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# Unleashing Economic Growth

## REGION-BASED URBAN DEVELOPMENT STRATEGY FOR NEPAL

Asian Development Bank

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## REGION-BASED URBAN DEVELOPMENT STRATEGY FOR NEPAL

By
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Asian Development Bank

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# FOREWORD

I am pleased to present to you the fifth issue of the Urban Development Series which is designed to share knowledge on urban development issues with a wide audience, including policy makers, academics, and the general public. This edition, *Unleashing Economic Growth: Region-Based Urban Development Strategy for Nepal*, presents an alternative way of developing Nepal's urban regions, inclusively covering both urban and rural economies.

Nepal's society is predominantly rural. It is one of the poorest countries in Asia. It is highly diverse in geography, culture and religions, and at the same time very rich in natural resources. Three ecological belts (Mountains in the north, Hills in the middle, and Tarai plain in the south) endowed with distinctive resources, runs from east to west for 800 kilometers. They are bisected by Nepal's major river systems running north–south, forming natural barriers within Nepal for the flow of goods and peoples, which makes mobility easier for north–south than east–west directions. Its landlocked location, rugged terrain, poor infrastructure, and the long-running conflict have prevented Nepal from fully developing its economy.

The challenges Nepal faces in achieving its growth potential are compounded by political, social, and civil conflicts as well as various issues related to institutional capacities and governance. Though we may continue debating what the constraints are in Nepal and how to remove them for its deserved growth, this book instead shifts its focus to explore what the potential strengths are and how its economic growth can be triggered by taking advantage of given resources, and by linking urban and rural economies inclusively as a sphere of the economic region.

Observing the country's transition from monarchical rule to a federal democratic republic in 2008, the strategy provides merits for the application regardless of governance structure. The proposed 8 regional boundaries are not by the administrative jurisdictions, but by the formation of natural barriers; thus, spontaneously promote agglomerated forms of economic activities within each region. The strategy also suggests targeting "urban-region area" influenced by an economic hub (or agglomerated form of town centers) as a unit of economic development investment, not individual cities or towns defined by administrative jurisdiction, for filling up the infrastructure gap.

Overcoming complex social economic issues and geo-political limitations in a balanced way will require long-term efforts as well as significant increases in development expenditure. Especially, the investment requirements for the

necessary physical infrastructure to sustainable development may be far greater than the resources available. Against this backdrop, the strategy in this book provides an alternative paradigm; it recommends investing for job creation and income opportunities in the context of symbiotic relationships between urban and rural areas, and prioritizing and focusing investments on the growth potentials to induce maximum economic impact.

Appreciation is extended to Ms. KyeongAe Choe in the South Asia Department, for initiating and spearheading this interesting strategic framework for Nepal's regional development. There were also other colleagues who provided valuable comments and helped in the preparation of the publication; such as Barry Hitchcock, Paolo Spantigati, Laxmi Sharma, and Md S. Parwez in Nepal Resident Mission as well as those in Department of External Relation and Office of Administrative Services.

This study partially adopted the results from *Regional Development Strategy* prepared in 2007 with ADB's assistance for the National Planning Commission of the former administration; at then it was a transitional government of Nepal. I am grateful for those Nepal government officials at that time who shared their visions of this region-based development approach during the preparation as well as for those who participated at the final presentation in February 2009.

I hope this series will encourage constructive discussions on the development issues further, and help policy makers to have a better informed decision on where to invest first to get the best benefits out of limited resources.

*Mike Lindfield*
*Chair, Urban Community of Practice*
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# EXECUTIVE SUMMARY

## Background and Resource Potential for Economic Growth

While Nepal initiated development efforts as early as the 1950s with the adoption of periodic plans, economic growth has been lackluster and slow, and fast-growing urban areas have failed to encourage growth in adjacent rural areas and spread the benefits of growth equitably.

Yet, given its diverse geographic, economic, and social features, Nepal's development efforts should, through a region-based development approach, aim to attain "balanced growth" in rural and urban areas and throughout the three ecoregions bisecting the country from west to east—mountain, hill, and the tarai. In this context, and as laid out in this paper, urban areas in particular should boost economic potential and facilitate growth in urban economic regions (UERs)[1] which better encompass rural hinterlands and create stronger rural–urban links.

Two-thirds of the economically active population—with majority of its 23.2 million people in rural areas—is engaged in agriculture, but that accounts for only one-third of gross domestic product (GDP). Indeed, nonagricultural productivity—with only one-third of the labor force engaged in the manufacturing or service industries—has been at least two times higher than rural productivity.

There is a huge variation in economic development and potential among the three ecoregions. The southern lowland plains, or tarai, have big agricultural potential and easy access to the Indian railway heads. Nepal has clear comparative advantages in agricultural and non-timber forest products (NTFP), such as medicinal herbs, large cardamom, cut flowers, jute products, mustard oil, as well as ginger and teas.

The hill and mountain regions, including diverse natural, cultural, and religious features, give the country strong advantages in tourism. But a decade-long insurgency stifled growth and an otherwise huge tourism potential, and greatly hampered the generation of foreign currency income. The two regions are less accessible, have poor infrastructure, and their urban areas are not well connected with rural hinterlands.

[1] Defined as the sphere of influence zone served by the economic activities of an agglomerated town or city, to which rural inhabitants can commute and access within a day's trip by non-motorized transportation).

In other areas, labor-intensive manufactured products including leather and leather products, hand-knit carpets, jewelry, woven carpets, textiles, and pashmina mufflers and shawls are competitive in international markets. There is massive potential in using hydropower to produce energy from the numerous snow-fed rivers in steep mountain territory. However, the proper use of these abundant natural resources is limited by several factors including weak capacity for managing local development, poor transport networks and physical infrastructure, lack of private sector investment, and institutional constraints to joining the global economy.

Demographically, Nepal's urban population, as elsewhere in the region, has grown, making up 16% of the total in 2005 from 3.6% in 1961, and expected to hit 23% by 2011. Likewise, per capita income has risen consistently from $68 in 1961 to $328 in 2005, and is expected to reach $518 by 2011. These are encouraging trends. The current annual urbanization rate, at 5.6%, is considered rapid and has always exceeded national population growth rates during census years.

But urbanization in Nepal is not largely due to an economic structural transformation but rather to the extension of municipal boundaries, high in-bound urban migration, and the addition of new urban areas. Urban areas have mostly grown haphazardly, expanding over flood-prone areas, and agriculture has remained the main economic activity in most areas. Again, urban growth has not adequately transformed potential production sectors in the hinterlands.

Nepal attempted to induce urban growth in the 1970s by adopting a regional development approach. But urban development since then has focused on physical development with only limited resources. To encourage inclusive growth, therefore, the prevailing concepts of the functions of urban areas and networks have to be critically reviewed.

First among these concepts, the vital idea that economic development of urban areas is a necessary condition to encourage economic development of rural regions has received marginal attention. Second, politicians and administrators have seen urban areas as political, administrative, and census enumeration units. The definition of urban areas (*nagarpalika*) should not only be according to population size, but should also incorporate other sensible factors such as population density, the economic and industrial structure, or the nodal function. Third, the urban network system in the hills and mountains has been fragmented by the lack of road access and by scattered rural settlement. This system should be reviewed for inclusive growth. Fourth, haphazard urban growth is aggravated by migration, accounting for over 30% of the total over the last decade. Vulnerable populations, including slum dwellers, squatters,

rag pickers, street children and child workers, and female sex workers, have accompanied this growth.

Inclusive development should aim to ameliorate these conditions to reduce the risks of social vulnerability and civil disturbance.

Various key players and agencies have begun efforts for urban development at central and local levels. At the national policy level, central agencies such as the National Planning Commission, Ministry of Physical Planning and Works, and Ministry of Local Development formulate policy and monitor urban development. The town development fund and town development committee provide financial and technical support for urban infrastructure. But roles and responsibilities among the different government agencies for urban development often overlap, leaving functional gaps.

Nonetheless, the Local Self Governance Act (LSGA 1999) has detailed the functions and responsibilities of municipal government for development, planning, and conservation of municipal towns. The Government of Nepal has allotted 10.4% of the total 2007 fiscal year budget to the urban sector, giving it significant support just after roads and water supply (with urban components). International organizations such as the Asian Development Bank (ADB), the European Union, Japan International Cooperation Agency, United Nations Development Programme (UNDP), United Nations Human Settlements Programme (UN-Habitat), World Bank, and others, have also supported urban environments including infrastructure, governance, public–private initiatives, and urban poor initiatives. In terms of amount, ADB's contribution to Nepal's urban development is the largest (45.4%) among international aid supporters. However, investment resources are severely limited compared to the country's needs, and investment decisions have been ad hoc, undermining intended impacts.

## Region-Based Urban Development Strategy and Analytical Methodology

Urban areas are assumed to drive economic growth for rural and regional development. As stated earlier, given its diverse features, Nepal's development efforts should attain "balanced growth" in both rural and urban areas and throughout all three ecoregions. In this context, urban areas in particular are expected to enable economic potential and facilitate growth in UERs.

The roles of urban areas should be redefined to facilitate (i) transformation of the widespread and traditional rural-based economy toward better performers such as agro-processing industries, and (ii) isolation of economic

activities into concentrated clusters of production. This requires a well-articulated urban and regional spatial structure.

Against this backdrop, a Region-Based Development Strategy is proposed through which cities or regions can stimulate economic growth in an extended urban region. The strategy would adopt methodological analytical tools for identifying competitive potential for economic growth in a given UER.

*Urban center analysis.* In terms of economic importance, the study analyzes the typology of urban areas by function and hierarchy. Functionally, urban areas are identified as market towns and border towns in terms of geographical location, nodal centers, industrial activities, internal and external trading advantages, and transfer points. There are 15 border towns along the international border, through which exports and imports pass, and 43 market towns offering internal trading, collection, and administrative services. By hierarchy, 15 are secondary towns with more than 50,000 people engaging in major economic activities (commercial, industrial, tourism, and transportation nodal). Among those, eight are market hubs and seven are border towns that offer services. There are also 43 emerging towns with populations of 50,000 or less, including 35 market towns and 8 border towns, which offer local and long distance trading services and other basic needs. Considering urban roles and functions as the engines of growth, a quantitative analytical framework was developed based on the following underlying premises: (i) urban areas drive economic growth; (ii) urban areas offer more employment opportunities; (iii) urban areas exert influence over surrounding areas by attracting people, goods, and capital: (iv) the hinterland's connection to its urban hub and/or center is essential to fully unleash economic potential in each UER; and (v) urban–rural links are symbiotic rather than dichotomous.

*Four-step analytical technique.* A four-step analytical technique was developed to identify the economic growth potential of urban areas and their economic regions.

*Step I* delineates the sphere of influence or economic region of municipal towns—the economic regions of eight major (secondary level) urban areas across the country in compact form or without leaving an area gap are delineated.

*Step II* measures the comparative advantages of the UERs, for which the aggregated composite rank (ACR) index is being developed for prioritizing urban areas based on their competitiveness. The index evaluates 18 key urban development indicators for each urban center. A composite or aggregate index value is obtained to select from each of the eight UERS two or three at the top rank.

*Step III* identifies priority business sectors with a greater potential for triggering economic growth. Their key competitive advantages are analyzed. A growth potential commodities (GPC) index is used to rank the total scores (in reverse order—i.e., rank 1 to highest aggregate value, rank 2 to second highest, and so on) obtained by each selected potential commodity and/or economic activity for each urban area.

*Step IV* involves the urban development infrastructure (UDI) index, which determines existing facilities in the urban areas and the facilities needed to support the development of selected products (identified by steps II and III) that are found to have growth potential in the UER. Relative scarcity (or demand and/or need) or the deficiencies of infrastructure in each urban center are identified in this step to support the development of the prioritized enterprises and their commodities. Strategizing the development of targeted sectors, the analytical results reveal where the potential lies for generating employment in the selected region.

## Analysis Results of Urban Economic Regions

Applying the four procedural steps, the three urban areas with the most potential from each UER were identified. They are Biratnagar, Dharan, and Ilam (UER 1); Janakpur, Kamalamai, and Siraha (UER 2); Birganj, Bharatpur, and Hetauda (UER 3); Lalitpur, Bhaktapur, and Bidur (UER 4); Butwal, Siddarthnagar, and Ramgram (UER 5); Pokhara, Lekhnath, and Baglung (UER 6); Nepalganj, Tribhuvannagar, and Tulsipur (UER 7); and Dhangadhi, Tikapur, and Mahendranagar (UER 8). In each UER, these urban areas could form major economic hubs (clusters or corridors).

Overall, transportation and road infrastructure were prioritized in each UER to support the flow of potential commodities and/or economic activities linking urban–rural economies, especially connecting the top three urban areas in each UER. Infrastructure commonly deemed necessary for unleashing economic growth included electricity supply, market expansion (or trading facility at border towns), research and development for major commodity products, cold storage space, and logistics.

## Opportunities for Unleashing Economic Growth

The potential of various natural resources and industrial development potential was also identified in each UER.

*For the primary agro-processing industry,* off-season vegetables generally have strong comparative advantage. High value crops differ quite

remarkably by UER—i.e., herbs and spices have potential in Biratnagar, and ginger and coffee in Butwal and Siddarthanagar, cut flowers for export from Birganj and Kathmandu, and honey and mustard products in Nepalganj and Dhangadhi. Other potential industries include processing medicinal herbs, NTFP, and dairy industries.

*For the secondary manufacturing industry,* only a few items were identified, such as jewelry making in Siddarthanagar, garments and handloom manufacturing in Biratnagar, and carpet weaving and pashmina production in Pokhara. Tourism combined with jewelry making or carpet weaving also has high competitive advantages.

*For the tertiary sector industry*, different types of tourism (ecotourism, luxury trekking, and spiritual tourism in connection with Buddha's birthplace or hot springs and/or spa) have been prioritized for most of the UERs except Biratnagar. These should be exploited by building essential infrastructure based on feasibility studies. Table 32 presents key interventions and action plans recommended for each of the eight UERs.

## Strategic Direction for Unleashing Economic Growth in Nepal

One of the objectives of this study is to understand urban sector development patterns in Nepal from the perspective of regional, economic, and inclusive growth. Three topics are addressed during the study: (i) update Nepal's urban sector profile, (ii) demonstrate the quantitative approach in prioritizing urban investment areas to promote economic growth inclusively for both urban and rural areas, and (iii) prepare an inclusive regional development strategy.

As one of the least developed countries in the world, Nepal still lacks most essential infrastructure, financial resources, and institutional capacity for managing economic growth. Development strategy should guide the nation's investment priorities and decision making, to use scarce resources effectively, and maximize limited financial resources. Existing urban sector development (filling infrastructure gaps and spreading limited resources thinly across wide geographic areas) needs to be renewed and reformed to meet the challenges, geo-spatial features, and socioeconomic contexts. This proposed strategy differs from the previous because it underscores the guiding principles in determining "where, what, and how" to design and to invest for Nepal's inclusive regional development, envisioning outcomes instead of inputs. Table 32 summarizes specific actions for each UER.

The proposed Region-Based Urban Development Strategy sets eight strategic principles.

- P1: Aim for each UER as a target development unit, not just cities and towns.
- P2: Start forming clusters in each UER to gain economies of scale.
- P3: Focus on forward–backward links along the value-added chains as well as urban–rural links.
- P4: Prioritize north–south connectivity, linking three eco-belts to complement each other within each UER.
- P5: Build the specialties of each UER using readily available natural resources for enhancing competitiveness.
- P6: Use action items identified through the analytical methodology to trigger economic growth in a coherent and constant manner.
- P7: Invest to support growth potential by each UER to develop specialties and the market competitiveness of the identified industries.
- P8: Target investments in a phased manner, accumulating development in a focused area over a long, 15-year period to induce synergistic impact.

The primary development focus of each UER should be on selected towns along the chosen north–south corridor systematically, rather than randomly concentrating investment on towns simply to satisfy political interests. If consistently pursued, the Region-Based Urban Development Strategy will help create the critical economic mass needed to fuel an agglomeration of economic opportunities in these expanded regions, and, as such, is highly recommended as a way forward.

# ABBREVIATIONS

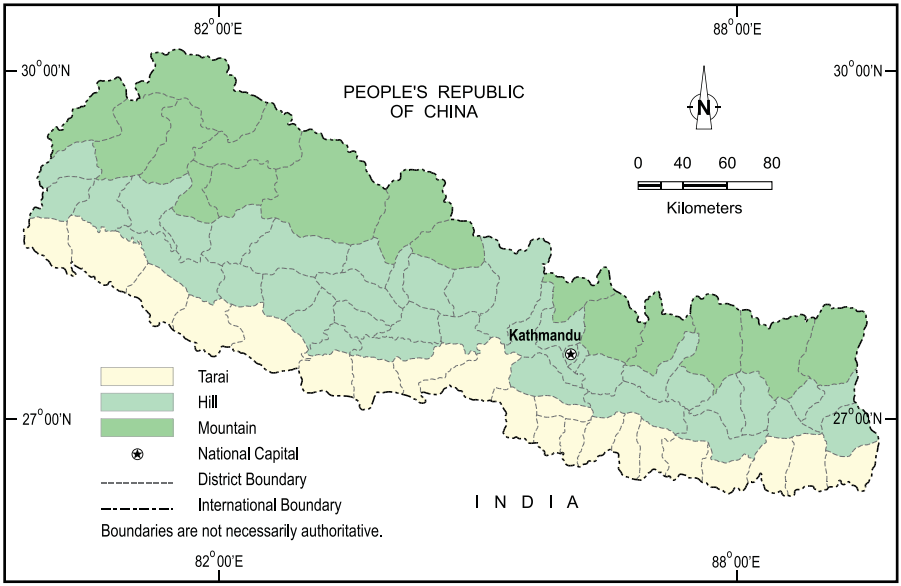
| | |
|---|---|
| ACR | aggregated composite rank |
| ADB | Asian Development Bank |
| APP | agricultural perspective plan |
| ASR | aggregated sum of the rank |
| CBS | Central Bureau of Statistics |
| PRC | China, People's Republic of |
| DRC | domestic resource cost |
| GDP | gross domestic product |
| GPC | growth potential commodity |
| GPCI | growth potential commodity index |
| ha | hectare |
| km | kilometer |
| LDF | local development fund |
| LSGA | Local Self Governance Act |
| MLD | Ministry of Local Development |
| MPPW | Ministry of Physical Planning and Works |
| NPC | National Planning Commission |
| NTFP | non-timber forest product |
| SEZ | Special Economic Zone |
| TDF | town development fund |
| UDI | urban development infrastructure index |
| UER | urban economic region |
| VDC | village development committee |

# INTRODUCTION

## Overview

Nepal[2] is a landlocked nation bordering the People's Republic of China (PRC) to the north and India to the south, east, and west. Commonly divided into three ecological regions running over 800 kilometers (km) from east to west—the Himalayas (mountains) in the north, the tarai plain in the south, and hills in between—it covers an area of 147,181 square kilometers (km$^2$). Its major river systems, the Kosi, the Narayani, and the Karnali, bisect these zones, and the country has eight of the world's 10 highest mountains, including Mount Everest. The capital and largest city, Kathmandu, is situated in the hill region (Figure 1).

### Figure 1: Nepal and Its Eco-belts




Source: NPC/ADB (2007).

[2] Total land area of the country is 141,181 km$^2$. Administratively, Nepal is divided into five development regions, 75 districts, 58 municipalities, and 3,915 village development committees. With a population of 27.7 million (2006), the country has 196 people per km$^2$. This density varies greatly with 330 people per km$^2$ in the tarai to 105 per km$^2$ in the mountains. The population is composed of diverse ethnic groups, inhabiting distinctive pockets of territory across the country.

Although Nepal shares no boundaries with Bangladesh, a narrow strip of land in India about 21 km wide, known as the Chicken's Neck (Siliguri Corridor), separates the two countries. Indeed, the distance to Banglabandh, the nearest seaport in Bangladesh from eastern Nepal via Kakarbhitta-Fulbari-Banglabandh is just 54 km, compared with the 960 km separating Birganj and Kolkata, the current port used. Efforts are under way to establish a free-trade zone along the shorter route.

The tarai region—fertile, hot, humid, and generally flat—is the northern extension of India's Gangetic plain, a major agricultural region and home to half of Nepal's population.

Its landlocked location, rugged terrain, poor infrastructure, and long-running conflict have prevented Nepal from fully developing its economy. The PRC, India, Japan, United States, and several European nations have invested heavily in foreign aid since the 1950s. Yet, overall, 31% of Nepalese still live below the poverty line. Gross domestic product (GDP) per capita was $468 in 2008. Income disparity has widened. And economic growth has not improved markedly or been fast enough to support population growth, estimated at 2.3% a year.

A little over 42% of the working population, defined as aged 10 years and above, were economically active, according to the last census[3] in 2001; among them, 65.6% were engaged in agriculture and other primary sector activities. The contribution of the nonagricultural sector to GDP has gradually increased, while key manufactured products include jute, sugar, cigarettes, beer, matches, shoes, cement, and bricks. No major industrial outputs are available for international trade. Nepal's spectacular landscape and exotic culture have considerable potential for tourism, but growth in export industries was stifled by political events and civil conflict over the past 10 years or so.

In addition, poor roads make access to markets difficult for local producers and have significantly undermined the viability of the subsistence household economy in rural areas. Consequently, many poor farmers migrate from the hills to the tarai plain and from rural to urban areas, pushing up migration rates over the decades. Relatively weak investment in development infrastructure and environmental problems such as land degradation and natural disasters also drive migration from rural to urban areas.

[3] The government conducts an official census every 10 years, the next occurring in 2011. Therefore, some data in this report are from estimates by the study team in Nepal, and reflects locally observed trends and available figures on growth rates.

Remittances from migrant workers, particularly those overseas, have emerged as the major contributor to the country's economy. Households receiving remittances are moving to urban centers seeking better services and consumer goods, with the regional distribution pattern of urban settlement favoring the tarai plain. Urban settlement in the mountain region is light, while existing urban areas are not geographically well connected. The largest urban concentration is in the Kathmandu Valley in the hill region, at nearly 31% of the total. Many small towns are emerging in the valley, but in an unplanned and haphazard manner.

## Rationale for a Region-Based Urban Development Strategy

Notwithstanding the urgency of improving the productivity of agriculture on which majority of the population subsists, and for tackling acute poverty in rural areas, urban settlements are increasingly crucial for addressing these problems as well as for the development of the entire country. Trade and tourism has been the economic base of Nepal's urbanization. The ability of these nonagricultural sectors to harness the comparative and competitive advantages of regions and subregions will determine the strength of urban–rural links and the sustainability of both rural and urban economies. Urban areas can leapfrog their role as a reception area for unemployed farm workers displaced from the hills and mountains to a labor-intensive agribusiness market offering employment. The management and planning of urban development, presently almost nonexistent, can also play a key role in this process, helping to determine and promote market towns and improve links between urban areas and their hinterlands.

The region-based urban development approach seeks to transform the subsistence economy into a commercial economy by promoting certain specialized productive activities. Urban areas are centers of demand for products from rural and hinterland regions. So, the spatial agglomeration of production factors at potential urban centers is a potent factor in stimulating economic growth. Growth is also boosted when a region has capacity to produce goods and services for far-flung markets. Exports bring financial capital into the region, which in turn drives the expansion of infrastructure, facilities, and internal markets for its industries. The development of hinterlands, or spheres of influence to urban areas, should recognize region-specific resource potential and include the rural poor. The distance to urban services and facility locations should be reduced and travel time should be cost-effective. These are fundamental to sustainable and inclusive growth.

To accelerate economic growth and reduce spatial and social imbalances as much as possible, a "regional economic unit" will have to be the driver of change. Such a unit can integrate urban and rural economies and create complementary conditions in which the economic interactions between the hill, mountain, and tarai regions can flourish. Spreading investments thinly across many small towns has had a very marginal impact, not only on economies but in the improvements to basic services, as local governments have very limited capacity to manage implementation. Consequently, the urban areas selected for investment should be prioritized according to their economic and/or industrial potential, not just to their lack of basic infrastructure. The selection of the types of urban and regional infrastructure services should be based on the principles of (i) promoting the economic potential of the selected urban–rural regions inclusively, and (ii) harnessing the competitiveness of selected agribusiness industries for export by enhancing connectivity and improving inclusive urbanization.

The chain of production activities adds more value than the simple sum of products. By establishing supply chains and distribution networks for agricultural commodities or manufactured goods, for example, Nepal should be able to realize this value-adding process with government policies and strategic planning. This report attempts to promote such a process as part of an urban development strategy.

## Objectives

The key objectives of this report are to

i. understand urban sector development patterns in Nepal from the perspective of its regional economic growth;
ii. analyze growth potential using quantitative and/or objective methodology to identify urban investment areas for maximizing development impacts with scarce resources; and
iii. demonstrate an inclusive development strategy to boost both urban and rural growth.

All these objectives take account of Nepal's landlocked location, three eco-belts, lack of technological advances, and the impact of civil disturbances that have prevented the country from fully developing its economy.

# URBAN ROLES AND ISSUES IN THE CONTEXT OF ECONOMIC DEVELOPMENT

## Urbanization in the Context of Economic Growth

The definition of urban in Nepal is neither adequate nor functionally articulated. Urban areas, *or nagarpalika*, are defined in terms of a minimum population size of 10,000 for the hill and mountain regions, and 20,000[4] for the tarai. Other criteria, such as population density, occupational structure, and nodal function relating to urban-led rural regional development, have never been used in designating urban areas. Although urban areas are autonomous bodies based on the Local Self Governance Act (LSGA), the Ministry of Physical Planning and Works (MPPW) is responsible for policy measures, projects, and programs related to urban infrastructure development.

Within 58 areas, the urban population of Nepal is just 17% of the total, which appears inadequate for connecting vast rural areas spatially, economically, and socially. The Central Bureau of Statistics (CBS 2003b) estimates that urban population will reach 20% in 2011, 23% in 2016, and 27% by 2021. The urbanization rate, at 4.9% a year, is four times higher than the population growth rate of 1.28% (Table 1), in keeping with past censuses which showed urbanization to always be faster. Average urban population density is 970 people per km$^2$, with the nine largest cities of over 100,000 as of 2008 (Biratnagar, Birganj, Bharatpur, Butwal, Dharan, Kathmandu, Lalitpur, Mahendranagar, and Pokhara) averaging 6,000 per km$^2$. One-third of urban areas have density levels below the national urban density. Indeed, many designated urban areas actually show rural characteristics: their boundaries

[4] But the tarai's two designated urban areas, Malangawa and Bhadrapur, have populations below 20,000.

are significantly "over-bounded," amalgamating contiguous village areas without the potential to acquire municipal status, such as urban functions, roads, industrial activities, and physical expansion. Densities in some newly inducted municipalities[5] are comparable to a rural density of 136 per km².

## Table 1: Urban Growth Patterns in Nepal

| Parameters | 1961 | 1971 | 1981 | 1991 | 2001 | *2008 |
|---|---|---|---|---|---|---|
| Urban population ('000) | 336 | 462 | 957 | 1,696 | 3,228 | *4,089 |
| Number of urban areas | 16 | 16 | 23 | 33 | 58 | *58 |
| Urban population (%) | 3.6 | 4.0 | 6.4 | 9.2 | 13.9 | **17.0 |
| Urban growth rate (%) | 4.40 | 3.23 | 7.55 | 5.89 | 6.65 | **4.90 |
| National population growth rate (%) | 1.65 | 2.07 | 2.66 | 2.10 | 2.27 | **1.28 |

* National Urban Development Institute (2008). *Municipality Profile, Nepal.*
** Central Intelligence Agency (2009), *The World Fact Book* (estimates).

Sources: Central Bureau of Statistics (2003a); Population Monograph of Nepal, Vol. II: 142.

Urbanization has not occurred evenly throughout the country. The nine largest urban areas share 52% of the total urban population, of which five lie in the hill region, while most urban areas are very small, with populations below 50,000 (Table 2). Variation also exists in urban population among the three ecological regions. The hill region, with 27 urban areas, holds 53% of the total urban population, larger than the urban population in the tarai. But in terms of the number of urban centers over the area, the distribution of the hill urban areas is sparser than the tarai. The urban centers in the hill region on average serve a hinterland of 2,272 km² (about 48 km diameter boundary), nearly twice the area served by tarai urban centers (1,173 km² or about a 34 km diameter boundary). In the mountain region, urban centers serve 25,909 km². Thus, urban centers in the mountains and hills serve localized populations and immediate surroundings, while scattered village settlements are too far away to make use of better urban amenities.

[5] Amargadhi, Bhimeswar, Kamalamai, Khandbari, Narayan, and Triyuga show densities ranging from 132–240 per km².

## Table 2: Distribution of Urban Areas by Ecological Regions, Nepal

| Urban Size Classes by Population | Number of Urban Areas (municipalities) | | | | Urban Population | |
|---|---|---|---|---|---|---|
| | Tarai | Hill | Mountain | Total | Number | % |
| ≥100,000 | 4 | 5 | 0 | 9 | 2,168,000 | 52 |
| 50,000–99,999 | 9 | 4 | 0 | 13 | 846,000 | 29 |
| <50,000 | 16 | 18 | 2 | 36 | 1,075,000 | 19 |
| Total urban areas | 29 | 27 | 2 | 58 | 4,089,000 | 100 |

Source: National Urban Development Institute (2008). *Municipality Profile, Nepal.*

If well-planned, rapid urbanization can be an encouraging trend—it provides employment and reduces discrimination between advantaged and disadvantaged social groups. But the process of urbanization in Nepal is different. It is not due to economic reasons, rather, it is caused by the expansion of municipal boundaries, designating new municipalities, and the high level of urban-bound migration. The availability of relatively better facilities than in rural areas draws people to municipalities.

Currently, there are three hierarchical levels of municipality: 1 metropolis (Kathmandu), 4 sub-metropolises (Biratnagar, Lalitpur, Pokhara, and Birganj), and 53 municipalities by population size, annual revenue, and some basic facilities.[6] The Ministry of Local Development (MLD) made this classification, as mentioned in the LSGA of 1999, for governance purposes rather than for the economic strengthening of municipalities. Apart from these incorporated towns, more than 127 small market centers are dispersed across the country's rural region.

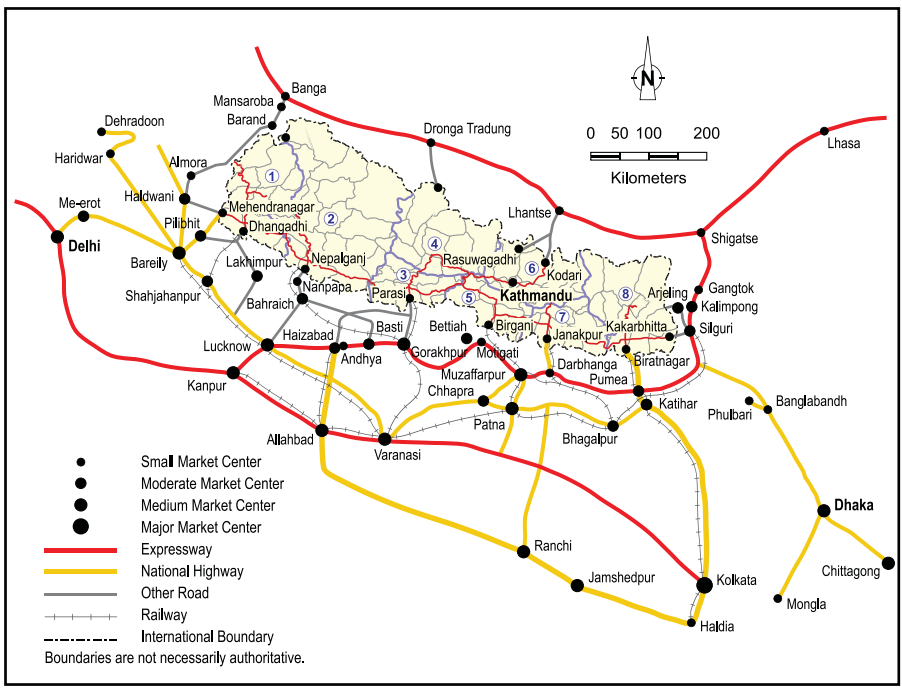
[6] The metropolitan city (*Mahanagarpalika*) is defined as a municipality with a minimum population of 300,000, annual revenue of at least NRs400 million, and facilities including electricity, drinking water, communications, paved roads, specialized health services, at least one university and other higher educational institutions in different fields, and international sporting events. Similarly, the submetropolis (*upa-mahanagarpalika*) is a municipality with a minimum population of 100,000, annual revenue of NRs100 million, electricity, drinking water, communications, paved roads, education and health services of a high standard, general infrastructure for national and international sporting events, public parks, and a city hall. The municipalities (*nagarpalika*) are defined as having annual revenue of NRs5 million for the tarai and NRs0.5 million for the hill and/or mountain region together with minimum urban facilities such as electricity, drinking water, roads, and communications.

## Geographical Constraints in Urban Development: Process and Factors

Urban development in the hills and mountains of Nepal is hindered by rugged terrain, a maze of spurs and narrow valleys, scattered arable land, and difficulty of movement. Here, urban areas are small, widely dispersed, and slow growing. Innumerable gorges along the north–south flowing rivers often hinder movement of people and goods from east to west of the country, particularly during the monsoon.

The urban system in the hills and mountains is fragmented by lack of road access (Figure 2). Average road density is 7.7 km per 100 km², or 1 km of road serving 1,367 people. Growth of urban areas in the hill and mountain regions, except in the Kathmandu and Pokhara valleys, has been slow because settlements are scattered over a vast rural area. The hills and mountains contain 1,392 settlements and the average distance between them is 45 km (a minimum 10 hours walk, if the terrain is flat). The population density is 106 per km², compared to the national average of 157 per km².

### Figure 2: Transportation in Nepal and Neighboring Countries




Source: NPC/ADB (2007).

Scattered rural settlements are clearly a crucial problem for development in the hills and mountains. A study by the Central Department of Geography, Tribhuvan University (CDGTU 2002) indicates that these have on average fewer than 10 houses, implying that people from such villages must travel much farther for urban-based services—a waste of time and money that also reduces the hours available for productive work. Longer distances mean people are less likely to use those services. Under such conditions, it is difficult to provide adequate and economically feasible urban infrastructure services. Efforts to agglomerate scattered settlements are essential to economically feasible facilities in reasonable proximity to users. At the same time, creating viable communities in terms of threshold demand size are indispensable but challenging. On the other hand, the hill region's wide, fertile valleys and the tarai plain have better road networks and comparatively denser pockets of settlement.

## The Urban Economic Base

Nepal's urban economic base is still rudimentary. The primary sector employs 30% of the economically active population aged 10 years and over,[7] the rest working in the nonagricultural sector. In contrast, slightly over 70% of the economically active rural population is engaged in primary production (Table 3). The wholesale and retail trades and manufacturing are the two most important industrial divisions in both urban and rural areas.

The primary production sector employs more than 50% of the working population in 17 of 58 designated urban areas. Trading accounts for 16.2% of the workforce, while manufacturing accounts for 15.4%. The relatively low share of manufacturing indicates that urban areas largely export raw materials and import finished products.

Given insufficient infrastructure and facilities, with the possible exception of the Kathmandu and Pokhara valleys, the hill region urban areas in particular have extremely limited potential for industrial development.

[7] Nepal's population census defined people aged 10 years and above as the "Economically Active Population." The census defined the primary production sector as including agriculture, forestry and fishery activities, and the nonprimary production sector comprising: (i) mining and quarrying; (ii) manufacturing; (iii) electricity, gas, and water supply; (iv) construction; (v) wholesale and retail trade; (vi) hotels and restaurants; (vii) transport, storage, and communications; (viii) finance and business services (financial intermediation, real estate, renting and business activities, and public administration and social security; (ix) community and personal services (education, health and social work, and other services); and (x) others (private households with employed persons, extraterritorial organizations and those not reported).

## Table 3: Economically Active Population Aged 10 Years and Over by Major Industry Division in Urban and Rural Areas (%)

| Industrial Division | Urban | Rural |
|---|---|---|
| Agriculture, forestry, and fishing | 30.4 | 70.1 |
| Mining and quarrying | 0.3 | 0.1 |
| Manufacturing | 15.4 | 7.9 |
| Electricity, gas, and water supply | 1.2 | 1.5 |
| Construction | 4.7 | 2.6 |
| Wholesale and retail trade | 16.1 | 7.7 |
| Hotel and restaurant | 3.5 | 0.9 |
| Transport, storage, and communications | 4.6 | 1.2 |
| Finance and business services | 11.6 | 2.8 |
| Community and personal services | 8.4 | 3.0 |
| Others | 3.2 | 1.7 |
| **Urban EAP = 1,114,898** | **Rural EAP = 8,785,298** | |

EAP = economically active population.

Source: CBS (2003a).

The nonagricultural sector contributes about 67% to national gross domestic product (GDP). During the past few years, however, industrial production has suffered frequent strikes by truckers, electricity blackouts, an irregular supply of raw materials, lockouts, and poor security. (Ministry of Finance 2007).

The three major sources of household income in urban areas are nonagricultural wages, nonagricultural enterprises, and housing (Table 4). In the rural areas, remittances are the second-largest source[8] of income after farming, the relative share surprisingly higher than for urban areas. Remittances may be a potential source of investment in urban areas, particularly in the large cities, since rural areas have limited potential for private investment.

[8] A higher proportion of rural workers than urban workers move away from their areas for employment. For instance, over 13% of the population aged 15 years or older in the rural western region alone moved away for work, compared to 5% of the same age group in all urban areas, excluding Kathmandu (CBS et al. 2006).

Small and micro enterprises dominate the urban economy. Of small-scale household enterprises, trade and business accounts for 43%, followed by the service sector at around 15% (CBS 2003a). Only 7% of households are involved in small-scale manufacturing enterprises. Informal activities, meanwhile, are increasing as cities grow and play important roles in providing livelihoods and services to the urban poor.[9] However, managing informal enterprises is a crucial issue. Poor labor market conditions and productivity, haphazard locations available to participants, poor entrepreneurship, and a lack of knowledge in market distribution networks and value-added production chains, are some of the major problems. The formal sector sees informal businesses as a major threat, and vice versa. Furthermore, the potential development of agriculture and other natural resources such as forests, pastures, and water in the hills and mountains have not been achieved, while the tarai's rich and fertile alluvial soils and tropical forests have not been fully exploited and its comparative advantages as a location for industry are stunted by limited infrastructure and facilities.

## Table 4: Household Income by Different Sources

| Income Sources | Urban | Rural | Nepal |
|---|---|---|---|
| Nonagricultural wage | 26.7 | 15.3 | 18.6 |
| Nonagricultural enterprises | 24.4 | 10.8 | 14.7 |
| Housing income | 23.9 | 8.1 | 12.7 |
| Remittances | 9.9 | 15.4 | 13.8 |
| Farm | 7.3 | 38.3 | 29.4 |
| Property income | 2.5 | 0.5 | 1.1 |
| Agriculture wage | 0.6 | 7.3 | 5.4 |
| Others | 4.6 | 4.2 | 4.3 |

* The percentage is calculated from average per capita income of NRs19,600 for urban; 8,483 for rural; and 10,130 for country areas.

Sources: CBS (2004); *Nepal Living Standards Survey 2003/2004,* Vol. 2.

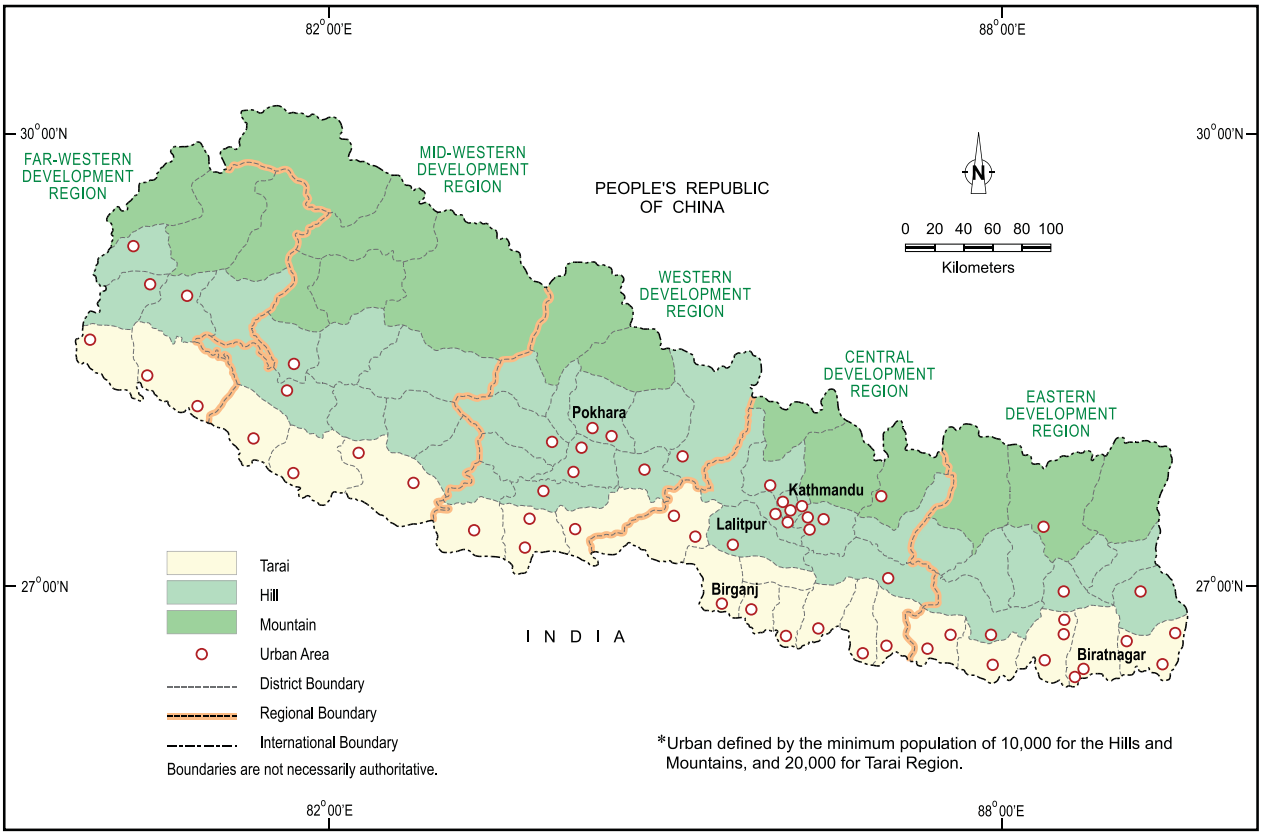
## Social Context of Urbanization

Over the past several decades, Nepal's large cities have expanded rapidly and haphazardly, mainly due to large streams of urban-bound migration, the weaknesses of municipal institutional capacity, insurgency, biased government policies, and so on. Seven urban areas[10] have grown over 60% in the past decade. Migration contributed 30% to total urban growth during

[9] The number of commercial vendors in Kathmandu, for instance, grew from 1,300 in 1998 to 4,557 in 2006, with migrants accounting for over 80% of commercial vendors (CARE Nepal, 2008; Dawadi, 2008).

[10] They include three hill municipalities—Dipayalsilgadhi (78.5%), Pokhara (64%), and Kathmandu (59.5%)—and four tarai municipalities: Kalaiya (74.4%), Butwal (70.3%), Bharatpur (63.4%), and Birganj (63%).

# Figure 3: Boundary of Five Administrative Regions and Distribution of Urban Areas, Nepal




Source: Modified NPC/ADB (2007).

the 1990s (CBS 2003a). Six urban areas[11] had received migrants ranging from 40% to 57% of their total population by the last census period (10 years). The population of vulnerable people, such as slum dwellers, squatters, rag pickers, street children, child workers and female sex workers, is also on the rise. Open spaces formerly used as market places, greenery, public parks, and playgrounds have been taken over by squatters, while footloose vendors occupy city-center sites. This has put additional pressure on already poorly available infrastructure and facilities, and limited land for settlement and other purposes in large urban areas.

The cultural and religious significance of many of Nepal's urban areas attract domestic and international visitors, bringing important sources of revenue for municipal governments. But the physical state of some monuments and sites in the Kathmandu Valley's cities, Janakpur, and Pokhara, are deteriorating quickly due to haphazard growth, inefficient planning, financial constraints, and the lack of a buffer zone between urban dwellers and the renowned sites.

Speedy change in urban lifestyles and family structure has affected the lives of young girls and boys both positively and negatively (CARE Nepal 2008), while social issues such as rising violent crime have emerged. Such change disproportionately affects poor women and girls. In addition, urban-bound migration has involved a large number of youth. Youth unemployment has recently become a crucial problem—youth make up 40% of the total urban population, youth literacy is 70%, while youth unemployment is more than 11% (CBS et al. 2006). A "brain drain" among young people with higher education and skills is also an emerging economic problem.

Ethnic, religious, or gender discrimination is usually minimal in urban areas, particularly the large ones, as communities are composed of diverse cultures, migrants, and open systems. But urban societies in Nepal are not far removed from the long-established feudalistic and closed system. Generally, those on the upper rungs of the social ladder have better access to social and economic infrastructure and opportunity, while those on the lower rungs, particularly disadvantaged groups, are left behind.

[11] They include five tarai urban areas, compared with Butwal (56.6%), Dharan (49.4%), Bharatpur (47.2%), Itahari (46.4%), and Damak (41.5%), as well as Kathmandu (45.6%). The contribution of migration in 12 urban areas lies within 30%–40%, 10 urban areas within 20%–30%, 19 urban areas within 10%–20%, and the remaining 11 below 10%.

## Urban Infrastructure and Services

In Nepal, where the principal effort of government is often to provide sufficient infrastructure and coverage, meeting quality standards for public services receives the lowest priority. The performance of some of the facilities by urban areas as shown in Table 5 is still low by general urban standards.

For instance, about 35% of urban households, mostly located in newly inducted small municipalities, have no access to tap water; 23% are without toilets; and 35% still use solid fuels (wood, agro by-products, and cow dung) for cooking and heating. The distribution and quality of these services are crucial issues. During dry months, water supply is extremely limited, as rivers shrink, and the groundwater level in the tarai falls due to decreasing flows from water recharge (watershed) areas. Inadequate quantity and intermittent supply of water are also serious issues in most of the hill towns. Though water availability varies seasonally, the quantity delivered in many municipalities is below 50 liters per capita per day. Inadequate quantities are also due to losses of as much as over 40%. This loss of water is a result of extensive use of free public taps, which are neither regulated nor metered, and poorly maintained pipes.

Access to infrastructure and facilities in terms of travel time is generally not as serious a problem in urban areas as in rural areas. Though the facilities listed in Table 6 are within an hour of the majority of urban households, some have to travel over an hour for facilities such as cooperatives, banks, and agriculture centers. In rural areas, household access to the given facilities, except primary school, has declined as travel time increases, which means that the few households nearer to facilities have the most advantage.

### Table 5: Selected Infrastructure and Facilities Indicators in Urban Areas (%)

| Indicators | Urban | Rural |
|---|---|---|
| *Households' Facility Access Indicators* | | |
| Access to tap water | 65.4 | 50.6 |
| Access to sewerage | 54.4 | 3.7 |
| Toilet facilities | 77.1 | 40.3 |
| Use of biofuel for cooking | 35.4 | 94.5 |
| Electricity connections | 87.4 | 27.3 |
| *Social Service Indicators* | | |
| Adult literacy | 68.3 | 45.0 |
| Households with rented houses | 34.8 | … |
| Semi-permanent and huts | 31.4 | … |

… = no data available.

Source: CBS (2004).

## Table 6: Household Accessibility to Selected Facilities (%)

| Urban—Travel Hours | | | | | Facilities | Rural—Travel Hours | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ≥3 | 2–3 | 1–2 | 0.5 –1 | ≤ 0.5 | | ≤0.5 | 0.5 –1 | 1–2 | 2–3 | ≥3 |
| 0 | 0.0 | 0.5 | 2.1 | 97.4 | Primary school | 87.7 | 8.4 | 3.0 | 0.4 | 0.5 |
| 0 | 0.0 | 0.9 | 10.4 | 88.7 | Health post | 41.3 | 26.1 | 19.3 | 8.3 | 5.0 |
| 0.3 | 0.1 | 1.7 | 12.6 | 85.4 | Cooperative | 21.2 | 19.9 | 24.8 | 13.9 | 20.3 |
| 0.2 | 0.1 | 1.8 | 17.4 | 80.5 | Agriculture center | 19.9 | 20.2 | 26.2 | 14.9 | 18.8 |
| 0 | 0.1 | 1.2 | 8.9 | 89.8 | Commercial bank | 15.2 | 18.4 | 26.6 | 17.1 | 22.7 |
| 0.1 | 0.0 | 1.0 | 9.5 | 89.4 | Bus stop | 28.4 | 15.7 | 17.2 | 12.0 | 26.6 |

Source: Pradhan (2006).

Planning and provision of infrastructure and facilities have often not kept pace with urban growth, meaning unhealthy, poorly serviced, and infrastructure-deficient sites have proliferated. Municipal governments have given least attention to urban planning and management and its importance in urban economic development. Urban planning for infrastructure and services is based on uncoordinated sector biases and has therefore resulted in redundant or overlapping of facilities or gaps in provision.

## Urban Environment

A number of urban environmental issues have emerged, coupled with government inability to match needs with infrastructure and facilities. Haphazard development has taken place over riverbanks in areas prone to flooding, and facilities-deficient sites in many cities. Although environmental problems in large urban areas—including in the Kathmandu Valley cities—are considered more severe than in other urban areas, several other fast growing and emerging municipal towns also face environmental problems. These are related to land, water, air, and noise pollutants, which in combination intensify their impact on the environment and the quality of urban life. Vulnerable populations with airborne diseases, and diseases related to water, food deficiency, and waste products are on the rise.

**Urban land** is the most polluted due to haphazard disposal of solid and liquid wastes, uncontrolled growth, absence of urban services, and weak institutional effort to combat these challenges. Large urban areas in particular face alarming environmental problems due to ever-increasing volume of waste and heaps of garbage that often remain uncollected for days. Municipalities

generate 1,350 tons of solid waste every day, an average of 0.34 kilograms per person (Pradhan 2006). Lack of dumping sites makes solid waste disposal a common problem in all urban areas. Open spaces and riverbanks within urban areas are used for landfill, polluting rivers. Unmanaged solid waste significantly damages public health and harms monuments and renowned historical, cultural, and natural sites. Urban solid waste management has become very costly for municipal government. A lack of long-term perspective and land for dumping waste are among the reasons for the random and unsanitary collection and disposal of urban solid wastes.

**Air pollution** is deteriorating in major cities as vehicular and industrial emissions, dust, and burning of plastics increase. Narrow streets are becoming inadequate for greater traffic flows in large urban areas, poor maintenance of streets is often a problem, and managing the burgeoning traffic with respect to pedestrians (particularly in greater Kathmandu and Pokhara) has been a great challenge. Urban dwellers in the Kathmandu Valley suffer the most from air pollution, which has risen tremendously in the past few years, also because of the frequent burning of tires on strike days. The Himalayas, which could be seen from the valley for 117 out of 120 winter days 30 years ago, were visible for only 22 days during the same winter days in 1998. In the last few years, ailments relating to air pollution such as pneumonia, bronchitis, and asthma have been common in the cities of the Kathmandu Valley. Indoor air pollution is also a problem, particularly for poor households in small urban areas due to the burning of biofuels (firewood, cow dung, and crop residues) for cooking and heating (Table 5), which emit harmful gases such as carbon monoxide, carbon dioxide, nitrogen oxides, and suspended particulate matter. Traffic management problems for nonmotor vehicles such as rickshaws (three-wheel cycles), push carts, oxen-drawn carts, and bicycles also exist in the major tarai cities.

**Water quality** is the most serious public health issue in Nepal. Available literature indicates that the water quality of all sources and/or services in most urban areas throughout the country is below the World Health Organization standard for drinking, due mainly to fecal contamination. This is evident in the fact that water-related diseases (diarrhea, dysentery, cholera, skin diseases, etc.) make up 61% of outpatient visits and are among the top 10 diseases. Hospital records in Kathmandu show that about 17% of all deaths are due to waterborne disease. Groundwater, a major source of water supply in tarai urban areas, is also being contaminated by arsenic (Nepal Red Cross Society 2003).

**Informal land development and shelter provision** is a common phenomenon. The increasing number of squatter settlements in Nepal's large cities is a conspicuous manifestation of rapid and haphazard urbanization. Central Bureau of Statistics (CBS) (2004) indicated that 35% of urban

# Figure 4: Transportation Network in Nepal

Source: ADB. 2003. *Community-Based Water Supply and Sanitation/Project Preparatory Technical Assistance.*

households live in rented accommodation, while semi-permanent homes and huts accounted for 31% (Table 5). In the Kathmandu Valley cities, the number of squatter settlements has increased from 33 in 1990 to 45 in 2008 (Lumanti 2008). Most of them occupy public land along riverbanks. The core slum areas of Kathmandu and Lalitpur are several generations old, but squatters are not yet entitled to own their buildings and landholdings.

Squatter settlements are also rising in fast-growing cities like Pokhara, Butwal, and Bharatpur. People in slum and squatter settlements live in the most vulnerable conditions, susceptible to river flash floods, the smell and nasty environment of dumping sites, extremely deficient water and sanitation, dilapidated and temporary huts, and narrow walkways. Many squatters left their original homes and find shelter in the cities due to living conditions made unfavorable and insecure by insurgency and other social reasons, as well as floods and landslides (CARE Nepal 2008). The increase in squatter settlements is due to other factors as well, such as lack of land-use zoning and planning, idle public land tracts, and weak enforcement of public acts and laws by municipal governments.

## Urban Land Uses

The municipal government and the Department of Urban Development are responsible for the planning of urban land-use zoning. However, there is limited information on land use for all municipalities. Due to over-bounding of rural areas, small, recently inducted urban areas have more than half their area covered either with agriculture or forest. The urban built-up area ranges from below 5% in the small urban areas to 60% in large urban areas. Over the past decade, large urban areas have seen a remarkable change in land-use patterns due to rapid population growth.

Prominent agricultural land has been lost to rapidly spreading urban blight. With the lack of land-use zoning plans and laws, managing haphazard growth in large urban areas remains difficult. The municipal government, according to the Local Self Governance Act (LSGA), is responsible for preparing resource maps for development and revenue generation, and land-use maps delineating industrial, residential, agricultural, recreational, and other zones. Urban land development through land pooling, mainly focusing on middle- or upper-income groups has been concentrated in a few major cities on a small scale. But the private sector is not being attracted to invest in land development and housing construction due to the absence of a legal framework. No policies and development plans are in place allowing the urban poor to access land and housing.

## Urban–Rural Links: Urban Centers, Market Towns, and Rural Villages

Strong urban–rural links are essential for balanced regional economic development in Nepal. But the 58 urban areas are not adequately linked to cover the vast rural region in terms of providing services and exploiting hinterland resources. Existing urban–rural links reflect geophysical conditions and the pattern of traditional economic flows. Volumes of goods and people are greater between north (the hills) and south (the plain) than between east and west. The north–south flows are easier, and more important due to the movement of complementary products. East–west flows cross similar topography and involve the same kinds of products. The wide and deep gorges of large north–south flowing rivers act as barriers for east–west flows, while supporting the north–south direction of traditional routes. These patterns of urban–rural links and regional development are valid, even in the newly introduced political context of Nepal's federal system. They call for policy measures and programs that would strengthen urban development systems and their links with the hinterlands of each of the broad watershed regions.

Nepal has a total of 16,834 kilometers (km) of roads. Of this, 49% is in the hills and mountains, which cover 77% of the country's total area. The tarai has better network coverage, with 51% of the country's road length for 23% of the nation's land area. Furthermore, 45% of Nepal's total road length is unpaved (fair-weather roads) which is impassable during the monsoon. Lack of roads linking urban areas and rural regions, particularly in the hills and mountains, is the most crucial problem. Roads link large and medium-sized municipal towns, but economic integration with surrounding areas is weakened by lack of road links in the areas themselves. Therefore, flow of goods and people between demand and supply centers is difficult, and the economic cost is relatively high due to time spent carrying goods for sale by foot.

Nevertheless, the agricultural base is strong. High value crops such as vegetables, fruits, dairy products, herbs, and cash crops (such as ginger, tea, cardamom, and potatoes) are significant for raising rural household incomes. Nonetheless, except in some pockets with commercial vegetable farming, close to major urban areas and linked by road, agricultural conditions have not improved. All 55 hill and mountain districts are food-deficit areas (CBS 2002). To improve agricultural conditions, urban areas have to provide agricultural development services such as farm inputs, marketing, collection and transportation, farm extension, processing, storage, training, health and education, and veterinary expertise.

The inadequate entrepreneurship and lack of measures promoting start-up businesses in both urban and rural areas are major impediments to the development of urban–rural links. Entrepreneurship is hindered by lack of training in business skills, of credit and technology transfers, and of marketing and market information. Potential local micro entrepreneurs, such as town-based informal businesses and rural artisans that base their activities mostly on local resources and can play a significant role in urban life and livelihood, are neglected in urban–rural integrated development.

Since most of the municipalities are largely rural, their functional roles are confined within their own jurisdiction rather than as centers for rural transformation. The government's rural–urban linkage development program, supported by the United Nations Development Programme, had the same difficulty. The 10-year program, which started in 1997, was hindered by a lack of understanding of the spirit of urban–rural linkage development. There was no coordinated approach among the agencies that developed the infrastructure for urban and regional development.

## Urban Finance

The urban finance system in Nepal has recently undergone a major change. About a decade ago, *octroi*[12] was the main revenue source, contributing almost two-thirds of the total municipal revenue. However, due to the severe pressure of business communities and donor agencies, the *octroi* tax was abolished and replaced by the local development fund (LDF),[13] which is collected by the Ministry of Local Development (MLD) and transferred to municipalities. LDF is the largest single revenue source contributing over 50% to the municipalities' own revenue and over 32% of total revenue (Table 7). Again, LDF is considered a temporary measure, which has to be phased out by the end of 2011 and replaced with other revenue sources.[14] If LDF is abolished, municipalities will face further financial difficulties because they are generally weak in mobilizing local revenue sources (GTZ/MLD 2006).

In addition, the municipalities are entitled to collect various taxes and fees, including service charges and property rental as internal revenue sources. They also get grants and loans as external sources from the central government, as well as from national and international financial institutions and development agencies. Grants and loans received by 58 municipalities accounted for 23.5% of total municipal revenue in 2004–2005.

[12] *Octroi* is a local tax collected on various articles brought into a district for consumption.
[13] The LDF or tax is levied at customs at 1.5% of the import value of goods.
[14] It is considered against the spirit of the World Trade Organization.

## Table 7: Aggregate Municipalities Total Revenue/ Expenditure Structure, FY2005

| Major Revenue Sources | % | Major Expenditure Indicators | % |
|---|---|---|---|
| | | | |
| Own source revenue | 62.26 | Recurrent expenditure | 21.73 |
| *Local development fee* | *31.89* | Debt payment | 2.01 |
| *House/land and property tax* | *7.53* | Social programs | 8.53 |
| *Other tax revenue* | *3.96* | Ordinary capital | 1.03 |
| *Fees and fines* | *13.16* | Capital investment | 66.70 |
| *Property rental* | *2.90* | Land/building purchase | 0.53 |
| *Other revenue* | *2.81* | Building construction | 2.27 |
| Miscellaneous income | 2.36 | Town level projects | 4.00 |
| Grants | 22.72 | Other development/ construction | 59.90 |
| *HLG/administrative* | *2.76* | Total Expenditure | 100.00 |
| *HLG/development* | *7.15* | | |
| *Others* | *12.57* | | |
| *Town development fund* | *0.24* | | |
| Loans (TDF and others) | 0.77 | | |
| Balance forward | 11.88 | | |
| Total Revenue ('000) = NRs3,105,538 | | Total Expenditure ('000) = NRs4,334,141 | |

HLG = higher level government, NRs = Nepalese rupees, TDF = Town Development Fund.

Source: GTZ/MLD (2006).

Table 7 shows that internal sources comprise about 62% of municipalities' total revenue. This source seems to be favorable for large urban areas. Interestingly, property-based taxes, a sustainable revenue source, are increasing. Large and medium-sized municipalities have made encouraging efforts to collect taxes from house and/or land, and property and professional sources, which are considered the most sustainable taxes. However, exploring alternatives to the existing traditional revenue sources, including LDF, is one of the biggest challenges. Revenue generation is an important issue for municipal government as lack of financial resources is a critical constraint on urban development. Strengthening the financial resources of municipalities is crucial for funding infrastructure.

On the expenditure side, a substantial portion of municipal spending (66.7%) is used for capital investment in public infrastructure, including land and/or building purchases, construction, town projects, and

other developments such as facilities for waste dumping sites, roads, embankments, and community services. Recurrent expenditure is about 22% of total spending, which is encouraging because it is below the given norm.[15] But in majority of municipalities of all sizes, total expenditure has exceeded total revenue by 40% on average, and has even consumed development grants allocated for physical development activities (GTZ/MLD 2006). These municipalities also have relatively low economic activity due to limited internal resources and little private sector investment in economic development initiatives and urban services.

There is lack of competency and commitment in municipal government for mobilizing different direct and indirect revenue sources. Reducing the dependency of most of the municipalities on the central government is a major challenge. Municipal authorities have to think seriously about local resource mobilization to meet growing financial needs. Most do not have up-to-date databases due to lack of human, infrastructure, and financial resources.

## Urban Poverty

Urbanization is a main driver of poverty reduction, as well as an important factor for changing social relations between advantaged and disadvantaged social groups (ethnicities, *dalits*, and women), as discrimination is less entrenched in urban areas. Though the incidence of urban poverty[16] declined dramatically to 9.6% in 2004 from 21.6% in 1995, there is great variation among different urban areas (CBS 2005). The lowest urban poverty incidence is 1.6% for Pokhara, followed by Kathmandu (2.1%), but it rises to 45.6% in Gulariya, and compares with a rural average of 34.6% (Table 8).

Fourteen municipalities fall below 10% poverty incidence, whereas 11 have an incidence above 30% (compared with a national average of 30.9%). The group of 14 municipalities comprises all seven urban areas, including Pokhara and Kathmandu Valley's five municipalities and the fast-growing central and western tarai urban areas, while the group of 11 municipalities includes all small, inducted urban areas.

[15] According to the *Local Body Financial Administration Regulation 1999*, municipal bodies may spend 25%–40% of total expenditure as current and/or administrative expenditure which includes salaries, allowances, services, fuel, contingencies, etc.

[16] The poverty line is derived from the Nepal Living Standards Survey based on consumption (expenditure) of household basic needs. It was NRs5,089 purchasing power parity (PPP) per year in FY1996 and improved to NRs7,696 PPP per year in FY2004.

## Table 8: Poverty Features in Nepal

| | Poverty Incidence (%) | | Poverty Gap (%) | | Distribution of Poor | | Human Poverty Index* | Human Development Index = 1* |
|---|---|---|---|---|---|---|---|---|
| Areas | 95–96 | 03–04 | 95–96 | 03–04 | 95–96 | 03–04 | | |
| Urban | 21.6 | 9.6 | 6.6 | 2.2 | 3.6 | 4.7 | 25.2 | 0.61 |
| Rural | 43.3 | 34.6 | 12.1 | 8.5 | 96.4 | 95.3 | 42.0 | 0.44 |
| Country | 41.8 | 30.9 | 11.8 | 7.5 | 100.0 | 100.0 | 39.6 | 0.46 |

Sources: CBS (2005), *UNDP (2004).

One key issue in urban poverty in Nepal is the increased rate of in-migration in large urban areas, which suffer high unemployment and offer limited income generating sources. Government efforts appear unable to reduce poverty among the urban unemployed. The generation of self-employment is also hindered by lack of training for skills and entrepreneurship, and deficient sources of microcredit support and market information in the urban areas. Given current governance structures and systems, municipalities face a crucial challenge in implementing measures for poverty reduction and managing myriad petty informal employment activities amid increasing slums and squatter settlements in urban areas.

# DISTRIBUTION PATTERNS AND TYPOLOGY OF URBAN REGIONS

## Context

Given Nepal's unique geology and ecology, it is important to consider existing patterns of urban settlement when devising an alternative development strategy.

Development indicators show a wide range of conditions among the ecological regions in the north and south, and between the east and west of the country (Table 9). The plains of the south are warmer and more accessible than the remote northern hills and mountains. The interdependence of the three ecoregions—spatially, ecologically, economically, and socially—provides a sound basis for region-based urban development.

Different initiatives can be identified where the location, size, and specialized functions of cities allows for different types of cluster development. The availability and quality of raw materials, roads, market potential, labor, and entrepreneurial innovation in these areas can form the building blocks for growth.

Three major rivers—the Koshi, Gandaki, and Karnali—divide Nepal's landscape into four major longitudinal (east–west) watershed basins. Each basin has sub-ecosystem units like mountains, valleys and tar land (upland plain), low height Chure hills, Bhabar tracts, and plains in the tarai. There is a flow of resources among these ecoregions. For instance, tarai agriculture and other economic activities depend on the careful conservation of watersheds, which are evolving as rivers drain the northern hill watersheds. The tarai's fertile plain produces surplus crops, which feed people in the hills and mountains. In the past few years, the hill and/or mountain regions have started to produce limited fruits and herbal products, which flow back to markets on the plain. Change in any one of these landscape units may affect the others, breaking ecologically established links on which economic and social phenomena are based.

The integrity of ecoregions is fundamental not only for maintaining major ecologies and conserving environmental resources, but also for supporting livelihood systems. Therefore, it is reasonable to include the development of urban and rural areas in the framework of an ecoregion-based planning and management unit.

Urban areas in Nepal have not been responsive to the demands of rural regions. A development plan should encourage infrastructure and facilities for production activities that support the flows of goods, services, and people from rural regions (as "inputs") to urban areas, and in turn convert them into "outputs". Development of these input–output relationships depends squarely on the diversity of resources in each of the three distinct ecological settings. The relationships could be enhanced by strategies to promote competitiveness between urban areas and their rural regions, which could include marketing networks for exports and local and/or regional marketing initiatives, encouragement for small manufacturing enterprises and inter-district cooperation.

## Table 9: Indicators of the State of Development by Ecological Region, Nepal

| Indicators | Mountain | Hill | Tarai | Nepal |
|---|---|---|---|---|
| *General features* | | | | |
| Area % and total | 35.2 | 41.7 | 23.1 | 147,181 |
| Number of districts | 16 | 39 | 20 | 75 |
| Population % and total '000 (2001) | 7.3 | 44.2 | 48.5 | 23,151 |
| Population growth rates % | 1.6 | 1.96 | 2.61 | 2.25 |
| Illiteracy % | 51.0 | 41.9 | 51.0 | 47.1 |
| *Settlement features* | | | | |
| No. of all settlements (2001) | 1,937 | 560 | 1,392 | 3,889 |
| No. of settlements (pop. 1000–9999) | 472 | 1,910 | 1,081 | 3,463 |
| Rural population % | 8.3 | 43 | 48.7 | 86.1 |
| Rural population density/km$^2$ | 32 | 143 | 301 | 138 |
| Rural population growth rate | 1.57 | 1.97 | 2.62 | 2.06 |
| Rural in-migration % and total ('000) | 2.3 | 20.9 | 76.8 | 1,727 |
| Rural out-migration % and total ('000) | 17.1 | 68.9 | 14 | 1,086 |

*continued on next page*

Table 9 *continued*

| Indicators | Mountain | Hill | Tarai | Nepal |
|---|---|---|---|---|
| Number of urban areas (2001) | 2 | 26 | 30 | 58 |
| Urban population % | 1.35 | 52.13 | 46.51 | 13.9 |
| Urban population density/km$^2$ | 280.0 | 1,210.9 | 867.5 | 985.2 |
| *Resources access and income sources* | | | | |
| Farm income household % (2004) | 59 | 45 | 49 | 48 |
| Non-farm household income % (2004) | 19 | 28 | 28 | 28 |
| Remittance income households % | 9 | 11 | 12 | 11 |
| Agricultural land % (2000) | 10.0 | 28.1 | 56.2 | 28.2 |
| Per capita (ha) forest land, 2000 | 0.95 | 0.38 | 0.12 | 0.29 |
| *Infrastructure and facilities* | | | | |
| Road length % (2002) | 1.4 | 12.9 | 25.0 | 17.5 |
| Electricity by household % (2001) | 21.26 | 42.78 | 38.65 | 39.39 |
| Health service/10,000 population (2001) | 3.67 | 2.27 | 1.34 | 1.92 |
| Health service/100 km$^2$ (2001) | 1.2 | 3.79 | 4.42 | 3.02 |
| Number of schools/100 km$^2$ | 6.17 | 24.7 | 19.82 | 17.05 |
| Irrigated area % of cultivated area (2001) | 7.94 | 9.45 | 50.26 | 28.43 |
| Drinking water households %* | 72.2 | 74.6 | 89.4 | 81.3 |
| Household using biofuel % | 99.7 | 78.1 | 88.9 | 84.8 |
| Toilets households % | 40.4 | 55.8 | 37.3 | 46.1 |
| ARI % of total OP visits | 10.45 | 9.75 | 7.24 | 8.72 |
| Diarrhea % of total OP visits | 11.21 | 10.5 | 9.52 | 10.14 |

ARI = acute respiratory infection, ha = hectare, OP = outpatient.
*Drinking water includes tap and tube well.

Source: CBS 2003, 2004, and 2005; data compiled by consultant.

## Growth Centers and Product Flows

The regional development strategy begun in Nepal in the early 1970s created urban-cum-regional centers in five macroeconomic development regions throughout the country. They are still valid as growth centers to address region-based urban development issues and integrate diverse ecological regions in the new federal political system. Ignoring this strategy, the national development strategies adopted during more recent years emphasized sector planning rather than correcting the side effects of sector planning (ADB 2007: Regional Development Strategy Report).

The progress of development strategies has in most cases been unsatisfactory. For instance, more than 3 decades after the regional development strategy was initiated, only one road corridor, in the central region, has been completed, while four other growth corridors it proposed building in the east, west, midwest, and far-west regions are still under way. It is uncertain when these will be completed. Table 10 summarizes the key structure of growth centers and corridors in the previous development strategy.

### Table 10: Administrative Division of Subregions, Growth Centers, and Growth Corridors (1974–2006)

| Subregions | Hill Regional Headquarters | Tarai Growth Centers | Mountain Growth Points | Proposed Growth Corridor Roads | State of Road Completion |
|---|---|---|---|---|---|
| Eastern | Dhankuta | Biratnagar | Hedangna | Biratnagar-Dhankuta-Hedangna | Incomplete (link up to Chainpur) |
| Central | Kathmandu | Birganj | Dhunche | Birganj-Kathmandu-Dhunche | Completed |
| Western | Pokhara | Bhairahawa | Jomsom | Bhairahawa-Pokhara-Jomsom | Incomplete (link up to Beni) |
| Midwestern | Birendranagar | Nepalganj | Khalanga (Jumla) | Nepalganj-Birendranagar-Khalanga | Incomplete (link up to Narayan) |
| Far-Western | Silgadhi-dipayal | Dhangadhi | Chainpur/ Darchula | Dhangadhi-Dotidipayal-Chainpur/ Darchula | Incomplete (yet to join Chainpur, Bajhang) |

Source: Pradhan (2004).

The agricultural perspective plan (APP) formulated more than a decade ago suggested that complementary farm products in agro-ecological zones (not to be confused with ecoregions) had great potential. The APP has already identified high-value agricultural activities and products best suited to the three ecoregions, based on physical environments (terrain, soil, and climate), social conditions (poverty), and provision of infrastructure (roads, irrigation, electricity, fertilizers, and extension services), and marketing arrangements (Agricultural Projects Services Center 1995). Husbandry of yaks, sheep and goats, growing apples, off-farm vegetables, herbs and non-timber forest products (NTFP), and potato seeds are potential agricultural activities in the mountains, while dairy products, citrus fruits, off-season vegetables, vegetable seeds, apiculture, sericulture, tea, and spices have promise for the hills. The APP identified the tarai as the prime region for the commercial farming of grains (rice, wheat, and maize), vegetables, subtropical and tropical fruits, and livestock. These primary sector-based products are intended for the domestic market.

Nepal needs to focus on international market-competitive industries that may be found in labor-intensive light manufacturing industries including secondary and tertiary sectors such as carpet weaving, pashmina items, cut flowers, traditional jewelry, medicinal herbs, and the tourism industry (luxury mountain-trekking and hot-spring spas, tourism to sites of religious interest, and tourism in the high Himalayas).

In addition to exploiting the potential of the economic growth regions, the development strategy should now take initiatives to meet the challenges of rapid urbanization. A strategy for the development of different ecoregions should not be competing against each other but, by providing scope for specialization, be complementary. The advantage of this approach is obvious if one notes that the tarai is a densely populated area with potential for extensive agriculture and industries, while the hills and mountains specialize in subtropical and temperate products that would find markets in the south (Table 11).

While adopting strategies to promote the potential products, Nepal has to focus on those with comparative and competitive advantages for generating high and sustainable economic growth in terms of their price in international markets. Some products and sectors that fit this profile have already been identified (Annex 1) and others can be made along these lines, providing that the necessary infrastructure and facilities are in place.

All lines of development hinge on good transport links throughout the ecoregions making diverse locations, resources, and activities accessible. Roads should be aligned north–south, as the main corridor of development, with feeder roads bifurcating east and west to connect major market settlements, including district headquarters. The potential market centers and

towns connected by feeder roads should be equipped with a wide range of social and economic services. It is only through such growth centers that the circulation of goods and services between regional and dispersed rural centers can be achieved.

## Agglomeration of Rural Settlements in the Urban Region

Scattered settlement in the hinterland (rural) regions of urban areas in the hills and mountains presents a crucial challenge to the provision of development facilities at a convenient distance to the people they serve. According to CBS (2003), the density of rural settlements is 0.02/km$^2$ in the hills and mountains, and 0.04/km$^2$ in the tarai. On average, each rural settlement in the hills and/or mountains has a population of 4,800, slightly less than half the size of rural settlements in the tarai.[17]

## Table 11: Possible Product Flows in Ecoregions

| Ecoregions | Natural Resources and Human Made Product Flows |
|---|---|
| Mountain | • Herbs, timber, water, and top soil<br>• Livestock, its products and fruits<br>• Migration of people and tourists |
| Hill | • Fuel wood, timber, top soil, water, and electricity<br>• Livestock and its products<br>• Agro products—vegetables, fruits, spices, cut flowers,<br>• Manufacturing—carpet weaving, traditional jewelry making<br>• Migration of people and tourism |
| Tarai | • Fuel wood, timber<br>• Livestock, fruits, and grains<br>• Industrial products |

Source: Authors.

A study by the Central Department of Geography in 2002 indicates that most rural settlements in the hills and/or mountains have less than 10 houses and 13 hours walking distance between them. That is indeed very far in terms of access to facilities. The Central Department of Geography (2002) has determined the threshold population and number of houses for a viable rural settlement, as follows:

Mountain — population 100 and 20 houses
Hill — population 175 and 50 houses
Tarai — population 325 and 150 houses

[17] The Central Bureau of Statistics defines settlement units according to the village development committee (VDC) ward boundary. Each VDC has nine wards that have at least nine settlement units. This does not consider the built area of a village.

A study of accessibility to nine rural development facilities (banks, credit, fertilizer, health services, high schools, improved seeds, markets, offices, post offices, and veterinary clinics) in a rural hill district of Lalitpur (Kathmandu Valley) shows that the travel time ranged from just over 1 hour for post offices to more than 3 hours for high schools, at an average walking speed of 1 km every 20 minutes (Pradhan 2006). Studies indicate that travel time to locations with basic facilities in rural areas has improved, yet the mean times, such as 32 minutes to primary schools and 86 minutes to health clinics, is far above national parameters of 15 minutes for primary schools and 60 minutes for clinics (Table 12).

### Table 12: Mean Travel Time to the Nearest Facilities, 1996

| Facilities | Urban | Rural |
|---|---|---|
| School | 0:14 | 0:32 |
| Health | 0:36 | 1:26 |
| Road | 0:18 | 5:27 |
| Market place | 0:38 | 3:05 |
| Agri-center | 0:58 | 2:43 |
| Cooperative | 0:44 | 3:22 |
| Bank | 0:35 | 3:49 |

National parameters:
Primary school = 15 minutes
Health post = 60 minutes

Source: CBS et al. (2006).

The pattern of settlement in rural areas is not viable for sustainable and rational use of development facilities, nor feasible for providing a consolidating force to community development. The time taken to travel 20 km on average in all ecoregions, the average distance between two settlements, would take more than 6 hours walking, based on 20 minutes per km. There is no way but to encourage a compact form of settlement for the sustainable development of urban and rural areas.

## Export Processing Zones

The Government of Nepal introduced Special Economic Zones (SEZ) and Export Processing Zones (EPZ) in 2003, aiming at making exports competitive by cutting production costs. Four special economic zones have been identified as export processing zones, including Bhairahawa, Birganj, Panchkhal (Kabhrepalanchok District), and Ratmate Jiling (Nuwakot District). Necessary work at Bhairahawa is ongoing (Ministry of Finance 2007). Altogether, 11 industrial districts or estates are now located at major urban areas.[18]

[18] They are Bhaktapur, Birendranagar, Butwal, Dhankuta, Dharan, Hetauda, Lalitpur, Kathmandu, Nepalganj, Pokhara, and Rajbiraj.

Under this program, all kinds of imports such as raw materials used in the production of exportable items are exempt from duties.[19] The Export Processing Zone is a tax free area where all services such as customs, taxation, banking, insurance, and security are provided ultimately for the production of exportable items, while the main objectives of an SEZ are to attract foreign investment, earn foreign exchange, increase export trade, and import new technologies. Industries established in this zone are required to turn out world-class products and export 70% to 100% of all they make. SEZs may include industrial estates, export processing zones, special trading areas, and tourism and/or amusement parks. However, exclusive enclaves for selected industries have formed within them, and they provide scant opportunity to include communities in the economic development process.

## Industrial Corridors

Industrial corridors have begun to appear along roads connecting border cities to the trunk road and the east–west highway running through the foothills of the Chure range across the tarai region (Table 13). When some link roads were widened to accommodate heavy traffic, industrial plants elsewhere in the border cities were moved to the towns along them. The importance of the newly emerged industrial corridors has increased due to the south–north highways bifurcating from the east–west highway that link the major cities and towns located in the hills. This can be seen along the industrial corridor zones of Biratnagar-Itahari (eastern region), Birganj-Pathalaiya (central region), and Bhairahawa-Butwal (western region). A favorable environment has begun to appear for the economic clusters in the midwestern too.

Given increasing migration and rising economic production in the tarai, industrial corridors are likely to become more important as urban economic zones in the future. Since the roads act as the principal factor for clustering of the development process and forward-backward links, road networks need to be designed to stimulate spontaneous growth of clustered economic activities.

[19] This is similar to the economic development policies known as “Import Substitution Strategy” adopted by “Asia’s four tiger economies” in the 1970s: Republic of Korea; Malaysia; Singapore; and Taipei,China.

## Table 13: Emergence of Industrial Corridors

| Tarai Border Cities by Regions | Break of Bulk Cities/Towns | Foothill Cities/ Towns | Hill Cities/ Towns | Small Towns/ Markets | Link Highways |
|---|---|---|---|---|---|
| Biratnagar (east) | • Itahari | • Dharan | • Dhankuta | • Hile<br>• Basantpur | • Koshi highway |
| Birganj (center) | • Pathalaiya | • Hetauda | • Kathmandu<br>• Lalitpur<br>• Bhaktapur<br>• Madhyapurthimi<br>• Kirtipur | • Banepa<br>• Dhulikhel<br>• Panchkhal<br>• Lamosangu<br>• Barbise<br>• Bidur<br>• Dhunche | • Kodari highway<br>• Trishuli highway |
| Bhairahawa (west) | • Butwal | • Butwal | • Tansen<br>• Waling<br>• Syangja<br>• Pokhara | • Kusma<br>• Baglung<br>• Beni | • Siddhartha highway |
| Nepalganj (midwest) | • Kohalpur | • Chisapani<br>• Ameliya | • Birendranagar<br>• Tulsipur/<br>• Ghorahi | • Narayan<br>• Khalanga, Jajarkot | • Ratna highway<br>• Rapti highway |
| Dhangadhi (far west) | • Atariya<br>• Mahendranagar | • Atariya/<br>• Budar | • Syauli | • Silgadhi, Safebagar | • Seti highway |
| | | | • Amargadhi | • Khodpe-bajhang<br>• Baitadi | • Mahakali highway |

Source: Authors.

## Cities in a Clustered Form

When two or more cities and towns in close proximity are enclosed or bound by a road network to form conurbations, with enterprises, industries and public service institutions, the provision of infrastructure and facilities can be a cost-effective way of stimulating economic growth. By this approach, infrastructure that instigates industrial and trading activities need not be replicated in each city but can instead be provided to serve the whole conurbation. Urban governments should consider opportunities to include the approach in policy measures for rational deployment of urban development infrastructure.

Seven areas have potential to be urban regions, in addition to the greater Kathmandu region. Each of these contains at least a pair of cities at distances ranging from 12 kms to 25 kms apart (Table 14). Discussions with the municipal authorities and key people in Biratnagar, Bhairahawa, Pokhara, Nepalganj, and Dhangadhi indicate that they have considered building ring roads around their own cities, a lesson learned from Kathmandu. The greater Kathmandu urban region, comprising Kathmandu and Lalitpur, which have functionally developed as adjacent twin cities and shared

national level services, is encircled by a 27 km long inner ring road. The Department of Urban Development has already planned construction of an outer ring road encompassing the valley's five municipalities and other small towns.

## Urban Functions

In terms of economic function, urban areas are defined according to their functions and ability to attract economic activities of different kinds. The urban hierarchy is classified into two broad levels—such as secondary towns and emerging towns. Likewise, they are functionally divided into two types—i.e., market towns and border towns. Table 15 describes the features of both types of urban areas by hierarchy and function. As depicted in Table 16, the number of secondary towns is one-third that of emerging towns and there are three times more market towns than border towns.

### Table 14: Distance Between Twin Cities

| Major Cities | | Links | |
|---|---|---|---|
| | | Cities and Towns | km |
| i | Biratnagar | Itahari | 22 |
| ii | Janakpur | Dhalkebar | 25 |
| iii | Birganj | Pathalaiya | 22 |
| iv | Bhairahawa | Butwal | 22 |
| v | Pokhara | Lekhnath | 12 |
| vi | Nepalganj | Kohalpur | 16 |
| vii | Dhangadhi | Atariya | 15 |
| viii | Kathmandu | Lalitpur | … |

... = no data available, km = kilometer.

Source: Authors.

The border towns act as gateway centers for exporting domestic products and importing capital goods, connecting major cities, towns, and villages in Nepal with the major cities of India. While border towns are important in an export-based regional development approach, market towns play an equally crucial role by supporting the internal flow of goods, services, and people. By providing services to remote areas, they help bring local produce into the marketing chain. The potential of both types of towns could therefore be exploited.

Table 16 summarizes the distribution of uban areas, by hierarchy and functions.

## Defining Economic Regions

The economic functions of existing cities, those presently within municipal boundaries, should be unleashed for adjacent urban–rural economic activities to undertake the role of engines of growth. The observations in this chapter provide strong rationale for shifting the existing urban development approach from traditional city administrative boundaries to the urban economic region (UER).

# Table 15: Definition of Hierarchy and Functions of Urban Areas

| Hierarchy | Functions (present and potential, linkage services) | |
|---|---|---|
| | Market Towns | Border Towns |
| Secondary towns | | |
| 1 Higher order urban centers with population above 50,000<br>2 Major economic centers | • Inland location–urban centers away from border<br>• Urban centers at cross roads, economic corridors (highways)<br>• Services to large inland hinterlands in the hills<br>• Road links to tarai gateways and hill towns<br>• Higher order administrative, financial, economic, educational, and health services<br>• Industrial estates, manufacturing for domestic markets, domestic trade<br>• Higher order educational and health services and institutions<br>• Tourism centers, specialized tourist activities | • Urban centers along the border with India<br>• Road connections to Indian railheads and the east–west highway (south–north oriented)<br>• Services to a large hinterland in tarai and the hill region<br>• Export oriented manufacturing<br>• Export processing zones<br>• Dry ports/trade facilitation<br>• Higher order economic, financial, educational services<br>• Tourism developing<br>• Agro processing, timber/non-timber industries<br>• Marketing centers of imported goods |
| Emerging towns | | |
| 1 Lower order urban centers with population 50,000 and below<br>2 Economic centers–marketing, administrative, long distance trading service | • Junction of east–west highway and north–south roads leading to the hills<br>• Services to hill hinterlands and minor settlements on east–west highway<br>• Hinterland defined by road and/or trail access<br>• Road links to the gateways of the tarai and other hill towns<br>• Administrative and lower order services—hill and/or mountain towns<br>• Transfer point for inwards and outwards goods<br>• Tourism and local trade centers | • Centers for domestic trade<br>• Few small manufacturing<br>• Light manufacturing and/or processing<br>• Markets for agricultural produce with comparative advantages<br>• Higher order service institutions<br>Local trade centers<br>• Collection centers for high value crops<br>• Hinterland supply centers<br>• Marketing centers for foreign goods—electronics, garments |

Source: Authors.

## Table 16: Typology and Numbers of Existing Urban Areas by Hierarchy and Functions

| | Function/Activity | | |
|---|---|---|---|
| Hierarchy | Market Towns | Border Towns | Total |
| Secondary Towns | 7 | 7 | 14 |
| Emerging Towns | 35 | 8 | 43 |
| **Total** | **42** | **15** | **57*** |

*Kathmandu city (primary city) is excluded. The Ministry of Local Development is in the process of designating 41 additional emerging towns to make a total of 99 incorporated municipalities, but their names are not yet known.

Source: Authors.

There are many ways to define UERs, for example, by administrative regional boundaries that provide government, or by common characteristics. The SEZ along the tarai border, a parcel of land concerned primarily with increasing export trade from Nepal to adjacent Indian cities, could constitute a UER. However, in this report, the guiding concept for defining the region is based on urban economic functions and the area's sphere of influence toward a hinterland, taking into account the following:

i. natural barriers such as geophysical and ecological units, rivers, and the contours of Nepal's landscape;
ii. spheres of influence radiated by agglomerated urban centers as the hub of economic activities; and
iii. backward-forward links and value-added supply chains within a day's distance of market centers.

The significance of the study adopting a broader economic region-based definition is to achieve balanced and sustainable development using locally available resources and promoting inclusive growth for rural–urban linkage contexts. The concepts and approaches discussed in this chapter are distinct from conventional urban development practices. The UER concept adopted here is essential to unleash economic growth in urban and rural areas inclusively within their economic regions in Nepal.

# EFFORTS IN URBAN–REGIONAL DEVELOPMENT

## Urban Institutions and Governance

The institutional framework for urban planning and management in Nepal is both complex and confusing, and provides a difficult working environment for urban development. The designated urban area, or incorporated municipality, is one of the local government bodies at the grassroots level. The municipality and village development committee (VDC) are independent local government bodies lying within a district[20] and are responsible for planning and management within their jurisdictional boundaries, while the district development committee is responsible for overall development within the district.

The municipalities are responsible for preparing and implementing plans and programs within their own boundaries, in accordance with the Local Self Governance Act (LSGA). They generate revenue from internal sources (tax and nontax revenue) and external sources (grants, public borrowing, and loans). Internal sources are the main revenue sources. They include taxes derived from land and other natural resources, house, rent, economic enterprises, vehicle, property, entertainment, commercial video and advertisements, and so on. The nontax revenues include the municipalities' own financial revenues derived from fees. The municipalities can take out loans from the town development fund (TDF) or banks for their development. Some funds are also provided directly from the central government. The municipality performs a total of 81 functions, including finance, physical infrastructure development, the provision of water resources, sanitation and environmental services, education, sports and culture, work and transportation, health and social welfare services, tourism, and industry.

Within central government, several ministries and agencies share responsibility for the urban sector. The National Planning Commission (NPC),

[20] According to the LSGA, district, municipality, and the village development committee are local government bodies; each has its own jurisdiction boundary for governance. There are 75 districts, 58 municipalities, and 3,915 village development committees in the country.

the highest planning body, is concerned with providing necessary guidelines and directives to local government bodies, including municipalities. The NPC sets overall national policies, strategies, and targets for all sectors and is responsible for monitoring progress of sector programs, preparing comprehensive development plans, and coordinating activities between different ministries and agencies. It also reviews and approves all work funded by Nepal's development budget and donor projects that require government support and cofinancing.

Two ministries directly involved in the urban sector are the Ministry of Physical Planning and Works (MPPW)[21] and the Ministry of Local Development (MLD). MPPW is the principal government agency responsible for formulating plans and policies related to infrastructure for physical planning and urban development. Under MPPW, the Department of Urban Development and Building Construction (DUDBC) is an implementing agency. The activities so far accomplished by DUDBC include financial analysis of the municipalities, land-use zoning, structure and/or physical plans, integrated actions plans, the classification of towns into hierarchical levels for investment purposes, physical development of emerging small towns, and so on. Likewise, the Department of Water Supply and Sewerage of MPPW holds responsibility for water supply and sewerage operation and construction. MLD has overall responsibility to oversee, support, and strengthen human settlement activities at the district, municipality, and village levels and is responsible for local development, governance. and decentralization. MLD has set up the Division of Urban Development to deal with the financial and administrative operation of municipalities.

Under MPPW, the TDF has been set up as an autonomous agency to provide financial and technical support for infrastructure (water, drainage, sewerage, solid waste management, etc.) and revenue generating activities in municipalities. TDF finances grants and loans. The grants cover the cost of feasibility studies, detailed engineering designs, and supervising construction, while the loans fund infrastructure construction. The TDF-financed projects until now have included social infrastructure such as public toilets and storm-water drainage construction, drinking water feasibility, procurement of solid waste collection equipment, the town's profile, school building construction, pond and park improvement, river training work, brick pavement, and bus park design and construction.

The town development committee, which falls under the authority of MPPW, has the authority to undertake urban development-related activities such as town planning, land development, conservation of historical and cultural monuments and environments, infrastructure development, etc.

[21] Previously, it was named the Ministry of Housing and Physical Planning.

At the district level, the Division of Urban Development and Building Construction and the district development committee are involved in the physical development of municipalities, as well as the small towns and market centers that lie within the district. In order to accomplish administrative and financial improvements in municipal operations, the government has created the Urban Development Training Centre in Pokhara.

In addition, other line ministries, departments and/or divisions, and agencies are responsible for infrastructure planning and development in the urban areas. They include roads, water supply, electricity, telecommunication, environment, health, education, industry, commerce, and supply, finance, security, etc.

The Municipality Association of Nepal acts as an agency for advocacy and generating awareness of municipal functions, and for mobilizing resources, capacity enhancement, and promoting wider participation for their development. The Chamber of Industry and Commerce at the district level is crucial for investment in the economic development of urban areas.

The existing urban development acts are conflicting and ambiguous. Three agencies have authority to prepare and implement the plans—town development committees (under the Town Development Act, 1988), municipalities (by the Municipality Act, 1991), and the district development committees (through the Decentralization Act of 1982). The sharing of authority and proliferation of these committees has caused duplication and incompatible action and is often the reason for disputes among the agencies.[22]

# Government Policies and Programs

## Introduction

Planned development efforts in Nepal date from the late 1950s. The current national development plan is the 11th three-year Interim Plan (2007–2010). Since the first plan (1956–1961), the predominant strategy has been to increase gross domestic product (GDP), to create the infrastructure necessary for development, and to achieve political stability. A fundamental aim was to achieve balanced growth, and so benefit the whole population, with a series of sector programs based on transport, agriculture, industry, and social services. Rural areas have always received top priority in development

[22] For instance, if the municipalities need to build structures on public land and open spaces according to the Municipality Act 1991, the Land Administration Act 1967 has empowered the chief district officer to protect public land from encroachment or such construction.

policies and programs while the potential benefits of linking urban–rural areas have been neglected. Various planning efforts have failed to achieve their expected results. Many factors lie behind this poor performance, including a mismatch between development programs and realities on the ground, lack of transparency and participation of local people in planning, limited resources, weak coordination among implementing agencies, and administrative constraints.

Government efforts to strengthen urban economies through major development approaches came up against many challenges, as discussed below.

## Interim Plan (2007–2010)

Some policies relevant to the urban sector can be inferred from the national periodic plans. Urban development issues raised in the most recent plan, which covers 2007–2010,[23] include the following: (i) a mismatch between programs and physical development plans; (ii) lack of urban development policies for rural region development; (iii) ineffective mobilization of TDFs for urban infrastructure; (iv) lack of laws to attract the private sector to invest in land development and housing construction; and (v) increased pressure on urban infrastructure because of migration.

Major challenges within the urban sector include

i. *Unplanned urban growth:* managing haphazard and uncontrolled growth of urban settlements and transforming dispersed rural settlements into a compact form;
ii. *Lack of manpower and infrastructure:* arranging required manpower and the provision of adequate urban infrastructure; and
iii. *Institutional issues:* establishing coordination between the Ministry of Physical Planning and Works and the Ministry of Local Development, and between other agencies that provide urban utility services.

Most of these issues and challenges are not new. The activities of the current plan mainly feature inclusive development and increasing public expenditure, building infrastructure, and carrying out relief works. The plan is directed toward peace-building, reconstruction and rehabilitation, as well as reintegrating the nation and revitalizing the economy after decades of political strife.

[23] These major issues and policies with regard to the urban development mentioned in the Interim Plan are also described in the draft national urban policy recently prepared by the Department of Urban Development and Housing Construction/Ministry of Physical Planning and Works in 2007, and approved by the cabinet.

Throughout the planning period, urban authorities have consistently kept up efforts to build basic infrastructure, but these have lagged population growth. A few large urban areas have expanded rapidly, while most small towns either have limited facilities or are growing sluggishly or declining. These have resulted in skewed distribution of urban areas, and therefore call for investment in infrastructure and facilities in urban areas that not only reflect their location in the three ecoregions but that are also in line with their potential.

Experience in other countries suggests that the regional development approach has shifted from closing gaps in infrastructure services to more inclusively exploiting the comparative growth potential of a region (which is known as the endogenous or comparative advantage approach). The approach tries to develop a location based on its available resources and potential. Development planning in Nepal has yet to progress to this stage.

Transforming dispersed rural settlements in the hills and mountains into viable forms of agglomerated or compact settlements that are linked to urban areas by roads is a crucial challenge. The long-term development planning strategy for dispersed settlements across the country, in respect to their physical locations, resources, livelihoods, social and cultural elements, links and the like, needs to be urgently reevaluated in order to achieve sustainable progress.

## Local Self Governance Act 1999 and Its Regulations

LSGA 1999, instigated under a multiparty democracy, mandates municipalities with the responsibility to formulate and prioritize planning activities in terms of their available resources, and coordinate with different agencies to achieve that goal. The functions of a municipality range from generating revenues from different sources, to improving physical, economic, and social conditions, and conserving environmental, cultural, and historical sites within its boundaries.[24] The municipalities implement all these once they have elected authorities. However, there is no financial decentralization in the local bodies. A district government controls the collection of resource-based revenue, passing it on to municipalities within its jurisdiction. The weak economic base of most small municipalities gives them little scope to generate their own revenue. While the policies, programs, and legislation described above provide a basic framework for urban planning and development, implementation has been marginal. The acts need to be

[24] The act has mentioned 10 broad types, in relation to finance; physical development; water resources; environment and sanitation; education and sports development; culture; works and transport; health services; social welfare; industry and tourism; and a miscellaneous category.

streamlined, made coherent, and their ambiguities removed in line with the spirit of the political context of the new federal system.

## Region-wide Rural Development Policies

Planned development first encompassed Nepal's urban areas in the early 1970s through the initiation of growth-pole strategy. By the Fourth Plan (1970–1975), after national economic planning met with limited success, planning efforts were redirected to four development regions (NPC 1970), with the addition of a fifth, the far-western region, in 1981.[25] According to the strategy, each of the macroeconomic development regions consisted of a regional headquarters. These centers were identified as polyfunctional settlements and equipped with infrastructure and facilities to cater to diverse regional needs (such as marketing, agricultural transformation, and services for industrial activities and other socioeconomic challenges) and to reduce disparities between urban and rural areas and among the three ecological regions. From the very beginning of Nepal's planned development, the Kathmandu Valley and Tarai Plain were identified as favorable regions, being geographically advantageous for investment from sector-based programs. While this may have been correct in terms of efficiency, the approach failed in terms of equity, as it cannot meet the required program resources for a wider spatial spread of population.

Since then, the regional headquarters approach has been maintained in successive development plans, but with less importance. As regional centers, Kathmandu and Pokhara have flourished from this induced growth by virtue of their location and resource potential, while the other three have lagged far behind. Regional development initiatives have not fully responded to the challenges of rapid urbanization and weak urban–rural links. In most cases, the market potential and local priorities are not necessarily being reflected in the plans. As a result, income and employment generation opportunities are undoubtedly being missed, as are the marketing of rural and urban products to strengthen rural–urban links. In the past 2 decades, the strategy has been feeble, and the adoption of parallel approaches such as integrated rural development and remote area development led the process away from its original concept.

[25] They are eastern, central, western, midwestern, and far-western development regions, which are also major watersheds. Regional growth centers identified for each of these development regions are Dhankuta for the eastern region, Kathmandu for central, Pokhara for western, Surkhet for midwestern, and Dotidipayal for the far-western region. Each watershed region consists of three broad ecological regions, latitudinally arranged (mountain, hill, and the tarai plain). A north–south corridor road linking the three ecological regions would stimulate development spatially, economically, socially, and politically.

## Service Center Approach

Nepal adopted the service center strategy down to the subdistrict level, or *ilaka,* in the late 1980s. It aimed at increasing rural people's access to basic facilities including education, health, security, agricultural service, veterinary, and communication through at least nine service centers within each of its 75 districts. The strategy appears appropriate for delivering basic services to remote rural people and forms an essential part of a rural urbanization policy. It would also seem to help strengthen the growth–center strategy by integrating district headquarters with the service network of smaller towns. However, in selecting service centers, the strategy ignored the potential of existing market centers to serve as service centers in terms of their links and functional hierarchy. Resource constraints also make it impossible for the chosen nine service centers to have the same services in all districts. Most of the service centers across the country are now defunct due to lack of technical criteria, commitment, and interest. Like many others, this strategy has suffered from political intervention.

## Rural–Urban Linkage Program

The Integrated Rural Development Projects (IRDP) approach was introduced in 1976. Fourteen IRDPs[26] have been launched, affecting the lives of more than 8 million people, mainly in the hills. These projects attempt to coordinate and support the development programs of sector plans, primarily by fulfilling the basic needs of rural people. The Remote Area Development Programme was initiated in 1968 and by the Ninth Plan (1997–2002), 25 mountain and hill districts were identified as remote. This program attempts to provide basic facilities for about 14% of the total population of Nepal and to integrate districts into the development mainstream (Pradhan 2007a).

## Rural–Urban Partnership Program

In 1997, the Ministry of Local Development (MLD) initiated a Rural–Urban Partnership Program as an integrated approach to urban region development with technical and financial support from the United Nations Development Programme.[27] This program was conceived as an urban-based and urban-led approach to rural development, and aimed to reduce the gap between cities and rural regions by strengthening links between them and

[26] They were Rasuwa-Nuwakot (1976), Mahakali Hills (1978), Sagarmatha (1978), Koshi Hill Area (1979), Rapti Zone (1980), Integrated Hill Development Project (1980), Karnali-Bheri (1980), Dhading District (1983), Seti Zone (1986), Mechi (1988), Gulmi-Arghakhanchi, and Gorkha, Lamjung, and Palpa Development Programmes.

[27] This program was initially executed by the National Planning Commission, then the Ministry of Physical Planning and Works, with technical and financial support from the United Nations Centre for Human Settlements.

improving conditions in poor urban hinterland communities. It had four major components: (i) regional or spatial economic planning, (ii) community mobilization, (iii) small business development, and (iv) urban development. The program intervened at four levels: (i) market region, (ii) market zone or municipal, (iii) community or rural market center, and (iv) enterprise.[28] Despite its well-documented concept, the program has not helped people as intended, except for establishing a revolving fund for partner municipalities. The program was found to have operated against the intended spirit because of poor understanding of the concept's application, an inherited feudal-based centralized system, and the use of traditional monitoring and evaluation practices within over-bounded municipalities.

## Urban Infrastructure and Development Supported by International Agencies

The most current distribution of donor–agency financial support in different urban sectors is presented in Table 17. Urban sector initiatives have taken 10.4% of the total budget; the third biggest share after roads (48.2%) and drinking water supply (13.4%), which also are in many cases related to urban sector development. Other sectors such as the environment, sanitation, industrial rehabilitation, and infrastructure (telecommunication and civil aviation) are also associated with the urban regions. In terms of amount, the contribution of the Asian Development Bank (ADB) is the largest (45.4%), followed by the International Development Agency (17.3%), Japan (12.4%), India (11.3%), and others. Of the estimated donor contributions, 44.3% is made up of loans, mostly from ADB, India, and others, while 31.7% comes from grants, and the Government of Nepal provides the remaining 24%.

Urban infrastructure development in Nepal is hampered by inadequate specialized human resources and limited financial resources. Over the past decade, donor agencies, including multilateral, bilateral, and international organizations, have supported Nepal's efforts in urban development and planning. These include ADB, World Bank, UNDP, United Nations Human Settlement Programme (UN-Habitat), United Nations Educational, Scientific and Cultural Organization, United Nations Environment Programme, International Union for Nature Conservation, the Danish International Development Agency, Japan International Cooperation Agency, Urban Development through Local Efforts/GTZ, and the European Union.

[28] Rural–Urban Partnership Program delineated broad market regions in terms of economic links and defined program locations for enterprise development. In municipalities, it attempted to ensure the commitment of municipal government on urban economic development and poverty alleviation through participatory development planning. The interventions at the rural market centers included seed-grant investments and linked the rural centers to the municipality. At the enterprise level, it identified entrepreneurs for loans with equity share.

International organizations such as Action Aid, Practical Action, and Water Aid, have also contributed. From 1993 onward, their support to urban sector development included the following broad areas:

i. Environmental improvement and management, management institutions, and the institutional strengthening of environmental authorities;
ii. Urban infrastructure development, such as the Kathmandu Valley Mapping Program, the land pooling program in the valley, and improving water supplies in Melamchi;
iii. Urban governance and public–private initiatives, such as the Public–Private Partnership Programme for Urban Environment, including working in solid waste management, bus terminal/park, marketplace, public toilet, green park, housing, slaughter, and pay parking; and
iv. Rural development through strengthening rural–urban links.

The Kathmandu Valley urban region has received the most attention in urban development initiatives, which suggests it is the most attractive place for Nepalis to live. At the same time, it is also home to many urban problems and challenges due in part to lack of management. As discussed in Chapters 2 and 3, investment patterns in urban development show that efforts are scattered, mostly indifferent to the urban areas' issues, problems, and challenges as economic development centers, or uninterested in exploiting their potential. Consequently, urban areas in most cases have not been stimulated to act as engines of growth for their rural hinterlands.

# Table 17: Urban and Related Projects and/or Programs Supported by Donor Agencies, 2007 (NRs '000)

| Sectors | Grant | Loan | Government | Total |
|---|---|---|---|---|
| *Asian Development Bank (ADB)* | | | | |
| Crop Diversification | … | 20,000 | 3,986 | 23,986 |
| Commercial Agriculture Development | 146,426 | … | 22,287 | 168,713 |
| Small Town Drinking Water and Sanitation | … | 31,986 | 219,981 | 251,967 |
| Melamchi Drinking Water | … | 367,570 | 329,530 | 697,100 |
| Kathmandu Valley Drinking Water Management | … | 209,278 | 26,400 | 235,678 |
| Improved Water Quality and Service Delivery in Emerging Towns | 46,800 | … | … | 46,800 |
| Community Managed Irrigation | … | 178,531 | 42,385 | 220,916 |
| Kathmandu–Terai Fast Track | 20,000 | … | 3,200 | 23,200 |
| Sub-Regional Transportation Facilitation | … | 480,000 | 145,075 | 625,075 |
| Road Connectivity | 254,425 | … | 45,400 | 299,825 |
| Road Network Development | … | 955,937 | 250,000 | 1,205,937 |
| Urban and Environment Improvement | … | 449,520 | 67,865 | 517,385 |
| Urban Development Fund-Drinking Water | … | … | 291,500 | 291,500 |
| *People's Republic of China* | | | | |
| Syaphrubensi-Rasuwa | 100,000 | … | … | 100,000 |
| *Denmark* | | | | |
| Environmental Sector Support Program and Energy | 2,202 | … | 7,887 | 10,089 |
| Department for International Development of the United Kingdom | | | | |
| Agriculture Research and Development Fund | 28,000 | … | 49,375 | 77,375 |
| Roads (Link Roads and Road Network) | 411,742 | … | … | 411,742 |

*continued on next page*

Table 17 *continued*

| Sectors | Grant | Loan | Government | Total |
|---|---|---|---|---|
| International Development Agency | | | | |
| Commercial Agriculture Development and Trade Facilitation | 10,000 | … | 1,850 | 11,850 |
| Industrial Rehabilitation Fund | | | 500,000 | 500,000 |
| Telecommunication Sector Reform | … | 363,980 | 25,153 | 389,133 |
| Irrigation and Water Resource Management | 224,620 | … | 3,210 | 227,830 |
| Road Maintenance and Development | … | 35,000 | 2,200 | 37,200 |
| Road Sector Development Project | … | 540,000 | 46,828 | 586,828 |
| *India* | | | | |
| Deep and Shallow Irrigation | 63,349 | … | … | 63,349 |
| Rapti Highway (Tulsipur-Salyan) | … | 95,000 | 2,000 | 97,000 |
| Hile-Leguwaghat (Bhojpur) | … | 40,000 | 30,000 | 70,000 |
| Rural Access Road (Basantpur-Tehrathum) | … | 50,000 | 1,000 | 51,000 |
| Surkhet-Dailekh | … | 84,000 | 2,000 | 86,000 |
| Sanfebagar-Martadi | … | 25,000 | 3,500 | 128,500 |
| Sanfebagar-Mangalsen | … | 47,000 | 3,000 | 50,000 |
| Tarai Roads Upgrading | 289,500 | … | 5,000 | 294,500 |
| Tanakpur Road Links | 80,000 | … | 4,000 | 84,000 |
| Okhaldunga-Diktel | 96,000 | … | 1,750 | 97,750 |
| Road Upgrade- Bhalubang-Pyuthan | … | 120,000 | 1,000 | 121,000 |
| *Japan* | | | | |
| Agricultural Research Programme | 20,000 | … | … | 20,000 |
| Agricultural Extension Programme | 72,000 | … | … | 72,000 |
| Agriculture Training, Extension, and Improvement | 6,558 | … | … | 6,558 |

*continued on next page*

Table 17 *continued*

| Sectors | Grant | Loan | Government | Total |
|---|---|---|---|---|
| Special Programme for Agricultural Production | 7,500 | … | 300 | 7,800 |
| Cooperative Farming (Irrigation, Fertilizer, and Seed) | 450,000 | … | … | 450,000 |
| Potato, Vegetables, and Spices Development | 2,900 | … | 40,602 | 43,502 |
| Civil Aviation Authority of Nepal | 63,600 | … | 70,000 | 133,600 |
| Road Maintenance (Various) | 180,000 | … | 20,000 | 200,000 |
| Kathmandu-Bhaktapur Road Expansion | 50,000 | … | 28,613 | 78,613 |
| Banepa Bardibas Highway | 245,000 | … | 4,127 | 249,127 |
| *Germany* | | | | |
| Town Development Fund | 200,000 | … | … | 200,000 |
| Town Development Fund | … | 6,000 | … | 6,000 |
| *Norway* | | | | |
| Crop Protection and Pesticide Development | 32,500 | | 45,383 | 77,883 |
| *Organization of the Petroleum Exporting Countries Fund* | | | | |
| Drinking Water | … | 8,700 | … | 8,700 |
| Irrigation | … | 42,045 | … | 42,045 |
| *Saudi Arab Development Fund* | | | | |
| Bagmati Irrigation Project | … | 220,000 | … | 220,000 |
| *UN Habitat* | | | | |
| Drinking Water | 23,210 | … | … | 23,210 |
| *United Nations Development Programme (UNDP)* | | | | |
| Micro Enterprise Development Programme | 30,000 | … | 40,000 | 70,000 |
| Rural Urban Partnership | 11,700 | … | … | 11,700 |
| Public–Private Partnership for Urban Environment | 36,807 | … | … | 36,807 |

*continued on next page*

Table 17 *continued*

| Sectors | Grant | Loan | Government | Total |
|---|---|---|---|---|
| *UNICEF* | | | | |
| Drinking Water Quality Improvement | 11,500 | … | 75,400 | 86,900 |
| Environmental Sanitation | 4,600 | … | 1,500 | 6,100 |
| *WHO* | | | | |
| Environmental Sanitation | 4,200 | … | … | 4,200 |
| **Total** | **3,225,139** | **4,469,547** | **2,463,287** | **10,157,973** |
| **Percent** | **31.75** | **44.00** | **24.25** | **100.0** |

… = no data available, NRs = Nepalese rupees, UN-Habitat = United Nations Human Settlements Programme, UNICEF = United Nations Children's Fund, WHO = World Health Organization.

Source: Ministry of Finance. 2007. *Source Book for Projects Financed with Foreign Assistance, FY2008*.

ADB assistance in Nepal urban development has largely focused on water supply and sanitation. Table 18 shows a summary of ADB urban projects in Nepal since 1984. Total completed investment amounted to $147.6 million by the end of 2007. In a review of investment impact and sustainability, all completed projects were rated as "partly successful." In particular, one of the project provided small-scale water supply systems to 387 towns, largely in the Tarai region, but no subsequent benefits or results have been reported. On the other hand, a relatively small ($27.6 million) investment focusing on tourism infrastructure (LN1156 and LN1451) seems to have produced tangible economic impacts—i.e., it helped Pokhara become the gateway to Himalayan tourism and to emerge as the second best town in Nepal after Kathmandu.

ADB's Nepal Urban Development Sector Study (2001) provided a guiding framework for Nepal's urban development, in line with ADB's country strategy for Nepal and overarching goal of poverty reduction. Both the country strategy and plan (subsequently renamed the country partnership strategy) and poverty reduction partnership agreement signed in October 2001 called for sharper focus on:

i. Improving basic social services to enhance human development and protecting the environment;
ii. Creating an enabling environment for mobilizing the resources of other development players;
iii. Good governance by improving efficiency, predictability, accountability and transparency in public services and financial affairs; and
iv. Broad-based growth through the creation of productive employment.

However, the lending pipelines to the urban sector since the Nepal Urban Development Sector Study was undertaken in 2001 have been programmed mainly around improving basic services without sharpening the focus either on generating jobs or creating an environment to encourage other agencies to mobilize resources.

## Urban Studies in Regional Development Context

Nepalese urban centers are clearly divided into two types: incorporated municipalities (the designated urban area) and small market towns, with populations of under 10,000 (hill and mountain) or 20,000 (in the tarai). The small market towns, which lie within the jurisdictional boundary of the village development committee (VDC), are obviously large in number, dispersed throughout the country, and cater to the needs of rural people. Markets or *hāt bazaars*, which occur once or twice a week for marketing rural and urban products, are an additional facility for the people of tarai and the eastern hills

# Table 18: Urban and Related Projects and/or Programs Supported by ADB

| Year Approved | Loan No. | Title of Projects | Amount ($ million) | Year Completed | Rating |
|---|---|---|---|---|---|
| 1984 | LN719 | Rural Water Supply Project | 9.6 | 1989 | NA |
| 1989 | LN949 | Second Water Supply Sector Project | 14.4 | 1994 | NA |
| 1992 | LN1156 | Tourism Infrastructure Development | 10.4 | 1997 | LTS |
| 1992 | LN1165 | Third Water Supply and Sanitation Sector Project | 20 | 1997 | PS |
| 1993 | LN1240 | Kathmandu Urban Development Project | 16 | 1999 | PS |
| 1996 | LN1451 | Second Tourism Development | 17.2 | 2004 | PS |
| 1996 | LN1464 | Fourth Rural Water Supply and Sanitation Sector | 20 | 2002 | S |
| 1998 | LN1640 | Melamchi Water Supply (Engineering) | 5 | 2000 | PS |
| 2000 | LN1755 | Small Towns Water Supply and Sanitation Sector | 35 | 2009 | S |
| Subtotal | | | 147.6 | | |
| 2000 | LN1820 | Melamchi Water Supply and Sanitation Project | 137.4 | 2013 | |
| | LN8191 | Melamchi Water Supply (OPEC) | 13.7 | 2013 | |
| 2002 | LN1966 | Urban Environment Improvement Project | 33.5 | 2010 | |
| 2003 | LN2008 | Community-Based Water Supply and Sanitation Sector | 25.6 | 2010 | |
| 2003 | LN2058/59 | Kathmandu Valley Water Services Sector Development | 15 | 2014 | |
| Total | | | 372.8 | | |

LTS = less than successful, NA = not available, PS = partially successful, S = successful.

Source: ADB.

and mountains. Such *hāts* fill the gap in marketing services for areas where there are few market towns. Besides marketing, there are also places for social gatherings where innovative ideas may be exchanged and commercial advertisements posted.

Over the past few decades, several studies have focused on the role of urban areas in the regional development of Nepal. As agriculture is the key sector of rural regional development, the role of rural market towns appears significant for providing services and marketing facilities to farmers. A network of rural market centers including both small towns and *hāts* linked by roads to large urban areas offers scope to improve the livelihood of rural people. Road links have been an impetus in both the development of market towns and the intensified production of off-season vegetables in the eastern Nepal (Pradhan 2007b). The market provides a collection point for locally grown vegetables and the Koshi Highway, links the produce with large demand centers in the crowded tarai as well as to India. This is also the case for several local products such as animal ghee (clarified butter), dried ginger (*sutho*), vegetables, and fruits, in other parts of Nepal.

Scrutiny of existing research shows that the opening of roads improved the flow of goods and people to cover extensive areas that were previously mostly localized, and has helped raise local production. It has also resulted in an influx of people, leading to the emergence of new market centers and expanding existing ones along the highways. Clearly, road construction has dramatically reduced the cost of transport, created loading and off-loading works, and replaced traditional transport such as mules, donkeys, and porters. On the other hand, some traditional towns, which are several kilometers away from roads, or without any access to them, have declined.

While the government's agricultural development program encourages farmers to grow apples and oranges in some favorable areas of the mountain region, marketing of products has not been supported and the lack of roads to large demand centers makes selling difficult. Consequently, though modern horticulture has succeeded in the mountains, the farmers have not seen any benefit from it. A road network serving the hinterland of urban market towns should be devised to integrate existing major traditional towns with potential pockets of production.

An attempt was also made to explore factors behind the scattered pattern of settlements in the hills and mountains, and to devise a policy framework for development of agglomerated and/or compact settlements (Central Department of Geography 2002). As availability of agricultural land is a precondition for growth and development of rural settlements, a policy framework for a viable compact settlement program cannot be formulated without a detailed survey of land resources in the country. The regional

development strategy prepared by the National Planning Commission (NPC)/ADB in 2007 endeavors to promote integrated urban development, a shift from the previous approach, which has yet to be implemented.

The new NPC 2008 approach did not talk about dealing with the problems of scattered rural settlements within the regional framework. Conversely, it argues, without providing convincing reason, that dispersed settlements will form sustainable agglomerated sizes once the economic growth rate reaches 6% or 7%. However, the competitive cost benefits for producing potential economic products and complementary products provide a sound basis for linking the hinterland regions and their potential for economic production with their respective urban centers.

# ANALYTICAL FRAMEWORK FOR UNLEASHING ECONOMIC GROWTH

## Context

In the Nepalese context, the word "balance" implies the promotion of economic growth and development (i) in urban and rural areas; (ii) inclusive of all ethnicities; and (iii) throughout the three broad geological or ecological regions (the tarai, hills, and mountains). The primary production sector (agriculture, livestock, and forestry) is vital for balancing development process, since it employs more than 65% of the labor force while contributing only about 36% to gross domestic product (GDP) (Ministry of Finance 2007). Since the early 1990s, planning focused on promoting urban development as a means of boosting rural economies, but with marginal impact.

Urban areas possess different potential for development because of their varying size, location, patterns of growth, structure and functions, and links. This potential needs to be carefully assessed to reveal the investment and revenue-raising capacity for stimulating development in rural regions. Until now, the urban governments' improvement efforts have not matched expectations because of the following:

i. The country's development has been weak, as discussed in preceding chapters. Investment is required everywhere but government resources are very limited;
ii. The thin spread of limited resources has resulted in minimal growth despite 2 to 3 decades of government programs; and
iii. A strategic framework for prioritizing investments has been hardly available for urban sector development, yet is needed to optimize investment outcomes and achieve growth impact efficiently.

Nepal has opportunities to increase competitiveness in a number of areas domestically as well as internationally. Resources vary from south to north, and from east to west. In particular, the hills and mountains offer

comparative advantages over the tarai plain for expanding production of cash crops, fruits, animal husbandry, herbs, non-timber products, and forestry. The tarai region, on the other hand, enjoys productive advantages in commercial agriculture and as a location for industry. The following are opportunities for international exports:

i. Nepal shares borders with the two giant economies of India and the People's Republic of China (PRC), whose high annual GDP and almost 2.5 billion consumers present opportunities for enhancing exports. Bangladesh, lying close to eastern Nepal, is also a potential market for agricultural products.
ii. Middle Eastern countries are being opened up as consumption markets of Nepal's agricultural products.
iii. Both the PRC and India have agreed through trade treaties to provide concessions to a number of Nepal's exports to both countries.
iv. Nepal's Mount Everest is an internationally renowned destination for tourists, while Lumbini is sacred to Buddhists as the birthplace of Buddha.
v. Nepal has huge untapped potential for hydropower production.

Despite its competitive advantages, lack of infrastructure, weak institutions, and macroeconomic instability have prevented Nepal from deriving the benefits. Investment in essential infrastructure is crucial to encouraging economic growth. Of critical importance, roads and electricity supplies are extremely limited. Nepal has the lowest road density among the landlocked countries, whereas electricity load shedding is an annual phenomenon, despite the country's vast water resources that could be used to generate power. In addition, investments in infrastructure and other basic facilities have not been cost-effective, particularly in the scattered settlements of the hills and mountains. The threshold size of these settlements is so small that it is not economical to deploy infrastructure and facilities. They are therefore without basic facilities, and their residents live at subsistence level or below. Even if facilities are provided, poverty often stops them from being able to access these.

The roles of urban areas in Nepal should help modernize its widespread traditional rural-based society and transform isolated economic activities into concentrated nodes of production. This requires a well-articulated spatial structure—i.e., integration of different-sized settlements equipped with various functions according to their level. However, urban centers are neither well articulated nor physically integrated and their economic base is generally weak. Most urban areas lack basic infrastructure and facilities and so are unable to support development of their rural regions, and many have seen haphazard growth, as previously discussed. These are some of the biggest hurdles to improving economic function. Building an alternative

strategy for region-based urban development will therefore need to consider the following three vital issues:

i. agglomerate scattered settlements into compact units in development areas;
ii. promote transforming rural regional economic structure from primary toward secondary and tertiary industrial sectors and development; and
iii. prioritize necessary infrastructure investment when resources are limited.

## Analytical Framework for Unleashing Economic Growth in Urban Economic Regions

Towns or urban areas broadly refer to administrative boundaries of districts, incorporated municipalities, or municipal and/or market towns, as defined by the Local Self Governance Act (LSGA) of Nepal. Rural areas comprise village development committees (VDC) and rural market towns. The municipality and VDC are subsets of a district. An urban economic region (UER) refers to the sphere of influence served by agglomerated towns or the economic activities of one or more urban areas within which towns and rural inhabitants can reach within a single day trip by non-motorized modalities (such as riding donkeys or by walking).

### Underlying Premises

Taking into consideration key aspects of urban centers' roles as engines of growth, the analytical framework is formulated with the perspective of balanced regional development and built upon the following five underlying premises:

First, urban areas are central places. They contain centralized functions for both their own inhabitants and people living in the surrounding areas. Here "function" is used to mean an activity, embracing all infrastructural, commercial, financial, industrial, socio-religious-cultural, and administrative types. Urban areas are also growth centers, as they provide all the facilities and services necessary for the development of their own area and surrounding region. The quantity, size, and type of urban functions determine their sphere of economic influence on dependent regions.

Second, urban areas offer employment to their own people and to those living in their regions. The type and amount of employment available in an urban area indicates the nature of its economic base. A strong economic base of the urban area and its region relies on its market competitiveness in the form of goods, services, and labor. By analyzing the relative importance

of available major economic activities, urban areas can be identified as "commercial," "industrial," or tourism or other centers.

Third, since urban areas are growth and employment centers, they exert influence over surrounding areas by attracting people, goods, capital and the like to their services and facilities. Thus, the development potential of the urban region is determined by the facilities and services it has available. The better the facilities, services, and living environment of an urban area, the more advantaged it is for attracting business activities and investments, as well as a place of market access.

Fourth, the links between urban areas and their hinterland regions are important to fully appreciate the economic growth of the region. The relationship between a center (or multiple nodes) and its UER is measured in terms of flows—of goods, people, etc. Flows from the hinterland may be considered "inputs" from and contribute to urban region development, while the infrastructure, facilities, and services in the urban areas constitute "outputs" and strengthen links to the hinterland.

Fifth, urban–rural links are symbiotic. Rural products are sold in urban areas, and the agglomeration of production factors in one place is a potent factor in stimulating economic growth of the region. However, an urban infrastructure investment study conducted by Swinburn (2006) indicate that investments in urban areas alone have yet to bring desirable impacts to surrounding areas because they have been focused on providing hard infrastructure development. To encourage region-based urban development, the needs of business transactions between hinterlands and urban areas should be taken into account when planning urban infrastructure and facilities.

## Data Requirements

Data from municipalities in Nepal is scarce and varies considerably among them, making comparison difficult. However, data mining from secondary sources has generated outputs in a contextual manner. Some unavailable data from municipalities—such as data pertaining to land use, resources analysis, and road networks—have been acquired from districts. Considering the common problem of data unavailability in Asia's developing countries, the methodology uses a simple ordinal ranking for assessing competitiveness. The analysis technique adopted here is simple but practical, as it was conceived with the expectation that quality data in Nepal would not be available.

Since no census data was available on flows of goods and people to and from urban centers, their hinterlands have been determined using a

graphic method. In readjusting boundaries of hinterland regions of nested[29] smaller urban centers into their corresponding higher (secondary) level urban areas, river courses, and mountain/hill ridges were used as the basis for demarcation. In most cases, these coincided with district boundaries.

Data on the origin and destination of commodities was obtained from agricultural reports of the Central Bureau of Statistics (CBS), the Nepal agricultural perspective plan (APP), district profiles, and the Rural Urban Partnership Programme's reports on market region studies and the flow of goods, as well as from consultation meetings. Detailed figures and information on the origin of people and goods was obtained during meetings in five pilot urban areas, which also verified the validity and relevance of the data.

## Analytical Methodology and Techniques

The analytical approach considered here was used to assess the levels (or patterns) of development of urban areas in relation to hinterland regions and the links between that foster economic growth. The analytical methodology adopted four steps to identify economic growth potential step by step.

Step I: Delineation of the sphere of influence of urban areas
Step II: Comparative advantages of urban areas
Step III: Competitiveness of industries/businesses
Step IV: Identification and prioritization of required urban infrastructure

Quantitative and qualitative techniques were used to analyze the ways that economic growth can be unleashed in each region. In formulating the analytical methodology, it was decided that this needed to:

i. be simple to understand;
ii. use practically verifiable indicators, given the available data; and
iii. employ readily applicable procedures that could be replicated.

### *(a) STEP I: Delineating the Economic Sphere of Influence of Municipal Towns*

As discussed earlier, an area over which the urban center exerts influence is termed the "sphere of influence" or "hinterland region." Data on flow of goods, people, information, etc. should be gathered to delineate the sphere of influence. However, available data at the municipal level in Nepal is

[29] Nested hierarchical centers refer to the urban centers and the area of their spheres of influence lying within the sphere of influence of a larger urban area, which happens when smaller centers are dependent on larger centers for obtaining all or most of the goods and services.

limited. The expected spheres of influence can be also obtained by graphical methods such as the "Thiessen Polygon" technique, which, as the name suggests, delineates areas of influence of urban centers as polygons. The technique, also known as "Delaunay triangles,"[30] is said to produce better approximations of hinterland areas, particularly in the mountain region, where deep gorges, river basins, and uninhabited mountains hinder the movement of people and goods. This technique relies on the reasonable assumption that each center in a rural region dominates the areas that lie geometrically adjacent to it and that people from those areas tend to go to the biggest service center nearest them. The hinterland area obtained from this technique is considered the maximum distance traveled by non-motorized mode within a day.

The followings steps were used to construct the "Thiessen Polygon" spheres of influence:

i. All 58 urban centers were located on the map of Nepal.
ii. A line was drawn between a pair of the nearest adjacent urban centers for all 58 centers, and each marked at the midpoint in-between.
iii. A bisecting line was drawn at a right angle to each midpoint and extended until it crossed other lines to create a polygon boundary for a center. This produces a distinctive agglomerated pattern of urban centers in a compactly distinguishable area, which is termed a city-region (covering urban centers and their hinterlands in an agglomerated form). This is based on the assumption that smaller urban centers lie within the sphere of influence of a larger urban area, which together forms a distinct block of several urban areas.
iv. The polygon boundaries were then adjusted, hierarchically nesting smaller centers associated with their next higher level of urban centers. By considering natural barriers such as ridges, watersheds, and major rivers flowing from north to south to cross over, a maximum size of division was determined as the final step. These allowed eight UERs to be identified in Nepal. It is possible to have more than one city-region within each UER. The UER boundaries are virtual economic spheres, as shown in Figure 5. They do not necessarily coincide with the five development (administrative) regions shown in Figure 3 of Chapter 2.

This step is performed to delineate compact economic regions of major (secondary level) urban areas across the country without area gaps. Follow-on steps of the analysis have been conducted by each UER. Each UER is considered a unit of economic analysis, such as for the potential of commodities value-chains and economic activities connecting north–south

[30] This technique has been used to delineate hinterland regions of market centers in the hill district of Lalitpur, Nepal (Pradhan 1998).

corridors, provision of infrastructure to support development of economic activities, and adequate functionality of city-regions within the UER.

Table 19 summarizes the distribution of eight UERs and their allied urban centers by hierarchy and function. The features, potential, and problems of each UER are discussed in Chapter 6. Urban areas are classified into two hierarchical levels: secondary towns (defined as inhabited by at least 50,000 people) and emerging towns. Likewise, urban areas have been identified as border towns and market towns in terms of function and/or activities. A two-by-two matrix table comprising hierarchical levels in the first column on the left and function/activity along the top row was constructed to depict the distribution of urban areas by each UER. These exercises were made consistent with the existing terminology and definitions of hierarchy of urban areas. The following criteria are used to define the UER:

- Urban population growth rates
- Road networks—inland and external
- Location attributes—border, internal (tarai, hill, and mountain), and break-of-bulk centers
- Function or service attributes
- Potential functions

*(b) STEP II: Measuring Comparative Advantages of Urban Areas*

This step was intended to prioritize urban centers based on their comparative advantages to serve hinterlands. A total of 18 urban development parameters were selected for this assessment. Given 58 urban centers, ranks were assigned for each parameter, from 1 for the highest to 58 for the lowest ranking. For instance, the larger the road network coverage of an urban district, the better the integration of economic activities or larger the sphere of influence. The higher the proportion of households that used fuel wood, the poorer the condition is deemed. This process was repeated for every parameter[31] under consideration.

[31] They are urban size, population density, urban growth rate, urban population (%), migration proportion, non-primary sector employment, road network coverage, small-scale enterprises, municipality revenue sources, drinking water coverage, sanitation coverage, electricity coverage, literacy status, fuel wood coverage, literacy status, rented households, Pakki house coverage, urban poverty, and percent employed.

# Table 19: Distribution of Urban Areas by Hierarchy and Functions

| Urban Economic Region (UER) | Hierarchy | Functions | |
|---|---|---|---|
| | | Market Town | Border Town |
| UER 1: Biratnagar | Secondary towns | Dharan, Triyuga | Biratnagar |
| | Emerging towns | Siraha, Itahari, Rajbiraj, Inaruwa, Damak, Ilam, Lahan, Dhankuta, Khandbari | Mechinagar Bhadrapur |
| UER 2: Janakpur | Secondary towns | … | Janakpur |
| | Emerging towns | Kamalamai | Malangawa Jaleswar |
| UER 3: Birganj | Secondary towns | Bharatpur, Hetauda | Birganj |
| | Emerging towns | Ratnanagar, Kalaiya | Gaur |
| UER 4: Kathmandu | Secondary towns | Kathmandu, Lalitpur, Bhaktapur | … |
| | Emerging towns | Madhyapur Thimi, Kirtipur, Banepa, Dhulikhel, Panauti, Bidur, Bhimeswar | … |
| UER 5: Siddarthnagar | Secondary towns | Butwal | Siddarthnagar |
| | Emerging towns | Tansen, Ramgram | Kapilbastu |
| UER 6: Pokhara | Secondary towns | Pokhara | … |
| | Emerging towns | Baglung, Byas, Lekhnath, Prithvinarayan, Putalibazaar, Waling | … |
| UER 7: Nepalganj | Secondary towns | … | Nepalganj |
| | Emerging towns | Birendranagar, Tribhuvannagar, Tulsipur, Narayan | Gulariya |
| UER 8: Dhangadhi | Secondary towns | … | Dhangadhi Mahendranagar |
| | Emerging towns | Dipayalsilgadhi, Amargadhi, Dasarathchand | Tikapur |

... = no data available.
Note: Towns highlighted in bold were selected for further assessment using the analytical methodology, and their selection decided at consultation meetings with communities.

Source: Authors.

# Figure 5: Boundaries of Urban Economic Regions and the Distribution of Urban Areas, Nepal

Source: Modified from NPC/ADB (2007).

Ranks of all 18 parameters are summed up by each urban center, and sorted again (referred to as aggregated sum of the rank (ASR) values. The lower the ASR values, the higher the comparative advantages of the urban center, and thus given aggregated composite rank (ACR) index 1 for the top ranked urban center. The higher the ASR value, the weaker the comparative advantages of the given parameter in the area concerned. For example, if Kathmandu were ranked first on all 18 parameters, the ASR value becomes 18 and the ACR index would be 1 out of 58. The ACR index allows us not only to select potential urban areas at top rank, but also to identify which urban areas are relatively weaker; and if so, clarifies which parameters are causes of weaknesses. In short, the ASR and ACR indicate the level of urban development and the relative ranking of comparative advantages of an urban center for further development potential. The position values of all municipalities considered are shown in Annex 2.

From this process, the top five of 57 urban centers (excluding Kathmandu) with the greatest comparative advantage for development were Lalitpur, Pokhara, Birganj, Butwal, and Dharan. The ASR values of all 18 parameters ranged from 127 (Lalitpur) to 897 (Narayan) with a mean value of 530. The 57 urban centers were classified into six hierarchical levels based on ASR values (Table 20).

## Table 20: Hierarchical Groups of Urban Areas by Aggregated Sum of the Rank Values

| Hierarchical Levels | Aggregated Sum of the Rank Values | No. of Urban Areas |
|---|---|---|
| I | 127–296 | 10 |
| II | 308–468 | 10 |
| III | 478–567 | 10 |
| IV | 570–665 | 11 |
| V | 669–774 | 10 |
| VI | 755–897 | 7 |
| **Total** | | **57*** |

* Kathmandu has been omitted for being an exceptional case. In terms of the urban development parameters considered here, its aggregate rank value is 94.

Source: Authors.

Urban ranks were also determined on a regional basis, to give the relative importance of urban development within each UER. This permitted assessment of whether existing urban functions (parameters) were adequate to support the development of economic activities in their respective hinterland region, and provided information to establish the need for facilities to support productive activities in particular urban centers.

*(c) STEP III: Identifying Competitive Industries to Trigger Local Economic Growth*

The third step was taken to analyze key competitive, advantageous, and priority economic sectors, such as commercial, industrial, agriculture, and other natural resources-based business enterprises with good potential for triggering local economic growth. This requires the identification of local resources and availability of commodities for each UER. Each potential commodity was scored either as high (3), medium (2), low (1) or as a zero depending on its availability and competitiveness in local, national, or international markets. Each UER may have more than one "commodity" for growth potential, and production chains can add value to their distinctive industrial and/or commercial commodities (whether agro-processing, manufacturing, or tourism services).

## Table 21: Key Competitive Advantageous Commodity Index (Growth Potential Commodity Index) by Urban Economic Region

| UER No. of Urban Centers | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 | C10 | C11 | C12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| UER 1 Biratnagar | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 |
| UER 2 Janakpur | 2 | 2 | 0 | 0 | 1 | 1 | 1 | 2 | 1 | 1 | 3 | 1 |
| UER 3 Birganj | 2 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 2 | 2 | 1 |
| UER 4 Kathmandu | 2 | 3 | 3 | 3 | 2 | 3 | 1 | 1 | 1 | 0 | 1 | 1 |
| UER 5 Siddarthnagar | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 |
| UER 6 Pokhara | 2 | 3 | 3 | 3 | 2 | 2 | 3 | 1 | 1 | 0 | 2 | 1 |
| UER 7 Nepalganj | 3 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 2 |
| UER 8 Dhangadhi | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 3 |
| Total score | 17 | 18 | 14 | 13 | 13 | 13 | 14 | 13 | 11 | 10 | 12 | 12 |
| GPC Index | 2 | 1 | 3 | 4 | 4 | 4 | 3 | 4 | 6 | 7 | 5 | 5 |

Note: The commodity identification numbers are C1 = herbs and spices (medicinal herbs and non-timber products and spices like ginger, tea, etc); C2 = tourism (spiritual Buddhist tourists, luxury health spas (hot springs) in the mountains, luxury trekking (not backpacking) in the mountains, and pleasure (biodiversity, culture, scenery); C3 = carpet weaving; C4 = pashmina items; C5 = cut flowers; C6 = jewelry making (traditional arts and crafts); C7 = fruits (apple in western mountains, oranges, and other citrus fruits in the hills); C8 = vegetables (off-season vegetables grown in the hills); C9 = dairy products; C10 = grains and cereals (mustard seeds, rice, wheat, and lentils); C11 = poultry/fishing (fish farms in Janakpur, Biratnagar, Birganj, and Siddarthnagar and in lakes in Pokhara and in fresh river in Kathmandu); and C12 = honey.

Source: Authors.

Using the similar techniques explained in Step II, a growth potential commodity (GPC) value was developed based on the total scores obtained by each selected potential commodity in each UER. This time, the higher the sum of total scores for a commodity, the better placed it is to become one of the key drivers of local economic growth. Table 21 summarizes the result of the Step III analysis and shows the competitive export-oriented commodities and/or activities obtained for the GPC index in each urban economic region UER (Annex 2).

These competitively advantageous activities and/or products may be classified into three major market-oriented types: (i) international export market based on labor intensive light manufacturing and services (tourism), industries (carpets, pashmina, cut flowers, jewelry, herbs, tea, spices and fruits, mustard, and honey); (ii) domestic national market (jewelry, fruits, vegetables, tea, dairy products, and grains and cereals); and (iii) local markets (vegetables, dairy products, and grains and cereals).

Among the top 12 commodities and/or activities, the four most competitively advantaged are tourism, growing herbs and spices, the production of carpets and/or pashmina, and fruits. However, their positions vary by urban region.[32] For instance, herbs and spices enjoy the greatest competitive advantage of commodities in the urban regions of Biratnagar and Nepalganj, while fishery takes that position in Janakpur. Tourism, carpets and/or pashmina and jewelry are best-placed in terms of competitive advantage in the Kathmandu urban region; while tourism, carpets and/or pashmina and cut flowers have the most growth potential in the Pokhara urban region; and honey production comes out on top in Dhangadhi. But no individual commodity emerged as the most competitively advantaged for Siddarthnagar and Birganj.

### *(d) STEP IV: Urban Development Infrastructure Index*

Step IV was used to identify required development facilities for the selected potential products obtained from Step III. The development facilities may vary by region, and their growth potential commodities as well as the types of supporting infrastructure and/or facilities are different in each. The urban development infrastructure (UDI) index helps prioritize which types of infrastructure or facilities are needed in particular urban areas to support the potential products and/or economic activities identified in Step III.

[32] The values assigned to the individual competitive commodities are according to their relative importance among the eight major urban places and therefore the assigned values herein may not be consistent with those of the urban centers within each of those eight urban places. Thus, a particular commodity/activity with top importance for individual urban center(s) within the UER as a whole may not have the same importance while compared to that of other urban economic regions.

# Table 22: Aggregate Urban Development Infrastructure Index by Urban Economic Region

| UDI Index UERs | $X_1$ | $X_2$ | $X_3$ | $X_4$ | $X_5$ | $X_6$ | $X_7$ | $X_8$ | $X_9$ | $X_{10}$ | $X_{11}$ | $X_{12}$ | $X_{13}$ | $X_{14}$ | $X_{15}$ | Total Value | Index* Value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1: Biratnagar | 2 | 1 | 2 | 0 | 1 | 2 | 2 | 1 | 1 | 0 | 2 | 2 | 2 | 2 | 1 | 21 | 0.47 |
| 2: Janakpur | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 2 | 1 | 0 | 9 | 0.20 |
| 3: Birganj | 2 | 1 | 2 | 0 | 1 | 2 | 2 | 2 | 0 | 0 | 2 | 1 | 2 | 2 | 1 | 20 | 0.44 |
| 4: Kathmandu | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 3 | 2 | 0 | 1 | 2 | 3 | 2 | 2 | 31 | 0.69 |
| 5: Siddarthnagar | 2 | 1 | 2 | 0 | 1 | 1 | 2 | 2 | 1 | 0 | 2 | 1 | 2 | 2 | 1 | 20 | 0.44 |
| 6: Pokhara | 2 | 1 | 2 | 0 | 2 | 1 | 2 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 18 | 0.40 |
| 7: Nepalganj | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 2 | 1 | 2 | 1 | 1 | 14 | 0.31 |
| 8: Dhangadhi | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 8 | 0.18 |
| Total UDI Score | 13 | 9 | 13 | 2 | 11 | 9 | 14 | 10 | 5 | 0 | 12 | 8 | 15 | 12 | 8 | 141 | 0.39 |
| UDI Rank | 3 | 7 | 3 | 10 | 5 | 7 | 2 | 6 | 9 | 11 | 4 | 8 | 1 | 4 | 8 | 15 | 9.40 |

UDI parameters: X1 = Road network; X2 = Electricity–regular supply; X3 = Communications; X4 = Business incubation; X5 = Skills and enterprise training–training institute education to promote the potential economic activities and/or commodities; X6 = Industrial base–labor-based light manufacturing; X7 = Bank loans for investment; X8 = Market expansion–external markets; X9 = Research and development for planning, policy formulation and programs; X10 = Transport with refrigerator; X11 = Irrigation; X12 = Cold storage; X13 = Farm inputs and/or cooperatives; X14 = Extension services; and X15 = Urban governance–an effective and fully responsive system for planned urban development.

Note*: The maximum potential value was obtained by multiplying 3 (score for strong presence) by 15 (total infrastructure types)—i.e., 3 x 15 = 45. On the other hand, if there is non-availability of all identified infrastructure, the value will be 0. Thus, the index value ranges from 0 (non-availability in all cases) to 1 (or 45/45: availability at the maximum potential in all cases).

Source: Authors.

A matrix containing the lists of required development infrastructure (15 parameters) along the top row and the UERs along the first column (left) was built. All the cells were marked with 1 or 0 to indicate the presence and absence in municipal towns of each facility required for the potential growth commodities and/or activities to flourish. The degree of availability is signified by 1 to 3, with 3 being the highest potential. The UDI index was derived by dividing the aggregated sum of observed values in each UER by 15 parameters. (Annex 2). Table 22 summarizes the infrastructure gaps and needs required for supporting the potential commodities for each UER.

Two types of development pattern are observed: common facilities available at all urban areas, and the other when the absence of some facilities creates “relative scarcity.” An average value, 9.4, can be used to differentiate these into two groups of infrastructure: one higher than the average value and the other lower. The 15 parameters of UDI index help identify what types of infrastructure or facilities are missing in a particular UER to support potential products and/or economic activities identified in the previous Step III. The higher the UDI index value, the better the facilities, and vice versa. Therefore,

if mean value of UDI rank 9.4[33] is taken into consideration, seven types of facilities are lacking or absent overall in Nepal to support development of its potential commodities and/or economic activities. In general, transport with refrigerator ($X_{10}$) is nonexistent in all urban regions, while relative scarcity is observed in the parameters (total UDI score < 9.40) of business incubation, research and development, cold storage, urban governance, industrial base, and electricity, in the order of severity.

The index value (last right column) for each UER was obtained by dividing the sum total assigned values of the infrastructure types by a maximum potential value of 45 (15 x 3). The total assigned score by infrastructure type for each UER is shown along the second last right column (e.g., 21, 9, 20, etc.), whereas the index values are shown along the last right column. Biratnagar urban region, for instance, has a 0.47 index value (21 / 45), which implies it has only 47% of the infrastructure required to support growth of the key economic drivers in the UER. By UER, Janakpur, Nepalganj, and Dhangadhi have overall relative scarcity as their index values are below the average index value of 0.39. Likewise, none of the urban region was given the maximum potential infrastructure index value of 1. The availability of facilities in Kathmandu (0.69) is relatively better than that of other UERs.

The UDI index is sought to devise strategies for selection of the urban areas in terms of relative scarcity and to help estimate the investment required for deployment of infrastructure needed to maximize economic growth.

## Verification of the Analytical Methodology in Five Pilot Towns

The pilot study covered five hotspot urban centers from the east to west of Nepal, excluding advanced regions influenced by Kathmandu (UER 4), such as Janakpur (UER 2) and Birganj (UER 3). The selection of those five cities, one from each region, is based on their competitiveness within each UER, expecting that growth potential can be expedited to generate economic growth faster in their own region. Information was acquired based on consultations and workshops during field visits with urban development allies in each of those five cities.

Consultation workshops were conducted in five hotspot urban centers of four development regions as pilot case studies; two centers from the western

[33] The value 9.4 was derived from dividing 141 (the weighted values summed for all Xs) by 15 (the total number of parameters used to assess urban development infrastructure types).

region and one each of the eastern, midwestern, and far-western regions.[34] Consultations with key urban sector personnel[35] were held in each hotspot center. Excluding the urban centers of the central development region,[36] the selection of hotspot urban centers was based on the following grounds:

i. Transport nodal centers along an economic growth corridor, serving a vast rural region for the flow of goods and services, both at internal and international (export/import) levels, and connected by roads to surrounding market towns and villages.
ii. Relatively large urban areas playing roles for the growth and development of their own regions.
iii. Growing rapidly due to migration and/or other reasons.

Four major questions were taken into account during the consultation workshops:

- Can the urban area under consideration unleash economic growth of the surrounding hinterland?

- If so, what are the strongest industrial and/or business enterprises that can be promoted for such an objective?

- What kind of facilities and/or infrastructure should be given assistance and investment to support such growth?

- What risks could impede the pilot area from kick-starting growth?

The Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis technique was used to acquire information on the urban areas and their spheres of influence in terms of potential, constraints, issues, and the suggestions gathered from the consultations. Information pertaining to places of origin of flow of goods and people, along with road links was also collected to delineate the hotspot urban regions. This Information also served to verify the parameters used in assessing potential urban areas (the UDI index) and sectors for economic growth (the GPC index).

[34] These regions were determined by considering their remoteness where data was insufficient.
[35] The participants were from the government (chief/engineer of the Division of Urban Development; Municipality's executive officer/planner, Planning Office of the District Development Office; agriculture officer, chiefs of Division of Industry and Commerce, Water Resources, Irrigation), university campuses, the private sector (associations of Industry and Commerce) and civil societies working in the urban development sector. The number of participants in each meeting ranged from 9 to 12. Meetings and workshops were held during April–March 2008.
[36] Because the Kathmandu urban region has exceptionally and relatively better urban development levels and data.

The investment areas needed to bolster growth in the five pilot hotspot cities are summarized in Table 23. The growth rates of urban areas are very high, at more than 5% in Butwal, and the rates of urban migration they experience are high as well, at above 35%. In two areas, Biratnagar and Nepalganj, urban growth and the influx of urban migrants are both very low. Agricultural land and forests are major resources for nurturing the growth potential of all urban areas. The border towns have an advantage of being closer to Indian railway heads, and their main function is, accordingly, as points to bring Indian products into the country and to export goods such as off-season vegetables, herbs, and high-value crops like tea, cardamom, ginger, coffee, and oranges.

All four tarai border towns enjoy access to the east–west highway that begins from the eastern corner of Nepal and ends in the far west, and the south–north highways linking each of these towns and the Indian border cities with the major centers in the hills. Butwal, a close neighbor of Siddarthnagar, is just 15 kilometers (km) from the Indian border. The economic growth of these towns and their hinterlands is completely dependent on export and import facilities and easy access to railway heads in India. All border towns except Biratnagar have relatively better tourism opportunities, such as religious sites in Butwal, and ecotourism owing to the biodiversity in both Nepalganj and Dhangadhi. The potential is strong for various types of tourism, such as trekking, village tours, religious visits, resorts, mountaineering, and sports. All five cities have airports with flights linking Kathmandu.

Common constraints in all five urban areas include the following: (i) haphazard urban growth due to the absence of master plans for land use and roads, lack of utilities, and unmanaged urban wastes and slums; (ii) lack of facilities for refreshments (cold storage, chilling, and transport with refrigerator) for perishable products and go-downs; and (iii) irregular supplies of electricity. Poor facilities also stunt the development of tourism in the mid- and far-western tarai urban areas. Border problems have been reported in all border cities. In addition, irrigation of cultivated land is also limited and market management training is weak in all five urban areas.

## Table 23: Summary Matrix of the Growth Potential of Five Hot Spots—Pilot Areas

| Component | Biratnagar (Border Town) UER 1. Biratnagar | Butwal (Market Town) UER 5. Siddarthnagar | Pokhara (Market Town) UER 6. Pokhara | Nepalganj (Border Town) UER 7. Nepalganj | Dhangadhi (Border Town) UER 8. Dhangadhi |
|---|---|---|---|---|---|
| Context | • All 3 eco-zones<br>• Density–188/1,983 km²<br>• UF–trade and services<br>• Industrial base– good | • Hill and plain<br>• Density–282/996 km²<br>• UF–trading<br>• Industrial base–good | • Hills/mountains<br>• Density–100/858 km²<br>• Industrial base–weak<br>• UF–services and tourism | • All three eco-zones<br>• Density–71/615 km²<br>• Industrial base–fair<br>• UF–trading and services | • All three eco–zones<br>• Density–112/403 km²<br>• Industrial base–weak<br>• UF–trading |
| Factors to nurture growth potential | • Border–India and People's Republic of China (PRC)<br>• Diversity–all three zones<br>• Industry and trade<br>• Border town<br>• Indian railway<br>• Clustering process<br>• Major resources–land and forest<br>• 24% migrants<br>• NPPS– >80%<br>• Transportation nodal<br>• Education center | • Border–India and inland<br>• Diversity–hill / plain<br>• Resources–agri-land and forest<br>• Transportation hub<br>• Urban growth–5.5%<br>• Migrants–42%<br>• NPPS–86%<br>• Religious tourism<br>• Trade<br>• Medicine education center | • Border–PRC and inland<br>• Diversity–hill / mountain<br>• Resources–forestry and pasture<br>• Urban growth–5.1%<br>• Migrants–35%<br>• NPPS–82%<br>• Uniqueness of nature<br>• Transportation hub<br>• Education center<br>• Trekking, resort, mountaineering | • Border–PRC and India<br>• Urban growth 1.9%<br>• Diversity–all three eco-zones<br>• Resources–forest and pasture<br>• NPPS–87%<br>• Migrants–28%<br>• Herbal collection<br>• Gateway of trade<br>• Tourism–nature | • Border–PRC and India<br>• Urban growth–4.2%<br>• Diversity–all 3 zones<br>• Resources–forest, agri-land<br>• NPPS–45%<br>• Migrants–36%<br>• Oldest town, trading<br>• Access to railway points<br>• Airport–best facility<br>• Diverse socio-culture<br>• Virgin money |

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Table 23 *continued*

| Component | Biratnagar (Border Town) UER 1. Biratnagar | Butwal (Market Town) UER 5. Siddarthnagar | Pokhara (Market Town) UER 6. Pokhara | Nepalganj (Border Town) UER 7. Nepalganj | Dhangadhi (Border Town) UER 8. Dhangadhi |
|---|---|---|---|---|---|
| Resource potential and industrial activities for promotion | • Agri-land, Forest<br>• OS vegetables<br>• HVCs–tea, cardamom, orange, tea, chilly, mango, banana<br>• Milk products<br>• Garments | • Rice integrated with livestock<br>• Ginger and coffee<br>• OS vegetables<br>• Orange<br>• Aloe vera and herbs<br>• Buddhist–tourism<br>• Ginger/coffee processing | • Tourist resources<br>• Varieties of tourisms<br>• Orange, apple, ginger, fish, and dairy<br>• Rhododendron, orchards<br>• Remittance<br>• Fruits industries<br>• Highway and airport upgrade | • Diverse resources<br>• Apple, pears, walnut, oilseeds, lentils, cotton<br>• Herbs, NTFPs–Yarsagumba<br>• Fruits, cotton, herbs processing industries<br>• Tourisms/ trekking | • Oilseeds, lentils, soybean<br>• Herbs and aromatic plants<br>• Biodiversity–tourisms<br>• Orange, ginger, flower<br>• Fruits preservation<br>• Herb processing |
| Constraints, issues, and challenges | • Agri-infrastructure<br>• Electricity<br>• Unmanaged urbanization<br>• Lack of local roads<br>• Jute production declined<br>• Cross-border issue<br>• Cold storages | • Agri-infrastructure<br>• Electricity<br>• Link to railway head<br>• Unmanaged urban growth<br>• Cold storages<br>• Indian threat to international airport and tourist management | • Not expanded tourisms<br>• Environmental pollution<br>• Unmanaged urbanization<br>• Infrastructure<br>• Research and extension<br>• Manufacturing and trade<br>• Threats–international airports | • Haphazard urban growth<br>• Increased squatters<br>• Wild lives protection<br>• Lack of storage<br>• Weak market development<br>• Agri-infrastructure<br>• Agro/herb processing<br>• Cross border issues | • Poor tourism facilities<br>• Limited road access to hill<br>• Haphazard urban growth along the highway<br>• Lack of storage facilities<br>• Irrigation limited<br>• Lack of food processing plants<br>• Threat–open border |

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Table 23 *continued*

| Component | Biratnagar (Border Town) UER 1. Biratnagar | Butwal (Market Town) UER 5. Siddarthnagar | Pokhara (Market Town) UER 6. Pokhara | Nepalganj (Border Town) UER 7. Nepalganj | Dhangadhi (Border Town) UER 8. Dhangadhi |
|---|---|---|---|---|---|
| Proposed specific measures and investment areas needed for growth | • Access to sea port<br>• Growth corridor<br>• Provision of irrigation<br>• Storage facilities<br>• Garment and agro-based factories<br>• Urban master plan | • Provision of irrigation<br>• Access road links<br>• Access to railway head<br>• Tourism promotion<br>• Cold storage<br>• Urban master plan | • Explore tourism<br>• Roads upgrade and/or expansion<br>• Urban master plan<br>• Cold storages<br>• Research and extension | • Urban master plan<br>• Access roads to hills<br>• Provision of cold storages<br>• Promotion of tourisms<br>• Agro/herb processing industries | • Link road to India border<br>• Internal link roads<br>• Promote tourism in Khaptad Park and rafting<br>• Agri-infrastructure<br>• Master urban plan<br>• Control poaching |

HVCs = high value crops, NPPS = nonprimary production sector, NTFP = non-timber forest product, OS = off-season, UER = urban economic region, UF = urban functions.

# GROWTH POTENTIAL IN EACH URBAN ECONOMIC REGION

## Comparative Advantages of Nepal in an International Context

Nepal's export market is situated mainly at the landlocked country's border with India. To generate higher value goods and sustain economic growth, it has no choice but to focus on products that have comparative and competitive advantage. Commodities can be produced and exported at lower prices compared to other countries, but Nepal also enjoys comparative advantage in a number of agricultural and manufactured products, hydropower, tourism, and some other service sectors (Annex 1).

### Agriculture and Agro-processing

According to studies, Nepal clearly has comparative advantage in products like sunflower seeds, large cardamom, cut flowers, herbs, ginger, and tea. Other products such as fruits, vegetables, and rice have comparative advantage, but high costs of storage, grading, packing, transportation, and marketing render them uncompetitive in India. If post-harvest activities and facilities for these products were more cost-effective and efficient, they would be competitive (ANZDEC 2003). Developing partnerships with major industries to help capture much of the value of specific crops would add value in areas where there is little potential for other service activities. Prerequisites include improved connectivity and better physical infrastructural links.

### Manufacturing Industry

The contribution of manufacturing to gross domestic product (GDP) was close to 10% in the 1990s and further reduced to about 7% in 2006. Comparative advantage has shifted from predominantly agricultural raw materials to labor-intensive manufactured products including leather and leather products, handwoven carpets, jute and jute products, essential oils, paper, textiles, polyester yarn, pashmina mufflers and shawls, and some specific garments (Karmacharya 2000). Detailed analysis confirms that only a few enterprises are competitive. Nevertheless, if constraints are addressed,

Nepal's competitiveness can be significantly increased. Common constraints are the high cost and inadequate transportation services, the unavailability and expense of electricity, low productivity, and rigid labor laws. In short, manufacturing is a yet-to-be-developed sector.

## Tourism

Nepal has a clear comparative advantage as a tourist destination. Its attributes are many and diverse. The Himalayan landscape includes the highest places on earth, and is a base for adventure activities such as mountaineering, trekking, rafting, jungle safaris, and mountain flights. Religious sites, such as the birthplace of Buddha (Lumbini) and the Pashupati temple, a major Hindu shrine, and the Newari architecture of the Kathmandu Valley are part of the country's rich cultural life, while the diversity of its flora and fauna is also a strong selling point. The most important destinations (in order of importance) are the Kathmandu Valley's cities and towns (Kathmandu, Lalitpur, and Bhaktapur), Pokhara, Nagarkot, Annapurna, Chitwan, Mount Everest, Dhulikhel, Lukla, Langtang, and Lumbini. Despite the wealth of these attractions, per capita earnings from tourism are the lowest in South Asia. Tourism contributes less than 3% to GDP and accounts for just 8% of total foreign exchange earnings. Strong comparative advantage is not so easy to maintain in the face of increasing worldwide competition. The development and promotion of new attractions, decreasing flight times and prices, and globalization, exert pressure on Nepal to enhance the quality and visibility of what it has to offer and to improve services, marketing, and infrastructure to draw in a wider range of tourists.

There is scope to enhance the tourism sector by targeting visitors who have money but little time. Facilities offering five-star services in a country with a wealth of culture and spiritual and physical diversity are a unique combination. Skiing is being developed as an alternative destination to the resorts of Europe and North America. Prerequisites for success include making Nepal more accessible by air, private-sector investment in facilities, and international marketing on a grand scale.

## Ecological Medicinal Herbs, and Research and Training Institutes

High altitude, ecological diversity, and medicinal herbs offer potential for medical research, possibly relating to sports medicine. Similarly, forests and other ecological environments could offer good locations for international research institutions, while links with universities and other higher education institutes could also be explored. Health facilities, spas, and boutique hotels at scenic locations, and retreats also have potential, as do golf courses. Prerequisites for these to develop successfully include investment in air

accessibility, and accommodation facilities whose location and design are sympathetic to the delicate natural environment.

### Hydropower Resources

With the elevation of its topography ranging more than 8,000 meters above sea level in the north to as low as 90 meters above sea level in the south in the space of just 200 kms, there is a massive comparative advantage for hydropower. All four major river basins together have the potential to produce 42 gigawatts of hydropower, yet Nepal has exploited just 1.3% of this potential (Kafle 2005). Lack of energy is a major constraint on economic development. Further, the benefits of additional hydropower also apply to the export market. South Asia, especially India's fast-growth economy, has vast shortages of energy (as well as peaking requirements). To gain comparative advantage from exporting hydropower energy to India, Nepal needs a large project to achieve economies of scale, and thereby lower its development cost per unit.

## Analysis of Urban Economic Regions

To balance ecological diversity and its spatial as well as economic structure, the analytical framework in Chapter 5 redefined the country's subregions into eight UERs (Figure 5) and regrouped urban centers accordingly (Table 19). Each UER covers the economic center or centers, and the hinterland defined by natural barriers (such as ridges, watersheds, and drainage basins), referred to as the "economic sphere of influence" or UERs. The comparative advantages of economic growth potential are distinguished from north to south by the ecological belts (mountain, hill, and tarai) and, to a lesser degree, east to west. In this sense, north–south corridors connecting three ecological belts are complementary in balancing economic development opportunities across the subregions.

To analyze the subregions' economic potential, the eight UERs rather than the existing five development "administrative" regions, are explored. This does not mean to suggest changes in administrative boundaries should take place, but is a way of conceptualizing the spheres of economic influence bounded by natural barriers. This chapter analyzes each UER, to identify its potential for unleashing economic growth. Discussions are based on analysis of the following elements:

1) **Location analysis**

2) **Resource base and potential analysis**—overview of existing information on potential natural resources, human resources, economic activities, comparative advantages of economic opportunities, and

some development indicators have been accomplished. This analysis has been based on the information drawn from the sources such as agricultural perspective plans (APP), land resources use, the Central Bureau of Statistics (CBS), and investment patterns at the district level.

3) **Urban areas analysis**—the potential of urban infrastructure development has been explored. Discussion highlights existing infrastructure or new economic activities that require additional infrastructure to enhance comparative advantages and help kick-start growth in the economic region.

4) **Urban–rural linkage analysis**—describes flows of goods, people, services, and capital between urban areas and hinterland (economic) regions, types of links such as economic (enterprises, marketing), administrative or social, road network, backward and forward links and the service accessibility pattern as well as issues, problems, and prospectus.

5) **Opportunities for unleashing economic growth**—capturing relative advantages unique in Nepal's contexts; the section briefly describes the potential advantages of each UER, in terms of unleashing economic growth through inclusive region-based urban development.

6) **Prioritization of infrastructure investment to jump-start economic growth**—based on the 5 preceding items, assessment of each UER will reveal the type of products and/or industries that could be the key drivers of economic growth within each UER. To support such key economic drivers in each UER, infrastructure investment should be prioritized and scarce resources optimized so that the provision of infrastructure services can facilitate job opportunities, promote business development, and reduce transaction costs of doing business in and out of the UER.

## Analysis of Individual Urban Economic Regions

### Urban Economic Region 1: Biratnagar

1) *Location:* In eastern Nepal, bordering the People's Republic of China (PRC) to the north and India to the south and east. It encompasses more than 10 urban areas, including Biratnagar itself and its hinterland regions.

2) *Resource base and potential:* The UER covers all three ecological regions and comprises 32% cultivated land, 40% forest and the rest high mountains, barren, and pasture land. This region has 16 districts and a population of 5.3 million: density is high in the tarai, decreasing over the hills and mountains. The region accounts for 18% of GDP, of which, the main economic activity, agriculture, accounts for 43%.

## Table 24: Urban Category: Biratnagar Urban Economic Region 1

| | Functions | |
|---|---|---|
| Hierarchy | Market Town | Border Town |
| Secondary Towns | Dharan<br>Triyuga | Biratnagar |
| Emerging Towns | Siraha<br>Itahari<br>Rajbiraj<br>Inaruwa<br>Damak<br>Ilam<br>Lahan<br>Dhankuta<br>Khandbari | Mechinagar<br>Bhadrapur |

Source: Authors.

3) *Urban areas analysis:* The region's urban areas share 15% of the total urban population. Urban density is 1,015 people per km$^2$ as contrasted to the rural density of 166 per km$^2$. Biratnagar, with a population of 166,674, is the second largest sub-metropolitan city, but it ranks 6th by urban development infrastructure index (UDI) level, based on 18 parameters. Of 14 urban areas, three (Ilam, Dhankuta, and Khandbari) lie below the mean urban rank value of 530. Three urban areas are border towns by function, of which Mechinagar is a fast-growing, emerging border town.

4) *Urban–rural linkage analysis:* Industry and trade provide two important linkage functions in Biratnagar UER. Manufacturing accounts for 21% of national GDP, and trading for 18.5% of the region's GDP. The market towns function as goods trading points between the hills and the tarai, while trade with India and abroad occurs through border towns. Biratnagar is Nepal's principal city for international trade. Three major roads, such as the east–west highway and two north–south highways penetrating into the hills, have facilitated the flows of goods and link the towns and villages in the region. All 14 towns, except Khandbari, are linked by road, and almost 90% of the region's residents live within 8 hours of an all-weather road. The border towns trade with India and abroad by using the Indian railway lines, while three remote districts without roads are linked by air from Biratnagar.

5) *Opportunities for unleashing economic growth:* Herbs and spices are the topmost commodities for UER 1. Altogether 12 products are identified with potential (Annex 2) with the top three urban areas for

those activities in Biratnagar, Ilam, and Dharan. Likewise, the top three potential commodities and/or activities for these three urban areas are herbs and spices, garments and handloom, and vegetables. Of these, herbs, spices, and garments are exportable items. Cardamom, tea, and ginger are among the important herbs and spices. Jute, sugarcane, dairy, and cereals (rice) are other important products for income generation in the area. The hill areas are particularly important with "six products" beginning with the letter "A" alone in Nepali such as *alainchi* (cardamom), *aolan* (dairy products), *aduwa* (ginger), *akbare* chilli, *amareso* (broom), and *alo* (potato). These products have replaced traditionally produced crops such as rice, wheat, maize, millet, etc., and farmers have increased their incomes through the sale of such crops.

6) *Prioritizing infrastructure investment to jump-start growth:* The infrastructure required for the selected potential products according to the UDI (Annex 2) includes 14 types, such as road and transport networks, electricity, access by the nearest road link via the "Chicken's Neck" through India to the nearest Bangladeshi seaport at Banglabandh, dry port, skill and enterprise training, labor-based industrial activities, market expansion, research and development, transport with refrigeration, irrigation, collection centers and/or cold storage, farm inputs and/or cooperatives, and extension services. Of these, the UDI index value indicates that 43% of the infrastructure exists in Biratnagar, 31% in Ilam, and 26% in Dharan. Three types of infrastructure that do not exist in all three urban areas are "shortest route" infrastructure to seaport access, dry port for loading and off-loading, and transport with refrigeration. Dry port infrastructure at Biratnagar for loading and off-loading commodities appears to be in most urgent need to unleash economic growth.

## Urban Economic Region 2: Janakpur

1) *Location:* Janakpur UER of the near east tarai comprises the hinterland of eight urban areas (Table 25). Koshi and the Bagmati Rivers are natural barriers of the region, with the Koshi limiting its eastern area and the Bagmati River limiting western services areas. The Sunkoshi River in the Sindhuli district acts as a

### Table 25: Urban Category: Janakpur Urban Economic Region 2

| | Functions | |
|---|---|---|
| Hierarchy | Market Town | Border Town |
| Secondary Towns | Triyuga | Janakpur |
| Emerging Towns | Kamalamai<br>Siraha<br>Rajbiraj<br>Lahan | Jaleswar<br>Malangawa |

Source: Authors.

northern boundary, while the country borders with India's Bihar state in the south.

2) *Resource base and potential:* Janakpur UER covers two ecological zones. It consists of over one-third cultivated land, about 40% forest, and about 27% occupied by hills (middle and low hill—Chure), and barren land. It contains 4 districts and 2.14 million people. Average population density is 361 per km² while its tarai density is over 500 people per km². The region accounts for 10% of GDP, while the agriculture sector accounts for over 40% of the region's GDP.

3) *Urban areas analysis:* Janakpur UER's eight urban areas share 9% of the nation's total urban population. Urban density is 573 per km² as compared to the rural density of 361 per km². With a population of 74,192, Janakpur ranks 14th by the national urban index level based on 18 parameters. Except Janakpur, all seven towns (Jaleswar, Kamalamai, Lahan, Malangawa, Rajbiraj, Siraha, and Triyuga) have lower aggregated sum of rank (ASR) value than the mean value of 530. By function, three urban areas, including Janakpur, Jaleswar, and Malangawa, are border towns, while only Kamalamai is an emerging market. Janakpur is the only secondary (higher order) city.

4) *Urban–rural linkage analysis:* Manufacturing is relatively weak and concentrated mainly in the tarai urban areas. Trading and industry provide two important urban–rural linkage functions. It has the country's largest and oldest cigarette factory, which has a network of business outlets in all major towns across the country. Although close to India, the function of market towns is marketing of local produce between the hill and tarai regions. The east–west highway is the main thoroughfare from which the local roads bifurcate to the south and north to connect major towns and settlements in the region. Banepa-Bardibas is another highway running to the north to connect Kathmandu valley via Kamalamai town. All four towns are connected by road. The region has a total of 1,759 kilometers of road, with a density of 37.5 km road per 100 km². Road accessibility is relatively better, with less than 3 hours for the region's people to reach the nearest road head. These roads have facilitated the flow of goods and people in the region. The border towns trade with India and use the Indian railway lines along the border for movement of people and goods. Daily flights operate between Janakpur and Kathmandu.

5) *Opportunities for unleashing economic growth:* UER 2 has 12 important products, the top three being fishery, fruits, and herbs and spices. Pond-based fishery is famous within the country, with over 20 natural ponds for farming fish (the local carp species is the *rahu*), which

can also be exported to the Indian market, if commercially managed. Mango in this region is also in high domestic demand. But trading with India, primarily through Janakpur, is quite low. There is also potential for religious tourism development in Janakpur, at the famous Janaki temple for Hindus. The three top urban areas out of eight, selected according to growth potential commodity (GPC) index, are Janakpur, Kamalamai, and Siraha (Annex 2).

6) *Prioritizing infrastructure investment to jump-start economic growth:* The infrastructure required for the selected potential products according to the UDI index (Annex 2) include 14 types such as road and transport networks, electricity, access to the nearest Indian railway head, dry port, skill and enterprise training, labor-based industrial activities, market expansion, research and development, transport with refrigeration, irrigation, collection centers and/or cold storage, farm inputs and/or cooperatives, and extension services. Of these, only 29% exist in Janakpur, 19% in Kamalamai, and 17% in Siraha. Three types of infrastructure absent in all three urban areas are lack of access to the nearest Indian railway head, transport with refrigeration, and loading and off-loading facilities for traded goods. A dry port at Janakpur for loading and off-loading commodities would be a priority.

## Urban Economic Region 3: Birganj

1) *Location:* Birganj urban economic region lies in the central tarai region. There are five urban areas including Bharatpur, Hetauda, Ratnanagar, Kalaiya, and Gaur. The influence area to the west is delimited by the Narayani River and to the north and the east by the Bagmati River. India's Bihar state lies to the south.

### Table 26: Urban Category: Birganj Urban Economic Region 3

| Hierarchy | Functions | |
|---|---|---|
| | Market Town | Border Town |
| Secondary Towns | Bharatpur Hetauda | Birganj |
| Emerging Towns | Ratnanagar Kalaiya | Gaur |

Source: Authors.

2) *Resource base and potential:* UER 3 covers two ecological zones, tarai plain, mid- and Chure hills. Agricultural land and forests are two important natural resources. The region comprises 37% arable land, 57% forest, 5% grazing, and 1% other (built-up, water bodies, and barren). The population of the region's five districts is 2.5 million, and average density is 297 per km$^2$, while the density is over 400 in the tarai. Agriculture, trade, and industry are important economic activities, accounting for about 15%

of the country's GDP. Agriculture accounts for over two-fifths of the region's GDP. Productivity of major cereals including rice, wheat, and maize is higher than the national average. The Chitwan valley is the poultry capital of Nepal, where 20 of 60 poultry hatcheries and 16 out of 94 poultry feed industries of the country are located. Agriculture is relatively better developed due to irrigation in the valley. UER 3 has the second largest industrial base in the country after Biratnagar (27% of GDP compared to the national average of 20%) and the highest share of manufacturing activities (38% of total industrial value added in the country), which are concentrated in Birganj, Hetauda, and Bharatpur. Tourism is one of the largest industries due to Chitwan National Park, Parsa Wildlife Reserve, Daman Hill Station, and sightseeing, rafting, and other river sports. It has the third largest tourist inflow after Kathmandu and Pokhara, and received about 58% foreigners and 23% Nepalese in 2005. This is a part of a "triangular" tourism link: Chitwan (wildlife), Kathmandu (culture), and Pokhara (natural uniqueness). In terms of trade, the region enjoys a pivotal position, with Birganj as the principal gateway to Nepal from India.

3) *Urban areas analysis:* During 1991–2001, the population of the region's five districts grew by 32%. The region has six urban areas, with population accounting for 15% of the total population. Urban density is 1,190, ranging from 551 in Bharatpur to 5,313 for Birganj. Rural population density is 203 people per km$^2$. With a population of 112,484, Birganj is one of the four sub-metropolises of the country. Birganj lies at rank 3 by the urban development parameters (index value indicates UER 3 currently has 44% of the necessary infrastructure for development).

4) *Urban–rural linkage analysis:* The Birganj UER lies at the hub of the national transport systems, including the section of the east–west highway, Tribhuvan Rajpath, and the Bharatpur-Mugling road (the diverging point of the highway linking Kathmandu and Pokhara). All urban areas, as well as small towns and market centers are connected by road. In addition, there are two domestic airports in this region—Simara (Bara district) and Bharatpur—linked to Kathmandu. Internally, most rural areas, except those in the scattered hill pockets of Makawanpur (Hetauda) and Chitwan districts, are accessed by road. Lying at a crossroads, it has links with all major cities and towns throughout the country. The region has a total road length of 2,995 km with a road density of 10 km per every 100 km$^2$. The region's people have to travel over 3 hours to reach the nearest road. Birganj is a prime commercial gateway for the export and import of goods to most parts of the country. Standing at the Indian railway connection, about 50% of all international trade passes through Birganj.

5) *Opportunities for unleashing economic growth:* This economic region has 12 economic products and/or activities, as listed in Annex 2. Of these, the top three economically competitive products and activities are tourism, cut flowers, and poultry and/or fishery. Chitwan National Park is famous for its wildlife. While cut flowers are a recent development, its poultry industry is the largest in the country. Three top urban areas selected according to the growth potential commercial index are Birganj, Bharatpur, and Hetauda.

6) *Prioritizing infrastructure investment to jump-start growth:* The infrastructure required for those selected potential products according to the UDI index (Annex 2) include 12 types: road and transport networks, electricity, convenient access to India's Kolkota port, business incubation, skill and enterprise training, labor-based industrial activities, market expansion, research and development, transport with refrigeration, cold storage and chilling center, and extension services. Birganj has relatively better facilities (39%) than the other two urban areas—Bharatpur (36%) and Hetauda (19%). Facilities absent in all three urban areas include business incubation and transport with refrigeration. It should be noted that this region will have the shortest link with the Kathmandu Valley, if the proposed fast-track tunnel road is constructed. A second international airport, after Kathmandu, is already proposed.

## Urban Economic Region 4: Kathmandu

*Location:* Comprising the hinterland areas of nine urban areas such as Lalitpur, Madhyapurthimi, Bhaktapur, Kirtipur, Banepa, Dhulikhel, Panauti, Bidur, and Bhimeswar, the Kathmandu UER shares the boundaries of the Koshi river on the east, the Bagmati on the south, and the Budhi Gandaki river on the west. The PRC's Tibet region lies on the north boundary. The Kathmandu UER lies on the north of the Birganj UER. Five highways emanate out in all directions from this region. They are the Tribhuvan to the south, the Kodari and Trishuli to the north, the Prithvi to the west, and the Banepa-Bardibas (near completion) to

### Table 27: Urban Category: Kathmandu Urban Economic Region 4

| | Functions | |
|---|---|---|
| Hierarchy | Market Town | Border Town |
| Secondary Towns | Lalitpur<br>Bhaktapur | |
| Emerging Towns | Madhyapurthimi<br>Kirtipur<br>Banepa<br>Dhulikhel<br>Panauti<br>Bidur<br>Bhimeswar | |

Source: Authors.

*Since the Katmandu Valley's urban areas and their economic regions have obtained highest development index values by Nepalese standards, analysis of this economic region is omitted for realistic comparison among other urban areas for the present contextual purpose. As this region contains the capital region and most prosperous economic activities by Nepali standards, no comparative advantage analysis is performed here.*

the east. The only international airport is located in Kathmandu Valley, and Kathmandu is the largest metropolis, with Lalitpur its sub-metropolis.

## Urban Economic Region 5: Siddarthnagar

1) *Location:* Siddarthnagar urban economic region in the western tarai encompasses the sphere of influence areas of Butwal, Tansen, Kapilbastu, and Ramgram. The influence area is delimited by the Kali Gandaki to the north, the Narayani River to the east and the local river originating from the west. Its south borders Uttaranchal state of India.

### Table 28: Urban Category: Siddarthnagar Urban Economic Region 5

| | Functions | |
|---|---|---|
| Hierarchy | Market Town | Border Town |
| Secondary Towns | Butwal | Siddarthnagar |
| Emerging Towns | Tansen Ramgram | Kapilbastu |

Source: Authors.

2) *Resource base and potential:* The Siddarthnagar UER covers six districts, spread over two ecological zones, the tarai plain and hills and mid-mountains. Agricultural land and forests are two important natural resources. Agricultural land accounts for 50%, forestry 43%, grazing 4%, and the rest 3% (built-up, water bodies, and barren). The population of the region is 2.53 million. Average population density is 282 per km$^2$ for the region, with Rupandehi the highest at 521 per km$^2$. Agriculture, trade, and industry are important economic activities, accounting for about 10% of the country's GDP. Agriculture accounts for about 20% of the region's GDP. But the productivity of agricultural crops like paddy, wheat, and maize is slightly lower than the national average. Industries in the region are growing fast and concentrated in the tarai districts of Rupandehi and Nawalparasi where road accessibility and flat topography encourage it. Trade is growing not only within the region, but also with other regions and India, accounting for about 12% of total trade. Tourism has also recently emerged as an attractive activity in the region due to Lumbini, the birthplace of

Buddha, and the industry has yet to be fully exploited. Tansen also attracts tourists for its scenic beauty.

3) *Urban areas analysis:* During 1991–2001, population in the region grew by 25.5%. There are five urban areas and urban population is low at 7.8%, far less than the national average of 14%. However, urban density is high, with 996 people per km², ranging from 652 for Ramgram to 1,459 for Siddharthnagar. Rural population density is 265 people per km². The population of Butwal is 75,384, ranking 4 by the composite UDI, one rank above Biratnagar sub-metropolis. Butwal is the largest among the five urban areas in the region.

4) *Urban–rural linkage analysis:* Siddarthnagar lies at the border, while Butwal lies at the crossroads of the national transport systems. The east–west highway passing through this region is the main thoroughfare. The Siddhartha highway is a north–south oriented road connecting the Indian border in the south to Pokhara in the north via important cities such as Siddharthnagar, Butwal, Tansen, Waling, and Putalibazaar. All urban areas, as well as small towns and market centers are connected by road. In addition, there is a domestic airport in this region, linking with Kathmandu. Internally, the scattered rural hill pockets of Palpa, Arghakhanchi, and Gulmi districts are not accessible by road. Lying at the crossroads, it is linked with all major cities and towns throughout the country. The region has a total road length of 2,215 km, with a road density of 5 km per every 100 km². The region's people have to travel about 7 hours by walking to reach the nearest road. Siddharthnagar (also known as Bhairahawa) is a prime commercial gateway for the export and import of goods, particularly for western Nepal.

5) *Opportunities for unleashing economic growth:* The top three competitive international products are herbs and spices, tourism, and jewelry making. Other potential products for income generation in order of importance in this economic region are cut flowers, vegetables, cereals (rice and wheat), and sugarcane. Cut flowers are a recent product in demand and the other three have large domestic markets. Sugar factories in the region are based on the locally grown sugarcane. Three top urban areas selected according to the growth potential commercial index are Butwal, Siddarthnagar, and Ramgram (Annex 2).

6) *Prioritizing infrastructure investment to jump-start growth:* Overall, the infrastructure available is fair. Both Butwal and Siddarthnagar have relatively better facilities (each shares 33%) while Ramgram has 17%. They lack five types of facilities, including refrigerated transport, loading

and off-loading facilities, limited links to overseas market chains, limited labor-based light manufacturing, and research and development.

## Urban Economic Region 6: Pokhara

1) *Location:* The Pokhara UER lies in the western hill region. The economic region comprises the sphere of influence areas of six municipalities, including Baglung, Byas, Lekhnath, Prithvinarayan, Putalibazaar, and Waling. The influence area is confined by the Kaligandaki to the south and west and by the Budhigandaki to the east. The PRC's Tibet is on the north.

### Table 29: Urban Category: Pokhara Urban Economic Region 6

| Hierarchy | Functions | |
|---|---|---|
| | Market Town | Border Town |
| Secondary Towns | Pokhara | |
| Emerging Towns | Baglung<br>Byas<br>Lekhnath<br>Prithvinarayan<br>Putalibazaar<br>Waling | |

Source: Authors.

2) *Resource base and potential:* The Pokhara economic region includes two ecological zones: the mid-mountains and Himalayas. Forests, agricultural land, and pasture are three major natural resources. Forest covers 31%, agricultural land 19%, grazing 20% and others with 29% (built-up, water bodies, barren, cliff, and snow cover). The region comprises 10 districts with a population totaling 2.04 million, and density of 100 per km$^2$, ranging from 273 per km$^2$ (Syangja) to four people per km$^2$ for the two mountain districts of Manang and Mustang. Agriculture, trade, and tourism are important economic activities. UER 6 accounts for only 6% of the country's GDP. Agriculture is the main economic activity, accounting for about 45% of the region's GDP. As the second most important tourist destination in Nepal, tourism is the largest industry. If it gets direct international flights it could become the most important destination. Indeed, its unique picturesque Himalayan ranges and lakes, and diverse traditional cultures, presents a huge potential for tourism. In 2005, 57,000 tourists visited. The region is gateway to the Annapurna Trekking Circuit. Village, trekking, sightseeing, and cultural tourism are major activities. There are also light industries, mostly related to tourism. The contribution of the tourism industrial sector to GDP is about 17%. Construction activities are also growing rapidly. Manufacturing contributes about 3% to the region's GDP, while trading is limited to only about 7%, mostly of inflows from other major urban centers.

3) *Urban areas analysis:* The population of the region grew by 16% during 1991–2001. With six urban areas, the region's urban population is nearly 16%, higher than the national average. Urban density is 858 people per km². Pokhara has the highest urban density of 2,831 people/km², followed by Baglung with 1,136 people/km². Rural population density is 265 people per km². By population size (156,312), Pokhara is the fourth largest sub-metropolis in the country, whereas by composite UDI it ranks third after Kathmandu and Lalitpur.

4) *Urban–rural linkage analysis:* The Pokhara economic region is accessed by three major highways, including the Siddhartha highway that runs to the south connecting the Indian border, the Prithvi highway to the east linking Kathmandu, and the Pokhara-Baglung highway to the west that provides access to the people living in the western areas. The planned expansions of the road network to the north (Mustang) will connect it to the PRC. The region has a total road length of 1,372 km, with a road density of 11 km per every 100 km². All urban areas, small towns, and market centers, are connected by road. However, the region's people have to travel over 3 hours (by foot) to reach the nearest road head point. Internally, most of the scattered hill pockets of Baglung, Myagdi, Gorkha, and Lamjung have yet to connect by road. However, these roads are not adequate to facilitate the flow of important rural products, such as apples from Marpha and oranges and non-timber forest products (NTFP), including *yarsagumba* (an herb) from several remote hill and/or mountain pockets. There are daily flight services, with greatest frequency between Pokhara and Kathmandu. There are also flights between Pokhara and Jomsom (Mustang) as well as mountain flight services. The region's only and first cable car (ropeway) service to the Mankamana temple attracts Nepalese and Indian visitors.

5) *Opportunities for unleashing economic growth:* Pokhara UER includes 10 important economically competitive products in the international market as listed in Annex 2. Of these, the top three are tourism, carpets, and cut flowers. In terms of labor-based employment, lake-based fishery (the region has the largest number of lakes in Nepal) has high potential for economic growth. Tourism—including trekking, pleasure and sightseeing, mountaineering, religious travel, and river rafting—is the second most important industry in the country. Village tourism has made Sirubari (Syangja district) and Ghalegaon (Lamjung district) new attractions, while the Annapurna Conservation Area Program is an excellent trek. Three top urban areas selected according to the growth potential commodity index (GPCI) are Pokhara, Lekhnath, and Baglung (Annex 2).

6) *Prioritizing infrastructure investment to jump-start growth:* Overall, the available infrastructure is fairly poor. Pokhara has relatively better facilities (45%) while two other towns, Lekhnath has 18% and Baglung, 21%. The relative scarcity of facilities in the three urban areas includes international market chains, research and development facilities, collection, and cold storage. Completely absent facilities include transport with refrigeration. Urban government needs to be tuned to the new political context and to facilitate more income-generating opportunities such as tourism, cut flowers, and traditional handicrafts. Furthermore, road and transport network links to production centers, fast track lines and/or expansion of current highways to Kathmandu, Narayanghat, and Butwal, electric ropeways to tourist spots in the mountains, an international and/or regional airport, and opening of hot spring spas along the high mountain trekking areas could accelerate economic growth.

## Urban Economic Region 7: Nepalganj

1) *Location:* The Nepalganj UER lies in the midwestern tarai region, which encompasses the influence areas of six urban areas including Birendranagar, Tulsipur, Gulariya, Tribhuvannagar, Narayan, and Nepalganj. The Karnali River, Nepal's longest river, acts as its western service boundary, and shares a boundary with the Butwal and Pokhara UERs to the east. This region borders the PRC to the north and India to the south.

### Table 30: Urban Category: Nepalganj Urban Economic Region 7

| Hierarchy | Functions | |
|---|---|---|
| | Market Town | Border Town |
| Secondary Towns | | Nepalganj |
| Emerging Towns | Birendranagar<br>Tribhuvannagar<br>Tulsipur<br>Narayan | Gulariya |

Source: Authors.

2) *Resource base and potential:* The Nepalganj urban economic region covers all three ecological zones: tarai, hill, and mountain. Forests, pasture, and agricultural land are three major natural resources. The forest area covers 40%, pasture 18%, agriculture 15% and the others 27% (built-up, water bodies, barren, cliff, and snow cover). The region's population is 3.01 million and the density is 71 per km$^2$, with relatively higher density in the tarai districts and lower in the hills and mountains. Agriculture is the main economic activity. Other activities such as service and manufacturing are small-scale. Manufacturing is hardly developed and concentrated solely in the tarai. However, trading contributes significantly to the region's economy. The region accounts

for only about 10% of Nepal's GDP. Despite being the least developed, the region does not lag too far behind in terms of trade (nearly 11% of the region's GDP). This may be due to trading generated by a food deficiency, rather than production activities in the region. Very little trading occurs with other regions, or India. Tourism has yet to be exploited fully. Tourist flows into the region account for only 0.3% of the total.

3) *Urban areas analysis:* During 1991–2001, population grew over 30%. Yet, the urban population is only 8%, less than the half of the national average. Urban density is 615 per km² and rural is 66 per km². Nepalganj with a population of 57,535 is the largest urban area, but it ranks 12th by the composite UDI. The composite urban index value of Birendranagar, with 468, is slightly better than the national UDI average value of 530.

4) *Urban–rural linkage analysis:* The road network determines the urban–rural linkage pattern. All six urban areas are connected by road. The region has a total road length of 2,216 km, which is 2.8 km per 100 km², the poorest road density. The region's residents have to walk 12 hours on average (basically through the mountains) to reach a road head point. The main road access in the region is the east–west highway, which passes through its tarai districts. There is a north–south highway that links the hills with India. Extensions of the south highway will provide access to settlements deeper in the hills. The northern part is extensive with sparse population pockets without road connection. The limited roads are therefore not adequate to facilitate the flow of important rural products, such as apples from Jumla, oranges and NTFPs, including *yarsagumba* from several remote mountain pockets. Daily flights operate between Kathmandu and Nepalganj. Infrequent flights connect to airstrips in the hills.

5) *Opportunities for unleashing economic growth:* The top three products include herbs and spices, honey, and mustard. Honey and mustard have a wider market within the country, as well as in India. Economically competitive products at international markets, including tourism, cut flowers, jewelry making, and carpets, have relatively less significance due to a lack of infrastructure in the region. Other domestically important potential products for income generation in UER 7 are mustard, cereals (wheat, lentils) sugarcane, and apples. This region contains some of the most important naturally spectacular landscapes and hot springs, which have yet to be fully explored. The three top urban areas selected according to GPCI are Nepalganj, Tribhuvannagar, and Tulsipur. Of these, Nepalganj has relatively more facilities than the other two centers.

6) *Prioritizing infrastructure investment to jump-start growth:* Overall, the infrastructure available (UDI index value) is fairly poor, below 50%. Nepalganj has relatively better facilities (36%) and Tribhuvannagar and Tulsipur, each has 14%. Facilities extremely lacking include access to the nearest railway head, skill training institutes, research and development, cold storage and collection centers, and extension services. Upgrading of Nepalganj airport to a regional standard is essential. The urban government needs to be in tune with the new political context, manage haphazard growth in urban areas, and build facilities for generating income opportunities.

## Urban Economic Region 8: Dhangadhi

1) *Location:* Dhangadhi UER lies in the far western tarai. It embraces the hinterland areas of six urban areas including Tikapur, Dhangadhi, Dasarathchand, Dipayalsilgadhi, Mahendranagar, and Amargadhi, and encompasses nine districts of the far-western area. It borders India to the south and the west. The service areas on the east and the north are roughly delineated by the Karnali River.

### Table 31: Urban Category: Dhangadhi Urban Economic Region 8

| | Functions | |
|---|---|---|
| Hierarchy | Market Town | Border Town |
| Secondary Towns | | Dhangadhi<br>Mahendranagar |
| Emerging Towns | Dipayalsilgadhi<br>Amargadhi<br>Dasarathchand | Tikapur |

Source: Authors.

2) *Resource base and potential:* The Dhangadhi UER covers all three ecological zones (tarai, hill, and mountain). Forests, agricultural land, and pasture are three major natural resources. Some 23% of land is arable, 49% is forest, and 12% is grazing land; water bodies, barren, cliff, snow cover, and built-up cover at 16%. The population is 2.19 million, with density of 112 per km$^2$, and relatively higher density in the tarai's two districts (Kailali and Kanchanpur) and lower in the hills and mountains. Agriculture is the main economic activity, accounting for 51% of the region's GDP. But the productivity of agriculture is low compared to other regions. Other activities, such as service and manufacturing are small-scale. The few manufacturing activities are all concentrated in the tarai's districts. Trading is limited, with only about 8% of the region's GDP, and is mostly between the hills and the tarai. Very little trading activity occurs with other regions or India. Tourism has huge potential and has yet to be exploited. The Suklaphant Wildlife Reserve

and the Khaptad National Park, which are unique in biodiversity, hold the most potential for tourism, but have poor infrastructure.

3) *Urban areas analysis:* The population of the region grew 18% during 1991–2001. The urban population is slightly over 11%, with urban density at 403 people per km$^2$, with rural at 100 people per km$^2$. Migration trends and rates have accelerated due to the increased number of internally displaced people over the last decade. In terms of population size, Mahendranagar, with a population of 80,839, is the largest urban area and ranks 37th, while Dhangadhi (population 68,482) is the second largest, but ranks 22nd (506 index score) by the national composite UDI. The aggregate score achieved by Mahendranagar is 637, which is lower or in poorer condition than the average urban index score of 530.

4) *Urban–rural linkage analysis:* The roads in the Dhangadhi urban economic region include two major highways—the east–west highway running through the tarai districts and the south–north oriented road. The east–west highway is the main thoroughfare, and the south–north oriented road emanates from the east–west highway and penetrates into the hills to link major towns and settlements in the north. All six urban areas are linked by road. The region has a total road length of 1,517 km for a road density of 75.6 km per 100 km$^2$. This is relatively better road density than those in other urban economic regions. Thus, on average, the people in this region walk less than an hour to reach the nearest road head point. There are daily flights between Dhangadhi and Kathmandu. Dispersed population pockets without road connection occupy the northern hill areas. There is limited road access to facilitate the flows of important rural products, such as oranges and NTFPs, including *yarsagumba*, from several remote mountain pockets.

5) *Opportunities for unleashing economic growth:* The top three most important products include honey, herbs and spices, and tourism. Other important potential products and/or activities for income generation in the region are mustard, cut flowers, fruits (oranges, watermelons), and grains (lentils, wheat). Except cut flowers, other products are domestically in high demand, as well as in the Indian border cities. Khaptad Park, a unique area of biodiversity among the parks in the country, offers potential for tourism. But tourism infrastructure is extremely poor in the park. From here, the traditional route links Mansarowar to Tibet. The top three urban areas selected according to GPCI are Dhangadhi, Tikapur, and Mahendranagar (Annex 2). All these lie in the tarai.

6) *Prioritizing infrastructure investment to jump-start growth:* According to the UDI index (Annex 2), the available infrastructure is fairly poor and varied among the three potential urban areas. Undoubtedly, Dhangadhi has relatively better facilities (39%), while Mahendranagar has 17% and Tikapur 14%. Facilities are poor for market access through the Indian railway head, loading and off-loading facilities, light industrial base, transport with refrigeration, market chain links, collection centers and cold storage, and extension services. UER 8 urgently needs road and transport links with the production and/or market centers, ropeway lines to tourist spots, and fast track links to Nepalganj from Dhangadhi. Road links to the nearest Indian Asian highway and Tibetan border are linked by Chinese highways. The maximum use of Dhangadhi airport to link to mountain and tourist places should be promoted. Urban government needs to be tuned to the new political context and facilitate more income-generating opportunities in the subregion.

# STRATEGIC POSITION AND WAYS TO MOVE FORWARD

## Rationale of Shifting Nepal's Development Approach

***An alternative strategic development framework for urban areas, which takes into account the country's unique socioeconomic and geophysical features, is clearly needed.***

As noted earlier, as a landlocked country, of diverse ecological, economic, and social features and troubled by civil strife and labor unrest, Nepal's urban areas have not been able to function as engines for economic growth. Agriculture is the mainstay of the economy, providing livelihood for three-fourths of the population but accounting for only about one-third of GDP. Industrial activity remains marginal, and mainly involves the processing of agricultural products. Economic growth as a result has hovered around 3% for many years—barely above population growth. And over one-third of the population lives below the poverty line, $1.25 per day.

***A development strategy, which can induce growth for both urban and rural economies, is needed.***

Development efforts to date aimed to attain balanced growth in which the rural economy remains a key sector. Indeed, the term "balance" implies the promotion of economic growth and development in both rural and urban areas and throughout all three eco-belt regions. As discussed earlier, Nepal has considerable scope for exploiting hydropower and tourism, as well as competitive high value crops and herbal products, among others. Yet, Nepal has lagged behind. There is urgent need to improve agricultural productivity while at the same time, the ability of nonagricultural sectors to harness the comparative advantages of its subregions will help determine the balance of development in both rural and urban economies.

***An alternative development strategy, which considers an urban economic region, inclusive of its rural hinterland as a unit of strategic focus, is needed.***

Considering the various contexts of development in Nepal, the main function of urban areas should be to provide and facilitate urban–rural economic links and the long-term transformation of the country's economic structure from the primary toward more productive sector industries such as services, trades, manufacturing, and agro-processing businesses. The role of urban areas can be leapfrogged from a mere reception area of unemployed farm workers who are displaced from the hills and mountains, to a labor-intensive agri-business industrial market offering employment opportunities. A network of urban areas with small towns and market centers will become essential for backward and forward links between rural economies and urban areas. Symbiotic relationships between urban areas and their rural hinterlands must be strengthened.

***Development strategy should guide the nation's investment priorities and decision making such that scarce resources are used most effectively and limited financing resources generate maximum benefits.***

As one of the least developed countries in the world, Nepal still lacks most of the essential infrastructure, financial resources, and institutional capacity needed for managing economic growth. More than 25% of the national budget relies on external loans and grants, and the country's investment requirements are huge. Given limited resources, long-term planning and prioritization are needed just to fill the gap in basic infrastructure and services in urban areas

***Nepal's urban development strategy cannot be simply descriptive of the infrastructure deficiency; it needs to prescribe concrete actions based on reliable analysis and tools.***

The urban sector in the current interim plan (2008–2010) has explicitly spelled out the role and importance of urban areas for growth in hinterland areas. This means that the government needs to identify potential growth sectors so that appropriate development infrastructure can be provided. This necessitates methodological and analytical tools that can help select potential sectors for growth in the urban areas and their rural regions. It implies that investment in development areas should be more focused according to strategic priorities, rather than spread out geographically.

***As the rapid urbanization of recent decades has shown, with its compound problems, urban development strategy needs to be renewed to meet the challenges of the coming decades of global urbanization.***

The induced growth of urban areas in Nepal was first initiated through the regional development approach in the 1970s. By this approach, five selected regional urban areas equipped with development infrastructure and facilities were assumed to act for growth in their surrounding regions. Since then, efforts in urban development have shifted with the emphasis on physical development in the urban areas. Until recently, urban development strategies have continued to focus more on providing utility facilities and housing.[37] Managing urban areas has always been an important issue. But previous effort has hardly focused on sustainable, local economic development. Likewise, the vital idea that development of urban areas as a necessary condition for socioeconomic transformation in rural hinterland areas has never been conceived in the country's urban sector policies.

## Region-Based Urban Development Strategy

### Overall Approach

Existing urban strategies do not conform to the new political context, that is, the federal republic democratic system. A region-based urban development approach is more appropriate than simple urban development within the strict urban jurisdiction alone. A shift in the existing urban sector strategy is therefore essential. The proposed region-based urban development strategy calls for more in-depth analysis, focusing on cities' competitive advantages as well as on multisector analysis, which adds new dimensions to the Nepal Urban Development Sector Study 2001 of the Asian Development Bank (ADB).

Region-based urban development is a strategy that attempts to enhance the ability of cities or regions to promote economic growth in an extended urban region. Building on the five premises (see section 5.2.1), the analytical framework provides a step-by-step analytical method (section 5.2.2) for identifying growth potential in urban economic regions (UER). The steps involved in the analysis are the following: (i) delineation of spheres of economic influence, (ii) assessment of comparative advantages of urban basis, (iii) identification of industry clusters in an agglomerated urban region with competitive market potential, and (iv) prioritization of the infrastructure investment needed to improve the business environment in each UER.

[37] Two reports, ADB's Nepal Urban Development Sector Study (2001) and the government's draft National Urban Policy (2007), have also followed the same previous approach.

## The Strategic Goal and Objective

The essence of the analytical framework is to prioritize growth potential and to guide investment decisions accordingly. However, the ultimate goal of the approach is to generate employment in the selected UER, by strategizing development of competitive sector industries with the infrastructure necessary to trigger economic growth.

This urban sector strategy is prescriptive and differs from all previous urban sector strategies, which were descriptive and input-oriented. The strategy underscores the "where, what, and how" of design and investment in Nepal's urban development, envisioning outcomes, not inputs.

## Guiding Rules and Strategic Principles

Using the results derived from the analytical methodology, optimal solutions for enhancing economic development will be sought.

Guiding Rules:

- Prioritize sectors with greater potential for growth (multiplier effects): In supporting private sector development and creating an enabling environment, priority should be given to sectors where there is likely to be comparative advantage and thus greater multiplier effects in economic growth. The expected ultimate impact of this concept is, thus, to alleviate poverty.

- Invest in areas with greater potential for growth (spill over effects): Due to limited funds available for urban development, they must be used rationally. Investment of financial resources should pay attention to expected returns on investment and spill over effects. Investments in areas with greater growth potential and higher multiplier effects in the long run are likely to yield greater dividends, generating more income and/or jobs. This promotes urban development more effectively and inclusively.

In line with the above rules, the Region-Based Urban Development Strategy adopts the following *strategic principles*:

Principle 1. Aims for region-based urban development (not limited by administrative jurisdictions, but influenced by the economic activities of an urban hub). Each UER will be the unit of long-term development planning, not just a primary town in each UER.

Principle 2. Starts development from the growth hub and/or urban center in each UER to gain economies of scale. Long-term planning guides compact settlements and agglomerated town-clusters in each UER.

Principle 3. Focuses on urban–rural links through physical road connectivity, but also the value added, forward-backward links of selected industries. The intention is to build up the competitiveness of potential growth industries.

Principle 4. Prioritizes investment in north–south connectivity, linking the three eco-belts within each UER. Their ecology and resource bases are interdependent and complement each other, providing synergic impacts.

Principle 5. Builds up the competitiveness of the UERs by providing scope for specialties in each UER. The analytical framework identifies competitive local resources available in each locality. The economic specialties of eight UERs are not meant to be competing against, but complementary to national growth.

Principle 6. Uses the results from the analytical framework and methodology to strategize the development of growth potential (Table 30). Identifies economic sectors with comparative advantage and competitiveness to trigger economic growth as the first step of designing assistance, by which employment opportunities for both urban and rural poor are maximized.

Principle 7. Prioritizes the infrastructure investment needed to support the potential growth sectors.

Principle 8. Builds up short-term investments with focus and targeting in a phased manner, accumulating development over 10–15 years to induce more synergistic development impacts in each UER.

## Actions for Unleashing Economic Growth in Each Urban Economic Region

Table 32 is the result of the UER analytical methodology. It summarizes the areas requiring investment and action. Due consideration for (i) prioritization, (ii) sequencing development phases, (iii) short-term action plans, and (iv) feasibility studies for the selected priority toward intervention should be carried out, and national and/or international aid investments coordinated accordingly.

Because the designation of urban areas in Nepal is based simply on population rather than on economic growth parameters, many urban areas lack the capacity to lead development in their nearby rural regions. Yet, 80% of the population is still rural, and Nepal's urban development strategy needs to make clear how cities can function as engines of growth in the hinterlands. Here the analytical technique assesses the potential for a regions' economic growth led by urban centers, in the given economic spheres of influence. The technique allows prioritizing sectors with greater competitive potential. In a selected UER, a primary action should focus on towns along the chosen north–south corridor within each UER, rather than randomly picking up investment areas based on political interests. If pursued with consistent vigor, this strategy will eventually create the critical mass needed to concentrate economic opportunities around the UER. As such, it promotes inclusive development and growth.

## Table 32: Recommendations for Key Development Interventions in Eight Urban Economic Regions

| Urban Economic Region | Location | Resources and Potential | Urban Area Analysis | Urban–Rural Linkage | Economic Growth Opportunities | Investment in Jump-start Growth |
|---|---|---|---|---|---|---|
| **UER1 Biratnagar** | • Eastern Nepal bordering the People's Republic of China (PRC) to the north and India to the south and east<br>• Encompassing more than 10 urban areas | UER1 comprises:<br>• 32% cultivated<br>• 40% forest<br>• 28% mountain, barren, and pasture land<br>• Agriculture contributes 43% of the region's gross domestic product (GDP)<br>• UER1 accounts for 18% of GDP<br>• 16 districts with 5.3 million people | • UDI Index value at 47% of required full infrastructure<br>• Biratnagar UDI rank 6th and the second largest city<br>• 15% of the total urban population<br>• Urban density 1,015 people per km$^2$<br>• Rural density 166 people per km$^2$ | • Industry and trading<br>• Biratnagar as the principal city for international trade<br>• Manufacturing contributes 21% of national GDP<br>• Trading contributes 18.5% of region's GDP<br>• East–west and two north–south highways facilitate the flows of goods and link the towns (14) and villages<br>• 90% of residents live within 8 hours of an all-weather road | Biratnagar, Ilam, and Dharan potential commodities/ activities:<br>• Herbs and spices, garments and handloom, and vegetables<br>Export Items:<br>• Herbs, spices, and garments<br>Products for local markets:<br>• Cardamom, tea, ginger, jute, sugarcane, dairy, and cereals (rice) | Priorities:<br>• Dry port for loading and off-loading,<br>• Transport with refrigerator<br>• Access to seaport at "shortest route" |

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Table 32 *continued*

| Urban Economic Region | Location | Resources and Potential | Urban Area Analysis | Urban–Rural Linkage | Economic Growth Opportunities | Investment in Jump-start Growth |
|---|---|---|---|---|---|---|
| **UER2 Janakpur** | • Country borders India's Bihar state in the south<br>• Comprises the hinterland of 8 urban areas<br>• Limited eastern and western access due to the Koshi and Bagmati Rivers | UER2 comprises:<br>• 33% cultivated<br>• 40% forest<br>• 27% middle and low hill—Chure land<br>• Has 4 districts with 2.14 million population<br>• Agriculture contributes 40% of the region's GDP | UDI Index value at 20% of requirements<br>• 8 urban areas have 9% of total nation's urban population<br>• Urban density 573 people per km$^2$<br>• Rural density 361 people per km<br>• Janakpur is the only secondary city, while others are emerging towns | • Manufacturing is relatively weak and concentrated mainly in the Tarai urban areas<br>• Nepal's main cigarette factory has a network of business outlets in all major towns across the country<br>• East–west highway facilitate the flow of goods and links the towns and villages to north and south by local roads<br>• Indian railways serve border business<br>• Daily flights operate between Janakpur and Kathmandu | Potential commodities/ activities:<br>• Fishery and poultry<br>Tourism:<br>• Religious tourism<br>• Rafting in the Sunkoshi river<br>Products for local markets:<br>• Sugarcane, tobacco, and cereals (rice and wheat), mango, junar and tomato | Priorities:<br>• Dry port at Janakpur for loading and off-loading commodities<br>• Tourism infrastructure development<br>• Rafting in the Sunkoshi river and<br>• Facilities for Janaki temple area<br>• Connection with appropriate infrastructure to the nearest Indian railway<br>• Transport with refrigerator |

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Table 32 *continued*

| Urban Economic Region | Location | Resources and Potential | Urban Area Analysis | Urban–Rural Linkage | Economic Growth Opportunities | Investment in Jump-start Growth |
|---|---|---|---|---|---|---|
| **UER3 Birganj** | • Country borders with India's Bihar state in the south<br>• Comprises the hinterland of 5 urban areas<br>• Limited western access due to the Narayani River and north and east by the Bagmati River | UER3 comprises:<br>• 37% cultivated<br>• 57% forest<br>• 6% grazing and others<br>• Has 5 districts with 2.5 million population<br>• Relatively better irrigation facility in the Chitwan Valley<br>• Tourism industries having Chitwan National Park, Parsa wildlife, river sports, etc.<br>• Agriculture is contributing 40% of the region's GDP | UDI Index value at 44% of requirements<br>• Six urban areas cover 15% of the total nation's urban population<br>• Has three fast growing emerging<br>• Urban density 1,190 people per km$^2$ ranging from 551 Bharatpur to 5,313 for Birganj<br>• Rural density 203 people per km$^2$<br>• Birganj city's urban development index rank at 3 | Region enjoys pivotal position due to Birganj being the principal gateway of Nepal<br>• All urban areas, as well as small towns and market centers are connected by roads<br>• International trade gateway about 50% of all goods passes through UER3 | Three towns are in secondary cities: Birganj, Bharatpur, and Hetauda<br>Potential commodities/ activities:<br>• Tourism, cut flowers, and poultry/fishery<br>Tourism:<br>• Ecotourism, wild life<br>Rafting<br>Products for local markets:<br>• Herbs and spices, vegetables, mustard, timber/ non-timber forest products, mango<br>• Nepal poultry business is concentrated in Chitwan valley about 28% | Priorities:<br>• Include business incubation<br>• Transport of goods with refrigerator<br>• Fast-track connection to Kathmandu |

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Table 32 *continued*

| Urban Economic Region | Location | Resources and Potential | Urban Area Analysis | Urban–Rural Linkage | Economic Growth Opportunities | Investment in Jump-start Growth |
|---|---|---|---|---|---|---|
| **UER5 Siddarthnagar (Bhairahawa)** | • Western Tarai bordering with India<br>• Delimited by the Kali Gandaki to the north, the Narayani River to the east, and the local river originating from the west<br>• Encompassing 5 urban areas | UER5 comprises:<br>• 50% cultivated<br>• 43% forest<br>• 7% pasture land and others<br>• Has 2.53 million population<br>• Agriculture is contributing 20% of the region's GDP<br>• Average population density 282 people per km$^2$<br>• UER5 shares 10% of total GDP | UDI Index value at 44% of requirements<br>• Urban density 996 people per km$^2$ ranging from 652 in Ramgram to 1,459 for Siddarthnagar<br>• Rural density 265 people per km$^2$<br>• Birganj city's UDI rank at 4 | North–south connection from India border, Siddhartha, to Pokhara in UER 6<br>• All urban areas, as well as small towns and market centers are connected by roads<br>• Siddharthanagar as a prime commercial gateway center for western Nepal<br>• Good road connections | Butwal, Siddarthanagar, and Ramgram potential commodities/ activities:<br>• Tourism in Lumbini Buddha's birthplace, jewelry making, and herbs and spices<br>Products for local markets:<br>• Herbs and spices, cut flowers, cereals, sugarcane processing, vegetables | Priorities:<br>• Overseas market chain links<br>• Transport for goods with refrigerator |

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Table 32 *continued*

| Urban Economic Region | Location | Resources and Potential | Urban Area Analysis | Urban–Rural Linkage | Economic Growth Opportunities | Investment in Jump-start Growth |
|---|---|---|---|---|---|---|
| **UER6 Pokhara** | • Confined by the Kaligandaki in the south and the west, by the Budhigandaki to the east, and Tibet to the north<br>• Encompassing 6 urban areas | UER6 comprises:<br>• 19% cultivated<br>• 31% forest<br>• 29% barren, cliff, snow cover<br>• Agriculture contributes 45% of the region's GDP<br>• UER6 shares 6% of GDP of Nepal<br>• 10 districts with 2.04 million population<br>• Average population density 100 people per km$^2$<br>• Tourism as the largest industry<br>• Contributes 17% of Nepal's tourism industry sector | UDI Index value at 40% of required full infrastructure<br>• Biratnagar UDI rank 6 and the second largest city<br>• 16% of the UER6 in urban areas<br>• Urban density 858 people per km$^2$, 2,831 per km$^2$ in Pokhara<br>• Rural density 265 people per km$^2$ | • Accessed by 3 major highways: Siddhartha highway connecting Indian border, Prithvi highway to the east Kathmandu, and Pokhara-Balung highway to the west<br>• Road density 11km/100km$^2$<br>• Average 3 hours walk to nearest road<br>• Flight connection between Pokhara and Kathmandu | Pokhara, Lekhnath, Baglung potential commodities/ activities:<br>• Tourism, luxury trekking, carpet weaving, pashmina<br>Export items (earning foreign currency)<br>• Tourism<br>Products for local markets:<br>• Cut flowers | Priorities:<br>• Access to international market chains<br>• Research and development facilities<br>• Transportation with refrigerator<br>• Electric ropeways to tourist spots in the mountains<br>• International/ regional level airport<br>• Hot spring spas along the trekking routes in the high mountains |

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Table 32 *continued*

| Urban Economic Region | Location | Resources and Potential | Urban Area Analysis | Urban–Rural Linkage | Economic Growth Opportunities | Investment in Jump-start Growth |
|---|---|---|---|---|---|---|
| **UER7 Nepalganj** | • Country borders the PRC to the north and India to the south<br>• Comprises the hinterland of 6 urban areas<br>• Kanarli river as its western boundary and shares boundary with UER5 and UER6 | UER7 comprises:<br>• 15% cultivated<br>• 40% forest<br>• 18% pasture<br>• 27% others<br>• 3.01 million population<br>• UER7 shares 10% of Nepal's GDP<br>• Agriculture contributes 40% of the region's GDP<br>• Average density at 71 people per km$^2$ | UDI Index value at 31% of requirements<br>• 8% of UER7 population in urban<br>• Urban density 615 people per km$^2$<br>• Rural density 66 people per km$^2$<br>• Janakpur is the only secondary city, while others are emerging towns | • Road density at 2.8 km length per 100 km$^2$<br>• Average 12 hours walk to reach the nearest road<br>• East–west highway passing through Tarai<br>• Daily flights operate between Nepalganj and Kathmandu | Potential commodities/ activities:<br>• Herbs and spices, honey, and mustard<br>Tourism:<br>• Hot springs and natural scenery<br>Products for local markets:<br>• Sugarcane and apple | Priorities:<br>• Cold storage and collection centers<br>• Extension services<br>• Skills training institutes<br>• Upgrading of Nepalganj airport to regional standard |

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Table 32 *continued*

| Urban Economic Region | Location | Resources and Potential | Urban Area Analysis | Urban–Rural Linkage | Economic Growth Opportunities | Investment in Jump-start Growth |
|---|---|---|---|---|---|---|
| **UER8 Dhangadhi** | • Country borders with India to the south and west<br>• UER8 lies in the far-western tarai<br>• Comprises the hinterland of 6 urban areas and 9 districts<br>• East and west delineated by the Karnali river | UER8 comprises:<br>• 23% arable<br>• 49% forest<br>• 12% grazing<br>• 16% others<br>• 2.19 million population<br>• Unique in biodiversity<br>• Agriculture contributes 51% of the region's GDP<br>• Average density at 122 people per km² | UDI Index value at 18% of requirements<br>• 11% of the UER8 population in urban<br>• Urban density 403 people per km²<br>• Rural density 100 people per km² | • Road density at 75.6 km length per 100 km²<br>• Average 1 hour walk to reach nearest road<br>• Daily flights operate between Dhangadhi and Kathmandu<br>• Roads links to nearest Indian Asian highway and Tibetan border are linked by Chinese highways | Potential commodities/ activities:<br>• Herbs and spices, honey and tourism<br>Tourism:<br>• Khaptad Park for biodiversity | Priorities:<br>• Loading and off-loading facility<br>• Light industrial base<br>• Transport with refrigerator<br>• Cold storage and extension services<br>• Transport links with the production/ market centers<br>• Ropeway lines to tourist spots<br>• Maximize use of Dhangadhi airport to link to mountain and tourist places |

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Table 32 *continued*

| Urban Economic Region | Location | Resources and Potential | Urban Area Analysis | Urban–Rural Linkage | Economic Growth Opportunities | Investment in Jump-start Growth |
|---|---|---|---|---|---|---|
| **UER4 Kathmandu** | Kathmandu shares the boundaries of the Koshi river on the east, the Bagmati on the south, and the Budhi Gandaki (river) on the west | (no analysis conducted for UER 4) | | | | |

Source: Authors.

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# ANNEX 1

## COMPARATIVE ADVANTAGES OF NEPAL IN AN INTERNATIONAL CONTEXT

Source: National Planning Commission/ADB, Regional Development Strategy, 2007: Annex

### Context

Nepal is a small economy and cannot dictate the price of its products in the world market. In Nepal and India is porous and results in a substantial volume of unrecorded trade in goods and exchange of labor. Similarly, any tariff differentials between the two countries increases the incentive to smuggle. Such informal trade takes place not only along Nepal's border with India, but also increasingly with the Tibet Autonomous Region in the People's Republic of China (PRC).

Nepal is also the most liberalized country in South Asia, comparable to the most liberalized developing countries. Tariff rates have been reduced from an average of about 40% in 1990

### Table A1.1: Competitiveness of Selected Agricultural Commodities

| Product | Nominal Protection Coefficient | Domestic Resource Cost | Competitive |
|---|---|---|---|
| Banana | 1.6 | 0.02 | |
| Cabbage | 1.6 | 0.44 | |
| Cauliflower | 1.0 | 0.07 | |
| Chili (Green) | 1.9 | 0.49 | |
| Garlic Dry | 1.9 | 0.34 | |
| Lentil (Broken) | 1.2 | 0.23 | |
| Lentils | … | 0.73 | Yes |
| Mango | 1.1 | 0.02 | |
| Orange | 0.5 | 0.00 | Yes |
| Pointed Guard | 1.4 | 0.14 | |
| Potato (red) | 1.6 | 0.63 | |
| Potato (white) | 1.9 | 0.82 | |
| Rice coarse | 1.3 | 0.33 | |
| Rice medium | 1.2 | 0.26 | |
| Tomato (big) | 1.2 | 0.12 | |
| Tomato (small) | 1.8 | 0.17 | |
| Niger seeds | 0.76 | … | Yes |
| Sunflower seeds | 0.87 | … | Yes |
| Large cardamom | 0.86 | 0.78 | Yes |
| Rose (cut flowers) | 0.68 | … | Yes |
| Cut flowers | 0.68 | … | Yes |
| Lemon grass | 0.64 | … | Yes |
| Mentha | 0.70 | … | Yes |
| Citronella | 0.82 | … | Yes |
| Tea | 0.54 | … | Yes |
| Ginger | … | 0.78 | Yes |

... = no data available.

Sources: ANZDEC (2003), Karmacharya (2000).

to about 9% in 2005. The country has virtually no nontariff barriers and quota restrictions.

Given this situation, Nepal has no choice but to focus on the products which have comparative and competitive advantage for generating higher and sustainable economic growth. In other words, it should promote the production of items, which can be produced at a lower price compared to other countries. It has comparative advantage in a number of agricultural and manufacturing products, tourism, and hydropower, in addition to some other service sectors. These are summarized below.

## Measuring Comparative Advantage

There are a number of ways to identify the comparative advantage of products in a country. Potential comparative advantage is measured and evaluated by using domestic resource cost (DRC)[38] criteria (Greenway and Milner 1993). DRC compares the economic cost of factors of production used in domestic production of particular goods with the value of those resources internationally. In other words, it is the ratio of the value of resources required to produce the product domestically and the value of the foreign exchange required to import it. The DRC ratio could be interpreted as the cost to the economy of saving foreign exchange (through import substitutions) or acquiring for exchange (through exporting). As the official exchange rate of Nepalese rupees is floating, the exchange rate does not protect Nepalese production and exports.

A ratio of less than one indicates that the production of these agricultural products has comparative advantage relative to India and other countries; greater than one suggests that products do not have comparative advantage with Indian or international products. The higher the ratio the greater the domestic resources needed to produce it. The DRC coefficient is a better indicator of potential comparative advantage in the presence of policy distortions.

An alternative measure for competitive advantage is the Nominal Protection Coefficient (NPC).[39] NPC is the ratio of domestic price at the border to the export parity price, also at the border.

[38] DRC (i) = DC(i)/VA (i), where DC(i) = domestic cost of producing good i with respect to factors valued at their social opportunity costs and VA (i) is the value added to activity at border prices.

[39] Symbolically, NPC = PD (i)/Pi (i), where PD (i) = export price of $i^{th}$ commodity at the border (f.o.b.) price after subtracting handling costs, marketing margins, and transportation costs; PI (i) = import price (c.i.f.) by adding handling and transport cost from the border to the market and subtracting marketing margins and transportation costs from the farm level to the market.

NPC measures the divergence between domestic price at the border and the relevant international (or border) price taking into account transportation and marketing costs involved. An NPC of less than one indicates that the product in question is competitive internationally. However, the inefficiencies and transaction costs associated with different layers of the export process are captured in the ratio. As NPCs capture all kinds of inefficiencies, a reduction in the transaction costs associated with the export items in question can lower the ratio. NPCs and DRCs are therefore both useful depending upon the availability of data for a country.

Alternatively, in the absence of data to calculate DRCs and NPCs, the simplest way of identifying comparative advantage is to determine the revealed comparative advantage[40] (Balassa 1967). This is based on the export performance of the country. In other words, comparative advantage is assessed in an indirect manner by using information derived or revealed from post-trade situations and assumptions about the relationship between observable and unobservable variables.

A country is said to have comparative advantage in a particular activity when its share of total world exports of this product by all countries is greater than its share of total exports of all products. An index exceeding unity denotes comparative advantage while a figure below one denotes comparative disadvantage. Using these measures, Nepal is seen to have comparative advantages in particular products and services within the broad sectors of agriculture, manufacturing, and tourism, as discussed in the next section. These conclusions are further supported by analysis of Revealed Comparative Advantage (RCA). Table 2 lists the major items arranged in ascending order of their RCAs in the world market. However, RCA has one major drawback. It does not take into account policy distortions, such as subsidies, tariffs, export incentives, etc., used to generate exports. Nevertheless, it provides the present comparative advantage of products in the country.

The following sections give more details in respect to agriculture, manufacturing, and others.

## Comparative Advantages: Agriculture

Table A1.1 analyses export competitiveness for Nepal's major agricultural products. The measures used are NPC and DRC. In general, NPC and DRC values of less than one are judged to be competitive. India is the export

[40] Revealed comparative advantage indices of a country for a specific product is defined as a ratio of the country's share of world exports for a particular group to the country's share of total world exports of all commodities.

destination for almost all of these products, except tea and large cardamom. Tea is largely exported to the European Union. Lentils are exported to India and Bangladesh. Herbs are exported to the European Union and India.

Table A1.2 reveals that Nepal has clear comparative advantage in Niger seeds, sunflower seeds, large cardamom, cut flowers, herbs, ginger, and tea. NPCs for these products are less than one, showing that there is a clear and significant profit margin in these items.

On the other hand, there are a number of products, such as fruits, vegetables, and even some cereals (e.g., coarse rice), which have NPCs mostly greater than one suggesting that these produce are not competitive with Indian products. However, DRCs for all these products are lower than one. It suggests that Nepal has comparative advantage in these products vis-à-vis India. But the production cost of these commodities is lower than that in India. The comparative advantage in production is eroded by high transaction costs arising from storage, grading, packing, transportation, and marketing. Even if the production costs are low, high processing, transportation, and marketing costs make the commodities uncompetitive. This suggests that post-harvest activities have to be made cost-effective and efficient (ANZDEC 2003).

## Table A1.2: Activities of Revealed Comparative Advantage for Nepal Exports, 1997

| Commodity Code | Description of Commodity | Revealed Comparative Advantage |
|---|---|---|
| 570110 | Hand knotted woolen carpets | 905.6 |
| 90830 | Large cardamom | 67.6 |
| 71340 | Lentils | 56.7 |
| 230220 | Bran of rice | 44.0 |
| 610510 | Men's or boys' cotton shirts: knitted or crocheted | 38.8 |
| 120799 | Niger seeds | 38.7 |
| 620630 | Women's or girls' blouses and shirts: cotton | 27.1 |
| 620342 | Trousers, bib and brace overalls, breeches and shorts: cotton | 25.0 |
| 620520 | Men's or boys' cotton shirts: not knitted | 23.0 |

*continued on next page*

Table A1.2 *continued*

| Commodity Code | Description of Commodity | Revealed Comparative Advantage |
|---|---|---|
| 550951 | Other yarn of polyester of staple fibers: mixed mainly or solely with artificial | 22.93 |
| 620462 | Trousers, bib and brace overalls, mixed mainly or solely with artificial | 19.61 |
| 560710 | Twine, cordage, ropes and cables: jute or other textile baste fibers | 17.45 |
| 731300 | Barbed wire of iron or steel; twisted hoop or single flat wire | 17.99 |
| 530310 | Jute and other textile baste fibers, raw orated | 17.87 |
| 410612 | Tanned/re-tanned but not further prepared, whether or not split: goat skin wet blue chrome | 16.99 |
| 410619 | Tanned/re-tanned but not further prepared, whether or not split: goat skin wet blue chrome | 16.19 |
| 650590 | Hats and other headgear, knitted/ crocheted, or made from lace, belt: other than hair nets | 14.67 |
| 630260 | Toilet linen and kitchen of terry toweling or similar terry fabrics | 13.94 |
| 550959 | Other yarn of polyester staple fibers: other sewing thread | 12.79 |
| 611010 | Jerseys, pullovers, cardigans, waistcoats, knitted: wool or animal hair | 12.46 |
| 91010 | Ginger: dried or fresh | 11.74 |
| 140390 | Vegetable material of a kind used in brooms or brushes | 11.00 |
| 151790 | Margarine, edible mixture or preparation of animal or vegetable ghee | 10.96 |
| 40590 | Pasteurized ghee | 10.13 |
| 330610 | Dentifrices: preparation for oral or dental hygiene, pastes, and powders | 9.61 |
| 151590 | Linseed oil or bran oil, sal seed oil | 9.06 |
| 340111 | Soap and organic surface-active products/preparations, in bars (for toilet use) | 8.01 |

*continued on next page*

Table A1.2 *continued*

| Commodity Code | Description of Commodity | Revealed Comparative Advantage |
|---|---|---|
| 630510 | Of jute or of other textile best fibers (sacks and bags) | 7.81 |
| 100890 | Cereals (buckwheat, millet, and canary seed) | 7.70 |
| 531010 | Unbleached woven fabrics of jute | 7.48 |
| 620640 | Women's/girls' blouses, shirts/shirt-blouses, knitted or crocheted (man-made fibers) | 6.84 |
| 410800 | Chamois (including combination chamois) leather (raw hides, skins, and leather) | 6.79 |
| 410611 | Tanned or re-tanned but not further prepared, whether or not split: vegetable | 6.48 |
| 410110 | Whole hides and skins of bovine animals of a weight per skin not exceeding 8 kilograms | 5.88 |
| 970600 | Antiques of an age exceeding 100 years | 5.50 |
| 800400 | Tin plates, sheets and strip, of a thickness exceeding 0.2 mm | 4.92 |
| 300490 | Herbal tea | 4.86 |
| 640510 | With uppers of leather or composition leather (footwear) | 4.05 |
| 620444 | Women's/girl's suits, ensembles, jackets, dresses, skirts, trousers, bib and brace overalls | 4.03 |
| 640419 | Footwear with outer soles of rubber or plastics: others | 3.83 |

Source: Karmacharya (2000).

Furthermore, most of the agricultural products are exported to India informally due to high transaction costs—procedural delays, paper work, and higher transportation costs. Informal traders bear less than 10% transaction costs of their turnover. On the other hand, total transaction costs faced by formal traders can be more than 30% of their turnover (Pohit and Taneja 2000). This could also be one of the reasons for continued exports to India even if NPCs are higher than one for many of these agriculture products. The informal trade does not show up in trade statistics.

## Comparative Advantages: Manufacturing

Industrial sector in Nepal has shown a mixed picture. The manufacturing sector grew by about 10% per annum in the 1990s driven mostly by exports. On the other hand, average annual manufacturing growth was insignificant between 2001 and 2006. The contribution of manufacturing to gross domestic product (GDP), at close to 10% in the 1990s, declined to about 7% in 2006.

### Table A1.3: Competitiveness of Selected Manufactured Sectors

| Product | Nominal Protection Coefficient | Domestic Resource Cost | Competitive |
|---|---|---|---|
| Vegetable/animal oils and fats | | 0.27 | Yes |
| Sugar | | 0.47 | |
| Carpet | 0.64–0.92 | 0.27 | Yes |
| Leather products | | 0.20 | Yes |
| Tanning and dressing | | 0.70 | |
| Wet blue buff hide | 0.62 | | Yes |
| Wet blue goat skin | 0.35–0.54 | | |
| Handicrafts (stone Buddha) | 0.35 | | Yes |
| Basic iron and steel | | 0.96 | |
| Casting of iron and steel | | 0.48 | |
| Structural metal products | | 0.49 | |
| Pashmina (shawls, mufflers) | | 0.87 | |
| Yarn and textiles | | 0.23 | Yes |
| Printing and publishing* | | | |
| Wood products* | | | |
| Paper* | | | |

*Note: Based on criteria of effective protection rate < 40% (MOICS)

Sources: Karmacharya (2000); Ministry of Industry, Commerce and Supplies (MOICS) (2004 and 2002).

In the past 20 years, Nepal's comparative advantage has shifted gradually from predominantly agricultural raw materials in favor of labor-intensive manufactured products. Nepal has comparative advantage in a number of manufacturing products. The major manufacturing products, according to revealed comparative advantage includes leather and leather products, hand knotted woolen carpets, jute and jute products, textiles and polyester yarn, pashmina muffler, shawls and some specific items of garment industry (Table A1.3).

Export competitiveness measured by NPC shows that Nepal has comparative advantage in handicrafts, leather and leather products, essential

oils, paper and hand-knotted carpets (Karmacharya 2000). Other studies reveal that textiles, wood products, paper, printing, and publishing industries are also relatively more competitive (Ministry of Industry, Commerce and Supplies [MOICS] 2004).

The overall picture derived from all three measures is that only a few enterprises are competitive. Nevertheless, if the constraints related to the competitiveness of manufacturing—low productivity, high transportation costs, inadequate transport services, unavailable and costly electricity, higher transaction costs, complicated documentation procedures, and rigid labor laws—are addressed, Nepal's competitiveness in manufactures can be increased, significantly. This is a tall order and reflects the fact that (under the current scenario) manufacturing is an undeveloped sector of Nepal's economy.

## Other Comparative Advantages

The first step in the process is to consider what makes Nepal different. What are its comparative advantages in the widest sense? This is not about identifying sectors of the economy but about identifying attributes or assets that set Nepal apart. The hearts of endogenous growth theory are differentiation among places (countries, regions, cities) building on inherent strengths, and making the best of what makes it different. Attributes or factors of differentiation include:

- Ecological diversity
- High-altitude wilderness areas, mountains, lakes, and forests
- Crops specific to altitude, hill, and mountain areas such as medicinal plants and herbs
- A small, but nonetheless English-speaking and educated proportion of the population (it seems that while there is relatively high illiteracy, there is also a pool of potential labor that has secondary education and a command of the English language that could be a great advantage for small-scale, high-value international operations)
- Stable macroeconomy
- Membership in the World Trade Organization (although not full compliance until 2012)

- Relatively open economy
- Civil society open to change and development
- Potential return of relatively skilled workers from overseas
- High cultural and religious interest, both population and activity, as well as physical assets

# ANNEX 2

## ANALYTICAL METHOD—FOUR STEPS

**Step I:** Delineation of the sphere of influence of urban areas[1]

**Step II:** Comparative advantages of urban areas

**Step III:** Competitiveness of industries/businesses

**Step IV:** Identification and prioritization of required urban infrastructure

Source: Authors.

[1] Step I is a mapping exercise and explained in the section, Analytical Methodology and Techniques, page 57.

## Step II: Comparative advantages of urban areas

* X18 parameters are: urban size, population density, the urban growth rate, urban population (%), migration proportion, non-primary sector employment, road network coverage, small-scale enterprises, municipal revenue sources, drinking water coverage, sanitation coverage, electricity coverage, literacy status, fuel wood coverage, rented households, Pakki house coverage, urban poverty, and percent employed.

# Table A2.1.1 Level of Development: Urban Economic Region 1: Biratnagar

| Municipality | $X_1$ | $X_2$ | $X_3$ | $X_4$ | $X_5$ | $X_6$ | $X_7$ | $X_8$ | $X_9$ | $X_{10}$ | $X_{11}$ | $X_{12}$ | $X_{13}$ | $X_{14}$ | $X_{15}$ | $X_{16}$ | $X_{17}$ | $X_{18}$ | Total | Index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dharan | 6 | 29 | 20 | 12 | 2 | 6 | 9 | 1 | 19 | 5 | 9 | 15 | 7 | 22 | 5 | 33 | 15 | 10 | 225 | 1 |
| Biratnagar | 2 | 8 | 33 | 8 | 18 | 7 | 15 | 22 | 8 | 3 | 20 | 23 | 23 | 8 | 11 | 34 | 23 | 4 | 270 | 2 |
| Bhadrapur | 55 | 14 | 47 | 58 | 14 | 9 | 12 | 42 | 20 | 29 | 24 | 27 | 12 | 21 | 9 | 35 | 18 | 2 | 448 | 3 |
| Itahari | 22 | 26 | 10 | 40 | 4 | 22 | 9 | 23 | 37 | 11 | 26 | 32 | 33 | 32 | 23 | 49 | 35 | 18 | 452 | 4 |
| Inaruwa | 40 | 24 | 37 | 55 | 22 | 25 | 9 | 25 | 36 | 4 | 33 | 34 | 30 | 31 | 33 | 44 | 32 | 19 | 533 | 5 |
| Damak | 26 | 43 | 57 | 47 | 6 | 30 | 12 | 8 | 32 | 26 | 21 | 36 | 20 | 41 | 19 | 46 | 29 | 37 | 536 | 6 |
| Mechinagar | 17 | 31 | 29 | 38 | 16 | 31 | 12 | 4 | 13 | 52 | 37 | 44 | 31 | 42 | 35 | 50 | 34 | 25 | 541 | 7 |
| Ilam | 56 | 37 | 42 | 44 | 26 | 28 | 30 | 58 | 33 | 33 | 13 | 18 | 5 | 28 | 6 | 42 | 38 | 26 | 563 | 8 |
| Dhankuta | 48 | 47 | 45 | 16 | 28 | 37 | 51 | 35 | 35 | 37 | 23 | 30 | 16 | 34 | 12 | 56 | 41 | 47 | 638 | 9 |
| Khandbari | 45 | 55 | 50 | 15 | 50 | 54 | 58 | 40 | 54 | 53 | 38 | 52 | 43 | 58 | 40 | 58 | 56 | 48 | 867 | 10 |
| **Mean** | | | | | | | | | | | | | | | | | | | | **507** |

## Step II: Comparative advantages of urban areas (continued)

### Table A2.1.2: Level of Development: Urban Economic Region 2: Janakpur

| Municipality | $X_1$ | $X_2$ | $X_3$ | $X_4$ | $X_5$ | $X_6$ | $X_7$ | $X_8$ | $X_9$ | $X_{10}$ | $X_{11}$ | $X_{12}$ | $X_{13}$ | $X_{14}$ | $X_{15}$ | $X_{16}$ | $X_{17}$ | $X_{18}$ | Total | Index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Janakpur | 10 | 7 | 26 | 19 | 23 | 12 | 6 | 34 | 4 | 13 | 25 | 24 | 34 | 17 | 21 | 30 | 31 | 8 | 344 | 1 |
| Rajbiraj | 31 | 12 | 35 | 46 | 48 | 10 | 29 | 9 | 30 | 9 | 28 | 20 | 18 | 25 | 36 | 38 | 33 | 21 | 478 | 2 |
| Lahan | 34 | 19 | 19 | 48 | 29 | 17 | 54 | 18 | 2 | 23 | 43 | 42 | 48 | 35 | 31 | 43 | 48 | 17 | 570 | 3 |
| Malangawa | 52 | 13 | 30 | 57 | 44 | 14 | 8 | 24 | 34 | 25 | 41 | 33 | 52 | 44 | 38 | 45 | 45 | 20 | 619 | 4 |
| Jaleswar | 43 | 18 | 44 | 53 | 42 | 26 | 7 | 20 | 26 | 22 | 50 | 47 | 55 | 43 | 54 | 52 | 52 | 11 | 665 | 5 |
| Triyuga | 15 | 56 | 1 | 9 | 25 | 44 | 52 | 30 | 50 | 48 | 56 | 54 | 45 | 56 | 53 | 57 | 51 | 42 | 744 | 6 |
| Siraha | 39 | 25 | 52 | 50 | 47 | 41 | 26 | 54 | 42 | 6 | 58 | 55 | 58 | 15 | 56 | 54 | 54 | 30 | 762 | 7 |
| Kamalamai | 28 | 57 | 27 | 18 | 35 | 49 | 54 | 44 | 55 | 54 | 49 | 49 | 41 | 51 | 41 | 47 | 50 | 46 | 795 | 8 |
| **Mean** | | | | | | | | | | | | | | | | | | | | **622** |

## Table A2.1.3: Level of Development: Urban Economic Region 3: Birganj

| Municipality | $X_1$ | $X_2$ | $X_3$ | $X_4$ | $X_5$ | $X_6$ | $X_7$ | $X_8$ | $X_9$ | $X_{10}$ | $X_{11}$ | $X_{12}$ | $X_{13}$ | $X_{14}$ | $X_{15}$ | $X_{16}$ | $X_{17}$ | $X_{18}$ | Total | Index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Birganj | 5 | 4 | 7 | 5 | 19 | 3 | 27 | 3 | 1 | 10 | 22 | 11 | 25 | 10 | 8 | 13 | 21 | 7 | 201 | 1 |
| Bharatpur | 7 | 41 | 5 | 10 | 3 | 19 | 16 | 32 | 23 | 43 | 7 | 13 | 8 | 14 | 10 | 16 | 4 | 16 | 287 | 2 |
| Hetauda | 13 | 17 | 36 | 11 | 8 | 13 | 47 | 19 | 5 | 27 | 10 | 9 | 14 | 13 | 13 | 21 | 7 | 6 | 289 | 3 |
| Ratnanagar | 25 | 23 | 13 | 31 | 10 | 32 | 16 | 33 | 39 | 40 | 17 | 16 | 27 | 30 | 37 | 27 | 11 | 33 | 460 | 4 |
| Kalaiya | 29 | 15 | 3 | 43 | 38 | 20 | 24 | 51 | 38 | 17 | 47 | 37 | 50 | 39 | 42 | 37 | 47 | 15 | 592 | 5 |
| Gaur | 38 | 20 | 40 | 49 | 41 | 43 | 36 | 39 | 7 | 16 | 51 | 51 | 57 | 45 | 57 | 53 | 57 | 23 | 723 | 6 |
| **Mean** | | | | | | | | | | | | | | | | | | | | **425** |

## Table A2.1.4: Level of Development: Urban Economic Region 4: Kathmandu

| Municipality | $X_1$ | $X_2$ | $X_3$ | $X_4$ | $X_5$ | $X_6$ | $X_7$ | $X_8$ | $X_9$ | $X_{10}$ | $X_{11}$ | $X_{12}$ | $X_{13}$ | $X_{14}$ | $X_{15}$ | $X_{16}$ | $X_{17}$ | $X_{18}$ | Total | Index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kathmandu | 1 | 1 | 8 | 1 | 5 | 1 | 1 | 17 | 21 | 21 | 1 | 2 | 1 | 1 | 1 | 6 | 2 | 3 | 94 | 1 |
| Lalitpur | 3 | 3 | 21 | 2 | 12 | 4 | 5 | 2 | 9 | 44 | 2 | 1 | 2 | 2 | 3 | 4 | 3 | 5 | 127 | 2 |
| Madhyapurthimi | 18 | 6 | 17 | 7 | 20 | 23 | 3 | 10 | 27 | 50 | 8 | 3 | 17 | 6 | 14 | 10 | 10 | 28 | 277 | 3 |
| Bhaktapur | 11 | 2 | 48 | 4 | 43 | 24 | 3 | 7 | 17 | 24 | 3 | 4 | 29 | 5 | 29 | 3 | 9 | 31 | 296 | 4 |
| Kirtipur | 23 | 11 | 32 | 54 | 24 | 11 | 1 | 55 | 14 | 20 | 5 | 5 | 15 | 9 | 17 | 5 | 6 | 1 | 308 | 5 |
| Banepa | 57 | 9 | 34 | 51 | 39 | 21 | 20 | 14 | 16 | 36 | 6 | 6 | 9 | 12 | 26 | 17 | 8 | 27 | 408 | 6 |
| Dhulikhel | 58 | 27 | 49 | 56 | 34 | 29 | 20 | 16 | 18 | 32 | 19 | 10 | 11 | 29 | 25 | 23 | 20 | 35 | 511 | 7 |
| Panauti | 37 | 32 | 39 | 39 | 46 | 46 | 20 | 27 | 22 | 46 | 16 | 8 | 21 | 47 | 48 | 39 | 22 | 40 | 595 | 8 |
| Bidur | 46 | 36 | 54 | 36 | 49 | 34 | 28 | 12 | 24 | 35 | 34 | 22 | 36 | 37 | 49 | 15 | 24 | 43 | 614 | 9 |
| Bhimeswar | 44 | 51 | 53 | 23 | 56 | 40 | 50 | 52 | 58 | 42 | 27 | 35 | 44 | 50 | 43 | 9 | 26 | 52 | 755 | 10 |
| **Mean** | | | | | | | | | | | | | | | | | | | | **399** |

## Step II: Comparative advantages of urban areas (continued)

### Table A2.1.5: Level of Development: Urban Economic Region 5: Siddarthnagar

| Municipality | $X_1$ | $X_2$ | $X_3$ | $X_4$ | $X_5$ | $X_6$ | $X_7$ | $X_8$ | $X_9$ | $X_{10}$ | $X_{11}$ | $X_{12}$ | $X_{13}$ | $X_{14}$ | $X_{15}$ | $X_{16}$ | $X_{17}$ | $X_{18}$ | Total | Index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Butwal | 9 | 22 | 4 | 25 | 1 | 5 | 31 | 11 | 3 | 12 | 14 | 14 | 3 | 7 | 4 | 22 | 12 | 9 | 208 | 1 |
| Siddarthnagar | 16 | 16 | 28 | 35 | 15 | 15 | 31 | 28 | 6 | 2 | 31 | 21 | 24 | 4 | 22 | 8 | 14 | 22 | 338 | 2 |
| Tansen | 49 | 28 | 14 | 34 | 30 | 16 | 33 | 31 | 49 | 19 | 12 | 12 | 4 | 11 | 7 | 19 | 13 | 24 | 405 | 3 |
| Kapilbastu | 35 | 33 | 9 | 45 | 45 | 36 | 37 | 15 | 52 | 31 | 52 | 48 | 54 | 19 | 45 | 28 | 42 | 39 | 665 | 4 |
| Ramgram | 41 | 35 | 58 | 52 | 33 | 45 | 48 | 26 | 40 | 1 | 57 | 50 | 51 | 16 | 47 | 32 | 43 | 36 | 711 | 5 |
| **Mean** | | | | | | | | | | | | | | | | | | | | **465** |

### Table A2.1.6: Level of Development: Urban Economic Region 6: Pokhara

| Municipality | $X_1$ | $X_2$ | $X_3$ | $X_4$ | $X_5$ | $X_6$ | $X_7$ | $X_8$ | $X_9$ | $X_{10}$ | $X_{11}$ | $X_{12}$ | $X_{13}$ | $X_{14}$ | $X_{15}$ | $X_{16}$ | $X_{17}$ | $X_{18}$ | Total | Index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pokhara | 4 | 10 | 6 | 3 | 11 | 8 | 34 | 6 | 15 | 14 | 4 | 7 | 6 | 3 | 2 | 11 | 1 | 14 | 159 | 1 |
| Baglung | 47 | 21 | 24 | 33 | 40 | 35 | 57 | 46 | 31 | 28 | 11 | 29 | 10 | 26 | 18 | 12 | 16 | 44 | 528 | 2 |
| Lekhnath | 21 | 42 | 23 | 22 | 32 | 39 | 34 | 43 | 57 | 38 | 15 | 17 | 13 | 23 | 39 | 24 | 5 | 41 | 528 | 3 |
| Putalibazaar | 32 | 49 | 51 | 26 | 52 | 52 | 39 | 49 | 44 | 30 | 36 | 43 | 22 | 38 | 34 | 14 | 19 | 51 | 681 | 4 |
| Waling | 50 | 38 | 43 | 41 | 55 | 50 | 39 | 37 | 41 | 45 | 30 | 25 | 28 | 33 | 28 | 25 | 30 | 57 | 695 | 5 |
| Prithvinarayan | 36 | 48 | 38 | 29 | 54 | 53 | 56 | 50 | 43 | 56 | 32 | 26 | 39 | 40 | 32 | 18 | 28 | 54 | 732 | 6 |
| **Mean** | | | | | | | | | | | | | | | | | | | | **554** |

## Table A2.1.7: Level of Development: Urban Economic Region 7: Nepalganj

| Municipality | $X_1$ | $X_2$ | $X_3$ | $X_4$ | $X_5$ | $X_6$ | $X_7$ | $X_8$ | $X_9$ | $X_{10}$ | $X_{11}$ | $X_{12}$ | $X_{13}$ | $X_{14}$ | $X_{15}$ | $X_{16}$ | $X_{17}$ | $X_{18}$ | Total | Index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nepalganj | 14 | 5 | 46 | 13 | 21 | 2 | 41 | 5 | 11 | 18 | 18 | 19 | 26 | 18 | 16 | 20 | 17 | 13 | 323 | 1 |
| Birendranagar | 30 | 30 | 25 | 21 | 13 | 18 | 38 | 36 | 28 | 34 | 29 | 28 | 19 | 27 | 24 | 29 | 27 | 12 | 468 | 2 |
| Tribhuvannagar | 20 | 39 | 18 | 27 | 28 | 27 | 18 | 53 | 25 | 55 | 40 | 39 | 37 | 20 | 15 | 41 | 36 | 29 | 567 | 3 |
| Tulsipur | 27 | 50 | 16 | 37 | 37 | 33 | 18 | 29 | 45 | 39 | 46 | 53 | 38 | 36 | 30 | 51 | 46 | 38 | 669 | 4 |
| Gulariya | 19 | 44 | 15 | 17 | 31 | 47 | 43 | 48 | 47 | 7 | 54 | 58 | 56 | 53 | 55 | 55 | 58 | 32 | 739 | 5 |
| Narayan | 51 | 54 | 41 | 30 | 58 | 56 | 45 | 56 | 46 | 58 | 55 | 57 | 46 | 54 | 44 | 36 | 55 | 55 | 897 | 6 |
| **Mean** | | | | | | | | | | | | | | | | | | | | **611** |

## Table A2.1.8: Level of Development: Urban Economic Region 8: Dhangadhi

| Municipality | $X_1$ | $X_2$ | $X_3$ | $X_4$ | $X_5$ | $X_6$ | $X_7$ | $X_8$ | $X_9$ | $X_{10}$ | $X_{11}$ | $X_{12}$ | $X_{13}$ | $X_{14}$ | $X_{15}$ | $X_{16}$ | $X_{17}$ | $X_{18}$ | Total | Index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dhanagadhi | 12 | 34 | 12 | 20 | 9 | 38 | 21 | 21 | 10 | 8 | 39 | 38 | 42 | 46 | 27 | 40 | 44 | 45 | 506 | 1 |
| Mahendranagar | 8 | 45 | 31 | 6 | 7 | 55 | 44 | 45 | 12 | 41 | 48 | 41 | 35 | 48 | 50 | 31 | 37 | 53 | 637 | 2 |
| Tikapur | 24 | 40 | 11 | 42 | 17 | 51 | 21 | 41 | 56 | 15 | 45 | 56 | 47 | 52 | 46 | 48 | 53 | 34 | 699 | 3 |
| Dipayalsilgadhi | 42 | 53 | 2 | 24 | 51 | 48 | 53 | 13 | 53 | 57 | 42 | 46 | 53 | 49 | 51 | 2 | 49 | 49 | 737 | 4 |
| Amargadhi | 53 | 58 | 55 | 14 | 53 | 57 | 49 | 38 | 48 | 49 | 44 | 45 | 49 | 55 | 52 | 7 | 39 | 58 | 823 | 5 |
| Dasarathchand | 54 | 52 | 56 | 32 | 57 | 58 | 42 | 57 | 51 | 51 | 53 | 31 | 40 | 57 | 58 | 1 | 40 | 56 | 846 | 6 |
| **Mean** | | | | | | | | | | | | | | | | | | | | **708** |

## Step II: Comparative advantages of urban areas (continued)

Composite Index Rank: Aggregated Sum of Rank Values and Aggregated Composite Rank Index

# Table A2.2: Grouping of Urban Areas by Composite Index Rank

| Municipality | $X_1$ | $X_2$ | $X_3$ | $X_4$ | $X_5$ | $X_6$ | $X_7$ | $X_8$ | $X_9$ | $X_{10}$ | $X_{11}$ | $X_{12}$ | $X_{13}$ | $X_{14}$ | $X_{15}$ | $X_{16}$ | $X_{17}$ | $X_{18}$ | Total | Index Level |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kathmandu | 1 | 1 | 8 | 1 | 5 | 1 | 1 | 17 | 21 | 21 | 1 | 2 | 1 | 1 | 1 | 6 | 2 | 3 | 94 | 1 |
| Lalitpur | 3 | 3 | 21 | 2 | 12 | 4 | 5 | 2 | 9 | 44 | 2 | 1 | 2 | 2 | 3 | 4 | 3 | 5 | 127 | 2 |
| Pokhara | 4 | 10 | 6 | 3 | 11 | 8 | 34 | 6 | 15 | 14 | 4 | 7 | 6 | 3 | 2 | 11 | 1 | 14 | 159 | 3 |
| Birganj | 5 | 4 | 7 | 5 | 19 | 3 | 27 | 3 | 1 | 10 | 22 | 11 | 25 | 10 | 8 | 13 | 21 | 7 | 201 | 4 |
| Butwal | 9 | 22 | 4 | 25 | 1 | 5 | 31 | 11 | 3 | 12 | 14 | 14 | 3 | 7 | 4 | 22 | 12 | 9 | 208 | 5 |
| Dharan | 6 | 29 | 20 | 12 | 2 | 6 | 9 | 1 | 19 | 5 | 9 | 15 | 7 | 22 | 5 | 33 | 15 | 10 | 225 | 6 |
| Biratnagar | 2 | 8 | 33 | 8 | 18 | 7 | 15 | 22 | 8 | 3 | 20 | 23 | 23 | 8 | 11 | 34 | 23 | 4 | 270 | 7 |
| Madhyapurthimi | 18 | 6 | 17 | 7 | 20 | 23 | 3 | 10 | 27 | 50 | 8 | 3 | 17 | 6 | 14 | 10 | 10 | 28 | 277 | 8 |
| Bharatpur | 7 | 41 | 5 | 10 | 3 | 19 | 16 | 32 | 23 | 43 | 7 | 13 | 8 | 14 | 10 | 16 | 4 | 16 | 287 | 9 |
| Hetauda | 13 | 17 | 36 | 11 | 8 | 13 | 47 | 19 | 5 | 27 | 10 | 9 | 14 | 13 | 13 | 21 | 7 | 6 | 289 | 10 I |
| Bhaktapur | 11 | 2 | 48 | 4 | 43 | 24 | 3 | 7 | 17 | 24 | 3 | 4 | 29 | 5 | 29 | 3 | 9 | 31 | 296 | 11 |
| Kirtipur | 23 | 11 | 32 | 54 | 24 | 11 | 1 | 55 | 14 | 20 | 5 | 5 | 15 | 9 | 17 | 5 | 6 | 1 | 308 | 12 |
| Nepalganj | 14 | 5 | 46 | 13 | 21 | 2 | 41 | 5 | 11 | 18 | 18 | 19 | 26 | 18 | 16 | 20 | 17 | 13 | 323 | 13 |
| Siddarthnagar | 16 | 16 | 28 | 35 | 15 | 15 | 31 | 28 | 6 | 2 | 31 | 21 | 24 | 4 | 22 | 8 | 14 | 22 | 338 | 14 |
| Janakpur | 10 | 7 | 26 | 19 | 23 | 12 | 6 | 34 | 4 | 13 | 25 | 24 | 34 | 17 | 21 | 30 | 31 | 8 | 344 | 15 |
| Tansen | 49 | 28 | 14 | 34 | 30 | 16 | 33 | 31 | 49 | 19 | 12 | 12 | 4 | 11 | 7 | 19 | 13 | 24 | 405 | 16 |
| Banepa | 57 | 9 | 34 | 51 | 39 | 21 | 20 | 14 | 16 | 36 | 6 | 6 | 9 | 12 | 26 | 17 | 8 | 27 | 408 | 17 |
| Bhadrapur | 55 | 14 | 47 | 58 | 14 | 9 | 12 | 42 | 20 | 29 | 24 | 27 | 12 | 21 | 9 | 35 | 18 | 2 | 448 | 18 |

*continued on next page*

Annex 2 *continued*

| Municipality | $X_1$ | $X_2$ | $X_3$ | $X_4$ | $X_5$ | $X_6$ | $X_7$ | $X_8$ | $X_9$ | $X_{10}$ | $X_{11}$ | $X_{12}$ | $X_{13}$ | $X_{14}$ | $X_{15}$ | $X_{16}$ | $X_{17}$ | $X_{18}$ | Total | Index | Level |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Itahari | 22 | 26 | 10 | 40 | 4 | 22 | 9 | 23 | 37 | 11 | 26 | 32 | 33 | 32 | 23 | 49 | 35 | 18 | 452 | 19 | |
| Ratnanagar | 25 | 23 | 13 | 31 | 10 | 32 | 16 | 33 | 39 | 40 | 17 | 16 | 27 | 30 | 37 | 27 | 11 | 33 | 460 | 20 | II |
| Birendranagar | 30 | 30 | 25 | 21 | 13 | 18 | 38 | 36 | 28 | 34 | 29 | 28 | 19 | 27 | 24 | 29 | 27 | 12 | 468 | 21 | |
| Rajbiraj | 31 | 12 | 35 | 46 | 48 | 10 | 29 | 9 | 30 | 9 | 28 | 20 | 18 | 25 | 36 | 38 | 33 | 21 | 478 | 22 | |
| Dhanagadhi | 12 | 34 | 12 | 20 | 9 | 38 | 21 | 21 | 10 | 8 | 39 | 38 | 42 | 46 | 27 | 40 | 44 | 45 | 506 | 23 | |
| Dhulikhel | 58 | 27 | 49 | 56 | 34 | 29 | 20 | 16 | 18 | 32 | 19 | 10 | 11 | 29 | 25 | 23 | 20 | 35 | 511 | 24 | |
| Baglung | 47 | 21 | 24 | 33 | 40 | 35 | 57 | 46 | 31 | 28 | 11 | 29 | 10 | 26 | 18 | 12 | 16 | 44 | 528 | 25 | |
| Lekhnath | 21 | 42 | 23 | 22 | 32 | 39 | 34 | 43 | 57 | 38 | 15 | 17 | 13 | 23 | 39 | 24 | 5 | 41 | 528 | 26 | |
| Inaruwa | 40 | 24 | 37 | 55 | 22 | 25 | 9 | 25 | 36 | 4 | 33 | 34 | 30 | 31 | 33 | 44 | 32 | 19 | 533 | 27 | |
| Damak | 26 | 43 | 57 | 47 | 6 | 30 | 12 | 8 | 32 | 26 | 21 | 36 | 20 | 41 | 19 | 46 | 29 | 37 | 536 | 28 | |
| Mechinagar | 17 | 31 | 29 | 38 | 16 | 31 | 12 | 4 | 13 | 52 | 37 | 44 | 31 | 42 | 35 | 50 | 34 | 25 | 541 | 29 | |
| Ilam | 56 | 37 | 42 | 44 | 26 | 28 | 30 | 58 | 33 | 33 | 13 | 18 | 5 | 28 | 6 | 42 | 38 | 26 | 563 | 30 | III |
| Tribhuvannagar | 20 | 39 | 18 | 27 | 28 | 27 | 18 | 53 | 25 | 55 | 40 | 39 | 37 | 20 | 15 | 41 | 36 | 29 | 567 | 31 | |
| Lahan | 34 | 19 | 19 | 48 | 29 | 17 | 54 | 18 | 2 | 23 | 43 | 42 | 48 | 35 | 31 | 43 | 48 | 17 | 570 | 32 | |
| Kalaiya | 29 | 15 | 3 | 43 | 38 | 20 | 24 | 51 | 38 | 17 | 47 | 37 | 50 | 39 | 42 | 37 | 47 | 15 | 592 | 33 | |
| Panauti | 37 | 32 | 39 | 39 | 46 | 46 | 20 | 27 | 22 | 46 | 16 | 8 | 21 | 47 | 48 | 39 | 22 | 40 | 595 | 34 | |
| Byas | 33 | 46 | 22 | 28 | 36 | 42 | 25 | 47 | 29 | 47 | 35 | 40 | 32 | 24 | 20 | 26 | 25 | 50 | 607 | 35 | |
| Bidur | 46 | 36 | 54 | 36 | 49 | 34 | 28 | 12 | 24 | 35 | 34 | 22 | 36 | 37 | 49 | 15 | 24 | 43 | 614 | 36 | |
| Malangawa | 52 | 13 | 30 | 57 | 44 | 14 | 8 | 24 | 34 | 25 | 41 | 33 | 52 | 44 | 38 | 45 | 45 | 20 | 619 | 37 | |
| Mahendranagar | 8 | 45 | 31 | 6 | 7 | 55 | 44 | 45 | 12 | 41 | 48 | 41 | 35 | 48 | 50 | 31 | 37 | 53 | 637 | 38 | |
| Dhankuta | 48 | 47 | 45 | 16 | 28 | 37 | 51 | 35 | 35 | 37 | 23 | 30 | 16 | 34 | 12 | 56 | 41 | 47 | 638 | 39 | |
| Jaleswar | 43 | 18 | 44 | 53 | 42 | 26 | 7 | 20 | 26 | 22 | 50 | 47 | 55 | 43 | 54 | 52 | 52 | 11 | 665 | 40 | |

*continued on next page*

Annex 2 *continued*

| Municipality | $X_1$ | $X_2$ | $X_3$ | $X_4$ | $X_5$ | $X_6$ | $X_7$ | $X_8$ | $X_9$ | $X_{10}$ | $X_{11}$ | $X_{12}$ | $X_{13}$ | $X_{14}$ | $X_{15}$ | $X_{16}$ | $X_{17}$ | $X_{18}$ | Total | Index | Level |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kapilbastu | 35 | 33 | 9 | 45 | 45 | 36 | 37 | 15 | 52 | 31 | 52 | 48 | 54 | 19 | 45 | 28 | 42 | 39 | 665 | 41 | IV |
| Tulsipur | 27 | 50 | 16 | 37 | 37 | 33 | 18 | 29 | 45 | 39 | 46 | 53 | 38 | 36 | 30 | 51 | 46 | 38 | 669 | 42 | |
| Putalibazaar | 32 | 49 | 51 | 26 | 52 | 52 | 39 | 49 | 44 | 30 | 36 | 43 | 22 | 38 | 34 | 14 | 19 | 51 | 681 | 43 | |
| Waling | 50 | 38 | 43 | 41 | 55 | 50 | 39 | 37 | 41 | 45 | 30 | 25 | 28 | 33 | 28 | 25 | 30 | 57 | 695 | 44 | |
| Tikapur | 24 | 40 | 11 | 42 | 17 | 51 | 21 | 41 | 56 | 15 | 45 | 56 | 47 | 52 | 46 | 48 | 53 | 34 | 699 | 45 | |
| Ramgram | 41 | 35 | 58 | 52 | 33 | 45 | 48 | 26 | 40 | 1 | 57 | 50 | 51 | 16 | 47 | 32 | 43 | 36 | 711 | 46 | |
| Gaur | 38 | 20 | 40 | 49 | 41 | 43 | 36 | 39 | 7 | 16 | 51 | 51 | 57 | 45 | 57 | 53 | 57 | 23 | 723 | 47 | |
| Prithvinarayan | 36 | 48 | 38 | 29 | 54 | 53 | 56 | 50 | 43 | 56 | 32 | 26 | 39 | 40 | 32 | 18 | 28 | 54 | 732 | 48 | |
| Dipayalsilgadhi | 42 | 53 | 2 | 24 | 51 | 48 | 53 | 13 | 53 | 57 | 42 | 46 | 53 | 49 | 51 | 2 | 49 | 49 | 737 | 49 | |
| Gulariya | 19 | 44 | 15 | 17 | 31 | 47 | 43 | 48 | 47 | 7 | 54 | 58 | 56 | 53 | 55 | 55 | 58 | 32 | 739 | 50 | |
| Triyuga | 15 | 56 | 1 | 9 | 25 | 44 | 52 | 30 | 50 | 48 | 56 | 54 | 45 | 56 | 53 | 57 | 51 | 42 | 744 | 51 | V |
| Bhimeswar | 44 | 51 | 53 | 23 | 56 | 40 | 50 | 52 | 58 | 42 | 27 | 35 | 44 | 50 | 43 | 9 | 26 | 52 | 755 | 52 | |
| Siraha | 39 | 25 | 52 | 50 | 47 | 41 | 26 | 54 | 42 | 6 | 58 | 55 | 58 | 15 | 56 | 54 | 54 | 30 | 762 | 53 | |
| Kamalamai | 28 | 57 | 27 | 18 | 35 | 49 | 54 | 44 | 55 | 54 | 49 | 49 | 41 | 51 | 41 | 47 | 50 | 46 | 795 | 54 | |
| Amargadhi | 53 | 58 | 55 | 14 | 53 | 57 | 49 | 38 | 48 | 49 | 44 | 45 | 49 | 55 | 52 | 7 | 39 | 58 | 823 | 55 | |
| Dasarathchand | 54 | 52 | 56 | 32 | 57 | 58 | 42 | 57 | 51 | 51 | 53 | 31 | 40 | 57 | 58 | 1 | 40 | 56 | 846 | 56 | |
| Khandbari | 45 | 55 | 50 | 15 | 50 | 54 | 58 | 40 | 54 | 53 | 38 | 52 | 43 | 58 | 40 | 58 | 56 | 48 | 867 | 57 | |
| Narayan | 51 | 54 | 41 | 30 | 58 | 56 | 45 | 56 | 46 | 58 | 55 | 57 | 46 | 54 | 44 | 36 | 55 | 55 | 897 | 58 | VI |
| **Mean** | | | | | | | | | | | | | | | | | | | | **530.3** | |

## Step III: Competitiveness of industries/businesses

Notes:

- The commodity ID (identification) numbers are C1 = herbs and spices (medicinal herbs and non-timber products and spices like ginger, tea, etc.); C2 = tourism (spiritual Buddhist tourists, luxury health spas (hot springs) in the mountains, luxury trekking (not backpacking) in the mountains, and pleasure (biodiversity, culture, sceneries); C3 = carpet weaving; C4 = pashmina items; C5 = cut flowers; C6 = jewelry making (traditional arts and crafts); C7 = fruits (apples in western mountains, oranges and other citrus fruits in the hills); C8 = vegetables (off-season vegetables grown in the hills); C9 = dairy products; C10 = grains and cereals (mustard seeds, rice, wheat, and lentils); C11 = poultry /fishing (fish farms in Janakpur, Biratnagar, Birganj, and Siddarthnagar and in lakes in Pokhara and in rivers in Kathmandu); C12 = honey.

- There are some variations in available commodities in each UER.

## Step III: Competitiveness of industries/businesses (continued)

### Table A2.3.1: Growth Potential Commodity Index: Urban Economic Region 1

| Urban Centers | $C_1$ | $C_2$ | $C_3$ | $C_4$ | $C_5$ | $C_6$ | $C_7$ | $C_8$ | $C_9$ | $C_{10}$ | $C_{11}$ | $C_{12}$ | Total | Index | Commodities Index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Biratnagar | 3 | 1 | 1 | 2 | 2 | 1 | 2 | 3 | 1 | 3 | 3 | 3 | **25** | **1** | **C1 = Herbs and spices** |
| Dharan | 2 | 1 | 1 | 3 | 2 | 2 | 2 | 2 | 1 | 2 | 1 | 2 | **21** | **2** | C2 = Tourism |
| Bhadrapur | 2 | 1 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 18 | 4 | C3 = Carpet weaving |
| Itahari | 2 | 0 | 0 | 1 | 2 | 1 | 1 | 2 | 2 | 3 | 2 | 2 | 18 | 4 | **C4 = Handloom** |
| Inaruwa | 1 | 0 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 3 | 2 | 2 | 17 | 5 | C5 = Cut flowers |
| Damak | 2 | 0 | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 2 | 17 | 4 | C6 = Jewelry making |
| Mechinagar | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 0 | 1 | 16 | 9 | C7 = Fruits |
| Ilam | 3 | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 3 | 1 | 0 | 0 | **19** | **3** | **C8 = Vegetables** |
| Dhankuta | 3 | 2 | 1 | 3 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 18 | 4 | C9 = Dairy products |
| Khandbari | 2 | 2 | 1 | 2 | 1 | 1 | 2 | 1 | 2 | 0 | 0 | 0 | 14 | 6 | C10 = Cereals |
| **Total score** | **22** | 10 | 7 | **19** | 15 | 12 | 17 | **20** | 18 | 18 | 11 | 14 | 183 | | C11= Jute |
| **GPC Index** | **1** | 10 | 11 | **3** | 6 | 8 | 5 | **2** | 4 | 4 | 9 | 7 | | | C12 = Sugarcane |

| | |
|---|---|
| **Vegetables** | Off-farm vegetables such as cabbage, cauliflower, tomato, raddish, beans, and vegetable seeds |
| **Fruits** | Banana, orange, sweet lemon, lemon, papaya |
| **Spices** | Cardamom, ginger, turmeric, cinnamon, akabare chili |
| **Dairy products** | Milk, cheese, butter and ghee, pork, angora (wool) |
| **Herbs** | *Allo* and *puwa* for clothes, *lokta* for Nepali paper, *chiraito, pakanbed*, silkworm, *panch aunle, jatamasi, bikhima, silajit,* etc. |
| **Cottage industry** | Dhaka (typical cotton) items, handloom |

## Table A2.3.2: Growth Potential Commodity Index: Urban Economic Region 2

| Municipality | $C_1$ | $C_2$ | $C_3$ | $C_4$ | $C_5$ | $C_6$ | $C_7$ | $C_8$ | $C_9$ | $C_{10}$ | $C_{11}$ | $C_{12}$ | Total | Index | Commodities Index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Janakpur | 3 | 3 | 0 | 1 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | **24** | **1** | C1 = Herbs and spices |
| Malangawa | 1 | 0 | 0 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 1 | 1 | 13 | 8 | C2 = Tourism |
| Jaleswar | 1 | 0 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 1 | 15 | 7 | C3 = Carpet weaving |
| Kamalamai | 3 | 2 | 1 | 2 | 2 | 2 | 3 | 2 | 0 | 1 | 2 | 2 | **22** | **2** | C4 = Handlooms |
| Rajbiraj | 2 | 0 | 0 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 16 | 6 | C5 = Cut flowers |
| Lahan | 2 | 0 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 17 | 5 | C6 = Jewelry making |
| Triyuga | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 0 | 1 | 1 | 2 | 18 | 4 | C7 = Fruits |
| Siraha | 2 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **19** | **3** | C8 = Vegetables |
| **Total** | **16** | 6 | 2 | 10 | 12 | 12 | **17** | **16** | 11 | 14 | 14 | 14 | | | C9 = Pond-based fishery |
| **Index** | **2** | 7 | 8 | 6 | 4 | 4 | **1** | **2** | 5 | 3 | 3 | 3 | | | C10 = Cereals |
| | | | | | | | | | | | | | | | C11= Tobacco |
| | | | | | | | | | | | | | | | C12 = Sugarcane |

| | |
|---|---|
| **Vegetables** | Tomato |
| **Fruits** | Mango, junar, and orange |
| **Spices** | Ginger, garlic |
| **Dairy products** | Milk, butter, and ghee |
| **Herbs** | *Allo* and *puwa* for clothes, *lokta* for Nepali paper, silkworm, etc. |

## Step III: Competitiveness of industries/businesses (continued)

### Table A2.3.3: Growth Potential Commodity Index: Urban Economic Region 3

| Municipality | $C_1$ | $C_2$ | $C_3$ | $C_4$ | $C_5$ | $C_6$ | $C_7$ | $C_8$ | $C_9$ | $C_{10}$ | $C_{11}$ | $C_{12}$ | Total | Index | Commodities Index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Birganj | 1 | 3 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 2 | 20 | **2** | C1 = Herbs and spices |
| Bharatpur | 2 | 3 | 1 | 2 | 3 | 2 | 2 | 1 | 3 | 2 | 3 | 2 | 26 | **1** | C2 = Tourism |
| Hetauda | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 1 | 21 | **3** | C3 = Carpet weaving |
| Ratnanagar | 2 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 19 | 4 | C4 = Handlooms |
| Kalaiya | 2 | 1 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 3 | 18 | 4 | C5 = Cut flowers |
| Gaur | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 10 | 5 | C6 = Jewelry making |
| **Total** | 10 | 11 | 5 | 8 | 11 | 9 | 10 | 10 | 11 | 10 | 9 | 10 | | | C7 = Fruits |
| **Index** | 2 | **1** | 5 | 4 | **1** | 3 | 2 | 2 | **1** | 2 | 3 | 2 | | | C8 = Vegetables |
| | | | | | | | | | | | | | | | C9 = Poultry/Fishery |
| | | | | | | | | | | | | | | | C10 = Cereals |
| | | | | | | | | | | | | | | | C11= Mustard |
| | | | | | | | | | | | | | | | C12 = Sugarcane |

| | |
|---|---|
| **Fruits** | Mango, banana, and orange |
| **Spices** | Ginger, garlic |
| **Dairy products** | Milk, butter, and ghee |
| **Herbs** | *Allo* and *puwa* for clothes, *lokta* for Nepali paper, silkworm, etc. |

## Table A2.3.4: Growth Potential Commodity Index: Urban Economic Region 4

| Municipality | $C_1$ | $C_2$ | $C_3$ | $C_4$ | $C_5$ | $C_6$ | $C_7$ | $C_8$ | $C_9$ | $C_{10}$ | $C_{11}$ | $C_{12}$ | Total | Index | Commodities Index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kathmandu | 2 | 3 | 3 | 1 | 2 | 3 | 1 | 2 | 1 | 1 | 1 | 1 | * | * | C1 = Herbs and spices |
| Lalitpur | 2 | 3 | 3 | 1 | 2 | 3 | 1 | 2 | 2 | 1 | 0 | 1 | **21** | **1** | C2 = Tourism |
| Madhyapurthimi | 1 | 2 | 2 | 2 | 1 | 2 | 1 | 2 | 0 | 3 | 0 | 1 | 17 | 4 | C3 = Carpet weaving |
| Bhaktapur | 1 | 3 | 3 | 3 | 1 | 3 | 1 | 2 | 1 | 2 | 0 | 1 | **21** | **2** | C4 = Power/handlooms |
| Kirtipur | 1 | 2 | 3 | 3 | 0 | 2 | 0 | 1 | 2 | 0 | 0 | 0 | 14 | 5 | C5 = Cut flowers |
| Banepa | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 10 | 7 | C6 = Jewelry making |
| Dhulikhel | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 11 | 7 | C7 = Fruits |
| Panauti | 2 | 2 | 2 | 2 | 1 | 2 | 1 | 2 | 0 | 0 | 0 | 0 | 14 | 5 | C8 = Vegetables |
| Bidur | 2 | 1 | 2 | 1 | 2 | 1 | 1 | 2 | 1 | 0 | 2 | 2 | **17** | **3** | C9 = Dairy products |
| Bhimeswar | 3 | 1 | 1 | 1 | 0 | 0 | 2 | 1 | 2 | 0 | 0 | 0 | 11 | 6 | C10 = Pottery items |
| **Total** | 16 | **20** | **21** | 18 | 11 | **19** | 10 | 16 | 10 | 7 | 3 | 6 | | | C11= Fishery |
| **Index** | 5 | **2** | **1** | 4 | 6 | **3** | 7 | 5 | 7 | 8 | 10 | 9 | | | C12 = Mushroom, strawberry |

| | |
|---|---|
| **Vegetables** | Cabbage, cauliflower, tomato, radish, beans, vegetable seeds, etc. |
| **Fruits** | Apple, citrus, *lapsi* |
| **Spices** | Ginger, turmeric, cinnamon |
| **Dairy products** | Milk, cheese, butter and ghee, pork, Angora (wool) |
| **Herbs** | *Allo* and *puwa* for clothes, *lokta* for Nepali paper, *Chiraito*, *Pakanbed*, silkworm, *Panch aunle, Jatamasi, Bikhima, Silajit* |
| **Cottage industry** | Dhaka items, handloom |

## Step III: Competitiveness of Industries/Businesses (continued)

### Table A2.3.5: Growth Potential Commodity Index: Urban Economic Region 5

| Municipality | $X_1$ | $X_2$ | $X_3$ | $X_4$ | $X_5$ | $X_6$ | $X_7$ | $X_8$ | $X_9$ | $X_{10}$ | $X_{11}$ | $X_{12}$ | Total | Rank | Commodities Index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Butwal | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 1 | 2 | 2 | **19** | **1** | C1 = Herbs and spices |
| Siddarthnagar | 1 | 3 | 0 | 0 | 2 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 17 | **2** | C2 = Tourism |
| Tansen | 2 | 2 | 1 | 3 | 1 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 13 | 3 | C3 = Carpet weaving |
| Kapilbastu | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 2 | 1 | 2 | 0 | 2 | 12 | 4 | C4 = Handlooms |
| Ramgram | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | **17** | **2** | C5 = Cut flowers |
| **Total** | **8** | **9** | 3 | 5 | 7 | **9** | 6 | 7 | 6 | 7 | 4 | 7 | | | C6 = Jewelry making |
| **Rank** | **2** | **1** | 7 | 5 | 3 | **1** | 4 | 3 | 4 | 3 | 6 | 3 | | | C7 = Fruits |
| | | | | | | | | | | | | | | | C8 = Vegetables |
| | | | | | | | | | | | | | | | C9 = Dairy products |
| | | | | | | | | | | | | | | | C10 = Cereals |
| | | | | | | | | | | | | | | | C11= Mustard |
| | | | | | | | | | | | | | | | C12 = Sugarcane |

| | |
|---|---|
| **Vegetables** | Cabbage, tomato, radish, beans, vegetable seeds |
| **Fruits** | Banana, orange, papaya, lemon, papaya |
| **Spices** | Ginger, turmeric, cinnamon, etc. |
| **Dairy products** | Milk, butter and ghee, pork |
| **Herbs** | *Allo* and *Puwa* for clothes, *Lokta* for Nepali paper, *Chiraito, Pakanbed,* silkworm, *Panch aunle, Jatamasi, Bikhima, Silajit,* etc. |
| **Cottage industry** | Dhaka (typical cotton) items, handloom |

## Table A2.3.6: Growth Potential Commodity Index: Urban Economic Region 6

| Municipality | $X_1$ | $X_2$ | $X_3$ | $X_4$ | $X_5$ | $X_6$ | $X_7$ | $X_8$ | $X_9$ | $X_{10}$ | Total | Index | Commodities Index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pokhara | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 0 | 3 | 20 | **1** | C1 = Herbs and spices |
| Baglung | 2 | 1 | 2 | 2 | 2 | 2 | 1 | 0 | 1 | 0 | 13 | **3** | C2 = Tourism |
| Lekhnath | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 3 | 16 | **2** | C3 = Carpet weaving |
| Putalibazaar | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 7 | 6 | C4 = Power/handlooms |
| Waling | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 7 | 5 | C5 = Cut flowers |
| Prithvinarayan | 1 | 2 | 1 | 1 | 2 | 1 | 2 | 0 | 0 | 0 | 10 | 4 | C6 = Jewelry making |
| **Total** | 8 | 9 | 9 | 8 | 10 | 8 | 8 | 3 | 4 | 6 | | | C7 = Fruits |
| **Index** | 4 | **2** | **3** | 4 | **1** | 4 | 4 | 7 | **6** | 5 | | | C8 = Vegetables |
| | | | | | | | | | | | | | C9 = Dairy products |
| | | | | | | | | | | | | | C10 = Fishery |

| | |
|---|---|
| **Tourism** | Trekking, culture, natural sights, boating, hot-spring spa |
| **Fishery** | Lake, fishlets |
| **Vegetables** | Cabbage, tomato, radish, beans, vegetable seeds |
| **Fruits** | Apple, orange, banana, apricot |
| **Spices** | Ginger, turmeric, cinnamon |
| **Dairy products** | Milk, cheese, butter, and ghee, pork |
| **Herbs** | *Allo* and *puwa* for clothes, Lokta for Nepali paper, *Chiraito, Pakanbed,* silkworm, *Panch aunle, Jatamasi, Bikhima, Silajit* |
| **Cottage industry** | Dhaka (typical cotton) items, handloom |

## Step III: Competitiveness of Industries/Businesses (continued)

### Table A2.3.7: Growth Potential Commodity Index: Urban Economic Region 7

| Municipality | $X_1$ | $X_2$ | $X_3$ | $X_4$ | $X_5$ | $X_6$ | $X_7$ | $X_8$ | $X_9$ | $X_{10}$ | $X_{11}$ | $X_{12}$ | Total | Index | Commodities Index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nepalganj | 3 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 1 | 2 | **22** | **1** | C1 = Herbs and spices |
| Birendranagar | 2 | 1 | 0 | 2 | 1 | 1 | 1 | 0 | 1 | 1 | 2 | 1 | 13 | 4 | C2 = Tourism |
| Tribhuvannagar | 2 | 1 | 0 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | **21** | **2** | C3 = Carpet weaving |
| Tulsipur | 2 | 0 | 0 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | **17** | **3** | C4 = Honey |
| Gulariya | 1 | 0 | 0 | 1 | 2 | 1 | 1 | 2 | 1 | 2 | 1 | 2 | 14 | 5 | C5 = Cut flowers |
| Narayan | 2 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 7 | 6 | C6 = Jewelry making |
| **Total** | **12** | 4 | 1 | **11** | 7 | 7 | 8 | 8 | 8 | 9 | **10** | 9 | | | C7 = Fruits |
| **Index** | **1** | 7 | 8 | **2** | 6 | 6 | 5 | 5 | 5 | 4 | **3** | 4 | | | C8 = Vegetables |
| | | | | | | | | | | | | | | | C9 = Dairy products |
| | | | | | | | | | | | | | | | C10 = Cereals |
| | | | | | | | | | | | | | | | C11= Mustard |
| | | | | | | | | | | | | | | | C12 = Sugarcane |

| | |
|---|---|
| **Road and transports network** | Link production and/or marketing centers by roads, electric ropeway lines to tourist spots, fast track link to Nepalganj, road link to nearest Indian Asian highway from Dhangadhi; expansion of Dhangadhi airport to link to mountain spots |

| | |
|---|---|
| **Vegetables** | Parwar, Pea, Pumpkins, Radish, Tomato, Beans, Cabbage, Cauliflower, Cucumber, Green chili, *Lauka, Pidalu* |
| **Fruits** | *Amala,* Banana, Lemon, Litchi, Mango, Orange, Watermelon |
| **Spices** | Ginger, turmeric, cinnamon |
| **Dairy products** | Milk, cheese, butter, ghee, pork, Angora (wool) |
| **Herbs** | Amala, *chiraito, Guchhichyau, Jatamasi, Nirmasi, Ritha, Silajit, Sutho, Tejpat, timur, yarsagumba,* walnut |
| **Cottage industry** | Handloom |

## Table A2.3.8: Growth Potential Commodity Index: Urban Economic Region 8

| Municipality | $X_1$ | $X_2$ | $X_3$ | $X_4$ | $X_5$ | $X_6$ | $X_7$ | $X_8$ | $X_9$ | $X_{10}$ | $X_{11}$ | $X_{12}$ | Total | Index | Commodities Index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dhangadhi | 3 | 3 | 0 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 22 | **1** | C1 = Herbs and spices |
| Mahendranagar | 2 | 1 | 0 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 14 | **3** | C2 = Tourism |
| Tikapur | 2 | 1 | 0 | 1 | 2 | 0 | 0 | 2 | 1 | 3 | 2 | 2 | 16 | **2** | C3 = Carpet weaving |
| Dipayalsilgadhi | 3 | 3 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 10 | 4 | C4 = Honey |
| Amargadhi | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 1 | 0 | 7 | 6 | C5 = Cut flowers |
| Dasarathchand | 3 | 1 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 8 | 5 | C6 = Jewelry making |
| **Total** | **15** | **9** | 1 | **10** | 4 | 3 | 5 | 5 | 4 | 8 | 7 | 6 | | | C7 = Fruits |
| **Index** | **1** | **3** | 10 | **2** | 8 | **9** | **7** | 7 | 8 | 4 | 5 | 6 | | | C8 = Vegetables |
| | | | | | | | | | | | | | | | C9 = Dairy products |
| | | | | | | | | | | | | | | | C10 = Cereals |
| | | | | | | | | | | | | | | | C11= Mustard |
| | | | | | | | | | | | | | | | C12 = Sugarcane |

| | |
|---|---|
| **Non-timber forest products/ Herbs** | *Amala, chiraito, Guchhichyau, Jatamasi, Nirmasi, Ritha, Silajit, Sutho, Tejpat, timur, yarsagumba,* walnut |
| **Fruits** | *Amala,* Banana, Lemon, Litchi, Mango, Orange, Watermelon |
| **Vegetables** | *Parwar,* Pea, Pumpkins, Radish, Tomato, Beans, Cabbage, Cauliflower, Cucumber, Green chili, *Lauka, Pidalu* |
| **Spices** | Ginger |

## Step IV: Identification and prioritization of required urban infrastructure

**UDI parameters:** $X_1$ = Road network; $X_2$ = Electricity – regular supply; $X_3$ = Communications; $X_4$ = Business incubation; $X_5$ = Skills and enterprise training – training institute education to promote the potential economic activities/commodities; $X_6$ = Industrial base – labor-based light manufacturing; $X_7$ = Bank – loans for investment; $X_8$ = Market expansion – external markets; $X_9$ = Research and development for planning, policy formulation, and programs; $X_{10}$ = Transport with refrigerator; $X_{11}$ = Irrigation; $X_{12}$ = Cold storage; $X_{13}$ = Farm inputs/cooperatives; $X_{14}$ = Extension services; and $X_{15}$ = Urban governance – an effective and fully responsive system for planned urban development.

## Table A2.4.1: Urban Development Infrastructure Index (Herbs and Spices, Handloom and Vegetables) Biratnagar Region 1

| Urban Centers | $X_1$ | $X_2$ | $X_3$ | $X_4$ | $X_5$ | $X_6$ | $X_7$ | $X_8$ | $X_9$ | $X_{10}$ | $X_{11}$ | $X_{12}$ | $X_{13}$ | $X_{14}$ | Total | Index | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Biratnagar | 2 | 2 | 0 | 0 | 1 | 2 | 2 | 2 | 1 | 0 | 2 | 1 | 1 | 2 | 18 | 0.43 | Index is derived from dividing total score by maximum potential infrastructure (14 x 3 = 42 at equals 1) |
| Dharan | 1 | 2 | 0 | 0 | 1 | 1 | 2 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 11 | 0.26 | UDII (Biratnagar) = 18.42; (Dharan) = 11.42 (Ilam) = 13.42 |
| Ilam | 1 | 2 | 0 | 0 | 2 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 13 | 0.31 | UDII (B) = 0.43; 0.26, 0.31 |
| **Total** | 4 | 6 | 0 | 0 | 4 | 4 | 5 | 4 | 2 | 0 | 4 | 2 | 3 | 4 | 42 | 3 | |

**Notes:**

$X_1$ = Road and transports network: linking production/marketing places by roads, upgrade of airports (regional levels) at Biratnagar and Bhadrapur, electric ropeway lines to tourist spots
$X_2$ = Electricity: regular supply
$X_3$ = Access by nearest road link via Chicken Neck (India) to Bangla sea port
$X_4$ = Dry port at Biratnagar for loading and off-loading
$X_5$ = Skill and enterprise training institutes about promotion and undertaking of the potential economic activities/commodities
$X_6$ = Industrial base: labor-based herbal and spices processing and medicine products, garments and dhaka (special cotton pattern) products manufacturing
$X_7$ = Bank: loan for investment, primarily for self employment generation and public–private partnership activities
$X_8$ = Market expansion – external (oversea) markets chains
$X_9$ = Research and development - exploration of tourism activities, manufacturing
$X_{10}$ = Transport with refrigerator
$X_{11}$ = Irrigation
$X_{13}$ = Farm inputs/cooperatives
$X_{12}$ = Collection centers/Cold storage
$X_{14}$ = Extension service

## Table A2.4.2: Urban Development Infrastructure Index (Herbs and Spices, Fruits and Vegetables) Janakpur Region 2

| Urban Centers | $X_1$ | $X_2$ | $X_3$ | $X_4$ | $X_5$ | $X_6$ | $X_7$ | $X_8$ | $X_9$ | $X_{10}$ | $X_{11}$ | $X_{12}$ | $X_{13}$ | $X_{14}$ | Total | Index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Janakpur | 2 | 1 | 0 | 0 | 2 | 1 | 2 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 12 | 0.29 |
| Kamalamai | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 8 | 0.19 |
| Siraha | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 7 | 0.17 |
| Sum | 4 | 3 | 0 | 0 | 4 | 2 | 4 | 1 | 3 | 0 | 3 | 1 | 3 | 3 | 27 | 1.93 |

**Index**

$X_1$ = Road and transports network: linking production/marketing centers by roads, upgrade of airport
$X_2$ = Electricity: regular supply
$X_3$ = Access to Indian nearest railway head
$X_4$ = Loading and off-loading facility for transshipment of goods at Janakpur
$X_5$ = Skill and enterprise training institutes about promotion and undertaking of the potential economic activities/commodities
$X_6$ = Industrial base: labor-based herbal and spices processing and medicine products manufacturing and fish processing and handling post production management of fruits and vegetables for export
$X_7$ = Bank: loan for investment
$X_8$ = Market expansion: external (oversea) internal markets chain
$X_9$ = Research and development: exploration of potential economic activities, manufacturing
$X_{10}$ = Transport with refrigerator
$X_{12}$ = Collection centers/Cold storage
$X_{11}$ = Irrigation
$X_{13}$ = Farm inputs/cooperatives
$X_{14}$ = Extension service

Tourism - Janaki temple (Hindu pilgrims), Sindhuligadhi (famous historic fort), Suhkoshi river rafting
Fruits = Juanar of Sindhuli, Fish of Janakpur

## Step IV: Identification and prioritization of required urban infrastructure (continued)

### Table A2.4.3: Urban Development Infrastructure Index (Tourism, Cut Flowers and Poultry and/or Fishery) Birganj Region 3

| Urban Centers | $X_1$ | $X_2$ | $X_3$ | $X_4$ | $X_5$ | $X_6$ | $X_7$ | $X_8$ | $X_9$ | $X_{10}$ | $X_{11}$ | $X_{12}$ | Total | Index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bharatpur | 2 | 1 | 0 | 0 | 2 | 2 | 2 | 1 | 1 | 0 | 1 | 1 | 13 | 0.36 |
| Birganj | 2 | 1 | 2 | 0 | 1 | 2 | 2 | 2 | 0 | 0 | 1 | 1 | 14 | 0.39 |
| Hetauda | 1 | 1 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 7 | 0.19 |
| **Total** | 5 | 3 | 2 | 0 | 5 | 5 | 5 | 3 | 1 | 1 | 2 | 3 | 34 | 3 |

**Notes:**

$X_1$ = Road and transports network: production/marketing centers by roads, electric ropeway lines to tourist spots, fast track link and expanded airport (international or regional) to Kathmandu
$X_2$ = Electricity: regular supply
$X_3$ = Convenient access to Kolkota (India) sea port
$X_4$ = Business incubation
$X_5$ = Skill and enterprise training institutes about promotion and undertaking of the potential economic activities/commodities—flowers, poultry, and pond-fish farming
$X_6$ = Industrial base: labor-based flower processing and packaging, and poultry slaughtering and processing manufacturing
$X_7$ = Bank: loan for investment
$X_8$ = Market expansion: external (oversea) markets chain
$X_9$ = Research and development: exploration of tourism activities, manufacturing
$X_{10}$ = Transport with refrigerator
$X_{11}$ = Cold storage/chilling center
$X_{12}$ = Extension service

## Step IV: Identification and prioritization of required urban infrastructure (continued)

### Table A2.4.4: Urban Development Infrastructure Index (Tourism, Carpet/Pashmina, and Jewelry) Kathmandu Region 4

| Urban Centers | $X_7$ | $X_8$ | $X_9$ | $X_{10}$ | $X_{11}$ | Total | Index |
|---|---|---|---|---|---|---|---|
| Lalitpur | 2 | 1 | 0 | 1 | 1 | 14 | 0.42 |
| Bhaktapur | 2 | 1 | 0 | 1 | 1 | 14 | 0.42 |
| Bidur | 0 | 0 | 0 | 1 | 0 | 6 | 0.18 |
| **Total** | 4 | 2 | 0 | 3 | 2 | 34 | 3.1 |

$X_1$ = Road network: road links to rural production centers, fast track lines to Birganj and Pokhara, electric ropeways to tourist spots and hot spring spa in the mountain, religious (Hindu and Buddhist) tourists attraction
$X_2$ = Electricity: regular supply
$X_3$ = Business incubation
$X_4$ = Skill and enterprise training: enterprising and skill training institute about promotion of the potential economic activities/commodities
$X_5$ = Industrial base: labor-based light manufacturing–carpet, Pashmina items and garments
$X_6$ = Bank: loan for investment, encouraging self-employment and public–private partnership
$X_7$ = Market expansion: external (foreign) market chains
$X_8$ = Research and development: based for planning and policies formulation programs
$X_9$ = Transport with refrigerator
$X_{10}$ = Irrigation
$X_{11}$ = Urban governance: effective and full responsive system for planned urban development, tourism

## Step IV: Identification and prioritization of required urban infrastructure (continued)

### Table A2.4.5: Urban Development Infrastructure Index (Herbs and Spices, Tourism, and Jewelry Making) Siddarthnagar Region 5

| Urban Centers | $X_1$ | $X_2$ | $X_3$ | $X_4$ | $X_5$ | $X_6$ | $X_7$ | $X_8$ | $X_9$ | $X_{10}$ | $X_{11}$ | $X_{12}$ | Total | Index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Butwal | 2 | 1 | 1 | 0 | 1 | 1 | 2 | 1 | 1 | 0 | 1 | 1 | 12 | 0.33 |
| Siddarthnagar | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 0 | 0 | 1 | 0 | 12 | 0.33 |
| Ramgram | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 6 | 0.17 |
| **Total** | **5** | **3** | **4** | **0** | **3** | **2** | **5** | **2** | **1** | **0** | **3** | | **30** | **3** |

**Notes:**

$X_1$ = Road and transports network: production/marketing centers by roads, electric ropeway lines to tourist spots, fast track link to Kathmandu and Pokhara; international or regional airports at Lumbini

$X_2$ = Electricity: regular supply

$X_3$ = Access to nearest Indian railway heads

$X_4$ = Loading and off-loading (dry port) facility

$X_5$ = Skill and enterprise training institutes about promotion and undertaking of the potential economic activities/commodities towards demand-based tourism and jewelry making

$X_6$ = Industrial base: labor-based herbal and spices processing and medicine products, curio/jewelry items manufacturing

$X_7$ = Bank: loan for investment, particularly self-employment and public–private partnership activities

$X_8$ = Market expansion: external (oversea) markets chains

$X_9$ = Research and development: exploration of tourism activities, manufacturing

$X_{10}$ = Transport with refrigerator

$X_{11}$ = Extension service for herbs and spices

$X_{12}$ = Collection centers/cold storage

## Table A2.4.6: Urban Development Infrastructure Index (Tourism, Carpet/Pashmina, and Cut Flowers) Pokhara Region 6

| Urban Centers | $X_1$ | $X_2$ | $X_3$ | $X_4$ | $X_5$ | $X_6$ | $X_7$ | $X_8$ | $X_9$ | $X_{10}$ | $X_{11}$ | Total | Index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pokhara | 2 | 1 | 2 | 2 | 2 | 1 | 1 | 0 | 2 | 1 | 1 | 15 | 0.45 |
| Lekhnath | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 6 | 0.18 |
| Baglung | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 7 | 0.21 |
| **Total** | **4** | **3** | **4** | **3** | **4** | **1** | **1** | **0** | **2** | **3** | **3** | **28** | **3** |

**Notes:**

$X_1$ = Road and transports network: road links to flower production centers, fast track lines/expansion of current highway to Kathmandu, Narayanghat, and Butwal, electric ropeways to tourist spots in the mountains, international/regional level airports

$X_2$ = Electricity: regular supply

$X_3$ = Skill and enterprise training: enterprising and skills training institute about promotion of the potential economic activities/commodities

$X_4$ = Industrial base: labor-based light manufacturing and post-harvest management of flowers, apples, and oranges, Pashmina, religious tourists attraction, hot spring spa development in the mountains/trekking areas

$X_5$ = Bank: loan for investment basically for self-employment and public–private partnership activities related to tourism, carpet, cut flowers, and hot spring spa

$X_6$ = Market expansion: external (foreign) market chains

$X_7$ = Research and development: based for planning and policies formulation and programs

$X_8$ = Transport with refrigerator

$X_9$ = Collection centers and cold storage

$X_{10}$ = Extension services for cut flowers

$X_{11}$ = Urban governance: effective and full responsive system for planned urban development, tourism promotion

## Step IV: Identification and prioritization of required urban infrastructure (continued)

### Table A2.4.7: Urban Development Infrastructure Index (Herbs and Spices, Honey, and Mustard) Nepalganj Region 7

| Urban Centers | $X_1$ | $X_2$ | $X_3$ | $X_4$ | $X_5$ | $X_6$ | $X_7$ | $X_8$ | $X_9$ | $X_{10}$ | $X_{11}$ | $X_{12}$ | $X_{13}$ | $X_{14}$ | Total | Index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nepalganj | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 0 | 0 | 2 | 1 | 1 | 1 | 15 | 0.36 |
| Tribhuvannagar | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 6 | 0.14 |
| Tulsipur | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 6 | 0.14 |
| **Total** | 2 | 3 | 1 | 3 | 1 | 3 | 2 | 2 | 0 | 2 | 4 | 1 | 2 | 1 | 27 | 2 |

Notes:

$X_1$ = Road and transports network: link production/marketing centers by roads, electric ropeway lines to tourist spots, fast track link to Butwal; expansion and strengthening airports
$X_2$ = Electricity: regular supply
$X_3$ = Access to nearest Indian railway heads
$X_4$ = Loading and off-loading facility dry port at Nepalganj
$X_5$ = Skill and enterprise training institutes about promotion and undertaking of the potential economic activities/commodities and post-harvesting management
$X_6$ = Industrial base: labor-based herbal and spices processing and medicine products, honey and mustard manufacturing, hot spring spa in trekking spots in the mountains
$X_7$ = Bank: loan for investment, basically for self employment generation and public–private partnership activities
$X_8$ = Market expansion: external (oversea) markets chains
$X_9$ = Research and development: exploration of tourism activities, manufacturing
$X_{10}$ = Transport with refrigerator
$X_{11}$ = Irrigation
$X_{12}$ = Cold storage/collection centers
$X_{13}$ = Farm inputs/cooperatives
$X_{14}$ = Extension service

## Table A2.4.8: Urban Development Infrastructure Index (Herbs and Spices, Tourism, and Honey) Dhangadhi Region 8

| Urban Centers | $X_1$ | $X_2$ | $X_3$ | $X_4$ | $X_5$ | $X_6$ | $X_7$ | $X_8$ | $X_9$ | $X_{10}$ | $X_{11}$ | $X_{12}$ | Total | Index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dhanagadhi | 2 | 1 | 1 | 0 | 2 | 2 | 2 | 1 | 1 | 0 | 1 | 1 | 14 | 0.39 |
| Tikapur | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 5 | 0.14 |
| Mahendranagar | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 6 | 0.17 |
| **Total** | 4 | 3 | 2 | 0 | 4 | 2 | 4 | 1 | 1 | 0 | 1 | 3 | 32 | 3 |

Notes:

$X_1$ = Road and transports network: link production/marketing centers by roads, electric ropeway lines to tourist spots, fast track link to Nepalganj, road link to nearest Indian Asian highway from Dhangadhi; expansion of Dhangadhi airport to link to mountain spots
$X_2$ = Electricity: regular supply
$X_3$ = Access to nearest Indian railway heads
$X_4$ = Loading and off-loading facility at Dhangadhi and Mahendrangar
$X_5$ = Skill and enterprise training institutes about promotion and undertaking of the potential economic activities/commodities, tourism activities, post-harvest management
$X_6$ = Industrial base: labor-based herbal and spices processing and medicine products, honey and mustard manufacturing
$X_7$ = Bank: loan for investment, basically for self employment generation and public–private partnership activities
$X_8$ = Market expansion: external (oversea) markets chains
$X_9$ = Research and development: exploration of tourism activities, manufacturing
$X_{10}$ = Transport with refrigerator
$X_{11}$ = Cold storage/collection centers
$X_{12}$ = Extension services

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