

# Nepal Human Development Report 2014

**Beyond Geography**  
Unlocking Human Potential



Government of Nepal  
National Planning Commission



*Empowered lives.  
Resilient nations.*





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## Message

It is my pleasure to note that the Nepal Human Development Report 2014 has come out with unique features – a different theme, useful data sets and innovations in methodologies and analysis. Indeed, the Report is a huge intellectual contribution to the development debate of Nepal.

This Report focuses on the productive abilities of the regions, households and individuals. The report also reinforces the fact that there are inequalities between and within regions, as well as social groups. It reveals that there is ethnic dimension to the geographic disparity. It also points out human development does not only depend upon access to facilities and productive abilities but also on the opportunities available.

The report rightly recommends strengthening inclusive growth and looking into innovation in development models for problems that defy general economics. Inclusive Growth and innovation in development models are important at this time, as Nepal tries to move out of a long drawn out political transition and its commitment to graduating from Least Developed Country to a Developing Country status by 2022.

While Nepal has already met Economic Vulnerability Index necessary for graduation and about to meet the Human Asset Index, we are far behind in meeting the criteria for Gross National Income. To meet the projected GNI per capita - US\$2,094 - Nepal needs to invest to the tune of 16.7 trillion rupees in terms of the current prices between 2013/14 and 2021/22.

Given the fast pace with which the economy needs to grow – 8% annually - for graduation from a least developed country, Nepal needs to invest in areas that are growing fast like the services sector. And given the inequality, as portrayed by this Human Development Report and the reports published earlier, the state has to focus on agriculture, infrastructure, education, health and the social sector to decrease inequality.

For that Nepal will have to focus on leading sectors like hydro-power, industries, tourism, agriculture and services and make use of economic growth centers identified in this report to spur the growth that the country needs. It further needs to increase the productivity of the population with a focus on health, education and gainful employment of the youth population.



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Prof. Dr. Govind Raj Pokharel  
Vice-chairperson  
National Planning Commission

## Foreword

The productive abilities of citizens are the real assets of a country. With right skill sets, even countries without significant natural endowment succeed to attain high level of development and prosperity. Nepal Human Development Report 2014 'Beyond Geography, Unlocking Human Potential,' traverses a field that has not been fully explored before, namely, variation in productive abilities of different regions, households and individuals. For the first time in almost a decade, the report also provides a wealth of data and information on human development at the district level based on the 2011 population Census and other relevant surveys. The Report comes at a time when the country is making efforts to move out of an extended political transition and has envisioned graduating from a least developed to a developing country by 2022.

The Report presents rigorous statistical analysis across space and time, using the available national data. The large statistical database created in the process, can be used by the Government and other development

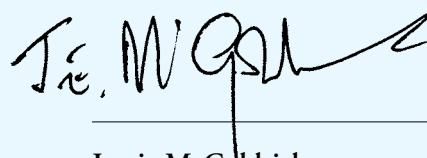
stakeholders to formulate policies and judicious budget allocations to sectors, regions, districts and socio-economic groups. The Report shows that the pattern of regional inequalities in human development as well as productive abilities remains entrenched, but there are indications that the gaps may be narrowing. To reduce the inequalities further, the rate of economic growth has to be enhanced without compromising the essential quality of equality and equity. The Report suggests that fusing of the two dimensions may be relevant in setting a federal development agenda that facilitates a multi-pronged approach to raising productive ability which can ensure sustainable human development.

A report of this nature is always a team effort. We would like to thank the team leader, authors and researchers, the National Planning Commission Secretariat and the United Nations Development Programme staff, as well as the members of the Steering Committee, peer reviewers, both national and international, and many others who in various ways contributed in the preparation of the Report.



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Dr. Som Lal Subedi  
Member-Secretary  
National Planning Commission  
Government of Nepal



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Jamie McGoldrick  
UN Resident Coordinator



# Acknowledgements

The Nepal Human Development Report 2014 is a joint effort of the National Planning Commission and UNDP. However, the findings, analysis and policy recommendations of the Report are those of the authors alone.

In line with UNDP Corporate Policy on national human development reports, the preparation of the Nepal Human Development Report 2014 started after the formation of a NHDR Steering Committee in May 2012 followed by a National Stakeholder Workshop on 22 June 2012 that determined the theme of the report. We are thankful to the leadership of Janak Raj Shah, former member of the National Planning Commission, who chaired the meeting.

Based on feedback and inputs received in the workshop, Basudeb Guha-Khasnobis, Senior Economist, UNDP Nepal, prepared a concept note on assessing Nepal's productive ability and its impact on human development. The concept note was approved by the Steering Committee in November 2012. The Steering Committee also identified a team of authors led by Pitamber Sharma, with Basudeb Guha-Khasnobis and Dilli Raj Khanal as members. The authors were supported by researchers Prakash Shrestha and Pawan Kanel and statistical assistants Tika Gautam and Anwesha Aditya. The team worked in close consultation with the National Planning Commission and UNDP throughout 2013. We would like to acknowledge the intellectual contribution and perseverance of the entire team.

The analysis presented in the report would not have been possible without the support provided by the Central Bureau of Statistics. Grateful acknowledgements are

due to Deputy Director Generals Suman Aryal and Rudra Suwal, and Director Ishwori Prasad Bhandari of the Central Bureau of Statistics.

The team presented the preliminary draft to the Steering Committee meeting on 12 December 2013 for their guidance and inputs. The initial draft was revised based on the inputs of the Steering Committee members. Also, in order to ensure effective participation of various stakeholders and national ownership in finalizing the report, four consultations were organized with 1) representatives of various government ministries and departments, 2) political parties, 3) civil society and the private sector, and 4) development partners on 24-25 February 2014. We thank all the participants of the stakeholder consultations for their valuable feedback.

In parallel, the report went through a peer review process. In addition to 11 national peer reviewers, the UNDP Human Development Report office, the UNDP Regional Bureau for Asia and the Pacific, and the International Centre for Human Development provided valuable feedback. The written comments received from the peer reviewers and comments from stakeholder consultation were incorporated into the report, and the final document was edited by Gretchen Luchsinger.

The report would not have been possible without the continuous support and guidance from the National Planning Commission, particularly Secretary Yubaraj Bhusal and Joint Secretary and National Project Director, Strengthening National Planning and Monitoring Capacity of NPC project, Pushpa Lal Shakya. Joint Secretaries Teertha Raj Dhakal and Gopi Nath Mainali

also contributed to finalizing the Report. Moreover, Rabi Shanker Sainju, Programme Director of NPCS also contributed to initiate the work. The support and follow-up of UNDP Country Director Shoko Noda, Assistant Country Director Heema Khadka, Programme Analyst Dharma Swarnakar; and Communication Analysts John Narayan Parajuli and Tapa Dipti Sitaula from UNDP Nepal was equally invaluable. We also extend our appreciation to Narayan Raj Maharjan, GIS Analyst from the UN Resident Coordinator's Office for producing the necessary maps.

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# Overview

# Overview

Nepal's 2014 Human Development Report assesses productive abilities at different interrelated levels by using the available national data. It indicates the trends in spatial inequalities and outlines the prospects of unlocking the human potential and achieving high-quality inclusive growth.

Nepal Human Development Report 2014 comes at a time when the country is making efforts to move out of an extended political transition and has resolved to accelerate its graduation from a least developed to a developing country by 2022. The importance of inclusive growth and human development to sustain peace, achieved after a long conflict, has been deeply ingrained among all stakeholders. The agenda for the years to come is high-quality growth and equitable development in its broadest sense.

The criteria for graduating from the least developed country category include achievements in per capita gross national income (GNI), the Human Assets Index and the Economic Vulnerability Index.<sup>1</sup> Increasing the growth rate from the current level of below 4 percent is indispensable, without compromising the essential quality of inclusiveness. At the same time, Nepal needs to maintain recent gains on some of the sub-indicators for the human assets and economic vulnerability indexes, and address shortfalls on some others.

With this background, the central theme for the present Nepal Human Development Report—the spatial dimensions of productive abilities—was developed jointly with the National Planning Commission and other relevant stakeholders. The report aims to assess productive abilities at different, interrelated levels. The measures of abilities developed in this report suggest how much capacity the Government has to accomplish high and inclusive growth in the coming years and indicate the extent to which current

capabilities are being translated into measurable outputs.

The report presents a rigorous statistical analysis across space and time, using the available national data. Since there is currently no single, universally accepted definition or measure of productive ability, the report asserts that this can be reflected, directly or indirectly, by a number of indicators. The large statistical database created in the process, it is hoped, may be used by the Government and other development stakeholders to target policies and rationalize budget allocations to sectors, regions, districts and socio-economic groups.

## Structure of the report

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The report is organized in six chapters. **Chapter 1** introduces it in the context of previous Nepal Human Development Reports and defines, for analytical purposes, nine eco-development regions, instead of the 15 conventional ones.

**Chapter 2** presents the standard human development indexes at the district level, for the first time in a decade; at the regional level; and, data permitting, at the level of various social groups. The indexes include the well-known Human Development Index (HDI) and its variations including caste/ethnic and gender dimensions, as devised by the global Human Development Report. All of these emphasize looking beyond income as an indicator of development. Their values reflect the effects of past policies in strengthening human

capital, which is expected to contribute positively to any indicator of productive ability. The overall picture that emerges is that HDI values are improving, but inequalities among regions and social groups remain mostly intact, although there are signs that some of these may be narrowing. The analysis also points to specific caste, ethnic and geographic dimensions of persisting inequalities.

**Chapter 3** features an innovation in measuring potential productive ability. The HDI and related indexes are essentially based on individuals. While important in their own right, these measures can be complemented by plausible indicators of productive ability that treat regions and households as units. The chapter constructs a regional access to facilities index for each of the nine eco-development regions and analyses trends over the past two decades. The index is essentially a composite measure of the ease with which households can access certain facilities that are covered by Nepal Living Standards Survey and are critical for well-being. From a policy perspective, the index may be used to guide resource allocations for infrastructure to make Nepal's diverse regions more comparable in the pursuit of inclusive growth and development.

The chapter also constructs a household well-being index for all households covered by successive survey rounds. This index is based on all information in the surveys that reflects, directly or indirectly, the overall socio-economic well-being of a household. The index is analysed along a number of dimensions, including regional, rural and urban, male- and female-headed households, and so on. Additionally, it is classified according to caste and ethnicity. It helps make the basic argument that an individual's productive ability is significantly affected by the well-being of the household s/he comes from. Improving household well-being through appropriate policies, therefore, indirectly improves the nation's productive ability.

The report shows that there has been no change in the ranking of regions by the regional and household indexes over time; lagging regions continue to lag. While inequalities among different social groups remain, these inequalities may be narrowing, however.

**Chapter 4** estimates sectoral labour productivity as well as total factor productivity of the manufacturing sector at the regional and industry levels, on the basis of available Census and survey information. These two well-known measures of actual productivity provide a broad picture of the level of and inequalities in productivity at regional levels, and indicate the context within which individual and household productive abilities need to be appreciated. Analysis of these measures could guide policy choices, since they identify sectors and regions where productivity is already high, and that in principle may serve as engines and epicentres of growth. The report also identifies exceptional regions with a mismatch between indicators of human development and productive ability, mainly in the Eastern and Central Tarai. Rectification of the mismatch is needed in order to achieve high and inclusive development.

**Chapter 5** constructs a youth ability index at the individual level for the population group aged 15-39, based on all three Nepal Living Standards Surveys. It examines trends along many relevant dimensions, with an information set much larger than that used by the HDI and related indexes. The youth ability index includes the personal characteristics of individuals, such as health, education and possible indicators of psychological well-being, albeit limited by data, and the status of the household s/he comes from. Household capital, proxied by the well-being index calculated in Chapter 3, is included as a determinant of the potential productivity of an individual. Statistical analysis reveals a high degree of inconsistency between the potential productive ability of youth, and the type and hours of work they seem to be per-

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**To achieve high and inclusive growth the mismatch between indicators of human development and productive ability has to be rectified.**



forming. To reap the demographic dividend<sup>2</sup> of a young population, this ought to be addressed quickly.

Chapter 6 presents major conclusions and policy recommendations emanating from the analysis. It calls for pursuing policies to accelerate the narrowing of regional inequalities in human development as well as productive abilities. It urges focusing on lagging regions, expanding the reach of inclusive policies, prioritizing urban management and rural-urban linkages, and preparing for opportunities presented by the demographic dividend.

## Major findings

By focusing on spatial inequalities in human development and the productive abilities of people, this report presents a picture that is both sobering and encouraging. The status quo of gaps in regional human development and productive abilities persists, but inequali-

ties seem to be narrowing. This indicates the need to maintain, but with renewed vigour, the path of inclusive growth and development, encompassing all regions as well as socio-economic groups that have been left behind. The pace of economic growth needs to accelerate, and be accompanied by large-scale employment generation and enhanced productivity in sectors such as high-value agricultural niches, industry and infrastructure development. These efforts should in part be oriented towards harnessing the tremendous vibrancy and energy of a growing population of young people.

Innovative statistical analysis combining the spatial and ethnic dimensions of productive ability makes the critical point that ethnicity, on which the current political discourse is primarily focused, has a spatial dimension. The report suggests that a fusing of the two dimensions may be relevant in setting a federal development agenda focused on a multi-pronged approach to raising productive ability and accelerating human development.

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**The pace of economic growth needs to accelerate and be accompanied by large scale employment generation and enhanced productivity.**

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1 The former is based on two education and two health indicators; the latter on eight indicators of different sectors related to the structural aspects of the economy.

2 The demographic dividend generally refers to the process of accelerated economic growth that accompanies changes in the age structure of a country's population as it moves from high to low birth and death rates, resulting in fewer young and older people relative to the working-age population.



CHAPTER 1

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# Enhancing Productive Abilities of People and Regions

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# 1.

## Enhancing Productive Abilities of People and Regions

The route to poverty alleviation and human development involves building up basic capabilities and enhancing the productive abilities of people. Inclusivity is best anchored in fair and comparable distribution of productive abilities.

Since the publication of the first global Human Development Report in 1990, the concept of human development has provided the most compassionate yardstick to assess people's progress. The idea that development has no meaning except with reference to the human being and the sum total of who s/he is, and what s/he is capable of, has been profoundly challenging to notions of development based solely on incomes and economic growth.

The distinctiveness of human development is the focus on people's well-being, through the expansion of human capabilities and choices to live full, creative lives with freedom and dignity. Capabilities or potential abilities to achieve valuable functionings define the life of an individual, or collectively a community or nation. This perception has opened new vistas in assessing development and exploring pathways for progress. The human development perspective provides a basis for development priorities that include principles such as equality and sustainability, and the pursuit of better health, education, information, security, quality of life, governance, political and social freedoms, participation and inclusion, and so on for every citizen, not just the majority.

Successive Nepal Human Development Reports have assessed the status of human development at national, regional and district levels, while focusing on specific themes of contemporary relevance. The first report in 1998 was grounded in a political economy

perspective, and preceded from an analysis of basic development structures and processes, including aspects of natural and human resources, economy, polity and culture. It recommended a series of actions to reorient society, polity, the economy and public finances that were seen as imperative to human development. The 2001 report considered poverty reduction and governance, with persistent poverty seen as a direct result of weak governance institutions and ineffective implementation of programmes and policies. The report recommended reforms in administrative and fiscal decentralization, and called for enhancing local governance, encouraging local government and NGO partnerships, and promoting the empowerment of marginalized groups.

The 2004 Report examined poverty reduction from an empowerment perspective, emphasizing equal opportunities for all. It advocated building empowerment on three pillars: people-responsive state institutions, removal of social barriers and discrimination, and stronger local organizational capacity and social capital. For the 2009 Report, on state transformation and human development, persistent inequality in human development was identified as both the cause and effect of exclusion. Different options were explored in restructuring the state and reforming the political system to accommodate the interests of different groups. A 10-point agenda proposed federalism to foster social justice, inclusion and participation that would result in lasting peace and human development.

## Capability, inclusive growth and a productive economy

All of Nepal's Human Development Reports have highlighted the persistence of inequality and poverty, and advocated policy and institutional initiatives to promote inclusion and empowerment. These issues resonate strongly in Nepal. From a capability perspective, poverty is a basic "capability failure" in achieving "certain crucially important functionings up to a certain minimally adequate level" (Sen 1993, p. 4). The route to poverty alleviation involves building up basic capabilities through the addition and/or enhancement of crucially important functionings.

There is no consensus on what basic capabilities are, or should be, however, and whether or not, given human diversity and associated value judgments, such a list, if drawn, can be universally accepted. While discourse on this approach is relatively rich at the conceptual and philosophical levels, operational guidance remains limited. A critical constraint in producing an empirical measure is that household surveys are not typically designed to capture the required broader information set.

Similarly, the concepts of inclusive growth and inclusive development do not have universally accepted operational measures. If one were to emerge, it would have to comprise a sense of the distribution of well-being, reduction in inequality and poverty, and the availability and distribution of opportunities.

In general, inclusion, or the lack of it, factors into the process through which growth or development happens. Inclusive growth is seen as reducing disadvantages, expanding opportunities and discouraging exclusion, and is non-discriminatory. Inclusive development subsumes non-income dimensions of well-being, and includes distribution not only across individuals, but also across groups differentiated by gender, ethnicity, regional location, and so on. The hallmarks of inclusive growth are wider participation and benefit sharing, and the breaking of discriminatory barriers to create a more level playing field. Openness, transparency, proportional representa-

tion and recognition, just and equal distribution, and redistribution of opportunities and achievements are conditions fostering inclusive development.

Enhanced functionings and abilities of individuals and groups in general, and of the more disadvantaged and marginalized populations as well as regions<sup>1</sup> in particular, are the building blocks of a more inclusive, participatory society. For countries like Nepal, where provision of productive employment opportunities is a major challenge, inclusive development also needs to be broadly based across economic sectors, and involve a large part of the country's labour force, especially youth aged 15-39 years.<sup>2</sup> An indispensable requirement for targeted policy intervention is sufficiently disaggregated evidence on productive abilities reflected in the socio-economic status of households and individuals, as well as the development status of regions. This requires an assessment of ground conditions related to these measures.

For poverty reduction, inclusive growth and development to be economically and politically sustainable, Nepal cannot rely only upon foreign aid, remittances, or other redistributive and transfer measures. Inclusivity is best anchored in fair and comparable distribution of productive capabilities where human beings, the "ultimate resource," show their ingenuity and productivity. Inclusive growth achieved in this way is rooted in the productive economy, and therefore likely to be self-sustaining.

This direction is particularly important for Nepal, given the many limits on the potential for transfer mechanisms, including administrative and governance bottlenecks, and the significant number of economic activities remaining outside the market system. Further, Nepal is presently in the midst of a political transition. In spite of the differing ideological positions of political parties, the emerging consensus seems to be that while the role of the state will remain crucial in areas such as education, health, infrastructure development and social security, market-based approaches can be effective in achieving and sustaining growth over

**Inclusive growth rooted in the productive economy is likely to be self-sustaining.**

the long run. Where the scope of redistribution may be limited, the emphasis should be on affirmative action as a mechanism for enhancing the productive potential of disadvantaged groups.

## Report objectives

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Since the adoption of democracy in 1990, Nepal has pursued several strategies to address multidimensional human development, inclusivity and growth. The present political transition notwithstanding, the efforts of the Government, supported by development partners, have broadly been to accelerate aggregate growth through investments in social and physical infrastructure, and create enabling institutional mechanisms. Efforts are also ongoing to develop the rule of law and the democratic character of institutions at all levels. However, structural problems related to control over and access to resources remain largely unaddressed.

This report attempts to assess productive capability at the levels of regions, households and individuals, as determined by development efforts of the past two decades or so. Based on available data, the report creates a comprehensive information set, at suitably disaggregated levels, that could guide policy interventions towards inclusive growth and development in the coming years. The set is preliminary because it takes into account only certain indicative aspects of the production structure of Nepal. It does not explicitly account for regional resource endowments, except as these are reflected in factor productivity. In due course, richer data sets may be available to address the possible limitations of the measures used here.

One aspect of regional productive abilities is reflected in the status of labour and total factor productivity, discussed in chapter 4 of the report. The other aspect, regional development status, is indicative of access to social, economic and physical infrastructure, as detailed in chapter 3. Measures of the productive abilities of households and individuals

developed in chapters 3 and 5 are closer to the concepts of “well-being” and “ability” status commonly used in development economics. Broadly speaking, well-being involves many dimensions: education and occupation of family members and the welfare of the household as a measure of goods and services accessibility. Measures of well-being usually serve as an input to other analyses such as of inequality or poverty; tabulation of population characteristics by quintiles or deciles; or regressions that involve welfare as an explanatory or dependent variable, and aim at explaining, for example, household health status. In policy-oriented applications, these measures are also utilized to make decisions regarding the allocation of resources and programmes to benefit the poor.

## The regional framework

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The report focuses on spatial inequalities in productive abilities primarily at the regional level. With the adoption of the development region concept after its Fourth Plan (1970-1975), Nepal has, for analytical purposes, been divided into three east-west or latitudinal ecological regions (Mountains, Hills and Tarai), and five development regions (Eastern, Central, Western, Mid Western and Far Western) oriented from north to south. A combination of the two yields 15 eco-development regions. Districts, not village development committees, are the primary units for inclusion in the ecological and development regions, irrespective of the fact that a number of Mountain districts include areas with ecological attributes typical of the Hill region.

The idea behind the eco-development regions was that they would be regarded as having specific resource and spatio-economic attributes, with implications for subregional planning, resource mobilization and policy formulation. The experience of the past several decades indicates that while the eco-development regions have continued to be used as the framework for subregional data present-

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**Measures of well-being serve as input to analysis of inequality and poverty.**

tation and analysis, the subregions themselves have been neither planning units nor units of policy analysis. The case of the Central Hills region elucidates the fallacy of this framework, as the indicators of the Kathmandu Valley simply overwhelm those for other districts. The concept of 15 eco-development regions has been redundant for all practical purposes of policy and programme formulation and assessment.

In this report, the 15 eco-development region framework is used for presenting human development data for the sake of comparison with the previous reports. To facilitate a more realistic analysis of human development, as well as other productivity-related indicators, including the Human Development Index (HDI), a nine eco-development region framework is also utilized. This basically treats the three Kathmandu Valley districts as one unit, and clubs together the Mountains, Hills and Tarai of the Eastern and Central eco-development regions, and the Mid Western and Far Western eco-development regions.

The nine regions, with the number of districts in parentheses, are: the Eastern and Central Mountains (6), the Eastern and Central Hills (14), the Eastern and Central Tarai (12), the Kathmandu Valley (3), the Western Hills (11), the Western Tarai (3), the Western, Mid Western and Far Western Mountains (10), the Mid Western and Far Western Hills (11), and the Mid Western and Far Western Tarai (5).

The nine-region framework was used to recognize the Eastern and Central Tarai, the Kathmandu Valley, and the Mid Western and Far Western Hills and Mountains as distinct regional entities by virtue of their location, human development and productive potential, as well as their socio-ethnic characteristics, and their status in Nepal's political economy. It also facilitates use of Nepal Living Standards Survey data, the basis of much of the forthcoming analysis, and does not deviate too much from the 15-region framework. The nine-region

breakdown serves only as an analytical device to portray spatial inequalities in Nepal.

While it would have been more desirable to include the Western Mountains as a separate region, this was not possible for the simple reason that each eco-development region needs to have enough data-points for survey information to be representative. With the Nepal Living Standards Survey data, the Western Mountains region has no data-points; it was therefore combined with the Mid Western and Far Western Mountain regions. Almost all districts in the Western, Mid Western and Far Western Mountain regions lie in the high Himalayas and the trans-Himalayan area. The Western Mountain districts of Manang and Mustang have a demographic and economic profile quite different from the Mid Western and Far Western Mountains by virtue of relatively small populations, higher levels of migration, remittance income and the impact of tourism. Wherever possible, data for the Mid Western and Far Western Mountains have been provided separately to account for this difference.

## Salient features of the analysis

Several salient features of the Report's empirical analyses deserve attention upfront. First, the HDI and total factor productivity estimates compare the actual status of economic and development outcomes across the nine regions. These are cross-sectional estimates, and can be used only for comparisons at specific time periods on which the data are based.

Second, the regional, household and individual indexes are derived from principal component analysis and are embedded in the domain of "potential." For example, the regional access to facilities index shows how easy or difficult access is/was for households. It does not indicate whether or not or how often households use the facilities. Its purpose is to examine whether or not gaps in the develop-

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**The nine-region framework is used only as an analytical device to portray spatial inequalities.**

ment status of regions have narrowed or widened in the past 20 years, and which dominant facilities define development status.

Third, the household well-being index is based on the premise that multiple characteristics<sup>3</sup> need to be factored into an assessment of the potential strength or resilience of a household. These characteristics are derived both from public investment, such as in access to facilities, and a whole range of private investments that the household undertakes over time. Examining trends over time and across groups gives a sense of how effective various endeavors by the Government have been in strengthening as well as equalizing household status.

High and comparable productive status is a prerequisite for eventual inclusive income or consumption growth. The household well-being index serves, in principle, two purposes: It reflects the impact of both government and household efforts in shaping the comparative well-being of households over time; and it is a key indicator of the possible contribution of the status of the household in expanding (or contracting) an individual member's potential. Putting it simply, two individuals with identical health, education and other personal characteristics often face different opportunity sets depending on the household they come from.

Fourth, most existing global measures of human development are designed under the binding constraint of having to use only those dimensions that have reliable data and are comparable across all countries. In a national context, it is possible to use a much larger information set relevant to the measurement of

development at various levels: regional, household and individual. Another issue linked to the constraint of international comparability is that even within the limited set of indicators, weights are usually assigned in a pre-determined manner. In this report, principal component analysis addresses these potential drawbacks by using every piece of information carefully collected by Nepal Living Standards Survey, and deriving optimal, not pre-determined, weights for each variable entering the construction of indexes.

Fifth, the three rounds of Nepal Living Standards Survey provide the only available data set for inter-temporal analysis. The surveys were not necessarily designed to fully address the questions asked in this report. Nevertheless, they provide a reasonable description of access to facilities by region and information on household indicators of well-being.

Finally, the index on the productive ability of individuals should not be viewed as a capability index, because the survey on which it was based was not designed to capture the conceptual details of this approach. The index goes beyond the personal characteristics of an individual and incorporates household status as an important determinant of a person's potential. Household status itself is a composite of a wide range of variables. At best, it is an instrument for or an indicator of how a person's opportunity set is determined. The logical connection between the access to facilities, household well-being and individual ability indexes is explained in chapter 3.

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**Nepal Living Standards Survey data set used for inter-temporal analysis provide a reasonable description of productive ability.**

<sup>1</sup> Given the extremely diverse topography of Nepal, with some remote and inaccessible areas, uniform development of various regions is critical for eventual inclusive growth.

<sup>2</sup> According to Nepal's Youth Policy, people aged 16-40 are classified as youth. For this Report, we have used greater than 15 and less than or equal to 40 year olds as the working age group.

<sup>3</sup> See annex 6, table A6.2.



CHAPTER 2

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# Progress in Human Development

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# 2.

## Progress in Human Development

The human development index values for all ecological and development regions have improved over time. Comparative improvements are also seen in gender development index and gender empowerment measures across regions. Overall, the human poverty situation has improved. However, the disparities among geographical regions and ethnic groups remain entrenched though there are indications that the gaps may be narrowing.

Human development in Nepal, at various disaggregated spatial and social group levels, has been reported in successive Nepal Human Development Reports since 1998. Slight methodological changes notwithstanding, Human Development Index (HDI) values are more or less comparable over time. They reveal both inequalities in human development across geographical regions and social groups, and the extent and direction of progress. The status of human development can then be appreciated in the context of economic, social and political policies pursued by the State.

This chapter presents the HDI and its well-known companion indexes. Chapters 3 and 5 offer comparative perspectives by exploring how various aspects of human development relate to the productive potential of regions and people.

### Measuring human development

Human development is fundamentally concerned with expanding people's choices, which has multiple dimensions and can be quite complex. This problem was simplified by the global Human Development Report's introduction of the HDI as a simple composite index. Similar indexes include the Gender-related Development Index (GDI), the Gender Empowerment Measure (GEM) and the Human Poverty Index (HPI). These easily understood measures indicate the state of people's lives in various dimensions.

The HDI reflects average achievements in three respects:

- A long and healthy life, measured by life expectancy at birth;
- Knowledge, measured by adult literacy and mean years of schooling; and
- A decent standard of living, measured by GNI per capita in purchasing power parity (PPP\$).

For this report, the HDI has been calculated for:

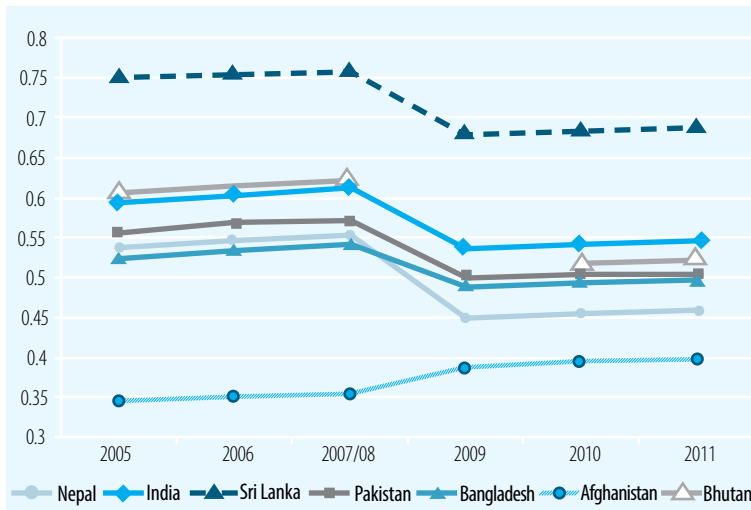
- The whole country;
- Urban and rural areas;
- Three ecological regions;
- Five development regions;
- Fifteen eco-development regions (resulting from the three ecological regions and five development regions);
- Nine eco-development regions (as defined in chapter 1);
- Districts; and
- Eleven caste and ethnic groups, comparable with previous reports, with additional values for selected groups.

HDI values by district are calculated using the latest available data. This comprises 2011 Census data for health and education indicators, and, for the first time in the income calculation, new national accounts estimates of the Central Bureau of Statistics (2011) for per capita GNI in PPP\$. Data from the 2011 National Living Standards Survey have been used to compute income for caste and ethnic groups. For full details on data sources, see annex 1.

The concept and computation of the HDI and related indexes is presented in annex 2. Caste/ethnic classification is presented in annex 3.

FIGURE 2.1

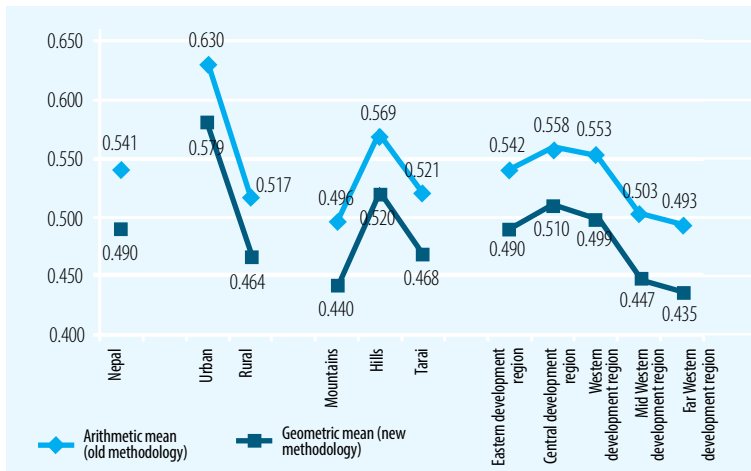
HDI trends for SAARC countries, 2005-2011



Source: UNDP 2009, 2011.

FIGURE 2.2

Regional HDI values based on the old and new methodologies, 2011



Source: Annex 4, table A4.1.

### Comparing South Asian nations on the HDI

The HDI score for Nepal in 2011 is 0.458, the lowest ranking among the countries of the South Asian Association for Regional Cooperation (SAARC), aside from Afghanistan (figure 2.1). Since 2007-2008, Bangladesh has moved ahead of Nepal. Despite Nepal ranking second in terms of life expectancy at birth and improvements in education indicators, it still has a low level of per capita income. With higher scores in all three dimensions, Sri Lanka leads the SAA-

RC countries on the HDI, followed by India in the second place, Bhutan in the third and Pakistan in the fourth. Poor education and health status are the major factors for India's relatively low score overall.

### Regional HDI values for 2011

The 2010 global Human Development Report changed the way of calculating the HDI, from using an arithmetic to a geometric mean. This method yields a lower HDI value compared to similar values reported in 2006 nationally and across all regions. Nepal's national HDI value, based on the geometric mean, is 0.490 for 2011, compared to 0.541 for 2011, using the arithmetic mean. Values obtained by the two methods for the country, urban and rural areas and ecological and development regions are provided for comparison in figure 2.2.

However, irrespective of the methodology, and in spite of changed HDI values, the overall HDI pattern remains similar across all regions, with no changes in rank.

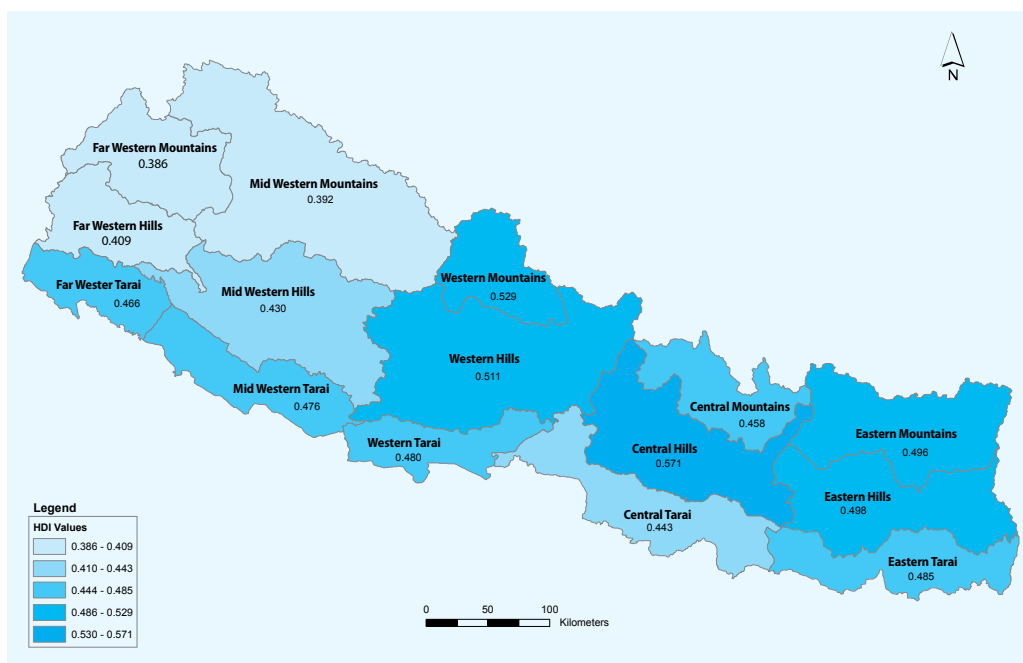
Using the more robust method of the geometric mean for 2011 HDI calculations, among the ecological regions, the Hills has the highest HDI value at 0.520, compared to the Tarai at 0.468 and the Mountains at 0.440. Within the development regions, the Central region, at 0.510, ranks at the top, followed by the Western, Eastern, Mid Western and Far Western regions (annex 4, figure A4.1).

The lowest HDI value is for the Mountains, at 0.440. This is primarily due to low scores for life expectancy in the region's five districts, Dolpa, Jumla, Kalikot, Bajura and Humla. This region includes two districts with the lowest values for education, Humla and Mugu, and three districts with the lowest values for income, Bajhang, Bajura and Kalikot.

Among the development regions, the Far Western region at 0.435 and the Mid Western region at 0.447 have the lowest HDI values, reflecting very low scores in all three dimensions. The highest value for the Central region at 0.510 results from high scores in education and

## MAP 2.1

### HDI values across the 15 eco-development regions, 2011



Source: Annex 4, table A4.1

higher per capita income, mainly in Kathmandu, Lalitpur, Bhaktapur and Manang districts. Ramechhap and Gorkha districts score high in life expectancy (annex 4, table A4.1).

Among the 15 eco-development regions, the Central Hills has the highest HDI score at 0.571, and the Far Western Mountains the lowest at 0.386. In the Tarai, the Eastern Tarai has the highest value at 0.485; the Central Tarai the lowest at 0.443. Among the Hill regions, the Far Western Hills has the lowest HDI score, at 0.409. For the Mountains, Western Mountains fares better at 0.529 by virtue of higher incomes in Manang and Mustang. Far Western Mountains lags behind at 0.386, largely due to low educational level and per capita income (map 2.1).

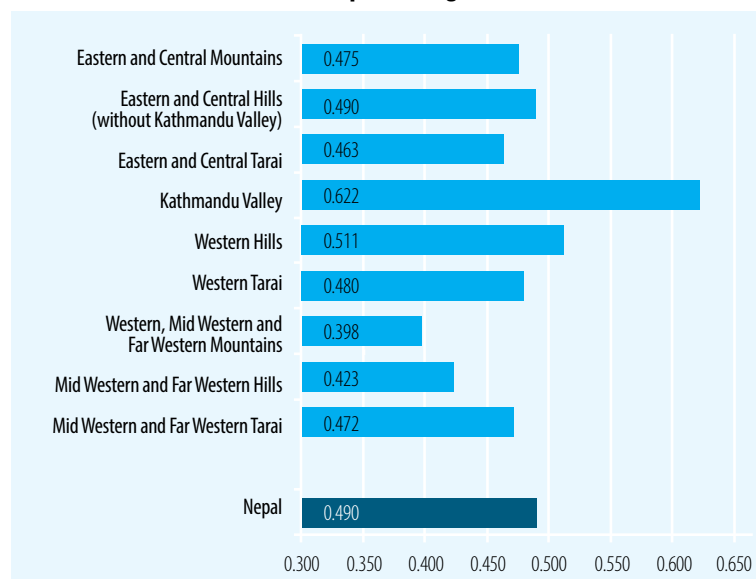
### 2011 HDI values for the nine eco-development regions

The nine-eco-development-region framework provides a discerning picture of inequalities in regional HDI values for 2011 (figure 2.3 and map 2.2). The Kathmandu Valley region has the highest HDI score at 0.622, stemming

largely from high scores for educational attainment and level of per capita income. Kathmandu, Lalitpur and Bhaktapur are at the top of the four highest ranking HDI districts in Nepal. The Western Hills at 0.511 followed by the Eastern and Central Hills (without the

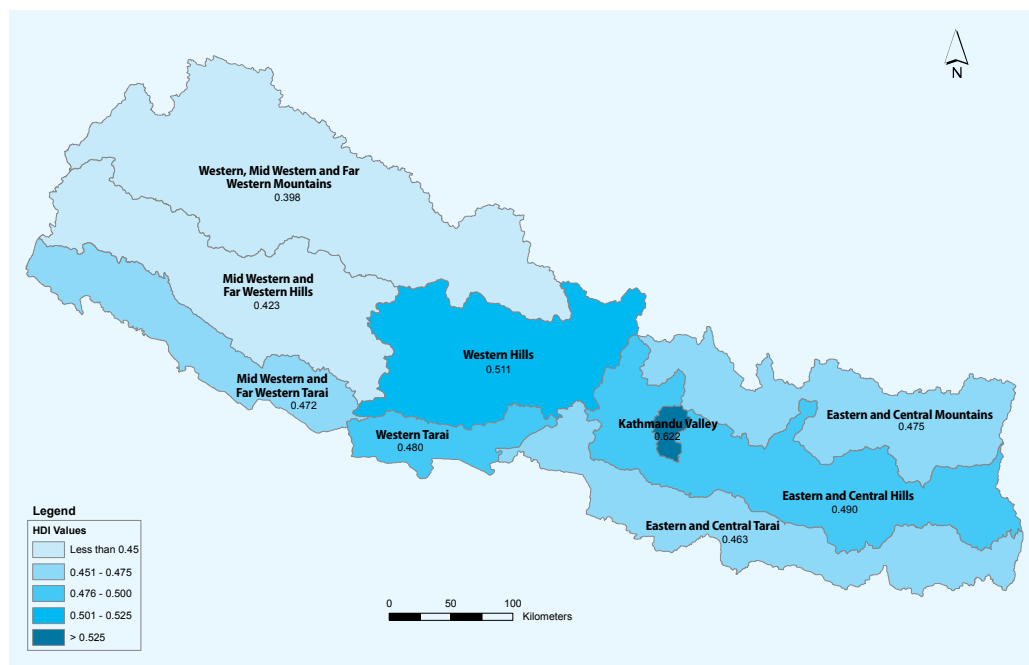
FIGURE 2.3

### HDI values for the nine eco-development regions, 2011



Source: Annex 4, table A4.1.

HDI values for the nine eco-development regions, 2011



Source: Annex 4, table A4.1.

Kathmandu Valley) at 0.490 have the second and third highest HDI scores. The HDI value for the Western Mountains at 0.529 exceeds that of the Mid Western Mountains at 0.392 and the Far Western Mountains at 0.386. When the Western, Mid Western and Far Western Mountains are lumped together, their overall HDI value is 0.398.

Only the Kathmandu Valley and Western Hills have higher HDI values than the national average of 0.490. The former's score is 1.6 times higher than that of the Western, Mid Western and Far Western Mountains, underscoring huge gaps and inequalities in human development across the nine regions.

The Eastern and Central Tarai, comprising 11 Tarai districts from Parsa to Jhapa, has a score of 0.463, making it modestly better off than the Western, Mid Western and Far Western Mountains, and the Mid Western and Far Western Hills.

HDI values by district for 2011

At the district level, Kathmandu, Lalitpur, Kaski, Bhaktapur and Manang have the highest HDI values for 2011, whereas Bajura, Bajhang, Kalikot, Humla and Achham have the lowest ones (see map 2.3).

Overall, in 2011, there are 10 districts — eight in the Mid Western and Far Western Mountains and Hills, and two in the Eastern Tarai—that have very low HDI values of less than 0.4. The next 16 districts—including nine in the Mid Western and Far Western Hills and Mountains, and four in the Eastern Tarai—have HDI scores between 0.4 and 0.449. Thirty districts, mostly in the Hills, have scores between 0.45 and 0.499. Another 13 districts, mainly in the Eastern and Central Hills, have scores between 0.5 and 0.549. The six districts with the highest HDI values are in the Kathmandu Valley, together with Kaski, Manang and Chitwan.

Mid West and Far Western Hills and Mountains and large parts of Central and Eastern Tarai are behind in human development.

**TABLE 2.1**

**Districts categorized by HDI values, 2011**

HDI values	Districts with HDI scores in ascending order	Number of districts
< .400	Bajura, Bajhang, Kalikot, Humla, Achham, Rautahat, Mahottari, Jajarkot, Rolpa, Mugu	10
.400 – .449	Dolpa, Sarlahi, Doti, Siraha, Jumla, Pyuthan, Baitadi, Dailekh, Rukum, Dhanusha, Kapilbastu, Darchula, Saptari, Sindhuli, Salyan, Dadeldhura	16
.450 – .499	Sindhupalchowk, Bara, Dolakha, Kailali, Rasuwa, Dhading, Parsa, Gulmi, Nuwakot, Bardiya, Okhaldhunga, Ramechhap, Kanchanpur, Udaypur, Baanke, Surkhet, Baglung, Bhojpur, Gorkha, Arghakhanchi, Dang, Sankhuwasabha, Myagdi, Nawalparasi, Khotang, Taplejung, Sunsari, Makwanpur, Rupandehi, Paanchthar	30
.500 – .549	Palpa, Solukhumbu, Tanahu, Lamjung, Mustang, Parbat, Morang, Dhankuta, Jhapa, Kavrepalanchowk, Illam, Terhathum, Syangja	13
> .550	Chitwan, Manang, Bhaktapur, Kaski, Lalitpur, Kathmandu	6

Source: Annex 4, table A4.1.

A clear pattern emerges where the Mid Western and Far Western Hills and Mountains and parts of the Central and Eastern Tarai lag behind in human development (table 2.1).

**Rural-urban HDI gaps**

The 2011 urban-rural gap in HDI is large, at 19.7 percent based on the geometric mean compared to 11.2 percent using the arithmetic

mean. This essentially reflects persistent discrepancies in income and education between urban and rural areas.

**The HDI over time**

Computing the HDI on the basis of the arithmetic mean can be used to track trends in ecological and development regions over time. This shows steady improvements in values

**MAP 2.3**

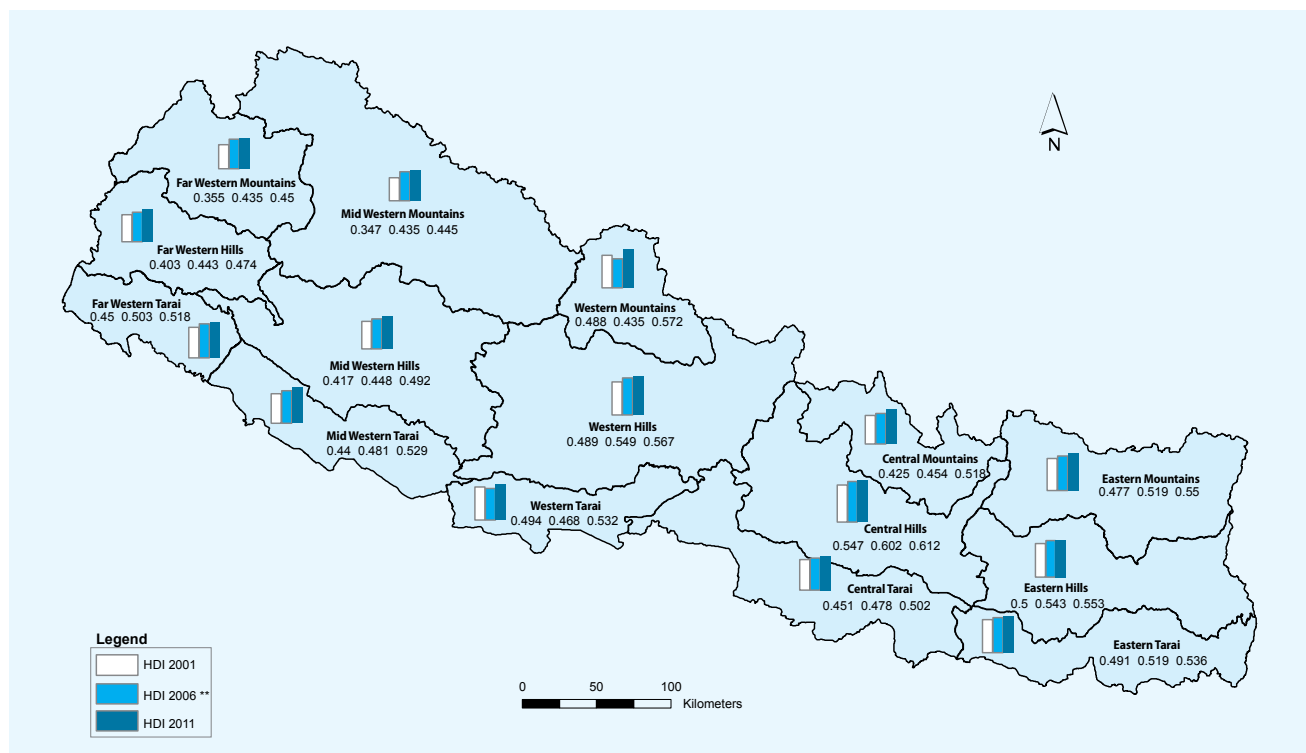
**HDI values across districts, 2011**



Source: Annex 4, table A4.1.

MAP 2.4

HDI values across the 15 eco-development regions, 2001, 2006 and 2011



Source: UNDP Nepal, 2004 and 2009, annex 4, table A4.1.

\*\* 2006 data is for 13 domains following the Nepal Demographic Health Survey Dataset. The combined value for Western Mountains has been used for Western, Mid Western and Far Western Mountains also.

over the last decade, across all ecological and development regions as well as districts.

Among the ecological regions, the Hills continue to lead with an HDI score of 0.569, followed by the Tarai at 0.521, a pattern seen in 2001 as well as 2006. The pace of HDI improvement has been faster in the Mountains, from 0.436 in 2006 to 0.496 in 2011. In spite of its relatively low HDI score, the Mid Western development region has made some gains, from 0.452 in 2006 to

0.503 in 2011, although considerable catching up remains.

Among the 15 eco-development regions, the Central Hills, including the Kathmandu Valley, has the highest HDI value at 0.612, followed by the Western Mountains at 0.572 and the Western Hills at 0.567. The Mid Western Mountains region has the lowest HDI rank at 0.445, a pattern that has remained constant over the years (map 2.4).

TABLE 2.2

Districts with the highest and lowest HDI scores, 2001 and 2011

Highest		Lowest	
2001	2011	2001	2011
Kathmandu (0.652)	Kathmandu (0.632)	Mugu (0.304)	Bajura (0.364)
Bhaktapur (0.595)	Lalitpur (0.601)	Bajura (0.310)	Bajhang (0.365)
Kaski (0.593)	Kaski (0.576)	Kalikot (0.322)	Kalikot (0.374)
Lalitpur (0.588)	Bhaktapur (0.573)	Bajhang (0.331)	Humla (0.376)
Rupandehi (0.546)	Manang (0.568)	Jajarkot (0.343)	Achham (0.378)

Source: UNDP Nepal 2004, annex 4, table A4.1.

**TABLE 2.3**

**Districts with the highest positional changes in HDI status**

District	Position 2001	District	Position 2011
Dang	↑ 28	Sindhuli	↓ 18
Khotang	↑ 20	Rupandehi	↓ 16
Rasuwa	↑ 17	Udaypur	↓ 15
Solukhumbu	↑ 12	Rautahat	↓ 14
Taplejung	↑ 12	Baglung	↓ 14

Source: UNDP Nepal 2004, annex 4, table A4.1.

District level comparisons over time can be made by computing the HDI based on the arithmetic mean (table 2.2). The four highest HDI districts in 2001 are also the highest in 2011, with some changes in ranks. Rupandehi, fifth in 2001, was replaced by Manang in 2011. Kathmandu and Kaski have retained the first and third places, while Bhaktapur, which used to be second, is now fourth and Lalitpur has moved from fourth to second. Three of the five lowest HDI districts, Bajura, Bajhang and Kalikot, are the same in 2001 and 2011. Humla and Achham replace Mugu and Jajarkot in 2011 among the districts with the lowest scores. The huge progress made by Mugu in education has helped improve its HDI ranking.

Between 2001 and 2011, the most significant improvements in HDI ranks are for Dang, up 28 positions; Khotang, up 20; Rasuwa, up 17; and Solukhumbu and Taplejung, up 12 positions each. This has been primarily a result of considerable progress in income. For Rasuwa, a jump in the mean years of schooling has contributed to the improvement. Examples of considerable slippage include Sindhuli, down 18 positions; Rupandehi, down 16; Udaypur, down 15; and Rautahat and Baglung down 14 (table 2.3). Districts maintaining the same positions include Kathmandu, Kaski, Syangja, Parbat, Sankhuwasabha, Bhojpur, Kailali and Kalikot.

Similar to earlier trends, the urban HDI value in 2011, at 0.630, remains higher than the rural HDI score, at 0.517. But there is noticeable improvement in the rural HDI

since 2006. The urban HDI value, by contrast, remained constant in 2011 compared to 2006. This underlines the issue of sustainability in HDI improvements. Remarkably, the difference in life expectancy between rural and urban areas has narrowed considerably.

**HDI values by caste and ethnicity**

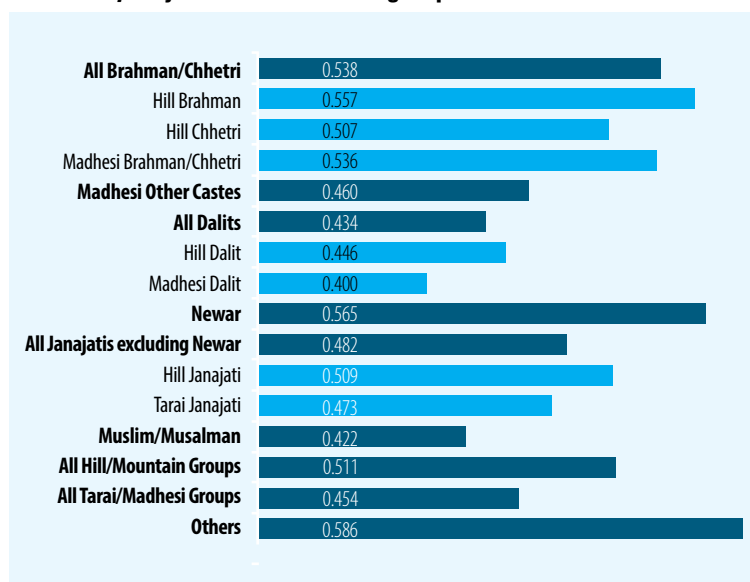
For 2011, HDI geometric mean values by caste and ethnicity are based on both Census and Nepal Living Standards Survey information. The population weights of various castes and ethnic groups have been derived from the 2011 Census; per capita income data by caste and ethnic groups are calculated from the 2011 survey (figure 2.4).

Inequalities in human development by caste and ethnicity have been noted since the first Nepal Human Development Report in 1998. These remain pronounced, despite some evidence that they may be reducing over time.

Among the four major caste and ethnic clusters—the Brahmans/Chhetris, the Janajatis, the Dalits and the Muslims—the Brahmans/Chhetris rank at the top with an HDI value of

**FIGURE 2.4**

**HDI values by major caste and ethnic groups, 2011**



Source: Annex 4, table A4.5.

**TABLE 2.4**

**Poverty incidence by caste and ethnicity, 2011**

Caste and ethnic groups	Poverty headcount rate	Percent of poor
Hill Brahmans	10.3	5.2
Hill Chhetris	23.4	16.6
Tarai Brahmans	18.6	0.4
Tarai middle castes	28.7	17.6
Hill Dalits	43.6	15.2
Tarai Dalits	38.2	6.9
Newars	10.3	2.5
Hill Janajati	28.3	24.4
Tarai Janajati	25.9	7.3
Muslim	20.2	3.5
Other	12.3	0.5
NEPAL	25.2	100.0

Source: Nepal Living Standards Survey 2011.

0.538, followed by the Janajatis (excluding the Newars) at 0.482, the Dalits at 0.434 and the Muslims at 0.422. This pattern was also seen in 2006. Among identified castes and ethnic groups, Hill Brahmans have the highest HDI score at 0.557, and the Madhesi Dalits have the lowest. The Muslims and Dalits have HDI values 27 and 24 percent lower respectively than that of the Brahmans/Chhetris.

There are significant variations within caste and ethnic clusters. The HDI score for the Hill Chhetris is 0.507, which is about 9 percent lower than that of the Hill Brahmans. There are also differences between the Tarai and Hill Janajatis. The latter fare better with an HDI value of 0.509, compared to 0.473 for the former. A similar picture emerges among the Dalits. Hill Dalits rank at 0.446 compared to 0.400 for the Madhesi Dalits. Among all Janajatis and Dalits, those from the Hills have better HDI scores than those from the Tarai or Madhes. Inequalities in HDI scores linked to caste and ethnicity thus also have a geographic dimension. The HDI rank for all Hill/Mountain groups is 0.511, compared to 0.454 for all Tarai/Madhesi groups.

There are exceptions to general patterns. Among the Janajatis, the Newars and

Thakalis have much higher HDI scores, since the Newars mostly live in urban areas and the Thakalis due to their entrepreneurial qualities.

Previous Nepal Human Development Reports have emphasized that among the three components of the HDI, differences in educational attainment largely explain inequalities between high and low HDI values for caste and ethnic groups (annex 4, figure A4.5). This is underscored by the low educational attainment of the Dalits in general and the Madhesi Dalits in particular, and of the Muslims. Low levels of education as well as social and economic exclusion translate into limited opportunities in economic and political spheres.

**Income, poverty, and caste and ethnicity**

Nepal Living Standards Survey shows a clear association between caste and ethnicity, and levels of income, revealing a picture similar to that of the HDI. As a group, the Brahmans/Chhetris have the highest income per capita, followed by the Janajati and the Dalit. The per capita income of Hill Brahman is 1.7 times higher than that of the Dalit in general, and two times higher than that of the Madhesi Dalit.

Survey data show that consumption-based poverty varies quite significantly across different castes and ethnic groups (table 2.4). The poverty incidence or poverty headcount rate for Nepal is 25.2 percent. But Hill Brahmans have a low incidence of 10.3 percent compared to 43.6 percent for Hill Dalits and 38.2 percent for Tarai Dalits. The poverty incidence among Hill and Tarai Janajatis is 28.3 percent and 25.9 percent, respectively (table 2.4). Also, one in every four poor in Nepal is a Hill Janajati.

**Gender and human development**

The Gender Development Index (GDI) and Gender Empowerment Measure (GEM) have been used to measure inequality between men and women. The GDI captures inequality in terms of the same dimensions as the HDI—

**Caste/ethnic inequalities in HDI scores also have a geographic dimension.**



long and healthy life measured by life expectancy at birth, knowledge measured by adult literacy and mean years of schooling, and a decent standard of living measured by GNI per capita in PPP \$. The GEM indicates the relative empowerment of women and men in various political and economic spheres. It reflects opportunities open to women, rather than their capabilities, in three key areas: political participation and decision-making, economic participation and decision-making, and power over economic resources. The methodologies to compute the GDI and GEM are described in annex 2.

### The Gender Development Index

The GDI has been computed using the arithmetic mean and the geometric mean. The score for Nepal for 2011 is 0.534, based on the arithmetic mean. Using the geometric mean gives a figure of 0.482. Irrespective of these methods, the regional pattern is broadly similar.

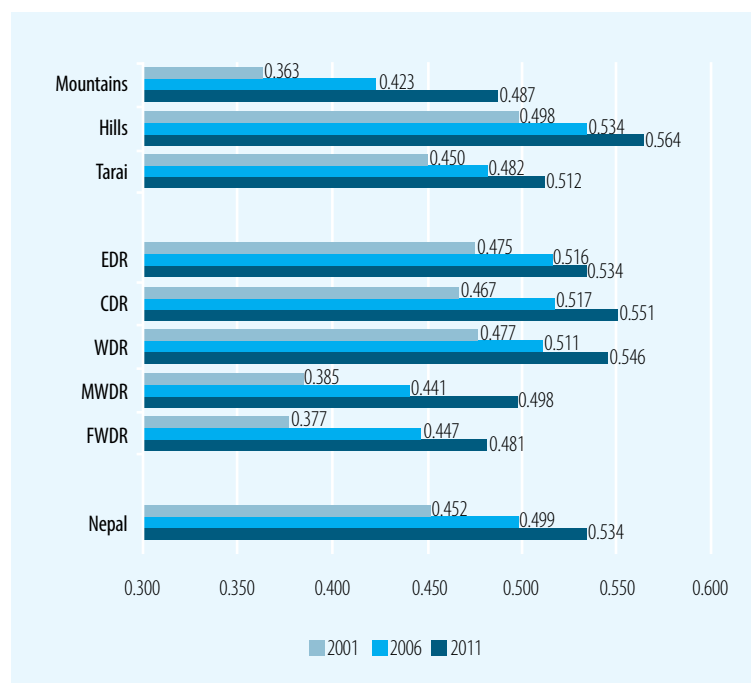
Among the ecological regions, the GDI value based on the geometric mean is the highest for the Hills at 0.515, followed by the Tarai at 0.458 and the Mountains at 0.430. The low GDI score for the Mountains is mainly due to low values in all three dimensions of the index. Indicators for life expectancy at birth and mean years of schooling for both sexes are the lowest in the Mountains and the highest in the Hills. Female adult literacy is also very low in the Mountains at 37.7 percent, compared to 43.3 percent in the Tarai and 56.4 percent in the Hills.

Among the development regions, a picture similar to that of the HDI emerges. The Central region, at 0.503 based on the geometric mean, has the highest GDI value, followed by the Western region at 0.491 and the Eastern region at 0.481. The Far Western and Mid Western regions have the lowest values at 0.423 and 0.442, respectively, primarily due to low life expectancy and adult female literacy (annex 4, figure A4.2).

A comparison of GDI values over time, using the arithmetic mean, shows progress na-

FIGURE 2.5

Comparative GDI values for ecological and development regions over time, 2001, 2006 and 2011



Source: UNDP Nepal, 2004 and 2009, annex 4, table A4.2.

tionally and in the ecological and development regions (figure 2.5).

Nationally, there is an 18 percent improvement in the GDI score between 2001 and 2011. Improvement is above the national average in the Mountains at 34.1 percent, the Mid West-

TABLE 2.5

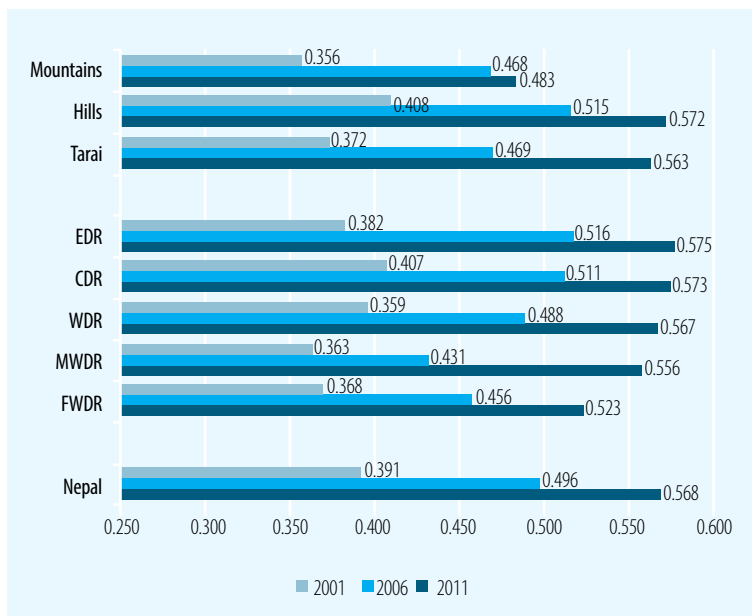
Percentage shortfall of GDI over HDI scores by region, 2001, 2006 and 2011

National	2001	2006	2011
Nepal	4.0	2.0	1.3
<b>Ecological region</b>			
Mountains	6.0	3.0	1.8
Hills	2.7	1.7	0.9
Tarai	5.9	2.4	1.7
<b>Development region</b>			
Eastern	3.7	1.9	1.5
Central	4.7	2.6	1.3
Western	2.9	1.0	1.3
Mid Western	4.2	2.4	1.0
Far Western	6.7	3.0	2.4

Source: UNDP Nepal 2009, annex 4, table A4.1 and A4.2. The shortfall is computed using  $((\text{HDI} - \text{GDI}) / \text{HDI}) \times 100$  for each region.

FIGURE 2.6

Comparative GEM values over time, 2001, 2006 and 2011



Source: UNDP Nepal, 2004 and 2009, annex 4, table A4.3.

ern region at 29.3 percent and the Far Western region at 27.5 percent. The Central region has a GDI value 1.14 times higher than that of the Far Western region in 2011, compared to 1.24 times in 2001, underscoring the closing gap between the best and worst performing regions in the last decade, although gender disparities in life expectancy, education and income remain major challenges across Nepal. Nationally, women’s average income, for example, is 57 percent lower than the average for men.

The difference between HDI and GDI scores, expressed as a percentage of the former,

is often taken as a measure of gender inequality. A higher value indicates greater inequality. A comparison for 2001, 2006 and 2011 shows that gender inequality has declined in all ecological and development regions (table 2.5). The decline has been most significant in the Mountains and the Far Western and Mid Western regions. The only exception is the Western region, where GDI scores have not kept up with improvements in HDI values.

The Gender Empowerment Measure

The value of the GEM for Nepal for 2011 is 0.568. Among ecological regions, the Mountains has the lowest value at 0.483, while the Hills has the highest at 0.572. This is due to the former’s low share of women in Parliament at 18.6 percent, compared to 28.9 percent for the latter and 32.9 percent for the Tarai, as well as low combined income values.

Among development regions, the Eastern region has the highest GEM at 0.575, followed by the Central and Western regions. This pattern varies from that of the GDI. The Far Western region has the lowest GEM value of 0.523, primarily due to its low share of women in administrative and professional positions.

A comparison of the GEM for 2001, 2006 and 2011 shows a rise in values in all ecological and development regions over time. Among ecological regions, the Tarai displays rapid growth between 2006 and 2011. For the development regions during the same

TABLE 2.6

Districts categorized by HPI values, 2011

HPI values	Districts in descending order of HPI values	Districts
<25	Kaski, Lalitpur, Bhaktapur, Jhapa, Kathmandu, Parbat, Chitwan	7
25 – 29	Palapa, Syangja, Morang, Manang, Rupandehi, Taplejung, Sunsari, Kanchanpur, Illam, Lamjung, Baglung, Kavrepalanchok, Arghakhanchi, Gulmi, Dhankuta, Nawalparasi, Makwanpur, Myagdi, Khotang, Kailali, Udaypur, Tanahu	22
30 – 34	Mustang, Banke, Bardiya, Solukhumbu, Terhathum, Bhojpur, Darchula, Dhading, Gorkha, Sankhuwasabha, Panchthar, Pyuthan, Dang	13
35 – 39	Okhaldhunga, Nuwakot, Dolakha, Dadeldhura, Ramechhap, Surkhet, Parsa, Sindhuli, Sindhupalchowk, Kapilvastu, Saptari, Rojpa, Rukum, Baitadi	14
40 – 44	Bara, Salyan, Dailekh, Dhanusa, Jumla, Rasuwa, Siraha, Bajura, Doti, Sarlahi, Jajarkot, Dolpa, Mahottari	13
> 50*	Kailikot, Mugu, Bajhang, Rautahat, Achham, Humla	6

\*There is no district with a value between 45 and 49.

Source: Annex 4, table A4.4.

**TABLE 2.7**

**Districts with the highest and lowest HPI values, 2001 and 2011**

Highest				Lowest			
2001		2011		2001		2011	
Humla	(63.8)	Humla	(49.26)	Kaski	(24.9)	Kaski	(16.50)
Dolpa	(61.9)	Accham	(46.68)	Lalitpur	(25.0)	Lalitpur	(19.18)
Mugu	(61.1)	Rautahat	(46.43)	Kathmandu	(25.8)	Bhaktapur	(19.43)
Bajhang	(59.9)	Bajhang	(45.32)	Jhapa	(29.2)	Jhapa	(21.82)
Achham	(59.2)	Mugu	(45.22)	Rupandehi	(29.2)	Kathmandu	(22.45)

Source: UNDP Nepal 2004, annex 4, table A4.4.

period, GEM values improved most significantly in the Mid Western region (figure 2.6).

### The Human Poverty Index

If the HDI reflects the expansion of opportunities and choices, the Human Poverty Index (HPI) captures the denial as a result of income and capability deprivation. The HPI value for Nepal in 2011 is 31.12. There are variations by rural and urban residence, and

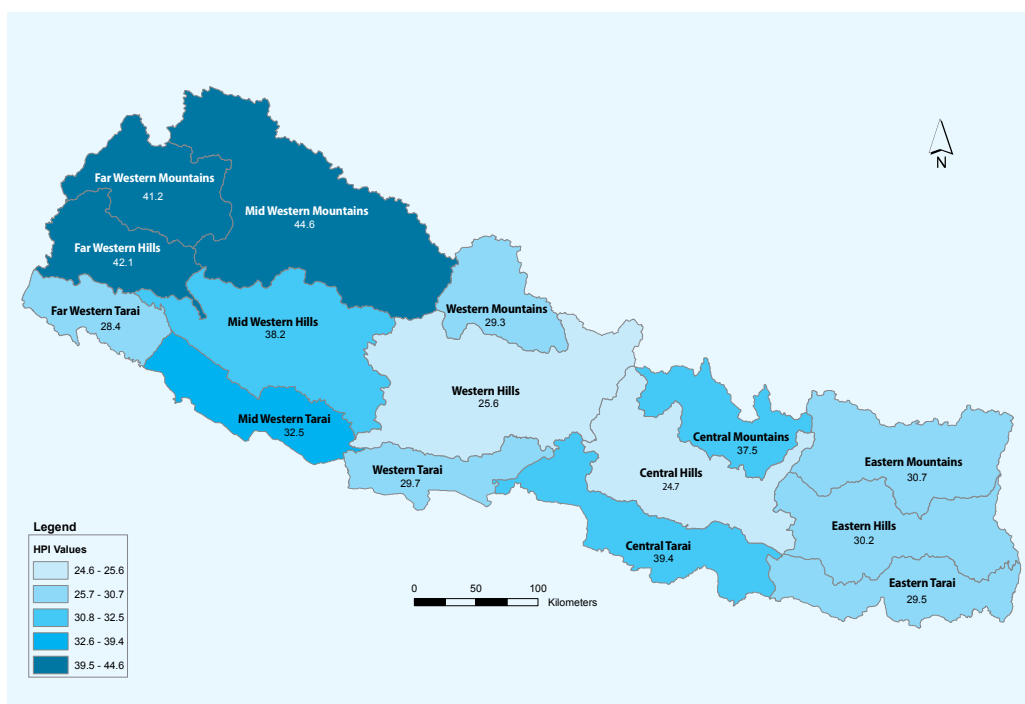
by ecological and development regions (annex 4, figures A4.3). Urban-rural differences are considerable, with rural poverty nearly 1.8 times higher than urban poverty.

Among ecological regions, the HPI is lowest in the Hills at 29.20 and highest in the Mountains at 38.51. Both the Mountains and Tarai regions have HPI values less than the national average.

Among the development regions, the value is lower than the national average only in the Western region at 27.20 and the

**MAP 2.5**

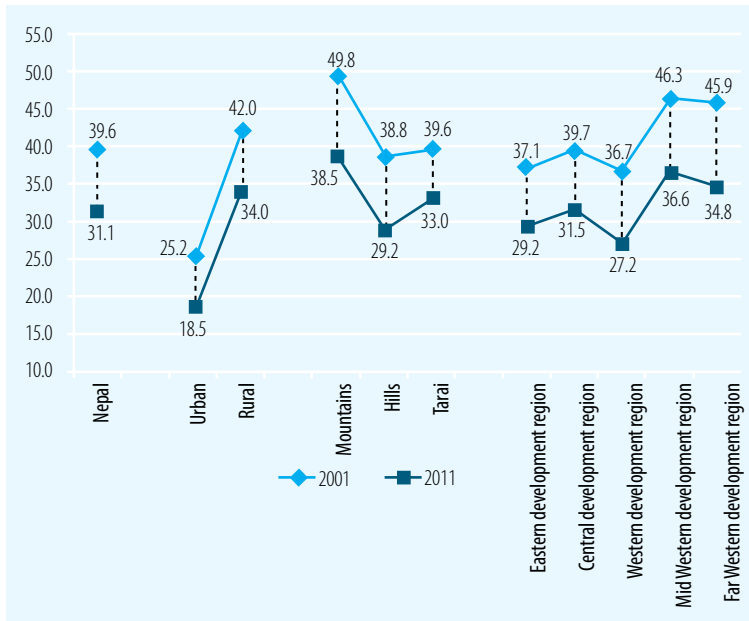
**HPI values across the 15 eco-development regions, 2011**



Source: Annex 4, table A4.4.

FIGURE 2.7

HPI scores across areas and regions, 2001 and 2011

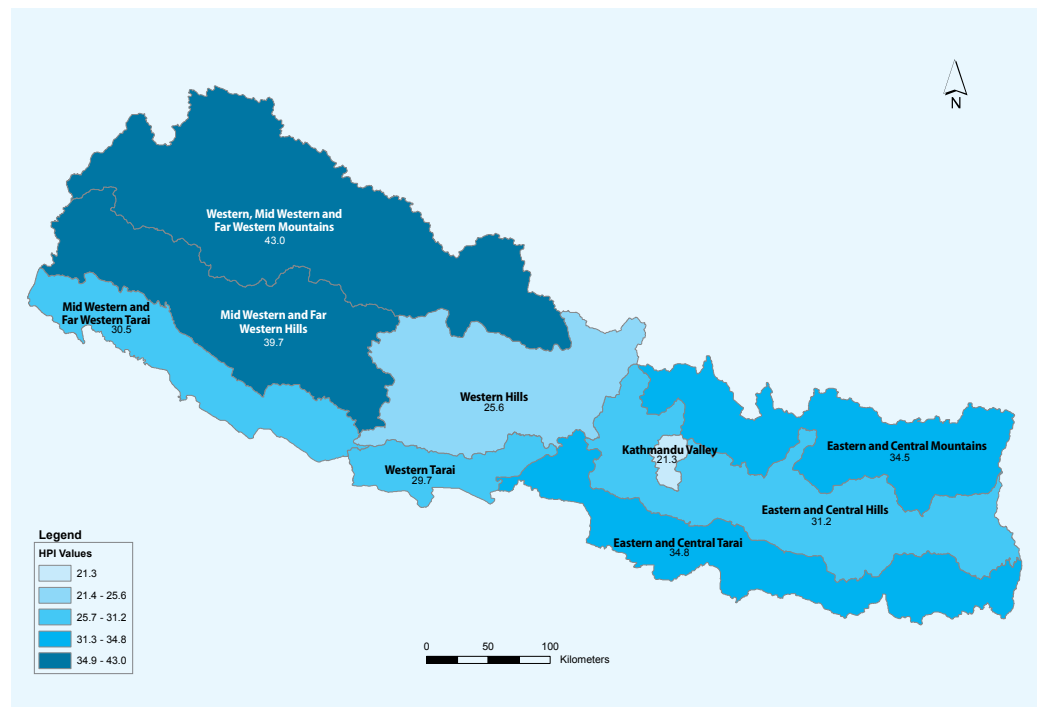


Source: UNDP Nepal 2004, annex 4, table A4.4

Eastern region at 29.22. The Mid Western region has the highest rank at 36.63, which is 1.3 times higher than that of the Western region. High levels of human poverty in the Mid Western and Far Western regions reflect deprivations in health, education and sanitation. In these two regions, the most deprived districts in terms of health are Dolpa, Bajura, Kalikot and Bajhang. The most deprived districts in terms of education are Rautahat, Mahottari, Humla, Sarlahi, Mugu and Siraha, where adult illiteracy rates are over 60 percent. Dailekh, Dang, Achham, Jajarkot and Salyan, mainly in the Mid Western region, are the most deprived in terms of access to safe drinking water, whereas the highest prevalence of child malnutrition is in Humla and Bajhang, where more than 60 percent of children are malnourished.

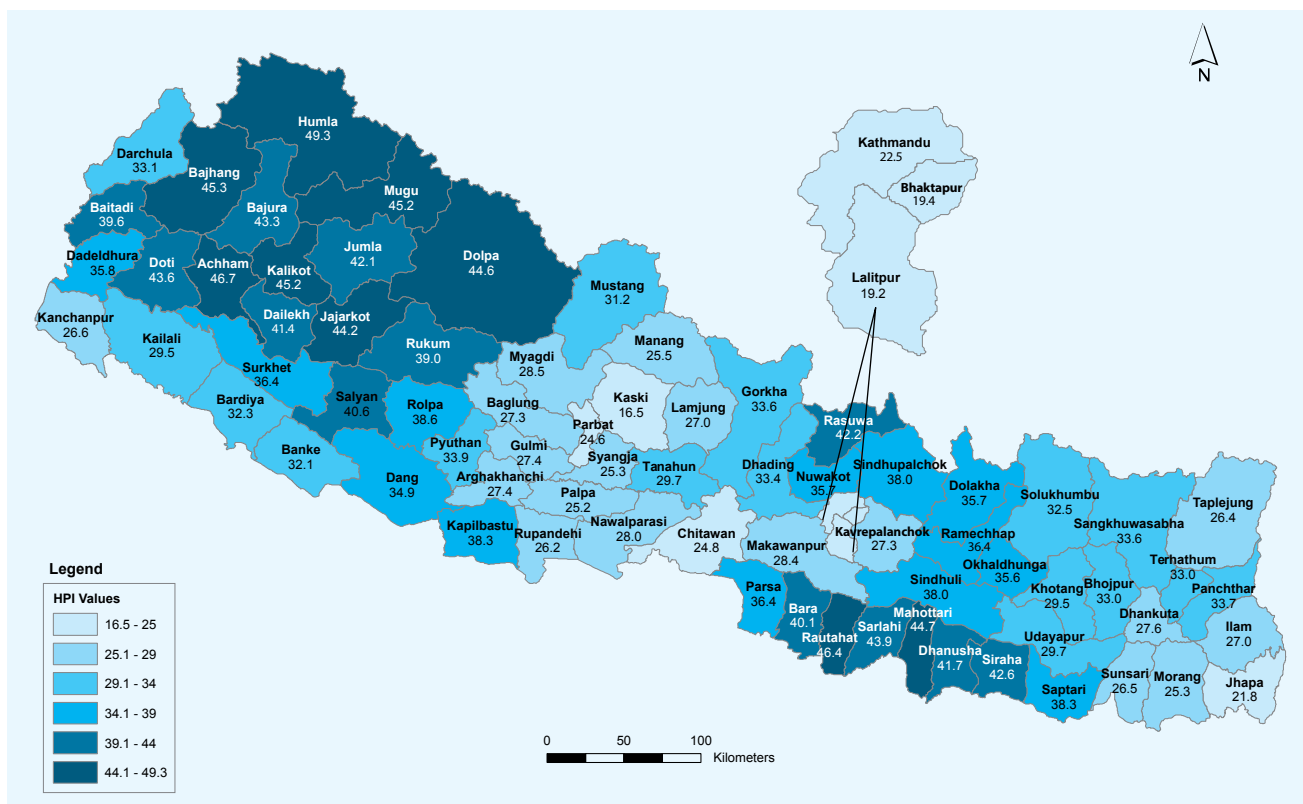
MAP 2.6

HPI values across the nine eco-development regions, 2011



Source: Annex 4, table A4.4.

HPI values across districts, 2011



Source: Annex 4, table A 4.4.

Among the 15 eco-development regions, those with particularly high levels of deprivation leading to human poverty are the Mid Western Mountains with an HPI value of 44.63, the Far Western Hills at 42.07 and the Far Western Mountains at 41.21. The Eastern, Central and Western Hills, the Eastern and Western Tarai, and the Western Mountains have HPI values below the national average. The Central and Western Hills, with scores of 24.65 and 25.62, respectively, show the lowest levels of deprivation (map 2.5).

Among the nine eco-development regions, the Kathmandu Valley, with an HPI value of 21.28, is the least deprived, and the Western, Mid Western and Far Western Mountains at 42.98 are the most deprived (map 2.6). Most of the districts from the latter

region perform poorly on all three dimensions of the HPI—health, education and income. The Kathmandu Valley region at 21.28, the Western Hills at 25.62, the Western Tarai at 29.69, and the Mid Western and Far Western Tarai at 30.47 have lower HPI values than the national average (annex 4, figure A4.4).

A look at HPI values by district shows that seven districts score less than 25. These are mostly districts with high HDI ranks. Another 22 districts, including 15 from the Hills, have HPI values between 25 and 29. In contrast, all six districts with HPI scores over 50 are from the Mid Western and Far Western Hills and Mountains, with the sole exception of Rautahat. Of the 13 districts with HPI values in the 40–44 range, five are from the Eastern Tarai (table 2.6 and map 2.7).

## HPI values over time

Nationally, the HPI fell between 2001 and 2011 by 8.5 points, or 21.4 percent. HPI scores declined for both ecological and development regions over the same period (figure 2.7). Among the ecological regions, the greatest decline took place in the Hills at 24.8 percent. The Western region had the steepest decline among the development regions at 25.9 percent. The smallest declines in each category were for the Tarai at 16.7 percent and the Central region at 20.7 percent.

Among the 15 eco-development regions, the most significant decline was in the Mountains regions, particularly the Mid Western Mountains at 14.7 points and

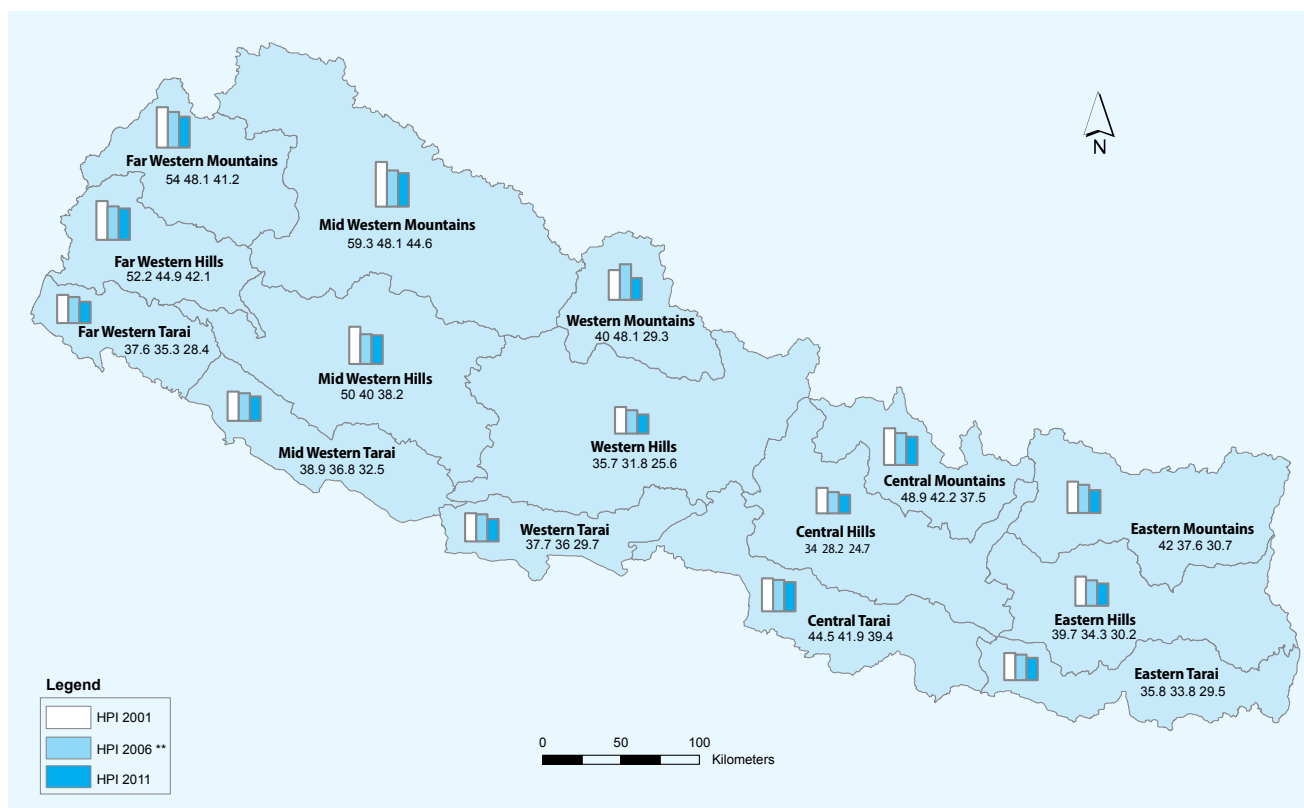
the Far Western Mountains at 12.8 points. The lowest decline was in the Central Tarai (5.1 points), followed by the Eastern Tarai (6.3 points) and the Mid Western Tarai (6.4 points) (figure 2.8 and map 2.8).

A district level comparison of HPI ranks over the decade from 2001 to 2011 shows a familiar picture (table 2.7). Four of the five districts with the highest HPI values—Humla, Achham, Bajhang and Mugu—are the same in 2001 and 2011, with some change in rankings. Dolpa dropped from the list in 2011, replaced by Rautahat, a Tarai district. Similarly, four of the five districts with the lowest HPI values—Kaski, Lalitpur, Jhapa and Kathmandu—remain the same. Rupandehi was replaced by Bhaktapur in 2011.

**High human poverty index for the Mid Western and Far Western Mountains reflects poor achievements in all education, health and income dimensions.**

### MAP 2.8

**HPI values across the 15 eco-development regions, 2001, 2006 and 2011**

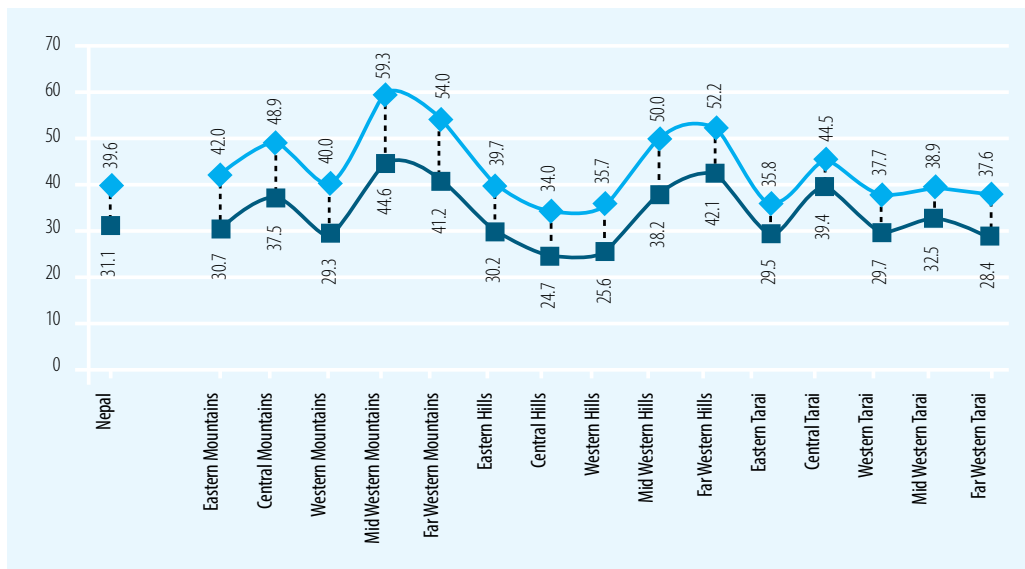


Source: UNDP Nepal, 2004 and 2009, annex 4, table A4.4.

\*\* 2006 data is for 13 domains following the Nepal Demographic Health Survey Dataset. The combined value for Western Mountains has been used for Western, Mid Western and Far Western Mountains also.

FIGURE 2.8

HPI scores across the 15 eco-development regions, 2001 and 2011



Source: UNDP Nepal 2004, annex 4, table A4.4.

Nepal’s trends in human development over the past decade show overall improvement accompanied by considerable, often entrenched regional and social inequalities. Three particular features stand out. First, regions already behind in human development remain that way, although inequalities among regions have begun narrowing. Second, there is a geographic dimension to caste and ethnic inequalities, with the Hills generally in a

more favourable position. Third, there may be two “problem” regions with respect to human development—namely, the contiguous Mid Western and Far Western Hills and Mountains, and the Eastern and Central Tarai. These exhibit contrasting spatial, developmental and socio-economic characteristics. The following chapters will assess how the productive potential and abilities of regions and people relate to human development.

**Regions that are behind in human development remain so but inequalities among regions are narrowing.**

A photograph of a woman in a headscarf carrying a large basket on her back, smiling. The image is overlaid with a blue tint. The text 'CHAPTER 3' is positioned above a horizontal line.

CHAPTER 3

# Regional Access to Facilities and Household Well-being Indexes

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# 3.

## Regional Access to Facilities and Household Well-being Indexes

Access to facilities in a region is an important factor in the well-being of households residing there. The well-being of a household, in turn, affects the potential productivity of its members.

Chapter 2 reported the current values of the Human Development Index (HDI) and related indexes at the national and district levels, and, data permitting, for socio-economic groups. The results reflect the effect of past policies in strengthening human capital, which is expected to contribute positively to any other indicator of productive abilities.

To sustain its recent remarkable progress in the reduction of extreme poverty, Nepal now clearly needs higher economic growth, which should be inclusive in the sense of allowing everyone to benefit from it. Nepal also aspires to graduate to the status of a developing country by 2022. One of the benchmarks for graduation from its current least developed country status is that per capita income must rise to \$1,192 and remain at that level for three consecutive years. Essentially, this means almost doubling 2013 per capita income.

The current growth rate of less than four percent is not sufficient to reach this benchmark or even to sustain Nepal's recent progress in poverty reduction. Monetary and fiscal stimulus can only have a temporary effect on the growth of gross domestic product (GDP). The move to a permanent high growth path requires a long-term, sustained increase in the productive abilities of households, individuals and regions. Further, productive abilities need to be comparable across men and women, rural and urban areas, ethnicities, religions and so on.

This chapter aims to inform policy-making linked to growth, inequality and least developed country graduation in two main ways. It explores current ground realities. It also

considers what more can be done to achieve higher growth that is also inclusive by assessing the multidimensional potential productive capability of Nepal's households and regions; an assessment of individual productivity among youth, as a third tier, follows in chapter 5.

The chapter offers an innovation in the unit of measuring productive abilities, moving beyond the HDI and related indexes, which are essentially based on individuals. While important in their own right, these measures can be complemented by plausible indicators of productive ability that entail treating regions and households as units.

Single measures like income or consumption do not adequately capture an individual's or household's well-being.<sup>1</sup> In fact, they may provide confusing and conflicting evidence, whether measured in aggregate or per capita terms, and say little about potential productive abilities. Without a rigorous assessment of potential productivity, especially how it has evolved over time, public resources—comprising both public sector investment and social assistance programmes—are unlikely to be targeted and used most effectively.

This chapter looks beyond consumption and income in defining and measuring well-being. Its multidimensional approach has strong intellectual roots<sup>2</sup> and is a pillar of the “human face” approach to development—a key policy priority in Nepal for reasons that are readily appreciated. Apart from its moral and philosophical appeal, this approach, when applied to a rigorous assessment of productive abilities, should provide important information to policy makers for evaluating which policies have been

successful in promoting relatively uniform capabilities, and what more can be done to narrow gaps and strengthen the average level of abilities.

Productive abilities comprise several features, with information on them usually available in periodic comprehensive household surveys. This chapter argues that for higher growth, individuals need to be capable, households need to be capable of supporting their individual members; and regions need to be capable of supporting resident households (and firms). To reach low inequality in development outcomes, a level playing field is required for all three, because they are inter-linked. This chapter introduces an individual ability index, a household well-being index and a regional access to facilities index. It makes no claim to providing a universal operational measure, particularly of “capability,” through any of these measures, especially for individuals.

### Individual ability index

As a broad conceptual background, the *capability* of an individual:

- Is not just what one *actually* achieves, but also what one can *potentially* achieve;
- Is not just the choice one has made, but rather one’s freedom to make alternative choices; and
- Is a wider concept of well-being than income or consumption, because it values freedom.

In the context of Nepal, this report measures the productive ability of young individuals using two sets of factors:

- The health and education level of individuals and other relevant personal characteristics available in the successive Nepal Living Standards Surveys; and
- The well-being of the households that individuals belong to.

Household well-being is important because even when two individuals have identical personal characteristics, their options or opportunity sets are still influenced by household

status. Household well-being may be construed as a (partial) instrument to capture an individual’s freedom.

Productive abilities measured with these two sets of factors reflects the potential of a person. High and comparable individual potential today is an essential pre-requisite for high and inclusive growth in the years to come. More discussion of the individual ability index, focused on youth, follows in chapter 5.

### Household well-being index

Information on a variety of household characteristics, including health, education, fertility, consumption, income and migration, makes it possible to analyse the interplay of different aspects that influence the quality of household members’ lives. The well-being of a household as a unit depends on:

- A broad set of family characteristics, including the education level of the head of the family, financial and physical assets, the type of dwelling, the number of dependents, indebtedness, and so on, and
- The level of development of the region where the household belongs.

The household well-being index combines variables from each area, based on Nepal Living Standards Survey data.

In the first category, household well-being relies on two kinds of private investment: those made by household members in the condition of their dwellings, and acquisition of assets including land, property and consumer durables.

For the second category, the level and efficiency of public investment is important, meaning that two households, identical except for the regions where they are located, can have very different productive abilities. The level of development of the region, especially in terms of ease of access to public facilities such as roads, schools, hospitals, information systems, etc., determines the productive ability of a household.

**Regional, household and individual productive abilities are inter-linked.**

## Regional access to facilities index

The Nepal Living Standards Surveys have gathered information on how much time it takes a household member to reach nearby facilities, such as early child development centres; primary, secondary and higher secondary schools; health posts; public hospitals and clinics; bus stops; paved roads; shops; markets; banks; agricultural centres; drinking water; internet access; police stations; post offices and community centres.

The regional access to facilities index, for the nine eco-development regions defined in chapter 1, is based on times to reach these facilities. The shorter the time, the better the household access in a particular region. The general level of a region's development is the average of the access to facilities index of all its households. A higher value indicates more advanced development.

## Measurement issues

To calculate the individual, household and regional indexes, the report uses principal component analysis.<sup>3</sup> It has the following advantages:

- It allows use of every piece of relevant information gathered by the three rounds of the Nepal Living Standards Survey that logically contribute to, or reflect, higher potential at the individual, household and regional levels;
- For the access to facilities index, it takes into account the interrelation between different elements of access and eliminates data redundancy;
- It generates optimal weights for each element in constructing the index; and
- It shortlists those elements—from a much longer list—that are the core determinants of the index, and where policy intervention would be most effective.

Principal component analysis is commonly used to construct wealth indexes (such as in the Demographic and Health Surveys) and a variety of socio-economic indexes. In Nepal, this report marks the first comprehen-

sive attempt to apply the technique to data from the National Living Standards Surveys.

The HDI and similar indexes are based on small sets of information due to the requirement of international comparability, and give subjective and pre-assigned weights. In a national context, one can use a much larger set of information to conceptualize human development, such as based on productive abilities, and create more robust estimates. Principal component analysis also gives weights endogenously. It reduces the dimensionality of data in a scientific way, getting rid of variables strongly correlated with other “primary” variables. This helps policy makers to focus on those aspects that are most critical in themselves and also in influencing multiple other aspects.

## Calculating the regional access to facilities index

Data from the three National Living Standards Surveys in 1995, 2003 and 2011 were used to construct the regional access index. Annex 6, table A6.1 provides the complete list of all facilities factored into the calculation. Scores for each facility were assigned by a scheme outlined in table 3.1.

TABLE 3.1

Time taken to reach closest facility	Score
Facility next to household	6
Less than 30 minutes	5
30 minutes to 1 hour	4
1-2 hours	3
2-3 hours	2
3 hours and more	1
Not applicable/no facility around	0

With data from the first National Living Standards Survey in 1995, principal component analysis yielded three principal components based on the eigenvalue criterion. The first component placed the highest weights on access to health posts, paved roads, bus stops,

A region's development level is the average of the access to facilities index of all its households. A higher value indicates more advanced development.

**Access to drinking water emerges as a significant determinant of regional development status in 2003 and 2011.**

markets, cooperatives, agricultural centres and commercial bank branches. The second component is defined mainly by access to dirt roads and *haat bazaars*,<sup>4</sup> while the third by access to primary schools and local shops.

Based on data from the second Nepal Living Standards Survey in 2003, the first component placed the highest weights on access to bus stops, paved roads, dirt roads, markets, agricultural centres, cooperatives, banks, drinking water and telephone booths. The second component was defined by access to dirt roads and *haat bazaars*, while the third by primary schools, health posts, local shops and post offices.

Analysis of data from the third survey in 2011 resulted in eight principal components, with the first placing highest weights on primary, secondary and higher secondary schools, hospitals, private clinics, bus stops, paved roads, dirt roads, local shops, markets, agricultural centres, cooperatives, post offices, telephones, police, internet access and libraries. The second included health posts, dirt roads, *haat bazaars* and drinking water in the dry season. The third emphasized drinking water in the rainy season and the fifth access to early child development centres. Components 4, 6, 7 and 8 do not have any significant weights<sup>5</sup> on any facility.

The 10 most important facilities common to all three surveys are: health posts, paved roads, bus stops, markets, cooperatives,

agricultural centres, dirt roads, *haat bazaars*, primary schools and local shops.

The questionnaires for the three surveys were not identical, however. The third gathered information on facilities not included in the second, and so on. While the common list above is indicative of the persistent importance of certain facilities, the second and third surveys contain significant information specific to them. For example, in the third survey, facilities such as internet access, libraries and early childhood development centres emerged as important determinants of overall development status. The most significant omission from the first survey is drinking water, which features prominently in the second and third surveys.

The access index for the nine eco-development regions at three points of time, 1995, 2003 and 2011, are shown in table 3.2. The absolute value of the index may be compared across regions within a particular year, but not across periods.

Analysis of the index reveals that the Kathmandu Valley ranks first, while the Western, Mid Western and Far Western Mountains is the least developed region. The rankings, or relative levels of access, remained unchanged during 1995-2011, but the gap in mean between the most and least developed regions has narrowed over time. In 1995, the Kathmandu Valley was 2.5 times as developed as the West-

**TABLE 3.2**

**Access index of the nine eco-development regions**

Region	1995				2003				2011			
	Mean	Standard deviation	Coefficient of variation	Rank	Mean	Standard deviation	Coefficient of variation	Rank	Mean	Standard deviation	Coefficient of variation	Rank
Kathmandu Valley	74.8	7.8	10.4	1	84.8	6.3	7.5	1	78.3	11.9	15.2	1
Eastern and Central Tarai	67.6	13.6	20.2	3	74.3	13.5	18.1	3	70.8	11.1	15.7	3
Eastern and Central Hills	40.9	16.2	39.7	6	41.9	22.5	53.8	6	48.6	22.4	46.0	6
Eastern and Central Mountains	39.9	17.0	42.7	7	37.8	14.3	37.9	7	46.6	18.4	39.6	7
Western Tarai	68.3	8.9	13.1	2	78.0	12.9	16.5	2	71.4	10.1	14.1	2
Western Hills	47.6	16.6	34.8	5	49.4	23.7	48.0	5	58.7	17.9	30.4	5
Mid Western and Far Western Tarai	61.4	12.8	20.9	4	68.9	15.9	23.1	4	69.5	13.2	19.1	4
Mid Western and Far Western Hills	39.1	16.8	43.0	8	34.3	20.1	58.7	8	41.0	20.4	49.8	8
Western, Mid Western and Far Western Mountains	28.9	8.5	29.3	9	26.9	15.8	58.5	9	37.3	20.3	54.5	9
<b>Nepal</b>	<b>55.2</b>	<b>19.8</b>	<b>35.8</b>		<b>60.6</b>	<b>24.7</b>	<b>40.8</b>		<b>61.7</b>	<b>20.3</b>	<b>32.9</b>	

Source: Computed from raw National Living Standards Survey data using principle component analysis.

ern, Mid Western and Far Western Mountains, but only twice as developed in 2011.

There are strong inequalities in access to facilities within the less developed regions, reflected by the high coefficient of variation. In fact, inequality of access in the Western, Mid Western and Far Western Mountains in 2011 was twice that of 1995. It increased in five out of the nine regions between 1995 and 2011, although the mean score improved.

Some key conclusions from the index are that the regions are most unequal in terms of the access of households to the 10 facilities identified above. While access gaps across regions have narrowed, intra-regional inequalities have risen sharply in less developed areas. This may be a concern, because inequality in access to facilities can eventually lead to inequality in development outcomes.

### Calculating the household well-being index

Based on the Nepal Living Standards Surveys, 39 variables, both publicly provided and privately procured, were scored for the household well-being index. A complete list is provided in annex 6, table A6.2, along with the scoring method (table 3.3 features an example).

The 39 variables were combined with the regional access index to create the household well-being index, meaning that a total of 63 variables were jointly analysed. Before presenting the results in various disaggregated forms, some important trends can be highlighted.

A higher value on the index indicates a more capable household. The index is, however, not symmetrically distributed. Indexes based on the first and second Nepal Living Standards Surveys are skewed to the right as means exceed median values. Therefore, they have relatively fewer high values. On the contrary, the distribution of the index based on the third survey is slightly skewed to the left; the bulk of the values, including the median, lie to the right of the mean. It therefore has relatively fewer low values. This indicates that household well-being

TABLE 3.3

Scoring drinking water sources in regions

Source	Score
Piped water	7
Covered well	6
Hand pump/tube-well	5
Open well	4
Spring water	3
River	2
Other source	1

shows a tendency towards more uniformity of late, which is a welcome development.

Common to findings from the calculation of all three indexes is the predominance of the access index and assets owned by either individuals or households, jointly described as physical capital. The first principal component is always dominated by physical capital; it garners the highest weights in all three surveys, emerging as the most important contributor to household well-being.

Physical capital comprises both public and household investments. Some variables in a household's well-being come from its own investments in, for example, materials for walls, roofs, floors and windows; sanitary systems; garbage disposals; toilet facilities and the like. Access to facilities such as for health, education and information, on the other hand, comes from public investment. They can also make positive contributions to well-being.

The Nepal Living Standards Survey measures access in terms of one-way travel time to reach a certain facility. The time depends on the mode of transport, such as on foot, bicycle, rickshaw, automobile or bus. The mode in turn depends on a household's distance to that facility and affordability, which is private. So access to facilities has both public and private investment components. Facilities provided by the Government are public investments affecting a household's productive capability. On the other hand, access to household utilities and amenities, distance to a facility and mode of transport to that facility are private decisions.

**Household well-being is determined by both physical as well as human capital.**

**Public investment has growing impact on household well-being.**

Apart from the physical capital that a household owns, human capital emerges as a second major factor in determining the value of the household well-being index. Human capital is primarily a private good. For instance, an ailing individual makes decisions to consult a doctor, homeopath, traditional healer and so on, and chooses the place of consultation, such as a private or public hospital, although the existence of a government hospital is essentially a public investment. Similarly, a household's decision to send children to school and/or college and for how many years is a private decision, while setting up a school in a given locality is a public provision.

Compared to 1995, in 2003 and more so in 2011, the importance of variables depending on public investment became more pronounced in the principal component—physical capital—of the household well-being index. The principal component in 1995 mostly comprised of private goods, including housing characteristics. In contrast, in 2003 it involved both private goods like housing materials, as well as public provisions in terms of access to paved roads, bus stops, markets, agriculture centres and cooperatives. In 2011, it mainly consisted of access to government facilities such as secondary and higher secondary

schools, public hospitals, roads, post offices, police stations, libraries, bus stops, market agricultural centres and cooperatives. All require public investments in infrastructure. This finding strongly reiterates the role of public investment in strengthening productive abilities. In this respect, Nepal is facing a challenge of full utilization of its fiscal space due to political instability.

After the calculation of the household well-being index, sample households were arranged in descending order and divided into 10 approximately equal sets. The deciles created in this way range from the most well-off (first decile) to the least well-off (last decile) households. A calculation of the mean capability score of each decile found that, based on data from all three Nepal Living Standards Surveys, differences in scores are uneven, implying that the index is not uniformly distributed. The maximum difference in mean is between the first two deciles in the first and second surveys, and between the last two deciles in the third survey. This can be interpreted as meaning that households in 1995 and 2003 belonging to the uppermost decile were in a relatively better position than those in the same decile in 2011. On the other hand, in 2011, the least well-off deciles were in a poorer condition than in 1995 and 2003.

**TABLE 3.4**

**Deciles of the household well-being index**

Deciles	2011		2003		1995	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Decile 1	48.855	4.745	39.164	7.439	49.872	7.751
Decile 2	43.348	0.909	30.950	1.510	40.533	1.555
Decile 3	40.684	0.691	25.598	1.394	35.546	1.394
Decile 4	38.500	0.630	21.289	1.122	31.233	1.035
Decile 5	36.522	0.531	17.979	0.820	27.874	0.925
Decile 6	34.624	0.606	15.422	0.670	24.806	0.888
Decile 7	32.206	0.835	13.359	0.577	22.000	0.747
Decile 8	28.851	1.200	11.117	0.735	19.213	0.825
Decile 9	23.943	1.665	8.114	0.990	16.535	0.745
Decile 10	15.970	3.863	4.166	1.446	12.134	2.677
<b>Total</b>	<b>33.382</b>	<b>8.880</b>	<b>16.986</b>	<b>9.380</b>	<b>25.853</b>	<b>9.868</b>

Source: Computed from raw Nepal Living Standards Survey data using principal component analysis.

**TABLE 3.5**

**A gradual increase in urban residents**

Year	Area	Deciles										Overall	Mean	Standard deviation
		Decile 1	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Decile 10			
2011	Urban	70.7	49.8	32.4	18.4	10.7	8.9	8.2	12.6	15.7	13.4	20.9	38.1	9.492
	Rural	29.3	50.2	67.6	81.6	89.3	91.1	91.8	87.4	84.3	86.6	79.1	32.1	8.264
2003	Urban	86.5	70.6	31.8	11.7	7.4	6.9	3.0	2.3	1.1	.1	16.5	29.6	7.117
	Rural	13.5	29.4	68.2	88.3	92.6	93.1	97.0	97.7	98.9	99.9	83.5	14.4	9.169
1995	Urban	42.5	32.1	13.8	5.2	3.2	3.7	2.7	.9	0	.1	7.3	39.2	9.911
	Rural	57.5	67.9	86.2	94.8	96.8	96.3	97.3	99.1	100	99.9	92.7	24.7	9.060

Source: Computed from raw Nepal Living Standards Survey data using principal component analysis.

Differences in mean scores between deciles have started decreasing step by step, however. In the first survey, the maximum difference was 10; this fell to 8 in the second survey and 7.85 in the third. Evidence on narrowing gaps is thus mixed under this classification. One significant feature of the decomposition is the high value of the standard deviation in the topmost and bottom deciles, as shown in table 3.4.

Based on table 3.4, figure 3.1 presents a visual representation of how gaps between deciles have evolved over time.

The distances between deciles increased quite sharply between 1995 and 2003, a trend observed in all the different indexes measuring potential productive abilities that follow in this chapter and chapter 5. Distances came down in 2011. Similar spikes in consumption and income inequality have been recorded elsewhere. A possible explanation may be the onset of liberalization in the first period, which, in the experience of most developing countries, is accompanied by at least a temporary rise in inequality. The fact that inequality started subsequently declining may be a reflection of the Kuznets’ curve phenomenon. In any case, this is a positive trend.

In terms of the relative status of rural and urban households during the last 15 years, comparison of calculations based on data from the three Nepal Living Standards Surveys indicates that over time the proportion of urban households is growing, though gradually. In 1995, only 21.23 percent of total households in Nepal lived in urban areas. The figure in-

creased to 29.75 percent in 2003 and to 34.86 percent in 2011.

The urban mean (table 3.5) is greater than the rural mean, according to data from all three surveys, but the gap is slowly narrowing. The difference in the average well-being score between rural and urban Nepal was 15 in 1995 and 2003; it came down to seven in 2011. The urban proportion in the lower deciles increased significantly of late. This suggests a need for appropriate policies to manage urbanization, without neglecting the development of rural areas, where most of Nepal’s citizens are located.

Nepal is primarily a patriarchal society, with 73.4 percent of households headed by male members in 2011. Nonetheless, the pro-

**FIGURE 3.1**

**Gaps between deciles, percentages**

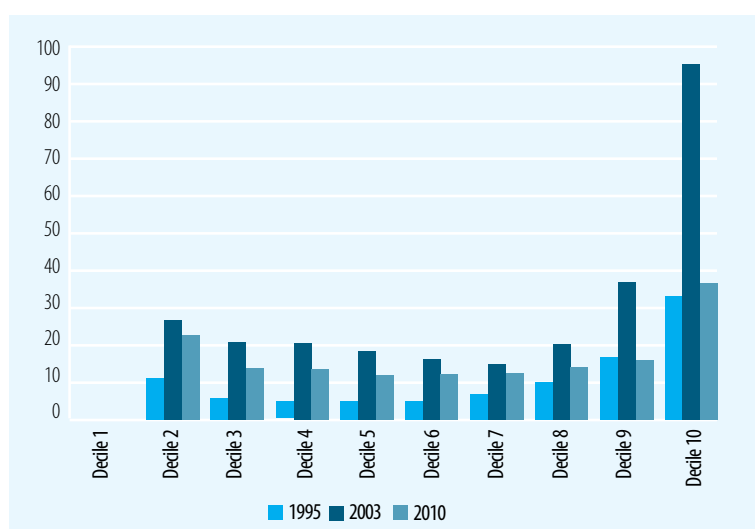
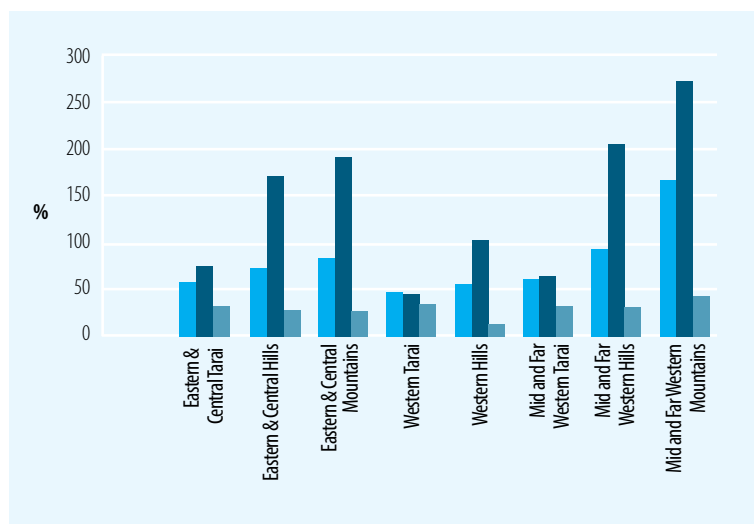


FIGURE 3.2

Gaps in the average household well-being index between the Kathmandu Valley and other eco-development regions, 1995, 2003 and 2011



portion of female-headed households has risen over the past 15 years.

In 1995, just 13.6 percent of household heads were females, a figure that climbed to 19 percent in 2003 and 26.6 percent in 2011. Table 3.6 shows that the share of female-headed households in the top decile rose from 5.1 percent to 18.9 percent during 1995-2011. The share of female-headed households rose more significantly in the upper deciles than in the lower, less well-off deciles. The gap in mean well-being between male- and female-headed households has come down sharply over the years.

Annex 7 shows the distribution of households by deciles and regions, providing detailed information on how shares have

evolved over time. The majority of households in the highest decile belong to the Kathmandu Valley, as could be expected, across data from all three surveys. The Eastern and Central Tarai had the second largest share of the highest decile in 1995 at 28 percent, but that fell to only 9.3 percent in 2011. The Western Hills, on the other hand, shows higher presence in the top decile in 2011 than in 1995.

From the perspective of inclusive development, households in all regions should advance as equally as possible. But the nine eco-development regions are still remarkably different in terms of household well-being. Table 3.7 shows average well-being scores of each region as well as their ranks during 1995-2011.

The first and last ranks remain unchanged between 1995 and 2011. But there are some significant changes in rankings of some of the other regions. In the last column, regions whose rankings went up are underlined, while those whose rankings fell are circled. The most striking fall is that of the Western Tarai, followed by the Eastern and Central Tarai, and the Mid Western and Far Western Tarai. Generally, average household status in the Tarai fell relative to the other regions.

A comparison of the relative gaps between the Kathmandu Valley and the eight other regions is shown in figure 3.2. Once again, gaps widen between 1995 and 2003, but subsequently close. In fact, the average household well-being index gaps between the Kathmandu Valley and the other eight regions are smaller in 2011 than in 1995.

TABLE 3.6

The number of female-headed households is growing

Year	Gender	Deciles										Overall	Mean	Standard deviation
		Decile 1	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Decile 10			
2011	Male	81.1	78.4	75.4	74.4	75.6	71.6	69.0	72.1	69.8	71.5	73.4	33.67	8.96
	Female	18.9	21.6	24.6	25.6	24.4	28.4	31.0	27.9	30.2	28.5	26.6	32.58	8.60
2003	Male	84.6	82.3	83.6	84.2	81.3	82.2	76.6	78.4	75.8	78.2	80.4	17.287	9.504
	Female	15.4	17.7	16.4	15.8	18.7	17.8	23.4	21.6	24.2	21.8	19.6	15.753	8.745
1995	Male	94.9	93.1	88.2	89.1	88.9	87.4	85.0	83.7	83.3	77.8	86.4	26.295	9.921
	Female	5.1	6.9	11.8	10.9	11.1	12.6	15.0	16.3	16.7	22.2	13.6	22.839	8.932

Source: Computed from raw Nepal Living Standards Survey data using principal component analysis.



TABLE 3.7

## Mean household well-being index values and ranks of the nine eco-development regions

Eco-development region	1995	2003	2011	Ranks		
				1995	2003	2011
Kathmandu Valley	43.17	31.30	41.98	1	1	1
Eastern and Central Tarai	27.36	18.00	31.68	4	4	7
Eastern and Central Hills	24.96	11.57	33.12	6	6	④
Eastern and Central Mountains	23.47	10.73	33.26	7	7	③
Western Tarai	29.29	21.65	31.32	2	2	8
Western Hills	27.84	15.48	37.05	3	5	②
Mid Western and Far Western Tarai	26.95	19.08	32.09	5	3	6
Mid Western and Far Western Hills	22.47	10.30	32.26	8	8	⑤
Western, Mid Western and Far Western Mountains	16.22	8.41	29.52	9	9	9

Source: Computed from raw Nepal Living Standards Survey data using principal component analysis.

## Caste and ethnicity

The average household well-being index varies widely depending on the caste or ethnicity of household heads. The mean score is high for upper-caste groups like the Brahmans and Chhetris. The share of the upper castes is high in the top deciles, showing a downward trend towards the bottom. Among the Tarai Brahmans and Chhetris, however, the fall in the share in the top decile is quite pronounced, as is the rise in the lower deciles.

Among the Janajatis, the share has significantly risen in the upper and middle deciles, with declines in the lower deciles. The share of Newars and Thakalis has decreased somewhat in the upper deciles with a relatively small rise in the lower deciles. Traditionally considered lower-caste groups are mostly concentrated in the bottom deciles. There has been some increase in the share of Dalits in the upper deciles, but the proportion remains largely unaffected in the middle and lower deciles. The share of Muslims in the lower deciles has climbed sharply.

One positive sign is that differences in averages among caste and ethnic groups have started falling. Chapter 5 provides detailed analysis of the evolution of household well-being and individual ability indexes according to caste and ethnicity.

## Concluding remarks

While the regional access and household well-being indexes are connected, each is important in its own right. The access index shows the ranking and gaps of the nine regions. The well-being index logically depends on the access index, and a set of other variables that are essentially households' own investments.

The access index underscores the need to close regional gaps in order to achieve more evenness in household well-being. But investment in human capital, such as education of the household head, and physical capital, such as sanitation, also emerge as priorities. Our analysis underscores equitable education, already prioritized by the Government, as a key determinant of household well-being, rather than enrolment rates at the national level. For physical capital, Nepal is slightly behind sanitation-related Millennium Development Goal (MDG) targets, as addressed in its MDG acceleration framework. The framework's priority of "toilets for girls in schools" is not the issue identified in the present analysis, which has more to do with sanitation facilities in the household.

Mean gaps in both the access and well-being indexes widened during 1995-2003 and started narrowing during 2003-2011. This

**Well-being gaps between socio-economic groups are narrowing.**

could be explained by ad hoc liberalization in the first period, followed by more emphasis on inclusive progress. There was also disruption of development in remote rural areas because of violent conflict during 1996-2005, which was rectified in the later period. Conflict, disturbances and economic upheavals also explain the increase in income inequality during 1995-2003 and decline thereafter, suggesting that conflict had a more seriously negative impact on the well-being of poorer and more vulnerable communities.

The Kuznets's curve phenomenon is well known. Lower inequality during 2003-2011 was not accompanied by higher growth, however, but by lower growth. This is an interesting phenomenon, where Nepal seems to have moved in a reverse direction along the Kuznets's curve. While "inclusion without growth" is just as unattractive as "growth without inclusion," the trend towards inclusion in well-being at least implies that a foundation for stronger inclusive growth is being built. Narrowing gaps in well-being is consistent with the lower inequality of income and consumption reported elsewhere. Combining the two sets of facts, the policy message is that more emphasis is needed to step up the rate of growth, while continuing to strengthen the efforts made through social protection policies, in particular to reduce inequality.

While growth is urban-centric in many developing countries, this is not necessarily a good prescription for Nepal, given its immense spatial diversity. The comparison with the Kathmandu Valley is emphasized with a view to urging more investment in agriculture across this predominantly rural country.

The nine eco-development regions can be clearly ranked from best to worst in terms of access to facilities. The ranking has not changed in the last nearly 20 years, implying that regions relatively developed in 1995 remained so in 2003 and 2011. The Kathmandu Valley region, the Western Tarai, and the East-

ern and Central Tarai rank in the top three, while the Eastern and Central Mountains, the Mid Western and Far Western Hills, and the Western, Mid Western and Far Western Mountains rank in the bottom three. In general, the Tarai regions have fared better than the Hills regions.

The gap between the most and least developed regions seems to be easing over time, however. In terms of development status as measured by access to facilities, in 1995, the Kathmandu Valley and the Western Tarai were, respectively, 2.6 and 2.3 times more developed than the Western, Mid Western and Far Western Mountains. Although there was a spike in 2003, this differential has decreased to 2 and 1.9, respectively, in 2011. There are strong inequalities within the less developed regions, nonetheless. The coefficient of variation in the Western, Mid Western and Far Western Mountains in 2011 is not only high, but nearly twice as high as in 1995. Inequality increased within four of the nine regions, mainly the Mountains and Hills, in 2011 compared to 1995. Given the inability of the Government to fully utilize its fiscal space to increase public investment, development partners are well advised to invest in schools, health posts and roads, especially in rural areas.

The household well-being index shows significant changes during 1995-2011. The Kathmandu Valley consistently ranks at the top, while the Western, Mid Western and Far Western Mountains rank the lowest. Among the regions that have advanced are the Western Hills, the Eastern and Central Mountains, and the Eastern and Central Hills. Regions that have regressed in ranking are the Western Tarai, the Eastern and Central Tarai, and the Mid Western and Far Western Tarai. Comparison of the Kathmandu Valley and other regions shows that in spite of considerable inequalities, the gaps in 2011 are smaller than in 1995. Evidence from the Tarai regions indicates that

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**Vigorous investment in agriculture is required in order to reduce regional imbalance in well-being.**

even though access to facilities is an important determinant of household status, there were other factors that had significant impacts, especially in terms of the other human development indicators reported in chapter 2.

Although this report does not find too much discrepancy between male- and female-headed households yet, this may quickly change due to the high rate of out-migration of male members of rural households. The male-female ratio in Nepal has gone down quite dramatically to 94 men per 100 women, according to the 2011 Census.

Overall, the fact that the mean gaps in potential productive abilities, have not widened, as reflected by the access and well-being indexes, is an extremely positive outcome. In fact, rural and urban gaps have narrowed. Some discrepancies between the nine eco-development regions, as well as different ethnic groups, have remained persistent, which is typical in a mountainous country. This situation needs very firm action, including in terms of donors and development partners who, in some cases, avoid difficult regions due to higher “business costs.”

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<sup>1</sup> Guha-Khasnobis 2012a.

<sup>2</sup> Guha-Khasnobis 2012b.

<sup>3</sup> For details on principle component analysis, see the technical appendix.

<sup>4</sup> *Haat bazaars* refer to temporary local markets that operate on certain day(s) of the week or sometimes month.

<sup>5</sup> The value of squared cosines of each variable in a factor is taken as the significance of that variable.



CHAPTER 4

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# Labour and Total Factor Productivity

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# 4.

## Labour and Total Factor Productivity

Aggregate labour productivity is low and has to be improved. Enhancing productivity, particularly in manufacturing, could propel growth and development. Yet there is no stable pattern of growth. Regions have a shrinking number of firms and jobs. Correcting policy lapses and structural impediments could reverse these trends.

Productivity increases are vital for sustaining high growth, which is a principle basis for economic advancement and improvement in people's well-being. As a measure of output in relation to input (Hulten, 2001), productivity indicates the efficiency of inputs in firms and industries during the production process, revealing the strengths and weaknesses of an entire production system. Productivity increases with the rising efficiency of factors of production.

Analysis of productivity indicators needs due attention in policy-making for providing not only sector and micro-level policy guidance, but also for overall policy direction from a macroeconomic perspective, which is critical for a low-income country like Nepal. In chapters 2 and 3, we examined the extent of productive capacity at the regional, household, as well as individual levels in some traditional as well as innovative ways. This chapter analyses district labour productivity, and the total factor productivity of manufacturing establishments in order to get a quantitative sense of the actual usage of such productive capacity in delivering concrete outputs.

### Labour productivity at the district level

Labour productivity offers a dynamic measure of economic growth, competitiveness and living standards. It is the value of goods and services produced in a period of time, divided by the hours of labour used to produce them. It

measures output produced per unit of labour, and is usually reported in terms of output per hour worked or output per employed person. Put another way, labour productivity is equal to the ratio between a volume measure of output and a volume measure of input use.

Constraints on data availability make the detailed calculation difficult in Nepal; this chapter computes labour productivity by district as:  $\frac{Y_i}{L_i}$ , where district GDP is output ( $Y_i$ ) and the economically active population is labour ( $L_i$ ). Labour productivity has been calculated for 2010/11 based on the data provided by the Central Bureau of Statistics.

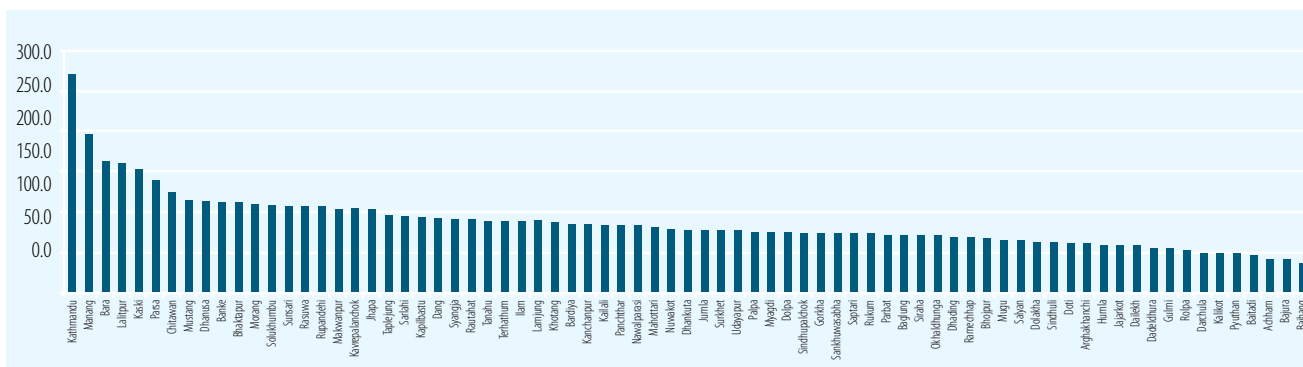
Labour productivity is also computed for the primary, secondary and tertiary sectors for the nine eco-development regions. A lack of time series data on district GDP and the labour force did not allow a comparative analysis of change over time. Computation at a single point of time provides cross-sectional distribution of labour productivity over different districts and regions.

### Low and skewed labour productivity distribution by district

Average national labour productivity stands at Rs. 118,107.7. Figures 4.1 and 4.2 present an index of district labour productivity compared to the national average and the Kathmandu district. Out of 75 districts, 56 are below the national average; only 19 are above or equal to it. Kathmandu, with the highest ranking, has labour productivity almost three times greater than the national average. The

FIGURE 4.1

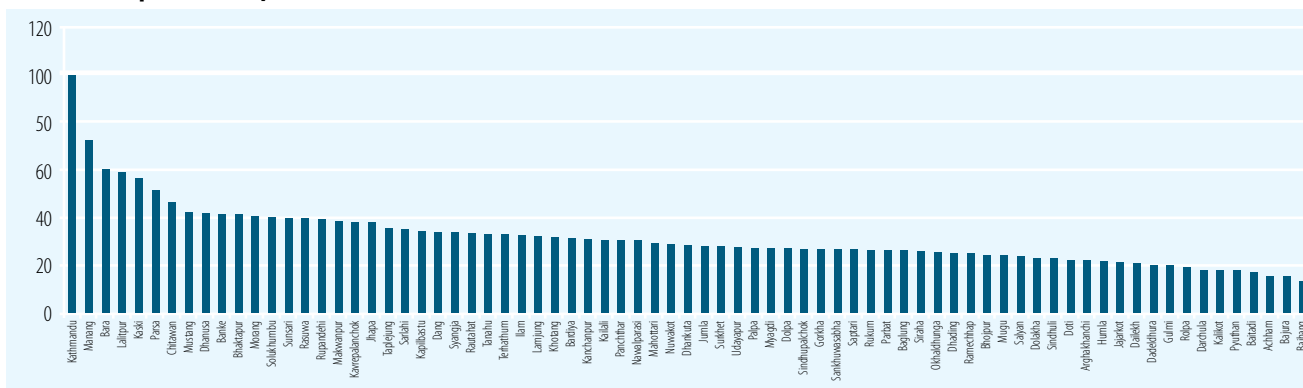
District labour productivity (Relative to National Average)



Source: Calculated based on district level GDP and economically active population provided by Central Bureau of Statistics, annex 8 table A8.1.

FIGURE 4.2

District labour productivity (Relative to Kathmandu)



Source: Calculated based on district level GDP and economically active population provided by Central Bureau of Statistics, annex 8 table A8.1.

top districts after Kathmandu are Manang, Bara, Lalitpur and Kaski. Manang, a mountainous district, has low population density and is a tourist destination.

Districts from the Far Western and Mid Western development regions, such as Bajhang, Bajura, Achham, Baitadi, Pyuthan, Kalikot, Darchula and Rolpa, are at the bottom. Labour productivity in these districts is less than 20 percent of the level in Kathmandu. Figure 4.3 further shows the distribution of district labour productivity through a histogram that very much skews to the left, indicating that many districts have less than average labour productivity.

A majority of districts achieve around 80 percent of the national average, a lopsided pat-

tern reflecting large gaps in the skills of workers and use of improved technology, both of which are key to higher productivity. Labour productivity is thus not only low, but also involves a very uneven distribution of capabilities.

Another perspective on labour productivity is given by averages for three broad economic sectors (figure 4.4). The primary sector, mainly agriculture, has an average labour productivity of Rs. 68,562.8, which is about 58 percent of overall national average productivity (annex 8, table A8.2). This is substantially lower than the average in the secondary sector, encompassing manufacturing, construction and electricity, gas and water, where the average is Rs. 198,486.2. The tertiary or services sector average is Rs. 225,684.3.

Nationally, agriculture suffers from low investment, and lacks commercialization and modernization. Two-thirds of people in the labour force are engaged in it, but the majority are unskilled, lacking knowledge on updated cultivation practices. The sector largely depends on the monsoon, while access to modern inputs and extension service is limited and poor in quality. Underemployment is a serious problem. Many young people have left farming for foreign employment. Nepal has become a net food importer.

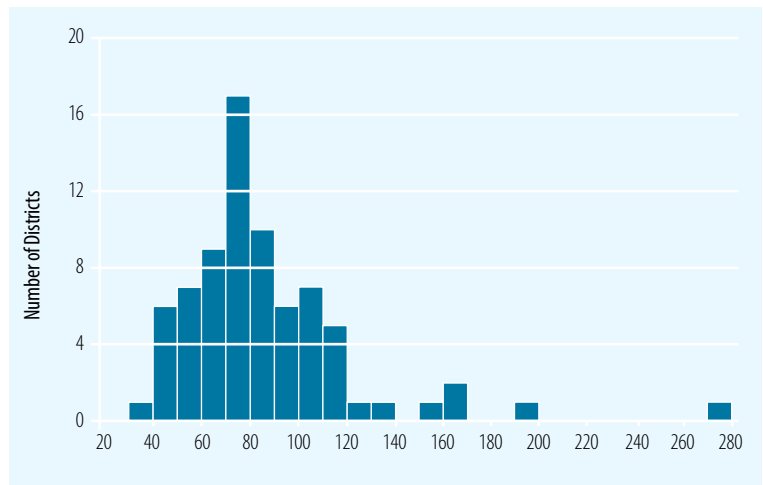
In terms of contribution to GDP and employment, the secondary sector is in an early stage as it absorbs only about 9 percent of the labour force and contributes to less than one-fifth of total GDP. Experience in other developed countries shows that the manufacturing sector can generate higher economic growth and large scale employment simultaneously. Contrarily, Nepal has faced de-industrialization along with a fast move to economic and trade liberalization.

On the positive side, the tertiary sector is relatively efficient even compared to the secondary sector, as is the case in many emerging economies. This sector now contributes more than half of total GDP. Wider and more judicious use of modern banking, finance and telecommunication facilities as well as more skilled manpower could further speed up labour productivity in this sector compared to the others. High productivity in services stems mainly from Kathmandu and some other districts, however, and overall the sector has not generated enough employment to absorb excess labour from agriculture.

Annex 8 presents the top 10 districts with high labour productivity in the three sectors, which reveals some interesting facts. The same districts do not have the highest labour productivity in all sectors, indicating variations in comparative advantages. Some districts in the Mountains, such as Manang, Taplejung and Mustang, achieve top labour productivity rates in the primary sector. Khotang, Mugu, Manang, Dolpa and Humla

FIGURE 4.3

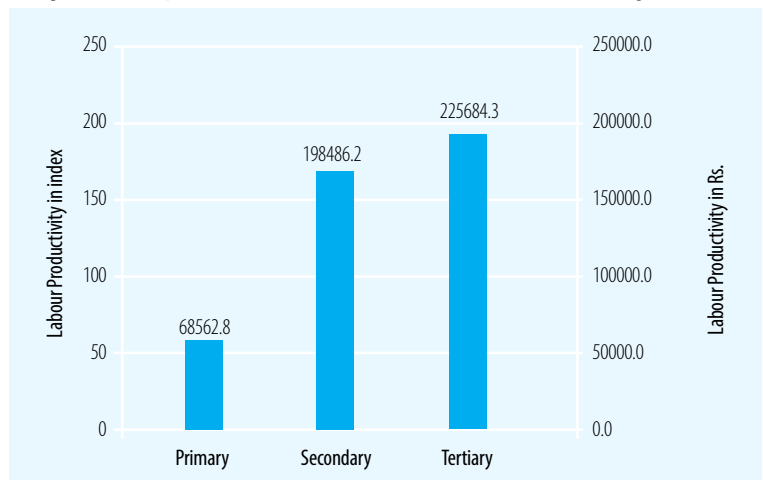
Histogram of the district labour productivity index



Source: Calculated based on district level GDP and economically active population provided by Central Bureau of Statistics, annex 8 table A8.1.

FIGURE 4.4

Labour productivity of different sectors (Relative to National Average)



Source: Calculated based on district level GDP and economically active population provided by Central Bureau of Statistics, annex 8 table A8.2.

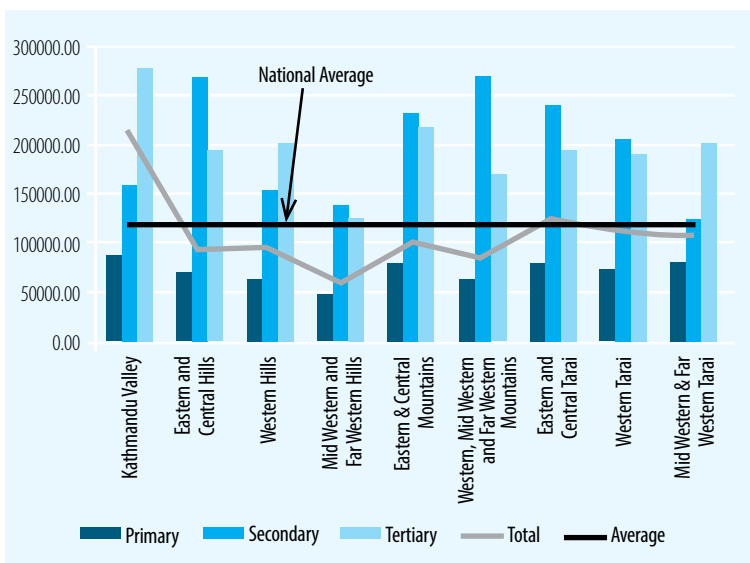
do so in the secondary sector, and Rasuwa, Sankhuwasabha, Nuwakot and Jumla in the tertiary sector.

### Labour productivity in the nine eco-development regions

Labour productivity calculations across the nine eco-development regions show that the Kathmandu Valley has the highest score, followed by the Eastern and Central Tarai (figure 4.5 and annex 8, table A8.2). Other regions

FIGURE 4.5

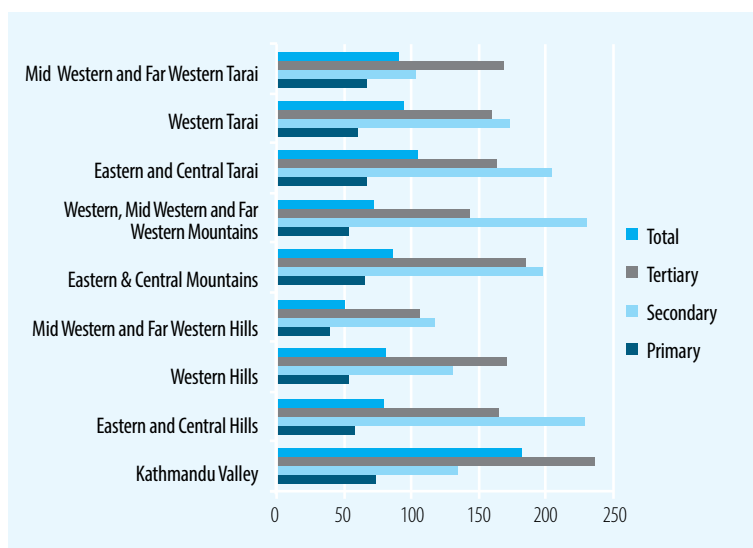
Regional and sector labour productivity (in Rs.)



Source: Calculated based on district level GDP and economically active population provided by Central Bureau of Statistics, annex 8 table A8.2.

FIGURE 4.6

Region and sector labour productivity relative to the national average



Source: Calculated based on district level GDP and economically active population provided by Central Bureau of Statistics, annex 8 table A8.2.

have labour productivity below the national average. Mid Western and Far Western Hills rank lowest. Lower productivity is due to inadequate and poor quality physical and human capital. It affirms the low capability of these regions from the standpoint of human development.

In all nine regions, the labour productivity of the primary sector is low compared to the secondary and tertiary sectors, showing the relative backwardness and inefficiency of agricultural activities. Primary sector labour productivity in the Hills and Mountains is lower than in the Tarai.

Productivity is highest in the secondary sector in almost all regions except the Kathmandu Valley, the Western Hills, and the Mid Western and Far Western Tarai, where the tertiary sector ranks highest.

The Western, Mid Western and Far Western Mountains have the highest labour productivity in the secondary sector, due to the strong performance of manufacturing establishments, such as distilleries, and paper and furniture industries; producers of herbal products; and construction activities. These engage a limited number of people, however.

The index of labour productivity in the nine regions relative to the national average is presented in figures 4.6 and 4.7.

Labour productivity, the HDI and poverty reduction

Higher labour productivity could mean people having more potential to increase their incomes, which could enhance human development through greater spending on health and education. Figures 4.8 and 4.9 present the relationship between labour productivity and the Human Development Index (HDI) for the 75 districts and nine eco-development regions, respectively, indicating a positive correlation. Figure 4.10 shows that when productivity is high, there is a strong possibility that poverty will decline, suggesting that the former could be a cornerstone of poverty reduction efforts.



### The total factor productivity of manufacturing establishments

Modern growth theory suggests two fundamental sources of economic growth: the rate of factor accumulation and total factor productivity. After Solow (1957), many theoretical works have tried to decompose the growth rate of aggregate output into a component explained by factor growth and a Solow residual component—or total factor productivity (Amin 2002). A higher growth path based on higher total factor productivity is considered preferable to increased application of inputs, as the latter is deemed unsustainable due to supply constraints and the phenomenon of diminishing returns. Total factor productivity as a crucial measure of efficiency is thus an important indicator in policy-making and reform processes (Saliola and Seker 2011).

Broadly, two types of factors influence the economic performance of a firm: internal ones, such as technology, management practices and marketing strategies, and external ones, such as public policy and the institutional environment (Subramanian et al. 2005). Put another way, total factor productivity is driven primarily by technology, the quality of human and physical capital, and institutional factors related to governance and management that shape the environment for entrepreneurial activities.

A rigorous quantitative analysis below examines trends in total factor productivity in the manufacturing sector in Nepal, the expansion of which is key for fast structural transformation, higher economic growth, employment generation and sustainable development. Attention to this sector is particularly important given its currently low and declining contribution to GDP.

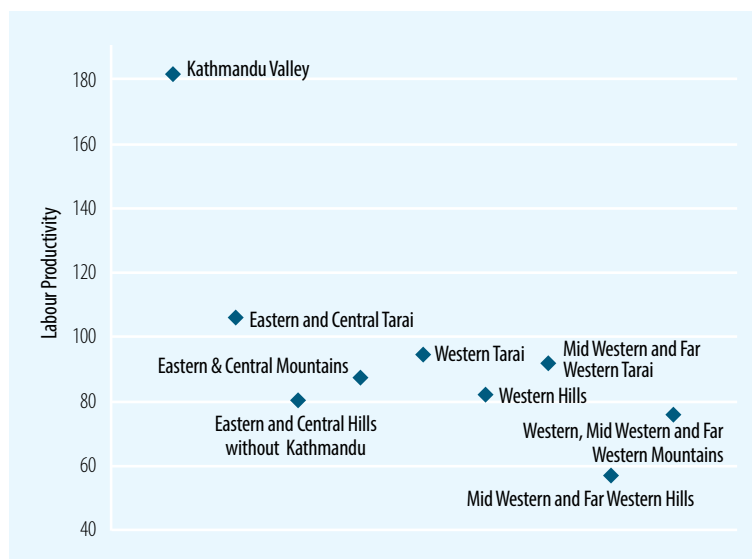
### Some findings on total factor productivity in manufacturing

#### Changing numbers of manufacturing establishments

Data from three manufacturing surveys conducted by the Central Bureau of Statistics were

FIGURE 4.7

### Regional spatial distribution of labour productivity



Source: Calculated based on district level GDP and economically active population provided by Central Bureau of Statistics, annex 8 table A8.2.

FIGURE 4.8

### Labour productivity and the HDI by district



Source: Annex 4 and calculated Labour Productivity from district level GDP and Economically active population provided by Central Bureau of Statistics, annex 8 table A8.1.

used to compute and compare the total factor productivity of different industries in various eco-development regions. The surveys show that there were 3,557 firms in 1997, 3,213 in 2002 and 3,446 in 2007 (annex 10), an overall decline. The dip in 2002 can be explained by internal conflict at that time.

Manufacturers of food products and beverages, wood products, chemicals, and rubber and plastic products, as well as printing and publishing firms in-

FIGURE 4.9

Labour productivity and the HDI by region



Source: Annex 4 and calculated Labour Productivity from district level GDP and Economically active population provided by Central Bureau of Statistics, annex 8 table A8.2.

FIGURE 4.10

Labour productivity and poverty levels in 75 districts



Source: Small Area Estimates of Poverty by Central Bureau of Statistics and Calculated labour productivity from district level GDP and Economically active population provided by Central Bureau of Statistics, annex 8 table A8.1.

creased in number over the period, whereas producers of textiles and apparel, leather products, paper products and fabricated metal products declined substantially.<sup>1</sup> Apparel manufacturing firms suffered from the elimination of quotas by the United States as per the 2004 ruling by the World Trade Organization.

Firms where numbers increased between 1997 and 2007 included those producing non-metallic mineral products (e.g., bricks, tiles, cement, lime, concrete and plaster, and glass), base metals, and electrical machinery and apparatuses, as well as furniture.<sup>2</sup> By 2007, the top five types of manufacturers by number included food products and beverages, textiles, non-metallic mineral products, textile industries, furniture and wood industries (such as sawmills). These are mainly low-tech industries, suggesting that Nepal lacks modern high-tech manufacturing firms.

Regionally, the Kathmandu Valley witnessed a substantial fall in its number of manufacturing firms, from 1,338 in 1997 to 798 in 2007. The government policy of shifting manufacturing industries out of the capital city due to environmental concerns, and the closing of many garment and carpet industries contributed to the decline. Half the manufacturing firms disappeared in the Eastern and Central Mountains because of poor business environment caused by internal conflict and power outages, among other reasons. Only in the Eastern and Central Tarai did a continuous increase in firms take place. New industries such as a producer of medical equipment and three companies manufacturing motorcycles and their parts opened after 2002. In the Western, Mid Western and Far Western Mountains, 12 additional firms opened between 2002 and 2007.

Due to the closure of a substantial number of firms in the Kathmandu Valley, the Eastern and Central Tarai had the highest share of industries, at 42 percent, by 2007. The Western, Mid Western and Far Western Mountains had only 17 manufacturers, less

than half the number in the Mid Western and Far Western Hills, and less than 1 percent of those in the Eastern and Central Tarai.

While manufacturing firms concentrated mainly in the Eastern and Central Tarai, the number operating in the Kathmandu Valley remained high. The Western Tarai, Western Hills, and Mid Western and Far Western Tarai also hosted a fair number.

Since the density of firms is largely determined by easy market access and available physical infrastructure, only a few located in the Eastern and Central Mountains, the Mid Western and Far Western Hills, and the Western, Mid Western and Far Western Mountains. Factors constraining industrial development in these regions, include lack of physical infrastructure including electricity and roads, and social infrastructure such as education and health services. Access to markets and technology, skilled manpower and finance are other major problems.

### Employment creation in manufacturing establishments

Despite increases in the number of firms in 2007 compared to 2002, employment generated by them declined. The total number of manufacturing jobs was 196,708 in 1997, which fell to 191,853 in 2002 and 177,550 in 2007 (annex 11). This resulted from a shift to more capital-intensive production as well as the closing of many firms producing labour-intensive products. Employment fell substantially in textile and apparel manufacturing, and in tobacco and leather companies. Despite significant job increases in firms producing plastic products and some incremental increase in other areas, job creation lagged behind job losses.

In 1997, textile manufacturers were the top employment generators, followed by makers of construction materials. By 2007, the latter had become the main job creators, followed by manufactures of textiles, and food and beverages.

Changes in employment in manufacturing establishments by region shows that the Kathmandu Valley emerged as the main

loser, with the number of jobs falling from 99,383 in 1997 to 38,909 in 2007. The Eastern and Central Tarai witnessed a gain in employment from 59,196 jobs in 1997 to 92,360 in 2007. The Western Tarai, and the Mid Western and Far Western Tarai also observed a rise. Employment in the Eastern and Central Hills, the Eastern and Central Mountains, and the Mid Western and Far Western Hills declined.

### Average total factor productivity of manufacturing establishments

The overall total factor productivity of manufacturing firms declined from 1997 to 2002, but increased by 2007 (annex 13, table A13.4). Except for a few industries, almost all exhibited a similar trend, due to the severe adverse impacts of internal conflict from 1996 to 2007 and growing competition from cheap imports under an immature liberal trade regime. Seven different types of manufacturing firms, including those involved in publishing and printing, and in producing tobacco, leather, coke, base metals, radio, television and communication equipment, and motor vehicles were among those with negative average productivity. Except tobacco industries, which lost comparative advantages in Nepal, productivities of other types of firms improved by 2007.

In 1997, manufacturers of chemicals and chemical products, electrical machinery and apparatuses, and wood and wood products had an average total factor productivity higher than one, a benchmark for greater productivity. In 2002, only firms involved in publishing, printing and reproducing recorded media had attained this level. By 2007, five different types of firms had exceeded it, comprising jute, carpet, pashmina and textile factories; sawmills and plywood factories; lube oil and lubricant industries; electronics manufacturers; and producers of medical instruments.

Many firms witnessed a decline of total factor productivity in 2007, compared to 2002, such as those in publishing and print-

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**Only a few industries have comparative advantages in Nepal; liberal trade policy has done little to help manufacturing.**

ing, and manufacturers of non-metallic mineral products. In 2007, the firms producing motor vehicles had the lowest total factor productivity, followed by those manufacturing machinery and equipment. Other industries had low scores for various reasons such as energy shortages, political instability, frequent strikes, sour industrial relations and increasing competition.

Total factor productivity trends reveal that only a few industries have comparative advantages in Nepal. The trade policy regime has done very little to help manufacturing firms increase their productivity and efficiency, contrary to arguments often made favouring this approach. A cumulative adverse effect has been seen in export performance, which has markedly deteriorated. Amid a continued rise in imports, the trade deficit reached 28 percent of GDP in 2012-2013, posing a serious problem for economic sustainability.

In recent years, Nepal has been exporting copper wire, galvanized iron pipes, jute, noodles, ayurvedic medicine, plastic utensils, polyester yarn, ready-made garments, shoes and sandals, toothpaste, wire, zinc sheeting and aluminium to India, and paper products, pashmina, ready-made garments, leather goods, tanned skins and woollen carpets to other countries.<sup>3</sup> Except for the category encompassing jute, ready-made garments, pashmina and woollen carpets, all other industries had a total factor productivity that was less than the overall average. Because of this, Nepal has been losing competitiveness in international markets.

#### Total factor productivity of manufacturing in the nine eco-development regions

The 2007 average total factor productivity scores of manufacturing in the nine eco-development regions are presented in figure 4.11 (see also annex 13, table A13.5). The results are largely consistent with general socio-economic development trends in particular regions depicted in different recent

surveys. Comparatively, the Kathmandu Valley and Tarai regions had higher productivity than the Hills and Mountains regions, which lack the necessary infrastructure and environment for developing manufacturing. The Kathmandu Valley had the highest productivity, followed by the Western Tarai, and the Eastern and Central Tarai, while the Western, Mid Western and Far Western Mountains had the lowest. This scenario was similar in 1997 and 2002.

By 2007, many regions had recovered earlier productivity losses, except the Mid Western and Far Western Hills, and the Western, Mid Western and Far Western Mountains, which are the most deprived areas in Nepal.

Patterns in different regions reflect capabilities for manufacturing and employment. Compared to the Kathmandu Valley, the Eastern and Central Tarai, and the Western Tarai, other regions have relatively limited productivity, indicating both underdevelopment and a lack of investment in enhanced capabilities. This explains the migration of people from these regions to urban areas such as the Kathmandu Valley and cities in the Tarai.

#### Total factor productivity and the HDI

Figure 4.12 presents average total factor productivity in 2007 and the HDI values of the nine eco-development regions. There is a positive correlation between the two, with higher productivity associated with higher HDI values. The former can contribute to the latter by raising capability and efficiency.

#### Industry dynamics of total factor productivity

Figure 4.13 and annex 14 present a detailed picture of total factor productivity across different industrial types in the nine eco-development regions and shows their comparative advantages.

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**Higher total factor productivity can contribute to the HDI by raising capability and efficiency.**

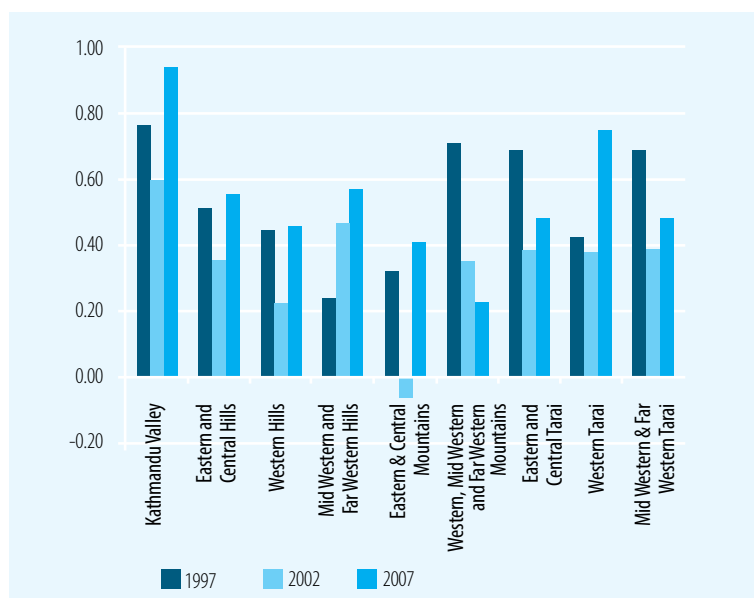
Among the major industry types, between 1997 and 2007, food and beverage manufacturers recorded improvement in total factor productivity in all regions except the Western, Mid Western and Far Western Mountains, reflecting the backwardness of that region even in basic food and beverage makers, and the survival problems of existing firms. These industries attained high productivity in the Kathmandu Valley, the Eastern and Central Tarai, the Eastern and Central Mountains, and the Western Tarai (annex 14, figure A14.1).

In 2007, tobacco industries were located only in the Eastern and Central Tarai, the Eastern and Central Hills, and the Western Tarai regions. They had disappeared from the Western Hills, and the Mid Western and Far Western Tarai. The performance of these firms has been very diverse among regions. Industry productivity, though decelerating, remained positive in the Eastern and Central Hills; some improvements were recorded in the Western Tarai. The Eastern and Central Tarai saw negative productivity in 2007 (annex 14, figure A14.2). Labour problem in large cigarette factories (such as Janakpur Cigarette Factory and Surya Nepal), the use of old technology in small tobacco factories, and disruptions in supplies of raw materials help explain low and even negative productivity.

Despite a substantial decline in their numbers, textile and apparel industry—comprising mainly producers of readymade garments, carpets, and pashmina and jute products—on average achieved moderate increases in productivity in the Kathmandu Valley, the Eastern and Central Tarai, the Western Tarai, the Western Hills, and the Mid Western and Far Western Tarai. But there was a fall in the Eastern and Central Hills, the Eastern and Central Mountains, and the Mid Western and Far Western Hills (annex 14, figure A14.3). Productivity declined over time in the Eastern and Central Mountains, despite limited

FIGURE 4.11

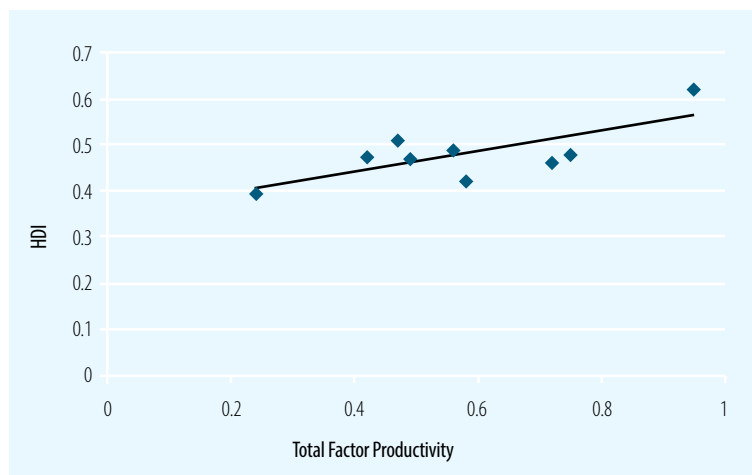
Average aggregate total factor productivity in the nine eco-development regions



Source: Annex 13, table A13.5

FIGURE 4.12

Total factor productivity and the HDI in the nine eco-development regions



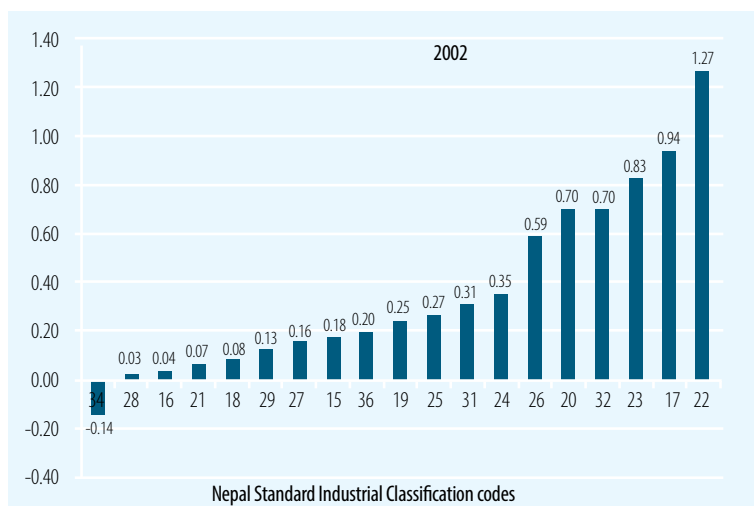
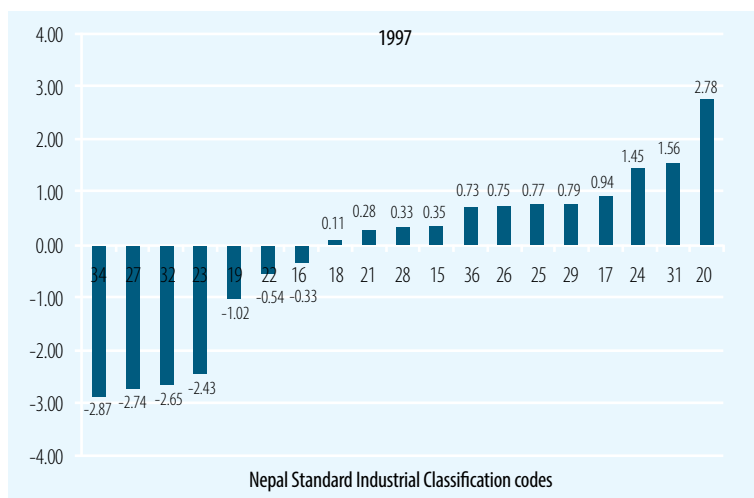
Source: Annex 4 and annex 13, table A13.5

numbers of firms. Average productivity in the Kathmandu Valley, and the Eastern and Central Tarai was above one, while it was less than that in the other eco-development regions. In the Western, Mid Western and Far Western Mountains, these industries have disappeared.

In general, firms in this category face tough competition from imports and are losing competitiveness in international markets.

FIGURE 4.13

Dynamics of the average total factor productivity of different industries



Source: Annex 13, table A13.4

Carpets and garments are major export items, but exports have been declining particularly since 2001. Many carpet industries have closed due to decreasing demand in international markets, including due to concerns about child labour and the lack of a Nepalese trademark. After the expiration of the quota system, ready-made garments faced tough competition in global markets. Duty free or quota free market access facilities have been obstructed on the pretext of rules of origin, and also some countries are still reluctant to provide such facilities despite agreed commitments.

The average total factor productivity of tanning and leather firms was negative in 1997 (annex 14, figure A14.4). Many factories closed in the Western Hills, and the Mid Western and Far Western Tarai. Their overall number declined precipitously from 77 in 1997 to 36 in 2007. A marginal rise in their productivity by 2007 took place in the Kathmandu Valley, the Eastern and Central Tarai, the Eastern and Central Hills, and the Western Tarai, despite absolute values remaining low compared to other types of firms. This group of industries includes mainly footwear manufacturing, and tanning and leather dressing firms. In recent years, Nepal has been exporting shoes and sandals to India, and ready-made leather goods and tanned skins to other countries. With increased export potentials, as well as possibilities for enlarging domestic markets, such industries could flourish, especially aided by schemes to enhance productivity and efficiency.

The total factor productivity of firms manufacturing wood and wood products, except furniture, and articles of straw and plaiting materials declined in all regions in 2002 and recorded some improvement in 2007 (annex 14, figure A14.5). But productivity remained low in 2007 compared to 1997. Regionally, substantial improvements had taken place in the Mid Western and Far Western Hills by 2007, suggesting the com-

parative advantage of such products in these regions. The average productivity of these firms was very low in the Eastern and Central Mountains in 2007; they are absent from the Western, Mid Western and Far Western Mountains. Since these industries rely on forest materials, productivity is directly affected by the availability and pricing of supplies.

The total factor productivity of paper and paper product manufacturers in the Western, Mid Western and Far Western Mountains was high compared to other regions in 2007 (annex 14, figure A14.6). A few firms produce traditional paper popular in export markets—*hate kagaj*, which is also called Nepali paper. Nepal has a long history of these exports. Productivity was also high in the Western Tarai, which has stationary and packaging firms, and two large paper mills, but low in regions such as the Western Hills. In the latter, firms are relatively weak and face competition from imported goods since they mainly use traditional production methods. The Mid Western and Far Western Tarai does not have this type of firms.

In contrast to trends in other areas, the total factor productivity of firms engaged in publishing, printing and reproducing recorded media improved in 2002 over 1997, but declined substantially in 2007 (annex 14, figure A14.7). These firms are mainly concentrated in the Kathmandu Valley, the Eastern and Central Tarai, the Western Tarai, the Western Hills, and the Mid Western and Far Western Tarai. Though they existed for some time in the Eastern and Central Hills, and the Eastern and Central Mountains, they have now disappeared from these regions. Overall productivity was very low in 2007 despite an expansion in the number of publishing and printing firms. High input costs, including for paper, ink, negatives and plates, and energy shortages have had adverse impacts. Firms in the Kathmandu Valley have high productivity through access to modern inputs and regular upgrading of technology.

Manufacturers of chemicals and chemical products had quite high total factor productivity in 1997, which substantially declined in 2002, except in the Western Hills. This group includes firms producing paints, herbal products, soaps, medicines and other chemicals. Although productivity improved in 2007 on average, it remains below the 1997 level. Regionally, it rose substantially in the Mid Western and Far Western Tarai, but was quite low in the Kathmandu Valley (annex 14, figure A14.8). The Western Tarai, and the Mid Western and Far Western Tarai have high potential for these businesses because of higher productivity and ready availability of raw materials.

As in many other industries, the average total factor productivity of manufacturers of rubber and plastic products declined in 2002 and improved in 2007. The Mid Western and Far Western Tarai were the only regions where productivity rose above one (annex 14, figure A14.9). The Western Hills had very low scores in 2007. It has only one firm, the Gorakhkali Rubber Factory, which continuously faces efficiency and management problems.

The average total factor productivity of firms producing non-metallic mineral products remained less than one in all regions in 2007. It was higher than one in the Eastern and Central Mountains in 2002, and in the Western, Mid Western and Far Western Mountains in 1997 (with only one firm, in Darchula district). This group mainly includes brick factories, crusher factories, cement industries, concrete producers and stone product makers. Average productivity did not improve in most regions. There was slight improvement in the Kathmandu Valley, the Eastern and Central Tarai, and the Western Tarai (annex 14, figure A14.10). Chronic electricity shortages and increased environmental concerns impacted these industries despite their higher potential for growth.

Producers of base metals and fabricated metal products, except machinery and

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**Chronic electricity shortages constrict some industries, despite their higher potential for growth.**

equipment, improved their total factor productivity significantly in 2007, compared to very low levels in 1997 and 2002 (annex 14, figure A14.11). But the higher level was recorded only in the Eastern and Central Hills, the Eastern and Central Mountains, and the Mid Western and Far Western Hills. These firms may have more prospects for expansion in these regions.

Among firms producing electrical machinery and apparatuses, total factor productivity steeply declined in 2002 compared to 1997 (annex 14, figure A 14.12). Though there was some improvement by 2007, values were still below those of 1997. Total factor productivity in 2007 exceeded a score of one only in the Western Tarai, and the Mid Western and Far Western Tarai. In the Western Hills, it continuously declined into the negative in 2007, but in the Mid Western and Far Western Tarai it turned positive in 2007 from a negative in 2002. These manufacturers do not operate in the mountain regions. The Western Tarai, and the Mid Western and Far Western Tarai have potential for more of these firms.

The average total factor productivity of furniture firms declined in 2002 over 1997 and improved in 2007 (annex 14, figure A14.13). Still, the value is less than one.

## Conclusions

Structural change and economic transformation are closely associated with productivity enhancement in major economic sectors. Countries that have been able to divert away from agriculture and other traditional products have been successful in accelerating development and achieving relatively rapid poverty reduction. With greater agricultural productivity, and the movement of labour and other resources from agriculture into modern economic activities, especially industry, overall productivity has risen along with incomes.

A rigorous quantitative analysis of trends in total factor productivity in the manufacturing sector broadly corroborates that productivity expansion will be key to high growth and sustainable development in Nepal, and is critical from the perspective of human development and capabilities.

Analysis based on the manufacturing surveys indicates that there is currently no stable growth pattern. Except in the Eastern and Central Tarai, all other eco-development regions saw declines in the number of manufacturing firms between 1997 and 2007.

Despite some incremental increases in the numbers of some types of firms from 2002 to 2007, employment generated by them actually declined, indicating a jobless revival. Capital-intensive modes of production and the closing of manufacturers of labour-intensive products had adverse impacts, especially in the Kathmandu Valley, followed by the Eastern and Central Hills, and the Eastern and Central Mountains. Trends in total factor productivity show that under the existing production structure, only limited industries have comparative advantages in Nepal

Current policies have done little to raise the efficiency and productivity of firms essential for industrialization, or to develop an adequate investment environment. A growing trade deficit and a lack of strategies to cope with increased competition from imports has meant that many industries, instead of flourishing, have collapsed over time. This has especially been the case in backward regions, even in those that otherwise have strong potential for growth. An industrialization drive focusing on lagging regions will be unlikely unless policy lapses, and structural and institutional impediments are corrected. Such an effort could spur private investment.

Across the nine eco-development regions, the average total factor productivity of manufacturing is largely consistent with general trends in socio-economic development. Although the Kathmandu Valley has the highest productivity, even that level is far

**Industrialization of lagging regions has to address policy lapses and structural and institutional impediments.**



behind those of other South Asian countries. Productivity in the Western, Mid Western and Far Western Mountains region is very low. Insufficient industrial capability to raise productivity coupled with the lack of policies to promote industrialization, especially in underdeveloped regions, has undermined the basic tenet of more equitable and balanced development. The nine eco-development regions generally display a positive correlation between total factor productivity and HDI

values, and a negative correlation between labour productivity and poverty.

The underlying reasons for disparities in labour and total factor productivity, across sectors, industries and regions, need to be more closely examined. Generally, such differences are attributed to gaps in productive abilities among different segments of the working population in general, and youth in particular. This issue is analysed in the next chapter.

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1 According to Nepal Standard Industrial Classification codes 15, 20, 24, 25, 22, 17 and 18, 19, 21 and 28, respectively. See annex 9 for a list of codes.  
2 According to Nepal Standard Industrial Classification codes 26, 27, 31 and 36 respectively.  
3 Nepal Standard Industrial Classification Codes 27, 28, 17, 15, 24, 25, 15, 17, 19, 24, 31, 27, 28, 21, 17, 17, 19, 19 and 17, respectively.



CHAPTER 5

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# Youth Productive Ability and Employment Status

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# 5.

## Youth Productive Ability and Employment Status

The working age population needs to be employed in occupations which matches their true ability. Reforms are necessary to ensure that human capital is strengthened in a comparable manner, and utilized fully.

In chapter four, estimates of labour and total factor productivity were analysed in detail. Labour productivity, in particular, is an indicator of the actual performance of Nepal's workforce in transforming its productive ability into economic output. Chapter 5 examines the potential productive ability of citizens aged 15-39, comparing it across regions and ethnic groups, and considering prospects for realizing a "demographic dividend" in the coming decades. Nepal has a young population, with about 33 percent of its people below the age of 15, and 57 percent between the productive ages of 15-59.

The measurement of individual productive ability, introduced in chapter 3, is backed by rich conceptual literature, but the index developed here is context specific, depending on available data in the Nepal Living Standards Surveys. It also focuses on people aged 15-39, approximately the working-age or youth population. All information on factors potentially contributing to individual ability was used, and principal component analysis employed to isolate dominant variables and create a unique index for each individual. A main question driving the analysis was whether or not Nepal's young people are performing to their full potential.

The productive ability of an individual is assumed to depend on a number of personal characteristics, including health and education status, and family or household factors. The latter is summarized by the household well-being index presented in chapter 3, which also incor-

porates regional development status through the access to facilities index. Directly and indirectly, the individual ability index is based on the maximum number of possible variables.

With data from the first Nepal Living Standards Survey, principal component analysis yielded four components for constructing the index, defined as the presence of a father and mother at home; the education levels of the father, mother and individual; marital and household well-being status; and chronic illness or any disabilities. Data from the second survey revealed the same pattern, except that household well-being status dropped out as a significant variable in any of the components. Calculations based on the third survey yielded six principal components with household well-being status re-emerging as the most significant variable in the third component.

The individual ability indexes calculated from the surveys were grouped into deciles. Annex 15, tables A15.1, A15.2 and A15.3 show the share of each of the nine eco-development regions in each decile in 1995, 2003 and 2011.

In 1995, 42 percent of individuals in the top or most capable decile came from the Kathmandu Valley. In 2011, this share fell to 32 percent. During the same period, the share of the Kathmandu Valley in the bottom or least capable decile went up from a negligible 0.6 percent to 7.6 percent. The Eastern and Central Tarai has the highest share of individuals in the bottom decile, at around 33 percent. Table 5.1 shows the mean index in each region, separately for males and females, along with the dispersion.

There are no significant potential productive ability gaps between young men and women in Nepal across the regions. Based on data from Nepal Living Standards Survey 2011, the average ability of women in Kathmandu is slightly higher than that of men.

There is more variation in female capability at present than in 2003 and 1995, how-

ever. The gender compositions of the deciles are given in tables 5.2, 5.3 and 5.4, showing significant changes over time. The share of females in the highest decile is substantially higher than that of males in 2011, compared to 1995 and 2003. The female shares are more or less equal in the upper deciles in 1995 and 2011, in contrast to 2003, when they were

TABLE 5.1

Male-female productive ability

Distribution of the individual ability index by the nine eco-development regions and gender, 1995-2011										
Eco-development region	Mean	1995			2003			2011		
		Mean	Standard deviation	Coefficient of variation	Mean	Standard deviation	Coefficient of variation	Mean	Standard deviation	Coefficient of variation
Kathmandu Valley	Male	17.16	11.0	64.52	70.75	15.65	22.12	63.88	10.86	17.00
	Female	15.74	8.03	51.03	63.90	18.22	28.52	63.99	11.04	17.25
	Total	16.46	9.72	59.05	67.34	17.32	25.71	63.94	10.95	17.13
Eastern and Central Tarai	Male	11.85	7.50	63.33	55.05	21.80	39.60	59.91	11.65	19.45
	Female	11.50	5.03	43.74	46.62	17.70	37.97	55.66	12.01	21.57
	Total	11.68	6.44	55.14	50.74	20.25	39.91	57.48	12.04	20.94
Eastern and Central Hills	Male	11.46	6.66	58.13	54.42	21.14	38.84	60.01	12.03	20.04
	Female	11.45	6.17	53.89	47.68	17.56	36.84	57.91	11.21	19.35
	Total	11.45	6.40	55.92	51.05	19.71	38.62	58.77	11.59	19.72
Eastern and Central Mountains	Male	10.23	5.54	54.16	56.91	18.76	32.97	59.65	12.74	21.35
	Female	10.52	4.04	38.45	49.20	17.72	36.02	57.58	12.25	21.28
	Total	10.37	4.84	46.66	52.76	18.59	35.24	58.40	12.47	21.36
Western Tarai	Male	12.38	7.94	64.13	61.54	20.02	32.54	61.23	11.51	18.80
	Female	11.66	4.68	40.16	50.61	17.84	35.25	58.00	11.42	19.69
	Total	12.02	6.50	54.14	55.93	19.69	35.21	59.30	11.56	19.49
Western Hills	Male	11.19	7.86	70.25	58.55	21.64	36.96	65.94	7.93	12.03
	Female	12.52	8.56	68.40	55.05	17.16	31.16	61.85	10.53	17.03
	Total	11.90	8.26	69.46	56.61	19.35	34.19	63.46	9.80	15.44
Mid Western and Far Western Tarai	Male	12.33	7.32	59.39	54.24	22.22	40.97	62.10	9.99	16.08
	Female	11.47	4.50	39.23	48.89	18.13	37.08	57.84	11.32	19.57
	Total	11.90	6.08	51.11	51.63	20.49	39.69	59.50	11.01	18.51
Mid Western and Far Western Hills	Male	9.79	6.02	61.51	48.67	22.98	47.21	60.48	9.44	15.62
	Female	10.62	6.06	57.07	45.58	16.98	37.25	54.50	11.05	20.28
	Total	10.22	6.05	59.20	47.08	20.16	42.81	56.84	10.85	19.09
Western, Mid Western and Far Western Mountains	Male	9.00	5.25	58.30	46.04	21.87	47.51	60.13	10.05	16.72
	Female	8.98	2.62	29.24	39.47	14.62	37.03	51.65	12.01	23.25
	Total	8.99	4.14	46.07	42.80	18.92	44.19	55.43	11.93	21.52
<b>Overall</b>	<b>Male</b>	<b>12.14</b>	<b>8.09</b>	<b>66.65</b>	<b>57.09</b>	<b>21.76</b>	<b>38.11</b>	<b>61.66</b>	<b>11.08</b>	<b>17.97</b>
	<b>Female</b>	<b>11.95</b>	<b>6.37</b>	<b>53.35</b>	<b>50.34</b>	<b>18.63</b>	<b>37.00</b>	<b>58.26</b>	<b>11.85</b>	<b>20.34</b>
	<b>Total</b>	<b>12.04</b>	<b>7.28</b>	<b>60.43</b>	<b>53.64</b>	<b>20.50</b>	<b>38.21</b>	<b>59.69</b>	<b>11.65</b>	<b>19.52</b>

Source: Computed from raw Nepal Living Standards Survey data using principal component analysis.

TABLE 5.2

## Gender composition of deciles, 1995

Gender	Distribution of the individual ability index by gender, percent										Total
	Decile 1	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Decile 10	
Male	55.6	50.5	48.1	47.5	45.8	45.4	44.7	44.7	50.5	63.7	49.7
Female	44.4	49.5	51.9	52.5	54.2	54.6	55.3	55.3	49.5	36.3	50.3
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: Computed from raw Nepal Living Standards Survey data using principal component analysis.

TABLE 5.3

## Gender composition of deciles, 2003

Gender	Distribution of the individual ability index by gender, percent										Total
	Decile 1	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Decile 10	
Male	61.6	67.1	69.0	56.7	41.4	44.1	31.9	16.1	27.3	73.5	48.9
Female	38.4	32.9	31.0	43.3	58.6	55.9	68.1	83.9	72.7	26.5	51.1
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: Computed from raw Nepal Living Standards Survey data using principal component analysis.

TABLE 5.4

## Gender composition of deciles, 2011

Gender	Distribution of the individual ability index by gender, percent										Total
	Decile 1	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Decile 10	
Male	42.1	50.1	49.3	58.3	52.6	47.0	40.6	33.8	21.4	26.7	42.2
Female	57.9	49.9	50.7	41.7	47.4	53.0	59.4	66.2	78.6	73.3	57.8
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: Computed from raw Nepal Living Standards Survey data using principal component analysis.

lower. The share of females in the lowest decile is significantly higher than that of males in 2011, varying from 1995 and 2003.

While there are no clear signs of potential gender inequality in average productive ability and decile composition, this does not imply the absence of gender discrimination. Equal potential capabilities need to be examined in terms of achievement, a point explored in the next section.

Tables 5.5, 5.6 and 5.7 show the shares of rural and urban populations in each decile as calculated from data in the three Nepal Living Standards Surveys. Urban individuals always dominate the highest decile. In 2011, the share of rural individuals was higher in the other nine deciles.

A significant trend is the rise in the share of urban individuals in the lower deciles between

1995 and 2011. For example, the urban share in the lowest decile was 3.9 percent in 1995, but rose steeply to 19.2 percent in 2011. The number of urban people below the poverty line doubled in the same period. The productive ability gap between rural and urban areas is not all that significant except for the highest decile, however.

### Productive ability and actual employment

The “main sector of employment” defined in the Nepal Living Standards Survey is the sector where the majority of working hours for seven days preceding the survey date were spent. If an individual was engaged in multiple sectors, the one in which s/he spent the most hours is regarded as the main sector.

TABLE 5.5

## Distribution of rural and urban populations, 1995

Rural-urban	Percent										Total
	Decile 1	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Decile 10	
Urban	58.3	61.6	43.7	19.0	9.7	5.6	4.3	3.0	10.5	3.9	22.0
Rural	41.7	38.4	56.3	81.0	90.3	94.4	95.7	97.0	89.5	96.1	78.0
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: Computed from raw Nepal Living Standards Survey data using principal component analysis.

TABLE 5.6

## Distribution of rural and urban populations, 2003

Rural-urban	Percent										Total
	Decile 1	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Decile 10	
Urban	71.8	33.2	35.7	48.2	33.6	18.5	23.6	12.8	15.4	12.9	30.6
Rural	28.2	66.8	64.3	51.8	66.4	81.5	76.4	87.2	84.6	87.1	69.4
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: Computed from raw Nepal Living Standards Survey data using principal component analysis.

TABLE 5.7

## Distribution of rural and urban populations, 2011

Rural-urban	Percent										Total
	Decile 1	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Decile 10	
Urban	60.0	42.8	49.6	37.5	44.5	38.6	34.9	28.1	16.6	19.2	37.2
Rural	40.0	57.2	50.4	62.5	55.5	61.4	65.1	71.9	83.4	80.8	62.8
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: Computed from raw Nepal Living Standards Survey data using principal component analysis.

Based on that definition, the dominant mode of employment in Nepal is “self-employment in agriculture” for both young males and females, followed by “wage employment in non-agriculture.” The other options are “wage employment in agriculture” and “self-employment in non-agriculture.” The share of “wage employment in agriculture” declined continuously from 12.2 percent in 1995 to 2.8 percent in 2011. The share of “self-employment in agriculture” also decreased, from 70.7 percent in 1995 to 61.3 percent in 2011. Conversely, the share of “wage employment in non-agriculture” increased every year, from 9.5 percent in 1995 to 12.6 percent in 2011. The share of “self-employment in non-agriculture” gradually rose from 7.7 percent in 1995 to 12.7 percent in 2011. Although the “wage employment in non-agriculture” share is

not high in terms of magnitude, it has increasingly become a preferred sector of employment.

Annex 16, tables A16.1, A16.2 and A16.3 show the shares of the four main employment sectors for each decile based on data from all three Nepal Living Standards Surveys, disaggregated by gender. The employment sector shares differ across deciles, with increases in the share of “wage employment in agriculture” in the lower deciles, while the share of “self-employment in non-agriculture” falls. This implies that individuals who have more productive potential, as measured by the ability index, have a preference for working independently, while those who are less able fall back as wage labourers in agriculture. There is also a tendency for more able individuals to find work in the “wage employment in non-agriculture” sector, which is a positive indication.

But “self-employment in agriculture” remains the dominant sector across all deciles.

Both males and females from higher deciles have lower proportional engagement in the “wage employment in agriculture” sector. Based on data from the third Nepal Living Standards Survey, the sector shares of both increase from decile 1 to decile 10. The percentage of males is 2.6 percent in decile 1 and 16.8 percent in decile 10, while for females it is 7.4 percent in decile 1 and 17.8 percent in decile 10.

In contrast, the percentage of individuals in “self-employment in non-agriculture” decreases from 23.2 percent in decile 1 to 11.3 percent in decile 10. Education and training with good health are the likely determinants of this tendency, since these factors increase the ability to absorb risks associated with this sector.

“Wage employment in non-agriculture” and “self-employment in agriculture” include the majority of people. The share of “wage employment in non-agriculture” ranges from 32.8 percent in decile 1 to 18.5 percent in decile 10. But this percentage varies by gender. Among males it is quite similar in all deciles, but for females it ranges from 28.2 percent in decile 1 to 12.5 percent in decile 10.

Employment sector distribution varies substantially between rural and urban areas. In the latter, the portion of people engaged in “wage employment in agriculture” from decile 1 is only 0.8 percent, which is negligible. “Self-employment in agriculture” in urban areas increases from 15.9 percent in decile 1 to 28.4 percent in decile 10. Many urban households do not own agricultural land; those who do tend to cultivate it themselves.

Looking at the overall distribution of employment sectors, participation is increasing in non-agriculture for a number of reasons. Earning cash is possible from “wage employment in non-agriculture,” the wage rate is higher, and it is easier to work there. There could be other reasons to explore.

**Working for wages outside agriculture is emerging as a preferred mode of employment.**

## Hours of work and productive ability

The Nepal Living Standards Surveys gathered information on the number of hours worked by each individual in each occupation. The analysis below relates the hours worked with individual productive ability. If the last section considered *where* young people are working and how this relates to their abilities, this one examines *how*

**TABLE 5.8**

**Mean hours spent in various sectors of employment by rural and urban areas, and gender, 1995**

Urban/rural	Gender	Wage employment in agriculture	Wage employment in non-agriculture	Self-employment in agriculture	Self-employment in non-agriculture
Urban	Male	31.90	41.97	18.12	40.35
	Female	21.48	33.54	22.41	35.87
	Total	26.35	39.78	20.86	38.68
Rural	Male	20.93	25.66	26.65	29.51
	Female	15.75	22.35	30.49	25.78
	Total	18.47	25.31	28.79	28.19
Total	Male	21.32	30.61	26.26	34.16
	Female	16.01	28.64	29.98	30.33
	Total	18.79	30.30	28.35	32.78
Correlation urban	Male	-.362	.012	-.036	-.038
	Female	-.198	-.037	-.142	-.025
	Total	-.297*	.004	-.095	-.027
Correlation rural	Male	-.076*	.079*	-.018	-.031
	Female	.014	.026	-.055**	.100
	Total	-.032	.060	-.041**	.012

Source: Computed from Nepal Living Standards Survey raw data.  
Note: \* and \*\* denote 1% and 5% significance levels respectively.

TABLE 5.9

## Mean hours spent in various sectors of employment by rural and urban areas, and gender, 2003

Urban/rural	Gender	Wage employment in agriculture	Wage employment in non-agriculture	Self-employment in agriculture	Self-employment in non-agriculture
Urban	Male	34.94	41.27	31.32	37.72
	Female	31.38	31.05	31.71	31.01
	Total	33.15	39.95	31.55	35.48
Rural	Male	26.50	48.94	26.16	47.11
	Female	28.38	40.97	25.25	37.70
	Total	27.75	46.92	25.57	43.77
Total	Male	34.54	45.33	30.76	42.43
	Female	31.11	38.20	30.86	34.53
	Total	32.78	43.91	30.82	39.71
Correlation urban	Male	-.136*	.148**	-.105**	-.011
	Female	-.010	.077	-.097**	.004
	Total	-.042	.137**	-.095**	.043
Correlation rural	Male	.555	-.109*	-.157*	-.187**
	Female	.123	-.089	-.157**	-.094
	Total	.171	-.093*	-.133**	-.068

Source: Computed from Nepal Living Standards Survey raw data.

TABLE 5.10

## Mean hours spent in various sectors of employment by rural and urban areas, and gender, 2011

Urban/rural	Gender	Extended economic work	Household work	Total in four sectors	Wage employment in agriculture	Wage employment in non-agriculture	Self-employment in agriculture	Self-employment in non-agriculture
Urban	Male	1.45	5.16	45.04	10.43	43.18	10.70	45.07
	Female	4.52	23.35	30.11	6.92	36.31	10.35	34.21
	Total	3.12	15.04	38.07	7.94	40.70	10.48	40.26
Rural	Male	9.55	5.81	28.62	9.58	24.87	11.89	29.95
	Female	16.18	24.04	18.90	8.64	19.33	13.00	21.57
	Total	13.56	16.84	22.97	8.98	23.34	12.57	25.90
Total	Male	6.26	5.55	34.59	9.66	32.85	11.73	37.21
	Female	12.13	23.80	21.87	8.44	28.40	12.64	27.12
	Total	9.68	16.17	27.65	8.87	31.45	12.29	32.52
Correlation urban	Male	-.075**	.013	-.112	.270	-.024	-.068	-.053
	Female	-.103**	-.246**	-.004	-.306**	-.064**	-.027	-.016
	Total	-.101**	-.207**	-.032	-.121	-.042	-.041	-.017
Correlation rural	Male	-.130**	-.146**	-.191**	-.067	-.028	-.122**	-.035
	Female	-.182**	-.194**	-.059**	-.066	.204**	-.097**	-.065
	Total	-.264**	-.223**	-.057**	-.062	.053*	-.103**	-.017

Source: Computed from Nepal Living Standards Survey raw data.



TABLE 5.11

## Mean hours spent in various sectors of employment by rural and urban areas, and gender, 2003

Eco-development region	Mean ability index			Ranks		
	1995	2003	2011	1995	2003	2011
Kathmandu Valley	16.47	67.35	63.94	1	1	1
Eastern and Central Tarai	11.69	50.74	57.48	5	7	6
Eastern and Central Hills	11.46	51.06	58.77	6	6	5
Eastern and Central Mountains	10.38	52.77	58.41	7	4	7
Western Tarai	12.02	55.93	59.30	2	3	4
Western Hills	11.90	56.62	63.47	3	2	2
Mid Western and Far Western Tarai	11.90	51.64	59.50	3	5	3
Mid Western and Far Western Hills	10.23	47.09	56.85	8	8	8
Western, Mid Western and Far Western Mountains	9.00	42.81	55.44	9	9	9

Source: Calculations by report team.

*much* they work in their respective sectors, a broad indication of the extent to which potential ability is reflected in actual output. Tables 5.8, 5.9 and 5.10 show the patterns.

Both rural and urban individuals worked more hours in the “wage employment in non-agriculture” and “self-employment in agriculture” sectors, based on data from the first survey, but hours in rural areas were much lower in number than in urban areas. The correlation between potential ability and hours worked are not at all positively significant, except for males in “wage employment in non-agriculture.” In this category, higher productive ability is positively associated with more hours worked.

Calculations from data in the second survey show that patterns of hours spent in each sector remain the same, but the positive correlation between capability and hours for males in “wage employment in non-agriculture” is no longer valid. All other correlations are either very low or negative. Data from the third survey reveal no significant or meaningful correlations between capability and hours of work in any sector. *This, by far, is the most worrisome feature of how human capital is used in Nepal.* The productive abilities of men and women are comparable, auguring well for inclusive growth. But the weak correlation between ability and actual productivity is a stumbling block that needs attention.

## Caste and ethnicity

Calculations for this report classified young individuals by caste and ethnicity. Households were classified according to the caste or ethnicity of the household head. Figure 5.1 presents the distribution by decile of households and individuals for each of these groups for all three Nepal Living Standards Surveys. By looking at the household and individual indexes for each group next to each other, it is possible to get a visual impression of whether the two patterns are identical. The extent to which they are similar implies the importance of household status in forming individual status. When they differ, it means individuals are breaking free from their family status background.

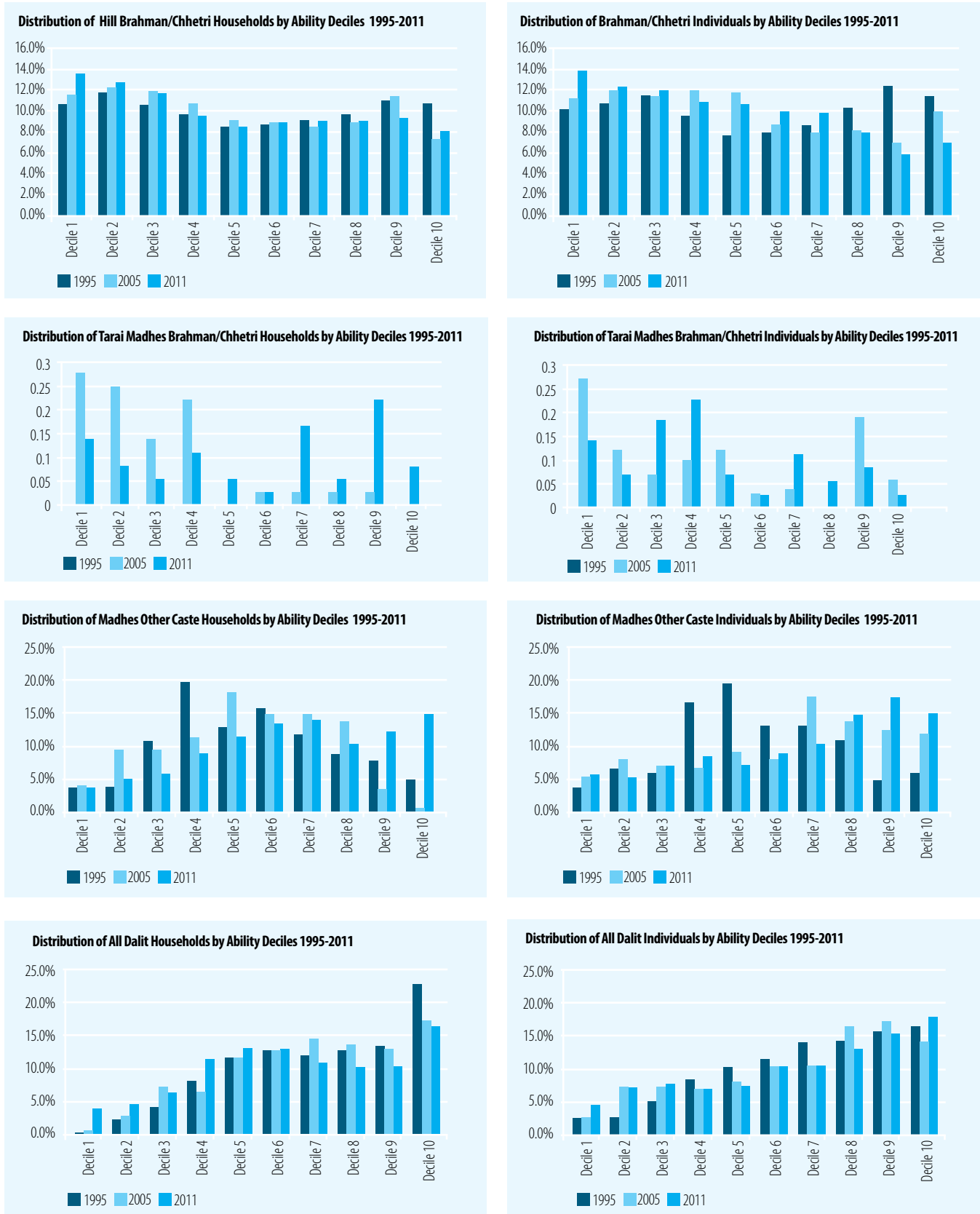
Shares of Hills Brahman/Chhetri households as well as individuals have increased in the upper deciles and fallen in the lower ones. Shares of Tarai Madhesi Brahman/Chhetri households have fallen quite dramatically in the upper deciles and risen sharply at the lower end. The movement of individuals in this group is in opposite directions, however, implying that the personal characteristics of individuals dominate household characteristics to a significant extent. Data classification issues meant this group could not be separately examined in 1995.

The shares of other Madhesi caste households and individuals have risen sig-

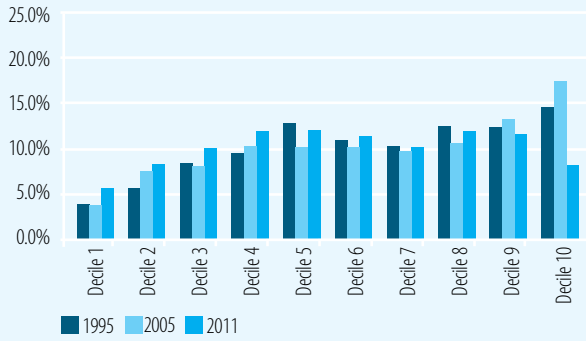
**Individuals are not able to take full advantage of their abilities.**

FIGURE 5.1

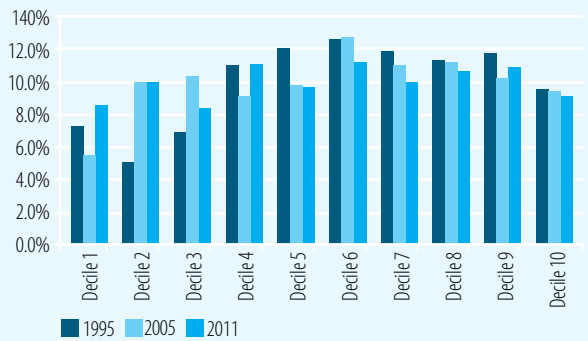
Distribution of ability in households based on caste and ethnicity, per decile, 1995-2011



**Distribution of All Janajati Households (Excluding Newar and Thakali) by Ability Deciles 1995-2011**



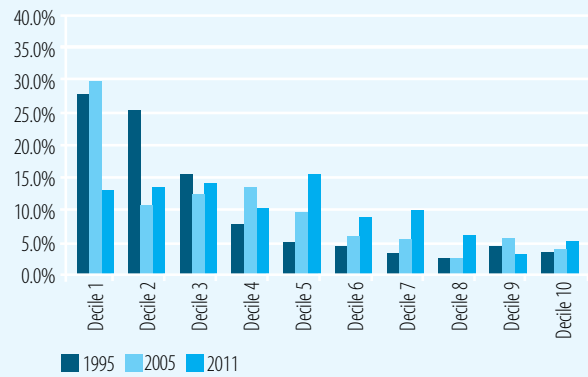
**Distribution of All Janajati Individuals (Excluding Newar and Thakali) by Ability Deciles 1995-2011**



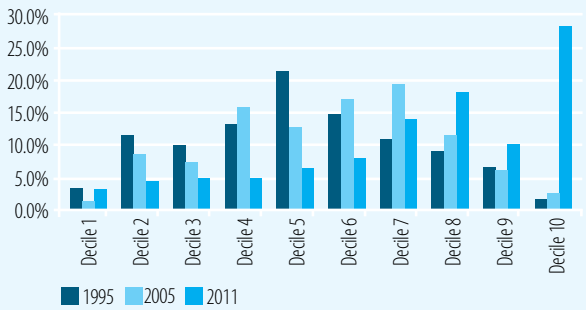
**Distribution of Newar and Thakali Households by Ability Deciles 1995-2011**



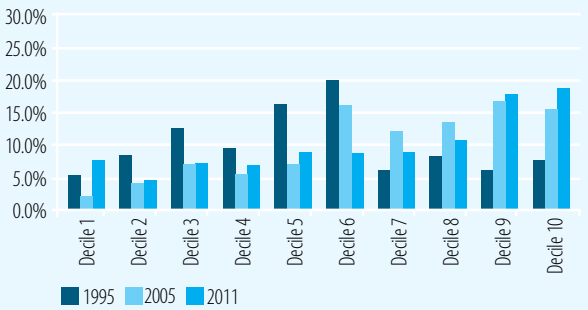
**Distribution of Newar and Thakali Individuals by Ability Deciles 1995-2011**



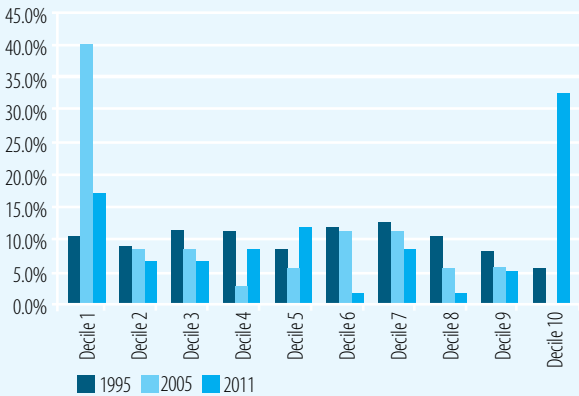
**Distribution of Muslim Households by Ability Deciles 1995-2011**



**Distribution of Muslim Individuals by Ability Deciles 1995-2011**



**Distribution of Households in Other Category by Ability Deciles 1995-2011**



**Distribution of Individuals in Other Category by Ability Deciles 1995-2011**

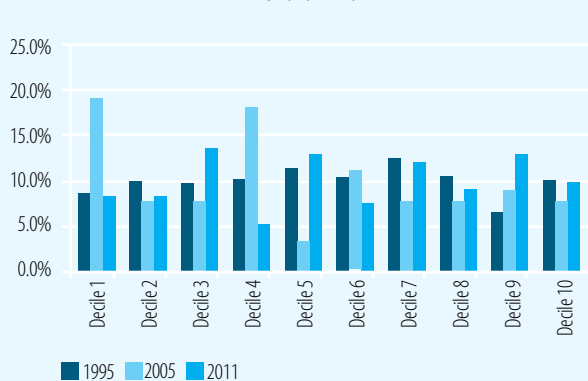
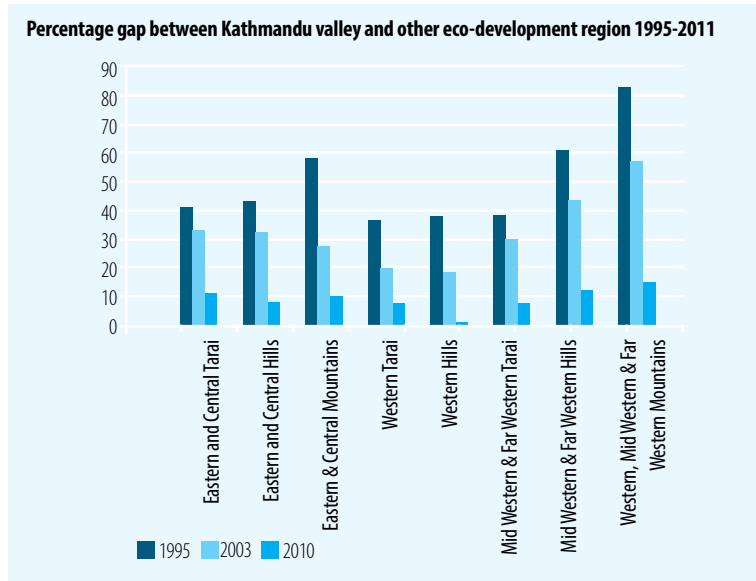


FIGURE 5.2

**Average individual productive ability of regions relative to the Kathmandu Valley**



matic. Gaps in the productive abilities of individuals across regions still prevail, although, as figure 5.2 depicts, they are narrowing.

**Concluding remarks**

Measuring individual productive ability at different levels helps assess the outcomes of past policies aiming at inclusion, and ascertain the potential for inclusive growth in the future. This report chose a three-index sequence: the development status of regions, as measured by access to facilities, which contributes to (among other things) household well-being, both of which in turn contribute to (among other things) individual ability.

Focused on people aged 15-39, the individual productive ability index discussed in this chapter reveals that household well-being significantly affects individual members. This influence was more pronounced in 1995 and 2011.

Regionally, as seen in all the measures in this report, the Kathmandu Valley ranks at the top of the individual abilities index, and the Western, Mid Western and Far Western Mountains ranks the lowest. The Kathmandu Valley is followed by the Western Hills, the Mid Western and Far Western Tarai, the Western Tarai, the Eastern and Central Hills, and the Eastern and Central Tarai. Relative to 1995, the Western Hills, Mid Western and Far Western Tarai, and Eastern and Central Hills have progressed, while the Eastern and Central Tarai, and the Western Tarai have gone down in rank.

The Kathmandu Valley has the highest ability share in the top decile, followed by the Eastern and Central Tarai. The Western Hills has increased its portion over the years. But the share of the Kathmandu Valley in the bottom decile has also risen between 1995 and 2011.

The mean value of the individual ability index is highest in the Kathmandu Valley followed by the Western Hills. The Western, Mid Western and Far Western Mountains con-

nificantly in the lower deciles, but without much change in the upper deciles. The shares of Dalit households and individuals show a steep rise in the upper deciles, but have remained the same in the lower ones. The shares of Janajati households (excluding Newar and Thakali) rose substantially in the upper deciles, compared to the shares of Newar and Thakali households and individuals, which fell there. Muslim households' and individuals' shares rose sharply in the lower deciles, by far the most significant departure from inclusiveness.

**Gaps in ability seem to be narrowing.**

**Productive abilities across the nine eco-development regions**

The average productive ability indexes of young individuals in each of the nine eco-development regions were calculated, as shown in table 5.11, for 1995, 2003 and 2011.

Not much changed in terms of top and bottom scores. Ranks 1, 8 and 9 applied to the same regions in all three periods. There are some variations in the middle, but these are not dra-

sistently has the lowest mean. While the ranking of regions by mean ability remains almost the same over time, the gap between the Kathmandu Valley and the Western, Mid Western and Far Western Mountains has declined from 1.83 in 1995 to 1.15 in 2011.

The mean values of the individual ability index disaggregated by gender show no significant differences between men and women, but in general, the index for females is slightly lower than that for males. By 2011, while the share of females in the top decile had increased remarkably, women also had a much larger share in the lowest decile. The male-female gap appears to be narrowing over time, however.

Calculation of data from all three Nepal Living Standards Surveys showed a higher urban share in the top decile and a more pronounced rural share in the lower deciles. Judging by the mean value of the index, the difference between urban and rural areas appears to be decreasing over time.

In terms of caste and ethnicity, there is no substantive difference between the household well-being and the individual ability index for the Hill Brahmans/Chhetris. For other groups, the picture is different. The share of other Madhesi caste groups in the lower deciles has increased relative to the household well-being index, as is true also for the Dalits, Janajatis and Muslims. At the same time, the shares of the Dalits, Janajatis and Muslims in the top decile have risen relative

to the household well-being index. This indicates that the individual ability index has much greater resilience than the household well-being index for these groups.

The most worrisome finding in this chapter is the lack of association between the ability of youth and their productive engagement, as indicated by actual employment by sectors and hours of work. Overall, the trends give a positive indication of inclusive outcomes as well as potential. There are important gaps, however, especially across regions, which require more attention in terms of public investment. The disturbing, and perhaps unsurprising, finding is the low correlation between productive ability and gainful employment both in terms of sectors and hours of work. For higher growth, more capable workers need to be employed in higher value added sectors. For such growth to be inclusive, existing gaps in potential need to be narrowed with targeted interventions in the various dimensions analysed in chapters 3 and 5. This suggests an important policy message: The labour market is not oriented towards making the most of the demographic dividend.

These findings are, in principle, consistent with Nepal's progress in terms of the MDGs and the HDI, although the analysis is much more refined and disaggregated, with significant methodological improvisations in capturing broader information sets and endogenously assigning weights to each component.

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**The trends indicate good potential for more inclusive development outcomes in the near future.**



CHAPTER 6

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# Conclusions and Recommendations

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# 6.

## Conclusions and Recommendations

The report highlights the persistence of inequalities and imbalances in human development and productive abilities and indicates the potentials for reducing gaps offering evidence to guide assessment of past policies and those that might shape future steps. A guiding objective of state restructuring could be to reduce regional inequalities in socio-economic development and resource endowments.

**H**uman development in its broadest sense depends on expanding human capabilities. The concept of capability, however, while conceptually and philosophically rich, defies identification of a set of indicators measuring its multiple and complex dimensions. The fact that capability encompasses “process,” “outcome” and “choice” accompanied by the “freedom” to choose makes pinpointing indicators a trying task.

This Nepal Human Development Report has attempted to look at and assess some aspects of capability through traditional measures, as well as composite multidimensional indexes drawing on a range of available data at the household and individual levels. These give some idea of the existing and potential status of abilities, in a manner not done before in Nepal.

Unlike previous Nepal Human Development Reports, this one has a predominantly spatial focus, comparing different regions and districts. It finds that inequality is often rooted in geography. But over the past decades, and particularly after the pursuit of economic liberalization as the signature theme of economic policies since the 1990s, the question of spatial inequalities and imbalances in development has largely remained unattended. The logic of economic liberalization, which has persisted as the dominant discourse in development, has tended to view spatial inequalities as either self-correcting over the long run through trickle-down effects, or as a function of the imperatives of resource endowments and factor costs that largely guide investments both in

the public and private sectors. This perspective has mostly failed to address concerns raised by the socio-political discourse nurtured by the people’s movement of 2006, namely, that of dealing with questions of social, economic, political and spatial exclusion and resulting inequalities.

The report’s main thrust has been to explore such issues in terms of the productive abilities of regions, and their households and individuals. Measures of these have been approximated on the basis of the three Nepal Living Standard Surveys conducted since 1995—the main source of longitudinal information on a broad range of issues affecting productive abilities. The report also presents regional information on factor productivity derived from national Census data and periodic manufacturing surveys, and calculations of the Human Development Index (HDI) and related indexes.

Through the use of these various measures and indexes, the report has sought to explore three basic areas of inquiry:

- The status and potential of different regions in Nepal and discernible trends over time;
- The gender, rural and urban, and ethnic implications of current status, potential and trends over time; and
- The influence of public policies on current status, potential and trends, and how policies can address emerging issues.

These three areas elucidate how human development bears on regional development, household well-being and individual ability and vice-versa. Nepal’s social and economic

**Social sector policies need to recognize the caste and ethnic dimensions of human development.**

diversity is matched in equal measure by its spatial diversity, and often the two are related in complex ways.

Since this reality has frequently been neglected in policy platforms, the report attempts to redress the lacunae. It makes the most of existing information, while aiming to lay the basis for the generation of more pertinent spatial data relevant to human development. It highlights not only the persistent nature of inequalities and imbalances, but also the potentials for reducing gaps, offering evidence to guide assessments of past policies and those that might shape future steps.

### **Human development: trends and implications**

The trends in the HDI and Human Poverty Index (HPI) reported in chapter 2 have been positive across all regions, and caste and ethnic groups. The pace of change over time across regions has not been as fast as one would expect, however. Regions that rank lowest in these measures continue to lag behind, and broad regional inequalities persist, although there are signs that gaps could be narrowing.

Given the nature of variables that comprise the HDI and HPI, any strategy for improving their values needs to take a systemic approach that is framed by well-articulated priorities for the short and medium term. A systemic focus could be on strengthening basic education and health systems, including those for safe drinking water and child nutrition at the grass-roots. The short and medium term priority in education could be to improve general literacy and school attendance, and reduce school dropout rates.

Another emphasis important to human development could be on raising household incomes through large-scale local level employment generation in agriculture and infrastructure. In view of massive labour migration abroad, one feasible option may be to train potential migrants in areas of labour demand so that earnings from safe and well-monitored

foreign labour migration can be substantially enhanced.

The HDI and HPI rankings clearly show that regions that have rapidly improved HDI scores, such as the Western Hills and Western Mountains, are those making strides in literacy and education, and where earnings from remittances as well as tourism have improved. Lagging regions—such as the Mid Western and Far Western Hills, the Western, Mid Western and Far Western Mountains, and the Central Tarai—have been behind in these areas.

Social sector policies need to recognize the caste and ethnic dimensions of human development. Clear and ongoing caste and ethnic inequalities are revealed in different educational achievements and earnings. This strengthens the argument for deliberate strategies to increase inclusiveness by providing educational and economic opportunities for disadvantaged ethnic and caste groups such as the Dalits and Muslims

The same applies to disadvantaged regions such as the Western, Mid Western and Far Western Mountains, and the Mid Western and Far Western Hills. Nepal has pursued national strategies to promote education and health services. While these need to be effectively implemented, it may also be necessary to prioritize regions with low HDI and high HPI indicators for specific and targeted interventions to bring about rapid improvements.

The supply of infrastructure, and improvements in quality and access, without question have to be continually enhanced in all regions. At the same time, different contexts need to be well understood. In the Eastern and Central Tarai, for example, where a better score on the regional access to facilities index does not translate into a better HDI value, access alone does not seem to be a sufficient condition for use of physical and social infrastructure, mainly in education and health. Here, strengthening the demand side is as much a priority. A broader strategy focused explicitly on caste and ethnic as well as gender dimensions is called for.



While public policies can play a role in creating and reorienting development infrastructure, the case of the Eastern and Central Tarai illustrates the pivotal role of social mobilization and awareness in spurring demand for services, particularly among marginalized and disadvantaged caste and ethnic groups, as well as those who are poor. Civil society organizations and political parties have pivotal roles to play in this kind of societal transformation.

### Labour and total factor productivity: trends and implications

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Knowledge, skills and infrastructure, including agricultural extension services, are key to augmenting labour productivity from a human development perspective. The very low aggregate labour productivity seen in the Hills and Mountains regions of Nepal points to the need for area-specific policies linked to, among other goals, the development of human capital and physical infrastructure.

For a country where two-thirds of the labour force is engaged in agriculture, improvement in the productivity of the primary sector is a prerequisite for overall increases in the productivity of the economy, and consequent economic transformation and prosperity. A two-pronged approach—first, transformation of agriculture from subsistence to commercialization and modernization, and second, absorption of a growing labour force in the secondary and tertiary sectors by utilizing available and potential resources—needs high priority.

Nepal's diverse ecological regions have many unexplored and unexploited potentials in the field of agro-based industries, herbal products, hydropower and tourism. Specific policies and programmes focused on agriculture and biodiversity products could promote productivity. In remote Hill and Mountain regions, agricultural productivity also depends on access to roads, and education and health infrastructure. Easy availability of technical and vocational education is necessary for up-

ping efficiency, and developing entrepreneurial and business skills. In view of the problems in promoting industrialization, it would also be prudent to pursue policies bolstering employment in modernized agriculture.

In the manufacturing sector, total factor productivity needs to substantially improve, with a particular focus on regions where it is very low or negative. Priorities may include: intra-firm restructuring through more capital injection, introduction of improved technology, and enhancement of resource allocation efficiency backed by more support services and facilities. A new initiative with policy packages including institutional support measures may be required for prioritizing development of new industries in lagging regions, based on resource endowments and comparative advantages promising dynamic gains in the long run. Similar incentives could be important for encouraging industries that contribute to both import substitution and export promotion. Strengthening comparative advantages in backward regions in part entails development of road and energy infrastructure.

Industrialization led by higher total factor productivity and sustainable high growth will require a more robust private sector development strategy, with a focus on an environment attractive to domestic and foreign investors. Sufficient incentives and level playing fields are important ingredients. Further, the complementary and facilitating roles of the State have to be spelled out more distinctly. Ambiguities or policy conflicts, coordination failures and unfair market manipulation will need top attention in the process of shifting resources from unproductive to productive use in high-potential areas.

### Trends in the regional access to facilities, household well-being and individual ability indexes

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The construction of the regional access to facilities, household well-being and individual ability indexes at the regional level was a novel

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**Improvement in agricultural productivity is a prerequisite for overall increase in productivity.**

**Better access to facilities does not necessarily translate into better household well-being and individual ability.**

exercise using the three information-rich Nepal Living Standards Surveys to trace development trends in spatial inequalities over time. The indexes are a result of the complex interplay of different variables.

Three particular features of the indexes are notable. First, the relative positions of different regions on particular indexes remain unchanged over time. Second, the top-ranking region, the Kathmandu Valley, and the bottom-ranking one, the Western, Mid Western and Far Western Mountains, are the same across all three indexes. Third, the indexes do not always converge. Better access to facilities does not necessarily translate into better household well-being or individual ability because of intervening variables.

Table 6.1 compares the human development and productive ability indexes for the nine regions identified for analytical purposes. This shows some critical features with clear policy implications. The predominance of the Kathmandu Valley in all indexes results from a highly centralized polity where the valley receives clear priority in investments in development infrastructure and services, and consequent expansion of opportunities. As the population, political and economic significance of the valley continues to grow unabated, this is likely to remain the case in the future. Kathmandu will also continue to attract the largest proportion of young and aspiring migrants.

A major challenge for policy planners is to create a decentralized polity where economic activities and opportunities are created in other regions. This would have the added benefit of helping to ensure that Kathmandu does not suffer from diseconomies of scale, resulting in pollution, overcrowding, problems in the provision of services and perils from natural disasters. All of these can potentially threaten its economic base, mainly tourism, services and foot-loose industries.

The Eastern and Central Tarai, on the other hand, presents a situation where labour and total factor productivity as well as access to facilities index values are among the highest in the country, but human development, human poverty, household well-being and individual ability index values are among the lowest. Concerted policy attention could address this mismatch between productive ability and human development.

With some variations, human development, and labour and total factor productivity, are also mismatched in the Western Hills. Achievements in human development there need to be complemented by increases in productivity.

The most entrenched problem of human development and productive ability is in the Mountains and Hills of the Mid Western and Far Western regions. Here, a more comprehensive approach to development is required. It needs

**TABLE 6.1**

**Comparing the human development and productive ability indexes by the nine eco-development regions, 2011**

Regions	HDI	Rank	HPI	Rank	Labour productivity	Rank	Total factor productivity*	Rank	Access to facilities index	Rank	Household well-being index	Rank	Individual abilities index	Rank
Kathmandu Valley	0.622	1	21.28	1	181.35	1	0.95	1	78.3	1	41.98	1	63.94	1
Eastern and Central Hills	0.490	3	31.21	5	80.11	7	0.56	5	48.6	6	33.12	4	58.77	5
Western Hills	0.511	2	25.62	2	81.93	6	0.47	7	58.7	5	37.05	2	63.47	2
Mid Western and Far Western Hills	0.423	8	39.68	8	57.0	9	0.58	4	41.0	8	32.26	5	56.85	8
Eastern and Central Mountains	0.475	5	34.51	6	87.26	5	0.42	8	46.6	7	33.26	3	58.41	7
Western, Mid Western and Far Western Mountains	0.398	9	42.98	9	75.86	8	0.24	9	37.3	9	29.52	9	55.44	9
Eastern and Central Tarai	0.463	7	34.81	7	106.11	2	0.72	3	70.8	3	31.68	7	57.48	6
Western Tarai	0.480	4	29.69	3	94.45	3	0.75	2	71.4	2	31.32	8	59.30	4
Mid Western and Far Western Tarai	0.472	6	30.47	4	91.73	4	0.49	6	69.5	4	32.09	6	59.50	3
Nepal	0.490		31.12		100		0.72							

Source: Derived from tables in chapters 2, 3, 4 and 5 of this report.

\* for 2007

to focus on both software, namely, education, health and services, and hardware, comprising physical infrastructure, to raise productivity.

## Policy Implications and Key Messages

This report has sought to show that regional development status in association with other variables reflects the well-being of households, and that household well-being in association with other variables reflects the ability of individual members over time. The results of its analysis more or less offer affirmation, notwithstanding the fact that data from the Nepal Living Standards Surveys are selective, and do not include many of the structural variables and processes through which socio-economic inequalities are produced and reproduced.

The findings have obvious implications for Nepal's planning efforts, particularly for the upcoming 13th national development plan. The attempt here is to flag some preliminary, but key, messages. According to the plan's approach paper, development is envisaged to be multidimensional, with priority given to hydropower and energy, agriculture, basic education, health, drinking water, physical infrastructure, good governance, tourism, trade and the environment, among other issues, and to increasing the contributions of the private, government and cooperative sectors. Various indicators in this report can guide stakeholders in building inclusivity into this process to further close gaps among social groups and regions. Key messages and some specific policy recommendations are as follows.

### A. Incorporate considerations of regional inequalities in budgeting and planning.

Regional development inequalities are apparent in the access to facilities index for the nine eco-development regions. The advantage of the Kathmandu Valley remains undiminished, while the Mid Western and Far Western Mountains and Hills in general continue to suffer relative neglect. Regional inequalities

stem from relatively low levels of public investment in roads, education and health infrastructure. Over the past decades, regional inequalities have fallen slightly through some investments in these areas, although progress will likely not be sustained without focused and scaled-up support. Improved road access is one particularly important contributor to enhanced access to facilities that contributes to human development; it can also spur private sector activities.

A regional approach to infrastructure development could comprehensively link regional natural resource endowments with potential at the household and individual levels. This requires that infrastructure development, particularly roads, focuses on quality, and is complimented by “development packages” to promote “niche” local development potentials that open opportunities for the private sector.

In the impending process of federalization, the Committee on State Restructuring of the last Constituent Assembly has laid down two principles for the delineation of provinces—identity, and capability or economic viability. A judicious and balanced approach to these two principles, with particular emphasis on economic viability, conditioned by the distribution of natural resources, is integral to enhancing the role of provinces in reducing regional inequality, promoting inclusive development and improving provincial resiliency. A guiding objective of state restructuring could be to reduce regional inequalities in socio-economic development and resource endowments, and promote regional resiliency.

This report highlights spatial trends in Nepal that provide a rationale for more judiciously allocating resources across regions and socio-economic groups. To monitor progress in the coming years, national surveys would need to incorporate additional regional and ethnic dimensions in their sampling frameworks. In the last decade, Nepal has been at the forefront of adopting many path-breaking policies to facilitate inclusive development, but weak monitoring has meant that the intent of

**Regional inequalities often stem from levels of public investment in roads, education and health infrastructure.**

these remains far from realized. Strengthening the monitoring arm of the national planning body would go far in facilitating better implementation.

Major policy recommendations are:

- *Assign budget allocations to improve access to facilities commensurate with the percentage gaps in the access index.* For example, allocations to improve access to facilities in the Western, Mid Western and Far Western Mountains could be roughly twice those for the Kathmandu Valley. Appropriate adjustments may be needed, depending on the number of people inhabiting the regions, but the central focus should be on closing access index gaps.
- *Incorporate the HDI as an important element in the allocation of development budgets at the district level.* The HDI has been used in the formula for the allocation of block grants to district and village development committees. But it has not been taken into consideration in the allocation of sectoral development budgets at the district level in specific areas such as drinking water, sanitation, etc. The incorporation of the HDI would not only give objectivity and transparency to such allocations, but also factor human development status into budget disbursements. As more and more relevant data become available, this system can be fine-tuned.
- *Incorporate capability improvements as a basic feature of district and local level periodic plans.* Development of district and village development periodic plans is among the mandated functions of the district and village development committees. Aspects of capability are generally included, but there is a need to be more explicit, at least initially, with respect to: adult literacy in general and female literacy in particular; skill enhancement, in the context of local resources and traditional/indigenous knowledge, through formal and informal systems; improvements

in health with respect to some key indicators; creation of productive and income-enhancing employment; and representation of women and marginalized groups in economic, social and political forums and organizations of public significance, such as management committees of schools and health centres, and user committees related to drinking water, irrigation and natural resource management. This process would require the maintenance and generation of data related to these aspects, which would further enhance the database on capability.

### **B. Focus on human development in the Eastern and Central Tarai, and the Mid Western and Far Western Hills and Mountains.**

The general perception in Nepal has been that the Eastern and Central Tarai, by virtue of better access, better used agricultural and industrial production potential, and past public investments has benefitted from focused policy attention. This report shows the fallacy of this notion. The Eastern and Central Tarai ranks high in access to facilities, labour productivity and total factor productivity, but human development achievements and household well-being are precarious and not aligned with economic standing (table 6.1). On the social front, particularly in education and health, the Eastern and Central Tarai clearly needs attention. The districts from Saptari to Parsa could receive more emphasis, since they also have significant Dalit populations.

Even as the supply of infrastructure, facilities and human resources needs to be expanded and strengthened, mass social mobilization strategies are also necessary to build demand for services, particularly among groups marginalized by poverty, caste and ethnicity, and/or gender.

Policy recommendations are:

- *Ensure education, health and empowerment programmes focus specifically on the lower economic classes, disadvantaged caste*

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**Capability improvement has to be a basic feature of local plans.**

*and ethnic groups, and women.* The second group includes Dalits and Muslims, especially. Programmes backed by social mobilization need to proactively provide incentives to encourage school attendance and use of basic health facilities and improved sanitation. Literacy programmes in particular have to be taken up in the spirit of a social mission involving community leaders, political parties and civil society in general.

### **C. Expand the scope and reach of inclusive policies.**

This report shows that inequalities in household well-being and individual ability increased among regions and deciles between 1995 and 2003, and appear to be narrowing thereafter. The increase could be a consequence of a number of factors. These include ad hoc liberalization policies that reduced public investments in lagging regions, a lack of deliberately inclusive policies focusing on disadvantaged regions and population groups, and the disruption of development projects and public services in remote rural areas due to conflict.

Narrowing inequalities since 2003 could stem from factors such as: the increased allocation of development funds to the local level, and socially inclusive policies expanding public investments to disadvantaged groups; increased remittances from labour migration by disadvantaged groups such as the Janajatis and Dalits; and the end of conflict after the Comprehensive Peace Agreement. The Mid Western and Far Western Hills and Mountains have not benefited as much from remittances as the Western Hills. Following the logic of the Kuznets curve, the phenomenon of increased inequality is normally associated with higher rates of economic growth in the early phases of industrialization. This was clearly not the case in Nepal.

Without sufficient economic growth, the State cannot continue to effectively and aggressively pursue inclusive policies that assist the underprivileged. If the inequality gap is to be sustainably lowered, growth has to be accelerated, including by pursuing policies to

increase labour and total factor productivity. At the same time, socially inclusive policies in education and health, and social protection for vulnerable groups need to be strengthened. Besides shorter term development gains, this would enhance the long-term resilience of communities and regions. “Inclusion without growth” may be a trying economic proposition, but “growth without inclusion” could defeat the very purpose of development, which is to expand the capabilities of people, and bring to fruition the potential within each individual in society.

Cross-national studies show that an important part of social inclusion policies is the use of social transfer programmes to help households in extreme and persistent poverty, such as by providing direct assistance in cash or kind, with the prime objective of reducing poverty and vulnerability. Recent studies confirm that such programmes strengthen the productive capacity of poor households and lead to growth (Barrientos 2011). They have potential for lifting credit constraints, providing greater security, and enabling reallocation of household resources leading to improved household investment and productive capacity. Social transfers are thus mechanisms, not only for dealing with poverty and vulnerability, but also for advancing economic growth and resilience.

Policy recommendation are:

- *Focus on sectors with high economic and employment growth.* These include health, education, transport and communication, financial services and public administration.
- *Within these four sectors, channel proportionately more public investment into health and education.* Private and/or public-private partnerships could be aggressively pursued in the other two areas. One emphasis could be on developing the operational modalities of public-private partnerships for infrastructure.
- *Design and expand social security and social transfer programmes.* In Nepal, social assistance programmes are an insignificant

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**While economic growth has to accelerate, socially inclusive policies need to be strengthened.**

proportion of annual government expenditures.<sup>1</sup> The range and volume of programmes for the social security of the poor, marginalized, disadvantaged and elderly needs to be expanded. Designing social transfer programmes to maximize growth effects could be an important part of policies to advance inclusion.

#### D. Prioritize urban management, and strengthen rural and urban links.

Regions that appear relatively more dynamic from a productivity point of view, such as the Kathmandu Valley, the Eastern and Central Tarai, and the Western Tarai, are those where urbanization is accelerating growth. This report shows that while there are expected inequalities among urban and rural areas, the gaps seem to be closing, largely due to access to facilities and the nascent process of increasing links between urban and rural areas. At the same time, while poverty measured by numbers of people seems to be declining in rural areas, it is rising in urban ones.

Managing pro-poor urban growth, and strengthening urban and rural links, therefore, could be two areas for policy attention in coming years. The objective should be to bring about sustainable increases in HDI values and reductions in human poverty.

In spite of the relatively low levels, Nepal's urbanization has been largely spurred by growth in the tertiary sector, unlike the historical experience of urbanization in the Western world. The growth of manufacturing and industrialization in general is limited to specific regions with particular advantages. While industrialization will eventually have to absorb the surplus labour force from agriculture, given the present state of inertia, this is likely to take time.

As one step forward, there could be greater emphasis on realizing potentially productive niches in agriculture. This would require not only increasing investments in the modernization and commercialization of agriculture and agro-processing, but also the

strengthening of rural and urban links where such potential exists. It could complement input and output connections between urban and rural areas, and reduce bottlenecks in input supply and marketing, and in the flow of technology and capital for agro-based industrialization as well as small and medium enterprises. The reduction of urban and rural differentials could also deter excessive population movement to urban areas.

Further, in this topographically diverse country, multiple centres of growth are required. Stronger urban and rural connections, supported by greater investment in agriculture, could generate a class of growth centres most relevant to Nepal.

Major policy considerations include:

- *Facilitate development of a balanced regional urban system.* The expansion of the road network has induced growth in a number of urban areas, small towns and market centres. Many of these act only as bulking and distribution centres; however, their potentials in mobilizing resources from surrounding areas remain unused. The viability and growth of these towns—leading to a more balanced urban system, with attendant balanced regional urbanization, economic diversification and improved access to urban facilities and services—could be enhanced by developing potentially productive niches in areas around them. This requires programmes, tied to the resources available in different places, that aim to strengthen urban and rural links through better access, flow of information, and financial and other support services.
- *Prioritize agriculture.* Although agriculture offers low output and employment growth, the sector has also suffered from benign neglect in Nepal, particularly with respect to increasing output and exploring potentials for agricultural processing and agro-based industries. On the positive side, it requires relatively low investment per unit of output; in that respect, it is significantly below the national average. The sector warrants much

more than the 15 percent share of public capital spending, mainly for modernization and developing value added agro-based industries, envisaged for the 13th national development plan. Agriculture also needs to be made more attractive to young, educated and innovative people, as well as returnee labour migrants. This would mean commercialization and higher investment in agricultural infrastructure.

- **Make urban planning and management pro-poor.** Increasing poverty in urban areas should be an area of serious concern. As the tempo of urbanization increases and movement to urban areas picks up significantly, urban poverty is likely to increase. Sustainable improvement in urban HDI values will depend on pro-poor urban planning and management. In terms of infrastructure and access to facilities, resources could be augmented for housing, public transportation, drinking water and sanitation, which are important variables in the household well-being index.

#### **E. Build on the opportunities of the demographic dividend.**

While individual ability is shaped by household well-being, it is also influenced by other factors, such as increasing literacy, better ability to take advantage of existing opportunities, and heightened awareness and aspirations. As a group, youth seem to be more willing to break from the traditional mold and seek more equality in all spheres. Policies and programmes need to proactively build on this potential for transformation.

Evidence suggests that Nepal is not yet well prepared to reap the advantages of the demographic dividend. Thirty percent of the total economically active population, much of which comprises youth, remains underproductive. The rising trend of labour migration abroad points to a dysfunctional domestic labour market. Annually, nearly 450,000 youth enter it, but gainful and productive employment opportunities remain far short of de-

mand, producing a significant mismatch between youth potential and actual employment status. Market-based and public employment generation schemes could begin to redress this issue, along with mismatches across regions and socio-economic groups.

Major policy recommendations are:

- **Rapid expansion of productive and gainful employment opportunities could absorb the increasing youth population** before the demographic dividend becomes a demographic nightmare in the form of social unrest, political instability, etc. Agriculture, the mainstay of the economy, shows low growth in employment and output. While 64 percent of the population works in agriculture, according to the third Nepal Living Standards Survey, its share of GDP is only 35 percent. Modernization could not only raise productivity, but make it an attractive sector for more youth to seek employment within.

Sectors such as mining, manufacturing, trade, hotels and real estate have the highest employment elasticity, and are good for employment generation. But their recent rate of growth has been slow. Revitalizing them could boost employment growth relatively quickly. Transportation and communication, financial services, public administration, education and health have fared well in growth of output and employment. Existing policy initiatives in these sectors could be continued and strengthened, as they provide the best economic opportunities for young people at the moment.

- **Pursue strategies to derive maximum employment and income advantages from safe labour migration.** The long-term implications of labour migration notwithstanding, it is likely to remain a dominant feature of the Nepali economy for at least another decade or more, attracting a significant proportion of youth. Strategies to increase benefits from migration could particularly emphasize: the creation of an information base and analysis of skills demand to match supply; skills training programmes to enhance the income of potential migrants; social security

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**Rapid expansion in productive employment is essential to reap the advantage of the demographic dividend.**

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**Strategies for  
safe and better  
remunerative labour  
migration need  
emphasis.**

schemes to ensure secure and safe migration; and greater options for return migrants, including investment and other opportunities. Development and implementation of these strategies rests on creating a comprehensive database and generating deeper analysis of the impacts and implications of labour migration. In view of the importance of labour migration, it could clearly be a priority for policy action.

- *Significantly raise the budget allocated to technical education to enhance the employability of youth in the labour market or about to enter it.* Youth employability is largely a function of their technical and vocational skills and competencies, underscoring the urgency of providing technical and vocational education at school and post-school levels. The budget allocated to technical education at present is meagre and needs to be substantially raised. Other essential measures to reduce mismatches in skills demand and supply include a concerted focus on expanding literacy, and improving the quality and relevance of basic school education and skills training.

- *Address gender gaps in education, health, employment, economic and political decision-making, and the social and legal empowerment of women.* There is almost a 20-percentage-point gap in literacy between men and women, to cite just one of many indicators capturing deeply rooted gender biases. Eighteen of 75 districts had female illiteracy rates over 40 percent in 2011. In spite of inequality in education outcomes, the potential of women shows remarkable comparability with that of men. Yet, women do not have commensurate accomplishments in economic, social and political spheres. Gender relations as a whole need to be addressed, and appropriate programmes designed to reduce discriminatory barriers, empower women, and raise awareness of the importance of gender equality as a basic principle of rights and development. Closing gender gaps will serve the twin purposes of deepening inclusivity and better positioning Nepal to benefit from the demographic dividend, as younger women comprise an increasing proportion of the active labour force.

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<sup>1</sup> Social protection expenditure includes social insurance, social assistance and labour market programmes. Social assistance programmes comprise six components: social transfers in cash or kind; in-kind transfers including targeted food subsidies for poor and vulnerable people, school children, child welfare, etc.; disaster relief programmes; assistance to the elderly; health assistance, e.g., for infants and expectant mothers; and disability programmes. An Asian Development Bank study showed that in 2009, the Government of Nepal spent 2.1 percent of GDP on social protection. Only 0.9 percent of GDP went to social assistance programmes (Rana 2012).



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# Annexes

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# Annexes

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## Data Sources and GNI Calculations

The major data source used to calculate the Human Development Index (HDI) and its related indexes are the National Population and Housing Census 2011, the Nepal Demographic and Health Survey 2011 and the Nepal Living Standards Survey 2011. The data sources used for computing each indicator are provided in table A1.1.

Due to limitations in data quality and availability, several direct and indirect techniques were applied to calculate life expectancy at birth ( $e_0$ ) and the proportion of the population not surviving beyond age 40. As data from schedule II of the 2011 National Population and Housing Census were not available,  $e_0$  could not be computed using information on reported number of children ever born and children surviving among those born alive, classified by ages of women in the reproductive years to generate life tables essential for calculating  $e_0$  and the proportion of the population not surviving beyond age 40. These values were calculated using information on the distribution of death according to age and sex by constructing life tables using raw Census data. Obtained values were high due to under-enumeration of death statistics and therefore were adjusted.

The adult literacy rate, the percentage share of the population, the percentage of the population without access to safe drinking water

and the adult illiteracy rate were acquired from the Central Bureau of Statistics (2012). Mean years of schooling data were obtained from the National Population and Housing Census, and 2011 raw data from the Population Division of the Central Bureau of Statistics. The corresponding figures for regional levels were obtained by considering the population weights of districts.

Information on the nutritional status of children under age five was retrieved from the 2011 Nepal Demographic and Health Survey as it was the only reliable source for the particular reference period. However, these data were limited to the national, and ecological, development and eco-development regional levels (the survey classified 13 domains). For the district and remaining eco-development regional levels, the values for this indicator were computed using the change in ratio estimated from UNDP Nepal (2004) and the Ministry of Health and Population (2012).

Per capita income was obtained from the National Accounts Division of the Central Bureau of Statistics. The report calculated value added per capita income for 75 districts. It calculated per capita income for caste and ethnicity from the 2011 Nepal Living Standards Survey. Per capita income in US dollars was then adjusted to calculate the per capita income PPP \$ using the ratio obtained from UNDP (2011).

TABLE A1.1

Major data sources used to calculate HDI and related indexes

Data	Source	Calculated indicators	Calculated indexes
National Population and Housing Census 2011	• Central Bureau of Statistics 2012	<ul style="list-style-type: none"> <li>• Adult literacy rate</li> <li>• Percentage of population without access to safe drinking water</li> <li>• Adult illiteracy rate</li> </ul>	<ul style="list-style-type: none"> <li>• HDI, GDI</li> <li>• HPI</li> <li>• HPI</li> </ul>
National Population and Housing Census 2011	• 2011 Census, raw data	<ul style="list-style-type: none"> <li>• Life expectancy at birth</li> <li>• Mean years of schooling</li> <li>• Percentage of people not expected to survive to age 40</li> <li>• Percentage share of female in administrative and managerial positions</li> <li>• Percentage share of female in professional and technical positions</li> </ul>	<ul style="list-style-type: none"> <li>• HDI, GDI</li> <li>• HDI, GDI</li> <li>• HPI</li> <li>• GEM</li> <li>• GEM</li> </ul>
Nepal Demographic and Health Survey 2011	• Ministry of Health and Population, New ERA and ICF International Inc. 2012	<ul style="list-style-type: none"> <li>• Percentage of children who are malnourished (under five years of age)</li> </ul>	<ul style="list-style-type: none"> <li>• HPI</li> </ul>
National Accounts of Nepal	• Central Bureau of Statistics for 2011	<ul style="list-style-type: none"> <li>• GNI per capita</li> </ul>	<ul style="list-style-type: none"> <li>• HDI, GDI, GEM</li> </ul>
Nepal Living Standards Survey 2011	• Central Bureau of Statistics 2011	<ul style="list-style-type: none"> <li>• Per capita income (caste and ethnicity)</li> </ul>	<ul style="list-style-type: none"> <li>• HDI</li> </ul>
Constituent Assembly database	• Election Commission Nepal	<ul style="list-style-type: none"> <li>• Percentage share of female in parliamentary representation</li> </ul>	<ul style="list-style-type: none"> <li>• GEM</li> </ul>

TABLE A1.2

## Estimates of GNI by districts (data source and methodology)

Industrial classification		Data collected	Source of data	Methodology
Agriculture and forestry	Agriculture	Production of cereals, cash crops, spices, pulses, vegetables, fruits, milk, meat, eggs, wool, etc.	Ministry of Agriculture and Development	The total output per district was obtained by multiplying the production and price. This output was used as an indicator to distribute the total gross value added by district.
	Forestry	Production of timber	Department of Forests	The total output of timber by district was obtained by multiplying the production and price.
		Number of households using firewood as a main source of cooking fuel	Census 2011, Central Bureau of Statistics	The total output of firewood by district was calculated by multiplying the number of households using firewood, the quantity required per household and unit price.
		Average quantity required per household and unit price	Nepal Living Standards Survey 2011, Central Bureau of Statistics	The indicator was obtained by adding the output of firewood and output of timber by district to allocate the gross value added by district.
Fishing	Fish	Production of fish	Ministry of Agriculture and Development	The total output by district was obtained by multiplying the production and price.
Mining and quarrying	Mining	Revenue collected from mining activities	Local Body Financial Commission/ Ministry of Federal Affairs and Local Development	Revenue collected by district was used as an indicator.
	Quarrying	Construction output	Central Bureau of Statistics	Construction output by district was used as an indicator.
Manufacturing	Modern	Census of Manufacturing Establishment 2006/07	Central Bureau of Statistics	The district gross value added from the census of modern manufacturing and small manufacturing was obtained and extrapolated to 2010-2011.
	Small	Survey of Small Manufacturing Establishments 2008/09		
	Unincorporated	Nepal Living Standards Survey 2011		
Electricity, gas and water	Electricity	Revenue and quantity sold by district	Nepal Electricity Authority	The quantity sold by district/revenue collected was used as an indicator to decompose the gross value added at the district level.
		Households using electricity as main source lighting	Census 2011, Central Bureau of Statistics	
	Gas	Number of bio-gas plants	Alternative Energy Promotion Centre	The indicator was derived from the number of bio-gas plants by district; multiplying by gross value added per plant was used to decompose the gross value added at the district level.
		Gross value added per bio-gas plant	Bio-gas survey, Central Bureau of Statistics	
Water	Water	Number of households using tap water	Census 2011, Central Bureau of Statistics	The indicator was derived from the number of households using tap water by district; multiplying by average revenue paid by household was used to decompose the gross value added at the district level.
		Average revenue paid by household	Nepal Living Standards Survey 2011, Central Bureau of Statistics	
Construction	Construction	Capital expenditure of village and district development committees and central Government	Local Body Financial Commission/ Ministry of Federal Affairs and Local Development	Total construction activities were divided into two categories, government and private. For government construction, the sum of the capital expenditure of village and district development committees, the central Government and municipalities was used as an indicator.*
		Household construction	Nepal Living Standards Survey 2011, Central Bureau of Statistics	The number of households with construction activities by district was estimated by using the Nepal Living Standards Survey ratio to total households; cost per household construction activity was also used from the Nepal Living Standards Survey.
Wholesale and retail trade	Wholesale and retail trade	Value added tax on sales	Inland Revenue Department	The value added tax on sales collected by district was used to decompose the gross value added at the district level.
Hotels and restaurants	Hotels	Number of hotels by type	Ministry of Tourism	The number of hotels and restaurants by types and district was multiplied by respective gross value added obtained from the survey to obtain the indicator at the district level.
	Restaurants	Number of tourist standard restaurants	Central Bureau of Statistics	
Transport, storage and communications	Road transport	Distribution of vehicles on the basis of road network and total population	Department of Roads	The indicator was obtained from the number of vehicles per district multiplied by gross value added per vehicle to decompose the gross value added at the district level.
	Air transport	Number of passengers	Civil Aviation Authority of Nepal	The number of passengers per airport/district was used as an indicator.
	Storage	N/A	N/A	As transport.
	Communications	Revenue from landlines, revenue and subscribers by zone, and number of households using cell phones	Nepal Telecom, Ncell	Total subscribers and revenue by zone were distributed to the district level on the basis of the number of households using cell phones through Nepal Telecom and Ncell.



Financial intermediation	Financial intermediation	Number of commercial banks by types	Nepal Rastra Bank	The net interest income of major commercial banks (Nepal Bank Limited, Rastriya Banijya Bank and Agriculture Development Bank) was distributed by district on the basis of fixed and savings deposits. For remaining commercial and development banks, interest income was distributed by district on the basis of the number of branches (unweighted). Total net interest income by district was used as an indicator.
		Number of development banks by types	Nepal Rastra Bank	
		Net interest income by bank	Nepal Rastra Bank	
		Bank deposits by branches of major commercial banks	Nepal Bank Limited, Rastriya Banijya Bank, Agriculture Development Bank	
Real estate, renting and business activities	Real estate	Revenue collected on land registration	Local Body Financial Commission/ Ministry of Federal Affairs and Local Development	Revenue from land registration by district was used to decompose the gross value added of real estate at the district level.
	Renting	Revenue from rent (rental tax)	Financial Comptrollers General Office	Revenue from rent by district was used to decompose the gross value added of renting at the district level.
	Business activities	Business taxes	Local Body Financial Commission	Revenue from business tax by district was used to decompose the gross value added of business activities at the district level.
Public administration and defense	Public administration and defense	Government expenditure on compensation of employee and intermediate consumption by district	Financial Comptrollers General Office	Total government expenditure on compensation of employee and intermediate consumption (current expenditure) by district was used as an indicator.
Education	Education	Number of students currently attending school by types	Flash reports	The total number of students studying at different levels of school and college was multiplied by the total expenditure on education per student by level, type and eco-development region.
		Number of students currently attending collage by types	University Grants Commission	
		Expenditure on education per student by level, type and geographical location	Nepal Living Standards Survey 2011	
Health and social work	Health and social work	Number of patients using different types of health institutions	Department of Health Services	The number of service takers by health institution and by district was multiplied by expenditure per patient by type of health institution to derive the indicator.
		Total expenditure per patient by type of health institution and geographical location	Nepal Living Standards Survey 2011	
Other community, social and personal service activities	Other community, social and personal service activities	Central government, and district and village development committee expenditures on culture and recreation	Financial Comptrollers General Office	For culture and recreation, the sum of government, village and district development committee, and municipality expenditure was used as an indicator. For sports, government and Nepal Sports Council expenditure was used as an indicator. For radio and TV channels, the number was obtained from the Ministry of Information and Communication; gross value added was derived from a Central Bureau of Statistics survey. Census data on the motion picture and music industry was used as an indicator for motion pictures.
		Government expenditure on sports	National Sports Council	
		Number of FM radio stations and gross value added per station	Ministry of Information and Communication, Central Bureau of Statistics survey	
		Number of television channels and gross value added per channel	Ministry of Information and Communication, Central Bureau of Statistics survey	
		Census of motion pictures and music industry	Central Bureau of Statistics, 2011	

\* For the central Government and municipalities, total expenditure on building and civil construction is taken into account.

## ANNEX 2:

# Technical Notes on Calculating the HDI and Related Indexes

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## Human Development Index

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The HDI is a composite index measuring average achievement in three basic dimensions of human development: a long and healthy life, knowledge and a decent standard of living. The HDI, for this report, is computed as the geometric mean (unlike its predecessors, which used the arithmetic mean) of the normalized indexes measuring achievements in each of these three dimensions. As a result of the use of the geometric mean, poor performance in any dimension is now directly reflected in the HDI, and there is no longer perfect substitutability across dimensions, keeping in mind that health, education and income are all equally important (UNDP 2010). This report, for the first time, also takes the geometric mean of the adult literacy rate and mean years of schooling to compute the combined education index.

### Data sources

Data sources comprised the Central Bureau of Statistics (2012) for life expectancy at birth, mean years of schooling and the adult literacy rate, and the National Accounts of Nepal (Central Bureau of Statistics) for GNI per capita (PPP \$).

### *Dimensions and goalposts for the HDI*

**Life expectancy at birth:** Life expectancy at birth is the number of years a newborn infant could expect to live if prevailing patterns of age-specific mortality rates at the time of birth stay the same throughout the infant's life (UNDP 2011). Life expectancy at birth is a summary measure of the health status of the population and was computed from life tables constructed from the  ${}_n m_x$  (central death rate) values obtained from the National Population and Housing Census (Central Bureau of Statistics 2012) raw data.

**Adult literacy rate:** Adult literacy rates were calculated from the National Population and Housing Census (ibid.) for people aged 15 years and above who can read and write.

**Mean years of schooling:** Mean years of schooling for all regions were computed from National Population and Housing Census (ibid.) raw data.

**GNI per capita:** GNI per capita is the aggregate income of an economy generated by its production and its ownership of factors of production, less the incomes paid for the use of factors of production owned by the rest of the world, converted to international dollars using PPP rates, divided by mid-year population.

See table A2.1 for goalposts in calculating the dimensions of the HDI.

TABLE A2.1:

## Goalposts for HDI dimensions

Dimension	Maximum	Minimum
Life expectancy	85	25
Adult literacy	100	0
Mean years of schooling	15	0
Per capita income (PPP \$)	40,000	100

Having defined the goal posts, the sub-indexes are calculated as follows:

$$\text{Dimension index} = \frac{\text{Actual value} - \text{minimum value}}{\text{Maximum value} - \text{minimum value}}$$

## Computing the HDI (Example: Mountain)

Region	Life expectancy at birth (in years)	Adult literacy rate (%)	Mean years of schooling	GNI per capita (PPP \$)
Mountains	66.98	51.46	3.02	965

Life expectancy index

$$= \frac{66.98 - 25}{85 - 25} = \frac{41.98}{60} = 0.700$$

Adult literacy index

$$= \frac{51.46 - 0}{100 - 0} = \frac{51.46}{100} = 0.515$$

Mean years of schooling index

$$= \frac{3.02 - 0}{15 - 0} = \frac{3.02}{15} = 0.202$$

Educational attainment index

$$= \sqrt{0.515 \times 0.202} = 0.322$$

Adjusted GNI per capita (PPP \$) index

$$= \frac{\log(965) - \log(100)}{\log(40,000) - \log(100)} = 0.378$$

## HDI output table

Region	Life expectancy index	Educational attainment index	Income index	HDI (geometric mean of the three indexes)
Mountains	0.700	0.322	0.378	0.440

## Gender Development Index

The GDI measures achievements in the same basic capabilities (dimensions) as the HDI but takes into consideration inequality in achievements between women and men. The values of the GDI range between 0 and 1. A GDI value of 1 indicates perfect gender equality whereas 0 indicates perfect gender inequality.

## Dimensions and goalposts for the GDI

There is strong evidence that the maximal potential life expectancy is greater for women than for men, given similar health care and nutritional opportunities (UNDP 2009). As a result, the goalposts for life expectancy at birth are different for males and females, as shown in table A 2.2.

## Computing the GDI

The first step is to create indexes for all indicators using their respective goalposts for both sexes, except for life expectancy, where the goalposts are slightly different as discussed above. The second step involves the computation of the equally distributed equivalent index, which is done using the following formula:

$$\left[ \frac{(\text{Female proportion share}) (\text{Female indicator})^{-1}}{[(\text{Male proportion share}) (\text{male indicator})^{-1}]^{-1}} \right]$$

This will produce three equally distributed indexes, one each for life expectancy, educational achievement and income. The final step is to aggregate these by taking their arithmetic mean as well as geometric mean, as done for HDI calculations.

TABLE A2.2:

## Goalposts for life expectancy at birth for computing the GDI

	Female	Male
Maximum	87.5	82.5
Minimum	27.5	22.5

### Computing the GDI (Example Hills)

Percentage share of population	
Female	0.523
Male	0.477

### Step I: Computing the equally distributed life expectancy index

Life expectancy	
Female	71.44
Male	66.83
Life expectancy index	
Female	0.732
Male	0.739

Equally distributed life expectancy index  
 $[Female\ population\ share \times (female\ life\ expectancy\ index)^{-1} + male\ population\ share \times (male\ life\ expectancy\ index)^{-1}]^{-1}$   
 $= [0.523 \times (0.732)^{-1} + 0.477 \times (0.739)^{-1}]^{-1}$   
 $= 0.735$

### Step II: Computing the equally distributed educational attainment index

Adult literacy rate	
Female	56.39
Male	78.86
Mean years of schooling	
Female	3.85
Male	5.13
Adult literacy index	
Female	0.564
Male	0.789
Mean years of schooling index	
Female	0.257
Male	0.342
Educational attainment index	
Female	0.380
Male	0.519

Equally distributed education index  
 $[Female\ population\ share \times (female\ educational\ attainment\ index)^{-1} + male\ population\ share \times (male\ educational\ attainment\ index)^{-1}]^{-1}$   
 $= 0.436$

### Step III: Computing the equally distributed income index

GNI per capita (PPP \$)	
Female	1,095
Male	1,558
Adjusted GNI per capita index	
Female	0.399
Male	0.458

Equally distributed income index  
 $[Female\ population\ share \times (female\ income\ index)^{-1} + male\ population\ share \times (male\ income\ index)^{-1}]^{-1}$   
 $= 0.426$

Region	Equally distributed life expectancy index	Equally distributed educational attainment index	Equally distributed income index	GDI
Hills	0.735	0.436	0.426	0.515

## Gender Empowerment Measure

The GEM seeks to determine how much women have been empowered or enfranchised to take part in different aspects of public life in comparison with men. It measures gender inequality in key areas of economic and public participation and decision-making. Its value ranges from 0 to 1 with higher values denoting higher empowerment of women and lower values indicating opportunities for women are severely constrained (UNDP 2009). The GEM focuses on women's opportunities rather than their capabilities, and captures inequality along the dimensions presented in table A 2.3

The percentage share of females and males in parliamentary seats is obtained from the Constituent Assembly election database. This does not include the 26 members of the CA who were not nominated at the time of

TABLE A2.3:

### Dimensions and indicators of the GEM

Dimensions	Indicators
Political participation and decision-making	Female and male shares of parliamentary seats
Economic participation and decision-making	Percentage share of females and males in administrative and managerial positions Percentage share of females and males in professional and technical positions
Power over economic resources	Female and male estimated earned income (PPP \$)

data compilation. Likewise, the percentage of females and males in administrative and managerial positions and in professional and technical positions is calculated from Nepal Population and Housing Census (2011) raw data.

### Constructing the GEM

The first step in constructing the GEM is to compute the equally distributed equivalent index by using the following formula:

$$[(\text{Female proportion share}) (\text{Female indicator})^{-1}] + [(\text{Male proportion share}) (\text{male indicator})^{-1}]^{-1}$$

The index for each indicator is then divided by 50, to obtain the indexed value of each indicator, with the rationale that in an ideal society, with equal empowerment of the sexes, each would have a share of 50 percent—i.e., women’s share would equal men’s share. The indexes for administrative and managerial positions, and professional and technical positions are then combined by taking the arithmetic mean to get the index for economic participation and decision-making. Unlike the GDI, the GEM evaluates income not for its contribution to, but as a source of, economic power that frees the earner to choose from a wider set of possibilities and exercise a broader range of options. Therefore, while calculating the GEM, income is not adjusted for the laws of diminishing returns (UNDP 2009). The arithmetic mean of the indexes for each of the three dimensions results in the GEM.

### Computing the GEM (Example Tarai)

Percentage share of population	
Female	0.508
Male	0.492

#### Step 1: Computing indexes for parliamentary representation, administrative and managerial positions, and professional and technical positions

Percentage of parliamentary representation

Female	32.86
Male	67.14

Percentage of administrative and managerial positions

Female	27.56
Male	72.44

Percentage of professional and technical positions

Female	27.11
Male	72.89

Income (GNI PPP \$)

Female	769
Male	1345

Equally distributed equivalent percentage for parliamentary representation

$$[\text{Female population share} \times (\text{female share in parliamentary representation})^{-1} + \text{male population share} \times (\text{male share in parliamentary representation})^{-1}]^{-1}$$

$$= 43.87$$

Equally distributed equivalent percentage for administrative and managerial positions

$$[\text{Female population share} \times (\text{female share in administrative and managerial positions})^{-1} + \text{male population share} \times (\text{male share in administrative and managerial positions})^{-1}]^{-1}$$

$$= 39.63$$

Equally distributed equivalent percentage for professional and technical positions

$$[\text{Female population share} \times (\text{female share in professional and technical positions})^{-1} + \text{male population share} \times (\text{male share in professional and technical positions})^{-1}]^{-1}$$

$$= 39.22$$

Income index for females =

$$\{(769 - 100) / (40,000 - 100)\} = 0.017$$

Income index for males =

$$\{(1345 - 100) / (40,000 - 100)\} = 0.031$$

Equally distributed income index

$$[\text{Female population share} \times (\text{female income index})^{-1} + \text{male population share} \times (\text{male income index})^{-1}]^{-1}$$

$$= 0.022$$

Indexing parliamentary representation

$$43.87 / 50 = 0.877$$

Indexing administrative and managerial positions

$$39.63 / 50 = 0.793$$

Indexing professional and technical positions

$$39.22 / 50 = 0.784$$

Combining the indexes for administrative/managerial and professional/technical positions

$$= (\text{Index of administrative and managerial positions} + \text{Index of professional and technical positions}) / 2$$

$$= (0.793 + 0.784) / 2$$

$$= 0.788$$

Now, GEM = (Parliamentary representation index + combined administrative/managerial and professional/technical index + income index) / 3

$$= (0.877 + 0.788 + 0.022) / 3$$

$$= 0.563$$

## Human Poverty Index

The HPI measures average deprivation in the three basic dimensions of human development—a long and healthy life, knowledge and a decent standard of living. Deprivation is

measured by considering the following indicators:

Deprivation in a long and healthy life (vulnerability to death at an early age) is measured by the proportion of the population not expected to survive beyond age 40. Values for this indicator are calculated from  $l_x$  (the number of persons surviving at the beginning of the indicated age interval,  $x$ , in this case 40 years out of the total number of births assumed as the radix of the life table, 100,000) values from constructed life tables based on Nepal Population and Housing Census 2011 raw data. Deprivation in knowledge is measured by the adult illiteracy rate calculated from the Central Bureau of Statistics (2012). Deprivation in economic provisioning/a decent standard of living is measured by the unweighted average of two indicators—the percentage of the population without access to safe drinking water, and the percentage of children under age five who are malnourished—as they capture deprivation in economic provisioning more practically than other indicators for developing countries like Nepal. The percentage of the population without access to safe drinking water is calculated from the Central Bureau of Statistics (2012) and the percentage of malnourished children under age five is obtained from the Ministry of Health and Population (2012) and UNDP Nepal (2004).

### Computing the HPI

Region	Percentage of people not expected to survive beyond age 40	Adult illiteracy rate	Percentage of people without access to safe water	Percentage of malnourished children under age five	Deprivation in economic provisioning
	$(P_1)$	$(P_2)$	$(P_{31})$	$(P_{32})$	$(P_3) = [(P_{31}) + (P_{32})] / 2$
Mountains	10.62	48.54	23.48	52.9	38.19

$$\begin{aligned} \text{HPI} &= \sqrt[3]{\frac{1}{3} [(P_1)^3 + (P_2)^3 + (P_3)^3]} \\ &= \sqrt[3]{\frac{1}{3} [(10.62)^3 + (48.54)^3 + (38.19)^3]} \\ &= 38.51 \end{aligned}$$

### ANNEX 3:

## Caste and Ethnicity Classification

Major category/group	Sub-category	Caste and ethnic groups in the 2011 Census
1 Hill caste	1.1 Hill Brahmans	1.1 Hill Brahman
	1.2 Hill Chhetris	1.2 Chhetri, Thakuri, Sanyasi
2 Tarai/Madhesi castes	2.1 Tarai/Madhesi Brahmans/Chhetris	2.1 Tarai Brahman, Nurang, Rajput, Kayastha
	2.2 Tarai/Madhesi other castes	2.2 Badhaee, Barai, Bin, Dev, Dhunia, Gaderi/Bhedihar, Hajam/Thakur, Haluwai, Kahar, Kalwar, Kamar, Kanu, Kathabaniyan, Kewat, Koiri/Kushwaha, Kori, Kumhar, Kurmi, Lodh, Lohar, Mali, Mallaha, Nuniya, Rajbhar, Rajdhob, Sonar, Sudhi, Teli, Yadav
	2.2.1 Yadav	
3 Dalits	3.1 Hill Dalits	3.1 Badi, Damai/Dholi, Gaine, Kami, Sarki
	3.2 Tarai/Madhesi Dalits	3.2 Bantar/Sardar, Chamar/ Harijan/Ram, Chidimar, Dhandi, Dhankar/Dharikar, Dhobi, Dom, Dusadh/Paswan/Pasi, Halkhor, Kalar, Khatwe, Musahar, Natuwa, Sarbaria, Tatma/Tatwa
4 Janajatis	4.1 Mountain Janajatis	4.1 Bhote, Byasi/Sauka, Dolpo, Lhomi, Lhopa, Sherpa, Thakali, Topkegola, Walung
	4.4.1 Thakali	4.2 Athpariya, Bahing, Bantawa, Brahm/Baramo, Chamling, Chepang/Praja, Chhantyal/Chantel, Dura, Ghale, Gharti/Bhujel, Gurung, Hayu, Hyolmo, Jirel, Khaling, Khawa, Kulung, Kusunda, Lepcha, Limbu, Loharung, Magar, Mewahang/Bala, Nachhiring, Newar, Pahari, Rai, Sampang, Sunuwar, Tamang, Thami, Thulung, Yakkha, Yamphu
	4.2 Hill Janajatis	
	4.4.2 Newar	
	4.3 Bhitri Madhesi Janajatis	4.3 Bote, Danuwar, Darai, Kumal, Majhi, Raji, Raute
4.4 Tarai/Madhesi Janajatis	4.4 Amat, Dhanuk, Dhimal, Gangai, Jhangad/Dhagar, Kisan, Koche, Meche, Munda, Pattharkatta/ Kuswadia, Rajbanshi, Satar/Santhal, Tajpuriya, Tharu	
5 Muslim	5 Muslim*	5 Muslim
6 Others	6 Others*	6 Bengali, Marwari, Punjabi/Sikh, Foreigners

\* Jain (other category, included in the 2001 Census) and Churaute (Muslim category, included in 1991 and 2001) have been excluded in the 2011 caste/ethnic groups.

# Values of the HDI and Related Indexes

TABLE A4.1:

## HDI values by region, 2011

Area/region/district	Population			Health			Education			Income			HDI	
	Female	Male	Total	Life expectancy		Adult literacy	Mean years of schooling		Per capita income (PPP \$)		Arithmetic mean (old methodology)	Geometric mean (new methodology)		
				Value	Index		Value	Index	Value	Index				
Nepal	13,645,463	12,849,041	26,494,504	68.80	0.730	59.57	0.596	3.90	0.260	1160	0.409	0.541	0.490	
Urban	2,217,771	2,306,049	4,523,820	68.93	0.732	79.27	0.793	4.94	0.330	2248	0.520	0.630	0.579	
Rural	11,427,692	10,542,992	21,970,684	68.81	0.730	54.98	0.550	3.69	0.246	936	0.373	0.517	0.464	
Mountains	919,200	862,592	1,781,792	66.98	0.700	51.46	0.515	3.02	0.202	965	0.378	0.496	0.440	
Hills	5,953,940	5,440,067	11,394,007	69.02	0.734	66.77	0.668	4.46	0.297	1316	0.430	0.569	0.520	
Tarai	6,772,323	6,546,382	13,318,705	68.85	0.731	54.24	0.542	3.52	0.235	1052	0.393	0.521	0.468	
Eastern development region	3,021,072	2,790,483	5,811,555	69.02	0.734	60.72	0.607	3.99	0.266	1088	0.398	0.542	0.490	
Central development region	4,815,361	4,841,624	9,656,985	69.84	0.747	58.54	0.585	4.11	0.274	1429	0.444	0.558	0.510	
Western development region	2,634,168	2,292,597	4,926,765	69.03	0.734	64.82	0.648	4.12	0.275	1104	0.401	0.553	0.499	
Mid Western development region	1,840,232	1,706,450	3,546,682	66.80	0.697	55.74	0.557	3.27	0.218	906	0.368	0.503	0.447	
Far Western development region	1,334,630	1,217,887	2,552,517	66.84	0.697	55.31	0.553	3.27	0.218	767	0.340	0.493	0.435	
Eastern and Central Mountains	475,938	433,806	909,744	69.03	0.734	55.41	0.554	3.32	0.221	1219	0.417	0.531	0.475	
Eastern and Central Hills (without Kathmandu)	1,843,865	1,672,272	3,516,137	69.68	0.745	60.39	0.604	3.77	0.251	1128	0.404	0.545	0.490	
Eastern and Central Tarai	4,305,574	4,220,062	8,525,636	69.61	0.744	51.24	0.512	3.41	0.228	1046	0.392	0.518	0.463	
Kathmandu Valley	1,211,056	1,305,967	2,517,023	69.13	0.735	82.52	0.825	6.83	0.456	2434	0.533	0.657	0.622	
Western Hills	1,550,759	1,260,376	2,811,135	69.77	0.746	68.55	0.685	4.39	0.293	1100	0.400	0.567	0.511	
Western Tarai	1,074,173	1,021,467	2,095,640	67.87	0.715	59.71	0.597	3.76	0.251	1097	0.400	0.532	0.480	
Western, Mid Western and Far Western Mountains	443,262	428,786	872,048	65.04	0.667	46.76	0.468	2.70	0.180	701	0.325	0.455	0.398	
Mid Western and Far Western Hills	1,348,260	1,201,452	2,549,712	67.20	0.703	54.11	0.541	3.02	0.201	710	0.327	0.486	0.423	
Mid Western and Far Western Tarai	1,392,576	1,304,853	2,697,429	67.20	0.703	59.44	0.594	3.69	0.246	1037	0.390	0.524	0.472	
Eastern Mountains	205,112	186,977	392,089	67.67	0.711	62.43	0.624	3.61	0.241	1407	0.441	0.550	0.496	
Central Mountains	270,826	246,829	517,655	70.13	0.752	50.30	0.503	3.10	0.206	1077	0.397	0.518	0.458	
Western Mountains	9,236	10,754	19,990	65.04	0.667	64.47	0.645	4.17	0.278	2329	0.525	0.572	0.529	
Mid Western Mountains	192,886	195,827	388,713	63.64	0.644	42.99	0.430	2.51	0.168	811	0.349	0.445	0.392	
Far Western Mountains	241,140	222,205	463,345	65.87	0.681	48.89	0.489	2.79	0.186	538	0.281	0.450	0.386	
Eastern Hills	844,825	756,522	1,601,347	68.87	0.731	65.33	0.653	4.09	0.272	1107	0.401	0.553	0.498	
Central Hills	2,210,096	2,221,717	4,431,813	69.72	0.745	72.10	0.721	5.41	0.361	1878	0.489	0.612	0.571	
Western Hills	1,550,759	1,260,376	2,811,135	69.77	0.746	68.55	0.685	4.39	0.293	1100	0.400	0.567	0.511	
Mid Western Hills	887,268	800,229	1,687,497	66.92	0.699	55.82	0.558	3.11	0.207	745	0.335	0.492	0.430	
Far Western Hills	460,992	401,223	862,215	67.68	0.711	50.71	0.507	2.84	0.189	643	0.311	0.474	0.409	

Continued...



Area/region/district	Population						Health				Education				Income		HDI	
	Female		Male		Total		Life expectancy		Adult literacy		Mean years of schooling		Per capita income (PPP \$)		Arithmetic mean (old methodology)		Geometric mean (new methodology)	
	Value	Index	Value	Index	Value	Index	Value	Index	Value	Index	Value	Index	Value	Index	Value	Index	Value	Index
Western Tarai	1,074,173	1,021,467	2,095,640	67.87	0.715	59.71	0.597	3.76	0.251	1097	0.400	0.532	0.480					
Mid Western Tarai	760,078	710,394	1,470,472	67.65	0.711	58.65	0.587	3.64	0.243	1117	0.403	0.529	0.476					
Far Western Tarai	632,498	594,459	1,226,957	66.70	0.695	60.39	0.604	3.75	0.250	940	0.374	0.518	0.466					
Lalitpur	66,909	60,552	127,461	65.83	0.681	65.72	0.657	3.89	0.260	1313	0.430	0.545	0.494					
Panchthar	101,631	90,186	191,817	68.12	0.719	66.91	0.669	4.21	0.281	1082	0.398	0.552	0.498					
Ilam	149,128	141,126	290,254	67.95	0.716	73.46	0.735	4.74	0.316	1260	0.423	0.578	0.526					
Jhapa	427,554	385,096	812,650	67.29	0.705	69.92	0.699	4.77	0.318	1226	0.418	0.565	0.518					
Morang	498,658	466,712	965,370	69.05	0.734	64.91	0.649	4.39	0.293	1251	0.422	0.562	0.513					
Sunsari	392,258	371,229	763,487	68.33	0.722	62.88	0.629	4.21	0.281	1104	0.401	0.545	0.496					
Dhankuta	86,897	76,515	163,412	69.04	0.734	68.59	0.686	4.36	0.290	1257	0.423	0.570	0.517					
Terhathum	54,426	47,151	101,577	68.05	0.718	69.36	0.694	4.56	0.304	1419	0.443	0.575	0.527					
Sankhuwasabha	83,517	75,225	158,742	68.42	0.724	63.16	0.632	3.60	0.240	1193	0.414	0.546	0.488					
Bhojpur	96,406	86,053	182,459	68.33	0.722	63.09	0.631	3.72	0.248	999	0.384	0.537	0.479					
SoluKhumbu	54,686	51,200	105,886	68.83	0.731	57.51	0.575	3.30	0.220	1841	0.486	0.558	0.502					
Okhaldhunga	79,297	68,687	147,984	70.56	0.759	56.14	0.561	3.43	0.229	957	0.377	0.529	0.468					
Khotang	109,220	97,092	206,312	70.24	0.754	61.98	0.620	3.78	0.252	1132	0.405	0.552	0.494					
Udaypur	167,820	149,712	317,532	69.29	0.738	60.70	0.607	3.81	0.254	920	0.370	0.533	0.475					
Saptari	325,438	313,846	639,284	71.34	0.772	45.44	0.454	3.21	0.214	801	0.347	0.498	0.437					
Siraha	327,227	310,101	637,328	71.29	0.772	39.96	0.400	2.82	0.188	689	0.322	0.474	0.408					
Dhanusa	376,239	378,538	754,777	69.53	0.742	41.89	0.419	2.97	0.198	938	0.374	0.487	0.431					
Mahottari	316,564	311,016	627,580	69.47	0.741	37.04	0.370	2.46	0.164	681	0.320	0.454	0.388					
Sarlahi	379,973	389,756	769,729	70.06	0.751	38.00	0.380	2.42	0.162	809	0.349	0.469	0.402					
Sindhuli	154,069	142,123	296,192	70.04	0.751	51.08	0.511	3.08	0.205	822	0.352	0.504	0.440					
Ramechhap	109,260	93,386	202,646	72.90	0.798	52.10	0.521	3.37	0.225	951	0.376	0.532	0.468					
Dolakha	99,554	87,003	186,557	70.85	0.764	53.60	0.536	3.26	0.218	922	0.371	0.522	0.459					
Sindhupalchok	149,447	138,351	287,798	69.57	0.743	49.51	0.495	3.02	0.201	1110	0.402	0.514	0.455					
Kavrepalanchok	199,001	182,936	381,937	70.86	0.764	62.77	0.628	4.18	0.279	1399	0.440	0.572	0.520					
Lalitpur	230,050	238,082	468,132	70.30	0.755	79.68	0.797	6.47	0.431	1894	0.491	0.640	0.601					
Bhaktapur	149,767	154,884	304,651	70.48	0.758	78.13	0.781	6.19	0.413	1379	0.438	0.618	0.573					
Kathmandu	831,239	913,001	1,744,240	68.55	0.726	84.04	0.840	7.05	0.470	2764	0.554	0.666	0.632					
Nuwakot	144,684	132,787	277,471	70.81	0.763	50.59	0.506	3.26	0.218	1086	0.398	0.524	0.466					
Rasuwa	21,825	21,475	43,300	70.91	0.765	41.32	0.413	2.88	0.192	1520	0.454	0.520	0.461					
Dhading	178,233	157,834	336,067	70.86	0.764	53.26	0.533	3.20	0.213	982	0.381	0.524	0.461					
Makwanpur	213,793	206,684	420,477	68.08	0.718	61.79	0.618	3.63	0.242	1410	0.442	0.551	0.497					
Rautahat	335,643	351,079	686,722	70.99	0.766	33.89	0.339	2.19	0.146	757	0.338	0.460	0.386					
Bara	336,464	351,244	687,708	70.50	0.758	43.25	0.433	2.72	0.182	1480	0.450	0.519	0.457					
Parsa	286,659	312,358	601,017	70.25	0.754	48.69	0.487	3.09	0.206	1223	0.418	0.522	0.464					
Chitwan	300,897	279,087	579,984	69.78	0.746	72.23	0.722	5.01	0.334	1537	0.456	0.598	0.551					
Gorkha	150,020	121,041	271,061	71.70	0.778	58.17	0.582	3.47	0.231	1039	0.391	0.545	0.481					

Continued...

Area/region/district	Population			Health		Education				Income		HDI	
	Life expectancy		Total	Adult literacy		Mean years of schooling		Per capita income (PPP \$)		Arithmetic mean (old methodology)	Geometric mean (new methodology)		
	Female	Male		Value	Index	Value	Index	Value	Index				
Syangja	163,315	125,833	289,148	69.68	0.745	70.37	0.704	4.73	0.315	1215	0.417	0.579	0.527
Kaski	253,713	236,385	492,098	70.51	0.758	78.57	0.786	5.76	0.384	1561	0.459	0.623	0.576
Manang	2,877	3,661	6,538	65.04	0.667	70.82	0.708	4.79	0.320	3166	0.577	0.608	0.568
Mustang	6,359	7,093	13,452	65.04	0.667	61.35	0.613	3.86	0.257	1922	0.493	0.552	0.508
Myagdi	62,246	51,395	113,641	70.05	0.751	65.16	0.652	3.75	0.250	1028	0.389	0.552	0.490
Paibat	81,289	65,301	146,590	70.55	0.759	67.57	0.676	4.56	0.304	1013	0.386	0.566	0.510
Baglung	150,616	117,997	268,613	68.83	0.730	65.54	0.655	3.91	0.261	868	0.361	0.538	0.478
Gulmi	159,165	120,995	280,160	68.09	0.718	65.58	0.656	3.92	0.261	752	0.337	0.526	0.464
Palpa	145,340	115,840	261,180	68.27	0.721	70.82	0.708	4.35	0.290	985	0.382	0.557	0.500
Nawalparasi	339,833	303,675	643,508	67.81	0.714	63.75	0.637	3.97	0.265	1157	0.409	0.545	0.493
Rupandehi	44,8003	432,193	880,196	68.29	0.721	64.39	0.644	4.20	0.280	1123	0.404	0.549	0.498
Kapilbastu	286,337	285,599	571,936	67.56	0.709	47.10	0.471	2.83	0.189	990	0.383	0.490	0.432
Aghakhanchi	111,366	86,266	197,632	68.56	0.726	65.57	0.656	4.01	0.267	909	0.368	0.540	0.482
Pyuthan	128,049	100,053	228,102	64.33	0.655	58.01	0.580	2.91	0.194	681	0.320	0.476	0.413
Rolpa	121,406	103,100	224,506	66.28	0.688	50.74	0.507	2.44	0.163	643	0.311	0.464	0.395
Rukum	109,408	99,159	208,567	68.39	0.723	50.81	0.508	3.06	0.204	782	0.343	0.491	0.431
Salyan	126,475	115,969	242,444	68.80	0.730	55.50	0.555	3.17	0.211	786	0.344	0.505	0.441
Dang	291,524	261,059	552,583	67.33	0.705	62.41	0.624	3.83	0.255	1127	0.404	0.537	0.485
Baanke	247,058	244,255	491,313	68.35	0.723	56.31	0.563	3.59	0.239	1133	0.405	0.528	0.475
Bardiya	221,496	205,080	426,576	67.26	0.704	56.54	0.565	3.46	0.231	1086	0.398	0.519	0.466
Surkhet	181,383	169,421	350,804	67.28	0.705	67.00	0.670	3.88	0.238	911	0.369	0.535	0.476
Dalekh	134,780	126,990	261,770	68.03	0.717	52.30	0.523	3.06	0.204	684	0.321	0.485	0.422
Jajarkot	85,767	85,537	171,304	66.45	0.691	46.92	0.469	2.70	0.180	611	0.302	0.455	0.393
Dolpa	18,462	18,238	36,700	61.20	0.603	44.22	0.442	2.53	0.169	1040	0.391	0.448	0.401
Jumla	54,023	54,898	108,921	63.14	0.636	44.43	0.444	2.62	0.174	1007	0.385	0.459	0.409
Kalikot	68,115	68,833	136,948	63.64	0.644	45.30	0.453	2.54	0.169	578	0.293	0.432	0.374
Mugu	27,261	28,025	55,286	65.57	0.676	39.25	0.393	2.50	0.167	866	0.360	0.451	0.397
Humla	25,025	25,833	50,858	64.15	0.653	37.22	0.372	2.22	0.148	794	0.346	0.432	0.376
Bajura	69,106	65,806	134,912	63.92	0.649	44.52	0.445	2.46	0.164	523	0.276	0.425	0.364
Bajhang	102,365	92,794	195,159	65.22	0.670	45.03	0.450	2.53	0.168	487	0.264	0.430	0.365
Accham	137,469	120,008	257,477	67.14	0.702	45.08	0.451	2.52	0.168	536	0.280	0.446	0.378
Doti	114,494	97,252	211,746	66.74	0.696	47.68	0.477	2.53	0.169	774	0.341	0.470	0.407
Kailali	397,292	378,417	775,709	66.46	0.691	58.86	0.589	3.62	0.241	942	0.374	0.513	0.460
Kanchanpur	235,206	216,042	451,248	67.08	0.701	63.04	0.630	3.97	0.264	938	0.374	0.528	0.475
Dadeldhura	75,538	66,556	142,094	67.90	0.715	57.26	0.573	3.34	0.223	764	0.339	0.503	0.442
Baitadi	133,491	117,407	250,898	68.88	0.731	54.85	0.548	3.13	0.209	573	0.291	0.486	0.416
Darchula	69,669	63,605	133,274	69.05	0.734	58.20	0.582	3.48	0.232	627	0.306	0.502	0.436

TABLE A4.2:

GDI values by region, 2011

Area/region	Health										Education										Income										GDI	
	Life expectancy					Adult literacy					Mean years of schooling					Education index					GNI per capita (PPP \$)					Equally distributed index	Arithmetic mean (old methodology)	Geometric mean (new methodology)				
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female				Male	Female	Male	
Nepal	0.515	0.485	70.90	0.723	67.00	0.742	0.732	48.78	71.66	0.488	0.717	3.28	4.55	0.219	0.469	0.382	909	1427	0.368	0.444	0.401	0.534	0.482									
Mountains	0.516	0.484	69.79	0.705	64.54	0.701	0.703	37.66	66.83	0.377	0.668	2.34	3.75	0.156	0.382	0.302	844	1094	0.356	0.399	0.376	0.487	0.430									
Hills	0.523	0.477	71.44	0.732	66.83	0.739	0.735	56.39	78.86	0.564	0.789	3.85	5.13	0.257	0.532	0.436	1095	1558	0.399	0.458	0.426	0.564	0.515									
Tarai	0.508	0.492	70.57	0.718	67.49	0.750	0.733	43.25	66.14	0.433	0.661	2.91	4.16	0.194	0.423	0.344	769	1345	0.341	0.434	0.381	0.512	0.458									
Eastern development region	0.520	0.480	70.73	0.721	67.52	0.750	0.735	50.61	72.31	0.506	0.723	3.44	4.58	0.229	0.481	0.393	806	1393	0.348	0.440	0.387	0.534	0.481									
Central development region	0.499	0.501	71.45	0.733	68.58	0.768	0.750	47.60	69.67	0.476	0.697	3.42	4.79	0.228	0.466	0.388	1113	1744	0.402	0.477	0.437	0.551	0.503									
Western development region	0.535	0.465	71.55	0.734	66.55	0.734	0.734	55.57	76.49	0.556	0.765	3.64	4.68	0.243	0.515	0.415	805	1447	0.348	0.446	0.388	0.546	0.491									
Mid-Western development region	0.519	0.481	69.29	0.696	64.61	0.702	0.699	44.43	68.74	0.444	0.687	2.70	3.88	0.180	0.427	0.336	839	978	0.355	0.381	0.367	0.498	0.442									
Far Western development region	0.523	0.477	70.42	0.715	63.69	0.687	0.701	40.19	73.32	0.402	0.733	2.50	4.12	0.167	0.410	0.324	612	937	0.302	0.373	0.332	0.481	0.423									

TABLE A4.3:

GEM values by region, 2011

Area/region	Percentage of parliamentary representation						Percentage of administrative and managerial positions						Percentage of professional and technical positions						Combined managerial/professional/technical positions indexes						Income		Equally Distributed Income Index	GEM	
	Female			Male			Female			Male			Female			Male			Female			Male			Female	Male			Female
	Share	Value	Index	Share	Value	Index	Value	Value	Index	Value	Value	Index	Value	Value	Index	Value	Value	Index	Value	Value	Index	Value	Value	Index			Value	Value	
Nepal	0.515	0.485	30.09	69.91	41.57	0.831	31.98	68.02	43.04	0.861	30.37	69.63	41.80	0.836	0.848	909	1427	0.020	0.033	0.025	0.568								
Mountains	0.516	0.484	18.60	81.40	29.69	0.594	33.90	66.10	44.36	0.887	27.08	72.92	38.93	0.779	0.833	844	1094	0.019	0.025	0.021	0.483								
Hills	0.523	0.477	28.92	71.08	40.34	0.807	34.24	65.76	44.40	0.888	32.93	67.07	43.50	0.870	0.879	1095	1558	0.025	0.037	0.029	0.572								
Tarai	0.508	0.492	32.86	67.14	43.87	0.877	27.56	72.44	39.63	0.793	27.11	72.89	39.22	0.784	0.788	769	1345	0.017	0.031	0.022	0.563								
Eastern development region	0.520	0.480	31.47	68.53	42.51	0.850	34.10	65.90	44.39	0.888	29.51	70.49	40.93	0.819	0.853	806	1393	0.018	0.032	0.023	0.575								
Central development region	0.499	0.501	29.38	70.62	41.55	0.831	31.70	68.30	43.35	0.867	30.45	69.55	42.40	0.848	0.857	1113	1744	0.025	0.041	0.031	0.573								
Western development region	0.535	0.465	28.16	71.84	39.27	0.785	36.16	63.84	45.30	0.906	34.07	65.93	43.95	0.879	0.893	805	1447	0.018	0.034	0.023	0.567								
Mid-Western development region	0.519	0.481	30.43	69.57	41.73	0.835	29.56	70.44	41.01	0.820	28.80	71.20	40.37	0.807	0.814	839	978	0.019	0.022	0.020	0.556								
Far Western development region	0.523	0.477	32.65	67.35	43.29	0.866	20.08	79.92	31.25	0.625	25.69	74.31	37.35	0.747	0.686	612	937	0.013	0.021	0.016	0.523								

TABLE A4.4:

## HPI values by region, 2011

Area/region/district	Percentage of people not expected to survive to age 40	Adult illiteracy rate	Percentage without safe water	Percentage of children under age five who are malnourished	Deprivation in economic provisioning	HPI
Nepal	7.52	40.43	17.09	40.50	28.80	31.12
Urban	5.32	20.73	16.36	26.70	21.53	18.51
Rural	7.94	45.02	17.27	41.80	29.53	33.96
Mountains	10.62	48.54	23.48	52.90	38.19	38.51
Hills	7.11	33.23	24.90	42.10	33.50	29.20
Tarai	7.44	45.76	8.35	37.40	22.88	33.04
Eastern Development Region	7.50	39.28	11.01	37.00	24.00	29.22
Central Development Region	6.35	41.46	18.36	38.20	28.28	31.54
Western Development Region	7.36	35.18	13.45	37.40	25.43	27.20
Mid Western Development Region	9.31	44.26	27.99	50.30	39.14	36.63
Far Western Development Region	9.53	44.69	19.86	46.40	33.13	34.80
Eastern and Central Mountains	8.69	44.59	19.58	45.20	32.39	34.51
Eastern and Central Hills (without Kathmandu)	7.75	39.61	21.78	39.40	30.59	31.21
Eastern and Central Tarai	6.93	48.76	7.13	36.40	21.77	34.81
Kathmandu Valley	4.20	17.48	28.77	28.50	28.64	21.28
Western Hills	6.74	31.45	17.38	36.00	26.69	25.62
Western Tarai	8.15	40.29	6.61	39.90	23.25	29.69
Western, Mid Western and Far Western Mountains	12.02	53.24	28.63	59.50	44.06	42.98
Mid Western and Far Western Hills	9.31	45.89	35.11	54.50	44.80	39.68
Mid Western and Far Western Tarai	8.47	40.56	13.46	38.50	25.98	30.47
Eastern Mountains	9.29	37.57	19.30	45.00	32.15	30.73
Central Mountains	8.17	49.70	19.77	45.50	32.63	37.49
Western Mountains	12.02	35.53	6.52	54.70	30.61	29.28
Mid Western Mountains	12.05	57.01	31.02	55.00	43.01	44.63
Far Western Mountains	15.72	51.11	27.91	55.50	41.71	41.21
Eastern Hills	8.27	34.67	22.99	45.50	34.25	30.17
Central Hills	5.52	27.90	25.60	31.30	28.45	24.65
Western Hills	6.74	31.45	17.38	36.00	26.69	25.62
Mid Western Hills	9.49	44.18	34.56	51.70	43.13	38.21
Far Western Hills	8.99	49.29	36.23	57.50	46.86	42.07
Eastern Tarai	7.03	41.35	4.93	31.40	18.17	29.50
Central Tarai	6.81	55.18	9.26	40.50	24.88	39.42
Western Tarai	8.15	40.29	6.61	39.90	23.25	29.69
Mid Western Tarai	8.18	41.35	19.86	43.50	31.68	32.50
Far Western Tarai	8.82	39.61	5.08	31.50	18.29	28.43
Taplejung	10.78	34.28	9.46	38.50	23.98	26.42
Panchthar	9.16	33.09	28.35	56.90	42.63	33.66
Ilam	8.42	26.54	22.00	46.10	34.05	26.96
Jhapa	8.76	30.08	5.49	24.20	14.84	21.82
Morang	7.00	35.09	3.08	31.50	17.29	25.32
Sunsari	7.10	37.12	3.58	29.40	16.49	26.52
Dhankuta	7.11	31.41	18.27	44.90	31.59	27.57
Terhathum	7.99	30.64	22.29	63.40	42.85	33.01
Sankhuwasabha	8.43	36.84	32.41	47.40	39.91	33.64
Bhojpur	9.65	36.91	31.43	45.50	38.46	33.03
Solukhumbu	8.74	42.49	11.18	47.60	29.39	32.48
Okhaldhunga	7.17	43.86	17.29	56.70	37.00	35.60
Khotang	8.15	38.02	21.83	33.60	27.71	29.47
Udaypur	8.15	39.30	22.07	30.00	26.03	29.74
Saptari	5.39	54.56	3.97	33.40	18.69	38.34
Siraha	6.37	60.04	10.27	39.70	24.99	42.62
Dhanusa	7.31	58.11	11.88	43.60	27.74	41.72
Mahottari	7.55	62.96	9.58	43.60	26.59	44.75

Continued..

Area/region/district	Percentage of people not expected to survive to age 40	Adult illiteracy rate	Percentage without safe water	Percentage of children under age five who are malnourished	Deprivation in economic provisioning	HPI
Sarlahi	7.04	62.00	11.01	37.70	24.36	43.86
Sindhuli	8.56	48.92	35.52	36.30	35.91	37.95
Ramechhap	5.92	47.90	20.39	44.40	32.40	36.35
Dolakha	7.61	46.40	22.15	44.00	33.07	35.70
Sindhupalchok	8.41	50.49	19.26	46.60	32.93	38.03
Kavrepalanchok	6.23	37.23	20.58	21.70	21.14	27.34
Lalitpur	4.03	20.32	30.48	16.20	23.34	19.18
Bhaktapur	3.31	21.87	18.25	26.90	22.58	19.43
Kathmandu	4.39	15.96	30.00	32.00	31.00	22.45
Nuwakot	6.77	49.41	12.32	37.10	24.71	35.66
Rasuwa	8.70	58.68	12.13	45.00	28.57	42.24
Dhading	7.68	46.74	15.39	26.30	20.85	33.38
Makwanpur	7.94	38.21	21.55	25.10	23.32	28.44
Rautahat	7.27	66.11	4.87	39.70	22.29	46.43
Bara	6.24	56.75	3.96	39.60	21.78	40.09
Parsa	5.30	51.31	4.62	37.20	20.91	36.37
Chitwan	6.45	27.77	15.77	42.00	28.88	24.80
Gorkha	6.57	41.83	37.16	31.30	34.23	33.58
Lamjung	5.70	36.38	11.68	32.20	21.94	26.98
Tanahu	7.27	31.68	24.76	47.30	36.03	29.75
Syangja	6.85	29.63	17.20	39.10	28.15	25.31
Kaski	4.59	21.43	7.55	22.90	15.22	16.50
Manang	12.02	29.18	2.42	54.70	28.56	25.52
Mustang	12.02	38.65	8.32	54.70	31.51	31.16
Myagdi	7.27	34.84	12.56	47.50	30.03	28.54
Parbat	6.11	32.43	17.47	26.20	21.84	24.62
Baglung	8.52	34.46	11.12	42.90	27.01	27.33
Gulmi	8.26	34.42	11.42	43.30	27.36	27.42
Palpa	7.25	29.18	20.93	35.90	28.42	25.23
Nawalparasi	8.09	36.25	13.11	38.90	26.01	27.99
Rupandehi	7.30	35.61	2.50	37.70	20.10	26.15
Kapilbastu	9.24	52.90	4.82	48.70	26.76	38.26
Arghakhanchi	7.71	34.43	23.48	31.00	27.24	27.37
Pyuthan	11.61	41.99	20.87	48.40	34.64	33.93
Rolpa	10.80	49.26	23.03	51.30	37.16	38.57
Rukum	8.14	49.19	26.41	51.30	38.85	39.02
Salyan	8.23	44.50	42.19	54.10	48.14	40.57
Dang	7.98	37.59	44.72	39.30	42.01	34.92
Baanke	7.84	43.69	4.87	44.80	24.83	32.10
Bardiya	8.84	43.46	2.14	50.60	26.37	32.30
Surkhet	8.39	33.00	37.26	57.90	47.58	36.36
Daiilekh	8.63	47.70	48.12	45.60	46.86	41.35
Jajarkot	11.50	53.08	43.91	51.30	47.60	44.20
Dolpa	14.48	55.78	35.16	54.10	44.63	44.56
Jumla	11.03	55.57	19.96	54.10	37.03	42.09
Kalikot	13.38	54.70	41.99	54.10	48.04	45.20
Mugu	9.41	60.75	24.68	50.20	37.44	45.22
Humla	11.60	62.78	30.05	65.70	47.88	49.26
Bajura	13.79	55.48	31.53	50.80	41.17	43.28
Bajhang	12.81	54.97	32.91	63.20	48.05	45.32
Accham	9.50	54.92	44.31	59.20	51.76	46.68
Doti	9.40	52.32	36.45	57.60	47.02	43.57
Kailali	9.00	41.14	6.10	31.40	18.75	29.49
Kanchanpur	8.52	36.96	3.32	31.70	17.51	26.60
Dadeldhura	8.89	42.74	29.22	48.60	38.91	35.80
Baitadi	8.14	45.15	31.57	59.20	45.38	39.58
Darchula	9.04	41.80	17.39	47.80	32.60	33.06

TABLE A4.5:

## HDI values by caste and ethnicity, 2011

Caste and ethnic groups	Health			Education				Income			HDI	
	Life expectancy		Adult literacy	Mean years of schooling		Combined educational index		Per capita income (PPP \$)		Arithmetic mean	Geometric mean	
	Value	Index		Value	Index	2:1 weightage	Geometric mean of adult literacy and mean years of schooling	Value	Index			
	Value	Index	Value	Index	Value	Index	Value	Index	Value	Index		
All Brahman/Chhetri	73.99	0.816	76.32	0.763	4.41	0.294	0.607	0.474	1,115	0.402	0.609	0.538
Hill Brahman	73.26	0.804	81.89	0.819	4.79	0.319	0.652	0.511	1,247	0.421	0.626	0.557
All Chhetri	70.32	0.755	72.04	0.720	4.13	0.275	0.572	0.445	1,016	0.387	0.571	0.507
Tarai Brahman and Chhetri	74.10	0.818	82.05	0.820	4.63	0.309	0.650	0.503	937	0.373	0.614	0.536
Madhesi other castes (including Yadav)	72.35	0.789	53.93	0.539	3.83	0.255	0.445	0.371	732	0.332	0.522	0.460
All Dalit	67.19	0.703	52.27	0.523	3.42	0.228	0.425	0.345	755	0.338	0.488	0.434
Hill Dalit	65.57	0.676	61.93	0.619	3.46	0.231	0.490	0.378	805	0.348	0.505	0.446
Newar	72.26	0.788	80.07	0.801	4.75	0.317	0.639	0.504	1,522	0.454	0.627	0.565
All Janajati excluding Newar	69.86	0.748	66.93	0.669	3.99	0.266	0.535	0.422	844	0.356	0.546	0.482
All Hill Janajati (including Newar)	70.51	0.759	71.21	0.712	4.15	0.277	0.567	0.444	1,051	0.393	0.573	0.509
All Tarai Janajati	69.44	0.741	62.24	0.622	3.99	0.266	0.504	0.407	822	0.352	0.532	0.473
Muslim	70.47	0.758	43.56	0.436	3.24	0.216	0.362	0.307	695	0.324	0.481	0.422
All Hill/Mountain groups	70.25	0.754	72.35	0.724	4.18	0.279	0.575	0.449	1,056	0.393	0.574	0.511
All Tarai/Madhesi groups	70.95	0.766	53.27	0.533	3.76	0.251	0.439	0.365	744	0.335	0.513	0.454
Others	72.87	0.798	79.49	0.795	4.36	0.291	0.627	0.481	2,316	0.524	0.650	0.586
Tarai/Madhesi Dalits	70.45	0.758	34.58	0.346	3.35	0.223	0.305	0.278	616	0.304	0.455	0.400
Chhetri only	70.33	0.755	72.13	0.721	4.13	0.275	0.573	0.446	1,001	0.384	0.571	0.506
Other Hill castes	70.20	0.753	70.33	0.703	4.14	0.276	0.561	0.441	1,113	0.402	0.572	0.511
Yadav	73.42	0.807	51.78	0.518	3.91	0.261	0.432	0.367	671	0.318	0.519	0.455
Tarai Madhesi castes excluding Yadav	71.91	0.782	54.80	0.548	3.79	0.253	0.450	0.372	751	0.336	0.523	0.461
Thakali	69.50	0.742	73.88	0.739	4.15	0.277	0.585	0.452	1,561	0.459	0.595	0.536
Mountain Janajati excluding Thakali	69.37	0.740	63.43	0.634	3.78	0.252	0.507	0.400	1,115	0.402	0.550	0.492
Hill Janajati excluding Newar	70.12	0.752	68.99	0.690	4.00	0.267	0.549	0.429	842	0.356	0.552	0.486
All Janajati	68.92	0.732	72.10	0.721	5.41	0.361	0.601	0.510	1,779	0.480	0.604	0.564

**TABLE A4.6:**

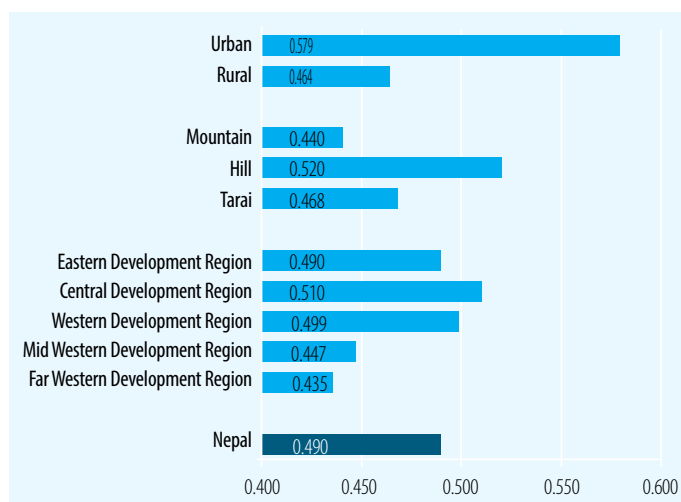
**Per capita income by caste and ethnicity, 2011**

Caste and ethnic groups	Per capita income (rupees)
<b>All Brahman/Chettri</b>	<b>49,878</b>
Hill Brahman	55,763
Hill Chhetri	45,420
Madhesi Brahman/Chhetri	41,889
<b>Madhesi other caste</b>	<b>32,737</b>
<b>All Dalit</b>	<b>33,786</b>
Hill Dalit	36,021
Madhesi Dalit	27,562
<b>Newar</b>	<b>68,060</b>
<b>All Janajati excluding Newar</b>	<b>37,726</b>
Hill Janajati	46,986
Tarai Janajati	36,765
<b>Muslim</b>	<b>31,096</b>
<b>All Hill/Mountain groups</b>	<b>47,208</b>
<b>All Tarai/Madhesi groups</b>	<b>33,288</b>
<b>Others</b>	<b>103,579</b>

Source: Nepal Living Standards Survey 2011.

**FIGURE A4.1:**

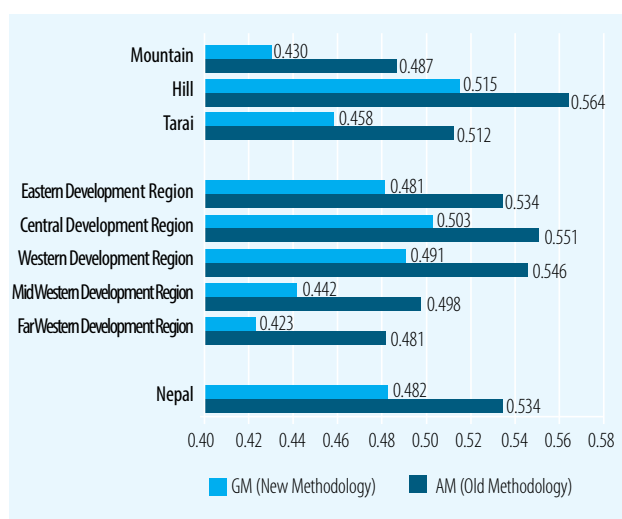
**HDI values by region, 2011**



Using the geometric mean  
Source: Annex 4, table A4.1.

**FIGURE A4.2:**

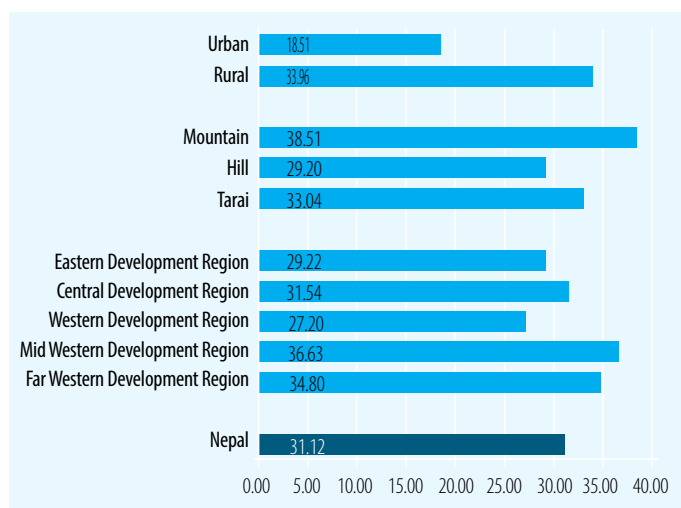
**GDI values across development regions, 2011**



Using the geometric mean  
Source: Annex 4, table A4.1.

**FIGURE A4.3:**

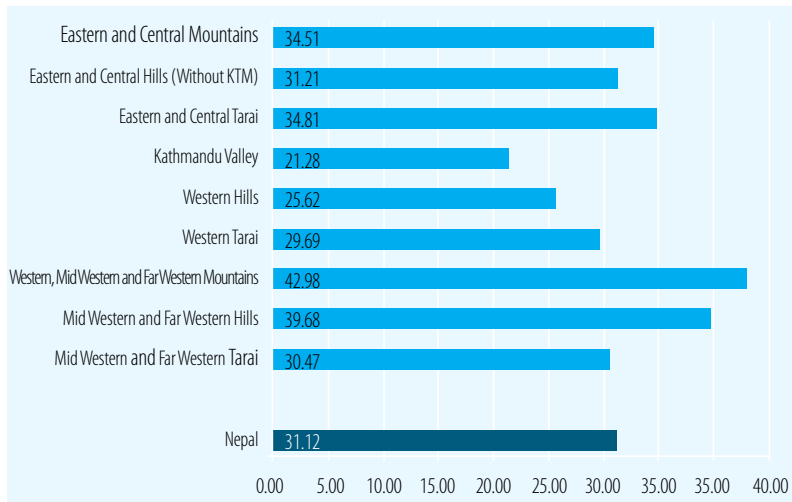
**HPI values by region, 2011**



Source: Annex 4, table A4.4.

FIGURE A4.4:

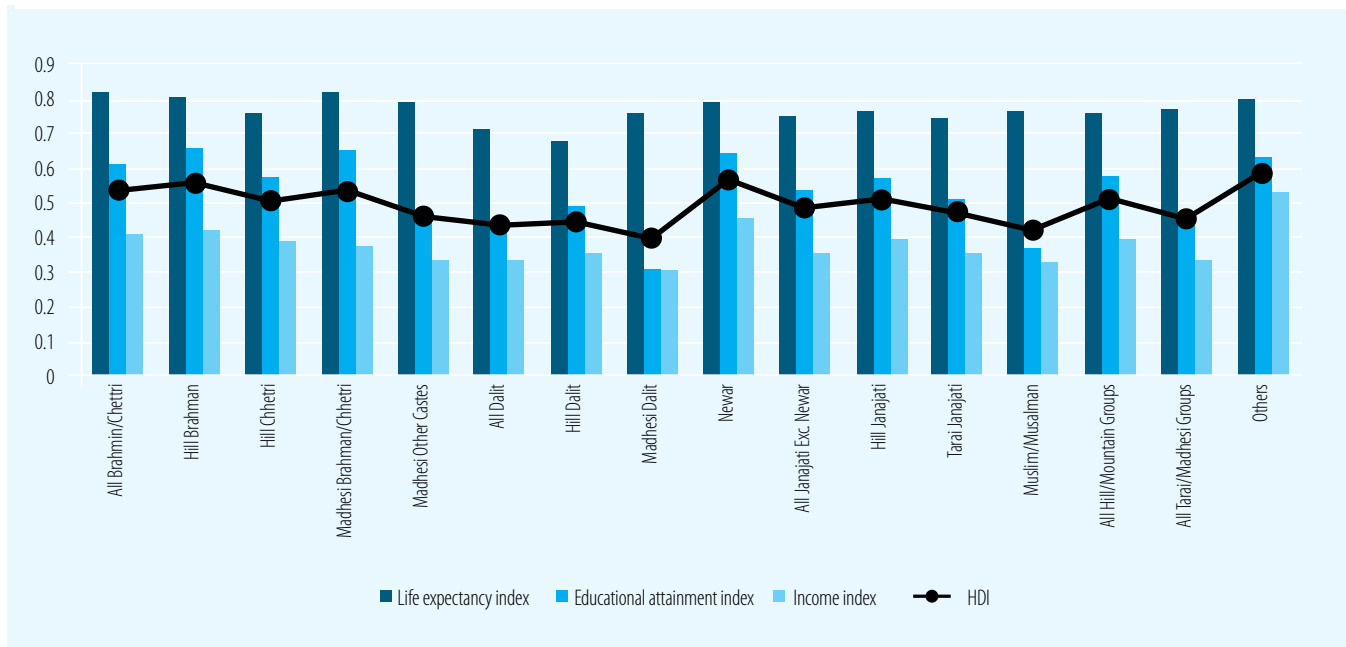
HPI values across the nine eco-development regions



Source: Annex 4, table A4.4

FIGURE A4.5:

The HDI and its components by major caste and ethnicity, 2011



Source: Annex 4, table A4.5.



**ANNEX 5:**

**Per Capita Gross National Income**

Area/region/district	Agriculture and forestry	Fishing	Mining and quarrying	Manufacturing	Electricity, gas and water	Construction	Wholesale and retail trade	Hotels and restaurants	Transport, storage and communications	Financial intermediation	Real estate, renting and business activities	Public administration and defense	Education	Health and social work	Other community, social and personal services activities	Total economy including financial intermediary (total value added)	Total economy at basic price (total value added)	GDP at market price	Factor income	GNI	Population	Per capita income, Rs. at market price	Per capita income, \$	Per capita income, PPP \$
Nepal	47,270	4,879	6,956	80,531	16,001	89,356	17,9306	21,057	105,834	50,111	106,236	24,830	67,739	16,992	46,947	1,290,047	1,248,482	1,366,953	7,549	1,374,503	26,494,504	51,879	718	1,160
Eastern development region	126,040	1,592	1,108	15,399	3,029	17,291	36,438	3,935	16,086	6,600	19,427	4,019	7,637	3,333	2,267	26,4200	256,605	280,955	1,831	282,785	5,811,555	48,659	673	1,088
Central development region	14,0829	1,864	3,583	45,927	8,082	43,995	83,467	10,012	64,594	30,011	52,869	12,188	38,997	7,059	39,588	583,065	562,350	615,713	1,528	617,241	9,656,985	63,917	884	1,429
Western development region	95,639	899	929	14,020	3,438	14,955	28,893	3,992	18,077	8,364	16,962	3,605	12,249	2,765	2,529	226,957	220,204	241,100	2,097	243,197	4,926,765	49,362	683	1,104
Mid Western development region	68,541	383	807	3,290	854	8,952	17,934	1,831	4,753	3,258	11,286	3,029	5,219	2,447	1,573	134,155	130,229	142,587	1,173	143,760	3,546,682	40,534	561	906
Far Western development region	42,220	141	530	1,895	598	4,524	12,575	1,287	2,324	1,878	5,692	1,989	3,638	1,389	990	81,670	79,094	86,599	920	87,519	2,552,517	34,287	474	767
Mountains	38,633	1	544	1,506	197	6,175	6,803	1,093	4,101	1,645	4,840	2,139	2,113	1,041	1,398	72,228	69,915	76,549	386	76,936	1,781,792	43,179	597	965
Hills	194,574	61	4,279	24,914	6,622	47,597	84,238	10,270	61,553	30,806	55,679	15,719	45,641	8,104	41,168	631,226	609,315	667,135	3,611	670,746	11,394,007	58,868	815	1,316
Tarai	24,0063	4,817	2,133	54,112	9,182	35,583	88,266	9,695	40,180	17,660	45,717	6,972	19,985	7,847	4,381	586,593	569,252	623,270	3,552	626,822	13,318,705	47,063	651	1,052
Eastern Mountains	14,714	0	94	318	36	13,38	1,585	238	1,011	426	1,931	447	410	189	299	23,037	22,438	24,568	111	24,679	392,089	62,941	871	1,407
Central Mountains	11,119	1	134	553	127	2,346	2,295	292	2,081	888	1,609	502	744	408	303	23,401	22,646	24,795	136	24,931	517,655	48,161	666	1,077
Western Mountains	955	0	35	34	1	232	89	189	332	45	64	148	18	21	100	2,263	1,900	2,080	2	2,082	19,990	104,152	1,441	2,329
Mid Western Mountains	6,491	0	192	324	18	1,481	1,279	180	489	236	803	592	412	213	416	13,126	12,866	14,086	14	14,100	388,713	36,274	502	811
Far Western Mountains	5,353	0	90	277	15	779	1,553	194	188	49	433	450	529	211	280	10,401	10,065	11,020	124	11,144	463,345	24,051	333	538
Eastern Hills	44,428	11	494	18,89	364	5,286	7,019	624	3,145	923	4,617	1,528	2,113	1,109	794	74,344	71,902	78,725	548	79,273	1,601,347	49,504	685	1,107
Central Hills	53,615	25	2,577	17,729	4,651	27,034	52,338	6,594	45,457	24,061	35,747	9,548	32,269	3,625	37,661	352,931	339,357	371,559	639	372,199	4,431,813	83,983	1,162	1,878
Western Hills	55,795	23	636	3,552	1,457	9,424	14,973	2,179	10,789	4,761	10,340	2,421	8,371	2,110	1,664	128,495	125,022	136,886	1,411	138,297	2,811,135	49,196	681	1,100
Mid Western Hills	28,456	2	323	1,321	105	3,947	6,662	582	1,592	688	3,868	1,443	1,826	891	689	52,395	50,716	55,529	667	56,196	1,687,497	33,301	461	745
Far Western Hills	12,280	0	248	421	45	1,907	3,247	290	570	374	1,107	779	1,063	369	360	23,061	22,318	24,436	346	24,781	862,215	28,742	398	643
Eastern Tarai	66,898	1,581	519	13,192	2,629	10,667	27,834	3,073	11,930	5,251	12,879	2,044	5,114	2,035	1,174	166,819	162,265	177,662	1,172	178,834	3,818,119	46,838	648	1,047
Central Tarai	76,095	1,838	873	27,645	3,305	14,615	28,834	3,126	17,056	5,061	15,513	2,138	5,984	3,026	1,624	206,733	200,348	219,959	752	220,111	4,707,517	46,757	647	1,045
Western Tarai	38,889	877	257	10,434	1,981	4,939	13,831	1,625	6,956	3,558	6,559	1,036	3,860	634	764	96,199	93,282	102,134	685	102,818	2,095,640	49,063	679	1,097
Mid Western Tarai	3,3594	380	292	1,644	730	3,524	9,992	1,069	2,672	2,334	6,615	994	2,981	1,343	469	68,634	66,647	72,972	493	73,464	1,470,472	49,960	691	1,117
Far Western Tarai	24,587	141	192	1,197	537	1,838	7,775	803	1,566	1,455	4,152	760	2,046	809	350	48,208	46,711	51,143	451	51,594	1,226,957	42,050	582	940
<b>Eastern Mountains</b>																								
Taplejung	4,723	0	41	96	9	479	491	57	123	101	431	148	163	67	94	7,021	6,803	7,448	39	7,487	127,461	58,741	813	1,313
Sankhuwasabha	4,569	0	29	134	25	494	659	78	403	141	936	158	155	80	95	7,955	7,888	8,417	54	8,471	158,742	53,364	738	1,193
Solukhumbu	5,422	0	24	89	2	365	436	103	485	184	565	141	93	42	110	8,061	7,948	8,702	18	8,720	105,886	82,356	1,140	1,841
<b>Eastern Hills</b>																								
Panchthar	5,206	1	46	168	21	651	880	69	478	91	341	189	298	154	99	8,694	8,413	9,212	73	9,285	191,817	48,405	670	1,082
Ilam	9,723	1	65	223	80	982	1,302	110	837	296	918	220	343	137	110	15,348	14,852	16,262	94	16,355	290,254	56,348	780	1,260
Dhankuta	4,695	0	65	140	57	717	770	76	424	51	826	219	269	198	106	8,614	8,335	9,126	61	9,187	163,412	56,223	778	1,257

Continued..

Area/region/district	Agriculture and forestry	Fishing	Mining and quarrying	Manufacturing	Electricity, gas and water	Construction	Wholesale and retail trade	Hotels and restaurants	Transport, storage and communications	Financial intermediation	Real estate, renting and business activities	Public administration and defense	Education	Health and social work	Other community, social and personal services activities	Total economy including financial intermediation service indirectly measured (total value added)	Total economy at basic price (total value added)	GDP at market price	Factor income	GNI	Population	Per capita income, Rs. at market price	Per capita income, \$	Per capita income, PPP \$
<b>Eastern Tarai</b>																								
Terhathum	4,054	0	17	114	19	307	437	49	241	76	260	125	163	89	95	6,046	5,850	6,406	42	6,447	101,577	63,470	878	1,419
Bhojpur	4,561	0	21	114	6	504	781	64	394	32	533	190	219	126	95	7,640	7,384	8,084	65	8,150	182,459	44,666	618	999
Okhaldhunga	3,422	0	51	81	3	591	661	55	140	32	367	163	214	96	98	5,973	5,748	6,294	40	6,334	147,984	42,800	592	957
Khotang	7,143	0	32	156	12	592	845	77	205	23	39	206	247	127	88	9,793	9,477	10,376	71	10,446	206,312	50,634	701	1,132
Udayapur	5,625	8	198	892	165	942	1,342	125	425	322	1,332	217	358	182	103	12,237	11,842	12,965	103	13,068	317,532	41,156	569	920
<b>Eastern Tarai</b>	19,099	153	129	1,927	612	2,510	6,152	672	2,825	1,345	3,034	431	1,794	435	346	41,465	40,370	44,201	351	44,552	812,650	54,823	759	1,226
Jhapa	16,963	312	123	6,086	1,178	2,766	8,392	993	5,200	1,752	3,137	519	1,360	834	439	50,055	49,026	53,678	349	54,027	965,370	55,965	774	1,251
Morang	11,829	163	129	4,079	691	2,290	5,630	576	2,551	1,629	4,066	490	893	261	148	35,404	34,261	37,512	189	37,701	763,487	49,380	683	1,104
Sunsari	11,230	561	70	660	103	1,570	3,833	418	783	241	970	336	354	266	120	21,518	20,823	22,799	112	22,911	639,284	35,838	496	801
Saptari	7,777	391	69	438	45	1,531	3,827	413	592	284	1,671	267	713	239	121	18,378	17,784	19,472	171	19,643	63,7328	30,820	426	689
<b>Central Mountains</b>																								
Dolakha	2,869	0	69	200	41	977	848	101	161	308	818	177	322	228	106	7,225	6,992	7,655	41	7,697	186,557	41,256	571	922
Sindhupalchok	6,645	0	52	300	73	1,171	1,268	165	1,805	518	574	233	358	145	103	13,409	12,976	14,208	83	14,291	287,798	49,657	687	1,110
Rasuwa	1,605	0	13	53	13	198	179	26	115	62	217	92	64	35	94	2,767	2,677	2,931	12	2,943	43,300	67,973	941	1,520
<b>Central Hills</b>																								
Sindhuli	5,714	1	42	165	73	991	1,153	95	333	156	558	231	527	77	98	10,214	9,884	10,822	68	10,890	296,192	36,767	509	822
Ramechhap	4,775	0	37	105	31	783	880	78	131	20	568	171	345	86	85	8,095	7,836	8,579	38	8,617	202,646	42,524	588	951
Kavrepalanchok	11,746	1	92	513	245	1,567	1,705	378	1,907	724	1,747	305	915	340	319	22,504	21,778	23,844	50	23,894	381,937	62,559	866	1,399
Lalitpur	3,733	3	489	2,578	846	4,066	6,111	696	3,002	3,363	5,553	499	5,464	451	733	37,386	36,179	39,612	46	39,658	468,132	84,715	1,172	1,894
Bhaktapur	2,781	2	66	1,232	318	1,267	1,894	117	1,629	1,286	3,376	250	3,001	193	303	17,714	17,142	18,769	24	18,793	304,651	61,686	854	1,379
Kathmandu	6,010	3	1,556	8,600	2,451	14,103	35,686	4,619	29,426	17,298	20,616	7,170	20,436	19,63	35,602	205,540	196,723	215,391	199	215,590	1,744,240	12,360	1,710	2,764
Nuwakot	6,335	1	127	163	118	1,218	1,194	321	1,363	195	891	222	315	116	98	12,676	12,267	13,431	50	13,481	277,471	48,586	672	1,086
Dhading	6,054	1	42	682	134	1,212	1,632	132	2,011	148	783	231	472	182	122	13,838	13,392	14,662	91	14,753	336,067	43,899	607	982
Makwanpur	6,466	13	127	3,691	434	1,827	2,083	159	5,657	870	1,855	468	794	218	301	24,963	24,157	26,449	74	26,523	420,477	63,079	873	1,410
<b>Central Tarai</b>																								
Dhanusha	10,305	536	148	4,986	213	2,638	4,522	482	1,027	689	2,183	342	816	410	286	29,584	28,727	31,453	211	31,664	754,777	41,951	580	938
Mahottari	7,750	362	79	600	272	1,909	3,506	384	503	292	1,013	278	583	248	82	17,861	17,284	18,924	177	19,101	627,580	30,436	421	681
Sarlahi	12,977	183	287	735	141	2,227	4,144	457	592	230	2,897	271	702	255	89	26,187	25,341	27,746	101	27,847	769,729	36,177	501	809
Rautahat	9,960	150	55	578	108	1,723	3,316	376	2,511	189	1,555	224	835	204	115	21,900	21,193	23,204	34	23,238	686,722	33,840	468	757
Bara	14,611	353	88	14,495	834	1,920	3,982	374	2,955	415	1,317	277	813	258	105	42,797	41,527	45,468	42	45,509	687,708	66,175	916	1,480
Parva	8,897	154	83	4,789	1,128	1,722	4,789	586	3,537	1,533	1,594	314	856	622	401	31,006	30,005	32,852	27	32,879	601,017	54,706	757	1,223
Chitawan	11,594	100	132	1,462	609	2,477	4,574	467	5,931	1,712	4,954	432	1,379	1,029	546	37,398	36,271	39,713	160	39,873	579,984	68,748	951	1,537
<b>Western Mountains</b>																								
Manang	396	0	17	12	0	103	28	149	16	8	28	62	3	6	45	874	845	925	1	926	6,538	14,588	1,959	3,166
Mustang	559	0	18	22	0	129	61	40	316	37	36	86	15	14	55	1,389	1,055	1,155	1	1,156	13,452	85,957	1,189	1,922
<b>Western Hills</b>																								
Gorkha	5,392	2	83	349	93	1,060	1,359	156	1,305	376	695	230	398	183	119	11,801	11,420	12,503	98	12,601	271,061	46,488	643	1,039
Lamjung	4,418	1	40	196	94	606	839	85	407	235	666	173	355	117	96	8,327	8,058	8,823	75	8,898	167,724	53,050	734	1,186

Continued...

Area/region/district	Agriculture and forestry	Fishing	Mining and quarrying	Manufacturing	Electricity, gas and water	Construction	Wholesale and retail trade	Hotels and restaurants	Transport, storage and communications	Financial intermediation	Real estate, renting and business activities	Public administration and defense	Education	Health and social work	Other community, social and personal services activities	Total economy including financial intermediation service (total value added)	Total economy at basic price	GDP at market price	Factor income	GNI	Population	Per capita income, Rs. at market price	Per capita income, \$	Per capita income, PPP \$
Tanahu	7,153	4	67	327	205	1,084	1,674	141	1,518	397	628	276	697	178	124	14,474	14,006	15,336	158	15,494	323,288	47,925	663	1,072
Syangja	8,245	2	48	260	89	897	1,409	122	1,297	248	724	217	688	143	265	14,653	14,180	15,526	185	15,710	289,148	54,333	752	1,215
Kaski	7,175	9	133	1,444	624	1,876	3,687	1,089	3,723	2,197	4,262	508	3,865	836	253	31,683	31,245	34,210	141	34,351	492,098	69,805	966	1,561
Myagdi	2,710	0	15	91	35	340	574	90	81	84	399	130	205	73	53	4,879	4,722	5,170	56	5,226	113,641	45,986	636	1,028
Palpa	3,128	1	45	156	46	573	734	68	143	130	546	188	254	95	98	6,205	6,004	6,574	65	6,639	146,590	45,289	627	1,013
Baglung	4,762	0	65	183	80	916	1,241	105	280	421	640	230	542	133	114	9,711	9,397	10,289	138	10,427	268,613	38,819	537	868
Gulmi	3,696	1	46	200	54	850	1,309	136	631	216	595	192	491	178	103	8,699	8,418	9,217	203	9,420	280,160	33,625	465	752
Palpa	4,994	2	62	225	102	883	1,202	104	848	236	823	112	570	207	350	10,720	10,374	11,358	142	11,500	261,180	44,031	609	985
Aghakhanchi	4,121	1	29	121	36	339	946	84	556	221	362	165	307	61	88	7,438	7,198	7,881	150	8,031	197,632	40,635	562	909
<b>Western Tarai</b>																								
Nawalparasi	12,209	163	44	6,112	485	1,431	4,149	452	2,085	521	1,573	330	1,351	137	103	31,146	30,140	33,000	296	33,296	643,508	51,742	716	1,157
Rupandehi	14,003	505	151	3,421	1,267	2,325	6,424	816	3,039	2,692	3,872	445	1,875	296	154	41,283	40,139	43,948	247	44,195	880,196	50,210	695	1,123
Kapilbasu	12,677	208	63	901	228	1,183	3,258	356	1,832	345	1,115	262	634	200	507	23,770	23,003	25,186	141	25,327	571,936	44,283	613	990
<b>Mid Western Mountains</b>																								
Dolpa	757	0	25	47	2	185	137	19	37	20	87	107	29	18	72	1,540	1,558	1,706	0	1,707	36,700	46,502	643	1,040
Jumla	2,316	0	68	100	6	491	359	52	202	148	409	165	116	50	95	4,579	4,475	4,900	4	4,904	108,921	45,022	623	1,007
Kailkot	1,766	0	37	97	4	351	422	58	70	15	100	118	152	48	98	3,336	3,228	3,534	7	3,541	136,948	25,860	358	578
Mugu	1,017	0	29	47	2	219	186	25	84	11	124	101	64	31	57	1,996	1,955	2,141	1	2,142	55,286	38,743	536	866
Humla	636	0	32	34	4	235	176	27	96	42	83	101	50	66	94	1,675	1,649	1,806	1	1,806	50,858	35,515	491	794
<b>Mid Western Hills</b>																								
Pyuthan	3,353	0	37	126	27	515	967	82	161	74	494	159	191	112	102	6,398	6,192	6,779	167	6,946	228,102	30,452	421	681
Palpa	3,114	0	50	114	17	558	876	83	136	37	429	161	214	98	85	5,972	5,779	6,327	131	6,459	224,506	28,768	398	643
Rukum	3,744	0	45	268	11	522	833	69	126	57	472	179	241	148	92	6,807	6,595	7,220	73	7,294	208,567	34,970	484	782
Salyan	5,183	0	29	114	12	467	927	78	149	63	336	156	217	128	102	7,961	7,704	8,435	82	8,517	242,444	35,131	486	786
Surkhet	6,536	2	95	469	25	991	1,464	125	551	340	1,537	468	456	177	115	13,350	12,925	14,151	135	14,286	350,804	40,724	563	911
Dalkech	4,223	0	38	130	10	531	990	93	358	17	431	170	288	139	94	7,509	7,267	7,956	56	8,012	261,770	30,609	424	684
Jajarkot	2,305	0	30	101	2	363	605	53	111	101	169	150	219	90	99	4,397	4,255	4,659	23	4,682	171,304	27,330	378	611
<b>Mid Western Tarai</b>																								
Dang	12,914	62	135	409	212	1,499	3,832	406	696	927	3,099	353	1,151	238	146	26,079	25,240	27,635	223	27,858	552,583	50,415	698	1,127
Banke	9,208	127	89	934	386	1,109	3,549	359	1,389	1,291	2,118	403	1,057	908	215	23,141	22,620	24,766	123	24,889	491,313	50,659	701	1,133
Bardiya	11,472	192	67	302	133	916	2,612	304	587	116	1,397	239	773	197	107	19,414	18,787	20,570	146	20,716	426,576	48,564	672	1,086
<b>Far Western Mountains</b>																								
Bajura	1,552	0	22	89	5	209	474	65	43	12	47	120	152	62	94	2,947	2,851	3,122	36	3,158	134,912	23,405	324	523
Bajhang	2,031	0	24	108	6	249	621	74	79	17	188	171	214	68	92	3,944	3,817	4,179	70	4,249	195,159	21,772	301	487
Darchula	1,770	0	44	79	3	321	458	55	66	20	198	160	163	81	94	3,511	3,397	3,720	18	3,737	133,274	28,042	388	627
<b>Far Western Hills</b>																								
Achham	2,923	0	51	140	5	445	965	83	156	127	77	190	349	111	75	5,698	5,514	6,037	138	6,175	257,477	23,984	332	536
Doti	3,900	0	58	106	11	457	840	84	162	71	452	279	221	74	93	6,809	6,591	7,216	109	7,325	211,746	34,595	479	774
Daddelhura	2,329	0	55	67	19	390	541	46	92	138	335	141	191	96	98	4,539	4,392	4,809	45	4,855	142,094	34,164	473	764
Baitadi	3,127	0	85	108	10	616	900	77	159	37	244	168	302	88	94	6,016	5,821	6,374	53	6,426	250,898	25,613	354	573
<b>Far Western Tarai</b>																								
Kailali	15,361	87	98	742	332	1,040	4,996	506	1,202	1,069	2,604	461	1,220	542	235	30,495	29,570	32,376	287	32,663	775,709	42,107	583	942
Kanchanpur	9,225	54	94	455	205	798	2,779	297	364	387	1,548	299	826	266	115	17,713	17,141	18,767	164	18,931	451,248	41,953	580	938

## ANNEX 6:

# Construction of the Principal Component Analysis based indexes

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The report constructed one composite index encompassing multidimensional aspects of productive ability using the three Nepal Living Standards Survey from 1995, 2003 and 2011. Based on existing literature and with some innovation, a sufficiently large number of theoretically important and policy relevant variables were selected.<sup>1</sup> The variables included both public and private goods that potentially contribute to various aspects of individual, household and regional productive ability. They comprised education, health, access to facilities, housing, water supply, sanitation, irrigation, ownership of land, dwelling value and size, value of assets, property and durable goods owned by a family, dependency ratio and social assistance schemes, to name a few.

Among the three surveys, the third is the most extensive both in terms of number of households surveyed and information included. For the household well-being index, the number of households was 3,374 for the first survey, 3,912 for the second and 5,988 for the third. The number of variables included was 63, 48 and 47, respectively.

## The methodology

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Principal component analysis<sup>2</sup> was employed to generate the individual, household and regional indexes in order to overcome many problems associated with traditional methods of calculation, such as simple aggregation, summation of standardized variables or the use of equal weights for all sub-components. Al-

though principal component analysis produces as many components as the total number of variables, following the eigenvalue rule or Kaiser criterion, the report retained only those factors accounting for at least as much variance as a variable (that is, an eigenvalue of 1 or greater). In the first Nepal Living Standards Survey, for household status, for example, 11 factors with eigenvalues greater than one explain 61.37 percent of total variance in the data. In the second survey, nine factors explain 62.92 percent of total variance; 16 factors explain 63.33 percent of total variance in the third survey.

In this way, principal component analysis reduces a large number of variables into a smaller number of factors or principal components. These factors can be further analysed and categorized into some distinct *dimensions* of capability. First, they can be classified into broad types of capital. Factors measuring infrastructure and other productive resources such as housing characteristics, sanitation, drinking water, light, telephone, farming equipment, irrigation, and access to facilities can be considered *physical capital*. *Human capital* incorporates factors representing health and education. Factors capturing monetary resources available to households in terms of amounts borrowed and lent, total income, value of property and assets owned by a family symbolize *financial capital*. *Social capital*, as captured by factors representing social assistance programmes like public food distribution, food for work, cash for work, and nutritional programmes for children and mothers, is considered only in the third Nepal Living Standards Survey.

<sup>1</sup> The list of variables along with the scoring method is provided in the Technical Appendix table A6.2.

<sup>2</sup> An intuitive description of principal component analysis was presented at the steering committee meeting for the Nepal Human Development Report in November 2012. The PowerPoint presentation is available on request.

## The three indexes

A non-standardized index was first computed for the respective units (individual, household and regional) taking a weighted average of the factor scores, where the weights are the proportion of the variance explained by each factor to total variance:

$$NSI = \sum_i w_i \text{Factorscore}_i$$

Where  $w_i$  is the weight of the  $i$ th factor.

This index gives the *relative* position of an individual (or household or region) in terms of ability on a linear scale. The index computed in this way can be positive or negative, making it difficult to interpret. Therefore, a standardized index was developed, the value of which ranges from 0 to 100, using the following formula, for example, for the household well-being index:

$$SI = \frac{(NSI \text{ of } HH_j - \text{Min } NSI)}{(\text{Max } NSI - \text{Min } NSI)} \times 100$$

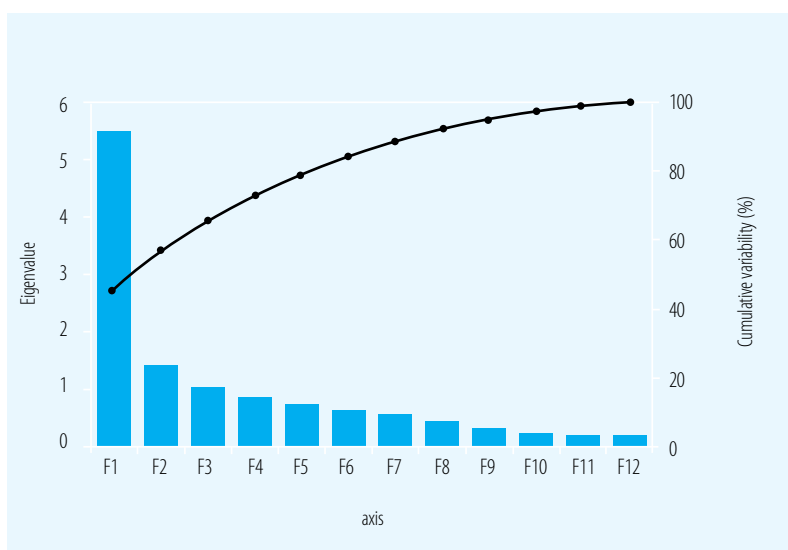
where  $j$  is the number of households.

The report's analysis is based on this standardized index.

The creation of the regional access to facilities index for the first Nepal Living Standards Survey is shown below.

## Calculating the "development status" index of a region

The first Nepal Living Standards Survey has 12 variables comprising "access to facilities." Scores, described in the text, were attached to each household for each facility. Principal component analysis produced 12 factors as below, of which only the first three, with eigenvalues greater than one, were retained for further analysis. These three components explain 65.8 percent of the total variability in access to facilities.



	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12
Eigenvalue	5.4	1.4	1.0	0.8	0.7	0.6	0.5	0.4	0.3	0.2	0.1	0.1
Variability (%)	45.6	11.7	8.4	7.1	6.0	5.1	4.6	3.7	2.7	1.7	1.5	1.3
Cumulative %	45.6	57.4	65.8	73.0	79.0	84.2	88.9	92.6	95.3	97.1	98.6	100.0

A Varimax rotation was performed, yielding the following matrix of squared cosines, where the numbers in bold identify the variables with the highest scores.

	D1	D2	D3
ATFR.101	0.015	0.002	0.687
ATFR.102	0.341	0.001	0.196
ATFR.103	0.748	0.023	0.017
ATFR.104	0.686	0.004	0.014
ATFR.105	0.091	0.519	0.020
ATFR.106	0.173	0.353	0.004
ATFR.107	0.026	0.070	0.421
ATFR.108	0.027	0.427	0.000
ATFR.109	0.652	0.014	0.019
ATFR.110	0.714	0.007	0.018
ATFR.111	0.763	0.014	0.022
ATFR.112	0.797	0.001	0.018

As discussed in the text, the first component placed the highest weights on access to health posts, paved roads, bus stops, markets, cooperatives, agricultural centres and commercial bank branches. The second principal

component is defined mainly by access to dirt roads and haat bazaars, while the third by access to primary schools and local shops.<sup>3</sup>

Constructing the index entailed using the factor scores after the Varimax rotation. Scores for five of the survey's 3,373 households are presented as an example.

	D1	D2	D3
400101	-1.288	-0.603	-0.678
400202	-0.811	-0.852	1.317
400404	-1.137	-0.012	-0.281
400505	-1.097	-0.275	0.855
400707	-0.743	-1.004	0.728

The index for the household is a weighted average of the factor scores, where the weights are determined by the share of each component in the total variance explained by all three factors. Thus, the weights W1, W2 and W3 are:

	D1	D2	D3
Variability (%)	41.950	11.966	11.973
Cumulative %	41.950	53.915	65.888
Weights	W1	W2	W3
	0.63668	0.181605	0.181714

The next step involves calculating the weighted average and producing the standardized index using the formula above.

The non-standardized index is the sum of the Di's multiplied by the corresponding Wi. The index can be negative, and therefore, difficult to interpret for our purpose. The column NUM is the difference between the index and the minimum value of the series. The lowest value it can take is 0. The final step is the calculation of the standardized index, with a value that lies between 0 and 100. The higher the value of this index, the better the access to facilities. Taking the average of all the household indexes of the nine eco-development regions used in this report produces a score for the region that represents its "development status," defined in terms of the access to facilities it offers to households.

Essentially, identical procedures were followed to generate the household well-being and individual ability indexes.

Household	D1	W1	D2	W2	D3	W3	Non-standard- ized index	NUM	Standardized index
400101	-1.288	0.63	-0.603	0.180	-0.678	0.180	-0.23063	0	0
400202	-0.811	0.63	-0.852	0.180	1.317	0.180	0.083735	0.314368	93.82156
400404	-1.137	0.63	-0.012	0.180	-0.281	0.180	-0.05269	0.177944	53.10643
400505	-1.097	0.63	-0.275	0.180	0.855	0.180	0.104437	0.33507	100
400707	-0.743	0.63	-1.004	0.180	0.728	0.180	-0.04969	0.180942	54.00123
							Maximum	0.104437	
							Minimum	-0.23063	
							Range	0.33507	

<sup>3</sup> Please refer to Table A6.1 for the full form of the abbreviated variables.

TABLE A6.1:

## Details of codes and facilities

Nepal Living Standards Survey 2011			Nepal Living Standards Survey 2003			Nepal Living Standards Survey 1995		
101	Early childhood development centre	AECDR	101	Primary school	101	Primary school		
102	Primary school	APSR	102	Health post	102	Health post		
103	Secondary school	ASSR	103	Bus stop	103	Bus stop		
104	Higher secondary school	AHSSR	104	Paved road	104	Paved road		
105	Health post/sub-heal	AHPR	105	Dirt road vehicle	105	Dirt road, vehicle passable		
106	Public hospital/PHC	APHR	106	Dirt road no vehicle	106	Dirt road, vehicle impassable		
107	Clinic/private hospital	ACPHR	107	Local shop	107	Local shop/shops		
108	Bus stop	ABSR	108	Haat bazaar	108	Haat bazaar		
109	Paved road	APRR	109	Market centre	109	Market centre		
110	Dirt road, vehicle passable	ADRVPR	110	Agriculture centre	110	Krishi centre		
111	Dirt road, vehicle impassable	ADRVIMPR	111	Cooperative	111	Sajha (cooperative)		
112	Local shop/shops	ALSCR	112	Bank	112	Commercial bank branch		
113	Haat bazaar	AHBR	113	Source of drinking water				
114	Market centre	AMCR	114	Post office				
115	Agriculture centre	AACR	115	Telephone booth				
116	Sajha (cooperatives)	ASCR						
117	Bank	ABR						
118	Drinking water in ra	ADWRSR						
119	Drinking water in dr	ADWDSR						
120	Post office	APOR						
121	Telephone booth	ATBR						
122	Police station	APSTR						
123	Internet access	AIAR						
124	Community library	ACBR						

TABLE A6.2:

**Variables in the household well-being index**

Variables listed are based on the third Nepal Living Standards Survey and the scoring method. Similar lists are available for the first and second surveys but are omitted here in the interest of space.

Variables	Numerical values
<b>Water supply and sanitation:</b>	
<b>1 Source of drinking water</b>	
i. Piped water	7
ii. Covered well	6
iii. Hand pump/tube-well	5
iv. Open well	4
v. Spring water	3
vi. River	2
vii. Other source	1
<b>2. Sanitation system for liquid waste</b>	
i. Underground drain	3
ii. Open drains	2
iii. Soak pit	1
iv. No	0
<b>3. Garbage disposal method</b>	
i. Collected by garbage truck	6
ii. Private collector	5
iii. Dumped	4
iv. Burned/buried	3
v. Dumped and used for fertilizer	2
vi. Other	1
<b>4. Type of toilet used</b>	
i. Flush—municipal sewer	4
ii. Flush—septic tank	3
iii. Non-flush	2
iv. Communal latrine	1
v. No toilet	0
<b>Land holding and irrigation facilities</b>	
<b>5. Household has own agricultural land</b>	
i. Yes	1
ii. No	0
<b>6. Ratio of irrigated plots to total number of plots</b>	
<b>Education (household head)</b>	
<b>7. Where did person learn?</b>	
i. Formal schooling	5
ii. Taught at home	2
iii. Government literacy course	4
iv. Non-governmental organization literacy course	3
v. Other	1
<b>8. Educational background</b>	
i. Never attended school	0
ii. Attended school/college in past	2
iii. Currently attending school/college	1
<b>9. Type of school/college</b>	
i. Community/government	2
ii. Institutional/private	3
iii. Technical/vocational	4
iv. Gurukul/madarsha/gumba	1
v. Community (public) campus	4
vi. Private campus	4
vii. Constituent campus	4
viii. Other	1
<b>10. Highest level completed</b>	
i. Nursery/kindergarten/pre-school	1
ii. Class 01	2
iii. Class 02	3
iv. Class 03	4
v. Class 04	5
vi. Class 05	6
vii. Class 06	7
viii. Class 07	8
ix. Class 08	9
x. Class 09	10
xi. Class 10	11
xii. SLC	12
xiii. Intermediate	13
xiv. Bachelor's	14
xv. Master's	15
xvi. Professional degree	16
xvii. Level less	0
<b>Inventory of durable goods</b>	
<b>11. Current sale value (sum of resale values of all durable goods)</b>	
<b>Dependency rates</b>	
<b>12. Ratio of earning members to household size</b>	
<b>Housing</b>	
<b>13. Material of outside wall</b>	
i. Cement-bonded bricks/stones	6
ii. Mud-bonded bricks/stones	5
iii. Wood	4
iv. Bamboo/leaves	3

Continued...



v. Unbaked bricks	2
vi. Other material	1
vii. No outside walls	0
<b>14. Foundation of dwelling</b>	
i. Pillar bonded	5
ii. Cement bonded	4
iii. Mud bonded	3
iv. Wooden pillar	2
v. Other	1
<b>15. Main roofing material</b>	
i. Concrete/cement	7
ii. Tiles/slate	6
iii. Galvanized iron	5
iv. Wood/planks	4
v. Earth/mud	3
vi. Straw/thatch	2
vii. Other	1
<b>16. Types of window</b>	
i. Shutters	3
ii. Screens/glass	2
iii. Other	1
iv. No windows/no covering window	0
<b>17. Area inside the dwelling (square feet)</b>	
<b>18. Sale value (Rs.)</b>	
<b>Electricity and fuel</b>	
<b>19. Source of light</b>	
i. Electricity	5
ii. Solar	4
iii. Bio-gas	3
iv. Kerosene	2
v. Other	1
<b>20. Amount paid for electricity (Rs.)</b>	
<b>21. Does household own (0 if no, 1 if yes):</b>	
i. Telephone	
ii. Mobile phone	
iii. Cable TV	
iv. Email/Internet	
<b>22. Amount paid for facilities (Rs.)</b>	
<b>23. Main cooking fuel</b>	
i. Cylinder gas	7
ii. Kerosene	6
iii. Bio-gas	5

iv. Firewood	4
v. Dung	3
vi. Leaves/rubbish/straw/thatch	2
vii. Other	1
<b>Health</b>	
<b>24. Present health status (of household head)</b>	
i. Excellent	4
ii. Good	3
iii. Fair	2
iv. Poor	1
<b>Expenditures on fertilizers and insecticides</b>	
<b>25. Amount paid (Rs.)</b>	
<b>Ownership of farming assets</b>	
<b>26. Equipment owned (number)</b>	
<b>27. Selling value (Rs.)</b>	
<b>Borrowing</b>	
<b>28. Amount borrowed (entered as a negative value)</b>	
<b>Lending</b>	
<b>29. Amount lent (Rs.)</b>	
<b>30. Value of other property (Rs.)</b>	
<b>31. Value of other assets (Rs.)</b>	
<b>32. Income</b>	
<b>33. Per capita consumption</b>	
<b>Social assistance (yes/no, 1/0)</b>	
<b>34. Receive public food distribution system</b>	
<b>35. Receive nutritional programme for child</b>	
<b>36. Receive nutritional programme for mother</b>	
<b>37. Receive food for work</b>	
<b>38. Receive cash for work</b>	
<b>39. Receive RCIWP programme</b>	
<b>Access to facilities</b>	
<b>40. Time taken to reach closest facility:</b>	
i. Facility next to household	6
ii. Less than 30 minutes	5
iii. 30 minutes to 1 hour	4
iv. 1 to 2 hours	3
v. 2 to 3 hours	2
vi. 3 hours and more	1
vii. Not applicable/no facility around	0

Considering each of the facilities separately, there are an additional 24 variables. So the total number of variables is  $(39+24) = 63$ .

**ANNEX 7:**

# Percentage of Households by the Nine Eco-development Regions and Deciles

**TABLE A7.1**

**Calculations for 1995**

Eco-development region	N=3,373										Overall	Mean	Standard deviation
	Decile 1	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Decile 10			
Kathmandu Valley	42.3	33.2	14.5	4.9	2.2	.3	.4	.1	0.0	0.0	6.5	41.3	8.2
Eastern and Central Tarai	28.1	28.6	37.9	41.7	31.1	35.4	34.0	32.0	25.8	16.7	31.3	26.8	8.9
Eastern and Central Hills	4.9	4.7	12.8	9.5	16.1	15.5	15.9	19.0	24.8	23.6	15.8	22.4	8.2
Eastern and Central Mountains	.9	2.7	4.4	4.9	3.5	6.5	5.6	4.7	5.3	6.9	4.8	23.3	8.2
Western Tarai	9.3	9.0	6.2	10.9	13.7	9.9	7.5	4.6	1.6	.7	7.2	28.9	7.7
Western Hills	6.7	10.4	11.8	13.6	14.3	14.7	13.2	13.8	11.8	19.1	13.5	24.5	9.9
Mid Western and Far Western Tarai	5.3	8.7	7.0	6.5	12.2	8.4	9.3	6.7	5.3	3.6	7.4	26.6	8.7
Mid Western and Far Western Hills	2.6	2.7	5.3	8.1	6.8	8.5	11.5	14.5	17.5	17.4	10.3	21.4	7.6
Western, Mid Western and Far Western Mountains	0.0	0.0	0.0	0.0	.1	.7	2.7	4.7	7.8	11.9	3.1	16.0	3.9
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>25.8</b>	<b>9.8</b>

Source: Computed from raw Nepal Living Standards Survey data using principal component analysis.

**TABLE A7.2**

**Calculations for 2003**

Eco-development region	N=3,373										Overall	Mean	Standard deviation
	Decile 1	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Decile 10			
Kathmandu Valley	57.3	31.6	18.7	7.7	3.6	1.6	.3	0.0	0.0	0.0	8.7	31.3	8.0
Eastern and Central Tarai	15.8	27.3	35.7	41.5	47.1	46.0	44.6	32.4	13.8	3.1	31.7	18.0	6.9
Eastern and Central Hills	4.2	5.3	8.8	7.5	7.8	10.2	13.3	17.3	27.2	42.2	15.3	11.5	8.0
Eastern and Central Mountains	0.0	0.0	0.0	.8	2.2	4.6	6.6	10.4	9.9	6.8	4.6	10.7	4.0
Western Tarai	6.3	10.0	16.0	16.1	8.7	7.5	4.6	3.1	1.2	0.0	7.1	21.6	7.2
Western Hills	10.7	12.3	9.0	11.7	10.5	12.9	12.4	16.6	20.2	16.1	13.5	15.4	9.4
Mid Western and Far Western Tarai	5.8	10.6	9.3	12.4	15.5	11.3	9.2	6.0	4.1	.6	8.5	19.0	7.1
Mid Western and Far Western Hills	0.0	3.1	2.4	2.3	3.8	4.0	6.3	10.0	19.3	20.0	7.7	10.3	6.4
Western, Mid Western and Far Western Mountains	0.0	0.0	.2	0.0	.9	1.7	2.7	4.2	4.3	11.2	2.8	8.4	4.6
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>16.9</b>	<b>9.3</b>

Source: Computed from raw Nepal Living Standards Survey data using principal component analysis.

TABLE A7.3

## Calculations for 2011

Eco-development region	N=3,373										Overall	Mean	Standard deviation
	Decile 1	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Decile 10			
Kathmandu Valley	43.2	28.7	19.3	9.4	5.9	3.0	2.4	2.8	2.7	.3	9.6	41.8	6.7
Eastern and Central Tarai	9.3	23.4	21.6	25.8	32.2	38.3	41.8	41.8	28.4	26.9	30.4	32.3	7.9
Eastern and Central Hills	6.4	10.0	18.5	18.7	17.7	17.8	14.5	14.0	14.2	14.5	15.0	32.8	8.5
Eastern and Central Mountains	2.0	3.4	5.4	3.5	2.8	3.7	2.9	4.4	7.0	5.7	4.1	31.6	8.5
Western Tarai	8.0	5.9	4.6	7.2	4.7	5.4	4.0	4.2	7.4	16.1	6.7	30.6	10.8
Western Hills	18.7	13.3	13.6	16.6	17.3	13.1	12.6	13.7	11.6	4.9	13.4	35.3	7.4
Mid Western and Far Western Tarai	6.4	7.8	7.9	8.4	7.9	5.7	7.4	7.1	12.4	14.2	8.6	31.4	9.6
Mid Western and Far Western Hills	5.5	6.0	7.8	9.2	9.4	10.1	10.9	8.2	10.8	13.1	9.4	31.8	8.8
Western, Mid Western and Far Western Mountains	.6	1.5	1.3	1.2	2.1	2.8	3.5	3.8	5.6	4.3	2.8	29.5	7.6
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>33.3</b>	<b>8.8</b>

Source: Computed from raw Nepal Living Standards Survey data using principal component analysis.

## ANNEX 8:

## Labour Productivity by Districts and Regions

TABLE A8.1

## Districtwise Labour Productivity (in Rs.) and in index

Districts	Economically active pop	GDP (Value Added) Rs. in million	Labour Productivity (in Rs.)	Labour Productivity Relative to National Average	Labour Productivity Relative to Kathmandu
<b>Eastern Mountain</b>					
Taplejung	59245.5	6802.8	114823.9	97.2	35.9
Sankhuwasabha	89076.7	7687.8	86304.8	73.1	27.0
Solukhumbu	61606.7	7947.9	129009.8	109.2	40.3
<b>Eastern Hills</b>					
Panchthar	85951.2	8413.5	97886.7	82.9	30.6
Ilam	141851.1	14852.2	104702.7	88.7	32.7
Dhankuta	91035.6	8335.4	91561.8	77.5	28.6
Terhathum	55401.7	5850.4	105600.1	89.4	33.0
Bhojpur	94178.8	7383.7	78400.6	66.4	24.5
Okhaldhunga	69635.9	5748.3	82547.3	69.9	25.8
Khotang	92356.8	9476.5	102607.9	86.9	32.0
Udayapur	133579.3	11841.7	88648.9	75.1	27.7
<b>Eastern Tarai</b>					
Jhapa	329345.2	40370.2	122577.2	103.8	38.3
Morang	377416.8	49026.1	129899.0	110.0	40.6
Sunsari	268482.7	34261.1	127610.1	108.0	39.9
Saptari	242521.9	20822.9	85859.9	72.7	26.8
Siraha	214341.9	17784.3	82971.8	70.3	25.9
<b>Central Mountain</b>					
Dolakha	94343.0	6991.9	74111.6	62.7	23.1
Sindhupalchok	150026.5	12976.4	86494.0	73.2	27.0
Rasuwa	20983.0	2677.4	127598.9	108.0	39.9
<b>Central Hills</b>					
Sindhuli	134796.1	9884.1	73326.2	62.1	22.9
Ramechhap	97912.6	7835.8	80029.0	67.8	25.0
Kavrepalanchok	177423.3	21777.6	122743.5	103.9	38.3
Lalitpur	190394.8	36179.0	190021.1	160.9	59.3
Bhaktapur	129495.4	17142.0	132375.4	112.1	41.3
Kathmandu	614432.4	196723.1	320170.5	271.1	100.0
Nuwakot	132394.6	12266.7	92652.5	78.4	28.9
Dhading	166200.1	13391.6	80575.2	68.2	25.2
Makwanpur	195841.7	24156.7	123348.0	104.4	38.5
<b>Central Tarai</b>					
Dhanusa	213443.4	28727.1	134588.7	114.0	42.0
Mahottari	183092.2	17283.9	94400.2	79.9	29.5
Sarlahi	224676.7	25341.1	112789.0	95.5	35.2
Rautahat	197110.0	21193.0	107518.8	91.0	33.6
Bara	215822.1	41527.0	192413.1	162.9	60.1

Continued...

Districts	Economically active pop	GDP (Value Added) Rs. in million	Labour Productivity (in Rs.)	Labour Productivity Relative to National Average	Labour Productivity Relative to Kathmandu
Parsa	182168.9	30004.6	164707.6	139.5	51.4
Chitawan	244209.7	36270.9	148523.4	125.8	46.4
<b>Western mountain</b>					
Manang	3635.0	845.0	232453.5	196.8	72.6
Mustang	7784.1	1055.0	135529.1	114.8	42.3
<b>Western Hills</b>					
Gorkha	132186.2	11419.7	86391.0	73.1	27.0
Lamjung	77771.7	8057.9	103610.0	87.7	32.4
Tanahu	132363.9	14006.5	105817.8	89.6	33.1
Syangja	131011.8	14179.9	108234.0	91.6	33.8
Kaski	172638.7	31244.7	180983.4	153.2	56.5
Myagdi	54146.6	4721.8	87204.6	73.8	27.2
Parbat	70704.4	6004.5	84924.0	71.9	26.5
Baglung	110679.6	9397.1	84903.3	71.9	26.5
Gulmi	130876.6	8418.2	64322.0	54.5	20.1
Palpa	118916.3	10373.8	87236.1	73.9	27.2
Arghakhanchi	101715.0	7198.2	70768.0	59.9	22.1
<b>Western Tarai</b>					
Nawalparasi	308398.0	30140.2	97731.5	82.7	30.5
Rupandehi	318001.9	40138.8	126221.9	106.9	39.4
Kapilbastu	207804.3	23002.8	110694.4	93.7	34.6
<b>Mid Western Mountains</b>					
Dolpa	17932.0	1558.5	86910.1	73.6	27.1
Jumla	49969.4	4474.9	89552.7	75.8	28.0
Kalikot	57077.5	3227.9	56552.9	47.9	17.7
Mugu	25305.0	1955.1	77259.5	65.4	24.1
Humla	23934.6	1649.2	68905.1	58.3	21.5
<b>Mid Western Hills</b>					
Pyuthan	109540.0	6191.9	56526.1	47.9	17.7
Rolpa	94440.0	5779.0	61192.1	51.8	19.1
Rukum	77523.0	6594.6	85066.7	72.0	26.6
Salyan	101158.3	7703.8	76155.6	64.5	23.8
Surkhet	144505.2	12925.0	89443.0	75.7	27.9
Dailikh	111223.4	7266.7	65334.0	55.3	20.4
Jajarkot	63063.6	4255.4	67477.8	57.1	21.1
<b>Mid Western Tarai</b>					
Dang	230846.6	25240.2	109337.5	92.6	34.1
Banke	170010.9	22619.6	133048.2	112.6	41.6
Bardiya	186231.2	18787.4	100882.1	85.4	31.5
<b>Far Western Mountain</b>					
Bajura	59300.7	2851.5	48084.7	40.7	15.0
Bajhang	87487.2	3816.6	43624.1	36.9	13.6
Darchula	59530.7	3397.2	57067.1	48.3	17.8

Continued...

Districts	Economically active pop	GDP (Value Added) Rs. in million	Labour Productivity (in Rs.)	Labour Productivity Relative to National Average	Labour Productivity Relative to Kathmandu
<b>Far Western hills</b>					
Achham	114446.9	5513.8	48177.7	40.8	15.0
Doti	92243.8	6590.6	71447.5	60.5	22.3
Dadeldhura	67848.7	4392.4	64738.8	54.8	20.2
Baitadi	105879.9	5821.3	54979.9	46.6	17.2
<b>Far Western Tarai</b>					
Kailali	300447.2	29569.9	98419.8	83.3	30.7
Kanchanpur	171333.6	17140.6	100042.4	84.7	31.2
<b>Total</b>	<b>10570707.9</b>	<b>1248481.6</b>	<b>118107.7</b>	<b>100.0</b>	

Source: Based on labour productivity calculated from district level GDP and Economically active population provided by Central Bureau of Statistics

**TABLE A8.2**

**Regionwise Labour Productivity (in Rs.) and Relative to National Average**

Regions	Primary	Secondary	Tertiary	Average
Kathmandu Valley	87084.8	158987.1	278999.8	214189.0
Eastern and Central Hills	69866.1	269247.0	195206.4	94616.5
Western Hills	64114.7	155287.8	203021.8	96763.1
Mid Western and Far Western Hills	47990.4	139256.4	126416.8	60834.9
Eastern and Central Mountains	79231.2	232904.4	218761.1	103057.2
Mid Western, Far Western & Western Mountains	64169.1	271847.6	170798.2	86879.4
Eastern and Central Tarai	80258.9	241082.2	193582.8	125321.6
Western Tarai	72238.1	204818.9	189528.2	111549.3
Mid Western and Far Western Tarai	79791.0	122766.6	200199.3	108346.0
Nepal (Average)	68562.8	198486.2	225684.3	118107.7
<b>Regionwise Labour Productivity Index (Relative to National Average)</b>				
Kathmandu Valley	73.7	134.6	236.2	181.4
Eastern and Central Hills	59.2	228.0	165.3	80.1
Western Hills	54.3	131.5	171.9	81.9
Mid Western and Far Western Hills	40.6	117.9	107.0	51.5
Eastern and Central Mountains	67.1	197.2	185.2	87.3
Mid Western Far Western and Western Mountains	54.3	230.2	144.6	73.6
Eastern and Central Tarai	68.0	204.1	163.9	106.1
Western Tarai	61.2	173.4	160.5	94.4
Mid Western and Far Western Tarai	67.6	103.9	169.5	91.7
<b>Total</b>	<b>58.1</b>	<b>168.1</b>	<b>191.1</b>	<b>100</b>

Source: Based on labour productivity calculated from district level GDP and Economically active population provided by Central Bureau of Statistics

TABLE A8.3

**Ranking of top 10 districts by labour productivity**

Primary	Secondary	Tertiary	Total
Manang	Dhanusa	Kathmandu	Kathmandu
Taplejung	Bara	Makwanpur	Manang
Ilam	Khotang	Rasuwa	Bara
Mustang	Mugu	Gorkha	Lalitpur
Solukhumbu	Manang	Chitawan	Kaski
Bara	Dolpa	Sankhuwasabha	Parsa
Kathmandu	Panchthar	Kaski	Chitawan
Panchthar	Ilam	Nuwakot	Mustang
Kaski	Makwanpur	Parsa	Dhanusa
Jhapa	Humla	Jumla	Banke

Source: Based on labour productivity calculated from district level GDP and Economically active population provided by Central Bureau of Statistics

**ANNEX 9:****Nepal Standard Industrial Classification Codes**

S.N.	Codes	Types of industries
1	15	Manufacture of food products and beverages
2	16	Manufacture of tobacco products
3	17	Manufacture of textiles
4	18	Manufacture of wearing apparel, dressing and dyeing of fur
5	19	Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear
6	20	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
7	21	Manufacture of paper and paper products
8	22	Publishing, printing and reproduction of recorded media
9	23	Manufacture of coke, refined petroleum products and nuclear fuel
10	24	Manufacture of chemical and chemical products
11	25	Manufacture of rubber and plastic products
12	26	Manufacture of other non-metallic mineral products
13	27	Manufacture of basic metals
14	28	Manufacture of fabricated metal products, except machinery and equipment
15	29	Manufacture of machinery and equipment NEC
16	31	Manufacture of electrical machinery and apparatuses
17	32	Manufacture of radio, television and communication equipment and apparatuses
18	33	Manufacture of medical, precision and optical instruments, watches and clocks
19	34	Manufacture of motor vehicles, manufacture of trailers and semi-trailers
20	35	Manufacture of other transport equipment
21	36	Manufacture of furniture, manufacturing NEC

Source: Census of Manufacturing Establishments 2007, Central Bureau of Statistics.



**ANNEX 10:**

## Number of Firms by Nepal Standard Industrial Classification Codes and the Nine Eco-development Regions

Codes	Number of firms			Eco-development regions	Numbers of firms		
	1997	2002	2007		1997	2002	2007
15	661	723	863	Kathmandu Valley	1,338	847	798
16	38	25	28	Eastern and Central Hills	162	176	161
17	828	457	519	Western Hills	235	212	258
18	136	115	36	Mid Western and Far Western Hills	32	24	35
19	77	59	36	Eastern and Central Mountains	60	33	31
20	198	195	271	Western, Mid Western and Far Western Mountains	6	5	17
21	118	85	91	Eastern and Central Tarai	1,164	1,265	1,447
22	79	81	105	Western Tarai	280	371	350
23	3	2	7	Mid Western and Far Western Tarai	280	280	349
24	92	95	109	<b>Total</b>	<b>3,557</b>	<b>3,213</b>	<b>3,446</b>
25	146	201	162				
26	623	624	657				
27	22	74	67				
28	183	127	124				
29	19	10	18				
31	29	35	33				
32	5	5	5				
33			1				
34	5	6	5				
35			3				
36	295	294	306				
<b>Total</b>	<b>3,557</b>	<b>3,213</b>	<b>3,446</b>				

Source: Census of Manufacturing Establishments 1997, 2002 and 2007, Central Bureau of Statistics.

**ANNEX 11:**

## Numbers of People Employed in Different Industries and by Region

Nepal Standard Industrial Classification code	1997	2002	2007	Regions	1997	2002	2007
15	24,261	32,082	30,930	Kathmandu Valley	99,383	63,993	38,909
16	3,213	2,896	2,618	Eastern and Central Hills	9,211	7,492	8,227
17	75,303	43,873	41,138	Western Hills	5,352	6,175	6,887
18	15,126	18,389	4,864	Mid Western and Far Western Hills	544	451	524
19	2,025	2,107	1,239	Eastern and Central Mountains	1,383	802	537
20	3,825	3,875	5,058	Western, Mid Western and Far Western Mountains	70	53	125
21	3,557	3,072	3,784	Eastern and Central Tarai	59,196	83,832	92,360
22	2,621	3,999	3,997	Western Tarai	12,376	17,589	18,092
23	158	80	434	Mid Western and Far Western Tarai	9,193	11,466	11,889
24	5,107	7,820	8,871	<b>Total</b>	<b>196,708</b>	<b>191,853</b>	<b>177,550</b>
25	3,457	5,423	7,218				
26	43,988	52,367	49,022				
27	1,234	2,887	3,724				
28	5,290	4,983	6,127				
29	298	208	414				
31	1,612	2,103	2,256				
32	275	392	370				
33	0	0	28				
34	82	270	213				
35	0	0	169				
36	5,276	5,027	5,076				
<b>Total</b>	<b>196,708</b>	<b>191,853</b>	<b>177,550</b>				

Source: Census of Manufacturing Establishments 1997, 2002 and 2007, Central Bureau of Statistics.

## ANNEX 12:

# Technical Note on the Total Factor Productivity Methodology

Generally, total factor productivity is calculated based on the estimation of production functions. After deriving the coefficients of traditional inputs using the ordinary least squares (OLS) technique, the residuals are treated as total factor productivities. For estimation at the firm or industrial levels and types a similar method is also popular. But Gal (2013) points out that the coefficients obtained through such an exercise are likely to be inconsistent and biased. In the case of the labour coefficient, for instance, firms with higher productivity hire more workers, but productivity is not directly observed during production function estimation, hence it enters an error term. Firms' behaviour may thus introduce a positive correlation between the error term and the labour input, rendering standard OLS inconsistent and biased. To solve this problem, a firm-specific dummy is used to

control for cases where productivity shocks occur differently across firms. The same technique has been applied in this report.

The report encountered some problems with both labour and capital inputs, given the absence of data in the required format for the estimation. If labour input data do not contain the number of hours worked, and instead provide information only on the number of employees, some complication arises. The absence of data on the characteristics of employees in terms of types of workers (i.e., low-skilled or high-skilled) also creates problems. These are solved by assuming that total labour costs are a measure of quality and intensity-adjusted labour. Hence, as in Saliola and Seker (2011), total compensation of workers, including wages, salaries and bonuses, is used. This report used data on compensation of employees

## BOX A12.1

### Illustration of total factor productivity methodology

Measuring total factor productivity requires an empirical specification of the production function (Subramanian et. al. 2005). Normally in economic literature, the following production function is used.

$$Y = f(K, L)$$

where Y represents value added, K represents capital inputs and L represents labour inputs. With Nepal's manufacturing survey data, there was a need to compute total factor productivity in cross-sectional data that defines some index of relative total factor productivity for each firm 'i' as:

$$\omega_i = \frac{Y_i}{f(K_i, L_i)}$$

such that  $\omega=1$  indicates the central tendency of total factor productivity in the cross-

section. A value of  $\omega>1$  indicates high total factor productivity relative to the firms in the cross-section, while a value below 1 indicates low total factor productivity (ibid.). Rearranging:

$$Y_i = f(K_i, L_i)\omega_i$$

If we use the Cobb-Douglas production function, then:

$$Y_i = A_i K_i^\alpha L_i^\beta$$

Taking the natural logs of the production function results in a linear production function:

$$\log Y_i = \log A_i + \alpha \log K_i + \beta \log L_i + \varepsilon_i$$

Estimated productivity can then be calculated as follows (Beveren 2007)

$$\hat{\omega}_i = \log Y_i - \hat{\alpha} \log K_i - \hat{\beta} \log L_i$$

While  $\hat{\omega}_i$  is in index number, productivity in levels can be obtained as the exponential of  $\hat{\omega}_i$

as it was readily available. Following the same authors (ibid.), the replacement value of fixed assets was used for the capital stock.

The report took a two-step approach to compute total factor productivity. First, the production function was estimated by taking different industrial types into consideration, as follows:

$$\log Y_i = \beta_0 + \beta_1 \log(\text{wage}_i) + \beta_2 \log(\text{fixedassets}_i) + \sum_{N=1}^K \alpha_N D_N * \log(\text{wage}_i) + \sum_{N=1}^K \delta_N D_N * \log(\text{fixedassets}_i) + \sum_{N=1}^K \gamma_N D_N + \varepsilon_i$$

where  $Y_i$  represents value addition in each firm, and  $N=1$  to  $K$  represents industrial types, grouped by the two-digit Nepal Standard Industrial Classification codes. This

equation gives different elasticity coefficients for each industrial type and also controls industry-specific mean differences. After calculating total factor productivity for each firm, considering the industry-specific production function, average total factor productivity is computed for different industrial groups and eco-development regions.

### Sources of data

Manufacturing survey data from 1997, 2002 and 2007 were used for computing labour and total factor productivity. Data have been further regrouped for the calculations. Industrial groups with less than five firms were merged to increase the sample size. See also box A12.1.

**ANNEX 13:**

## Total Factor Productivity Index (Log) of Different Industrial Types by Regions and Over Time

**TABLE A13.1**
**Calculations by the nine eco-development regions, 1997**

Regions → Industry ↓	1	2	3	4	5	6	7	8	9
15	0.49	0.08	0.26	-0.49	0.35	0.76	0.42	0.20	0.31
16		1.58					-0.32	-0.50	-1.01
17, 18	0.89	0.47	0.30	0.27	0.44	0.64	0.96	0.05	0.48
19	-1.75	-1.07	-1.69				-0.79	-1.15	-1.20
20	2.92	2.79	2.50	1.57	1.99		2.89	2.73	2.47
21	0.41	0.28	-0.02	0.29	0.13		0.48	0.17	-0.25
22	-0.55	-0.92	-0.73		-0.52		-0.44	-1.11	-0.40
23, 29, 32, 33, 34, 35	-0.18						-1.22	0.44	
24	1.27	2.01	1.37				1.52	1.30	1.14
25	0.72	0.82	1.04				0.83	0.31	1.49
26	0.72	0.85	0.64	0.53	0.36	1.51	0.87	0.85	0.62
27, 28	0.13	-0.69	0.07	-0.07			-0.13	0.01	0.63
31	1.41	2.45	0.65				1.66	1.60	
36	0.89	0.38	0.51	0.10	0.55	0.31	0.84	0.70	0.64

Source: Calculated from Census of Manufacturing Establishments 1997, 2002 and 2007, Central Bureau of Statistics.

**TABLE A13.2**
**Calculations by the nine eco-development regions, 2002**

Regions → Industry ↓	1	2	3	4	5	6	7	8	9
15	0.21	0.13	0.02	0.17	-0.47		0.20	0.25	0.15
16		1.37	-0.04				0.12	-3.05	
17, 18	0.81	0.95	0.07	1.61	0.29		0.82	0.29	0.57
19	0.24	0.31					0.32	0.03	
20	0.83	0.33	0.69	0.31			0.60	1.03	0.89
21	-0.16	0.13	-0.20	0.18	0.06	0.50	0.28	-0.11	
22	1.26		1.63				1.26	1.51	0.56
23, 29, 32, 33, 34, 35	0.47	-0.15					0.49	-0.23	-0.31
24	0.11	0.73	1.52				0.32	0.69	0.11
25	0.24	0.04	0.76				0.27	0.36	0.28
26	0.59	0.91	0.49	0.87	1.34		0.53	0.77	0.57
27, 28	0.09	-0.68	-0.08	1.44			0.24	-0.25	-0.09
31	-0.17	0.40	0.46				0.43	0.33	-0.13
36	0.23	0.20	0.16	0.33	0.16	-0.22	0.18	0.21	0.21

Source: Calculated from Census of Manufacturing Establishments 1997, 2002 and 2007, Central Bureau of Statistics.

TABLE A13.3

## Calculations by the nine eco-development regions, 2007

Regions → Industry ↓	1	2	3	4	5	6	7	8	9
15	0.85	0.51	0.34	0.52	0.71	-0.32	0.81	0.87	0.30
16		0.34					-0.64	0.76	
17, 18	1.18	0.73	0.79	0.82	0.24		1.20	0.72	0.81
19	0.49	0.32					0.68	0.65	
20	1.37	0.84	0.82	1.92	0.07		1.26	1.05	1.11
21	0.33	0.24	0.07	0.34	0.23	1.12	0.32	0.74	
22	0.46		0.22				0.26	-0.21	0.12
23, 29, 32, 33, 34, 35	1.27	0.08	0.11				0.89	-0.93	0.75
24	0.11	0.88	0.27				0.65	1.10	1.50
25	0.26	0.60	0.05				0.51	0.43	1.15
26	0.64	0.36	0.12	0.32	0.05		0.59	0.88	0.33
27, 28	0.90	1.09	0.19	1.38	1.70		0.69	-0.02	0.38
31	0.40	0.56	-0.15				0.33	1.14	1.11
36	0.79	0.67	0.69	0.57	0.95	-2.29	0.71	0.76	0.60

Source: Calculated from Census of Manufacturing Establishments 1997, 2002 and 2007, Central Bureau of Statistics.

TABLE A13.4

## Average total factor productivity by industry in 1997, 2002 and 2007

Nepal Standard Industrial Classification Code	1997	2002	2007
15	0.35	0.18	0.69
16	-0.33	0.04	-0.55
17	0.94	0.94	1.17
18	0.11	0.08	0.49
19	-1.02	0.25	0.64
20	2.78	0.70	1.14
21	0.28	0.07	0.36
22	-0.54	1.27	0.26
23	-2.43	0.83	1.28
24	1.45	0.35	0.69
25	0.77	0.27	0.46
26	0.75	0.59	0.55
27	-2.74	0.16	0.68
28	0.33	0.03	0.57
29	0.79	0.13	0.23
31	1.56	0.31	0.47
32	-2.65	0.70	1.07
33			2.85
34	-2.87	-0.14	0.11
35			0.68
36	0.73	0.20	0.69
<b>Overall</b>	<b>0.69</b>	<b>0.43</b>	<b>0.72</b>

Source: Calculated from Census of Manufacturing Establishments 1997, 2002 and 2007, Central Bureau of Statistics.

**TABLE A13.5**

**Total factor productivity averages for the nine eco-development regions**

Eco-development regions	Average total factor productivity		
	1997	2002	2007
1 Kathmandu Valley	0.77	0.60	0.95
2 Eastern and Central Hills	0.52	0.36	0.56
3 Western Hills	0.45	0.23	0.47
4 Mid Western and Far Western Hills	0.24	0.47	0.58
5 Eastern and Central Mountains	0.32	-0.06	0.42
6 Western, Mid Western and Far Western Mountains	0.72	0.35	0.24
7 Eastern and Central Tarai	0.76	0.39	0.72
8 Western Tarai	0.43	0.39	0.75
9 Mid Western and Far Western Tarai	0.70	0.39	0.49

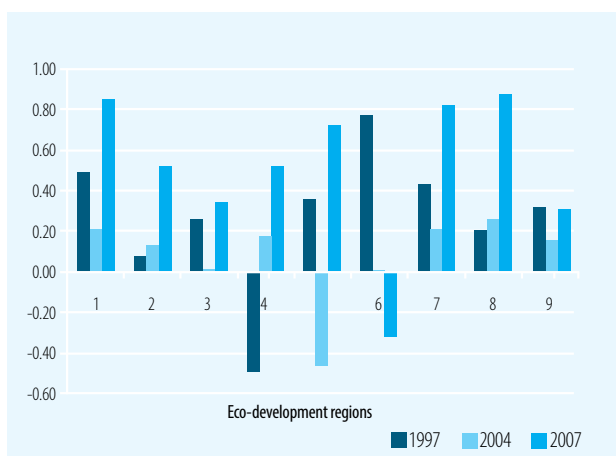
Source: Calculated from Census of Manufacturing Establishments 1997, 2002 and 2007, Central Bureau of Statistics.

**ANNEX 14:**

**Average Total Factor Productivity by Industry and Eco-development Region Over Time**

**FIGURE A14.1:**

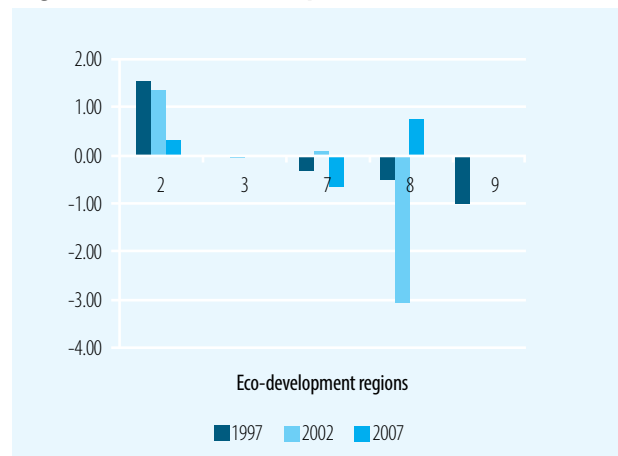
**Average TFP of Food and Beverage Industry**



Source: Annex 13, table A13.1 to table A13.3

**FIGURE A14.2:**

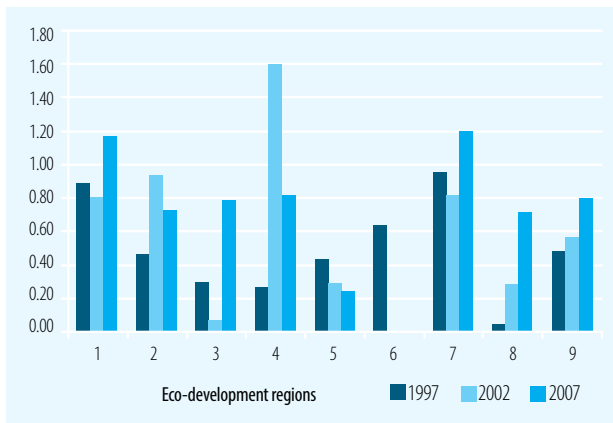
**Average TFP of Tobacco Industry**



Source: Annex 13, table A13.1 to table A13.3

FIGURE A 14.3:

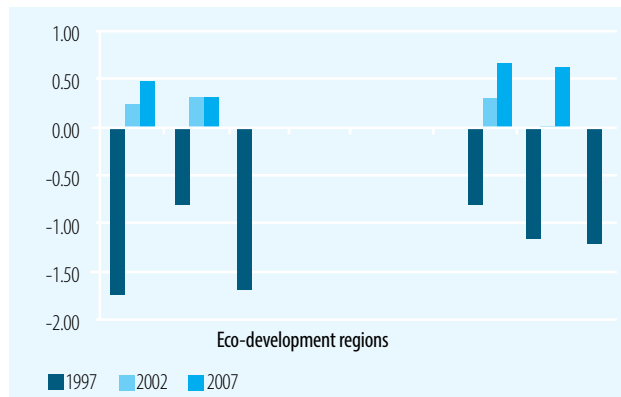
**Average TFP of Textile and Apparel Industry**



Source: Annex 13, table A13.1 to table A13.3

FIGURE A 14.4:

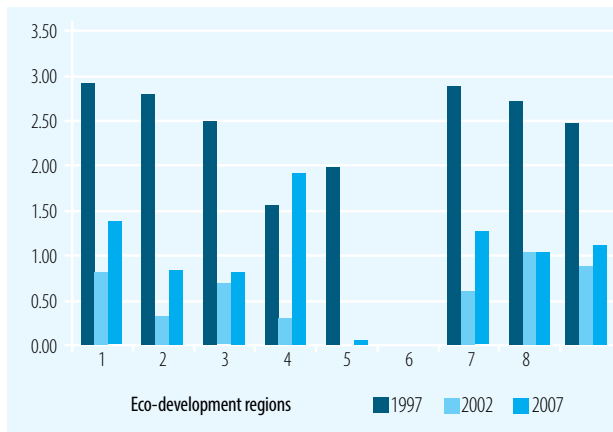
**Average TFP of Tanning and Dressing of Leather, Manufacture of Luggage and Handbags**



Source: Annex 13, table A13.1 to table A13.3

FIGURE A 14.5:

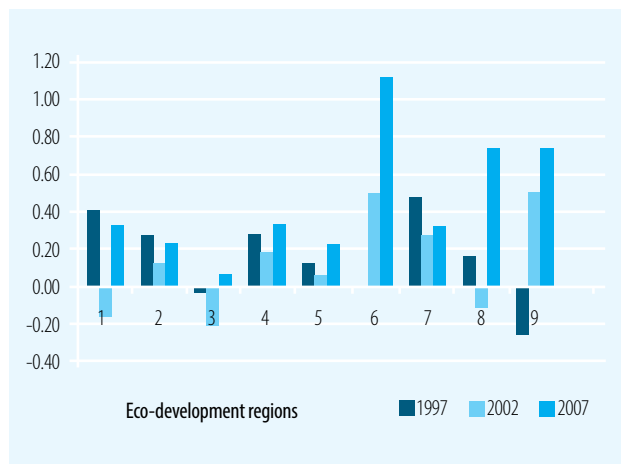
**Average TFP of Saw Mill, Plywood and Other Wood-based Industry (except furniture)**



Source: Annex 13, table A13.1 to table A13.3

FIGURE A 14.6:

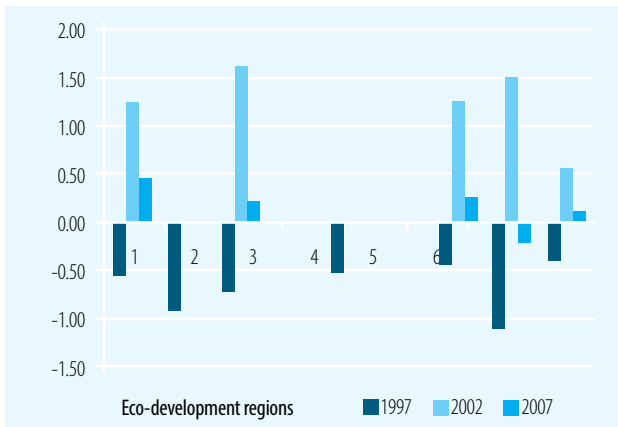
**Average TFP of Manufacture of Paper and Paper Products**



Source: Annex 13, table A13.1 to table A13.3

FIGURE A 14.7:

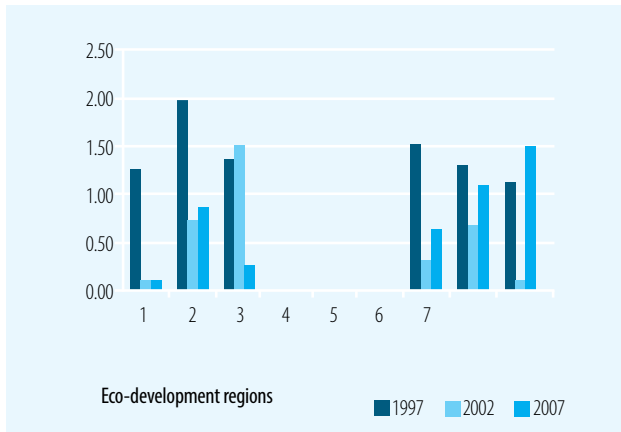
**Average TFP of Publishing, Printing and Reproduction of Recorded Media**



Source: Annex 13, table A13.1 to table A13.3

FIGURE A 14.8:

**Average TFP of Firms Producing Chemical and Chemical Products**

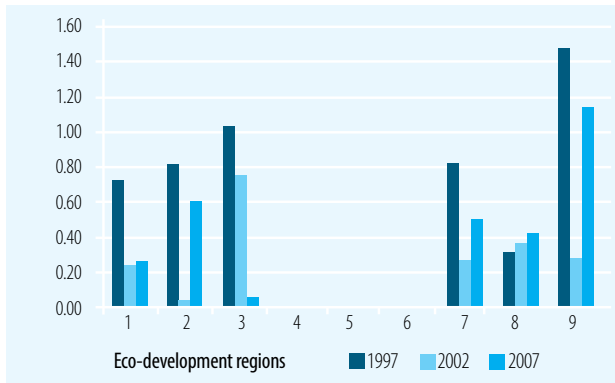


Source: Annex 13, table A13.1 to table A13.3



FIGURE A14.9:

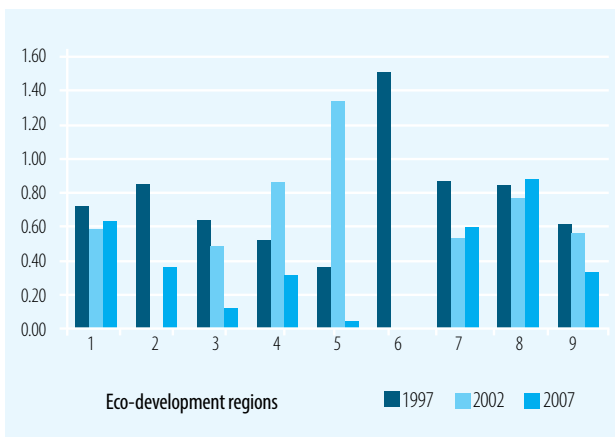
**Average TFP of Firms Producing Rubber and Plastic Products**



Source: Annex 13, table A13.1 to table A13.3

FIGURE A14.10:

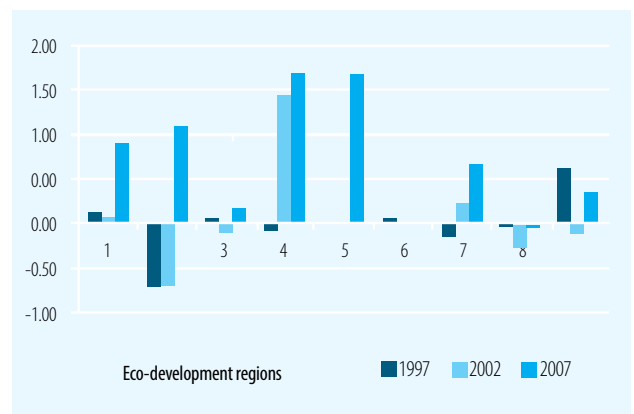
**Average TFP of Firms Producing Non-metallic Mineral Products**



Source: Annex 13, table A13.1 to table A13.3

FIGURE A14.11:

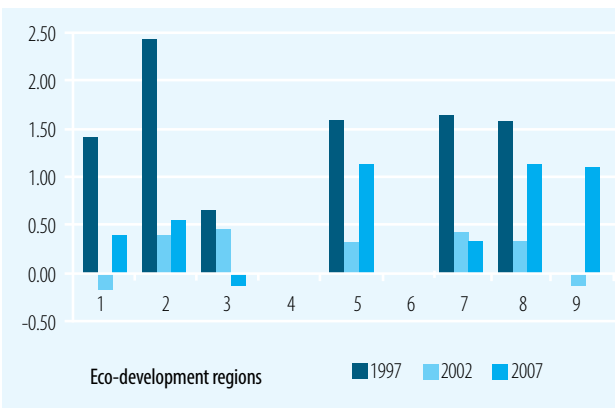
**Average TFP of Firms Producing Basic Metals and Fabricated Metal Products (except machinery and equipment)**



Source: Annex 13, table A13.1 to table A13.3

FIGURE A14.12:

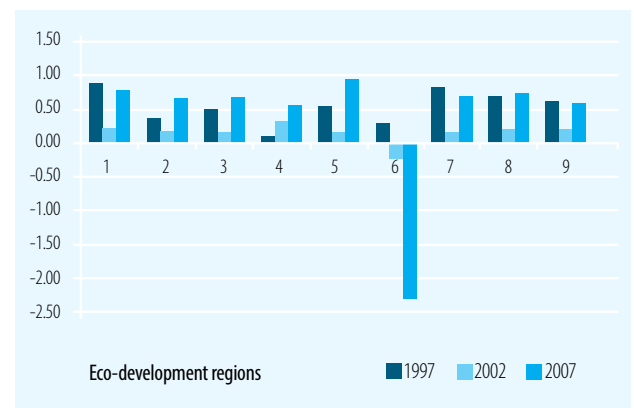
**Average TFP of Firms Producing Electrical Machinery and Apparatus**



Source: Annex 13, table A13.1 to table A13.3

FIGURE A14.13:

**Average TFP of Firms Producing Furniture**



Source: Annex 13, table A13.1 to table A13.3

## ANNEX 15:

## Regional Composition of Ability Deciles

TABLE A15.1

## Calculations for 1995

Region	Nepal Living Standards Survey, percent										Total
	Decile 1	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Decile 10	
Kathmandu Valley	42.9	45.1	31.9	13.0	3.6	1.1	.7	1.0	3.4	.6	14.3
Eastern and Central Tarai	16.4	19.3	22.8	29.7	35.9	33.3	29.1	25.6	19.8	24.7	25.6
Eastern and Central Hills	9.0	10.1	11.3	16.8	12.5	14.8	17.8	15.4	18.6	12.6	13.9
Eastern and Central Mountains	2.6	1.7	3.7	6.4	7.1	5.6	7.1	5.9	8.0	9.1	5.7
Western Tarai	4.1	3.5	7.8	7.3	9.0	8.9	7.6	3.6	3.0	5.7	6.1
Western Hills	15.6	8.9	10.0	10.0	9.3	11.8	9.5	10.3	15.9	17.8	11.9
Mid Western and Far Western Tarai	4.3	6.9	6.9	8.9	10.5	12.1	9.0	6.9	4.7	5.8	7.6
Mid Western and Far Western Hills	4.2	4.2	4.9	6.3	10.6	8.7	11.5	18.1	11.7	16.1	9.6
Western, Mid Western and Far Western Mountains	.8	.4	.6	1.6	1.6	3.7	7.7	13.2	15.0	7.6	5.2
<b>Overall</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: Computed from raw Nepal Living Standards Survey data using principal component analysis.

TABLE A15.2

## Calculations for 2003

Region	Nepal Living Standards Survey, percent										Total
	Decile 1	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Decile 10	
Kathmandu Valley	39.6	14.7	19.7	22.3	14.4	4.6	10.9	3.2	4.2	2.7	13.6
Eastern and Central Tarai	24.3	26.4	22.7	23.3	29.2	26.5	33.0	32.8	41.0	30.1	28.9
Eastern and Central Hills	6.7	14.5	12.7	11.8	11.3	19.6	12.5	13.8	17.9	14.8	13.6
Eastern and Central Mountains	.2	9.4	6.0	4.0	3.7	8.2	6.1	6.7	5.0	4.5	5.4
Western Tarai	7.6	5.0	7.3	6.7	6.1	4.5	7.7	5.6	3.6	4.6	5.9
Western Hills	8.7	13.6	14.3	12.9	14.6	14.0	6.9	7.2	9.1	9.4	11.1
Mid Western and Far Western Tarai	9.4	9.2	10.2	8.8	9.3	11.4	15.4	9.4	7.6	13.6	10.4
Mid Western and Far Western Hills	2.9	5.1	5.0	7.8	8.2	7.4	4.9	12.3	7.5	13.0	7.4
Western, Mid Western and Far Western Mountains	.6	2.0	2.1	2.3	3.2	3.8	2.6	9.0	4.1	7.4	3.7
<b>Overall</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: Computed from raw Nepal Living Standards Survey data using principal component analysis.

TABLE A15.3

## Calculations for 2011

Region	Nepal Living Standards Survey, percent										Total
	Decile 1	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Decile 10	
Kathmandu Valley	32.9	19.1	26.4	16.5	27.1	17.8	17.7	12.1	6.0	7.6	18.3
Eastern and Central Tarai	20.0	17.0	20.6	26.0	18.9	23.8	23.9	27.9	35.0	33.1	24.6
Eastern and Central Hills	8.9	19.0	9.2	14.5	12.1	16.3	13.9	16.4	14.6	15.1	14.0
Eastern and Central Mountains	1.6	3.7	3.9	4.2	4.3	2.8	3.4	3.7	3.7	3.6	3.5
Western Tarai	7.5	8.5	8.6	6.3	6.4	7.6	7.1	8.3	9.9	7.9	7.8
Western Hills	16.7	15.1	9.8	11.2	10.1	11.0	7.9	8.5	5.4	4.1	10.0
Mid Western and Far Western Tarai	8.1	9.1	10.6	10.8	9.0	9.4	12.1	9.1	9.7	9.3	9.7
Mid Western and Far Western Hills	3.1	7.1	8.3	8.0	9.9	9.7	11.9	10.7	10.6	14.8	9.4
Western, Mid Western and Far Western Mountains	1.2	1.4	2.7	2.5	2.3	1.5	2.1	3.3	5.2	4.6	2.7
<b>Overall</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: Computed from raw Nepal Living Standards Survey data using principal component analysis.

## ANNEX 16:

## Employment by Sector

TABLE A16.1

## Calculations for 1995

Gender		Nepal Living Standards Survey, percent										Total
		Decile 1	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Decile 10	
Male	Wage employment in agriculture	8.8	5.0	9.1	13.1	20.9	24.5	30.1	27.1	23.6	17.8	19.3
	Wage employment in non-agriculture	27.3	27.9	33.4	23.6	18.5	20.1	18.2	21.7	24.0	20.0	23.0
	Self-employment in agriculture	37.2	37.8	40.1	51.6	53.2	46.3	45.7	44.8	46.9	51.4	45.6
	Self-employment in non-agriculture	26.7	29.4	17.5	11.7	7.5	9.0	5.9	6.4	5.6	10.8	12.1
	<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Female	Wage employment in agriculture	9.6	7.7	9.1	12.6	17.2	22.2	26.7	24.4	20.5	26.4	18.8
	Wage employment in non-agriculture	14.6	12.3	11.6	5.8	2.5	2.4	1.9	1.6	3.1	1.9	4.7
	Self-employment in agriculture	55.8	61.3	65.9	73.9	73.5	70.0	67.7	69.8	71.6	65.4	68.8
	Self-employment in non-agriculture	20.0	18.7	13.4	7.7	6.8	5.4	3.8	4.2	4.8	6.3	7.7
	<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Total	Wage employment in agriculture	9.1	6.1	9.1	12.9	19.1	23.4	28.5	25.8	22.0	22.4	19.0
	Wage employment in non-agriculture	23.0	21.4	23.4	15.3	10.9	11.8	10.3	11.9	13.5	10.4	14.5
	Self-employment in agriculture	43.5	47.5	52.0	62.0	62.9	57.4	56.4	56.9	59.3	58.8	56.4
	Self-employment in non-agriculture	24.4	24.9	15.6	9.8	7.2	7.3	4.9	5.4	5.2	8.4	10.1
	<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: Computed from raw Nepal Living Standards Survey data using principal component analysis.

TABLE A16.2

## Calculations for 2003

Gender												Total
		Decile 1	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Decile 10	
Male	Wage employment in agriculture	1.7	5.1	8.3	8.4	8.5	15.7	21.2	21.1	33.8	21.1	12.0
	Wage employment in non-agriculture	26.7	18.8	21.6	22.4	26.5	19.6	19.7	23.5	19.0	20.0	21.8
	Self-employment in agriculture	41.4	62.2	59.0	54.6	51.5	54.6	48.1	46.8	39.8	50.5	52.9
	Self-employment in non-agriculture	30.2	14.0	11.1	14.6	13.4	10.2	11.0	8.6	7.4	8.4	13.3
	<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Female	Wage employment in agriculture	4.7	6.4	8.5	4.6	5.4	12.1	14.7	16.8	23.6	21.0	13.9
	Wage employment in non-agriculture	21.2	6.1	13.9	13.6	5.3	2.9	4.4	1.8	1.4	2.4	4.8
	Self-employment in agriculture	53.4	81.4	67.7	66.6	78.3	80.6	73.7	77.5	72.0	71.3	74.6
	Self-employment in non-agriculture	20.8	6.1	9.8	15.2	11.1	4.4	7.2	3.9	3.0	5.4	6.7
	<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Total	Wage employment in agriculture	2.6	5.5	8.4	7.4	7.0	13.9	17.2	17.7	26.0	21.0	13.0
	Wage employment in non-agriculture	25.0	15.2	19.9	20.0	16.5	11.4	10.4	6.5	5.5	8.8	13.3
	Self-employment in agriculture	45.1	67.5	61.0	57.9	64.1	67.3	63.6	70.8	64.4	63.7	63.7
	Self-employment in non-agriculture	27.3	11.8	10.8	14.8	12.3	7.4	8.7	4.9	4.1	6.5	10.0
	<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: Computed from raw Nepal Living Standards Survey data.

TABLE A16.3

## Calculations for 2011

Gender												Total
		Decile 1	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Decile 10	
Male	Wage employment in agriculture	2.6	5.7	2.6	4.2	4.5	5.5	4.0	11.0	16.6	16.8	6.6
	Wage employment in non-agriculture	37.9	27.3	34.1	33.7	37.5	37.6	36.1	38.1	34.2	34.5	35.3
	Self-employment in agriculture	33.6	48.0	43.2	42.3	35.9	36.2	32.9	34.1	33.1	35.7	37.6
	Self-employment in non-agriculture	25.9	19.1	20.2	19.8	22.0	20.7	27.0	16.8	16.1	13.1	20.5
	<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Female	Wage employment in agriculture	7.4	7.2	8.0	6.5	7.1	7.1	10.5	12.0	17.7	17.8	11.3
	Wage employment in non-agriculture	28.2	16.2	19.6	18.9	18.8	12.0	13.4	11.8	9.3	12.5	14.9
	Self-employment in agriculture	43.5	59.7	52.1	57.9	54.7	58.0	59.3	59.7	59.6	59.1	57.1
	Self-employment in non-agriculture	20.8	16.9	20.3	16.6	19.4	22.9	16.8	16.5	13.3	10.6	16.7
	<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Total	Wage employment in agriculture	5.1	6.4	5.1	5.0	5.5	6.2	7.2	11.6	17.3	17.5	9.0
	Wage employment in non-agriculture	32.8	22.2	27.4	28.7	30.3	26.4	24.8	23.8	17.3	18.4	24.9
	Self-employment in agriculture	38.8	53.3	47.3	47.6	43.2	45.7	46.1	48.0	51.1	52.8	47.5
	Self-employment in non-agriculture	23.2	18.1	20.2	18.7	21.0	21.7	22.0	16.6	14.2	11.3	18.6
	<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: Computed from raw Nepal Living Standards Survey data.





Government of Nepal  
National Planning Commission



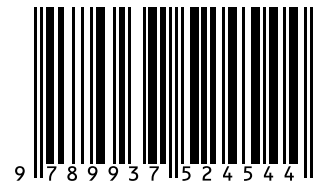
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Nepal is presently making efforts to move out of an extended political transition and has resolved to accelerate its graduation from a least developed to a developing country by 2022. The importance of inclusive growth and human development to sustain peace, achieved after a long conflict, has been deeply ingrained among all stakeholders. The agenda for the years to come is high-quality growth and equitable development.

This report explores spatial inequalities in productive abilities at the level of regions, households and individuals and presents a picture that is both sobering and encouraging. Broad regional inequalities in human development and productive abilities persist, but these seem to be narrowing over time. This indicates the need to maintain, with renewed vigour, the path of inclusive growth and development, encompassing all regions as well as socio-economic groups that have been left behind.

The report argues that the unambiguous focus of state policies should be to accelerate the narrowing of regional inequalities in human development and productive abilities. The pace of economic growth needs to accelerate, and be accompanied by large-scale employment generation and enhanced productivity in sectors such as high-value agricultural niches, industry and infrastructure development. Efforts should be oriented towards harnessing the tremendous potential and energy of a growing population of young people.

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