

ANNEX I: Sources of data and technical notes

ANNEX 1.1: SOURCES OF DATA

Major sources of data used in the calculation of human development and human empowerment indices

This report makes use of various sources of data, collected mostly by government agencies. Both the raw as well as the published data were used depending upon the need of

various indices of interest. Thus, some of the input indicators, particularly at regional and sub-regional disaggregated level, used in the report to calculate human development and human empowerment indices, have not been published elsewhere. The data sources and the variables used in the measurement of human development and empowerment indices in this report are shown in Table 1.

TABLE 1 Major sources of data used to calculate human development and empowerment indices

Data	Source	Calculated indicators	Indicators used for
Population Census 2001	Central Bureau of Statistics, HMG/N 2002a	<ul style="list-style-type: none"> ■ Life expectancy index: deprivation in longevity ■ Adult literacy ■ Mean years of schooling ■ Percentage of labour force engaged in non-agricultural sector ■ Gini corrected average per household land holding ■ Percentage share of males and females in total population ■ Population without safe drinking water ■ Access to sanitation facilities ■ Access to radio and telephone ■ Index of administrative and managerial representataion: (Index of technical, professional and administrative representation) ■ Proportion of people not surviving beyond 40. 	HDI HDI, HEI HDI HEI HEI HEI HDI HPI HEI HEI HEI GEM HPI
Nepal Demographic and Health Survey 2001	Ministry of Health, HMG/N, New ERA, ORC Macro 2002	<ul style="list-style-type: none"> ■ Under nourished children under 5 ■ Life expectancy index: deprivation in longevity ■ Proportion of people not expected to survive beyond 40. 	HEI, HPI HDI HPI
Nepal Family Health Survey (NFHS) 1996	Pradhan et al 1997 (Ministry of Health, HMG/N 1997)	<ul style="list-style-type: none"> ■ Life expectancy index; deprivation in longevity 	HDI
Local Election Data Tape	Election Commission Nepal, HMG/N 1997	<ul style="list-style-type: none"> ■ Percentage share of women in parliament ■ Voter turnout in the National Election ■ Number of candidates contested per seat/post in local election 	GEM HEI HEI
Nepal Labour Force Survey 1998/1999	Central Bureau of Statistics, HMG/N 1999	<ul style="list-style-type: none"> ■ Wage rate by sex 	HDI
National Accounts of Nepal	Central Bureau of Statistics, HMG/N 2002b	<ul style="list-style-type: none"> ■ Per capita GDP 	HEI, HDI
Agricultural Development Bank 2002, other credit agencies and SMCs	ADB/N 2002, Rural Development Bank and other credit agencies	<ul style="list-style-type: none"> ■ Access to formal credit 	HEI
Social Mobilization, Mapping of Social Mobilization in Nepal	Sah. J., ed. 2003, National Planning Commission and various sources	<ul style="list-style-type: none"> ■ Social mobilization outreach % 	HEI

The estimation of the required demographic indicators to calculate various human development indices were not straightforward due to the limitations in the quality of data and the level of availability of information from CBS 2001, NHDS 2001 and NFHS 1996. Several direct and indirect estimation techniques were used to calculate the life expectancy at birth and proportion of people not surviving beyond 40. Therefore, the information on reported number of children ever born and survivors among those born alive classified by age of women in reproductive age were used to calculate the life expectancy at birth for the national, regional and sub-regional level. The outcome of this exercise was then used to derive the respective life tables for the corresponding regions.

A similar exercise was also carried out using the 2001 census data which did not produce reliable estimates of mortality, neither at the regional nor at the district level. The mortality indices were calculated using Q5 indicator that is probability of death at age 5 instead of age 0. Again this also did not produce consistent output. In the process of getting more robust mortality related indicator, the exercise was further carried out using a method that produced the required indices taking the crude death rate (CDR) and the age-sex distribution of the population as input. For this, again the CDR for each district was estimated using the stable population technique where C_x value (proportion of population at age x) was considered as the basis. The entire mortality indicator produced using different data sets and different methods also was unable to produce a consistent result. Therefore, the life expectancy at birth for the district level was adjusted by using the regional growth rate in those cases where the indicator was found to be outlier. For these exercises the west mortality model pattern by Coale and Demeny (1966) was assumed as the pattern of mortality in Nepal as these have been used in almost all the mortality related indicators estimated in the past. All these exercises were necessary to overcome the limitation of the data on adult mortality, which

is one of the important required inputs for estimating the life expectancy at birth.

Information on nutritional status of children was calculated using the data from the Nepal Demographic Health Survey, 2001, as this was the only reliable source that allowed the required indicator that corresponded the reference period. However, the limitation of this indicator, particularly at the district level, is that it is based on small number of cases and is likely to be suffering from a sampling error.

Information from the National Accounts of Nepal was utilized to derive GDP by sector. The methodology and data source used for estimating per capita income at the regional and district level is given in Table 2 (see Technical Notes 1.2 for the estimation method used in the calculation of per capita income).

The Election Commission reports election results for each of the 75 districts of Nepal, covering the VDCs, municipalities and district development committees. This report has used information of such reports to assess political participation, particularly of females in relation to males. This information has been utilized to derive the voter turn out in the last national election 1999 and the number of candidates per seat in the local election in 1997.

The adult literacy figures were obtained from CBS. All other variables used in the measurement of human development and empowerment indices mean years of schooling, access to drinking water, toilet, radio, telephone and electricity, average size of operational land holding and inequality in the distribution of land holding (Gini corrected land holding), proportion of labour force employed in non-agriculture and relative shares of males and females in professional and managerial work – were estimated using the sample raw data of the Population Census 2001 obtained from CBS. Estimates for these variables were obtained separately for rural and urban sectors in a district using the ratio estimation method given below.

The ratio estimation method can be shown as

$$y''_{hi} = \sum_j \frac{y_{hij}}{x_{hij}} X_{hij}$$

Where y''_{hi} is the ratio estimator for the population with a certain characteristic in the i^{th} domain and in the h^{th} district. The number of persons found in the sample with a certain characteristic in the j^{th} tabulation group, in the i^{th} domain and in the h^{th} district is y_{hij} . x_{hij} is the total number of persons found in the sample in the j^{th} tabulation group, in the i^{th} domain and in the h^{th} district. X_{hij} is the total number of persons from the 100 percent count, found in the j^{th} tabulation group, in the i^{th} domain and in the h^{th} district.

The estimator for the h^{th} district is

$$y''_h = \sum_i y''_{hi}$$

where all domains have been sampled.

Where some domains are completely enumerated, the district estimator is

$$y''_h = \sum_i y''_{hi} + Y_h$$

Where Y_h is the total from the completely enumerated domains.

The national level estimator is

$$y'' = \sum_h y''_h$$

Similarly, estimates for the five development regions and the three ecological zones were obtained by adding together the district estimates falling in each of these areas.

TABLE 2 Estimates of income at district level (methodology and data source)

Industrial division	Grouping	Types of data and methodology	Indicators	Sources of data
1. Agriculture	- Food grains	Statistical information on Nepalese agriculture 2001/02	Output by crops/ livestock and districts	Ministry of Agriculture
	- Cash crops	Agriculture marketing information bulletin special issue 2002		
	- Livestock	Value of royalty collected by the government by district (Hamro Ban, 2001/02)	Value of royalty	Department of Forest, HMG
	- Forestry			
2. Mining and quarrying	- Mining	The value added of mining is estimated using the mining production figures.	Mining product	Department of Mining and Geology
	- Quarrying	The value of quarrying is estimated on the basis of royalty paid to the local government.	Value of royalty paid for quarrying	Local government bodies
3. Manufacturing	- Modern manufacturing	The census of manufacturing establishments, 2003 provides details data on the value added of manufacturing by districts.	Census value added of manufacturing establishments	Central Bureau of Statistics (Census of Manufacturing Establishments 2003)
	- Small scale manufacturing	Households operating small scale manufactur- ing activities (SSMA)	No of households involved in SSMA	Population census 2001
4. Electricity	- Electricity	Electricity consumption (utilized energy) by district 2001/02	Utilized energy KWH	Nepal Electricity Authority
5. Construction	- Private pakky construction	Households by house/housing unit, Population Census 2001	Number of pakky housing unit	CBS
	- Private kachy construction	Households by house/housing unit, Population Census 2001	Number of kachy housing unit	CBS
	- Government construction	Capital expenditure of the government	Expenditure amount	Financial Comptroller's Office

Contd....

TABLE 2 Estimates of income at district level (methodology and data source)

Industrial division	Grouping	Types of data and methodology	Indicators	Sources of data
6. Trade hotels and restaurants	- Trade	Statistical information on Nepalese agriculture 2001/02 Agriculture marketing information bulletin special issue 2002 The census of manufacturing establishments, 2003 provides details data on the value added of manufacturing by districts.	Value of output of agriculture and manufacturing products	Ministry of Agriculture and Central Bureau of Statistics
	- Hotels and restaurants	No. of hotels and restaurants by district	Number of hotels and restaurants	Business Registers compiled by various agencies and CBS.
7. Transport and communication	- Transport	Persons engaged in transport activities by district, Population Census 2001	Number of persons engaged	Population Census 2001, CBS
	- Communication	Revenue collection from telecommunication by district	Revenue amount	Nepal Telecommunication Corporation
8. Finance and real estate	- Finance	The number of financial institutions is taken as the indicator to generate value added. (Banking and Financial Statistics-2002)	Number of financial institutions	Nepal Rastra Bank
	- Real estate	The number of households by ownership type, Population census 2001 is taken into account for estimating value added in the real estate sub-sector.	Number of household of by selected type	Population Census 2001, CBS
	- Business services	Volume of business services-trade, transport, private services etc.	Volume of transaction	National accounts data, CBS
9. Community social and personal services	- Government services	The expenditure details of the government 2001-02 by district	Expenditure amount	Financial Comptroller's Office
	- Private services	Number of persons engaged in private service activities - health and social work, education and other community, social and personal services	Number of persons engaged in private service activities	Population Census CBS, 2001
	- Non-profit institutions	Number of non-profit institutions by district	Number of NPIs	Social Welfare Council

Note:

1. This is the first exercise done so far to estimate income at the district level. Because of the lack of adequate data base, direct estimation of income at this level was not possible. Therefore, indirect technique is followed to derive income figures by preparing indicators based on the data available. During the estimation process, several supporting tables are prepared and indicators are generated to arrive at the estimation of income at the district level.
2. The reliability of estimates depends on the quality of data used in the estimation. Effort has been made to identify and use the appropriate possible indicators, though deficiency of qualitative data in many of the areas is strongly felt.

ANNEX 1.2: HUMAN DEVELOPMENT AND RELATED INDICES

The human development index

The Human Development Index (HDI) is based on the three indicators: Longevity, as measured by life expectancy at birth; educational attainment as a measure by combined of adult literacy rate (two-third weight) and the combined gross primary, secondary and tertiary enrolment ratio (one-third weight); and standard of living, as measured by GDP per capita (PPP US\$). The combined primary, secondary and tertiary enrolment ratios was introduced in the 1994 HDR replacing the variable of mean years of schooling, mainly because the formula for calculating mean years of schooling is complex and has enormous data requirements (UNDP, 1994). The methodology, along with the definition of variables and their measurement, adopted in calculating the HDI for Nepal is illustrated below.

Life expectancy index

Life expectancy at birth is calculated based on the reported number of children ever born and surviving using data of Nepal Demographic and Health Survey, 2001, The National Census 2001, Nepal Family Health Survey (NFHS) 1996 applying the direct as well indirect techniques. The Coale and Demeny (1966) West Mortality Model life table is used to derive the life expectancy at birth. Life expectancy is calculated for each geographical region, development region, rural-urban place of residence, eco-development region, and for 75 districts. The life expectancy at birth based on the stable model technique using the age-sex distribution of the population was also applied in generating the crude death rate and the proportion of population at age-x to calculate the life expectancy at birth as none of the single mortality estimation technique was able to produce the consistent indicators at regional, sub-regional and district levels. Consequently, in some cases, the growth in life expectancy or infant mortality rate based on

the NDHS 2001 and NFHS 1996 was also used to extrapolate life expectancy for 2001, particularly for the district level indicator. For sub-region and the districts in which the results appeared absurd, appropriate proxy values were used from the corresponding development region or ecological region.

Educational attainment index

The Nepal Human Development Report has used both the estimates of the adult literacy rate and mean years of schooling from the National Census, 2001 data. The mean years of schooling instead of enrolment ratio, was used in the case of Nepal because mean years of schooling is expected to capture the educational quality of the literate adult and the educational attainment of young people (combined enrolment ratio) which is not possible when used the gross enrolment ratio that generally are overestimated and unreliable due to the practice of enrolment-based government grants to the schools. Therefore, the data from the National Census, 2001 was used to calculate mean years of schooling for ecological zones, development regions, eco-development regions, place of residence and districts.

Income index

Lack of an efficient information system, which forms a sound basis for GDP calculations, is a major challenge currently faced by the National Accounts Statisticians in Nepal. The CBS has so far been publishing GDP estimates only for National level. The exercise to obtain GDP down to the sub-national level was never attempted in the past, which has created a serious data gap in the process of decentralized planning process. The direct estimates of income at the district level was not possible at this moment because of the lack of data at the district level. Therefore, an indirect technique is followed to arrive at the estimates developing indicators for the respective sectors and sub-sectors.

The procedure is largely based upon production approach (supply side) and generates suitable indicators for each industry.

The respective indicators are mostly sectoral outputs wherever available and, in some cases, proxies of outputs are used. In the current study, various secondary sources of information collected mostly by government agencies are used for preparing indicators. The latest information available in different areas of the economy is carefully scrutinized and used for estimation purposes. The indicators thus identified formed the main basis of estimation process. Further, it is assumed that the relative weights of each of sectoral GDP by districts are equal to the relative weights of the corresponding indicator by district. Specifically, the disaggregating procedure adopts the above method and takes all the sectors one at a time and has apportioned GDP to the district. The totals of all the sectors re-

$$v_{ij} = \text{value added of the } i^{\text{th}} \text{ sector in } j^{\text{th}} \text{ district } \forall i = 1, 2, \dots, 9, j = 1, 2, \dots, 75$$

$$I_{ij} = \text{Value of proxy indicator of the } i^{\text{th}} \text{ in } j^{\text{th}} \text{ district } \forall i = 1, 2, \dots, 9,$$

$$j = \sum_j 1, 2, \dots, 75 \quad V_i = \sum_j v_{ij}$$

$$aV_{ij} = \text{Value added of } i^{\text{th}} \text{ sector}$$

$$i = 1, \dots, 9 \quad I_i = I_{ij} = \text{Value of proxy indicator of the } i^{\text{th}} \text{ sector}$$

$$i = 1, \dots, 9 \quad V_{ij}/V_i = I_{ij}/I_i \quad i = 1, 4, \dots, 9$$

sulted in the GDP at the district level. Population figures provided by CBS for 2001 have been used to obtain per capita GDP. Per capita GDP is then converted to PPP US \$ with the help of ratio of per capita GDP {NR} thus estimated to per capita GDP in PPP\$ (2001) of Nepal established by the Human Development Report 2003. As sectoral

Box 1 Illustration of HDI methodology

Basic data table showing required data to calculate HDI

Region	Life expectancy at birth (Years)	Adult literacy rate (%age 15 and above)	Mean years of education	Per capita income PPP income in US\$
Urban Nepal	64.53	68.3	5.06	2224

Calculation of HDI

Life expectancy index:

$$\frac{64.53 - 25}{85 - 25} = \frac{39.53}{60.00} = 0.65883$$

Adult literacy index:

$$\frac{68.3 - 0}{100 - 0} = \frac{68.3}{100} = 0.6830$$

Mean years of schooling index:

$$\frac{5.06 - 0}{15 - 0} = \frac{5.06}{15} = 0.337333$$

Educational attainment index:

$$[2(0.6830) + 1(0.337333)]/3 = 0.567778$$

Adjusted GDP per capita (PPPUS\$) index

$$\frac{\text{Log}(2224) - \text{Log}(100)}{\text{Log}(40000) - \text{Log}(100)} = 0.51772$$

Human development index output table

Region	Life expectancy index	Educational attainment index	Income index	Sum of three	Human development index (HDI)
Urban Nepal	0.65883	0.567778	0.51772	1.744328	0.581

GDPs are not available by Rural/Urban locality, a different approach, which utilizes the relative shares of these areas in total income, has been used. Further, it is assumed that such relative shares do not change significantly in a short period of time and therefore the shares, those established by the NLSS survey (1996) have been used to disaggregate the GDP at the rural/urban level.

The gender-related development index

The Gender-related Development Index (GDI) uses the same variables as the HDI. The difference is that the GDI adjusts the average achievement of each region/sub-region in life expectancy, educational attainment and income in accordance with the disparity in achievement between women and men. For this gender-sensitive adjustment this report, as suggested in the HDR 2000, has used the weighted formula that express a moderate aversion to inequality, setting the weight-

ing parameter, ϵ , equal to 2. This is a harmonic mean of the male and female values.

The GDI also adjusts the maximum and minimum values for life expectancy, to account for the fact that women tend to live longer than men. For women the maximum value is 87.5 years and the minimum value 27.5 years; for men the corresponding values are 82.5 and 22.5 years (UNDP 2000).

The calculation of GDI requires equally distributed index for income, which calls for separate income indices for male and female. The income indices for male and female further demand per capita income in PPP\$ for both sex. The procedure therefore begins with disaggregating of the per capita income by sex using the standard set of formulae being applied in human development reports. The calculation of equally distribution income index then follows using separate formulae. The set of formulae are given below:

Box 2 Formula for income calculation

Formula for income disaggregation

$$S_f = \frac{(w_f/w_m) \times ea_f}{[(w_f/w_m) \times ea_f] + ea_m} \quad 1A$$

$$Y_f = \frac{S_f Y}{N_f} \quad 1B$$

$$Y_m = \frac{(1 - S_f) Y}{N_m} \quad 1C$$

Formula for calculation of income index

$$W(Y_f) = \frac{\log Y_f - \log Y_{\min}}{\log Y_{\max} - \log Y_{\min}} \quad 1D$$

$$W(Y_m) = \frac{\log Y_m - \log Y_{\min}}{\log Y_{\max} - \log Y_{\min}} \quad 1E$$

Equally distributed income

$$\text{Index } I_{\text{GDI}} = \{P_f \times W(Y_f)^{-1} + P_m \times W(Y_m)^{-1}\}^{-1} \quad (2)$$

Where W_f = Female wage rate, W_m = Male wage rate
 ea_m = Proportion of economically active male
 ea_f = Proportion of economically active female
 Y = GDP in PPP \$ N_f = Female population N_m = Male population
 $P_f = N_f / (N_f + N_m)$ and $P_m = N_m / (N_f + N_m)$

Percentage share of population

Female	0.5005
Male	0.4995

Step one : Computing the equally distributed life expectancy index

Life expectancy index (Mountain)

Female	61.46
Male	60.52

Life expectancy index

Female	$(61.46 - 27.5)/60 = 0.5660$
Male	$(60.52 - 22.5)/60 = 0.6337$

Equally distributed life expectancy index

$$[\text{Female population share X (female life expectancy index)}^{-1} + \text{Male population share X (male life expectancy index)}^{-1}]^{-1}$$

$$[[0.5005 * (0.5660)^{-1}] + [0.4995 * (0.6337)^{-1}]]^{-1} = 0.5979$$

Step two : Computing the equally distributed educational attainment index

Adult literacy rate (percentage age 15 and above)

Female	34.9
Male	62.7

Mean years of schooling

Female	1.95
Male	3.56

Adult literacy index

Female	$(34.9 - 0)/100 = 0.349$
Male	$(62.7 - 0)/100 = 0.627$

Mean of schooling index

Female	$(1.95 - 0)/15 = 0.130$
Male	$(3.56 - 0)/15 = 0.237$

Educational attainment index

Female	$[2/3(0.349) + (1/3(0.130))] = 0.2760$
Male	$[2/3(0.627) + (1/3(0.237))] = 0.4971$

Equally distributed educational attainment index

$$[\text{Female population share X (female educational attainment index)}^{-1} + \text{Male population share X (male educational attainment index)}^{-1}]^{-1}$$

$$[[0.5005 * (0.2760)^{-1}] + [0.4995 * (0.4971)^{-1}]]^{-1} = 0.35483$$

Step three : Computing the equally distributed income index

Percentage share of population

Female	0.5005
Male	0.4995

GDP per capita

Female	790
Male	1831

Adjusted GDP per capita (PPPUS\$) index

Female	$\frac{\text{Log (790) - log (100)}}{\text{log (40000) - log (100)}} = 0.345$
Male	$\frac{\text{Log (1831) - log (100)}}{\text{log (40000) - log (100)}} = 0.485$

Equally distributed income index

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

$$[[0.5005 * (0.345)^{-1}] + [0.4995 * (0.485)^{-1}]]^{-1} = 0.403$$

Gender related development index (GDI)

Region	Equally distributed life expectancy index	Equally distributed educational attainment index	Equally distributed income index	Sum of three	Gender related development index (GDI)
Nepal	0.5979	0.35483	0.403	1.35573	0.452

The gender empowerment measure

The Gender Empowerment Measure (GEM) uses variables constructed explicitly to measure the relative empowerment of women

and men in political and economic spheres of activity. The percentage share of men and women in the administrative and managerial positions and in the professional and technical positions is used to reflect their

BOX 4 Illustration of GEM methodology

Percentage share of population

Female 0.5005
Male 0.4995

Step one: Calculating indices for parliamentary representation and administrative and managerial and professional and technical positions.

Percentage share of parliamentary representation

Female 19.33
Male 80.67

Percentage share of administrative and managerial position

Female 12.71
Male 87.29

Percentage share of professional and technical positions

Female 18.75
Male 81.25

Equally distributed equivalent percentage (EDEP) for parliamentary representation

[Female population share X (female's share in parliamentary representation)⁻¹ + Male population share X (male's share in parliamentary representation)⁻¹]⁻¹
[[0.5004 * (19.33)⁻¹] + [0.4996 * (80.67)⁻¹]]⁻¹ = 31.12

Equally distributed equivalent percentage (EDEP) for administrative and managerial positions

[Female population share X (female's share in administrative and managerial positions)⁻¹ + Male population share X (male's share in administrative and managerial positions)⁻¹]⁻¹
[[0.5004 * (12.71)⁻¹] + [0.4996 * (87.29)⁻¹]]⁻¹ = 22.13

Equally distributed equivalent percentage (EDEP) for professional and technical positions

[Female population share X (female's share in professional and technical positions)⁻¹ + Male population share X (male's share in professional and technical positions)⁻¹]⁻¹
[[0.5004 * (18.75)⁻¹] + [0.4996 * (81.25)⁻¹]]⁻¹ = 30.40

Indexing parliamentary representation = 31.12/50 = 0.622

Indexing administrative and managerial positions: 22.13/50 = 0.443

Indexing professional and technical positions: 30.40/50 = 0.608

Combining the indices for administrative and managerial, and professional and technical, positions.

(Index of administrative and managerial positions + Index of professional and technical positions)/2
= (0.443 + 0.608)/2 = 0.5253

Step two: Calculating index for male and female income

$$S_f = \frac{W_f/W_m \times ea_f}{W_f/W_m \times ea_f + ea_m} \quad 3A$$

$$Y_f = \frac{S_f Y}{N_f} \quad 3B$$

$$Y_m = (1 - S_f) Y / N_m \quad 3C$$

$$W(Y_f) = \frac{Y_f - 100}{40,000 - 100} \quad 3D$$

$$W(Y_m) = \frac{Y_m - 100}{40,000 - 100} \quad 3E$$

Equally distributed income index for GEM: $I_{GEM} = \{P_f W(Y_f)^{-1} + P_m W(Y_m)^{-1}\}^{-1}$ (4)

Where the symbols have their usual meanings, For example in Nepal, $Y_f = 790$ \$ $Y_m = 1831$ \$

$$W(Y_f) = (790 - 100) / (40000 - 100) = 0.01729$$

$$W(Y_m) = (1831 - 100) / (40000 - 100) = 0.0434$$

Equally distributed income index: [[0.5004 * (0.01729)⁻¹] + [0.0434 * (81.25)⁻¹]]⁻¹ = 0.0247

Step three: Computing GEM

GEM = 1/3 (index of parliamentary representation + combined index of administrative, managerial, professional and technical positions + equally distributed income index)

GEM Nepal = 1/3 (0.622 + 0.5253 + 0.0247) = 0.391

economic participation and decision-making power. Women's and men's percentage shares of parliamentary seats – participation of men and women only in local election at VDC and municipality level – are used to reflect their political participation and decision-making power. Income variable is used to reflect power over economic resources. It is calculated in the same way as the GDI except that the unadjusted, rather than adjusted GDP per capita, is used. The three indices – for economic participation and decision making, political participation and decision making and power over economic resources – are averaged to derive the final GEM value (UNDP 2000). For all variables, equally distributed equivalent percentage (EDEP), as in the calculation of GDI, has been calculated assuming a value of 2 for 'aversion to inequality'.

The calculation process of equally distributed income index for GEM is similar to that of the GDI. The only difference is in the formula while calculating separate income per capita indices for both sex.

Human poverty index

Human Poverty Index (HPI), a multi dimensional measure of poverty introduced in the Human Development Report 1997 (UNDP 1997), is a reverse image of the HDI that focuses on human deprivation instead of human achievement. It brings together in one composite index the deprivation in four basic dimensions of human life – a long and healthy life, knowledge, economic provisioning and social inclusion. Deprivation in a long and healthy life (P_1) is measured by the percentage of people born alive today not expected to survive to age 40; deprivation in knowledge (P_2) is measured by the adult illiteracy rate and deprivation in economic provisioning (P_3) is measured jointly by unweighted composite value of the percentage of people lacking access to health (P_{31}) services and safe water (P_{32}) and the percentage of children under five who are moderately or severely underweight (P_{33}) (UNDP 2000); that is, $P_3 = [P_{31} + P_{32} + P_{33}]/3$. HPI is calculated as outlined in HDR 1997 with the assumption of a generalised mean $\alpha = 3$.

BOX 5 Illustration of HPI methodology

Region	Percentage of people not expected to survive to age 40	Adult illiteracy rate	Percentage of people without access to safe water	Percentage of malnourished children under age 5	$(P_{31}) + (P_{32})/2$ Deprivation in economic provisioning
	Deprivation in longevity (Percent)	Deprivation in knowledge (Percent)			
	(P_1)	(P_2)	(P_{31})	(P_{32})	(P_3)
HPI Nepal	17.7	51.4	20.48	50.5	35.49

$$HPI = [1/3 \{P_1^3 + P_2^3 + P_3^3\}]^{1/3}$$

$$HPI \text{ Nepal} = [1/3 \{(17.4)^3 + (51.4)^3 + (35.49)^3\}]^{1/3} = 39.6$$

ANNEX 1.3: HUMAN EMPOWERMENT INDEX

CONCEPTS AND MEASUREMENT

Rationale for the human empowerment index

After several decades of development progress and development thinking, empowering people and creating a good investment climate have now emerged as the two basic and mutually reinforcing pillars of any strategy for pro-poor growth and sustainable poverty reduction (Stern 2002). This is consistent with the human development paradigm, which envisages the full empowerment of the people as one of its four pillars, the others being equity, sustainability and productivity (Haq 1995). As a comprehensive concept, empowerment is both an intrinsic element of poverty reduction and a means to reduce poverty.¹ It is a surest way to establish link between growth and human development.

Despite some progress in human development, poverty – both income and non-income poverty – remains intractable because it is so intricately bound up with the condition of disempowerment/capability deprivation so striking in health, education, knowledge and communication, as well as people's inability to exercise their civil and political rights and the absence of their voice, power, dignity and self-confidence in the public sphere. In this broad context, the HDI cannot be taken as fully capturing the whole of the concept of human development. It encompasses only three variables – health, education and income. It also has its own philosophy as well as limitations.

Human development indices: philosophy and limitations: According to Amartya Sen, the HDI should be seen, "as a deliberately constructed crude measure, offered as a rival to the GNP."² It does not reflect other human choices.³ The restriction of HDI to these three indicators is justified on the ground that if these basic require-

ments of life are not met, many equally important dimensions of human life become impossible to achieve and many opportunities remain inaccessible (Raworth, 1998). This assumption, however, provides no basis for monitoring progress towards other elements basic to critical human choices that the index does not reflect. Although income enters into the HDI as a surrogate for all the dimensions of human development that are not reflected in a long and healthy life and in knowledge, it cannot serve as the surrogate for non-purchasable goods or other human choices.⁴ This limitation gives rise to imperfections that stem primarily from two sources. First, the HDI is rooted in a philosophy of simplicity; it set out to exclude other major aspects of human life – even those that are quantifiable – in a global calculation. Second, because of the issue of universality, the HDI necessitated selecting only those indicators that are relevant and available for all countries.⁵

Since its introduction in 1990, the HDI has undergone a series of analytical and methodological refinements, along with the inclusion of three additional composite indices (GDI, HPI, and GEM), to capture different aspects of human development from differing perspectives⁶ – again, for application on a global scale, despite shortcomings for a number of countries. For example, the absence of reliable data restricted the estimates of GDI, GEM and HPI-1 to less than 100 countries. With the advent of national human development reports in 1992, researchers could begin turning their attention to additional indices for advocacy and policy guidance on priority issues in their own countries – issues that were not necessarily global, but of particular relevance to a given society at a given time. Such indicators were also sensitive to short-term policy changes, as opposed to existing long-term stock variables,⁷ so that the policy-makers could focus more sharply on country-specific problems and priorities when formulating development strategies. Although the principle of universalism in the selection of indicators has limited scope at the global

level,⁸ there is sufficient flexibility at the national scale not only for adding such priority indicators, but even for formulating new indices (UNDP 2000). For this reason, the existing HDI indices and indicators continue to evolve; the basic components of HDI are being supplemented, even replaced, by other more relevant indicators to reflect country-specific priorities and problems.⁹ As long as the data are reliable, a greater number of key indicators that are not reflected in HDI certainly permits a clearer picture of human development. They also make the index less vulnerable because the impact of a biased indicator on the overall score diminishes when more indicators are used.

The human empowerment index: The human development paradigm envisages full empowerment of all people, to enable them to exercise their choices voluntarily. As a critical pillar of human development, the concept of empowerment is closely linked to the notion of the human development paradigm, which embraces all choices – socio-cultural, economic and political. While human development concerns the expansion of social, economic and political capabilities that widen people's choices for leading the kinds of lives they value, empowerment focuses on the question of how the expansion of assets and capabilities, as well as social inclusion, can enable people to take part in growth processes that also shape their lives. (Haq 1995). It implies a democratic polity in which people can influence decisions on a scale well beyond their own persons and households. Empowerment is now recognized as an approach that creates the environment for enabling citizens to take advantage of poverty-reducing opportunities and assets politically, economically, socially and psychologically.

While the existing HDI and other composite indices like GDI, GEM¹⁰ and HPI shed light on different aspects of human development, no single composite index captures all these crucial dimensions of human empowerment. This rationale underlies the

effort to develop an empowerment index. The Human Empowerment Index (HEI) has therefore been constructed by bringing together the available objective social, economic and political indicators into a composite index of empowerment. This holistic perspective permits one to measure the empowerment level of all human beings at the district level in the spirit of the HDI; the disaggregation of the HEI provides the basis for measuring disparities in terms of caste, ethnicity and gender, subject to the availability of sufficiently desegregated database. This information will give planners and policy-makers new insights for devising appropriate policy interventions to address concentrated poverty and disempowerment at different geographical levels.

Defining empowerment

Empowerment has become a "buzzword", used in a variety of situations by a multitude of people to describe a proliferation of outcomes (Swift and Levin 1987).¹¹ Because "empowerment" has acquired a certain cachet in the development community, there is a tendency to use the term loosely, without embedding it in a larger conceptual framework (Perkins and Zimmermann 1995). To understand the multifarious uses of the term "empowerment", one must examine the foundational word "power" in terms of two of its primary meanings in all dictionary definitions: authority (power over) and ability (power to). Power as authority is used to describe what one may "rightly" do within an inter-personal system, whereas power as ability is used to describe what people can (or cannot) do – possession of a power (Wartenberg 1990).

Empowerment means transforming existing power relations in favour of those (women, disadvantaged groups and, more generally, the poor) who faced severe limitations in exercising power and making voluntary choices. Empowerment concerns the transformative use of power, in which a dominant agent also exercises his power in such a way that the subordinate agent learns certain skills that undercut the power differential between

him/her and the dominant agent (Wartenberg 1990). In this sense, the notion of empowerment "is inescapably bound up with the condition of disempowerment¹² and refers to the processes by which those who have been denied the ability to make choices acquire such an ability" (Kabeer 1999).

Although the term empowerment has different meanings in different socio-cultural and political contexts,¹³ it is defined in the broadest sense as the expansion of freedom of choice and action for increasing one's authority and control over the resources and decisions that affect one's life. Since poor people's choices are extremely limited, both by their lack of assets and by their powerlessness to negotiate better terms for themselves with both formal and informal institutions, the empowerment source book defines empowerment.... as the expansion of assets and capabilities of poor people to participate in, negotiate with, influence, control, and hold accountable institutions that affect their lives (World Bank 2002a). This definition¹⁴ encompasses two crucial aspects: 1) the ability to make a purposeful choice and take action in line with this choice (agency) and 2) the ability to transform this agency into an outcome. While assessment of agency relates to specific attributes of the individual or collective actors, the ability to transform action into outcome is a function of the structure of social and political opportunities actors face.¹⁵ Kabeer (2001) defines empowerment as the expansion in people's ability to make strategic life choices in a context where this ability was previously denied to them. This definition makes it possible to distinguish empowerment from other closely related concepts: the idea of process, or change from a condition of disempowerment, and that of human agency and choice.¹⁶

There are many possible definitions of empowerment, including rights-based definitions. Box 1 provides several definitions of empowerment from various perspectives. Most definitions focus on issues of improv-

ing individual and collective skills to gain power and to have control over decisions and resources that determine the quality of one's life while, at the same time, taking into account structural inequalities that affect entire groups. Based on some common denominator found in all these definitions, the following working definition of empowerment has been used for operational purposes in the present Nepal Human Development Report 2004. Empowerment builds people's assets and capacity to gain understanding and control over personal, social, economic and political forces to act individually as well as collectively to make choices about the way they want to be and do things in their best interest to improve their life situation (UNDP 2003b). This definition captures the spirit of human development, which is defined as "creating an environment in which people can develop their full potential and lead productive, creative lives in accord with their needs and interests.... to be able to participate in the life of the community." Only if people can enhance their capabilities and their assets/resources in various forms can they exercise real freedom of choice and action in such a way as to improve their lives in terms that they themselves value. Empowerment is seen as a means of dealing with structurally unequal power relations in legitimately defined ways. In this core sense, empowerment is not just a state of affairs but a continuous and a cumulative process at different levels (individual, community or even beyond) and in different degrees. Box 2 provides some key concepts central to understanding the term.

The framework for measuring empowerment *Dimensions of empowerment*

The existing literature shows varied dimensions of empowerment.¹⁷ Allowing for some overlap, empowerment can occur in economic, socio-cultural, political, legal, interpersonal and psychological dimensions.¹⁸ For operational purposes, it becomes possible to group them further into three broad dimensions namely socio-cultural, eco-

Empowerment is the expansion of assets and capabilities of poor people to participate in, negotiate with, influence, control, and hold accountable institutions that affect their lives (World Bank 2002a).

Empowerment is about the creation of political, legal, socio-cultural and economic environment that would facilitate, encourage and enable the powerless (i.e., the poor) to influence policies, decisions, actions on their behalf (Sharma 2003).

Empowerment is about full participation of people in the decisions and processes that shape their lives. It is viewed in the context of policies and programmes designed to strengthen people's capacity to respond to their needs and priorities and civil society organizations are viewed as mediators or catalytic agents for people's empowerment and focus on strengthening these mediating structures (UNDP 1998).

Empowerment should lead to the liberation of both men and women where each can become whole beings irrespective of gender and collectively use their potential to construct a more humane society for all (Akhtar 1992).

Empowerment is the process of gaining power, both control over external resources, and growth in inner self-confidence and capability (Sen 1997).

Empowerment is the process of awareness and capacity-building leading to greater decision-making power and control, and to transformative action (Marilee 1995).

Empowerment is the process of challenging existing power relations and of gaining greater control over the sources of power (Batliwala 1994).

Empowerment is about freedom to choose and achieve different outcomes (Sen 1999).

Empowerment can be loosely defined as a process through which previously disempowered people increase their access to knowledge, resources, decision-making power, and

raise their awareness of participation in their communities and their ability to increase their control over their own environment (Johnson 1999).

Access to productive resources and the capacity to participate in decisions that affect the least privileged (IFAD, 1995).

Access to resources, awareness of the causes of inequality, capacity to direct one's own interest, capacity to take control and action to overcome obstacles to reducing structural inequality (UNICEF 2001).

The development of the ability and capacity to cope constructively with the forces that undermine and hinder coping; the achievement of some reasonable control over one's destiny (Pinderhughes 1983).

Empowerment is dependent on two concepts: a) an individual or group's ability to utilize power to solve problems, gain access to institutions or organizations that are serving them, and nurture; and b) equity focusing on the issue of whether they are getting their fair share of resources (Biegel 1984).

An extensively political - as well as psycho-social - conception requiring a distinction between empowerment as a development of empowering skills and empowerment as attainment of participatory competence (Keiffer 1984).

True empowerment is not a condition which can be bestowed by one group on another but is, rather, an ongoing process by which the disempowered seek to fulfil their own needs and preserve their own rights (Swift and Levin 1987).

The process by which people, organizations, or groups who are powerless a) become aware of the power dynamics at work in their life context, b) develop the skills and capacity for gaining some reasonable control over their lives, c) exercise this control without infringing upon the rights of others, and (d) support the empowerment of others in their community (McWhirter 1991).

Empower is used in a legal context meaning "to invest with authority, authorize" (HMC 2000).

economic and political (including legal). Clearly, each of these dimensions is very broad, containing a range of sub-domains within which people may be empowered. Refer to chapter 1 of this report for the definition of these social, economic and political dimensions of empowerment.

Social empowerment encompasses both human and social capabilities. Human capabilities include such basic elements of the quality of life as education, skills,

health, access to safe water and sanitation, information and communication.¹⁹ Social capabilities, on the other hand, refer in particular to social status, dignity, cultural expression, and sense of belonging and solidarity in society and participation in social organizations. Individual human capabilities, when combined with social capabilities through the network, enables collective action to enhance or expand both individual and collective assets and capabilities (social capital),

Resources, agency and achievement or outcome as the three most common definitional elements of empowerment²⁰ can be taken as the central concept in Sen's characterization of commodities, agency/process and achieved functionings/capability. Resources or commodities form the enabling conditions under which choices are made; agency is at the heart of the process through which choices are made, and achievements are the outcomes of choices (Kabeer 2001) and are best treated as outcomes of empowerment. The importance of agency emerges from the bottom-up approaches towards development emphasising the importance of participation and "social inclusion".²¹ While this distinction seems clear at the conceptual level, it is not always easy to completely separate the three elements in developing empowerment indicators.²²

Empowerment is a cumulative dynamic process and outcome operating at different levels. Empowerment is not just a process; it is also about reaching desirable outcomes/goals - the substantive empowerment, which encompasses both inter-personal empowerment (individual capacities, self-esteem and self-efficacy) and instrumental empowerment (capabilities such as knowledge and skills) to achieve collective socio-political goals (Rich et al 1995). As a process, it involves building people's capacity through mobilising and organizing them to channel their collective skills, resources and energies to understand and combat the cause of poverty. As an outcome, it involves people coming together to bring structural transformation of the political, economic, social and cultural conditions to address the causes of their poverty. Sustainability is the common thread running between the two. Outcome without sufficient attention to process can lead to unsustainability. Empowerment operates at different levels. At the individual level, people may experience a more immediate psychological empowerment such as increase in self-respect, esteem, or confidence, which often evolve from collective action (Labonte 1998). At the community level, empowerment allows individuals and groups to organize and mobilize themselves to achieve commonly defined goals. Community empowerment occurs only when both individuals and institutions are empowered to achieve commonly defined outcomes or goals. Empowerment is also context-specific, as empowerment in one context often have different meanings elsewhere.²³

Empowerment and social inclusions are closely related but separate concepts. Empowerment is about the enhancement of assets and capabilities of diverse individuals and groups to engage, influence and hold accountable institutions, which affect them. Social inclusion, on the other hand, is about the removal of institutional barriers and the enhancement of incentives to increase the access of diverse individuals and groups to assets and development opportunities (Bennett 2002). While the empowerment process operates "from below" and involves agency, as exercised by individuals and groups, social inclusion requires systemic change (initiated from above) that is necessary to sustain empowerment over time (Narayan 2002). It is through the process of social inclusion that the "rules of the game" are modified and institutions transformed so that economic growth is widely shared (Malhotra et al 2002).

Women's empowerment encompasses some additional unique elements: Women are not only a crosscutting category of individuals that overlap with disempowered/disadvantaged and marginalized subsets of society (ethnic minorities such as *Dalits*, indigenous and disabled people), they also face household and inter- and intra-familial relations as source of their disempowerment in a way that is not applicable for other disadvantaged groups (Malhotra et al 2002). Gender equality and gender equity are separate, but closely related concepts. Gender equality implies equivalence in life outcomes for women and men, recognizing their different needs and interests, and requiring a redistribution of power and resources. Gender equity recognizes that women and men have different needs, preferences, and interests and that equality of outcomes may necessitate different treatment of men and women.

Social mobilization as an important dimension of capacity-building is primarily a mechanism of empowerment: Capacity-building is a necessary but not sufficient condition for empowerment. While capacity-building refers to knowledge transfers to individuals or groups in order to enable or empower them to carry out certain activities, empowerment increases the relative power and ability of people, particularly the disadvantaged groups, in their socio-political environment. Empowerment in this sense is thus an outcome of both the capacity building of the disadvantaged people and a reform of oppressing rules and practice.

Empowerment as a strategy for conflict transformation: Empowerment has a revolutionary potential, as it seeks to promote substantial transformation of existing unequal power structures. As such, it is a powerful strategy for transforming conflict for a constructive outcome. Empowerment in this sense means that a party is empowered by gaining new awareness and understanding of its goals, options, skills, resources and decision-making, which make it possible for them to be able to utilize these new insights in mediation and negotiations. Social conflict leads to transformation - for better or for worse. Conflicts can be better transformed into constructive outcomes when people are empowered socially economically and politically. Empowerment can also be a negative force for transforming the dispute into violent conflict if there is a mismatch between social, economic and political empowerment of the people.

Empowerment efforts are seen to be successful when four key elements such as access to information, inclusion/participation, accountability and Local Organizational Capacity (LOC) are in place. These mutually reinforcing elements²⁴ can be successfully applied to four critical development objectives: ensuring the provision of basic services, improving local and national governance, improving access to markets and to justice.²⁵ Making state institutions more responsive to people (good governance), removal of social barriers/discrimination and building assets and capabilities including organizational capability (social capital) are mutually reinforcing pillars/aspects of the empowerment approach to poverty reduction. Good governance,²⁶ through state reforms, creates an inclusive participatory environment that helps to remove barriers and promotes the build-up of assets as well as organizational capabilities of the poor, thereby strengthening the demand side of empowerment and vice versa.²⁷

thereby enhancing social empowerment. Economic empowerment concerns expanding economic capabilities to improve their access to productive assets (both physical and financial), as well as access to economic opportunities (employment, market and production technology). Experience reveals that poor people are often excluded from equal access to economic opportunities because of market regulations, because they lack information, connections for credit and organizations and because of discrimination (World Bank 2002a). Empowerment strategies that are supportive in overcoming many of these barriers can help enhance the assets and economic capabilities critical for economic empowerment. Political empowerment cannot be seen as the power to vote alone, but also the power of voice and of collective action (Friedmann 1992). It is about the expansion of political capabilities/entitlement associated with democratic governance – encompassing opportunities for political dialogue, dissent and critique as well as voting rights and participatory selection of legislators and executives.²⁸ Political empowerment also encompasses legal empowerment, which is defined as the process of acquiring critical awareness about rights and the law, the ability to assert rights, and the capacity to mobilize for change (Schuler and Kadirgamar-Rajasingham 1992).

Empowerment in one dimension can play a catalytic role in bringing about change in other dimensions depending on the context and stage of development. The expansion of human knowledge and capabilities, for instance, has an indirect influence on economic and political empowerment. However, evidence shows that empowerment promoting development interventions within a particular dimension does not necessarily lead to empowerment in other dimensions (Malhotra and Mather 1997; Kishor 1995 and 2000; Hashemi et al 1996; Beegle et al 1998). This

means that an integrated approach is required to address sustainable empowerment, a situation where people are empowered socially, economically and politically. A very low level of empowerment on all these three fronts (multiple disempowerment) and the level of significant mismatch between these are two extreme cases requiring intervention. For instance, a high level of social and political empowerment amidst the very low economic empowerment makes empowerment unsustainable, leading to disenchantment and hence conflict in various forms. Hence promoting sustainable empowerment (see area A in Venn diagram shown in chapter I) requires an integrated empowerment-led strategy for poverty reduction and human development.

The capability approach to measuring empowerment

Sen's capability approach provides the basic foundation of the concept of human development and as such is relevant as a framework for conceptualizing and analyzing empowerment.²⁹ This approach involves concentration on freedoms to achieve in general and the capabilities to function in particular (Sen 1993). Functionings and capabilities, the major constituents of the capability approach, are closely related but distinct concepts. Functionings are achievements more directly related to living conditions, whereas capabilities are notions of freedom – real opportunities people have regarding the life they may lead" (Sen 1987). A person's achieved wellbeing (functionings) varies from elementary things (as being literate, adequately nourished, being in good health, avoidance of escapable mortality and premature death) to more complex achievements (as being happy, having self-respect and taking part in social life without shame) (Sen 1997). Capability is a combination of functionings that a person can achieve, reflecting the freedom to lead one type of life over another (Sen 1992). The transition from

primary goods to functionings, functionings to capabilities and capabilities back to primary good and functioning is governed by the availability of five instrumental freedoms (political freedom, economic facilities, social opportunities, transparency guarantee and protective security) and their interaction with institutions (formal and informal).³⁰

From this perspective, the functionings that a person has achieved are not sufficient to determine her/his overall wellbeing. Instead, it is the functionings that a person could have achieved, given the opportunity to choose or exercise freedom of choice.³¹ The capability approach thus imparts considerable value to freedom of choice or opportunities and as such, it belongs to the class of opportunity-based theories³² instead of outcome-based theories. Given that functionings are objectively observable, whereas the person's capability (potential being and doing) are unobservable facts,³³ most empirical applications are often limited to measuring outcomes through achieved functionings (outcome-based evaluation) rather than measuring opportunities through capabilities.³⁴ One of the best illustrations of the application of the capability approach³⁵ is the concept of human development, which is about enlarging people's choice by enhancing their functionings and capabilities. The human development indices constructed by UNDP on the foundation of the capability approach have clearly established the fact that economic growth and income can be a poor predictor of capabilities.

The capability approach is similar to the notion of empowerment, comprising three interrelated components: resources, which form the enabling conditions under which choices are made (similar to the notion of primary good or resource in the capability approach); agency, which is at the heart of the process through which choices are made (similar to the

conversion factors influenced by instrumental freedoms); and achievements, which are the outcomes of choices (achieved functionings/capabilities).

If human development is about enlarging people's choices by enhancing their functionings and capabilities, poverty or disempowerment means that opportunities and choices most basic to human development are denied. Considering that poverty is the reflection of disempowerment, capabilities and functionings may be the most appropriate focal variables for measuring empowerment. If poverty includes all dimensions of capability deprivations, empowerment is the expansion of assets³⁶ and capabilities at the individual level (such as health, education, and housing) and at the collective level made possible through freedom of choice and action. For our present context, assets and capabilities can be broadly grouped into social (including human), economic and political components³⁷ to provide the conceptual foundation for developing indicators underlying the three broad dimensions of empowerment.

- **Human and social capabilities.** While human capabilities include good health, education, and other life-enhancing skills, social capabilities include social status, dignity and other cultural expressions conveying a sense of belonging, leadership, trust, identity and the capacity to organize and participate in social organizations. Both human and social capabilities can be combined to address the social dimension of empowerment. Addressing the social dimension of empowerment thus requires expanding both human and social capabilities and entitlements through social opportunities to address social exclusion and deprivation.
- **Economic capabilities** include income and material assets (physical and financial resources). Addressing the economic dimension of empowerment requires enhancing economic entitle-

ments and capabilities through the expansion of economic facilities/infrastructure and promoting equitable access to economic opportunities.

- **Political capabilities** include freedom, power, voice and influence over public policies. It refers to the capacity to represent individuals or groups, access information, form associations, and participate in the political life of a community or country. The politically weak have few entitlements and cannot obtain public resources needed to lift them out of poverty. Addressing the political dimensions of empowerment thus requires political and institutional reforms.

All these capabilities are interrelated. Vulnerability and social exclusion hamper human and political capabilities resulting in reduced income and assets (economic capabilities) and vice-versa. The framework encompasses focusing the empowerment interventions on the entire spectrum of the most important dimensions of capability deprivation and their causal interrelations. The framework delineating dimensions of empowerment offers potential roadmaps for operationalizing and measuring empowerment.

Indicators of empowerment

The human empowerment index has been constructed for the first time using the available quantitative indicators at a more disaggregated level of spatial unit (the district). The choice of indicators for computing empowerment index has been largely guided by reliance on availability of relevant quantitative indicators at the district level.³⁸ Most subjective/qualitative variables crucial for measuring empowerment are not available at the district level. Nor is it conceptually possible to link them to available objective indicators to arrive at the composite index of empowerment. Even the existing databases are not sufficiently rich to provide a useful set of objective indicators especially to measure the political empowerment including

the degree of participation in social organization. As such, the indicators selected for use are neither exhaustive nor comprehensive enough to measure all the crucial attributes of varied dimensions of empowerment.

Altogether, 15 objective indicators have been selected for capturing the three dimensions of empowerment and bringing them together into a composite Index. There are 8 indicators used to measure social empowerment, 5 indicators to measure economic empowerment and 2 indicators to measure political empowerment. The details on the measurement of these indicators, their data sources and the computation procedures for empowerment indices are elaborated at length in the technical note below. A brief highlighting of the definition and relevance of these indicators underlying social, economic and political empowerment in light of the capability framework are in order.

Social empowerment indicators

Social empowerment is measured by a set of 8 indicators reflecting education, health, information and participation in social organizations.

Educational attainment: Knowledge is a critical human choice in its own right. It is also valued as a constituent of the human capabilities to do other things (contribute to productivity, self-respect and relative power or empowerment) and is encapsulated as instrumental empowerment (Rich et al 1995). Literacy figures are only a crude reflection of access to education, particularly to the quality of education so necessary for creative and productive life in modern society. However, considering that literacy is a person's first step in learning and knowledge building, literacy figures are essential in any measurement of human capabilities and hence social empowerment.

Two sets of indicators used to capture the educational attainment as in the case of

HDI are adult literacy³⁹ and mean years of schooling. Although, the combined primary, secondary, and tertiary gross enrolment ratio (or flow variable) is another variable used to measure the educational attainment index in HDI, the standard practice in the past Nepal Human Development Report has been to use mean years of schooling instead of combined gross enrolment ratio in the absence of information on tertiary gross enrolment.⁴⁰ Hence, mean years of schooling has been included as another indicator to capture the overall intensity of knowledge and capabilities in education. It captures the educational quality of the literate adult and the educational attainment of young people. Estimate of both the adult literacy and mean years of schooling is based on the 2001 population census data.

Health status: As with knowledge, the health of a country's citizens is another critical human choice in its own right and is also valued as a constituent of human capabilities to do other things. Although life expectancy at birth is certainly the most comprehensive indicator of the health, it has been considered desirable to proximate the determinants of health outcome (life expectancy) by three sets of indicators that are more meaningful and sensitive to capture the short term policy changes than long-term stock variables, such as life expectancy. These three indicators include:

- **Infant mortality** is defined as the number of deaths of infants under one year of age per thousand live births in the year 2001 following the WHO standard. Unlike life expectancy, it is more sensitive in the short run to policy changes for assessing the progress towards health outcome and is also very strongly associated with life expectancy.
- **Child undernutrition** defined as percentage of children aged 1-5 years who are malnourished in terms of stunting (low height for age) is another important indicator included for measuring

health outcome.⁴¹ Undernourishment in children impairs their working/earning capacity throughout their earning life cycle. Among the three most widely used anthropometric indicators (body mass index) that interfere with their health and genetic potential for growth, the prevalence of undernutrition in terms of stunting remains high (54%) in Nepal compared to underweight (47%) and wasting (7%). In a poverty-stricken society such as Nepal, where food is of tremendous importance in the budget, a poor person is more likely to be undernourished than his/her richer counterpart. This implies that an increase in purchasing power is needed to raise nutritional status, especially if the nutritional level is low to begin with.⁴² These two health indicators are expected to capture the health outcome of infants and young children, the most vulnerable in a society.⁴³ Any policy that is targeted to address these health indicators is expected to have desirable impact on longevity as represented by life expectancy variable.

- **Access to sanitation:** Ensuring access to safe drinking water and sanitation facilities remains an urgent human need for improving health status or better health outcomes. The lack of access to these facilities reflects basic human capability deprivation and is also considered key indicators of HPI.⁴⁴ However, considering the close association between these two variables and, more importantly, the need to capture the change in human behaviour towards better health outcome, the inclusion of access to sanitation is understandable. The access to sanitation is proximate by the percentage of population with at least adequate excreta-disposal facilities (toilets) using the 2001 population census data. The role of sanitation is crucial for understanding the linkage between various health outcomes. While the role of clean water in reducing disease is one aspect of a water supply as a

social investment, the installation of toilets reflect a change in behaviour to effectively prevent human, animal, and insect contact with excreta and hence reducing the excreta-borne disease cycle.

Information and communication: The right to and relevant and timely access to a variety of information and communication constitute a critical element of empowerment,⁴⁵ as it enhances knowledge and power and hence creates enabling condition for good governance – transparency, accountability and legitimacy. An informed citizen would be in a better position to understand that he/she has to take advantage of opportunities, have access to services provided by the state and, as stakeholders in the development process, make development actors accountable to them. Conceptually, access to information and justice can be proximate by two sets of indicators,⁴⁶ namely a) the state of print, audio and visual and communication media (newspaper, radio, TV, telephone) in terms of their outreach and b) the degree of openness in access to information and justice (right to information Act, mechanism for social audit, and open access to land records).⁴⁷ Since the latter set of indicators – reflecting the existence of an enabling legal environment for empowerment – is difficult to include in the absence of any objective indicators at a more disaggregated level, the extent of mass information and communication media, the following two indicators are used as proxies:

- Proportion of households having access to radios
- Proportion of households having access to telephone service

The availability of radio, television and telephone indicates that people have alternative choices about how to spend their time and money to lead a life that they value. While radio broadcasting has indeed a wider coverage than other media because of its low cost and effectiveness even for the illiterate, poverty and physical isolation still exclude many people from using other

basic forms of ICT, such as print media and television.⁴⁸ While the lack of disaggregated and reliable data precludes the inclusion of print media, television is not included because of its high correlation with telephone and radio. The availability of telephone and/or telephone service is considered an effective communications infrastructure for a country to rise beyond a moderate level of development.⁴⁹

Participation in local organizations: The participation of people in social organizations is considered one of the critical elements of social empowerment. Organized communities are more likely to have their voices heard and their demands met than unorganized communities. It is only when groups connect with each other across communities and form networks or associations (federations) that they begin to influence government decision-making and gain collective bargaining power. Social capital formation describes the improvement of the ability of a community to make decisions and enlarge their choices and capabilities.⁵⁰ Experience in Nepal and elsewhere in South Asia provides the common lesson that building social capital⁵¹ through people's organizations and their networks and associations (bridging capital) enables them to gain collective strength and bargaining power to overcome the forces that are against them. (SAARC 1992) This strength goes in two directions: on the one hand, it makes it possible for groups of the poor to solve problems by themselves (self-help approach), and on the other, it makes it possible – at least for larger groups of people – to start claiming their rights from different governmental and other institutions, i.e., social empowerment.⁵²

The lack of information does not permit capturing the extent to which existing social organizations at the district level have enhanced social capabilities of organized communities to take collective actions. For this reason, the proportion of household

members participating in various social organizations (the outreach of social organization) has been included as a proxy for capturing social capital or capabilities of organized community at the district level. The information on social mobilization outreach has been obtained from a more recent social mobilization mapping study for 44 districts supplemented by additional information compiled from different secondary sources (ADB, rural development banks and other NGO sponsored socially mobilized group membership).⁵³

Economic empowerment indicators

Economic empowerment is measured by five sets of indicators reflecting access to land and its distribution, access to credit, access to electricity, employment and per capita income.

Access to and control over productive assets: Access to productive resources, principally land, is a key requirement for any escape from poverty, hunger and disempowerment. In the predominantly agrarian economy of Nepal, where land ownership and its holding continue to be treated solely as a source of economic/social power and dignity, the degree of inequality in the distribution of land holding as measured by the Gini coefficient can perhaps be the most powerful indicator to capture such unequal control over economic resources. For this, the extent of inequality in the distribution of land holding for each district has been estimated using the recent population census data and the average size of operational land holding is adjusted by the estimated land inequality index to arrive at the inequality adjusted or Gini corrected average size of landholding.⁵⁴ The Gini-corrected average size of holding is included as a proxy for the land-based barriers to economic empowerment. As with land, access to housing is extremely valuable for many reasons, but because of the strong

correlation between homeless and landless households, this is excluded from the analysis. If land ownership is fairly equally distributed, the benefit of economic growth will be reflected in good economic empowerment and hence good human development.

Access to financial resources: In addition to the physical assets such as land, other financial assets – particularly credit – are of the utmost importance to any understanding of the economic empowerment of people, especially the poor. The inclusion of credit as an indicator of economic empowerment can be justified in light of the finding of numerous studies that have confirmed the relevance of micro credit as a critical variable in any effort for social mobilization and hence empowerment. The proportion of households benefiting from institutional credit is an important indicator to reflect the coverage of institutional credit in the country. The national sample census of agriculture conducted by CBS and rural credit survey conducted by NRB are the two national level surveys that provide such information. However, the former survey is fairly old, while the later survey does not cover all the districts of the country. For this reason, an attempt has been made to compile the information from the main formal financial institutions regarding their coverage at the district level. The formal financial sector in Nepal consists of ADBN and the two commercial banks (NBL and RRB). Cooperatives financed by ADBN are also part of the formal financial sector. Accounting for some 85% of the formal financial sector, ADBN dominates the rural credit scene in Nepal despite the fact that only 12% of households have access to institutional credit in the country. Information has also been compiled from other financial institutions including those operating under the supervision of the central Bank (e.g., Grammeen bank, Nirdhan, Chhimek, DEPROSC and Swabalamban) and HMG/donor-supported community organizations.

Access to electrification: Expansion of road and electricity networks in the country constitutes key economic infrastructure for empowerment. The role of these infrastructures in the development is widely discussed in the literature. The proportion of households that are connected with electricity has been included as a proxy for the role of enabling economic infrastructure for empowering poor people. Electricity availability creates many avenues for development and empowerment of people. It enables people to start up or expand small-scale economic enterprises for reducing poverty and also creates the opportunity for climbing up the energy ladder. Achieving the MDG of eradicating poverty and ensuring environmental sustainability is therefore largely contingent on the provision of an electricity supply that is adequate and affordable to the rural masses.

Employment: Economic empowerment requires equal access to economic opportunities and their optimal engagement in productive activities. With the persistently high levels of unemployment and underemployment in the country, there is mounting concern over the economic exclusion that follows from limited employment opportunities, a poor labour market information system and discriminatory labour market practice in the country. Such exclusions place unemployed youth, the less-skilled workers with disabilities, ethnic minority groups and indigenous population at special risk – with women facing higher barriers to employment across all these categories. The lack of investment in employable skills and capabilities of the vulnerable groups in the face of globalization, together with the insignificant transformation of Nepal's agriculture, is among the root causes of such exclusion. Underemployment is considered a more serious problem than unemployment in Nepal,⁵⁵ with agriculture being the main reservoir of surplus labour. In the absence of reliable estimates of un-

employment and underemployment, the ratio of labour force employed in non-agricultural employment is used as a proxy for the deprivation in economic inclusion. This variable aims to capture the extent of sectoral shift/transformation in employment away from agricultural jobs (towards non-agricultural wage employment).

Income: As a crucial means to a number of important ends (control over purchasable commodities), income has great significance in any accounting of economic capabilities and hence empowerment of people. Income can reveal in an indirect way (both as proxy and as causal antecedent) the ability of a person to do things that she or he has reason to value (Anand and Sen, 2000).⁵⁶ In theory, higher income is likely to raise both power and welfare, but heterogeneity in other characteristics and household formation can either strengthen or weaken the relationship.⁵⁷ Though there are diminishing returns to income, per capita GDP in PPP\$ is treated as a source of economic power in the same spirit of gender empowerment measure (GEM), rather than adjusting it though taking [log] as in HDI.

Political empowerment indicators

Conceptually, both negative (freedom from arbitrary arrest, exclusion) as well as positive (freedom to vote, participate in political and social life) aspects of political freedom should be captured by focusing on both the formal availability and actual exercise of political freedom by the people. However, there are no unambiguous indicators to measure the extent of democracy and political and civil rights as essential elements of political empowerment. Voter turnout and competitive and fair elections are the only most widely-used objective indicators of democracy and political freedom (UNDP 2002b). Objective indicators often fail to capture all aspects of democratic governance.⁵⁸ Although a number of subjective governance

indicators like the level of democracy, political rights and civil rights are used at the national level (see UNDP 2002b), such indicators cannot be applied at a more disaggregated level within the country.⁵⁹ Second, subjective indicators cannot be conceptually linked to objective indicators in the formulation of the composite index.

Most of the indicators reflecting the attributes of political empowerment are subjective in nature⁶⁰ and therefore open to dispute and biases of perception. While such subjective indicators are possible to form at the national level, using scoring methods, they are not necessarily applicable at the district level, owing to the fact that most of the subjective indicators being measured remain unchanged throughout the country.⁶¹ Voter turnout and the existence of competitive elections are the two most widely used and readily available objective indicators of democracy and political right. Even these, however, are not free of controversy, as they often fail to capture the widespread, substantive participation and accountability of those who hold power – requirements for truly democratic governance.⁶² However, in the absence of any other readily available objective indicators at the district level, the proxies for political empowerment are:

- Voter turnout in the national election 1999;
- The number of candidacy per seat in the VDC assembly election 1997.

The first indicator is intended to capture the extent of participation in political process to exercise, while the second aims at measuring the degree of competition among citizens in local elections. Information on voter turnout in the national election is based on the general election result of 1999 published by the Election Commission. Since the Commission keeps voter information on a constituency basis rather than that of the poll centre, it has not been possible to obtain exact voter

turnout directly for rural and urban population by district. To overcome this problem, the voter turnout in the urban and rural areas have been proxied by the voter turnout in the local election for the position of municipality mayor and VDC chairman respectively. Likewise, the number of candidates standing for different seats in the local assembly has to be derived separately for the rural (VDC assembly) and urban areas (municipality assembly) based on local election data obtained from the Election Commission.

Computing the human empowerment index

This section addresses the measurement issue with regard to the method of normalizing variables, weighting and the aggregation in the construction of composite of human empowerment.

Normalization and scaling: Each variable selected for measuring different dimensions of empowerment is normalized through a process of scaling. The zero to one scoring transformation method used by UNDP to compute HDI has been used to normalize each indicator and then to compute the composite empowerment index. This method has a number of advantages. First, it transforms the values of all indicators from 0 (worst condition) to 1 (best condition) of spatial unit (district in this case) and the value can be computed with respect to desired or observed maximum and minimum values of spatial unit. Second, this method handles the indicators that are directly proportional to the well being (see equation 1 below) and those that are inversely proportional to well being (see equation 2). Third, the normalized values are unitless; the method is therefore quite useful for dealing with different units of indicators. Fourth, as this technique is unweighted, it is best for the research in which giving weight to the individual indicator for the computation of composite index is difficult.

The method involves selecting a maximum and a minimum value for each variable and the difference between the maximum and the minimum value defines the scale. The normalized variable is constructed by the ratio of difference between the observed value and the minimum value (the path covered by the society in the selected variable) to the difference of the maximum value and the minimum value (the total path to be covered by every society in the variable in question).

In those cases where the indicator is directly proportional to empowerment or well being, the normalized value is the difference between the observed or chosen value of one indicator and minimum value of the same indicator as a proportion of the difference of the maximum value and the minimum value. Algebraically, it can be expressed as follows:

$$I_{ij} = \frac{X_{ij} - X_{i(\min)}}{X_{i(\max)} - X_{i(\min)}} \quad (1)$$

Where I_{ij} is the normalized value of i^{th} indicator for j^{th} region (district) in the country, X_{ij} is the observed value of i^{th} indicators for j^{th} district. Whereas $X_{i(\max)}$ and $X_{i(\min)}$ are maximum and minimum values of the same indicators respectively. When X_{ij} takes the maximum value of the indicators, numerators will be the same as the denominators and hence the normalized value of indicators (I_i) becomes 1. Alternatively when X_{ij} becomes minimum, the normalized value becomes zero. In this way, the highest value will be transformed to 1 and the lowest value to zero. Similarly, other values are transformed to the range 0 to 1 without changing the order of the value.

In cases where indicators are inversely proportional to empowerment, the normalized value is the difference between the maximum value of the indicator and the actual value of the same indicator as

proportion of the range of that indicator. Algebraically, it can be expressed as

$$I^*_{ij} = \frac{X_{i(\max)} - X_{ij}}{X_{i(\max)} - X_{i(\min)}} \quad (2)$$

When X_{ij} takes the maximum value of the indicators, numerators becomes zero; hence the normalized value of indicators (I_i) becomes 0. Alternatively, when X_{ij} becomes minimum, the normalized value becomes 1. In this way, the minimum value will be transformed to 1 and the maximum indicator value becomes zero. Other values are also changed in the same way, reversing their original order.

Maxima and minima: The observed minima and maxima of the spatial unit have been used in normalizing the variables. This was also the standard practice followed by UNDP until 1994 in normalizing variables for constructing the HDI. However, fixed maxima and minima were introduced in 1994 based on the trends of the variables, and their probable values over the next 25 years to carry out meaningful inter-temporal comparison and trend analysis of the HDI.⁶³ While such a fixed method is preferable to the observed method of fixing minima and maxima, especially for intertemporal comparison, these is no basis for fixing such a value for these newly introduced empowerment indicators of the spatial unit in the absence of spatially disaggregated time series data on most variables to project their probable values in the next 25 years or so together with the need for consensus among policy-makers to ascertain the maximum path desirable for attainment (goal post). The normalized variable, which is a pure number, shows, for a particular variable, the path covered by a society as a proportion of the path to be covered. Thus, if a society for a particular variable remains at the minimum, the normalized value of the variable will be 0; if it has attained the maximum value, the normalized value will be 1.

Weighting: As with the HDI, all variables considered for measuring empowerment at the district level are given equal weights considering that all the dimensions included in the HEI are equally important and desirable in their own right for building human capabilities. While the absence of any substitution makes the assumption of equal weights defensible, more research is needed to explore substitution possibilities among indicators through modelling, although the treatment of weight is not always free of controversy.⁶⁴

Aggregation and composite index: Once all the variables are normalized with all the necessary adjustments, a simple mean of various domains is taken to first arrive at social, economic and political empowerment indices. A composite index of empowerment is the simple arithmetic mean of these three dimensions of empowerment. The maximum value of the empowerment index is 1 and the minimum value is 0.

$$EI_j = \frac{1}{N} \sum_{i=1}^n I_{ij} \quad (3)$$

Where E_{ij} is the overall empowerment index for j^{th} spatial unit (districts and eco-development regions in this case) and I_{ij} denotes the normalized value of i^{th} sub-indices comprising social, economic and political empowerment for j^{th} spatial unit. N is the number of three sub-indices – those for social, economic and political empowerment. Within social empowerment component, three sub-indices have been computed separately for education, health and information using a simple average of their respective indicators. Likewise, the three sub-indices – those for land, credit and employment-based indicators – have been computed first in order to arrive at the economic empowerment index.

Calculating human empowerment index: illustration

The human empowerment index measures the average achievement in the country by district in three dimensions of empowerment: social, economic and political. Before the HEI itself is calculated, an index needs to be created for each indicator underlying these dimensions. Boxes 1 through 3 illustrate the calculation of social, economic and political empowerment index for Nepal.

Some limitations and scope for refinement

There is considerable scope for refining the HEI in a number of ways. First, there is a need for further research to explore the threshold level for certain indicators beyond which an individual or community may feel empowered in each sphere of life. In some cases, a very low level of disempowerment for a single indicator – no matter how high or empowered a region is relative to other indicators – may be enough to dominate all other considerations. Second, it is necessary to establish a more disaggregated database for reflecting the social, economic and political status of those most disempowered. Currently, as with HDI, HEI conceals many disparities in levels of empowerment within the district, both in terms of lower spatial units (e.g. VDCs) and social and economic groups (gender, caste/ethnicity etc). The computation of more disaggregated HEI in terms of these groups could help us understand the relative position of these groups within the district. Third, there is a need to fix the goal post for all indicators in order to make the HEI comparable over time. This requires not only enough national-level time series data for most new indicators not reflected in the HDI, but also a consensus among policy-makers to ascertain the maximum path desirable for attainment at the national level. In the absence of such information, the observed minimum

BOX 3 Illustration of social empowerment index calculation

Social empowerment is measured by four key domains, such as participation, information, health and education, with each domain consisting of a set of indicators. Therefore, four sub indices have been computed separately for education, health information and participation, using a simple average of their respective indicators as illustrated below.

Calculating the education index

The education index measures the relative achievement of different districts in terms of two education-related variables: adult literacy and mean years of schooling. For Nepal, with an adult literacy rate of 48.6 and mean years of schooling of 2.75, the education index works out to be 0.429 as illustrated below.

XE1	Adult literacy (15+)	=	48.6	
XE2	Mean years of schooling	=	2.75	
XE1*	Adult literacy index	=	$(48.6 - 19.6)/(73.5 - 19.6)$	= 0.538
XE2*	Mean years of schooling index	=	$(2.75 - 1.25)/(5.94 - 1.25)$	= 0.320
XEI	Education index = (XE1* + XE2*)/2	=	$(0.538 + 0.32)/2$	= 0.429

Calculating the health index

The health index measures the relative achievement of different districts in terms of three health-related variables. These include separate indices for infant mortality, malnourished children and access to sanitation (toilets). For Nepal, with an infant mortality rate of 68.51 per 1000 live birth in 2001, child undernutrition (stunting) of 50.51% etc, the health index works out to be 0.563 as illustrated below.

XH1	Infant mortality (number/1000 live birth)	=	68.51	
XH2	Malnourished children under 5 (%)	=	50.51	
XH3	Population with access to sanitation (%)	=	39.22	
XH1*	Infant mortality index	=	$(173.83 - 68.51)/(173.83 - 24.01)$	= 0.703
XH2*	Malnourished children under 5 index	=	$(90.00 - 50.51)/(90.00 - 26.67)$	= 0.623
XH3*	Population with access to sanitation index (%)	=	$(39.22 - 9.04)/(92.30 - 9.04)$	= 0.362
XHI	Health index	=	$(XH1* + XH2* + XH3*)/3$	= 0.563

Calculating the information and communication index

The information and communication outreach index measures the relative achievement of different districts in terms of two IC technology-related variables: radio and telephone. For Nepal, with the population outreach of these variables, the IC index works out at 0.297, as illustrated below.

XIC1	Household population with radio	=	52.59	
XIC2	Household population with telephone	=	3.91	
XIC1*	Radio ownership index	=	$(52.59 - 30.07)/(80.94 - 30.07)$	= 0.443
XIC2*	Access to telephone index	=	$(3.91 - 0.0)/(25.90 - 0.0)$	= 0.151
XICI	Information and communication index	=	$(0.443 + 0.151)/2$	= 0.297

Calculating the social mobilization outreach

For Nepal, with the social mobilization outreach of 28.74 % in 2001, the SM outreach index works out at 0.336, as illustrated below.

XSO	Household membership in social organization	=	28.74	
XSOI	Social mobilization outreach Index	=	$(28.74 - 0.0)/(85.54 - 0.0)$	= 0.336

Calculating social empowerment index

The social empowerment index is the simple arithmetic mean of the above three sub-indices: education, health and information and communication. With the above estimated values of these indices for Nepal, the composite index of social empowerment for Nepal works out at 0.406, as illustrated below.

SEI	Social empowerment = (XEI + XHI + XICI + XSOI)/4	=	$(0.429 + 0.563 + 0.297 + 0.336)/4$	= 0.406
-----	--	---	-------------------------------------	---------

and maximum values of indicators across the regions/districts have to be utilized for normalizing the indicators; this was the method used also by UNDP initially (until 1994) in normalizing HDI indicators. The fourth possible refinement is to explore the possibility of assigning weights for each indicator, al-

though the treatment of weight is not always free of controversy. While the assumption of no substitution among some indicators that are important in their own right makes the equal weighting defensible, more research is needed to explore the substitution possibilities among indicators through modelling.

BOX 4 Illustration of economic empowerment index calculation

Economic empowerment is measured by five sets of variables, namely access to productive resources (land and its distribution), electrification, credit, employment structure and per capita income.

Calculating the land based index

XL2	Gini-corrected average land holding	=	0.337	
XLDI	Land accessibility index	=	$(0.337 - 0.072)/(0.564 - 0.072) =$	0.540

XEL	Electrified households %	=	31.08	
XELI	Electrification index	=	$(31.08 - 0.58)/(96.81 - 0.58) =$	0.317

Calculating the credit index

XC1	Households with access to institutional credit	=	19.85	
XCI	Access to institutional credit index	=	$(19.85 - 0.0)/(68.68 - 0) =$	0.289

Calculating the employment index

XN1	Labour force employed in non-agricultural sector	=	31.33	
XNI	Non-agricultural sector job index	=	$(31.33 - 9.99)/(79.01 - 9.99) =$	0.309

Calculating the income index

XIN	Per capita GDP at ppp \$ 2001	=	1310	
XINI	Income index	=	$(1310 - 679)/(3438 - 679) =$	0.229

Calculating economic empowerment index

The economic empowerment index is the simple arithmetic mean of the above five sub-indices, namely land base index electrification index, credit index, employment index and income index. With the above estimated values of these indices for Nepal, the composite index of economic empowerment works out at 0.337, as illustrated below.

EEI	Economic empowerment index	=	$(XLDI + XELI + XCI + XNI + XINI)/5$	
		=	$(0.540 + 0.317 + 0.289 + 0.309 + 0.229)/5 =$	0.337

BOX 5 Illustration of political empowerment index calculation

The political empowerment index measures the relative achievement of different districts in terms of two indicators, namely voters turnout, degree of competition in local election. For Nepal, the political empowerment index works out to be 0.646 as illustrated below.

XP1	Voter turnout in the last national election %	=	66.05	
XP2	Contested candidates per seat in local election	=	2.05	
XP1*	Voters turnout index	=	$(66.05 - 31.81)/(80.84 - 31.8) =$	0.698
XP2*	Degree of competition (candidates per seat) index	=	$(2.05 - 0.99)/(2.77 - 0.99) =$	0.594
PEI	Political empowerment index	=	$(0.698 + 0.594)/2 =$	0.646

Calculating overall human empowerment index

The overall composite index of empowerment is computed using simple arithmetic mean of social empowerment index (SEM), economic empowerment index (EEM) and political empowerment Index (PEM) as illustrated below for Nepal.

HEI	Overall empowerment (SEI + EEI + PEI)/3	=	$(0.406 + 0.337 + 0.646)/3 =$	0.463
-----	---	---	-------------------------------	-------

In summary, as a much broader concept, human empowerment includes many aspects – both subjective perceptions and objective realities of life – that have not been possible to capture fully – or that are not being measured. Political freedom, participation in decision-making, personal security, and threats to sustainability (environ-

ment) are some critical aspects of human empowerment that are difficult to measure. The concept of political freedom as a touchstone of political empowerment is much larger than what has been measured in this Report through the use of the two most commonly used objective indicators (the voter turnout and the degree of competi-

tion among candidates in local elections), which are often ambiguous in nature. There is a need to establish disaggregated data to meaningfully capture the true level of political empowerment. Conceptually, both negative (freedom from arbitrary arrest, exclusion) as well as positive (freedom to vote, participate in political and social life) aspects of political freedom should be captured by focusing on both the formal availability of political freedom and its actual exercise by the people. However, the lack of such information at a more disaggregated level, together with the difficulties of scoring and combining

subjective indicators into a composite index of empowerment, is a serious challenge that has deterred researchers. Subjective ratings are always open to obvious contestation about the knowledge and bias of the raters. Nor can such a rating be combined with a real number, as they do not meet the criteria of reliability and validity. While these problems deterred our current efforts to include other pertinent governance-related subjective indicators of political empowerment, constant research in this area will certainly provide scope for capturing additional aspects of political empowerment in future.

ENDNOTES

- 1 Empowerment is an integral component of any strategy of development and poverty reduction, a message communicated by the World Bank study *Voices of the Poor*, which drew on surveys of more than 60,000 poor people in more than 60 countries (see Narayan D. et al 2000a).
- 2 see UNDP 1999.
- 3 These include human freedom, the opportunity to be productive and guarantees of enjoying self respect, participation and security—all essential ingredients to people’s empowerment. (We thank Selim Jahan for this and other points made in a personal communication.)
- 4 The manner in which GDP per capita is adjusted, using logarithmic functions among many other possible functions, is often argued to have reduced its importance in the index. Such an adjustment of GDP per capita in HDI does not permit capturing the environment-income nexus, particularly since environmental quality begins to increase once a country reaches GDP per capita of US\$ 10,000 (1,985 dollars), a level of income well beyond the point at which the UNDP assumes that growth in GDP per capita contributes minimally to human development (Grossman and Krueger 1995: 370-71).
- 5 Further, it should also be viewed in the context of other criteria, namely those of sufficient attractiveness to policy-makers and pluralism, rather than mono-centricity (Jahan 2003).
- 6 GDI was introduced to adjust HDI for gender inequality. HPI was introduced to measure shortfalls in human development from a deprivation perspective, but fails to account for deprivation in other basic capabilities and choices of human lives (social inclusion, political freedom and opportunities to enjoy self respect and guaranteed human right – a notion of disempowerment). Likewise, the GEM shed lights on gender inequality in opportunities in economic and political participation and decision-making. As with HDI, all these composite indices are constructed on the same philosophy of simplicity and universality in the choice of indicators (HDRO/UNDP 2003).
- 7 For example, the stock variables like life expectancy and adult literacy cannot reflect short-term progress, whereas a flow variable like net primary enrolment figures can do so. This has led to the Human Development Report Office (HDRO), in collaboration with a number of UNDP Country Offices, to devise short-term progress indicators that are more sensitive to policy changes and can also monitor short-term progress (Jahan 1999, 2000 and 2003).
- 8 The absence of any reliable data on the issue of access to health services has forced the estimate of HPI-1 to rely on the other two variables included in economic provisioning. As noted in the text above, the non-availability of data has restricted the estimates of GDI, GEM and HPI-1 to less than 100 countries.
- 9 For example, the income component of HDI (justified in terms of command over resources needed for a decent living) is supposed to reflect elementary capabilities for which adequate quantitative data are not available on a comparable cross-country basis. However, there is scope for capturing such elementary capabilities in the preparation of national human development report, depending on the availability of such data.
- 10 Both the GDI and GEM have established that greater gender equality in building human capabilities or providing opportunities to women does not depend on income level or stage of development (Anand and Sen 1995).
- 11 The term “empowerment” originated in the social movements of the 1960s and 1970s. Prominent examples are the Black Power movement in the United State and the emancipation movement of Paulo Freire

- in Latin America. During the Third World Conference on Women, held in 1985 in Nairobi, the women's network Development Alternatives for a New Era (DAWN) introduced the term into the discourse on development and women's roles in politics (Sen and Grown, 1987). It became a watchword among feminist writers (Friedmann, 1994: 115) and has also become a term of much political rhetoric (Chamberlain 1997).
- 12 Poverty and disempowerment are closely associated because an insufficiency of the means for meeting one's basic needs restricts one's ability to make meaningful strategic life choices. It also brings to the fore the fact that implicit in the proper use of the term "empowerment" is the notion that someone is giving power and skill to someone who did not have it previously.
 - 13 An exploration of local terms associated with empowerment around the world include self-strength, control, self-power, self-reliance, own choice, life of dignity in accordance with one's values, capable of fighting for one's rights, independence, own decision making, being free, awakening, and capability – to mention only a few (World Bank 2002a).
 - 14 It is also argued that this definition is somewhat narrow and specific rather than what could be understood from the use of the term power in normal parlance, as it associates empowerment with poor people and thus implies that non-poor people have adequate power and need not be empowered; it also limits the range of action to those that involve an interaction with institutions. This implication was partially refuted in a recent empirical study for Russia, which found that many people who do not see themselves as poor nevertheless feel that they have little power. (Lokshin and Ravallion 2002).
 - 15 Actors may be ineffective because they lack agency to transform their claims into outcomes, because they are weaker than other autonomous actors, and because the context in which they operate is inresponsive to their action, etc. Agency, on the other hand, depends on the economic and educational resources of actors, on their cognitive resources and on their organizational capacities and their integration into social networks (Smulovitz 2003).
 - 16 Strategic life choices are meant to describe decisions that influence a person's life trajectory and subsequent ability to exercise autonomy and make choices.
 - 17 See Malhotra et al 2002; Friedmann 1992, 1996; CIDA 1996; Stromquist 1995.
 - 18 Psychological empowerment concerns the individual's sense of potency, which results largely from successful action in the social and political domain (Friedmann 1992 and 1996). Perceived competencies, self-confidence and self-determination are some variables critical for measuring psychological empowerment, even though they are not easily measurable, unlike other dimensions of empowerment in the absence of information on these attribute of psychological empowerment.
 - 19 Capability may be seen as the capacity that enables people to increase their well-being depending on a variety of factors such as education, health, skills that are inherent in the family or skills that are acquired or learned. In addition to its direct value (creative and healthy life) in its own right, it also has instrumental value (indirect role) in influencing social, economic and political participation and entitlements (Sen 1997).
 - 20 See Rowlands 1995; Oxaal and Baden 1997; Sen G 1993; Kabeer 2001.
 - 21 See Friedmann 1992; Oxaal and Baden 1997; Rowlands 1997; Chambers 1997; Narayan et al 2000a and 2000b
 - 22 A given variable may function as an indicator of access to resources (or an enabling factor) in one context, of people's agency in another, and may represent an achievement in still other contexts. The proper understanding of such a relationship thus becomes essential to devising suitable empowerment interventions.
 - 23 For example, a shift in women's ability to visit a health centre without permission from a male household member may be a sign of empowerment in one country (rural Bangladesh) but not in another (urban Peru)
 - 24 Accountability is possible only through access to information. Even if access to timely information is available, people can-not take necessary action in the absence of LOC. Likewise, strengthening LOC is not possible in the absence of access to information, participation, and the accountability of service providers to poor people.
 - 25 See World Bank 2002a.
 - 26 Governance comprising the three closely interrelated concepts: accountability, legitimacy, and transparency is defined as the exercise of (state) power in a variety of institutional contexts to direct, control, and regulate activities of people as citizens, voters, and workers (Robinson, quoted in Dahal 1996).
 - 27 See Sharma 2002.
 - 28 Democratic governance ensures that people's human rights and freedoms are respected, that people have influence in decisions that affect their lives, and that they can hold decision-makers accountable.
 - 29 Sen's capability approach has contributed to an important paradigm shift in development economics away from welfarist approach to increased emphasis on incorporating individual entitlements, capabilities, freedoms and rights into the conceptual foundation of economics and social choice. This approach can be seen as a framework of thought and stresses the number of purposes for which it can have relevance to conceptualizing and analyzing well-being and poverty, liberty and freedom and empowerment (Sen 1993).
 - 30 For a detailed exposition of these instrumental freedoms, see Sen 1999.
 - 31 It is only through information on the achieved functionings and the capability set that it becomes possible to deduce whether the non-achievement of a certain functioning is the result of a free choice to forego this particular functioning or simply because it was not available in the capability set. The concept of "refined functioning" takes note of the available alternatives/options or capabilities available to a person. For instance, a person experiencing famine has no option to choose being nourished,

- while an activist may chose to fast despite his option to choose being nourished. Considering the options of persons, one can give the activist a higher score on the refined functioning of being nourished than the person experiencing famine.
- 32 If you have a job offer, then having a job and earning money is an opportunity. But not taking the job would mean those functionings will not (to the same degree) be achieved despite their being a part of the capability set (Sen 1993).
 - 33 See Roemer J. 1996.
 - 34 The capability approach can be used at various levels of sophistication, but Sen has constantly pointed out data limitation as a substantial drawback.
 - 35 Sociologists and psychologists have made similar applications for several decades. Sen (1987:24; 31) himself refers to the literature on basic needs and social indicators and sociological studies.
 - 36 Assets refer to material assets, both physical and financial, which enable people to withstand shocks and expand their horizon of choices. The extreme limitation of people's physical and financial assets severely constrains their capacity to negotiate fair deals for themselves and increases vulnerability.
 - 37 Protective capabilities with respect to security and vulnerabilities is also a key dimension of poverty and hence disempowerment, which are chronic as much as they are transient. The dynamic concepts of empowerment that are closely related to poverty are thus needed to grasp the fact that people move to a large extent in and out of poverty or disempowerment trapped intermittently in response to seasonal variations and external shocks at the household, community or national level – resulting, for example, from natural disaster, violent conflict and economic crisis. Addressing such vulnerability issues thus calls for providing protective security in the form of social safety net (Sen 1999).
 - 38 This limitation clearly underscores the possibility of capturing the subjective elements of empowerment, and thereby confining the study to those indicators for which proxies of resources/enabling condition and outcome/achievement of empowerment can be found.
 - 39 Adult literacy is the ratio of the literate population aged 15 years and above to total population of the same age expressed as a percentage. The treatment of children's literacy rates (6-14 years) separately would perhaps be another desirable indicator to capture the progress towards making basic education accessible and affordable to those groups of families whose children are still forced to enter the labour market in its worst forms because of extreme poverty, thus perpetuating intergenerational poverty. However, the child literacy figure has not been included because of its strong association with adult literacy figures.
 - 40 In a developing country, where ensuring universal access to basic education is a critical issue of concern, the focus on combined primary and secondary gross enrollment is a better educational indicator than mean years of schooling. Net enrolment rate (NER) is a better indicator than Gross Enrollment Rate (GER) to measure the correct age population actually enrolled. NER statistics at the district level are available separately for primary and lower secondary and secondary education, but not for tertiary education and also for rural-urban areas.
 - 41 It is also one of the key indicators used for measuring HPI.
 - 42 The relationship between increases in income and increases in nutrition may or may not be strong. This weak relationship implies that providing a direct nutrition supplement may have a far greater impact on undernutrition than an increase in income.
 - 43 This is not only in line with the international endorsement of the MDG, which recognizes health outcome of children as priority for action, but it can also capture the short-term policy changes in health outcomes, unlike the long-term change in a stock variable such as life expectancy.
 - 44 It should be noted that the level of deprivation in economic provisioning in HPI-1 is captured by the lack of access to health services, safe water and sanitation and level of malnutrition.
 - 45 It is considered a critical element for supporting empowerment, the others being accountability, inclusion/participation, and local organizational capacity (World Bank 2002a)
 - 46 See Sharma 2002
 - 47 While the Nepalese people have the constitutional right to demand information on any matter of public importance, the government has yet to pass the bill to make this provision feasible.
 - 48 The free and fair flow of information in many poor countries, including Nepal, is the exception rather than the rule. Cost-based barriers include low incomes and the relatively high costs of energy for batteries, electricity or fuel for generators, which are additional barriers produced by low levels of rural electrification, low quality radio and television transmitters and poor press circulation.
 - 49 A correlation analysis suggests that while television is not correlated with radio (0.144), it is positively correlated with telephone service. However, considering the importance of the telephone in going beyond a moderate level of development, it is also included as crucial indicator of communication media.
 - 50 Social capital concerns developing the roles and responsibilities of individuals and their institutions, and is created through changes in the relationship between persons that facilitate collective actions in the form of new relationships between individuals.
 - 51 Shared learning, the devolution of responsibility, the establishment of working rules, how activities are undertaken, monitored and enforced are also forms of social capital. Social capital formation describes the improvement of the ability of a community to make decisions and enlarge their choices and capabilities.
 - 52 see Banskota and Sharma 1996.
 - 53 The social mobilization mapping exercise reveals about 38% of household coverage in 44 districts studied. See Sah J., ed. 2003.
 - 54 When G is the Gini coefficient utilised to measure the degree of inequality in the distribution of land holding and L is the average size of operational holding, the Gini-corrected average landholding (W)

- is computed as $W=L(1-G)$. If a particular district has a higher value of W , then it can be seen as having a higher level of productive asset than the latter.
- 55 Some 47% of the employed labour forces remain underemployed, compared to some 5% of the total labour force that remains completely unemployed. The target set by the Ninth Plan was to reduce unemployment from 4.9% to 3.0% and underemployment from 49% to 10 % in the next 20 years.
- 56 See Anand and Sen 2000.
- 57 Empirical evidence from Russian adults indicates that higher individual and household incomes raise both self-rated power and welfare (Lokshin and Ravallion 2002).
- 58 For instance, the very low voter turnout in the local government elections is also visible even in the healthiest democratic systems, such as Britain. In some cases, a country may hold elections without their ever resulting in a change in power, whereas in others there are changes in power, but civil liberties such as press freedoms may be curtailed.
- 59 This is because of the uniformity of the most indicators relating to political freedom and power and legal provision throughout the country (UNDP 2002b). Second, measuring the subjective indicators is always beset by controversy regarding their scaling and weight.
- 60 A World Bank team has constructed six aggregate indices based on numerous indicators from more than a dozen sources: voice and accountability, political instability and violence, rule of law, corruption, government effectiveness and regulatory burden. The voice and accountability index, combines several indicators of the political process, including the selection of governments, with indicators of civil liberties and political rights, and press freedom and independence. (UNDP 2002b).
- 61 The same applies to even some objective indicators, which remains unchanged at the district level.
- 62 See Note 58 above.
- 63 The need for using fixed maxima and minima rather than observed maxima and minima for normalizing the variables was considered important to capturing the two issues. First, the use of observed maxima and minima provided no way of knowing whether the changes in the HDI value of a country stem from its improved performance or from changing the goal posts. Second, since the observed maxima and minima change from year to year, representing changes in goal posts themselves; any meaningful inter-temporal comparison was not possible.
- 64 As with HDI, there is, however, an assumption of transformation – education is transformed into knowledge and enhances human capabilities; income is transformed into other aspects of empowerment not captured by the existing indicators.