawa and Birgunj. Though the Tribuvan route is shorter, the new route is less precarious and results in time savings.

The East-West Highway stretches from:

- Kakarvitta in the East to Mahendra Nagar in the West; a total of 1,055 kilometers. Segments include:
  - .. Kakarvitta-Dhalkebar: 256 kilometers (1974)
  - .. Dhalkebar-Pathalaiya: 109 kilometers (1972)
  - .. Pathalaiya-Hetauda: 29 kilometers (1967); part of Tribuvan Highway
  - .. Hetauda-Nayaranghat: 79 kilometers (1982); serves as part of short-cut to Kathmandu from Birgunj and the East
  - .. Nayaranghat-Butwal: 116 kilometers (1975) carries Butwal/ Bhairawa traffic to Kathmandu
  - .. Butwal-Kohalpur: 251 kilometers under construction; permits access to Nepalgunj in fair weather
  - .. Kohalpur-Kanchanpur (Mahendra Nagar): 215 kilometers partly under construction

Donors have been instrumental in the construction of all segments of the East-West Highway.

Principal feeder roads to assist in distribution of goods and services throughout the country that have been planned or constructed include:

- Ali-Ilam
- Dharan-Dhankuta
- Kohalpur-Surkhet
- Dhangadi-Dandeldhura
- Lamosangu-Jiri
- Others.

Many of these are North-South routes designated by the national spatial strategy to assist in regional development. As a consequence, they will provide linkages between principal administrative and regional centers and the national highway network. Progress made in establishing Nepal's road network is shown in Table III.18.

2. **Tracks and trails**
As the bulk of the Nepalese population does not have access to motorable roads; the HMG placed importance on the creation and improvement of tracks and trails. As of 1981, there were 1200 kilometers of jeepable trails within the country, and 6,600 kilometers of foot and mule trails.

TABLE III.18

HIGHWAY NETWORK
(Kilometers)

End of Period	Paved	Gravel	Earth	Total
1955	295	n.a.	365	660
1965	289	147	1,390	1,826
1970	961	392	1,308	2,661
1974/75	1,575	416	1,182	3,173
1975/76	1,666	428	1,350	3,444
1976/77	1,751	556	1,829	4,136
1977/78	1,851	593	2,151	4,595
1978/79	1,916	685	2,090	4,691
1979/80	2,044	564	2,332	4,940
1980/81	2,044	564	2,332	4,940
1981/82	2,167	703	2,151	5,021
1982/83	2,322	719	2,229	5,270

Source: Roads Department, Ministry of Public Works and Transport.

Emphasis has been placed upon improving access between villages and district centers, and district and zonal headquarters, as well as among most heavily traveled routes. Numerous pedestrian suspension bridges necessitated by rivers, streams, and gorges, have been constructed.

These routes provide vital means of access for provision of goods and services to remote locations in Nepal. Furthermore, because road construction has proved difficult and costly with limited return on investment tracks and trail improvement is receiving higher priority than in the past.

3. Civil Aviation

Civil aviation has played an important role in reaching many of the more remote locations within Nepal. Scheduled air service is available to 37 locations in Nepal including Tribuvan International Airport in Kathmandu. Five airports are suitable for medium-sized aircraft, 20 aerodromes can accommodate twin-otters and 12 are served by small planes. Kathmandu is the only airport that can handle wide-bodied jet planes.

Domestic air transport helps relieve isolation in the more remote parts of the country. But, other than passenger and tourism trade, it has not played a significant role in economic development. Air cargo is negligible due to the size of the carriers. Travel expense is also a problem for important services such as health care for most of the population. Nevertheless, the existence of a comprehensive network is a good foundation for future development needs.

4. Railroads

Three small railways exist in Nepal:

- The Janakpur line (53 kilometers), an extension of the Indian system, used primarily for pilgrims from India to Janakpur (1.2 million in 1979/80).

- The Nepal Line (8 kilometers); is an extension of the Indian system from Rauxal that carries some bulk Cargo to Birgunj.

- The Kosi line (35 kilometers) formerly used to transport construction material to the Kosi River barrage. It is no longer in operation. The railroads have been operating at deficits, but the HMG has struggled to keep them operable.

In addition, to the railroads, the National Transport Corporation operates a trolley line (30 kilometers) between Kathmandu and Bhaktapur in the Kathmandu Valley. The trolley has proven popular for both local traffic and tourists and passenger volumes have been steadily increasing. The number of passengers rose from 1.5 to 3.0 million between 1975/76 and 1979/80.

5. **Ropeways**

Ropeways, trolleys, and trains, that can eventually tap Nepal's hydroelectric potential, are viewed as positive transport mechanisms by the HMG. Ropeways, which serve like ski-lifts for the transport of commodities, are innovative and adaptable to Nepal's unique geography. The Kathmandu/Hetauda Ropeway, constructed in 1964 with USAID assistance, has a total length of 42 kilometers. (The effective distance by road is 143 kilometers). It can carry 25 tons per hour and is cheaper than any other form of transport; however, commodities are exposed. When storage, pilferage, and transhipment costs are taken into consideration, it is currently competitive only for bulk shipments. Traffic has declined from 19,000 tons in 1972/73 to 11,400 tons in 1979/80 in favor of trucks. The ropeway ceased to operate in 1981 but began again recently. The UNCTAD/ESCAP group feels the ropeway could play a much more important role if a coordinated ropeway/rail system were introduced. Additional ropeways are also under consideration to serve areas to the north of Dhankuta, Baglung, Surkhet (Birendra Nagar) and other locations.

6. **Waterways**

Internal waterways have served for the transport of timber, and by small vessels which carry grain to India; however, only a few rivers are navigable. Given the rugged terrain in the Hills, lack of water during the dry season, and siltation of the rivers, waterways do not appear to have much potential for transport within Nepal. As discussed above, use of waterways for transit transport to Calcutta and Chittagong may be viable.

7. **Proposed Transport Development**

The draft Sixth Plan called for a shift in emphasis away from road construction to more productive investments. It noted that emphasis would be placed on the efficient use of infrastructure already in place. However, the plan recommended Rs.3.9 billion in investment or 17 percent of total investment in road construction. Among the principal elements of the Sixth Plan are:

- Completion of the East-West Highway (310 Kilometers)
- Construction of selected North-South Highways (250 kilometers)
- Stage construction of mid-mountain East-West Highways
- Construction of selected feeder roads from existing highways (940 kilometers)
- Construction of roads within integrated development projects (265 kilometers)
- Construction of 1,200 kilometers of jeepable trails, 6,554 kilometers of foot-tracks and mule trails, suspension foot-bridges, and 6,156 culverts by local Panchayats.

By 1982/83, according to the Economic Survey, 373 kilometers of blacktopped road, 201 kilometers of gravel roads, and 335 kilometers of upgraded dirt roads had been completed. In addition, 25 suspension bridges were constructed throughout the development regions and several aerodromes were provided with additional physical facilities. Traditionally, roads have been given highest development priority in transport. The Department's Long-Term Road Plan suggests this will continue to be the case.

8. **Proposed Highways**

Proposed highways in the Plan include:

- Dhankuta-Kathmandu Highway (400 kilometers). This would connect the EDR and CDR. Indian assistance may be involved but no construction has begun.

- Pokhara-Surkhet (407 kilometers). Part of the mid-mountain East-West Highway, it was to begin in 1982 with Chinese assistance and would link the MWDR with the CDR.

- Kathmandu-Janakpur (130 kilometers). Part of this road was to begin construction in 1982 and Japanese assistance may be involved. The road is one of the most attractive of the proposals since it would save 100 kilometers in road distance between principal Eastern Terai towns and Kathmandu. Time savings in transit trade from India would also occur. From an urban perspective, the Janakpur-Kathmandu Highway would significantly affect the growth of CDR and EDR settlements. Janakpur would obviously benefit while Birgunj would Hetauda would likely decline in their rates of growth.

According to the IBRD, it is becoming increasingly important for the HMG to focus on the economic feasibility of existing and proposed projects in order to avoid misinvestment. Though the IBRD supports completion of the East-West Highway, it questions the East-West Mid-Mountain proposal (as does the UNCTAD/ESCAP group). The principal roads in Nepal carry less than 250 vehicles per day while many carry only about 50.

Among the principal policy recommendations of the IBRD are:

- Relate transport investment to agricultural development to assist in production and distribution

- Improve the speed of execution and quality of construction of civil works. Improvements in institutional, contractual, and logistical mechanisms are cited.

- Improve maintenance performance to protect costly investments.

C. URBAN ROADS AND DRAINAGE[11]

Data relating to sectoral urban roads and drainage is limited. The lack of systematically collected and classified data is a serious constraint for both evaluation and planning of urban road systems. On the other hand, the major issues are obvious:

- **Increase the responsibility of Town Panchayats for construction of urban roads**
  On the basis of observation and secondary source reports, it is clear that the Road Department (RD) at the Ministry of Works and Transport cannot effectively manage both inter-urban and urban roads (and drainage). The RD is responsible for primary and secondary urban roads while tertiary roads are the domain of Town or Nagar Panchayats. The distinction of national and local responsibilities works reasonably well outside of the Kathmandu Valley where major arterials are limited in each settlement. However, in the case of Kathmandu, the Road Department is under immense pressure to perform access and cosmetic "services" at the behest of vested interest groups. This clearly interferes with its ability to perform its national and systematic urban role. Despite current administrative, technical, and financial weaknesses within the Town Panchayats, much greater latitude should be given to them to handle urban roads and drainage in lieu of the Road Department. This is consistent with the HMG's policy regarding decentralization of decisionmaking. There does not appear to be any qualitative difference in roads constructed by the RD and TP, and the UDA team has observed that TP's are sensitive to the needs of the populace and urban environment on the whole.

- **Develop national systems for urban transport planning**
  The lack of systematic classification, standardization, and planning of urban roads and drainage systems is another major problem issue. Of particular concern is the lack of analysis on long-term benefits and costs, impact on urban land values and potential gains in cost recovery. The equivalent of the Road Department's Long-Term Road Plan does not exist in urban areas. The location of major arterials have largely been determined by long-standing trade routes and tracks. The location of secondary and tertiary roads were largely determined by existing (pedestrian) trails and property lines. Due to grave difficulties in acquiring private land for public purposes, these routes (particularly in the Hill settlements) do not facilitate vehicular traffic.

  Most decisions regarding the location of tertiary routes are made by the Nagar Panchayats on the basis of consultation with landowners. There is virtually no planning guidance provided by either the Road Department or DHBPP.

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[11]Sources include The Road Department (MWT) and GTZ; Integrated Development Systems, 1983.

- **Improve road and drainage design**
  The design of many urban roads is defective. It appears that roads have been designed in the inter-urban style (above natural grade rather than below natural grade). This has required adjacent property owners to infill for their own construction, causing poor drainage of interior areas. As a consequence, inefficient patterns of land use develop. Though 40-50 percent of urban roads are provided with side drains, the emphasis appears to have been on preserving the roads themselves rather than directing natural drainage flows. More consideration must be given to the catchment areas. To date, only one drainage master plan has been prepared. Urban drainage systems are extremely important to foster efficient and compact urban development. Benefits should easily outweigh the costs of improved systems.

- **Improve coordination among various utilities**
  In addition to providing access and transport flows, urban roads are corridors for a wide variety of utilities—including water supply, telecommunication, storm and sanitary sewers, and power. To date, there has been virtually no coordination among the parties to avoid damage and disruption of road service.

- **Improve urban road and drainage maintenance**
  Maintenance of both urban roads and drainage systems is a severe and growing problem. Not unlike the national road system, emphasis has been on new construction rather than preserving the life and efficiency of existing systems. This has led to a visible deterioration of road and drainage networks in virtually every settlement.

  The issue of maintenance is directly related to provisions for cost recovery. Some forms of direct taxation regarding national roads have recently been inaugurated. However, the equivalent does not exist for urban roads. Construction and maintenance of most urban road and drainage networks are the responsibility of the Town Panchayats but local resources are extremely limited. Increases in property taxes to generate additional resources and capture of capital gains in transfers is essential; and corresponding shares of increased revenue should be shared by the Town Panchayats who are instrumental in providing the services that lead to increases in property values:

- **Lack of a responsible agency for urban drainage**
  The lack of a single responsible authority for area drainage has been a serious problem which will be eased by increasing authority of road construction and drainage to the Town Panchayats. A more appropriate National role would be the provision of master plans for each settlement for both principal routes and drainage systems.

  Lack of concern for maintenance, and poor solid waste collection has also resulted in poor performance of drainage systems, particularly during the rainy season. Poor design in many Terai towns without option of gravity flow and high water tables, and lack of maintenance has led to a visible deterioration in networks.

As Table III.19 indicates, in 1982 Nepal had a total urban road network of 633 kilometers of which 275 were blacktopped, 147 gravelled and 211 in earth tracks. Between 1978-82, the average annual kilometer increase was on the order of 41.5 kilometers. There is very little location-specific information regarding urban roads but for seven principal settlements indicated in Table III.20 a number of observations can be made: Kathmandu has more and better quality urban roads than the combined total of the other settlements, more blacktop roads exist than any other surface.

Though the UDA team was unable to obtain urban road costs on a settlement basis, Table III.21 shows that differences in cost range between five and ten times for all surfaces between the Hill and Terai regions.

Expenditures on urban roads is increasing (Tables III.22 and III.23). In 1979/80, urban roads received less than one percent of all investments in the road subsector. However, by 1982/83 investments were expected to be on the order of four percent and planned allocations have been consistent with actual expenditures overall.

TABLE III.19

URBAN ROADS IN KM

YEARS	BLACK-TOPPED	GRAVELLED	EARTH-TRACKS	TOTAL
1978	222	96	149	467
1982	275	147	211	633
Addition (1982-1978) in road kilometer:	33	51	62	166
Annual Average addition:	13.25	12.75	15.50	41.50

Source: Urban Roads and Surface Drainage Maintenance Systems in Nepal, GTZ, Integrated Development Systems, November 1983.

TABLE III.20

URBAN ROADS IN SELECTED LOCATIONS

	Black-Topped	Gravelled	Fair Weather	Total Km
Kathmandu	84	34	51	169
Lalitpur	19	15	21	55
Bhaktapur	5	19†	27	51
Biratnagar	15	7	18	40
Dharan	7	4	-	11
Birgunj	6	6	6	18
Hetaura	2	6	7	15
Total:	138	91	130	359

Source: Nepal Sadak Suhiti, (1982). A Department of Roads Publication.
† Includes brick pavement as well.

TABLE III.21

ROAD CONSTRUCTION COST BY GEOGRAPHICAL REGION AND TYPE OF ROAD

	Fair Weather	Gravelled	Black-top
Hilly Region			
Single Lane	15	17	20
Double Lane	43	45	[illegible]
Tarai Region			
Single Lane	3	4	8
Double Lane	4.5	6	14

* The costs are derived from the per-kilometre construction costs incurred in Lamosangu-Jiri road, Narayangarh-Mugling Road and Mahendra Rajmarg-Guar Road.

Source: Urban Roads and Surface Drainage Maintenance Systems in Nepal, GTZ, Integrated Development Systems, November 1983.

TABLE III.22

INVESTMENT IN URBAN ROADS

Fiscal Year	Investment in Road (1)	Investment in Road (2)	(2) as % age of (1)
1978-79	42,79,94	45,17	1.05
1979-80	43,06,39	15,76	0.05
1980-81	47,21,94	57,50	1.22
1981-82	54,33,69	63,14	1.66
1982-83*	47,30,04	1,90,00	4.02

Source: Budget Speeches and Office of the Comptroller General, HMG.
* Revised Estimate.

Source: Urban Roads and Surface Drainage Maintenance Systems in Nepal, GTZ, Integrated Development Systems, November 1983.

TABLE III.23

ESTIMATED REQUIREMENT OF MAINTENANCE EXPENDITURE IN URBAN ROADS
(Rs. in 000)

Kind of Road	Km in 1982/83	Cost Requirement
Black-topped	275	57,20
Gravelled	147	18,08
Earth-tracks	211	20,05
TOTAL	633	95,33

Source: Urban Roads and Surface Drainage Maintenance Systems in Nepal, GTZ, Integrated Development Systems, November 1983.

VII. COMMUNICATIONS

Communication facilities in Nepal are being expanded and upgraded to improve the quality of services, but this is proving difficult because of the mountainous terrain and remoteness of some areas. Most towns and villages are served by the country's postal system which consists of the General Post Office in Kathmandu, 74 district post offices, and over 1,500 local post offices throughout the Kingdom. Money order and postal saving bank services are available in some of the larger post offices, but because of remoteness and distances, mail services can be extremely slow.

Telegraph service is available in many parts of the country but often unreliable because of equipment failures.

The telephone system serves most urban areas while in remoter settlements some use of wireless sets (using solar energy) is being applied. Projects are being implemented to expand services and number of lines available in Kathmandu and other urban centers and to convert C.B. telephone lines into automatic lines in smaller towns.

Placing calls to remote areas can take up to several hours but the telephone system is the most reliable type of communication available.

International communication from Nepal has been greatly improved by the recently installed satellite earth station in Kathmandu that provides direct service to other countries by telephone, telegraph, and telex. Also the telecommunication links with India and Bangladesh have recently been upgraded.

Unlike some sectors, telecommunications has been able to expand its activities to cope with increasing demand while keeping its accounts in the black. It has been able to do so by concentrating in marketable areas such as Kathmandu and other principal urban areas.

In the Seventh Plan, however, the HMG would like to emphasize improved telecommunications in the Hill areas (i.e. district headquarters) where service will be much more expensive to provide and major subsidies would be required. In Kathmandu and the Terai, the cost for provision of one line is on the order of Rs.23,800. In the Hill areas, where a project under consideration is to provide five lines for each of 60 different places, the cost per line is estimated at Rs.127,000 and marketability remains a serious question.

The following provides a brief description of the principal telecommunications projects that have been implemented or are planned. In addition, Table III.24 indicates the number of lines and exchanges by settlement and those projected for 1985.

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TABLE III.24

NEPAL TELECOMMUNICATIONS CORPORATION

CURRENT AND PROJECTED EXCHANGES AND TELEPHONE LINES BY SETTLEMENT

S. No.	Location	Total Capacity by Nov. 1983	End of 1984	End of 1985
1.	Bhadrapur	200 (M)	200 (M)	1,000
2.	Dhamak	-	-	250
3.	Dharaa	500 (M)	1,000	1,000
4.	Biratnagar	2,000	3,000	3,000
5.	Dhankuta	200 (M)	200 (M)	1,000
6.	Rangeli	-	-	250
7.	Rajbiraj	200 (M)	200 (M)	1,000
8.	Siraha	100 (M)	100 (M)	250
9.	Janakpur	400 (M)	1,000	1,000
10.	Malangawa	50 (M)	50 (M)	250
11.	Jaleswor	-	-	250
12.	Birgunj	1,000	2,000	2,000
13.	Hetauda	400 (M)	1,000	2,000
14.	Bharatpur	200 (M)	200 (M)	2,000
15.	Kalaiya	20 (M)	20 (M)	250
16.	Gaur	-	-	250
17.	Kathmandu (Kathmandu, Patan and Bhaktapur)	8,000	20,000	41,000
18.	Banepa	200 (M)	500	500
19.	Bhairahawa	400 (M)	1,000	1,000
20.	Butwal	200 (M)	1,000	1,000
21.	Tansen	200 (M)	500	500
22.	Taulihawa	-	250	250
23.	Krishnanagar	-	250	250
24.	Pokhara	400 (M)	1,000	2,000
25.	Ghorahi	-	-	250
26.	Tulsipur	-	-	250
27.	Nepalgunj	500 (M)	1,000	1,000
28.	S. Doti (Dipayal)	-	-	350
29.	Surkhet	200 (M)	200 (M)	1,000
30.	Dhangarhi	-	-	2,000
31.	Mahendranagar	200 (M)	200 (M)	1,000
		15,570	34,870	68,350

* All lines automatic except those marked by (M), which are manual.

Source: Nepal Telecommunications Corporation

A. IMPLEMENTED AND PLANNED PROJECTS

1. Telecommunication Development Project (1976-1980)

Under this project, 14 manual and four automatic exchanges were installed/expanded with a total of 6,600 telephone lines, and analogue microwave/VHF links consisting of six systems were installed.

Project cost: US$5.5 Million (Foreign component only).

2. Telecommunications Development (1980-1984)

a. World Bank's III Project:

A total of 17 new digital exchanges with a total capacity of 22,500 telephone lines:

- a total of nine digital radio systems
- 80 VHF radio telephone subscribers to be installed and put under operation

Total Project about US$24.5 Million (foreign component only), out of which US$14.5 Million is funded by the World Bank.

b. Earth Station and Telex Exchange Project

Total cost: about US$6.0 Million under this project.

Type B earth station with 18 SCPC channels and a telex exchange with a total equipped capacity of 252 lines are installed and operated.

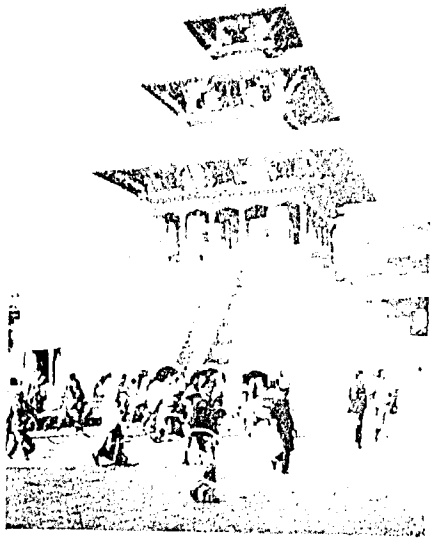
3. Fourth Telecommunications Development Programme (1984-1988)

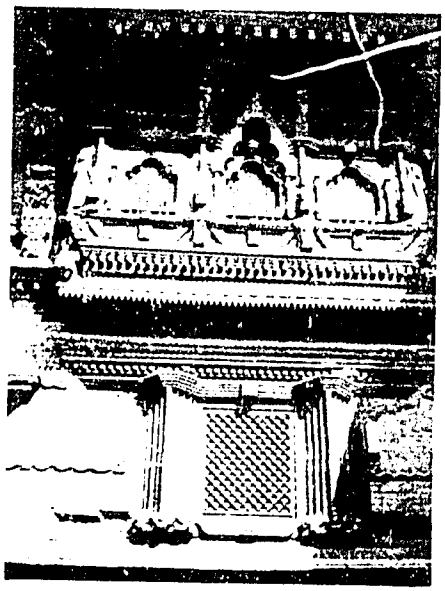
a. World Bank Project:

- Total telephone lines to be added (in urban areas): 32,450 lines
- Total cost for one including national and international trunk circuits and telex expansion (estimated cost): about US$60 Million (Foreign 46 Million US$; 14 Million US$)
- This program shall consist of:
  - .. 19 new exchanges with a total of 32,450 lines.
  - .. digital transmission links with a total of about 360,000 channels km.
  - .. earth station expansion by 24 channel ends
  - .. telex exchange expansion by 25 lines
  - .. about 200 PCOs and long-distance telephone connections by radio

b. **Rural telecommunication Project:**
Under this project, 63 district headquarters and commercial centers located in remote areas will be provided with telephone services (about 330 PCO and long-distance subscriber connections), and 13 locations will be provided facsimile services. The transmission link for the above shall consist of 121 hops.

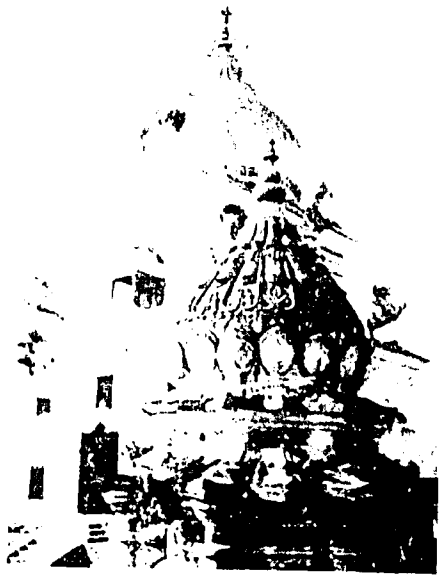
Total project cost estimated about US$40 Million.

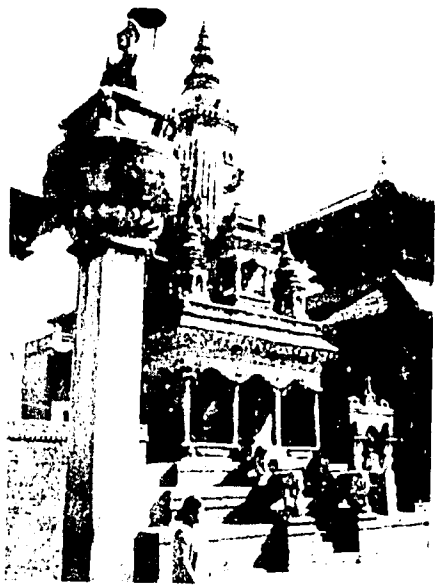


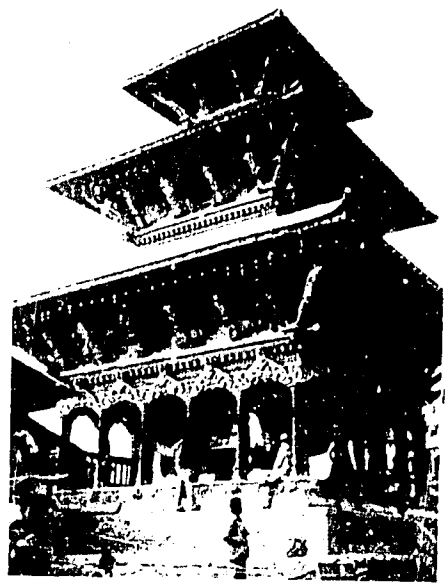


Cultural Heritage in the Kathmandu Valley

Nepal is renowned for its marvelous temples, shrines and festivals which form an integral and active part in Nepalese customs.







PART FOUR

INDICATIVE RESULTS OF THE APPLICATION OF AN URBAN INVESTMENT MODEL TO NEPAL

I. INTRODUCTION

To supplement the Urban Development Assessment, we have carried out a very preliminary and limited application of PADCO's National Urban Policy Study (NUPS) model to Nepal. PADCO developed the NUPS model three years ago for a national urban policy study in Egypt and since then has refined the model for use on a micro-computer. The purposes of the Nepal application were:

- To verify the UDA's conclusions on which cities have the highest economic development potential;
- To make order-of-magnitude estimates of the national economy's capacity to 1) generate urban jobs and 2) cover the costs of job creation and service provision for the growing urban population; and
- To evaluate the implications of two national urban development scenarios: 1) a continuation of current trends and 2) a greater concentration of urban growth in the Terai and Foothill settlements.

The NUPS model analytically relates the macro-economy and the urban settlement system of a country. It does this essentially by forecasting the size of the urban labor force and allocating this employment, and the resulting total urban population, to cities and towns according to efficiency or other criteria. At the same time, the model provides forecasts of resources available for investment in urban areas and of the costs of creating urban jobs and providing services to the urban population. These forecasts allow one to check whether the national economy's capacity to generate both urban jobs and investment resources is keeping pace with the demand for such jobs and for urban services. This exercise can be carried out for various urban development "scenarios". The baseline is often a "least cost" scenario, in which the model systematically allocates jobs (and therefore population) to the cities having the lowest marginal costs of job creation. These are the cities with the strongest agglomeration economies (concentration of labor force and services which attracts job-creating enterprises), hence the least cost may also be thought of as the "economic efficiency" scenario. Other urban development scenarios may allocate jobs and population to cities according to other criteria. For example, one may assume adoption of a program to stimulate urban development in a certain region, and that the program would shift future urban growth away from the primate (principal) city and to the new area. Since the cost of job creation in secondary or tertiary cities is usually higher than in principal cities, this type of alternative scenario would probably have a higher overall cost. For a full description of the workings of the NUPS model, the reader may consult a paper, "Analytical Methodology for Preparing National Urban Policy Recommendations" (Draft for Discussion), January 1984, prepared by PADCO for the AID Office of Housing and Urban Programs.

It should be stressed that the findings presented in this Appendix are based on a very limited application of the NUPS model and are meant not to be definitive, but merely indicative. Time constraints prevented us from exploiting the model more fully in the preparation of this report.

II. DATA USED

To run the NUPS model we used three sets of data: figures on the national and urban population (including population and employment at the city level), data on the national economy, and information on urban infrastructure and service standards.

National and Urban Population
Table VI.1 presents the national and urban population figures used in this exercise. The national population growth rate of 2.62 percent per year is taken from a recent World Bank study[1] and is assumed to remain constant from 1985 to the year 2000. The 1981 urban population of 1.026 million is our estimate of the population in cities officially designated as "nagar panchayats." According to this definition, the urban population is classified as that living in cities of about 10,000 people or more.[2] The 1985-2000 urban population growth rates are taken from the same World Bank study. According to these figures the urban population will be about 8 percent of total population next year, around 10 percent in 1990, and will reach about 16 percent by the year 2000.

Table IV.2 gives data for the 29 cities included in the analysis. These data come from several sources. The 1971 and 1981 population figures are from the Censuses of those years. The employment figures are mainly from a series of household budget surveys for 16 cities conducted in 1973-75 by the Nepal Rastra Bank. These are supplemented by data from the 1981 Census for urban populations of Districts.

A. ECONOMIC DATA

The NUPS model used various macro-economic parameters on Nepal to forecast GDP, investment, and job creation. These appear in Table IV.3. The 1984 estimates of GDP by sector are based on trends developed from 1974-75 to 1980-81 national accounts data.

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[1] IBRD/WSSB, Water Supply and Sewerage Study for Nepal (Interim Report), 1983.

[2] According to figures cited by the World Bank in its Nepal Urban Sector Memorandum (date), approximately 20% of Nepal's population is estimated to live in urban centers of 5,000 or more. Based on this definition, our analysis covers only about one-third of the urban population. While this is a limitation on our analysis, it does not hinder from drawing meaningful conclusions. The reason is that any urban development strategy to be undertaken by the Nepalese Government would have to focus on a limited number of cities that offer the greatest development potential.

TABLE IV.1
NATIONAL AND URBAN POPULATION

	National Population (000)	Urban Population (000)	Percent Urban
1981	15,020	1,026	6.8
Avg. Growth Rate (%)	2.62	7.4	
1985	16,657	1,363	8.2
Avg. Growth Rate (%)	2.62	7.4	
1990	18,956	1,948	10.3
Avg. Growth Rate (%)	2.62	7.45	
1995	21,573	2,790	12.9
Avg. Growth Rate (%)	2.62	7.45	
2000	24,551	3,996	16.3

Sources: Growth rate forecasts and 1981 national population: World Bank, Nepal Water Supply and Sewerage Studies, Interim Report, 1983. 1981 urban population: PADCO estimate. Growth rate forecasts for urban population are midpoints of two alternative hypotheses.

TABLE IV.2

NEPAL CITY DATA 1985
(000)

City	Population	Employment	Employment in Mining, Manufacturing, & Construction
1. Kathmandu	281.5	123.9	12.5
2. Lalitpur	90.2	46.9	7.0
3. Bhaktapur	52.3	32.9	3.9
4. Banepa	11.6	6.9	0.2
5. Bharatpur	47.9	13.4	0.4
6. Hetauda	47.2	25.5	2.5
7. Birganj	70.9	34.0	4.4
8. Janakpur	49.7	26.4	3.9
9. Jaleswar	11.3	5.7	0.3
10. Kailaiya	11.9	5.9	0.3
11. Dhankuta	22.0	12.8	1.0
12. Ilam	11.0	6.8	0.3
13. Damak	27.7	16.6	0.5
14. Dharan	56.3	16.9	0.7
15. Biratnagar	125.4	55.2	9.9
16. Bhadrapur	10.8	5.6	0.7
17. Rajbiraj	22.1	7.5	0.8
18. Lahan	19.6	9.8	0.5
19. Pokhara	64.6	42.0	3.8
20. Tansen	17.5	8.6	0.2
21. Butwal	28.3	8.5	0.3
22. Bhairawa	37.5	22.2	2.4
23. Taulihawa	11.9	5.9	0.3
24. Ghorahi	32.4	23.7	0.7
25. Birendranagar	21.8	12.2	0.7
26. Nepalganj	39.5	17.4	2.1
27. Dipayal	11.6	6.9	0.2
28. Mahendranagar	91.8	76.2	2.3
29. Dhangadi	37.1	15.2	0.2

Source: PADCO NUPS analysis for Nepal.

There were no actual data available on the sectoral distribution of total investment (public and private) in recent years, so the 1984 estimates of investment by sector were derived by taking 1984 estimated GDP, dividing it by 15 percent, which is a forecast of investment as a percentage of GDP based on past trends, and allocating the resulting total investment to the four sectors according to the breakdown shown in the Sixth Development Plan. The 1984 estimates of employment by sector were also calculated indirectly. The only sectorally disaggregated employment data available were for 1971 and 1976. According to these figures, total employment grew at an annual rate of 5 percent over the period. This growth rate was used to calculate total 1984 employment, and the total was allocated among sectors based on apparent trends in the shares of employment for each sector. For example, agriculture had 94 percent of employment in 1971 and 90 percent in 1976; we projected that it would have 85 percent in 1984.

The incremental capital-output ratios (ICORs)[3], which are used in the NUPS model to estimate sectoral GDP, are derived from several sources and are very rough estimates. The ICORs for two sectors, transportation/communication/construction and services/commerce, were obtained from time series data on sectoral GDP and estimates of past sectoral investment. The investment figures were based on actual total investment between 1974/75 and 1979/80 which was allocated among sectors according to the breakdown of the Fifth Development Plan. The ICOR for agriculture could not be calculated from past national accounts data because real agricultural GDP declined in four out the six years between 1974/75 and 1980/81; therefore, the agriculture ICOR used in the analysis was estimated from figures in the Sixth Development Plan on projected agricultural investment and output. Finally, the ICOR for industry also could not be calculated from past national accounts data (real industrial GDP declined in three of the six years from 74/75 to 80/81). There were no other sources of figures (past or projected) at our disposal, so we chose industrial ICORs based on judgment. Given the poor performance of the industrial sector in recent years (especially of the public enterprises), we decided to start with a very high ICOR of 15 for the first projection period (1986-90) and follow it with declining—though still high—ICORs of 10 for the second period and 8 for the third. The ICORs for the other three sectors were assumed to remain constant over the three projection periods.

The sectoral shares of investment shown in Table IV.3 are the same as those presented in the Sixth Plan. We assumed these would remain constant over the 1986-2000 period.

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[3]Simply stated, an ICOR is the ratio of investment to the increase in output (GDP) produced by that investment. Thus the lower the ICOR, the more productive the investment.

TABLE IV.3

MACRO ECONOMIC PARAMETERS
(Rs in 1974/75 prices)

	1984	1986-90	1991-95	1996-2000
GDP Block	GDP (Millions)	ICORs		
1. Agriculture	11,435	3.59	3.59	3.59
2. Industry & Power	840	15.00	10.00	8.00
3. Transport, Communications, Construction	1,273	2.75	2.75	2.75
4. Services & Commerce	2,508	3.16	3.16	3.16
Investment Block	Investment (Millions)	Investment Shares		
1. Agriculture	941	.312	.312	.312
2. Industry & Power	675	.223	.223	.223
3. Transport, Communications, & Construction	523	.173	.173	.173
4. Services and Commerce	883	.292	.292	.292
Employment Block	Employment (000)	Investment-Labor Ratios		
1. Agriculture	7,783	.034	.034	.034
2. Industry & Power	74	.008	.008	.008
3. Transport, Communications, Construction	18	.008	.008	.008
4. Services & Commerce	1,282	.034	.034	.034

Source: PADCO NUPS analysis for Nepal

The NUPS model uses investment-labor ratios (ILRs) to estimate employment generated by the national economy.[4] The ILRs in Table IV.3 were also calculated from a variety of sources and should be taken as order-of-magnitude estimates. It was not possible to obtain ILRs using past national accounts data because of a lack of recent employment data (see above). The ILR for industry/power was derived from data in an industrial plan prepared recently by the ISC.[5]. This study estimated an

[4]Investment-labor ratios are analogous to ICORs. An ILR measures the amount of employment growth produced by a given amount of investment. In this analysis, the ILRs represent thousands of (additional) jobs divided by millions of Rupees in investment.

[5]Industrial Services Centre, Industrial Sector Plan Study 1980/81-1990/91, 1983.

overall cost per job—for both small and large-scale industry—of Rs.101,480 (1980/81 prices). For large-scale industry only, the cost per job was Rs.215,742. Because in our analysis the sector includes both industry and power, we decided to use the figure for large-scale industry. This translates into an ILR in 1974/75 prices (our base year) of about 0.008, which means that for every million rupees invested in the industry/power sector, about eight jobs will be created. The ILR for agriculture was arbitrarily set at .034, a little less than one quarter the cost per job in the industry/power sector. This figure is consistent with agriculture ILRs used in other countries. Because of the lack of available data, the ILR for transport/communication/construction was assumed to be the same as that for industry/power, and the ILR for services and commerce the same as the one for agriculture.

B. INFRASTRUCTURE AND SERVICES STANDARDS

The NUPS model uses data on the per capita costs of urban infrastructure and services to estimate the total costs of providing these to the urban population. The per capita costs reflect, of course, certain standards of infrastructure or service provision. For the sake of simplicity we opted to use only one package of standards which was uniformly applicable to all cities. This package was based on relatively modest levels of infrastructure and services. For example, the per capita cost for water was calculated from data on the World Bank's Third Water Supply and Sewerage Project for Nepal, which is designed to provide service to substantial numbers of low-income households through standpipes and communal taps. Table IV.4 summarizes the per capita costs used in this analysis. The infrastructure types covered were water, sanitation (assumed to be pit latrines only), streets (blacktopped), and housing (at Rs.100/m2 in 1983 prices). Electric power and drainage were not included because of lack of data. The services included in the analysis were education and health. Per capita costs for education were estimated very roughly from information in the Sixth Plan. Data on health costs were not available but we felt it was reasonable to use the education figure as a proxy for a first approximation. Public transport could not be included due to lack of data. On the whole, the standards package used here represents a rather low one, and the total infrastructure and services cost projections produced for this exercise should be taken as conservative.

It should be noted that our estimates include not only the cost of providing services and infrastructure to the additional future urban population but also the cost of upgrading services for the pre-projection (existing) urban population. These upgrading costs are not easy to calculate, and we did not have time to gather data for accurate estimates. For simplicity, we have assumed that upgrading would add about 50 percent more to the total costs of urban streets, housing, education, and health and about 100 percent more to the cost of sanitation. No upgrading of water supply has been assumed in this exercise, but it could be included in future calculations.

TABLE IV.4
SUMMARY OF INFRASTRUCTURE AND SERVICE COSTS
(1974/75 prices)

Type	Unit	Cost (Rs)	Source
Water	Additional liter/capita/day	31	World Bank, Third Water Supply and Sewerage Project (1981)
Sanitation	Latrine/capita 1/	134	World Bank, Water Supply and Sewerage Study (Interim Report), 1983
Streets and Pavement	Per capita	196 2/	Bhaktapur Development Project, 1983 (GTZ)
Housing	Per capita	614 3/	Pokhara Engineer's Office
Education	Per capita	200 4/	Sixth National Development Plan
Health	Per capita	200 5/	—

1/ Assumes average household size of 7.

2/ Blacktopped streets and courtyards.

3/ Assumes 1983 construction cost of RS 100/m2; house size of 92 m2 (from Bhaktapur project); average household size of 7.

4/ Based on Sixth Plan investment and beneficiary forecasts and assumes 60 percent of investment is for capital development.

5/ No reliable data available; therefore education figure used.

Finally, this component of the model takes into consideration regional variations in construction cost. Based on fragmentary data on cost differences in road projects between the Hills and the Terai[6], supplemented by knowledge about transportation access to Nepal's regions, we developed a set of tentative regional cost variation indices which are presented in Table IV.5. These are open to revision if better data come to light.

[6] Urban Roads and Surface Drainage Maintenance Systems in Nepal, Integrated Development Systems, Kathmandu, November 1983.

TABLE IV.5
REGIONAL CONSTRUCTION COST INDEXES

Development Regions	Hills	Terai
Eastern	1.30	0.45
Central		0.30
Kathmandu Valley	0.85	
Other	1.00	
Western	1.15	0.45
Mid-western	1.45	0.55
Far-western	1.55	0.55

Source: PADCO NUPS analysis for Nepal

III. MACRO-ECONOMIC AND EMPLOYMENT ISSUES

The first step in the analysis was to produce a set of macro-economic and employment projections for the 1985-2000 period. The economic projections appear in Table IV.6. For these projections, we assumed that investment would remain at 15 percent of total GDP for all three five-year periods up to the year 2000.

This is a conservative assumption, but one we considered justified for a baseline scenario.[7] The projections show overall GDP growing at an average annual rate of 3.71 percent (in real terms). This is consistent with past trends and expectations of the Government and the World Bank. If achieved, this GDP growth rate would represent a slight upward trend in real national GDP per capita. GDP for the sectors defined as "urban"—all except agriculture—is projected to grow at 6.99 percent per year. This is slightly lower than our projected urban population growth rate—about 7.4 percent—which suggests that in this scenario, real urban GDP per capita would decline. With somewhat more optimistic assumptions regarding the rate of investment (say an increase to 17 percent in the second period and 19 percent in the third), the projections would, instead, probably yield real growth in urban GDP per capita.

Table IV.6 also shows that the Nepalese economy will generate new jobs at a very slow rate: total employment is projected to grow at 0.78 percent per year. The dominance of agricultural employment in Nepal is mostly responsible for this low growth. By itself, "urban" employment—again, defined as employment in all the sectors except agriculture—is projected to grow by 2.63 percent per year. The vast bulk of urban employment is in commerce and services. Table IV.7 presents the projected trends in urban employment generation compared with the growth of the urban labor force. In 1985, there are 691 thousand people in the urban labor force and 1,406 thousand jobs, a surplus of 706 thousand jobs. This does not mean, of course, that the Nepalese economy is generating twice as many urban jobs as there are people to fill them. The "surplus" is actually a result of what we are defining as "urban." On the one hand, we are using a conservative definition of the urban population: those living in cities of 10,000 or more. If we included in this definition settlements down to 5,000 population, we would be using an urban population approximately three times larger (see footnote 2), and the surplus of urban jobs would become a deficit. On the other hand, we have used a very liberal definition of urban employment. For

[7]Total public and private investment reached 13.5% of GDP in 1980/81. Foreign resources have accounted for all of the increase in investment in recent years. Domestic public investment as a percentage of total investment has remained constant in the last decade. Foreign resources as a percentage of public development spending increased from 39% in 1974/75 to 57% in 1979/80. Currently, foreign resources account for between 40 and 45% of all investment (public and private); however, the share of foreign resources in investment cannot continue growing indefinitely.

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simplicity, we have assumed that all the employment in industry/power, transportation/communication/construction, and services/commerce is urban. In reality, however, a significant part of the employment in these sectors is located outside of what we have defined as urban areas (see, for example, the section on Industry, Part Three, II). This also means that the figures on urban employment generation in Table IV.7 are overstated.

TABLE IV.6

ECONOMIC PROJECTIONS

GDP (Rs millions)	1985	1990	1995	2000	Percent Avg. Annual Growth Rate
1. Agriculture	11,644	12,817	14,239	15,968	1.99
2. Industry & Power	876	1,077	1,441	1,996	5.28
3. Transport, Communications, Construction	1,425	2,274	3,303	4,556	7.54
4. Commerce & Services	2,731	3,979	5,490	7,329	6.37
Totals	16,676	20,147	24,473	29,849	3.71
Investment (Rs millions)					
1. Agriculture	780	943	1,145	1,397	3.71
2. Industry & Power	558	674	819	998	3.71
3. Transport, Communications, Construction	433	523	635	775	3.71
4. Commerce & Services	730	882	1,072	1,307	3.71
Totals	2,501	3,022	3,671	4,477	3.71
Employment (thousands)					
1. Agriculture	7,810	7,958	8,139	8,359	0.43
2. Industry & Power	78	102	131	166	4.81
3. Transport, Communications, Construction	21	40	62	89	9.38
4. Commerce & Services	1,307	1,446	1,615	1,821	2.09
Totals	9,216	9,546	9,947	10,434	0.78

Source: PADCO NUPS analysis for Nepal.

The real significance of the figures in Table IV.7 is that the Nepalese economy is projected to generate urban jobs over the next fifteen years at a much slower rate than the urban labor force is growing. As Table IV.7 shows, urban jobs would grow at about 2.6 percent per year while the labor force would grow at about 7.4. By the year 2000, the "surplus" of jobs is almost gone. Another way to express the problem is that, given the figure in Table IV.7, the urban labor force will grow by about 1.3 million between 1985 and 2000, while urban jobs will grow by only 670 thousand in the same period. If we assume more realistic definitions of both urban population and urban employment, as discussed above, it is likely that an urban jobs deficit will open up soon, if it doesn't exist already. In fact, current estimates suggest that as much as half of the urban population in Nepal may be unemployed and/or underemployed (see the section on Employment, Part One, I.C.2). Even if the Nepalese economy were able to rapidly improve its performance—through higher investment rates, more productive urban investments, and greater emphasis on labor-intensive investments—to the point that the rate of job creation increases to, say, five percent, it will still be only two-thirds the rate of growth of the urban population.

TABLE IV.7
URBAN LABOR FORCE AND EMPLOYMENT GROWTH

	1985	1990	1995	2000	Growth Rate
Urban Population (000)	1,363*	1,948	2,790	3,996	7.43 %
Urban Labor Force (000)	691**	988	1,415	2,026	7.43 %
Employment Generated by Economic Growth (000)	1,406**	1,588	1,808	2,076	2.63 %
Surplus (000)	715	600	393	50	
Population Multipliers***		3.587	4.261	5.008	

* This figure appears in Table IV.2
** These figures appear in Table IV.6
*** Change in urban population divided by the change in urban labor force, or the urban population which must be supported by each job.

Source: PADCO NUPS analysis for Nepal.

IV. ALTERNATIVE URBAN INVESTMENT SCENARIOS

A. LEAST-COST SCENARIO

The next step in the analysis using the NUPS model was to allocate urban employment plus the other urban population supported by it to cities on the basis of a "least-cost" criterion. As explained above, the least-cost procedure gives priority in job allocation to the cities with the lowest marginal costs of job creation. Jobs are allocated to cities, in turn, until the marginal costs of adding jobs to all settlements are equal. In other words, this procedure allocates urban growth to the cities where it can occur in the most economically efficient manner. In the NUPS model, the cities with the lowest marginal costs of job creation (or greatest agglomeration economies) are those with the highest proportions of industrial employment.

Accordingly, the cities that receive priority in job allocation under the least-cost scenario are, in order of priority: Biratnagar, Lalitpur, Janakpur, Birganj, Bhadrapur, Nepalganj, Bhaktapur, Bhairawa, Rajbiraj, Kathmandu, Hetauda, and Pokhara. It is interesting to note that this list includes all five of the principal Hill cities and five of the seven principal Terai cities (the other two are Mahendranagar and Dhangadi).

Table IV.8 presents population growth figures for these selected cities under the least-cost scenario. By the year 2000, the five principal cities of the Hill area reach a combined population of 1.77 million, which is 44.4 percent of that year's total urban population. These cities grow at an average annual rate of 8.31 percent, which is slightly higher than the projected overall population growth rate (7.43 percent); thus, they marginally increase their share of urban population over the projection period. The three Kathmandu Valley cities would grow at a combined rate of about 8.5 percent per year, while the two other principal Hill cities—Hetauda and Pokhara--would grow together at about 7.6 percent. The principal Terai cities grow at a combined rate of 9.19 percent between 1981 and 2000, reaching a total of 1.7 million by the end of the period. Because these cities as a group grow considerably faster than overall urban population, they increase their share of urban population from 33 percent in 1981 to 42 percent by the year 2000.

Taking all of the 29 cities into consideration, the least-cost scenario results in a decrease of the Hill cities' share of urban population from 60.5 percent to 53.2 percent between 1985 and 2000. This reflects the strong economic development potential of the Terai cities. The projections also indicate the dominance of the Central and Eastern Regions in urban development. Even in 2000, 77 percent of the urban population of the Hill area would be located in the Central Region (primarily in the Kathmandu Valley), and 78 percent of the urban population of the Terai would be located in the Eastern and Central Regions.

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TABLE IV.8

LEAST COST SCENARIO
URBAN POPULATION ALLOCATIONS
FOR SELECTED SETTLEMENTS

	1985 Population (000)	2000 Population (000)	Average Annual Growth Rate (%)
Kathmandu Valley Cities			
Kathmandu	282	753	6.77
Lalitpur	90	465	11.57
Bhaktapur	52	222	10.16
SUBTOTAL	424	1,440	8.49
(% of total urban pop.)	(31.1)	(36.0)	
Other Principal Hill Cities			
Hetauda*	47	139	7.49
Pokhara	65	195	7.59
SUBTOTAL	112	334	7.56
(% of total urban pop.)	(8.2)	(8.4)	
Principal Terai Cities			
Biratnagar	125	762	12.81
Janakpur	50	256	11.50
Birganj	71	278	9.53
Bhairawa	38	134	8.76
Nepalganj	40	132	8.28
Mahendranagar	92	96	0.28
Dhangadi	37	37	0
SUBTOTAL	453	1,695	9.19
(% of total urban pop.)	(33.2)	(42.4)	
TOTAL SELECTED SETTLEMENTS	989	3,469	8.73
(% of total urban pop.)	(73.0)	(87.0)	
TOTAL URBAN POPULATION	1,363	3,996	7.43

Regions (all 29 cities)	1985 (000)	1985 %	2000 (000)	2000 %
Hill	824	60.5	2,125	53.2
Terai	539	39.5	1,871	46.8

Source: PADCO NUPS analysis for Nepal

* In other parts of the report Hetauda is considered an Inner Terai settlement

B. ALTERNATIVE SCENARIO

The Nepal Urban Development Assessment includes a tentative "urban strategy" proposal which we have quickly evaluated using the NUPS model. The focus of this alternative scenario (as we will call it here) is to give special emphasis to urban development in the Terai as a means of relieving population pressure in the Hill area. While the Terai is already serving as a safety valve for overcrowding in the Hills, the alternative scenario would accelerate urban development in the Terai even more to increase non-farm job opportunities for migrants. This would be accomplished through policies which encourage private investment in Terai cities and a program of increased public investment in these cities.

The alternative scenario involves a number of assumptions about urban population growth. First, the three cities of the Kathmandu Valley—Kathmandu, Lalitpur, and Bhaktapur—would grow at no more than 3.5 percent per year from 1985 to 2000. Second, primary growth emphasis would be given to six of the principal Terai cities—Biratnagar, Janakpur, Birganj, Bhairawa, Nepalganj, and Dhangadi—and one Hill city—Pokhara—all of which would be projected to grow at between 8 and 12 percent per year. Third, secondary growth emphasis would be given to three other Terai cities—Rajbiraj, Bhadrapur, and Mahendranagar—as well as to six Inner Terai and Foothill cities—Dharan, Butwal, Hetauda, Bharatpur, Ghorahi, and Birendra- nagar. It is assumed these would grow at 8 to 10 percent per year.

Because of these assumptions, the alternative scenario generates a different urban population distribution over the 1985-2000 period than does the least-cost scenario. Under the alternative scenario, the same amount of urban population growth (about four million additional urban residents) is allocated among cities; however, the allocation procedure gives first priority to fulfilling the above city growth targets and second priority to economic efficiency considerations.

Table IV.9 presents urban population allocations for selected settlements for the alternative scenario. The three Kathmandu Valley cities are limited to a growth rate of 3.5 percent per year, which causes them to reach a total population of about 710,000 in the year 2000, around half of what they achieve under the least-cost scenario. However, Hetauda and Pokhara, the two other principal Hill cities, both grow faster than in the least-cost scenario. By the year 2000, these two cities would absorb about 100,000 more inhabitants than in the previous scheme.

The principal Terai cities as a group grow faster in the alternative scenario (10.53 percent per year) than in the least-cost scenario (9.19 percent), which reflects the added emphasis these cities receive under the former. These cities would include about 51 percent of the nation's urban population by the year 2000, up from 33 percent in 1985. The same group of cities reaches only 42 percent of urban population under the least-cost scenario.

Looking at all 29 cities, the alternative scenario ends up allocating about 44 percent of urban population to cities in the Hills by the year 2000, while the least-cost scenario allocates 53 percent. This also indicates the added emphasis on growth in the Terai on which the alternative scenario is based.

TABLE IV.9

ALTERNATIVE SCENARIO
URBAN POPULATION ALLOCATIONS
FOR SELECTED SETTLEMENTS

	1985 Population (000)	2000 Population (000)	Average Annual Growth Rate (Percent)
Kathmandu Valley Cities			
Kathmandu	282	471	3.48
Lalitpur	90	151	3.51
Bhaktapur	52	88	3.57
SUBTOTAL	424	710	3.50
(% of total urban pop.)	(31.1)	(17.7)	
Other Principal Hill Cities			
Hetauda*	47	168	8.86
Pokhara	65	273	10.04
SUBTOTAL	112	441	9.57
(% of total urban pop.)	(8.2)	(11.0)	
Principal Terai Cities			
Biratnagar	125	800	13.17
Janakpur	50	270	11.90
Birganj	71	292	9.88
Bhairawa	38	154	9.78
Nepalganj	40	157	9.54
Mahendranagar	92	234	6.42
Dhangadi	37	127	8.57
SUBTOTAL	453	2,034	10.53
(% of total urban pop.)	(33.2)	(50.8)	
TOTAL SELECTED SETTLEMENTS	989	3,185	8.11
(% of total urban pop.)	(73.0)	(80.0)	7.45
TOTAL URBAN POPULATION	1,363	4,006	

Regions (all 29 cities)	1985 (000)	1985 %	2000 (000)	2000 %
Hill	824	60.5	1,758	43.9
Terai	539	39.5	2,248	56.1

Source: PADCO NUPS analysis for Nepal

* In other parts of the report Hetauda is considered an Inner Terai settlement

In terms of population distribution, the overall effect of the alternative scenario is to reduce 1985-2000 urban population growth in the three Kathmandu Valley cities by about 700,000 and reallocate this number of people to cities in the Terai as well as to other Hill cities.

C. COMPARISON OF ALTERNATIVE SCENARIO WITH TREND PROJECTIONS

The preceding analysis provides insight into the differences between two hypothetical urban development strategies for Nepal, but it tells us nothing about how the UDA's tentative strategy proposal compares with real urban growth trends. We obtained population trend projections for Nepali cities from the World Bank's Interim Report on Water Supply and Sewerage. These trend projections cover all the cities which would receive primary and secondary growth emphasis under the UDA strategy proposal. A summary of figures comparing the two appears in Table IV.10. The numbers show that the strategy of giving special emphasis to promoting urban growth in major Terai and Foothill cities produces a significant but modest increase of urban population in the "growth emphasis" cities over the populations they would reach based on present trends. The primary emphasis cities would gain about 609,000 additional people and the secondary emphasis cities about 97,000, while the Kathmandu Valley cities would lose about 66,000. The reason the three Kathmandu Valley cities do not lose more population is that they are already growing relatively slowly (by Nepalese standards), at a combined rate of about 3.8 percent from 1971 to 1981, and the trend projections use a combined rate of about 4 percent for the 1981-2000 period.

This particular exercise is of limited usefulness in that it only shows a redistribution of projected total urban population. Because both the trend projections and the UDA strategy projections are based on the same baseline data and growth rate assumptions, both alternatives depart from the same sized urban population "pool." The total net addition to urban population of 427,000 people shown in Table IV.10 does not take into account what would happen if the overall rate of urbanization were increased above the projected 7.4 percent per year growth rate that we have used as a baseline. The analysis would have been more meaningful if we had run a scenario like this to reflect the basic objective of the proposed UDA strategy: to help relieve population pressure among rural Hill dwellers by stimulating urban growth (in all regions except the Kathmandu Valley). An "accelerated urban growth" scenario of this type would produce a larger amount of urban population absorption in the growth emphasis cities.

D. URBAN DEVELOPMENT COSTS vs. RESOURCES AVAILABLE

Table IV.11 presents a summary of total urban development costs generated by the NUPS model for both the least-cost and alternative scenarios. Urban development costs are made up of job creation costs and infrastructure and service provision costs. The cost of job creation for the alternative scenario is slightly higher than that for the least-cost scenario because the former allocates a greater proportion of

jobs to cities with higher marginal job creation costs (mainly the Foothill cities). On the other hand, infrastructure/service provision is slightly less expensive for the alternative scenario than for the least-cost scenario. This is because infrastructure provision is less costly in the Terai, where the alternative scenario allocates a greater proportion of urban population. The two categories of urban development costs more or less balance each other out so that there is no significant difference in total costs between the two scenarios.

TABLE IV.10
COMPARISON OF TREND WITH UDA STRATEGY
(Population in 000s)

	City Population in 2000		
	Trend Projections	UDA Tentative Strategy	Difference 1985 - 2000
Primary Growth Emphasis Cities [1]	1,464	2,073	+ 609
Secondary Growth Emphasis Cities [2]	888	985	+ 97
De-emphasis Cities [3]	776	710	- 66
TOTAL URBAN POPULATION (APPROX)	4,000	4,000	

1 Biratnagar, Janakpur, Bhairawa, Nepalganj, Dhangadi, Birganj, and Pokhara.

2 Rajbiraj, Bhadrapur, Mahendranagar, Dharan, Butwal, Hetauda, Bharatpur, Ghorahi, and Birendranagar.

3 Kathmandu, Lalitpur, and Bhaktapur.

Sources: Trend projections: World Bank, Interim Report on Water Supply and Sewerage for Nepal, 1983.

UDA strategy: PADCO analysis.

At first glance, it would appear that the Nepalese economy would generate about twice the investment resources required for meeting the urban development costs estimated by the NUPS model. According to the macro-economic projection, investment resources available for the three urban sectors—industry/power, transportation/communication/construction, and commerce/services—would total about Rs.35.6 billion (1974/75 prices) over the 1985-2000 period. Urban development costs total only Rs.18.5 to 19 billion. However, it must be remembered that our definition of urban population is limited to nagar panchayats, which receive only a portion of total "urban" investment resources. We have guessed that roughly one-half of urban investment is applied to nagar panchayats. Taking this correction into account shows that urban investment resources will be almost, but not quite, sufficient to cover the

costs of job creation and service provision in cities. The deficit for the least-cost scenario over the 1985-2000 period is approximately Rs.1.4 billion. This deficit figure is probably conservative. It would have been higher if we had assumed higher standards of infrastructure (see above).

An "accelerated urban growth" scenario (see above), in which urbanization occurs faster than current trend projections, would obviously entail higher urban development costs.

TABLE IV.11

URBAN DEVELOPMENT COSTS VS. RESOURCES AVAILABLE 1986-2000
(Rs millions in 1974/75 prices)

COSTS	"Least Cost" Scenario	Alternative Scenario
Job Creation	9,799	10,208
Infrastructure and Services	9,159	8,291
Total	18,958	18,499
TOTAL URBAN INVESTMENT RESOURCES [1]	35,603	35,603
ESTIMATE OF ACTUAL INVESTMENT RESOURCES AVAILABLE FOR NAGAR PANCHAYATS [2]	17,532	17,532
SURPLUS/DEFICIT	- 1,426	- 967

1 Projected investment (public and private) for the three non-agricultural sectors of the economy: industry/power, transportation/communication/construction, and services/commerce.

2 One-half of total urban investment resources.

Source: PADCO NUPS analysis for Nepal.

V. CONCLUSIONS

1. The Nepalese economy is projected to generate urban jobs over the next fifteen years at a much slower rate than the urban labor force is growing. Current estimates suggest that as much as half the urban population in Nepal may be unemployed and/or underemployed. This deficit will grow wider even under the most optimistic of projections. It is therefore imperative that the productivity of the urban economic sectors be improved, that urban investment be increased at a faster rate in real terms, and that a greater emphasis be placed on labor-intensive urban investments, so that the greatest possible numbers of urban jobs are created.

2. A preliminary application of the NUPS model to Nepal confirms that the following cities have the greatest economic development potential, as measured by their ability to attract industrial employment:

Hills:	Kathmandu, Lalitpur, Bhaktapur, Pokhara
Foothills:	Hetauda
Terai:	Biratnagar, Janakpur, Birganj, Bhadrapur, Nepalganj, Bhairawa, Rajbiraj

Future urban employment would be concentrated in these cities under a "least-cost" urban development scenario. Creation of new jobs is, in principle, lowest in these cities compared to others. Overall city growth projections under the least-cost scenario are consistent with current urban growth trends, which show the Terai gaining urban population faster than the country as a whole. Most Terai cities are currently growing at between 8 and 12 percent per year.

3. The Nepal Urban Development Assessment includes a tentative "urban strategy" proposal that has been evaluated using the NUPS model. This alternative aims at relieving population pressure in the Hill area by giving special emphasis to development of selected cities in the Terai and Foothills, as well as to Pokhara. Urban population in the Terai would be more evenly distributed, in that cities of the West Terai would grow faster than in the past. The strategy also involves reducing future growth of the main cities of the Kathmandu Valley. Urban population projections based on the alternative urban strategy suggest that the "special emphasis" cities would absorb around 66,000 people who would otherwise have settled in cities in the Kathmandu Valley between 1985 and 2000.

4. The NUPS model's tentative macro-economic and urban development cost projections suggest that resources available for urban investment (public and private) will not be sufficient to cover the costs of urban job creation and provision of infrastructure and services over the 1985-2000 period. While the projected deficit of urban investment resources for the 15-year period is small—about Rs.1.4 billion in 1974/75 prices—it is a conservative estimate. The infrastructure and services costs are based on fairly low standards, and some services--drainage,

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electric power, and public transport—were left out due to lack of data. Actual costs of urban infrastructure and services might well be 50 to 100 percent higher than projected. In addition, total urban development costs would be even higher than those projected here if Nepal were to adopt a strategy to increase the rate of urbanization. To expand the resources available for urban investment, it will be necessary to find ways of mobilizing more domestic resources (foreign assistance has accounted for all of the real increase in total investment in recent years, but this cannot continue indefinitely). It would also be desirable to seek rapid improvements in the productivity and payoff rates of industrial investments, which have been disappointing in the last decade.

5. We have been able to perform only a very preliminary and limited application of the NUPS model to Nepal. Additional work could be done to produce more useful and accurate results. For example, estimates could be made of the job creation and services/infrastructure costs of a strategy to accelerate the growth rate of urban populations in selected cities. This would provide an idea of the additional costs of absorbing more new urban dwellers in these cities than would be absorbed if current trends continued. More work could also be done on refining the economic parameters—ICORs and ILRs—and infrastructure services cost estimates that are inputs for the model. Different infrastructure standards packages could be designed for different types of cities. Finally, a number of sensitivity analyses could be performed to determine the effects of changing key assumptions such as varying the investment rate, adjusting future trends in ICORs and ILRs, shifting investment resources among sectors, and varying the levels of infrastructure and services.

APPENDIX I

A. ADMINISTRATIVE FRAMEWORK

1. Government Structure—National and Local Government

The following is adapted from the Water and Sewerage Study for the IBRD's Fourth Water Supply Project, Proctor and Redfern, 1983.

Nepal's first written constitution of 1962 has been subsequently amended in 1967, 1975 and 1980. The present form of government is under the partyless panchayat system under the leadership of His Majesty King Birendra.

Administratively Nepal is divided into:

5 Development **Regions**: Far West, Mid West, West, Central and East.
14 **Zones**: Far West Region - 2 Zones; Other Regions - 3 Zones each.
75 **Districts**: Between 4 and 8 Districts in each Zone.
29 Nagar panchayats and numerous gaon panchayats Town and Village Councils.

At the national level, the legislative assembly is the Rastriya Panchayat. Of its 140 members, 112 are elected by the adult population (with either one or two members representing each district). The remaining 28 members are appointed by the King. The Rastriya Panchayat nominates the Prime Minister by a majority vote. He in turn nominates the members of the Council of Ministers (who may be Ministers or Ministers of State, or Assistant Ministers).

There are presently 17 Ministers or Ministers of State (assisted by 19 Assistant Ministers) as follows:

Prime Minister

Ministers:
- Home Affairs
- Panchayat and Local Development
- Industry Commerce and Supplies
- Finance
- Justice and Land Reform
- Foreign Affairs
- Water Resources

Ministers of State:
- Labour and Social Welfare
- Forest and Soil Conservation
- General Administration
- Communications
- Works and Transport
- Tourism
- Education and Culture
- Agriculture
- Health

The senior civil servant in each ministry is the secretary. Below this level, ministries may be organizationally divided into departments, and may have established (and reporting through the ministry) various boards (often with a project execution focus) and corporations. Geographically, the departments may have offices in the regional headquarters or sometimes in zonal and district headquarters.

The "region" is not a level of political administration, but rather an area designated for the equity objectives of development planning and for national Government administration. Government departments are well represented with local offices at the regional headquarters, and these are subject to special town planning and implementation arrangements. Similarly the "**zone**" is a level of national Government administration. The senior zonal official is the Zonal Commissioner, who is appointed by the King and who monitors and coordinates certain activities within the zone.

The next level of political administration is the **district**. The **district panchayat** comprises nine members and a Chairman and Deputy Chairman. Their members are elected by the nagar and gaon (town and village) panchayat (assembly) members and from representatives of the class organizations (Adult, Woman, Peasant, Youth, Worker and Ex-Serviceman) from each of nine areas into which all districts are divided. The Chairman and the Deputy Chairman are elected by the same people on a district-wide basis.

The **district assemblies** raise funds from taxes, receive financial assistance from the Government, approve and execute certain projects of various kinds and may petition the Government for particular action in their districts. A representative of the Home Ministry, the **"Chief District Officer"** (CDO), coordinates the activities of Government departments in the districts and supervises police and "law and order" matters in the district. A representative of the Ministry of Panchayat and Local Development, the **"Local Development Officer"** (LDO), provides technical and coordination assistance to the district activities. The authority and responsibility of a district panchayat are governed by the District Panchayat Act 1962 with 13 revisions to August 1982. The Decentralization Act 1982 also has important relevant provisions.

The nagar and gaon panchayats (town and village councils) are elected. Typically, there are five representatives from each of the 10 to 20 wards (led by a Ward Chairman, elected by the adult residents of the ward). The Pradhan Pancha (Mayor) and Deputy Pradhan Pancha are elected by the adult residents of the community-at-large. There are presently 29 nagar panchayats (increased from 27 in 1982) and 3,947 gaon panchayats (increased from 2,900 in 1982). The nagar and gaon panchayats also raise revenue from various taxes.

They may receive financial assistance from both the national and district levels of Government, may approve and execute projects of various kinds, and may petition the Government for a particular action in the community. The responsibility and authority of nagar panchayats is governed by the Town Panchayat Act 1962 with eight revisions to November 1979. The Decentralization Act 1982 also has important relevant provisions.

TABLE API.1

29 NAGAR PANCHAYATS - NEPAL 1983

Far West	Mid West	West	Central	East
Mahendra N* (D)	Birendra N* (R)	Bhairawa* (D)	Bharatpur* (D)	Lahan*
Dhangadi* (D)	Nepalganj* (Z)	Pokhara* (R)	Birganj* (D)	Rajbiraj* (Z)
Dipayal (R)	Tribhuvan N* (D)	Butwal* (Z)	Hetauda* (Z)	Dhankuta* (R)
		Tansen (D)	Kathmandu* (C&R)	Dharan* (Z)
		Taulihana (D)	Bhaktapur* (D)	Biratnagar* (D)
			Patan* (D)	Damak
			Banepa	Ilam* (Z)
			Kalaiya (D)	Bhadrapur*
			Jaleswar (D)	
			Janakpur* (D)	
(3)	(3)	(5)	(10)	(8)
2*	3*	3*	7*	7*

(C) Capital; (R) Regional HQ; (Z) Zonal HQ; (D) District HQ.
* Under study by IBRD's Fourth Water Supply project

Some aspects of the panchayat system are indigenous to Nepal. Before formalization of its present structure, there was a tradition whereby a group of respected leaders in a community was accepted by the community as a vehicle for the local administration and dispensation of justice in settlement of disputes and application of social sanctions and other penalties to those who failed to observe accepted personal conduct. To some extent, the traditional and the new formal systems may be operating together in some villages in Nepal, but the traditional system is rapidly vanishing in the towns, and it can be expected that its influence in the villages will also erode but more slowly.

The HMG has adopted a clear policy of strengthening the role of local governments in the future. In particular, the Decentralization Act 1982 provides for development planning at the district level (for both locally and centrally funded projects) to reflect the district perception of priorities. The Act is recent and therefore details of its working in practice are not yet known.

The preceding has described the structure of the legislative and executive areas of the Government. The judicial area is headed by the Supreme Court; there are local courts at the zonal and district levels.

Economic Planning: National Planning Commission—The Sixth Plan (80-85)
The preparation of development plans is the responsibility of the National Planning Commission, which is chaired by the Prime Minister and whose members (about 10) are accepted as respected individuals with a background sometimes in politics and sometimes in a particular profession or academic discipline. Certain other trans-sectoral activities (eg. the National Census and the Central Bureau of Statistics) are organized under the Planning Commission.

2. Key Urban-Related Ministries

Ministry of Water Resources

The Ministry of Water Resources embraces all aspects of water resources management, particularly hydroelectric power, irrigation and drinking water. It is organized as follows:

Ministry of Water Resources (MWR)
- Department of Water Supply and Sewerage (DWSS)
  ... Water Supply and Sewerage Board (WSSB)
- Department of Irrigation, Hydrology and Meteorology
  ... Groundwater Resources Development Board (GWRDB)
  ... Hydrology Section
  ... Organizational Units for Specific Irrigation Projects
- Electricity Department (ED)
- Water and Power Commission (WPC)

Electric power development, transmission and distribution are the responsibility of the line departments and associated agencies of the Ministry of Water Resources (MWR) as follows:

The Water and Energy Commission (WEC)
is a special planning unit responsible for preparing water and energy strategy and recommending appropriate development programs to HMG in all aspects of water and energy.

The Electricity Department (ED of MWR)
develops all major generation plants, provides bulk supply transmission and also distributes electricity in the Far West and Mid West Regions.

The Nepal Electricity Corporation (NEC)
distributes electricity in the Central and Western Regions.

The Eastern Electricity Corporation (EEC)
used to distribute electricity in the Eastern Region (1981), and is now integrated with NEC.

The Small Hydel Development Board (SHDB)
is responsible for developing small hydroelectric projects in remote communities.

Ministry of Land Reform—Survey Department

The Ministry of Land Reform is concerned with population resettlement schemes and the reform of land ownership structure. Of particular interest to this project is the Survey Department, which is organized as follows:

Ministry of Land Reform:
- Survey Department
- Geodetic Survey
- Topographic Survey
  ... Cartography
  ... Photography
  ... Reproduction
  ... Computation
  ... Field Survey
- Cadastral Survey
- Training

The Survey Department is also receiving technical assistance financed by CIDA through the services of the Canadian firm of Kenting Earth Sciences in a resource mapping project. This is based on new (1978-79) aerial photography, mostly at 1:50,000 but sometimes at 1:20,000, and the preparation of interpretative maps and related reports as follows.

Topic:	Scale:
Land Classification	1:50,000
Land Utilization	1:50,000
Soils (Agriculture)	1:50,000
Climate (Far West, Mid West only)	1:250,000
Geology	1:125,000

While in concept the Topographic Survey Section is the repository of the aerial photographs and topographic maps available in the country, it appears that in some instances, specific photography or mapping is undertaken by the Section on a contract basis for a specific project unit in another department. In this case the mapping can usually be obtained (or even its existence identified) only by contract with that project unit.

We will also note here the availability of a series of maps at various scales prepared by the "population mapping unit" attached to the Census Bureau which for the first time mapped the boundaries and the ward boundaries of the Nagar Panchayats.

Ministry of Works and Transport (and Physical Planning)

The following organizational description of the Ministry of Works and Transport is not complete, but it identifies the elements of potential relevance to urban projects.

Ministry of Works and Transport:

- Roads Department (RD)
- National Construction Company of Nepal (NCCN)
- Transport Corporation
- Department of Housing and Physical Planning (DHPP)
  - ... Physical Planning Section
  - ... Design Section (Buildings)
  - ... Construction Section (Buildings)
  - ... Maintenance Division
  - ... Planning Boards for Regional Development Centres
    - Kathmandu Valley (CENTRAL)
    - Pokhara (WEST)
    - Surkhet (Mahendra Nagar) (MID WEST)
    - Dhankuta (EAST)
    - Dupayal (FAR WEST)

Ministry of Panchayat and Local Development (MPLD)

This ministry exercises supervision of the district, town and village panchayats and is the administrative vehicle for Government grants to those subordinate levels of Government. At the five regional headquarters, there is a regional directorate. At the district level, the local Development Officer (LDO) is a representative of this ministry. His office has units concerned respectively with finance, administration, development and planning and the District Technical Officer (usually an engineer). The district office assists the district panchayat in district land planning, which has been given increased impetus under the 1982 Decentralization Act.

MPLD assigns one officer to each of the nagar panchayats. His principal role is to advise the nagar panchayat of their authority and responsibility under the Nagar Panchayat Act and other legislation. The nagar panchayats are in turn required to file audited annual financial statements with MPLD.

Although MPLD has supervision responsibilities for the nagar panchayats, it is clear that the district panchayats (and through them, the village panchayats) receive the concentration of attention from MPLD. There is no organizational unit in MPLD which is specifically concerned only with the nagar panchayats, or which has a specifically urban focus.

The technical efforts of this ministry are concentrated in village-level water supply and sanitation (with assistance from UNICEF), in local small-scale irrigation schemes, pedestrian suspension bridges, and so forth.

Ministry of Industry and Commerce

This ministry is subdivided into departments concerned with industry, mines and geology, tourism and commerce.

The **Department of Industry** supervises a number of government corporations which operate manufacturing industries. It also has an Industrial Promotion Division, concerned with creating an appropriate environment for private investment in industrial activity. Under this division, the **Industrial Services Centre (ISC)** conducts feasibility studies on the viability of industrial ventures, provides consulting services to publ[illegible]rivate industrial concerns and prepares specific industrial proposal[illegible]blished an Industrial Sector Plan Study for the period 1980/1[illegible]. The **National Industrial Development Corporation (NIDC)** extends financial assistance to industries in the private sector, including tourist facilities.

This department also coordinates HMG policy and assistance in the development of small-scale cottage industries, this program is receiving assistance from the World Bank.

The **Department of Mines and Geology** undertakes geological exploration and mapping, mineral and hydrocarbon exploration and provides **geotechnical services.**

The geotechnical services include expertise, drilling from one of five to six rigs (rotary and percussion) available and laboratory services for plastic and liquid limits, grain size distribution, moisture content, triaxial compression tests and standard penetration.

Tourism is a major industry in Nepal, which has seen dramatic growth in the sixties and seventies. It is a major contributor to Nepal's foreign exchange earnings. Public sector participation in this industry has involved personnel training, tourism promotion, general information investments, and investments in private sector facilities through the NIDC.

B. TOWN PANCHAYAT FUNCTIONS

The following materials are adapted from "Urban Roads and Drainage Maintenance System in Nepal" submitted to BDP Bhaktapur, Integrated Development Systems, November 1983.

The functions to be performed by the Town Panchayt Council (TP) cover almost all areas of urban development and services. It appears, according to the functions entrusted to a TP, that the TP was really intended to function as the main urban development authority. However, this has not generally been the case. The activities

to be performed by a TP can be broadly categorized under five headings: construction and development works, public health and sanitation, public health and safety, judicial, and miscellaneous as follows:

1. **Development and Construction Works**

- Construct, maintain and clean roads, bridges, and sewer, and drain outlets;
- Arrange for electrification of streets and lanes;
- Establish and supervise the running of schools in conformity with the rules and regulations of the Department of Education;
- Construct and maintain ponds and water supply for cattles and animals;
- Establish and ensure proper arrangements for establishment of museum, zoo, art gallery, library and rest houses;
- Plant trees and arrange for their conservation;
- Arrange for exhibition, town-fairs etc.;
- Cooperate and assist in various development works initiated by the District Panchayat or District Development Committee.

2. **Public Health and Sanitation**

- Construct, maintain and clean lavatories and urinals;
- Arrange for drinking water and ensure its purity;
- Arrange for collection and dumping of garbage, rubbish or other harmful things, and prohibit sale of rotten and stale commodities including meat of sick or prohibited animals;
- Specify areas for cremation ground or 'ghats' and washing purpose;
- Eliminate threat of rabies by killing or controllig stray dogs;
- Arrange for medicines and treatment in times of epidemics;
- Repair or cause repair of houses, trees, ditches and other like things which pose public hazards;
- Arrange for gymnasium dispensary and hospitals, other medical services and health exhibition;

- Arrange for removal of patients suffering from infections disease and for cleaning of ponds, ditches and wells not in operation.

3. Establish, arrange for, or operate Dharmashala, pati and Pauwas

- Arrange for pens to keep in custody cattles and other animals creating traffic or other hazards;
- Prohibit illegal and dangerous trade and professions;
- Arrange for possible assistance at times of calamities;
- Establish and run public transport service.

4. Judicial

- Arbitrate complaints on inconveniences caused by houses, roads or drains;
- Designs for houses submitted by the people and order the destruction of a house, or a portion thereof, if the house, or portion thereof, has been changed from the design approved;
- Examine the weights and measures in use.

5. Miscellaneous

- Maintain vital statistics on birth, death, and the size of population;
- Maintain data and information on houses and lands, distribution of block number on house and name streets;
- Prevent cruelty on animals;
- Survey area under its jurisdiction and maintain survey maps;
- Specify parking places and stops;
- Construct gardens, parks and other utilities of high public use (e.g. wells, dams, canal, ponds, etc.);
- Catch lunatics or those behaving vulgarly and hand them over to guardians or, in the absence of guardians, to police for custody;
- Compel children of 6 to 10 years to attend schools, if not attending.

The TP has been empowered to collect taxes, charges fees, octroi and levies. For example, it can collect house-tax (property tax) to a maximum of Rs. 10 per house per annum. Likewise, it can collect taxes on rents accruing to the owner from leasing houses, land, shops or garages at a maximum rate of 2 percent on rent accruals. Similarly, a TP can collect taxes or charge license fees on trade and on other professional (e.g. legal or medical practices) activities. A TP is also empowered to collect vehicle (including bicycles or push-carts) taxes and charge a fee on construction designs submitted for its approval.

On the whole, the tasks to be performed by a TP are indeed comprehensive and, perhaps, daunting as well. These tasks are specified as the right and duties of a TP and are to be performed in its area of jurisdiction through the Pradhan Pancha, or a member, or a committee of members, appointed by the Pradhan Pancha. The limited resource base, legal authority, and the organizational capability, in addition to frequent encroachment by Government agencies in the TP's area of jurisdiction, have caused a great imbalance between the authorized functions and the actual performance of the various tasks.

In Table API.2, elements of municipal finance are presented for nine nagar panchayats for reference. Data for seven of the settlements were derived from the "Urban Roads and Drainage Maintenance Systems" report (GTZ 1983). Data for Bhairawa and Pokhara were compiled by the UDA team.

TABLE API.2a

ELEMENTS OF MUNICIPAL FINANCE IN SELECTED SETTLEMENTS

URBAN CENTER	ORGANIZATION	STAFFING	EQUIPMENT (ROADS)
KATHMANDU pop. 235,000 (1981) expenditure per capita	Seven (7) Sections: - Goswara section - Sanitation - Statistics - Treasury - Engineering & Construction - Design & Legal - Tax section	933 total employees (133 mainly drivers and sweepers)	4 big tractors (one currently not functioning) 33 power trailers 1 jeep 2 cars (one not working)
BIRATNAGAR pop. 94,000	Seven (7) Sections: - Administrative - Development & Planning - Finance & Tax - Accounts - Stores - Health & Sanitation - Legal	226 total employees (75 sweepers)	1 car 1 bus 2 jeeps 3 tractor-trailers 3 push carts 2 road rollers 3 fire engines
DHARAN pop. 42,000	Unknown	115 total employees (nongazetted) 47 nongazetted ranking 36 peons, sepoys 30 sweepers	1 barely operational road roller (needed major repair)
BIRGUNJ pop. 44,000	Six (6) Sections: - Administrative - Accounts + tax subsection - Planning - Store - Sanitation - General - Secretariat	242 total employees (nongazetted) Principal positions: Khardiyas 10 Baludars 11 Mukhiyas 9 Checkpoints 10 Technicians 11 Sweepers 160 Orderlies 18	2 road rollers 2 motorcycles 1 fire engine 3 buffalo carts 2 night soil tanks 20 wheelbarrows 1 car 1 jeep 3 tractors 5 trailers 23 bicycles
HETAURA pop. 35,000	Seven (7) Sections: - Administrative - Accounts - Planning - Stores - Arbitration - Sanitation - Taxation	106 total employees 14 3 4 2 2 37 5	no equipment except a tractor
LALITPUR pop. 80,000	Fourteen (14) Sections, Three (3) Sub-sections: - Medical - Health & Sanitation - Design - Design Check - Administration - Accounts - Arbitration - Taxation - Stores	180 total employees Some positions: nongazetted 1st Class - 8 overseers 2 sweepers 100	no equipment or vehicles
BHAKTAPUR pop. 48,000	Nine (9) Sections, Three (3) Sub-sections: - Taxation - Accounts - Planning - Administration - Arbitration - Design - Health & Sanitation - Health Sub-section - Meeting	152 total employees Principal positions: nongazetted: 26 peons: 17 sweepers: 41	1 jeep 1 tractor 1 trailer 14 push carts 2 manually operated cleaning rods
Jua Tesm BHAIRAWA pop. 30,000	Six (6) Sections: - Administration - Health - Transportation - Library - Ward committee - Fire brigade	139 total employees 54 employees 44 (40 health aides) 6 3 11 15	N/A
POKHARA pop. 47,000	Four (4) Sections: - Administration - Construction - Fire brigade - Health	125 total employees 85 (estimates) 6 28 6 (and 54 sweepers)	N/A

TABLE A.PI.2b

ELEMENTS OF MUNICIPAL FINANCE IN SELECTED SETTLEMENTS (continued)

URBAN CENTER	EXPENDITURES FY 1982/83	REVENUES FY 1982/83	ACTIVITIES
KATHMANDU pop. 235,000 (1981) expenditure per capita	Budget: regular Rs. 11,500,000 (salary Rs. 5,718,000) development Rs. 700,000 Rs. 17,200,000 per capita Rs. 73 (1981 pop.)	Total: Rs. 18,500,000 Elements: trade tax Rs. 9,602,000 Registration/ loading Rs. 325,100 vehicle Rs. 1,305,000 Professional/ commerce Rs. 160,000 Industry Rs. 285,000 Advertisement Rs. 530,000 HMG grant Rs. 600,000	(1) town level construction (i.e. compound wall or bus parks) (2) ward level minor construction and repair
BIRATNAGAR pop. 94,000	Budget: regular Rs. 4,185,000 (salary Rs. 1,265,000) development Rs. 10,210,000 Rs. 15,395,000 per capita Rs. 164	Total: Rs. 16,300,000 Major elements: commercial tax Rs. 6,000,000	Black-topped 3.15 km of road Gravelled 7.22 km Constructed 5.96 km water-bound Macadam road 5.67 km of road repair (black-top)
DHARAN pop. 42,000	Total: Rs. 3,300,000 (road repair Rs. 230,000) (new roads Rs. 500,000) (drainage Rs. 15,000) per capita Rs. 79	Elements: trade tax Rs. 1,400,000 HMG grant Rs. 480,000 Dist. grant Rs. 100,000	Allocations for road repair, drainage system, construction, brick soling
BIRGUNJ pop. 44,000	regular Rs. 2,882,000 development Rs. 6,403,000 Rs. 9,285,000 Principal elements: Administration Rs. 1,092,000 Education Rs. 205,000 Health/sanitation Rs. 1,205,000 Development const. Rs. 1,403,000 Relief Rs. 319,000 Irrigation/water Rs. 700,000 per capita Rs. 211	Total: Rs. 8,695,000 Elements: HMG grant Rs. 600,000 trade tax Rs. 4,628,000	Construction of drains
HETAURA pop. 35,000	Total: Rs. 1,123,000 Elements: Education Rs. 30,000 Health Rs. 188,000 Construction Rs. 1,164,000 per capita Rs. 32	Total: Rs. 1,731,000 HMG Rs. 700,000 District Rs. 50,000 Timber Corp. Rs. 25,000 Trade Rs. 375,000 Vehicle Rs. 331,000	Construction and maintenance of roads by borrowing equipment (plan: to black-top 1 km of road/year)
LALITPUR pop. 80,000	Budget: regular Rs. 1,843,000 development Rs. 2,606,000 Rs. 4,449,000 per capita Rs. 56	Total: Rs. 4,445,000 "regular" Rs. 2,733,000 "development" Rs. 1,711,000	Gravelling, construction of road surface drainage; black-topping, repair
BHAKTAPUR pop. 48,000	Budget: regular Rs. 803,000 salary Rs. 468,000 Elements: Health/ Education Rs. 80,000 Development Rs. 1,848,000 Rs. 2,651,000 per capita Rs. 55	Total: Rs. 3,089,000 Elements: min. tourism Rs. 49,000 Panchayat Rs. 180,000 HMG Rs. 523,000 HMG total Rs. 752,000 Livestock sales tax Rs. 572,000 BDP Rs. 320,000 Rental Rs. 350,000	No evidence of involvement in construction or maintenance. Main concern directed toward town level constructions (relatively big). Non-involvement with roads due to poor resource base; BDP
UDA Team BHAIRAWA pop. 30,000	Administration Rs. 1,359,069 Admin, Ed, Health, Soc Dev, Trans. Construction Rs. 1,609,000 Planning Rs. 1,673,500 Miscellaneous Rs. 269,500 Fire brigade Rs. 203,382 Rs. 5,114,451 per capita Rs. 170	Principal revenues: rest house tax Rs. 2,350,000 rural bazaar tax Rs. 100,000 fixed tax Rs. 1,077,457 HMG grants Rs. 500,000 (District) Rs. 25,000 Fire brigade Rs. 200,000 Rs. 5,113,594	
POKHARA pop. 47,000	Principal expenditures: Salary Allowances Rs. (899,000) Administration Rs. 1,567,362 Construction Rs. 2,402,028 Health Rs. 308,478 Fire brigade Rs. 208,793 Planning Rs. 807,735 Other Rs. 10,000 Total (unsure) Rs. 5,304,396 per capita Rs. 113	Principal revenues: rent (land bldg.) Rs. 396,000 quarries Rs. 399,000 vehicle tax Rs. 200,000 HMG grant Rs. 100,000 business tax Rs. 90,000 (unsure) Rs. 5,428,883 (including additional grant request)	

APPENDIX TWO

SETTLEMENT TYPOLOGY

A. HILL SETTLEMENTS

1. **Kathmandu Metropolitan Area:** Three Nagar Panchayats are located in the Kathmandu Valley: Kathmandu, Lalitpur (Patan), and Bhaktapur. Settlements in the Kathmandu Valley have historically been centers of government and power. Their growth can be attributed to the richness of the valley, their locations on the routes between Tibet and India, and linkages with the rest of the country. Each has benefited from substantial investment—particularly Kathmandu. Recent dominance of Kathmandu over Lalitpur (Patan) and Bhaktapur is due to the former's government role and the diversification of its local economy. From an urban perspective, Lalitpur has become an integral part of Kathmandu while Bhaktapur remains a predominantly agriculturally-related settlement. Kathmandu—as a regional center and hub of government, power, income, trade and commerce, tourism, and the foreign community—is the primary urban area. It is the major urban market for manufactured goods. Its economic base is strengthened by its fertile valley.

   Kathmandu also serves as a catchment for Hill population from its hinterland as well as other parts of the country. Yet its isolation and limitations for manufacturing suggest that it is possible to constrain its growth in favor of other settlements in appropriate locations.

2. **Secondary Hill Cities**

   Pokhara: As a center for tourism, government regional center, settlement area for retired Gurkha soldiers, marketing and distribution center for its hinterland, center for health, higher education and springboard for many regional activities such as land control and forestry, Pokhara is the second largest Hill settlement. Its rate of growth (8.5%) during the period 1971-81 was accelerated by investment and provision of services in regional road and transport, power, water, and the creation of an industrial estate. Tourism investment and jobs appear to have been the major motors of local development; however with the general growth-stabilization of tourism and Pokhara's limited share and type of tourism (primarily low-budget type),job opportunities are presently limited. Furthermore, although Pokhara is benefiting from an IBRD cottage industry project, it is having difficulty marketing its products.

   Pokhara will continue to play an important role as a regional service center but, although it has unconstrained opportunities for physical growth, it is anticipated that it may have difficulty generating jobs on a large scale.

3. Tertiary Hill Settlements

Tansen: Tansen is an historical town whose growth has been stimulated by regional service investment. It is also a district capitol. Its rate of growth was on the order of 7.3 percent per annum during 1971-81. Perhaps, because of its long history, it has traditionally been well-organized politically to deal with its regional interests. Tansen, however, is a ridge town with physical constraints for growth. With the introduction of the Pokhara-Butwal road, there is reason to believe that Tansen's regional role will diminish somewhat since it is removed from the main valley road.

Dhankuta: is a regional center as designated by the Fourth Plan and supported in subsequent plans. As such, it has benefited from urban planning support by the DHBPP for a period of about ten years. Dhankuta's rate of growth (12.3% per annum) was very rapid between 1971-1981. Its growth can be attributed to government investment and construction of regional social services and administrative facilities. Dhankuta, like Tansen, is a ridge town and thus suffers from severe physical development constraints and relative isolation despite the newly constructed access road. The field visit also suggested a lack of economic animation in the settlement. It appeared that Dharan plays a much more economic and regional service role for the Eastern hills than does Dhankuta. For these reasons, the importance of its stated role as a regional service center need to be reexamined.

Dipayal: is a recently created Nagar Panchayat and regional "growth pole" for the Far Western Development Region. The UDA team was unable to visit the settlement or obtain adequate data on it. Apparently, it is situated on a river bank with physical constraints for development. Service provision is limited and it serves primarily as a local market town.

Illam: in the tea growing area of Nepal, is relatively isolated and as a consequence suffered a low rate of growth (3%) over the period 1971-81. Currently, it has no administrative function other than that of a Nagar Panchayat. However, it does serve as a local market town. The principal marketing and distribution point for the Eastern hills is Dharan which enjoys good access to the East-West Highway.

Banepa: Located east of Kathmandu, on the Koderi Road, Banepa is a newly-created Nagar Panchayat. The UDA team was unable to visit it, or obtain much relevant data on the settlement. It appears to be primarily a local market town.

Dimak: is also a newly created Nagar Panchayat with no other administrative function. Very little data exists for this settlement. It is located in the Eastern Development Region and appears to serve primarily as a local market town.

B. TERAI SETTLEMENTS

Growth in the Terai settlements has been sparked by investment in transport and industry and the Terai's agricultural productivity.

1. Inner Terai Settlements

Hetauda and Bharatpur: These settlements are located in the Rapti Valley of the Central Development Region. They are both situated on commercial routes that lead to Kathmandu from Terai towns and entry points for goods from India. Hetauda is in proximity to the Kulikhanii Dam but both benefit from power that it provides. Hetauda also has an industrial estate and is the seat of the ropeway to Kathmandu. Agricultural development in the valley has benefited both settlements. Both settlements have administrative functions: Bharatpur is a district capitol while Hetauda is a zonal capital. Neither of the settlements has any physical development constraints. Building materials (sand, gravel, stone) are particularly plentiful in Hetauda, and there is a cement plant located there.

With the completion of the Mugli-Bharatpur road, Bharatpur became a principal crossroad for traffic coming from most of the Terai en route to Kathmandu (East, Central, and West). As a consequence, growth has been more rapid there than in Hetauda.

Birendranagar and Tribuvan Nagar: These settlements are located in the Mid-Western Development Region. They are both valley or Inner Terai Towns. The former is located in the Sirket Valley while the latter is found in the Rapti zone.

Birendranagar has benefited from substantial investment in construction and service facilities as it was designated as one of the six regional "growth poles". Tribuvan Nagar is a district capital.

Birendranagar and Tribuvan Nagar had growth rates in excess of 10 percent per annum during the period 1971-81. However, this growth is likely related to temporary employment growth in construction and government workers. Though both settlements have small airfields, they do not enjoy easy access to the national road network, and they share a relatively impoverished hinterland.

2. Foothill Settlements

Dharan and Butwal: are situated at the Foothills of the Churia range. Dharan, the larger and faster growing of the two, is located in the Eastern Development Region and Butwal is in the Western Development Region. Though Dharan is the more dominant and long-standing of the two, both serve

as marketing and distribution points for the Hill areas in their proximity, and are important transport depots and commercial service centers. In Dharan, a base for recruitment of Gurkha soldiers is established. In addition, both of the settlements are Zonal Headquarters. Though neither settlements has an airfield, these are readily accessible in Bhairawa (Butwal) and Biratnagar (Dharan).

3. **Principal Terai Settlements**

Principal Terai settlements are situated on the border with India. The settlements are quite evenly distributed along the border. Distances range from about 110 to 140 kilometers in the East and 160-200 kilometers in the West. The increase in distance in the West is interesting since it is the poorer of the two regions.

Biratnagar: located in the Eastern Development Region, is situated in the midst of the jute growing area. Two major jute industries are located there with about 10,000 employees. Biratnagar is Nepal's most important industrial center with about industries located there. It is situated on the Indian border and is connected to an Indian railhead that serves for the export of jute and other goods to India and third countries. Most exports from Nepal exit through Biratnagar. It also has its own airfield that serves much of the region. Biratnagar lies on the Dankuta-Biratnagar Highway and has direct access to Nepal's East-West Highway.

The settlement can expand easily in directions that will not interfere with the border. However, the government's declared policy of restricting location of industry within 8 kilometers of the border does pose some development constraints if these are enforced.

Biratnagar is a district headquarters with good health and educational facilities which service its immediate and distant hinterland (including the Hills).

Janakpur: is recognized as the birthplace of the Hindu God Shiva and is the site of a principal temple. As a consequence, it attracts many pilgrims each year. It is also the site of a large tobacco and cigarette factory that employs approximately several hundred workers. Several other industries are located there as well. Janakpur is located near but not directly adjacent to the border. It has a small airfield plus access to the Indian railway and the East-West Highway.

As a district headquarters and regional service center, it is one of the fastest growing of the principal Terai cities (9.3% per annum).

Birgunj: is located on what is now the principal trade route with India. It has access to the Indian rail facilities and the central route to Kathmandu (via Hetauda). Birgunj is located in close proximity to the Indian town of Rauxhall; consequently, a good deal of "commuting" occurs between the cities across the open border.

Because of its locational advantages, numerous industries have been recently installed there. Birgunj has been growing at an annual rate of 13.44 percent per annum during the period 1971-81 and is the fastest growing of the principal Terai towns.

Bhairawa: Between Birgunj and Bhairawa the Nepal's Terai Plain is interrupted by the border which reaches to the foothills. This causes the East-West Highway to be deviated through the Central Rapti Valley and the Inner Terai settlements of Hetauda and Bharatpur before it intersects the Pokhara Bhairawa road.

Bhairawa is one of the principal entry/exit points for traffic from and to New Delhi and the West. It is served by narrow gauge Indian rail. It also has an airfield which serves the surrounding area for which it is a district headquarters.

Bhairawa is a small industrial center for liquor, leather, and other industries. According to shopkeepers interviewed, commercial activities have been declining in recent years due to export controls and the rise of Birgunj. Apparently, Bhairawa (and Nepalgunj) were illicit entry points for the export of third country goods into India. The settlement's growth rate between 1971-1981 averaged 5.7 percent, less than the average growth rate for Terai settlements. This is unusual given the introduction and upgrading of inter-urban routes to Pokhara and Bharatpur. Nevertheless, a linear corridor between Butwal and Bhairawa is currently being built up, demonstrating economic growth potential.

Nepalgunj: had the lowest overall growth rate of principal Terai settlements during the last census periods. This is particularly surprising given the predominance of the population increase in the Western Terai. (See Figure II.8) Part of the reason for this is that construction of the East-West Highway has not been fully completed to Nepalgunj. A good portion of it is useable only by jeeps. As a consequence, traffic is diverted through India.

Nepalgunj is served by the Indian rail facilities; but for third world country imports and exports, Calcutta is the principal port used which favors transport-related facilities in the eastern portion of the country. As with the other Terai towns, Nepalgunj has an airfield which serves its hinterland.

Nepalgunj is a zonal headquarters and regional service center for its agricultural hinterland and contains a number of agro-industries.

Dhangadi: is located in the Far Western Development Region. It is the headquarters for the Kailali district. Dhangadi has a population of about 27,000 though its 1971-81 growth rate is unknown. Like Mahendra Nagar, Dhangadi is not yet linked to the rest of the country by the East-West Highway. Road traffic is diverted through India. It is, however, linked to the interior

(Dandeldhura) by paved road. Because of the breadth of the Terai in this area, Dhanghadi is located in a large arable hinterland; consequently, it serves as a rural service center and market town.

Mahendra Nagar: is located in the Far Western Development Region. It is the fastest growing of the principal Terai towns (20.8 percent per annum between 1971-81). However, part of this growth appears to be due to boundary changes. Mahendra Nagar is apparently a conglomerate of a number of villages and does not have a distinctly urban character.

Rapid growth in the region suggests that an important increase in the size of Mahendra Nagar is justified. There is less of a free flow of traffic between Mahendra Nagar and India than the other principal Terai settlements. This is apparently due to Indian military presence in the sensitive area immediately west of Nepal.

Despite its rapid growth, Mahendra Nagar suffers with isolation from the rest of the country. The East-West Highway will not reach the settlement before 1990, though it does have its own airfield.

Mahendra Nagar is a district headquarters and regional service center. It is located in one of the few areas Terai areas that remain forested. However, deforestation and subsequent cultivation have been the factors leading to population growth in that portion of the Terai.

4. Other Terai Settlements

The other Terai settlements that classify as Nagar Panchayats primarily serve smaller hinterlands. They are located roughly in between the larger centers. For example, Biratnagar is located between Bhadrapur and Rajbiraj; Dhangadi is located between Nepalganj and Mahendra Nagar. However, in many cases, administrative considerations were instrumental in their designations as Nagar Panchayats. For example, Taulihana, Kailaiya, and Jaleswar are district or zonal headquarters.

Eastern Terai

Bhadrapur: is located in the extreme east of the Terai. It is one of the smallest and slowest growing Nagar Panchayats. It is not situated favorably with respect to internal or international trade which has contributed to its slow growth; and, in addition, it has no administrative function. Apparently, population flows between Bhadrapur and adjacent Indian settlements are common.

Rajbiraj: is not well integrated into the transportation network; nor does it benefit from Indian rail facilities. Furthermore, with the introduction of the national transport network it is common for intermediate settlements to decline in importance in relationship to larger ones due to time/distance considerations.

Jaleswar: is located in close proximity to Janakpur and the Indian border. Apparently it was selected as a zonal headquarters because a suitable building was located there. It does not have access to Indian rail facilities. It is a small rural service center and market town.

Western Terai

Taulihawa: is located in the Western Development Region. It is a newly created Nagar Panchayat and district headquarters.

Primarily a rural service center and market town, it is in close proximity to Lumbini, the birthplace of Buddha and a pilgrimage spot.

APPENDIX III

DHBPP PLANS AND STATUS FOR SELECTED SETTLEMENTS[1]

MAHENDRA NAGAR

The zoning map is ten years old (1973). The road network map is being updated. A Town Development Committee exists under the Act(s). The Chairman is the Zonal Commissioner; the Secretary is the Pradhan Pancha (Mayor).

DHANGADI

A zoning (land use) plan was approved in 1980. Some implementation problems are reported.

BIRENDRA NAGAR

Birendra Nagar (Sirket) is a regional headquarters. As such, it has received sustained planning assistance since 1972. A variety of projects have been implemented including limited housing, private sector loans to develop local building materials and road construction. Emphasis was also placed on regulations to govern the development of other activities. The plan is one of the most comprehensive in Nepal and its experiences (negative and positive should be written up).

NEPALGANJ

The completion of a draft land use plan is impending.

TRIBHUVAN NAGAR

The completion of a draft land use plan is impending.

BHAIRAWA

A land use plan was approved in 1980.

BUTWAL

A land use plan is in preparation but the completion date is not known.

POKHARA

Pokhara as a regional headquarters has benefitted from sustained planning support for about ten years. Planning has provided a foundation for tourism efforts and an industrial estate nevertheless. The settlement suffers from extremely low density in new development areas. The DHBPP has a field office there.

BHARATPUR

There has been some recent field work to commence land use plan implementation (6/83); the completion date is not known.

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1 Sources: DHBPP; IBRD/WSSB. Proctor and Redfern, PADCO.

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BIRGANJ

A draft land use plan is approaching completion.

HETAUDA

A land use plan was approved in 1980.

JANAKPUR

The completion of a draft land use plan is impending.

LAHAN

A draft use land plan is prepared and is awaiting approval.

KATHMANDU

Kathmandu is the regional headquarters and the national capital. Continuous planning support is provided by the Kathmandu Town Planning team. A predecessor organization to DHBPP (the Town Planning Office) with the assistance of UNDP-financed town planning experts (from 1962-1974) produced three successive land use plans for the Kathmandu Valley. The plans, and general observations by the IBRD's Urban Sector Memorandum (1982), include:

Physical Development Plan for the Kathmandu Valley, 1963: Recognized conflict between urban expansion and agricultural production in the valley. Recommendations were primarily physical and not supported by economic data, municipal finance, or phasing of development. Useful background data.

The Kathmandu Valley Physical Development Plan, 1969: A traditional zoning map aimed at regulating land use in the Valley. Imprecise limits of zones and strict regulations proposed made the plan difficult to enforce. The restrictive zoning laws were often found arbitrary and economic consequences were not always taken into account. It appeared tht the objective was to control physical development rather than direct it towards a specific goal.

The Kathmandu Valley Town Development Plan, 1976: Its main objective has been to make the zoning law enforceable by providing accurate maps of zone boundaries. A main feature of the 1976 plan is to set back regulations along major roads which the TDIC attempts to strictly enforce.

The UMN study notes that town planning officials are generally dissatisfied with the plans. Among the principal criticisms include:

- too much emphasis on development regulation, too little emphasis on providing direction for future growth;
- lack of an identifiable implementation and investment plan;
- lack of coordination between planning organizations and government bodies responsible for the provision of infrastructure;

Since the completion of the master plans, the Kathmandu Town Planning Team was involved in the preparation of two housing schemes which have been extremely slow in implementation and some location-specific planning (gardens, etc.). Some progress has been made in neighborhood planning but it appears many planning issues remain to be addressed.

The UDA team has not conducted an evaluation of the quality and utility of the physical plans and development regulations being prepared by the DHBPP (and Kathmandu Valley Town Planning Team) but some general observations were made in Part Two. These remarks, however, are prefaced by the the fact that in many LDC countries where detailed master plans and data sets have been developed they have fallen out-of-date almost before they were complete. This was largely because the planners had no authority to implement the plans or because they ignored certain dynamics of urban development which could not be "corrected" by plans and regulations. This appears to have been the case for the three physical plans prepared for the Kathmandu Valley.

Two examples of plans prepared by the DHBPP are presented in Figures APIII.1 and APIII.2

FIGURE APIII.1

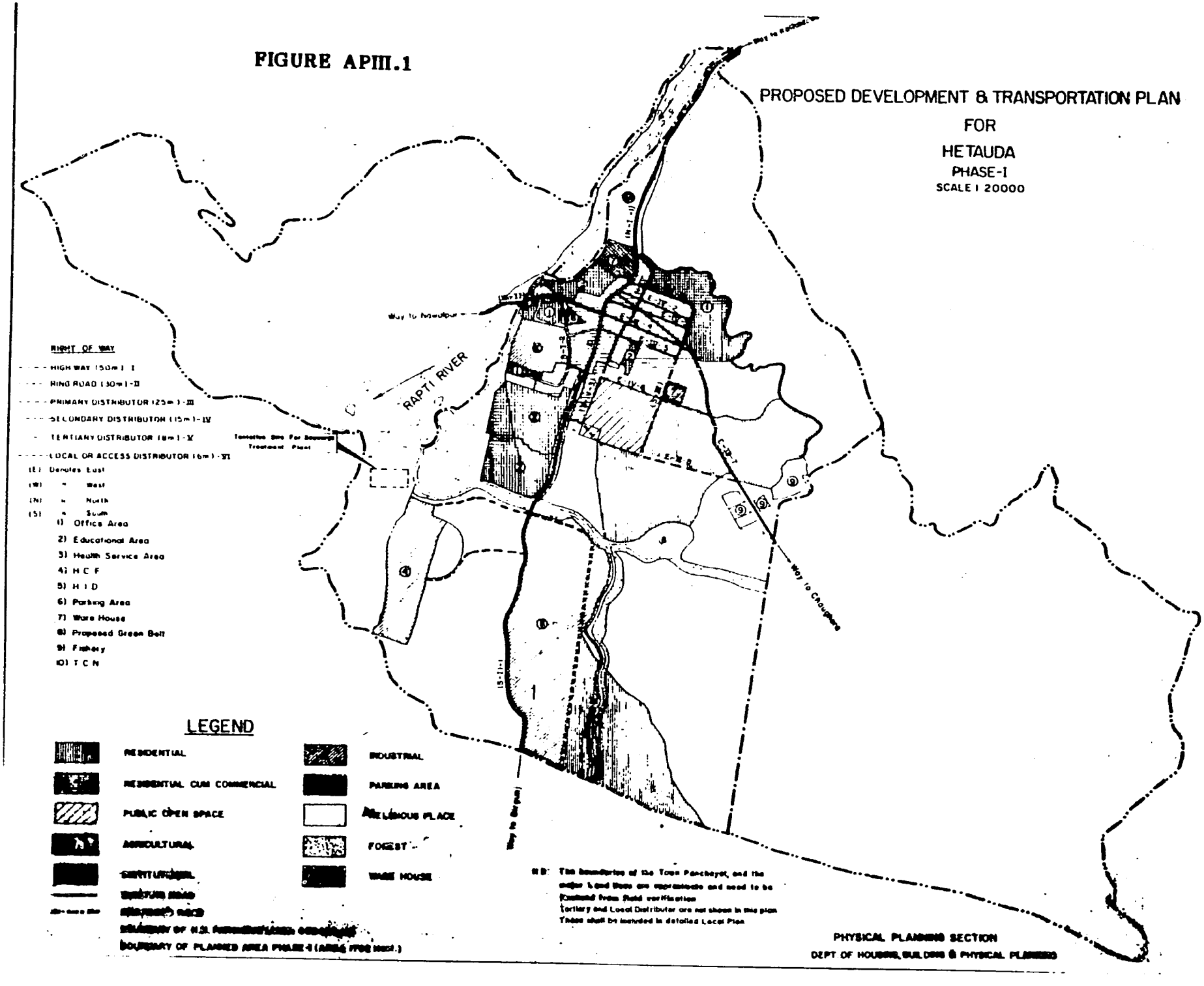
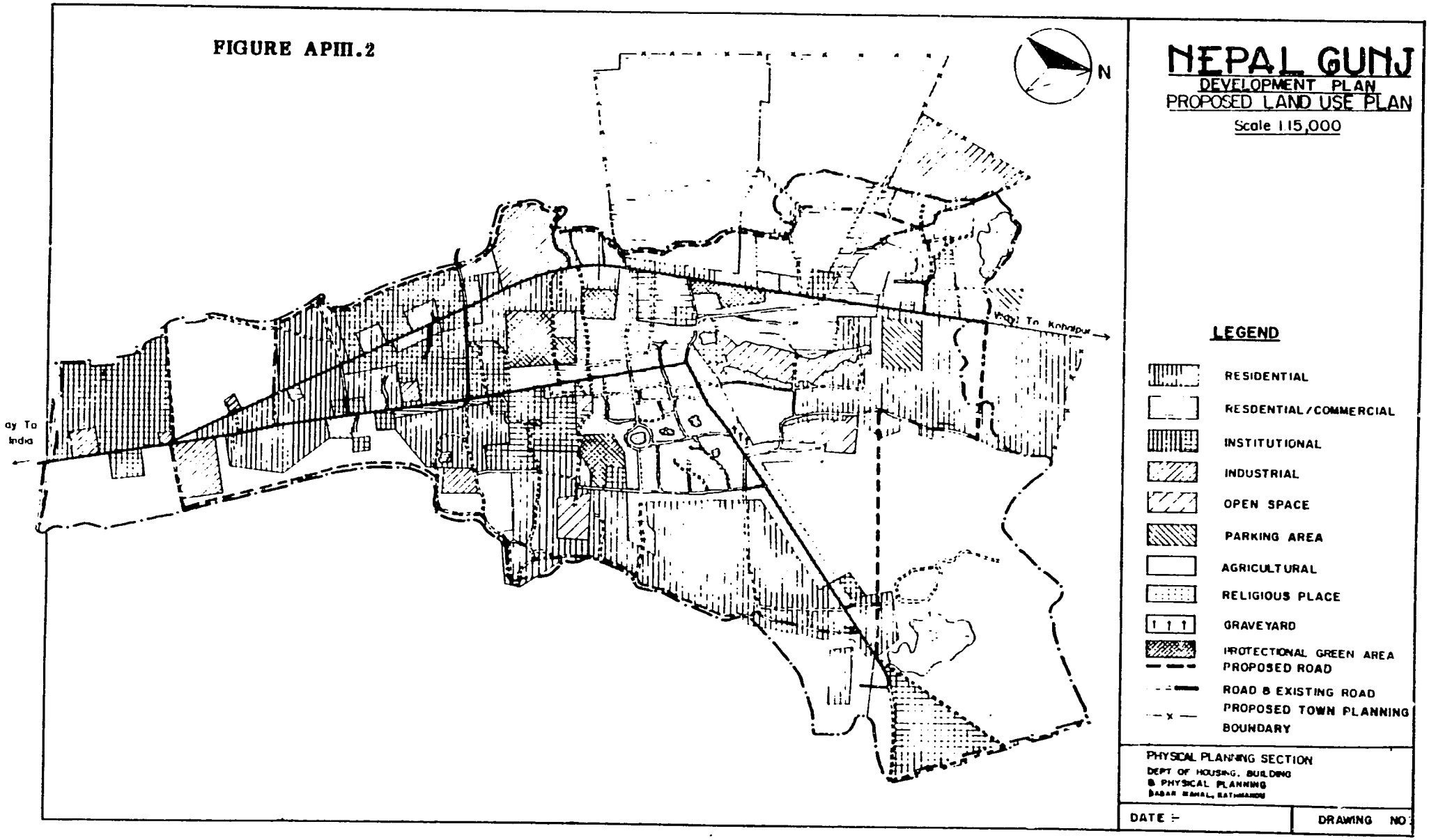


FIGURE APIII.2



APPENDIX IV

MANPOWER[1]

During the Fifth and Sixth Plans, the HMG initiated a number of manpower development programs. These included population seminars, industrial training, basic skill training in the labor supply centers at Butwal, Hetauda, and Nepalganj, general mechanical training, and trade skill training. About 8,000 individuals were trained in these programs of which about 52 percent of these received only basic training in the labor supply centers; 17 percent in population education programs; and 29 percent were trained in the industrial training program. Though this represents a good start, the number of trainees and quality of training is not commensurate with need. The Sixth Plan set a target of adding additional labor supply centers in Dharan, Mahendra Nagar, Birendranagar, Pokhara, and Jhapa (Bhadrapur). The Plan also aimed at nearly doubling the provision of training at the existing centers. Moderate goals for vocational training, labor management, and motivational and intensive training were also set.

Little has been done in evaluating how successful the training programs have been in securing employment among the trainees. However, the HMG and ILO have conducted a number of studies concerning the labor supply centers and vocational training center (Kathmandu). These studies also probed employers as well as district and village panchayats in proximity to the centers. The primary objective of the labor supply centers is to foster rural nonfarm employment. However, it was found that the quality of basic training in the labor supply centers was low, irregular, and insufficient. Longer-term vocational training such as that sponsored by SATA in Balajou (Kathmandu) was found to provide excellent training, but at a limited scale.

Regarding the market for potential job opportunities and training, the vast majority of local officials interviewed by the ILO in proximity to the labor supply centers indicated that agriculture offered little scope for future employment generation. Suggested areas of district and village employment and training included:

- building trades (carpentry, joiners, sawyers, masons, plasterers, stone cutters);
- mechanics;
- cottage industries (makers of brick and tile, furniture and wood products, baskets, carpets, shoes, packing paper, biscuits, plates and utensils, rope, cotton cloth and products, mustard oil, medicinal herbs);
- and bee-keeping.

Very few cottage industries exist in the areas surveyed. According to local officials, the principal problem in development of cottage and small industries is likely to be training.

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[1] Sources include Department of Labor, ILO, Labor Supply Centers Report, 1981.

Other problems include finance and raw materials, but they generally feel these constraints can be more readily overcome. Within the villages and districts, officials stated some scope for job generation in communal activities such as construction of basic infrastructure (road and tracks, irrigation and drainage channels), and public buildings (administration, schools, temples). Labor for these activities have traditionally been on both a voluntary and paid basis.

The ILO conducted a survey of industrial establishments in 1981 which included 28 manufacturing and construction employers in Hetauda (3,747 employees); and 69 manufacturing establishments in Kathmandu (7,858 employees). (Tables APIV.1 and APIV.2) In order of importance, the employers indicated that their principal development constraints included: poor supply of raw materials and equipment, competition with foreign goods, lack of orders (market), lack of key manpower, and lack of finance. Difficulties in supply of raw materials included:

Hetauda:

Imports: steel, steel rod, pig iron and iron rods, coal, machinery, spare parts, bitumin, battery acid, etc.

Local products: sugar and timber.

Kathmundu:

Imports: pig iron, iron and steel in various forms, other metals, machinery, electrical equipment, synthetic and non synthetic textiles, oil seed, alcohol, sugar, milk powder, chemicals, glue, plastics, coal, packaging materials, and plywood.

Local products: cement, wood for handicrafts, furniture and other materials. Most employers also indicated that they could not obtain enough foreign currency or import quotas for importing raw materials from India to meet their needs.

Most of the industries surveyed were operating at below capacities yet still had vacancies and need for upgrading of workers. At full capacity, the Kathmandu plants would require 873 additional employees while those in Hetauda would require about 984. In the Hetauda and Kathmandu plants, there were 524 vacancies and 1,039 employees which required skill upgrading. Table APIV.3 indicates which posts were vacant and needing upgrading. In general, the highest proportion of vacant posts were among higher level technical occupations and managerial and clerical positions, but the largest number of vacancies were among skilled production workers. With respect to skill upgrading, technical and production workers needed most assistance. The employers indicated that an in-plant training program is the most suitable form of training to meet their needs.

The issue of non-Nepalese labor was discussed in the labor supply centers, rural districts, and among employers. Non-Nepalese labor is particularly active in more skilled trades such as carpentry, masonry and brickmaking. Other principal activities

include wood cutting, rice milling, and road building. Seasonal agricultural jobs were found to account for a great deal of non-Nepalese employment; for example, 4000 occasional foreign workers are hired by large sugar cane producers in Birgunj.

Among the industries surveyed, about 6.2 percent of the labor was non-Nepalese However, 19 percent of the employees in Hetauda were non-Nepalese, and most of these were engaged in brickmaking (58 percent of the non-Nepalese total). Though non-Nepalese are engaged in most of the positions, they are most dominant as skilled production workers. (Tables APIV.4 and APIV.5)

Given the exceedingly high levels of unemployment and under-employment in Nepal, the large scale employment of non-Nepalese workers is a sensitive issue. In many cases, Nepalese lack the necessary skills to compete with non-Nepalese—or primarily Indian labor. Other factors include: socio-cultural values which inhibit application for "lowly" and demanding jobs (haircutting, jute stripping, etc.); lack of efficiency and time-consciousness; and, in some cases, a foreign dominated management structure that may favor non-Nepalese.

The HMG has adopted several policies regarding the employment of foreigners. Cottage industry employment is reserved for Nepalese, but the large number of brickmakers indicate that the policy is not fully implementable. Industrial enterprises may hire with permission non-Nepalese, for a period of seven years, if skilled Nepalese labor is in short supply—but means are found to overcome this obstacle (i.e. citizenship). Building, road, and other large contractors use more skilled foreign workers even when the contracts are governmental in nature. In general, employers (enterprises and individuals) hire foreign workers when it is more economical to do so. Thus, Nepalese workers must be trained to become more competitive, skilled, and cost efficient.

TABLE APIV.1

EMPLOYMENT IN INDUSTRY GROUPS
HETAUDA

Industry Group	Number of Establishments	Employment		
		Males	Females	Total
Food, Beverages, etc.	7	414	9	423
Wood & Wood Products, etc.	4	776	35	811
Brickmaking	7	755	58	813
Metal, Engineering, Electrical, etc.	7	201	—	201
Construction	1	695	5	700
Other (mainly Cotton Textiles)	2	589	208	797
TOTAL	28	3,430	315	3,745

Source: Dept. of Labor, ILO 1981

TABLE APIV.II

EMPLOYMENT IN INDUSTRY GROUPS
KATHMANDU

Industry Group	Number of Establishments	Employment		
		Males	Females	Total
Food, Beverages, etc.	13	822	146	968
Textile, Footwear, etc.	14	1,039	331	1,370
Wood and Wood Products	8	439	33	472
Chemicals, Plastics, etc.	4	129	23	152
Metal, Engineering, Electricity†, etc.	18	2,798	67	2,865
Bricks, Cement, etc.	6	1,659	21	1,680
Handicrafts	4	117	50	167
Miscellaneous	2	171	13	184
TOTAL	69	7,174	684	7,858

† Figures for Nepal Electricity Corporation also cover Bagmati, Narayani, Janakpur, Lumbini and Gandaki Zone.

Source: Dept. of Labor, ILO 1981

ILO INDUSTRIAL ENTERPRISE SURVEY

TABLE APIV.3

VACANCIES AND UPGRADING TRAINING NEEDS
Kathmandu and Hetauda
(K) (H)

Occupation	Vacancies		Upgrading Needs Indicated		Number Employed	
	(K)	(H)	(K)	(H)	(K)	(H)
HIGHER LEVEL TECHNICAL, ETC., OCCUPATIONS						
Chemist (degree)	1		2		8	2
Chemist (diploma)		1			7	4
Civil Engineer (diploma)		1			5	3
Civil Engineer (certificate)						14
Electrical Engineer (diploma or above)	5				6	
Electrical Engineer (certificate)					61	
Electronic Engineer (diploma or above)	1		1		6	
Electronic Engineer (certificate)				7	1	
Mechanical Engineer (diploma or above)	1	5	2	3	16	
Mechanical Engineer (certificate)		1		5	5	22
Chemical Engineer			1		2	
Refrigeration, Air Conditioning Engineer (certificate)		2			6	1
Other Engineers	2	1			8	9
Draughtsman	4		4		12	
Laboratory Technician		1	4	2	5	3
Quality Controller	1		7		9	
Other Technologists	4	37	3		16	42
Subtotal	19	49	24	17	173	—
MANAGERIAL, CLERICAL, ETC., OCCUPATIONS						
Manager, Assistant Manager, Working Proprietor	7	2				
Accountant (degree)	2	1	7		26	6
Accountant (diploma)	5		9	1	33	10
Accountant (other)	15		13	1	62	31
Personnel Officer	1	1	5		23	6
Typist, Stenographer	6	3	8	1	54	14
Clerk, Accountants, Cashier, etc.	50	13	37	1	529	68
Storekeeper	2	1	21	8	78	35
Timekeeper	3	1	2		25	7
Watchman, Guard	23	5	8		303	100
Other Managerial Clerical, etc.		27	5		98	131
Subtotal	114	54	115	13	1371	—

(continued)

Source: Dept. of Labor, ILO, Labor Supply Centers Report, 1981

ILO INDUSTRIAL ENTERPRISE SURVEY

TABLE APIV.3 continued

VACANCIES AND UPGRADING TRAINING NEEDS
Kathmandu and Hetauda
(K) (H)

Occupation	Vacancies		Upgrading Needs Indicated		Number Employed	
	(K)	(H)	(K)	(H)	(K)	(H)
SKILLED PRODUCTION OCCUPATIONS						
Foreman, Technical Supervisor	15		87	20	217	22
Skilled Moulder, Caster	3		7		40	
Skilled Sawmiller					4	
Weaver, Knitter	10		23		229	
Textile Mechanic	2		1		14	
Dyer, other skilled Textile	1		9		46	
Carpet Maker	1				1	
Tanner, other skilled Tannery			7		9	
Miller						
Skiller Sugar Worker						
Butcher						
Skilled Dairy Worker	5	10	10		42	
Baker					2	
Brewer, Distiller						
Skilled Tobacco Worker						
Tailor	1				3	
Dressmaker			1		2	
Shoemaker	52		60		257	
Skilled Leather Worker	17		25		77	
Wood Machinist, Carver, etc.	3		11		68	
Blacksmith, Forger	1		7	4	34	12
Toolmaker, Die Setter			2		8	
Metal Machinist, Setter, Turner	1				10	
Engineering Fitter					3	
Motor Vehicle Mechanic	6		6	5	28	16
General Mechanics (Institution Trained)	14	2	6		43	
General and other Mechanics	10	4	7	18	28	31
Electrician, Wireman, Electric Fitter	68	1	292	12	572	59
Electric Linesman, Cable Jointer	16		25		50	
Plumber, Pipefitter	1		4	1	21	16
Welder, Flame Cutter	3			2	30	10
Sheetmetal Worker					77	
Potter, skilled Ceramic						
Compositor, other skilled Printing Workers			17		45	
Painter, Spray Painter, Polisher	2				68	
Bricklayer, Mason					9	
Carpenter, Cabinetmaker		4	4	10	185	30
Engine Driver					37	
Construction Equipment Operator (heavy)		12		12		
Construction Equipment Operator (light)		6		6		
Boiler Attendant	1			1	5	9
Furnaceman	2	1		1	40	1
SUBTOTAL	235	22	611	92	2304	
LESS SKILLED AND UNSKILLED OCCUPATIONS						
Bricklayers	21		10	157	4010	933
GRAND TOTAL	389	125	760	279	7858	--

Note: (a) The need for management upgrading training, which appears to be widespread, was not assessed during the survey.

TABLE AIV.4

NEPALESE AND NON-NEPALESE EMPLOYMENT
BY OCCUPATION IN MANUFACTURING
KATHMANDU

Occupation or Group of Occupants	Employment Non-Nepalese	Nepalese
Chemist (degree)	1	7
Electronic Engineer	1	5
Mechanical Engineer	1	15
Laboratory Technician	1	4
Various Technologists	1	15
Managers, etc.	5	131
Accountants & Clerical	4	696
Foreman, Technical Supervisors	4	213
Metal Moulder, Caster	16	24
Skilled Textile Workers	6	289
Engineering Trades	13	190
Other Skilled Occupations	17	1,396
Less Skilled and Unskilled Occupations	11	4,010
TOTALS	85 (1.2%)	6,983

Source: Dept. of Labor, ILO 1981

TABLE AIV.5

NON-NEPALESE EMPLOYMENT BY OCCUPATION
IN THE ORGANIZED SECTOR
HETAUDA

Occupation	Employment Non-Nepalese	Nepalese
Chemist (degree)	2	—
Technologist	2	2
Quality Controller	2	40
Manager, Assistant Manager	4	34
Accountant	1	46
Typist Stenographer	1	13
Clerk	3	65
Storekeeper	1	34
Watchman Guard	1	166
Other Clerical, etc.	1	130
Foreman, Technical Supervisor	2	20
Metal Moulder, Caster	15	7
Sawyer	11	6
Brewer	1	4
Wood Machinist	2	11
Carpenter	2	28
Furnaceman	1	—
Brickmaker	474	290
Labourers and Other Unskilled	10	1,443
TOTALS	536 (19%)	2,339

Source: Dept. of Labor, ILO 1981

APPENDIX V

BALANCE OF PAYMENTS AND FOREIGN EXCHANGE[1]

Nepal has traditionally had to rely heavily on imports for its development projects. Deficits were generally offset by invisibles such as foreign assistance, worker remittances, and tourism earnings. In recent years, however, Nepals's balance of payments position has been deteriorating. Although a series of droughts, population increase, and subsequent lower levels of per capita agricultural production are primarily to blame, other factors have contributed to deficits as well. These include:

- Structural weakness in production, profitability, and distribution of exports and import substitutes;
- Increased consumption and imports of consumer rather than development related (capital) goods;
- Unfavorable prices for exported commodities;
- Stress on trade diversification rather than export earnings;
- Stress on industrial import substitution rather than a complementary export program;
- Monetary policy inconsistency which led to losses on convertible currencies;
- Lack of a concerted trade and export policy.

Of vital concern to Nepal is its widening balance of payment gap due to a slow growth in exports. In 1970/71, its trade deficit (excluding foreign assistance) was Rs.298 or 75 percent of that year's exports. By 1979/80, the deficit was on the order of Rs.2,372 or twice its export values. In other words, in 1979/80, exports met only one-third of its import requirements.

During the period 1978/79 and 1981/82, Nepal's current account deficit was on the order of 4 percent of GDP. However, this was matched by inflows of foreign aid and a surplus of $39 million resulted. In 1982/83, the current account deficit was on the order of 9 percent of GDP and despite concessional aid and other invisibles a deficit of $36 million occurred.

Exports grew at a rate of only 5 percent between 1974/75 and 1979/80 which in real terms was a negative rate of growth. They continued to rise until 1980/81 then fell, representing zero growth between 1979/80 and 1982/83. Commodity prices for key exports such as jute have also been rising too slowly to keep pace with inflation.

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[1] Sources include: Recent Development and Selected Issues in Trade Promotion. IBRD, 1983.

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Imports, on the other hand, have been steadily increasing; from 1975/76 to 1981/82, they rose 19.3 percent per annum.

Of particular concern is Nepal's rising imports of food products and luxury (other manufactured) goods. Imports of food and live animals grew at 16.3 percent and luxury goods at 12.9 percent.

In 1981/82, exports to India accounted for 67 percent of Nepalese exports, while Indian imports represented 46 percent of Nepal's total imports. However, Nepal imported 2.3 times more than it exported to India.

Since the Third Plan, Nepal began to diversify its trade. At the time it traded almost exclusively with India (94.7 percent). By the Fifth Plan, Indian trade had fallen to 57.9 percent. There are indications, however, that the results of diversification were not all positive. Some exports may have earned more in an Indian market and Nepal was forced to sell convertible currencies at a loss to buy Indian Rupees for imports (by 1979/80 Rs. 2,000 million of Indian Rupees were purchased and until February 1980 units cost $15.9 dollars and were sold at $11.9).

Nepal has revised its foreign exchange rate system several times in recent years. A dual exchange system (Dollars/Indian Rupees) was unified in 1980/81 and depreciated in 1982. Since June 1983, this was replaced by a trade weighted basket pegged to the US dollar. With respect to trade, Nepal's reliance on the exchange rate, rather than the economic competitiveness of its exports, helped stifle growth in trade. It also led to opportunities for short-term high-risk but profitable gains among traders often in illicit goods.

Foreign exchange earnings have generally remained positive. In current prices, receipts grew at 29.4 percent per annum from 1974/75 to 1980/81, largely due to growth in foreign aid (69.3 percent per annum) and tourism (31.4 percent). Payments, on the other hand, grew at only 19.6 percent per annum. Between 1980/81, both receipts and payments dropped by 13.7 and 18.2 percent per annum. However, greater receipts kept the balance in the positive.

External debt rose from 7 percent of GDP five years ago to 12 percent of GDP in 1982/83. However, due to concessional terms, its debt service ratio increased from only 4 percent in 1978/79 to 7 percent in 1982/83. Nepal has generally been able to retain its international reserves, but by 1982/83, these represented only four months of imports.

Future prospects:

According to the IBRD, merchandise exports which fell by 46 percent between 1980/81 and 1982/83 are expected to rise by 25 percent this year and 24 percent by 1984/85. Imports are expected to decrease, then rise rise slightly. The trade deficit is expected to improve, then rise slightly before general improvement begins. The overall balance should be positive in 1984/85 due to higher inputs of foreign aid with no improvement in international reserves and imports coverage.

Since the Sixth Plan, the HMG has adopted monetary, export, and production policies that should, in the long run, improve the balance of payments position. Much will depend, however, in how successful Nepal is in increasing production, reducing imports of nonproductive goods, and exercising the political will to correct irregularities in trade.

APPENDIX VI

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The Universal Transverse Mercator (UTM) grid overlay is based on the Everest Geodetic System. Latitude is measured and numbered northward and southward from the equator, and longitude is measured and renumbered every 6°. For Nepal the 6° break in numbering occurs at approximately 84° E longitude.

PARTICIPATING AGENCIES/STAFF

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Best Available Document

Available Document

NEPA

SYMBOLS
Regional Development Centers
Zonal Headquarters
District Headquarters
Towns; Villages
Towns outside Nepal
Mountains over 8,000 meters
Lodu-Lomey-T'so
Pei-Ku-T'so
Taple La
Saidu La
Laing La
CHINA
SHISHA PANGMA
8013
CHINA
MANASLU
8125
Langtang
Thangjet
Dhunche
Khodari
Resi Sahar
Bidoor
Chabjara
Chankoli
Gorkha
Dhading
Bandipur
Camauli
KATHMANDU
Thimi
Bhaktapur
Banepa
Dhulikhel
Latipur
Gandaki
Bhimbhedi
Ramechhap
Bhaktapur
Sapi Gandaki
Bagmati
Hetauda
Sindhulimadi
Jhawani
Rapti
Bhandrawatola
Amlekhganj
Shikna Thori
INDIA
Jurubela
Lalhitti
Dhalkewar
Simra
Kalaiya
Naraiapur
Narkaraganj
Birgunj
Malangwa
Janaki
Roxaul
Bagmati
Deodh
Laduriya Nandongarh
Chanpatia
Gaur
Jaleswar
The international boundary on this map has been de
map sources, is approximate and should not be tak

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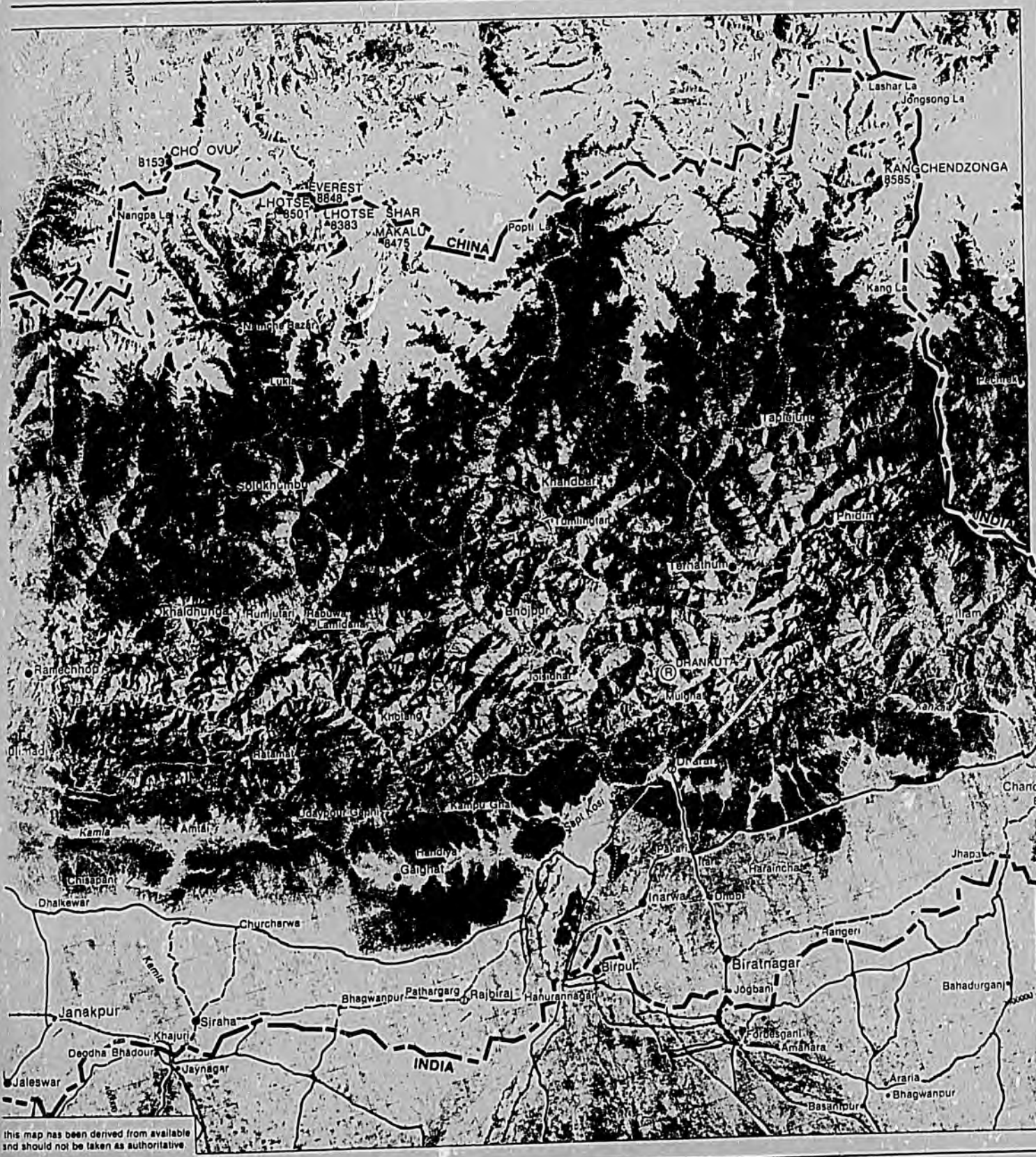
- Airports/Airstrips
- Railways
- All weather roads
- Seasonal roads
- Trails
- Ropeways
- International Boundary



this map has been derived from available and should not be taken as authoritative.