3. ECONOMY, POVERTY AND FOOD SECURITY

3.1 Physiography and Administration

Nepal is a small landlocked country sandwiched between China to the north and India on the other three sides. Its geographical area is about 147 000 km^2. It lies in the southern slopes of the Himalayas and its topography is uneven. Beginning from the very top of the Himalayas in the north it extends to the plains of the larger Indo-Gangetic valley. It is rectangular in shape with about 800 km length and mean breadth of about 193 km. It is broadly divided into three roughly parallel east-west regions (ecological belts), which from north to south are known as the mountains, hills and Tarai. Major features are shown in Table 3.1.

Table 3.1: Ecological belts of Nepal

	Mountains	Hills	Tarai
Altitude range*	3 000 to 8 840	300 to 3 000	60 to 300
Climate	Temperate to alpine	Subtropical to temperate	Tropical to subtropical
Topography	Steeply sloping mountains with valleys and river basins	Sloping with valley and river basins; cultivated terraces on the hills	Plains; part of the Indo-Gangetic basin
Dominant agricultural system	Livestock-based	Cereals, horticulture, livestock	Cereals, cash crops, livestock
Surface area (%)	22.7	50.2	27.1
Cultivated area (%)	0.3	48.1	51.6
Population (%)	7.3	44.3	48.4

*Metres above mean sea level.

For administrative and developmental purposes the country is divided into five development regions – Eastern, Central, Western, Mid-western and Far-western – which run north-south. There are 75 districts, more than 4,200 Village Development Committees (VDCs) and 58 municipalities. It is a multiparty democracy with system of Village Development Councils and Village Development Committees at the grass roots level and District Development Councils and District Development Committees at the district level. At the centre there is a National Development Council and a bi-cameral Parliament with 205 elected members and the senate with 60 indirectly-elected or nominated members.

3.2 Growth record: Overall Economy and Components

Nepal is one of the world's least developed nations, with low per capita income (US$249), and generally low socio-economic indicators. Life expectancy at birth of around 57 years and adult literacy at 38 percent are among the lowest in the world. Its overall human development index value of 0.49 ranks Nepal 142nd among 173 countries worldwide. Unemployment statistics (14 percent in 1997) conceal a great deal of unreported unemployment. Underemployment is widespread, and about 50 percent of the working population is estimated to work for less than 40 hours a week. Nutritional indicators are also

among the lowest in the world. Almost half of the children are either under weight or stunted, and 75 percent of pregnant women and 50 percent of women aged 15-59 are anaemic.

Despite the fact that Nepalese economy grew at an annual rate of 4.93 percent between 1990 and 1998, growth varied widely between years. Table 3.2 indicates that in the 1990s annual growth in real Gross Domestic Product (GDP) varied from a high of 7.9 percent in 1993/94 to a low of 2.72 percent in 1997/98 (Coefficient of Variation 33.8 percent). The rate of growth of agricultural GDP (AGDP) was (a) highly variable, (b) negative in three out of 10 years and (c) less than population growth in five out of 10 years. In contrast to this, the rate of growth of non-agricultural GDP (NAGDP) has in every year been positive, less variable and greater than the population growth rate. Among the non-agricultural sub-sectors, manufacturing, transport and communications, and community and social services sub sectors grew fastest.

Table 3.2: Real GDP growth

Year	Agriculture	Other	Total
90/91	2.15	10.64	6.44
91/92	-1.06	9.76	4.62
92/93	-0.62	6.47	3.29
93/94	7.60	8.12	7.90
94/95	-0.33	5.29	2.87
95/96	4.42	6.62	5.70
96/97	4.13	3.82	3.94
97/98	1.04	3.89	2.72
98/99	2.72	5.64	4.47
99/2000	4.97	7.40	6.44
2000/01	3.99	6.95	5.80
Mean	2.64	6.78	4.93
Standard deviation	2.71	2.16	1.67
Coefficient of Variation (%)	102.58	31.88	33.87

Source: *Economic Survey-2000/01* and *2001/02*, Ministry of Finance; 2001 and 2002.

Growth of the Nepalese economy is determined mainly by the growth of its agriculture sector since, despite its declining relative importance, it is still the single largest sector of the economy (Tables 3.3 and 3.4) and the main source of livelihood for the bulk of the population.[1] In the non-agricultural sector, manufacturing, trade and commerce, transport and communication, finance and real estate and community and social services are important sub-sectors with relatively high contribution to NAGDP growth rate (Appendix Table 2).

Table 3.3: Structure of real gross domestic product (1984/85 Prices)

Sectors	(Rs million)		Percent of total	
	1990/91	**2000/01**	**1990/91**	**2000/01**
Agriculture	28,327	36,853	47.43	38.15
Non-agriculture	31,395	59,759	52.57	61.85
GDP	59,722	96,612	100.00	100.00

Source: *Economic Survey-2000/01* and *2001/02,* Ministry of Finance; 2001 and 2002.

Table 3.4: Growth in real per capita GDP

Particulars	1990/91	2000/01	Growth (%)
Real GDP (Rs million)	59 722	96 612	4.9
Population (million)	18.5	22.7	2.1
Per Capita Real GDP (Rs)	3 228	4 256	2.8

Note: Real GDP at 1984/85 Constant Prices
Source: *Economic Survey-2000/01* and *2001/02*, Ministry of Finance; 2001 and 2002.

3.2.1   Consumption, saving and investment

Between 1986 and 1996, marginal propensity to consume in Nepal was high, estimated at 0.867 (NHDR, 1998). As a result, over 83 percent of income is spent on consumption leaving very small share of income for saving and thus investment (Table 3.5). During the 1990s, the public sector consumption grew at a faster rate than private consumption, causing the share of the former to increase from 10 to 12 percent in the decade. The figures on investment show that private sector investment growth was slightly faster than that of the public sector (about 14.4 and 13.5 percent respectively) indicating one effect of economic liberalisation. However, over the same period the ratio of investment to GDP increased, from 20.8 percent in 1990 to about 25.65 percent in 2000.

Table 3.5: Structure and growth of consumption, savings and investment

(Values in billion rupees)

Particulars	In nominal terms			In real terms (1984/85 prices)		
	1990/91	**2000/01**	**Growth (%)**	**1990/91**	**2000/01**	**Growth (%)**
Consumption	108.9	343.6	12.18	56.0	84.6	4.20
Private	97.8	301.9	11.93	50.3	74.3	3.97
Public	11.1	41.7	14.15	5.7	10.3	6.03
Gross Domestic Saving	11.5	65.7	19.04	5.9	16.2	10.57
Total Investment	25.1	105	15.39	12.9	25.8	7.18
Gross Domestic Product	120.4	409.3	13.02	62.0	100.7	4.98
Consumption as % GDP	90.45	83.95	NA	90.45	83.95	NA
GDS as % of GDP	9.55	16.05		9.55	16.05	
Investment as % GDP	20.85	25.65		20.85	25.65	

Source: *Economic Survey-2000/01* and *2001/02*, Ministry of Finance; 2001 and 2002.

3.2.2 Government revenues and expenditures

Table 3.6 presents statistics on government expenditure and its sources of financing during the period 1990 to 2000. The fact that regular expenditure grew faster than development expenditure is due mainly to salary increases for government employees in the latter period. Although growing at an annual rate of 16.4 percent in nominal terms and 8.1 percent in real terms, the financing capacity of domestically generated resources was limited to less than half (45.6 percent) of total government expenditure in 1990. This, however, increased to 61.2 percent in 2000 reflecting improvements in revenue generation. In the domestic resources sector a slight improvement was seen in terms of increased share of tax revenue in total revenue, reflecting improved fiscal measures for revenue generation.

Table 3.6: Structure and growth of government revenue and expenditure

(Amount in billion rupees)

Particulars	1990/91	2000/01	Growth Rate	1990/91	2000/01	Growth Rate
Revenue	10.73	48.89	16.38	5.52	12.03	8.10
Tax revenue	8.18	38.86	16.86	4.21	9.56	8.55
Non-tax revenue	2.55	10.03	14.68	1.31	2.47	6.52
Expenditure	23.55	79.83	12.98	12.12	19.65	4.95
Regular	7.57	42.76	18.90	3.90	10.52	10.45
Development	15.98	37.07	8.78	8.22	9.12	1.04
Revenue as % of expenditure	45.56	61.24	NA	45.56	61.24	NA
Deficit amount	-10.66	-24.19	8.54	-5.49	-5.95	0.82
Deficit financing	10.82	19.04	5.81	5.57	4.69	-1.71
Domestic borrowing	4.55	7.00	4.40	2.34	1.72	-3.02
Foreign loan	6.27	12.04	6.74	3.23	2.96	-0.85
Domestic borrowing (%)	42.05	36.76	Na	42.05	36.76	NA
Foreign loan (%)	57.95	63.24		57.95	63.24	

Source: *Economic Survey-2000/01* and *2001/02*, Ministry of Finance; 2001 and 2002.

Fiscal deficits over the period increased annually by about 8.5 percent in nominal term and 0.8 percent in real term. Fiscal deficits are financed mainly through two sources. The first is foreign borrowing, which increased rapidly over the period. The second source is domestic borrowing, which declined in line with the increases in foreign financing. This was the result of economic reform programme, which constrains domestic borrowing.

3.2.3 Foreign aid

Foreign aid has played an important role in financing government expenditure since the very beginning of planned development in Nepal. The growth of foreign aid in the 1990s is shown in Table 3.7. The ratio of disbursements to commitments has been growing in the latter period and this reflects improved government capacity.

Over the years there has been a shift in the composition of foreign aid disbursements, with the proportion represented by grants increasing. Although there was some degree of year-on-year variation, the grant component increased from about 27 percent in the first period to about 32 in the latter period. Another interesting feature of foreign aid disbursed during the period is the relative decline in bilateral aid as a proportion of the total. Despite the fact that the grant component of the foreign aid has been increasing in real terms over the years, foreign debt has been swelling. The accumulated foreign debt in nominal term was calculated at Rs 59.5 billion in 1990, but increased almost four fold to reach Rs 198.2 billion by 1998. As a result, annual government expenditure incurred in the payment of principal and interest on loans has been increasing. Interest loan payment was Rs 0.5 billion in 1990, increasing to Rs 1.7 billion in 1998, an annual growth rate of about 13 percent.

Table 3.7: Growth in foreign aid in the 1990s

Three year Aver-age	Particulars	In nominal terms					In real terms (1984/85 constant prices)				
		Amount in (Rs billion)			Proportion of		Amount in Rs billion			Proportion of	
		Total	Grant	Loan	BL	ML	Total	Grant	Loan	BL	ML
1988-90	Committed	14.19	5.69	8.50	41.67	58.33	8.00	3.21	4.79	41.67	58.33
	Disbursed	6.03	1.64	4.39	39.77	60.23	3.40	0.92	2.48	39.77	60.23
	% Disbursed	42.47	28.76	51.69	NA		42.50	28.66	51.77	NA	
1998-00	Committed	23.36	13.41	9.88	60.75	39.25	5.88	3.38	2.49	60.75	39.25
	Disbursed	17.5	5.6	11.9	22.61	77.39	4.41	1.41	3	22.61	77.39
	% Disbursed	74.91	41.76	120.45			75.00	41.72	120.48		
Growth Rate (%)	Committed	5.70	9.99	1.69	NA		-3.36	0.58	-7.01	NA	
	Disbursed	12.57	14.65	11.71			2.93	4.86	2.14		

BL = Bilateral and ML= Multilateral
Source: *Economic Survey-2000/01* and *2001/02*, Ministry of Finance; 2001 and 2002.

3.2.4   External trade

Nepal's foreign trade has grown over the years, and the balance of payments has improved slightly in relative terms because exports have been growing faster than imports (Table 3.8). In the export sector, some changes were observed in terms of destination. India's share has increased significantly in terms of both exports and imports, but relatively more on the imports side, leading to a slight increase in the trade deficit with that country. In terms of composition of exports, the share of food and live animals, 14 percent in 1990, declined to about 9 percent in 2000. On the import front, the share of food and live animals also declined slightly from about 7.8 percent in 1990 to about 5.2 percent in 2000 (Appendix Table 3).

Table 3.8: Trends in foreign trade

(Rs billion)

Particulars	In nominal term			In real term (1984/85 prices)		
	1990/91	2000/01	Annual growth (%)	1990/91	2000/01	Annual growth (%)
Export	7.39	55.65	22.37	3.80	13.70	13.67
India	1.55	26.03	32.59	0.80	6.41	23.16
Others	5.84	29.62	17.63	3.01	7.29	9.26
Import	23.23	115.69	17.42	11.96	28.47	9.07
India	7.32	42.21	19.15	3.77	10.39	10.68
Others	15.9	70.48	16.06	8.18	17.35	7.80
Trade Gap	-15.84	-60.04	14.25	-8.15	-14.78	6.13
India	-5.77	-16.18	10.86	-2.97	-3.98	2.98
Others	-10.06	-40.86	15.05	-5.18	-10.06	6.86

Source: *Economic Survey-2000/01* and *2001/02*, Ministry of Finance; 2001 and 2002.

3.3   The Poverty and Food Insecurity Situation and Underlying Causes

3.3.1   Poverty trends and regional distribution

A review of concepts and measurement of poverty was presented in the previous chapter. Analysis in the present section is focused on poverty trends and on the distribution of poverty both geographically and by subsets of the population. This is based on the surveys and studies carried out by the National Planning Commission (NPC), Nepal Rastra Bank (NRB), the World Bank and CBS during the period 1977 to 1996.

NPC Survey of 1977

The NPC conducted a nation-wide survey on *Employment, Income Distribution and Consumption Patterns in Nepal* during March-July, 1977. The Survey, using Rs.2 per capita per day as the poverty line income, estimated the proportion of households and of population below the poverty line for the rural and urban areas of the then four development regions (Table 3.9). The estimates are based on two criteria: minimum subsistence consumption (expenditure) and minimum subsistence income.

Table 3.9 Households and population below poverty line in 1977

Figures are percentages

Poverty Criterion	Households			Population		
	Rural	Urban	Total	Rural	Urban	Total
Consumption	34.34	19.86	33.65	32.14	20.01	31.54
Income	41.22	22.08	40.30	37.23	16.97	36.20

Source: National Planning Commission, 1983; p. 117

The Table shows that the incidence of poverty in rural areas was about twice as high as in the urban areas. The proportion of both population and of households below the poverty line appears lower when looked using the consumption criteria except in the case of urban population, where the reverse situation was observed. Regardless of the criteria used in determining the poverty line, the proportion of *households* below this line was higher than the proportion of *population*. Here again the exception was

the urban population under the consumption criterion, although the difference was marginal. This may be due to the fact that in estimating the total population the households have been multiplied by the average number of family members *present* (NPC 1983) during the survey. The relatively higher percentage of population than households apparently living below the poverty line in the urban areas may be due to immigration of poor individuals to urban areas and the possibility that had been forced to save by cutting consumption. The survey report does not explain the actual reason behind the difference except stating that consumption expenditure *could be met through borrowing or free gift or from past savings* (NPC 1983). While it gives estimates of the number of both households and population below the poverty line for each of the four development regions, and for the rural and urban areas, the survey report does not give the estimated proportions. Instead, it states that the number of persons and households below the poverty line is higher using income, rather than expenditure, as a measure (NPC. 1983). This may perhaps substantiate an argument made elsewhere in the report that the 'income measure of poverty may be desirable' (NPC. 1983).

The Survey extrapolates its findings to cover the entire country and gives estimated proportion of total households and total population with expenditure and income 'below minimum subsistence levels', rather than below the poverty line. The estimates are disaggregated by both development region and residence – rural and urban – and are presented in Table 3.10. Regarding the difference between the estimates of this table with that of Table 3.9, the report states that it is due to the fact that the figures presented in the latter have been estimated by calculating households and population below the poverty line for all 75 districts, using the percentage of the adjoining sample district of the same ecological zone for the non-sample districts (NPC 1983).

A few features of the incidence of poverty by development region are evident from Table 3.10. *First*, the proportion of households and population below the poverty line is generally higher in the FWDR in terms of both income and expenditure measures. The exceptions are the rural population of this region relative to that of the WDR in terms of consumption and the urban population in terms of income. *Second*, the incidence appears lower in terms of the percentages of population than in terms of percentage of households, regardless of the residence and of the measures used. The report does not explain the reason behind this difference. One explanation could be the possibility of some of the households below the poverty line also having smaller family size. *Third,* the income measures generally give higher incidence of poverty than the consumption measure. This could be due to a variety of reasons. Expenditure at any given time could be more than income, implying dissavings. It could also be due to biases in reporting, as households generally tend to be more accurate in reporting expenses than income. The survey report however, has a different observation. 'Surprisingly, the larger categories of farm households have an excess of per capita expenditure over income instead of smaller categories like the landless, marginal and small, both irrigated and unirrigated (except marginal irrigated), which show excess of income over their consumption expenditure.' (NPC, 1983).

Table 3.10: Households and population with expenditure and income below minimum subsistence levels in regions of Nepal, 1977

Figures are percentages

Region	Households in terms of				Population in terms of			
	Consumption		Income		Consumption		Income	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Eastern	34.09	13.70	38.63	21.99	32.61	14.40	37.02	19.06
Central	34.00	25.56	36.33	27.81	29.53	25.30	34.46	21.23
Western	37.25	25.76	29.96	29.26	37.00	26.25	28.45	25.61
Far-Western	38.29	33.96	47.31	35.85	34.82	33.96	43.56	25.04
Nepal	35.53	23.49	37.33	27.58	32.91	23.99	35.46	22.20
Nepal	33.24		35.50		31.33		32.89	

Source: National Planning Commission, 1983; P. 116

An important aspect of the Survey that needs to be mentioned here relates to the selection of sample households. A 'landless household' is defined as 'one, which does not possess any land for cultivation purpose but which, may possess a homestead or house site, which may be used for kitchen garden.' (NPC, 1983) Given this definition, the possibility of homeless households having been excluded from the sampling frame cannot be ruled out, although the proportion of such households was generally very low at that time.

The NRB Survey of 1984/85

The NRB sponsored a *Multi-purpose Household Budget Survey* in 1984. The Survey used the BNI approach following the NPC's lead, and the results are summarized in Table 3.11. As noted in the previous chapter, the Survey does not report its findings by development region, but by the three ecological belts, a feature that is not found in the NPC Survey of 1977. Their common levels of disaggregation, however, are the rural and urban areas. The NRB Survey does not provide national aggregate either. However, quoting the same survey, the Ninth Plan states: 'A household budget survey done by the Nepal Rastra Bank in 1984 revealed 41.5 percent of the population living below the poverty line.' (NPC, 1998). Yet another study, the *Nepal Human Development Report 1998* (NHDR) quoting this very survey report states the national average to be 42.5 percent. (NESAC, 1998). Given the sensitivity of the survey to a slight change in the definition of the poverty line (see below), this variance could be due to the difference in the choice of this parameter, a possibility which will be discussed later.

Table 3.11: Incidence of poverty by region: 1984/85

Region	Percent below poverty line:					
	Households			Population		
	Rural	Urban	Total	Rural	Urban	Total
Mountain	36.0	-	36.0	44.1	-	44.1
Hills	49.8	12.6	47.1	52.7	14.5	50.0
Tarai	34.1	20.2	33.0	35.4	24.1	34.5
Nepal	40.7	16.1	NA	43.1	19.2	N. A.[1]

1. The NRB report does not give this total. Using this very survey, however, the NPC (98) and NHDR estimate the national average as 41.5% and 42.5% respectively

Source: Nepal Rastra Bank, 1988; p.136.

At the aggregate level the incidence of poverty is highest in the hills, followed by the mountains and then the Tarai, for both population and households. Similarly, the incidence is higher in the rural areas. The urban Tarai had a higher incidence of poverty than the urban hills. At both the household and population levels the incidence of poverty is more than twice as high in the rural areas than in urban areas. In the Hills the level of rural poverty is more than three times that of urban areas. Thus, poverty in Nepal is largely a rural phenomenon with rural-urban differences being sharpest in the Hills.

World Bank/UNDP Study of 1989

A joint World Bank-UNDP report, *Nepal: Relieving Poverty in a Resource Scarce Economy* (1990), used NRB 1984/85 data updated for 1989 to estimate the level of poverty for that year. The report used two alternative criteria in defining the poverty line and to estimate the level of poverty. These are:

- The WB established level of absolute poverty for international comparison i.e. US$150 per capita per annum; and
- The definition of the poor suggested by Michael Lipton i.e. those whose food expenditure absorbs 70 percent or more of total expenditure[2].

Their estimates are presented in Table 3.12. The incidence of poverty shows a marked difference depending on which of the above definitions is used. Using the NPC criterion the poverty line is set at US$8.24 and US$7.73 per day for the Hills and the Tarai respectively – which is much lower than the WB's poverty line used for international comparison. Indeed if the WB criterion to define the poverty line were used, as many as 71 percent of the population would be living below the poverty line.

Table 3.12: Incidence of poverty in percentage by region under different poverty lines: 1989

Poverty Line	Region								
	Hills			Tarai			Nepal		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
NPC	55	13	52	29	17	28	42	15	40
US$150	78	32	75	69	51	68	74	42	71
Lipton	65	52	64	70	50	68	68	51	66

Source: The World Bank and UNDP, 1990.

The sensitivity of the number of poor to the choice of poverty line results from the flat distribution of income around a very low average. Thus, moving the line even slightly up or down results in large changes in the share of population above or below it. Within the limitations of the data it is thus not very meaningful to talk of the precise number of poor. *The best one can conclude is that the incidence of absolute poverty is very high – in the neighbourhood of 50-60 percent.*

Nepal Living Standards Survey 1995/96 of CBS

The CBS conducted NLSS between June 1995 and June 1996 using the World Bank's *Living Standards Measurement Survey* (LSMS) approach. The incidence of poverty as revealed by the Survey is summarized in Table 3.13. In this survey, a new category of poor, the 'ultra-poor' was introduced.

However, the definition of this group – apart from being 'the poorest' – is not given in the Ninth Plan (NPC1998). Comparing the poverty incidence across ecological belts, the mountains emerged as having the highest concentration of poor people, followed by Tarai. Indeed, compared to the findings of the NRB survey, there is not much difference in the incidence of poverty between hills and the Tarai. This is a significant change compared to the NRB survey findings. The apparent reduction in the proportion of the poor in the hills and the almost commensurate increase in the Tarai would, if true, imply *inter alia*, a massive movement of the poor people from the former region to the latter.

Table 3.13: Poverty incidence by region: 1996

Region	Population below Poverty Line (%)		
	Poor	Ultra-poor	Total
Mountain	29.3	26.7	56.0
Hills	21.3	19.7	41.0
Tarai	28.7	13.3	42.0
Urban	13.2	9.8	23.0
Rural	26.4	17.6	44.0
National Average	24.9	17.1	42.0

Source: National Planning Commission, 1998; p.203

As in the previous findings, the proportion of the poor in the rural areas is almost twice as high as in the urban areas, while the mountain region has the highest concentration of the ultra poor. Indeed the proportion of the ultra poor in the mountain region is twice as high as the level in the Tarai. The NHDR, while quoting the data files of the same NLSS, however, gives a slightly different interpretation regarding the incidence of poverty. The NHDR has used the 'identical level of 2 250 kcal' as used in the NRB survey, and the updating by the WB survey as presented in Table 3.11 – labelled as the NPC poverty line (NESAC 1998).

Table 3.14 shows the incidence of poverty as reported in NHDR 1998, estimates which are based on the minimum subsistence income.[3] In terms of ecological belts, poverty is more pronounced in the Mountains followed by Hills. Poverty in the Mountains is 1.7 times higher than in the Tarai, and in the Hills it is 1.35 times higher. In terms of development regions, it is lowest in the CDR (34 percent) followed in order by the EDR, WDR, MWDR and FWDR (NHRD 1998, Table 7.23).

Table 3.14: Incidence of poverty by region

Development Region	Ecological Belts			All Nepal
	Mountain	Hill	Tarai	
Eastern	57	68	27	43
Central	48	31	34	34
Western	52	46	44	45
Mid-western	72	66	47	59
Far-western	80	73	49	65
Total	63	50	37	45

Source: NHDR, 1998.

The poverty trends appear in Table 3.15. In all the years referred to poverty was more prevalent, and was growing faster, in rural areas than in the towns and cities: during this period rural poverty increased by 9.8 percentage points as against a one percentage point increase in urban areas[4].

Table 3.15: Trends in the incidence of poverty

Source	Year	Population below poverty line (%)		
		Urban	Rural	Nepal
NPC	1977	17.0	37.2	36.2
NRB (MPHBS)	1985	19.2	43.1	42.5
WB/UNDP	1989	15.0	42.0	40.0
CBS	1996	18.0	47.0	45.0

Source: NHDR, 1998

3.3.2   Gender and poverty

Table 3.16 presents gender-disaggregated poverty incidence.[5] Female-headed households constitute about seven percent of total households in rural Nepal. NHDR, 1998 reports the incidence of poverty to be lower among female-headed households than their male counterparts, a finding that is consistent for all regions. The percentages are 47.2 and 50.7 respectively. The *Monitoring Micro Impacts of Macro and Adjustment Policies* (MIMAP) study showed poverty incidence to be highest in the mountains and lowest in the Tarai irrespective of who heads the household.

Table 3.16: Gender specific poverty incidence

Ecological Belt	Sample Household (No.)	Female-Headed Household (%)	Poverty Incidence (%)	
			MHH	FHH
Mountain	995	5.83	63.07	56.62
Hills	3525	8.40	62.65	52.36
Tarai	2816	5.04	32.01	31.69
All	7336	6.76	50.73	47.18

MHH= Male headed households; FHH= Female headed households.
Source: Calculated from Credit Survey 1991, NRB 1994 and reported in MIMAP, 1996.

3.4   Food Security

Food security has been understood in different forms and very often it has been defined narrowly to mean food self-sufficiency, but it is much more than this. The FAO defines food security as a state 'when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for active and healthy life.'[6] This definition encompasses several dimensions of food security. First, it implies both physical and economic access to sufficient food. Second, it means that such access should encompass all people irrespective of their economic and social backgrounds. Third, it implies such access at all times in a year, and in times of unusual events like war and times of natural calamity. Fourth, it implies that food has to be safe, nutritious and conducive to a

healthy life. Of the several dimensions of food security, physical access to nutritious food is of most direct concern of the agricultural sector.

3.3.3   Foodgrain trade, production and availability

In 1975/76 Nepal exported foodgrains worth Rs.5,954 million, but with production failing to keep pace with population growth, exports declined drastically in the 1980s, reaching just Rs.1 million in 1989/90 (Koirala and Thapa, 1997). Table 3.17 presents the foodgrain trade balance in the 1990s. Without considering pulses, the country has been a net importer of food grains except for 2000/01. Even when pulses are considered, the country has been a net importer of foodgrains except for 1996/97, 1997/98 and 2000/01 when exports of pulses was high enough to offset the negative trade balance in cereals.

Table 3.17: Trade balance of food grains (1993-1998)

(Rs million)

	Commodities	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01
Import	Rice	617.7	481.6	816.9	379.1	168.3	1715	200.5	0
	Wheat	4.3	9.7	4.6	4.2	2.5	0.2	0	0
	Pulses	0.0	134.7	119	149.8	181.6	145.8	0	0
	Total	622	626	940.5	533.1	352.4	1861	200.5	0
Export	Rice	0.0	0.0	0.0	0.1	8.0	74.1	0	16.6
	Pulses	347.3	456.9	663.4	1039	1057.1	1191.2	87.1	703.6
	Maize	0.0	0.0	0.0	5.8	4.4	0.1	0	0
	Total	347.3	456.9	663.4	1044.9	1069.5	1265.4	87.1	720.2
Balance (Export - imports)	Without pulses	-622.0	-491.3	-821.5	-377.4	-158.4	-1641	-200.5	16.6
	With pulses	-274.7	-169.1	-277.1	511.8	717.1	-595.6	-113.4	720.2

Source: Computed from data presented in FNCCI, 2000 and 2001.

Table 3.18 presents the food self-sufficiency situation (cereals) in the 1990s. With steady growth in population and hence requirements, annual fluctuations in the level of food deficit at the macro level is directly determined by variation in production, which in turn is largely determined by variations in the production of paddy[7]. Although the deficit, defined as the percentage of requirement, has never exceeded 12.5 percent at the macro level, there is large variation across regions and ecological belts. In the 1990s the deficit averaged at 5.2 percent. Although the deficit fluctuated, the situation seems to have improved in the latter part of the 1990s, as the average deficit, which was around 8.5 percent during 1992-94 declined to about one percent during 1998-99 and it turned into surplus in 1999/2000 and 2000/01. However, the surplus remained below 2 percent of the requirements in both years

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Table 3.18: Food production and deficit situation

Year	Production (000 Mt)	Requirement (000 Mt)	Deficit	
			'000 Mt	as % of requirement
1990/91	3 619	3 487	+ 132	+3.78
1991/92	3 373	3 562	189	5.31
1992/93	3 292	3 634	342	9.41
1993/94	3 585	3 724	139	3.73
1994/95	3 398	3 883	485	12.49
1995/96	3 917	3 948	31	0.79
1996/97	3 973	4 079	106	2.6
1997/98	4 027	4 178	151	3.61
1998/99	4 098	4 279	181	4.23
1999/2000	4 452	4 383	+ 69	1.57
2000/01	4 513	4 430	+83	1.87

Note: + indicates surplus.
Source: computed from MDD data file.

Irrespective of the national situation, the Mountains and the Hills have always remained vulnerable to food shortages. The Tarai, on the other hand, has always been a surplus food producer. All development regions except the East are vulnerable to food shortages, although these vary between regions and years (see Chapter 5)

3.4.2   Nutritional dimensions of available food

Continuing high population growth, slow-growing agricultural output, lack of adequate livelihood opportunities, shortage of nutritious food, high level of poverty, lack of heath care facilities, lack of education and public awareness, etc have translated into various types of nutritional problems among different sections of population (NPC 1998). The most important forms of undernutrition include protein energy malnutrition, iron deficiency anaemia, vitamin A deficiency and iodine deficiency. Undernutrition among children is around 53 percent and almost three-quarters of pregnant women and half of women aged 15-59 years are anaemic.

Most of the nutritional problems arise from lack of adequate entitlements. Therefore adequacy of food consumption in the households is one of the important parameters for determining nutritional status and thus food security status. In Table 3.19 a rough approximation of available calories from cereals is compared with estimated requirements. Figures in the table show that in all the years analysed, and by inference for the whole 1990s, energy available from cereals was in shortfall to the extent of 9.5 percent in 1990, 17.7 percent in 1994, 11.3 percent in 1997, 8.6 percent in 1998 and by less than 1 percent in 2000/01. A similar situation is reported in NHDR (1998) which, citing data from MOAC (1992 and 1996), reports a shortfall of about 5 percent on a nutritional energy requirement of 2 250 Kcal/capita per day in 1995.

Table 3.19: Comparison of available and required calorie from cereals

(Availability and requirements in Kcal/day/person)

Reference Year	Energy requirement		Available (cereal)	Deficit (cereal)
	Total	Cereals		
1990/91			1720	180
1994/95	2250	1900	1564	336
1997/98			1685	215
1998/99			1737	163
2000/01			1880	10

Source: Energy availability from cereals is computed from MDD data file for respective years and energy requirements from cereals are computed from APROSC (1986).

To assess total dietary energy adequacy, a comparative assessment of requirement and availability was carried out taking 2 250 Kcal as the requirement. The results are shown in Table 3.20. This shows that Nepal remained deficit at the macro level only during 1986-88. However, source-specific composition of available dietary energy is far from ideal from a nutritional perspective. In 1995 almost 94 percent of available dietary energy was derived from vegetable sources. Even within vegetable sources, most available energy was from cereals and root crops against a requirement of 45 percent for a nutritionally balanced diet. From the nutritional point of view, the food security situation in Nepal is not favourable, due to over-consumption of carbohydrates and deficiency of micronutrients and energy from animal sources.

Table 3.20 Nutritional dimension of food security

Total dietary energy (Kcal/day)	Availability	Requirement	Surplus/Deficit
1986-88	2083		-167
1989-91	2285		35
1994-96	2267	2250	17
1997/98	2366		116
2000/01	2577		327
Composition in % - 1995			
Animal origin	6	20	-14
Vegetable origin	94	80	+14
Cereal and root crops	79	45	+34
Other	15	35	-20

Source: SIFAD-Asia Pacific Region, FAO Regional Office 1999 and MDD, 2002.

Household self-perception provides an additional way to assess access to food and nutrition. The findings of such an assessment, conducted during NLSS (1996) and reported in CBS (1998), are presented in Table 3.21. There is a trend of the 'less-than-adequate' category increasing from east to west, interrupted only by an unexpectedly low figure for the MWDR. In terms of ecological belts these conclusions confirm earlier findings that nutritional inadequacy is highest in the Mountains and lowest in the Tarai. Elsewhere in the report it is shown that women suffer most when food is less than adequate. Children also suffer disproportionately, not only from chronic malnutrition, but also from frequent illness, child labour and lack of access of educational opportunities.

Table 3.21: Adequacy of food consumption (1995/96)

(% of households)

Development region/ ecological belt	Less than adequate	Just adequate	More than adequate
Eastern	49.1	49.7	1.2
Central	49.8	47.4	2.8
Western	54.8	44.3	0.9
Midwestern	46.9	51.3	2.2
Far Western	55.8	42.0	3.3
Nepal	50.9	47.3	1.8
Mountain	63.2	33.6	3.3
Hill	54.7	43.1	2.2
Tarai	44.9	54.0	1.2

Source: A Compendium on Environmental Statistics1998 Nepal, CBS, 1998

As noted earlier, an important dimension of food utilization is the general health and sanitation situation. The indicators presented in Table 3.22 do not present a healthy picture. High child mortality, high death rate, high maternal death rate and low life expectancy at birth are the characteristic features of Nepal. Discriminatory social and cultural practices, a limited and ineffective health delivery system and disproportionate impact of poverty mean that the health status of Nepalese women is below that of men. The male/female mortality differential indicates that women have lower levels of welfare, with inferior access to health care and nutrition than men. The Table shows that child mortality rate is significantly higher among girls than among boys, and this is despite the fact that during infancy boys are biologically the weaker sex. There is also neglect of girls in health care and feeding which is reflected in higher prevalence of malnutrition and lower nutritional status. Stunting is the primary indicator of nutritional status of the children, and in Nepal girls are more likely to be stunted or severely stunted than boys.[8]. The NPC/UNICEF *Nepal Multiple Indicator Surveillance* (NMIS) study of 1995 arrived at similar findings.

Table 3.22: Health and survival indicators

Indicators	Male	Female
Child Mortality Rate	45.5	56.5
Crude Death Rates	12.9	13.6
Maternal Death Rates	-	8.33
Life expectancy at Birth	55.0	53.4
Nutritional Status of Children (%)		
Stunted	47	50
Severely stunted	19	22

Note: CMR: per 1000 live birth, CDR: per 100 births, MDR: per 100 000 live birth.
Source: DOH/New ERA and DHS, 1996, Family Health Survey, 1996.

Infant mortality ranks and rates for South Asian countries are presented in Table 3.23. These data show that Nepal's infant mortality rate has declined in each of the reference years shown. However, Nepal still has the highest infant mortality rate among South Asian countries except Pakistan. Infant mortality in Nepal in 1999 was 1.06 times the rate in India, 1.16 times the rate in Bangladesh and 5.47 times the rate in Sri Lanka.

Table 3.23: Infant mortality - Rate of progress

Country	Under-5 mortality			
	Rank	Rate (per 1000 live birth)		
	2001	1960	1990	2001
Nepal	55	315	145	91
Bangladesh	58	248	144	77
Sri Lanka	130	133	23	19
India	54	242	123	93
Pakistan	43	227	128	109

Source: The State of the World Children, UNICEF, 2000 and 2003. 193 countries ranked with rank 1 indicating the worst situation with respect to under-5 mortality.
Note: Infant mortality rate is estimated at 64 in 2001 (New Era, 2002).

Statistics on morbidity and use of health care services are presented in Table 3.24. Again the position of females is worse. Despite higher morbidity and malnutrition, they receive less health care than males (FHS, 1996, NLSS, 1996). The NLSS study covered 3 388 households and revealed that although a higher percentage of females were ill, most ailing women did not receive treatment at all, while those who did receive treatment received mostly home remedies or traditional medical care. Early marriage together with frequent and prolonged child bearing is associated with the high rate of undernourishment, high morbidity and ultimately high mortality among both mothers and infants (FHS, 1996). Several micro studies support these findings.

Table 3.24: Health status and utilization of health care

		Not Immunized	Male	Female
Immunization of Status of Children aged 5 years and under (NLSS, 1996)		Mountain	43.71	35.77
		Hill	16.63	19.90
		Tarai	17.46	23.60
		Partially Immunized		
		Mountain	31.44	39.39
		Hill	41.22	42.06
		Tarai	46.46	43.55
		Fully Immunized		
		Mountain	24.85	24.84
		Hill	42.15	38.04
		Tarai	36.04	32.86
Consultation with health practitioner (NLSS, 1996)		Not consulted	33.20	35.55
		Doctor	35.61	33.99
		Para medical	26.72	23.47
		Traditional	4.47	6.98
Popula-tion reporting Chronic Illness		Mountain	7.97	9.25
		Hill	6.98	8.08
		Tarai	4.66	5.63
Distributi on of type of Illness by Gender		Diarrhea	45.46	42.04
		Fever	45.46	42.04
		Respiratory	4.71	5.61
		Skin	33.28	34.90

Source: NLSS. 1996

Nutritional anaemia is common among the pregnant women. One study indicated that among mothers of children aged six to 36 months it ranges from 71 percent in the mountain districts to 95 percent in the Tarai (Joint Nutritional Programme Survey, 1986). Another study conducted in 1987 found 68 percent of the women of middle hills were suffering from iron deficiency anaemia (Melville 1987). From the available evidence it is unclear whether the female survival rate is different among the poor and non-poor households

Information on immunization and poverty level also indicates the disadvantage of poor females in utilization of health services. The Family Health Survey of 1996 in general found boys are more likely to be vaccinated than girls (47 percent versus 40 percent). No significant variation was observed in the gender difference in the utilization of health care services between the poor and non-poor households except in immunization. The proportion of households consulting different medical practitioners is provided in Appendix Table 4.

3.5 Forces Contributing to Poverty and Food Insecurity

No systematic and rigorous study of the processes and causes of poverty has been undertaken in Nepal. The low level of per capita income, poor and highly unstable growth performance and uneven

income distribution are the major causes of the high incidence of poverty and food insecurity in Nepal. The poor lack economic access to food with consequences on their productive capacity and the capability to acquire adequate education and health care often leading to perpetuation of poverty. *Nepal Human Development Report* (1998), based on the Nepal Living Standard Survey 1996, has identified the following socioeconomic correlates of poverty:

- Poverty is negatively correlated with the age of the household head;
- Poverty is highest among households whose heads are illiterate (51 percent) and lowest among those with education level higher than high school (12 percent);
- Households with agriculture as the main occupation tend to be poorer than those in other occupations;
- In general, poorer households have more children than non-poor households;
- Among households that own land, poverty is negatively correlated to the amount owned;
- In comparison with non-poor households, members of poor households feel ill more often, have a lower proportion of children immunized, have a lower proportion of children in school, and have less access to sanitation facilities.

In addition to the slow rate of economic growth, the key factors associated with poverty are discussed in the sub-sections below.[9]

3.5.1 Population growth

In Nepal population growth has exceeded the long-term growth in income and other factors that contribute to poverty reduction, thereby contributing to the vicious circle of poverty. The available evidence, however, indicate that a transition in fertility is taking place[10], which may eventually help to break this circle. In Table 3.25, growth in population during the last three census period is compared with growth of income in the economy. Although real growth in the economy exceeded population growth in the 1970s, 1980s and the 1990s, growth in the agriculture sector on which the livelihoods of the majority of rural people are dependent, has lagged behind population growth in both the 1970s and the 1990s. More than 40 percent of the population was below 15 years in all three census years and, although the rate of growth of this population group continues to decline (from 2.89 percent from 1981 to 1991 to 2.36 percent from 19981 to 1991), the rate of growth is still high.

Table 3.25: Comparative growth in population and economy

	1971-81	**1981-91**	**1991-2001**
Population growth	2.66	2.10	2.28
Real GDP Growth	3.11	5.06	4.64
Real AGDP Growth	0.76	3.74	2.12
Real NAGDP Growth	7.32	6.87	6.64

Note: Real GDP, AGDP and NAGDP growth in the 1970s refer to 195/76-1980/81 and are at 1970/71 prices; for the 1980s these refer to 1984/85-1990/91 and for the 1990s, these refer to 1990/91-1997/98 periods only. For the latter two periods, these are at 1984/85 prices.
Source: Computed from CBS population data and MOF-*Economic Survey 2000* and *2001*.

3.5.2   Growing labour force and low employment

Table 3.26 shows the actual and potential labour force of Nepal using conventional definitions. The 'work force' is defined as those who are actually working or available for work during seven days prior to the time of survey.[11] The participation rate is lower for women than for men because many of the tasks women perform have not been categorized as 'productive work'. However, the apparent increasing participation rate of women over the period shown in the Table indicates that more of their work is being recognized as productive.

Table 3.26: Potential and actual labor force and participation rate by sex, 1971-1996

(In millions)

	1971			1981			1991			2001		
	M	F	T	M	F	T	M	F	T	M	F	T
Population	5.8	5.7	11.6	7.7	7.3	15.0	9.2	9.3	18.5	11.4	11.4	22.8
Population ≥10 years	4.1	4.1	8.2	5.4	5.1	10.5	6.2	6.5	12.7	7.6	7.7	15.3
Work force	3.4	1.4	4.8	4.5	2.3	6.8	4.3	3.0	7.3	6.2	6.9	13.1
Participation rate (%)	82.9	35.1	59.3	83.1	46.2	65.1	68.7	45.5	57.0	81.8	90.2	85.8

Source: NHDR, 1998 and CBS 2002.

In all the periods referred to the labour force participation rate (LPR) varied across ecological belts. Table 3.27 shows that in all these periods the LPR was highest in the Mountains, followed respectively by the Hills and the Tarai. The low participation rate in the Tarai was caused primarily by religious and social norms, which bar women to come out of households to find work. The growing trend in participation rate in that zone suggests a growing relaxation of such attitudes.

Table 3.27: Changes labor force participation rate by ecological belt (%)

Belt	1971	1981	1991	1996	2001
Mountains	70.0	75.7	74.5	81.5	NA
Hills	62.9	68.8	62.8	70.5	NA
Tarai	51.3	58.8	48.6	69.0	NA
Nepal	59.3	65.1	57.0	70.6	85.8

Source: NHDR, 1998 and CBS 2002.

The distribution of workers by major areas of work in three periods is presented in Table 3.28. This shows that agriculture remains the dominant sector in employment. The rest of the economy comprises sectors like mining and quarrying, manufacturing, electricity, gas and water, construction, trade and commerce, transport and communication, finance and business service, and personal communication services. Among these non-agriculture sectors, trade and commerce and personal communication services were important in terms of absorbing the work force. The continuing predominance of the agriculture sector in livelihoods indicates agricultural development as the prime area to be targeted in poverty reduction policy.

Table 3.28: Work participation by major sectors

Sectors	1981	1991	1996
Agriculture, forestry & fishery	91.13	81.23	82.9
Non-agriculture	8.87	18.77	17.1
Total	100.00	100.00	100.00
Distribution of non-agriculture			
Trade and commerce	18.09	18.58	NA
Personal community service	51.64	54.57	NA
Other sectors	30.26	26.85	NA

Source: CBS, 1995 and CBS, 1996.

3.5.3   Unemployment and underemployment

In Nepal a person 10 years of age or older who is not at work at least one day in a year or one hour in a week but is seeking work or is available for work and who is not a student or household worker or physically unable to work is defined as unemployed. Because of this narrow definition, the unemployment estimates (Table 3.29) appear rather low. The unemployment rate reported by the Nepal Labour Force Survey 1998/99 (1.8 percent) is also low. This is because it considered employment only of people in age group 15 years and above, whereas in the previous two surveys the cut-off age was 10 years. Unemployment was higher among the males than among females in 1976/77 but consistently lower in subsequent periods.

Table 3.29: Estimates of unemployment rate in different point in time

	Year			
	1976/77	1984/85	1995/96	1998/99
Male	5.5	NA	5.6	2.0
Female	6.0	NA	4.1	1.7
Total	5.6	3.1	4.9	1.8

Source: NPC, 1977; CBS, 1996 and 1999 and Ghayur. 1994.

Although the reported unemployment rates were lower than previously, there was quite a high rate of underemployment due mainly to the very narrow definition of unemployment that was used. An active person in the labour force is said to be underemployed if he/she does not work for 40 hours a week. Table 3.30 shows the estimates of underemployment at different points in time. Underemployment is more rampant in rural areas than urban areas. This is because of the seasonal nature of agriculture, which is the prime source of employment in rural areas. By ecological belts, it is lowest in the Mountains (36.5 percent) and highest in the Tarai (50.8 percent) and in between in the hills (45.1 percent). Given that Tarai is characterized by larger farm size, low labour force participation rate and better infrastructure, one would normally expect low underemployment rate in the Tarai. However, the seasonal nature of agriculture and low cropping intensity makes it vulnerable to high rate of underemployment, as observed during 1995/96.

Table 3.30: Changes in underemployment

Region	1976/77	1984/85	1995/96	1998/99
All Nepal	60.9	44.9	47.0	27.4
Rural	63.1	46.4	47.5	NA
Urban	44.7	33.6	38.1	
Mountains	-	-	36.5	
Hills	-	-	45.1	
Tarai	-	-	50.8	

Source: Computed from NHDR, 1998.

3.5.4   Slow growth in labour productivity

Changes in labour productivity have been interpreted on the basis of two parameters. The first is the ratio of real gross domestic product to work force (population aged 10 and above). The second is movements in real wage rates. The first of these measures is presented in Table 3.31. The most worrying feature of this table is the fall in labour productivity of almost two percent per annum between 1991 and 1996, and by 3.4 percent between 1996 and 2001 reflecting the fact that during the period real GDP grew annually by 4.9 percent while the workforce increased by 7.2 percent during the first period and by 8.9 percent and 5.2 percent respectively during the second period.

Table 3.31: Changes in labour productivity over time

Year	Work force million	Real GDP Rs million (1984/85 prices)	Productivity Rs/person	Annual growth (%) between periods		
				Labour	Real GDP	Productivity
1991	7.3	59768	8187			
1996	10.3	75773	7357	7.13	4.86	-2.12
2001	15.8	97620	6178	8.93	5.20	-3.43

Source: Computed from *Economic Survey*, MOF, 1999/2000 and 2000/01.

Changes in the second indicator are presented in Table 3.32. Although there has been modest growth in most sectors, by international standards real wage rates have remained low in Nepal. The situation in agriculture is the worst, but growth has also been sluggish in Kathmandu and real wages have actually declined in Biratnagar. The real wage rate of labour in the informal sector has however been increasing consistently in both places. In the civil service, real wages of junior level staff have not only been low and insufficient to meet daily requirements but also have remained unchanged over the period. The exceptions are peons, whose real wages increased slightly, and clerks, whose real wages declined.

Inflation averaged around 9 percent per annum between 1991/92 and 1997/87, and this combined with slow growth in nominal wages to produce slow or negative progress in real wage growth. Inflation in food prices over the period was higher than the general inflation rate, with cereal prices growing at about 10 percent annually. Although higher prices of cereals provide some incentives to producers, this hits the

poor particularly hard, since they spend a high proportion of their earnings on staple foods and grow less cereals all of which they normally consume.

Table 3.32: Levels and trends of real wage (RW) by sector

(Real wage rate Rs/month for unskilled labor at 1985 prices)

Real wage by industrial activity*	Year					Growth rate (%)
	1985	**1990**	**1994**	**1995**	**1996**	
Kathmandu						
Agriculture	636	657	658	739	795	2.05
Industry	313	280	360	421	412	2.53
Labor**	-	631	775	783	852	5.13
Biratnagar						
Agriculture	523	478	506	472	444	-1.48
Industry	301	304	431	507	381	2.17
Labor**	-	478	619	629	592	3.63
	1985	1991	1994	1995		
RW in civil service						
Peon	410	469	NA	404	441	0.66
Junior clerk	545	580	NA	495	520	-0.43
Clerk	650	654	NA	569	583	-0.98
Senior clerk	815	770	NA	697	694	-1.45

* Nominal wage in Kathmandu and Biratnagar deflated by respective area consumer price indices.
** Other unorganized sector labor.
Source: NHDR, 1998.

3.5.5   Low and declining farm size

High population growth in the 1970s and 1980s resulted in increased pressure on land resources. This is evident from the land use data presented in Table 3.33, which shows a distinct pattern of change between 1975 and 1985. This change was mainly centred on conversion of forest into agricultural land since no major changes were observed in other land use categories[12].

Table 3.33: Land resources and land use changes

(Area in square km)

Land use category	1975		1985	
	Area	**%**	**Area**	**%**
Cultivable	23260	16.49	26533	18.03
Forests	48230	34.19	55334	37.6
Pasture	17857	12.66	19785	13.44
Others	51712	36.66	45529	30.93
Total	141059	100.0	147181	100

 Source: NASSS, 1982 and LRMP, 1986.

The changes in land use between 1981 and 1991 as presented in Table 3.34 indicate that about 93 percent of land was under agriculture, while the number of holdings increased. In the inter-censal period the number of holdings increased proportionately more than the increase in agricultural land, so that average land holding per household fell in all three ecological belts. In a situation where the rate of

technological progress in agriculture is either non-existent or very low, this contributes to growing rural poverty.

Table 3.34: Changes in land use in Nepal between 1981/82 and 1991/92

	1981/82	1991/92	% Change
Total agriculture land (000 ha)	2359.2	2393.0	1.43
Total non agricultural land	104.5	204.5	95.69
Total land holding	2463.7	2597.4	5.43
Total holdings ('000)	2194.0	2736.0	24.70
Holdings w/o land	8.3	32.1	286.75
Holdings w/ land	2185.7	2703.9	23.71
Average size of holding (ha)	1.13	0.96	-14.78
Agriculture holding	1.08	0.89	-18.01
Non-agriculture holding	0.05	0.08	58.19
Average Family Size (no)	5.86	5.94	1.4
Land: Person Ratio	0.15	0.13	-1.42

Source: National Sample Census of Agriculture, 1981 and 1991.

During the period, non-agricultural land also increased by about 96 percent. This is probably because land not registered previously is registered but is yet to be put under cultivation.

Table 3.35 shows the percentage distribution of land resources between the three ecological belts. Several defining features of these belts emerge from these data. One is the very low proportion of land that can be cultivated in the hills and the correspondingly high proportion in the Tarai. A second is the fact that so little of the country's pasture is in the Tarai, reflecting the way it has been brought under cultivation. More than half of the land in the Mountains is in the 'others' category, i.e. mainly uncultivable slopes and high altitude areas where little can be grown. Most of the 'others' land in the Tarai is water bodies and settlements.

Table 3.35: Ecological distribution of land use, 1985

Land use	Percentage distribution of area		
	Mountains	Hills	Tarai
Agriculture	0.26	48.12	51.62
Forest	2.80	62.50	34.70
Pasture	50.66	45.09	4.25
Others	51.89	38.34	9.77
Total	22.71	50.19	27.10

Source: ACES, CBS 1998.

3.5.6   Inequalities in land distribution

Another characteristic of demographic and land use changes in Nepal is that the land distribution has been highly skewed in favour of big landholders. Table 3.36 presents the Gini Coefficients (GC) for four consecutive agricultural census periods. The GC is a measure of inequality, in this case in land

holding: the higher the coefficient (maximum 1), the greater the degree of inequality. The degree of skewness was clearly high in the 1961-62 census, and remained so in the next census. However in the 1980s there was a significant improvement, probably due to the cumulative effect of land reform measures adopted in the 1960s and continued fragmentation of holding due to family division.

Table 3.36: Gini-coefficients for land distribution in different agriculture census periods: 1961-62- 1991-92

Census Year	1961-62	1971-72	1981-82	1991-92
Gini Coefficient	0.82241	0.83614	0.80257	0.68998

Source: Calculations based on the respective census data.

Despite improvements in land holding distribution, inequalities are still high, as is shown in Figure 3.1, which presents Lorenz curves of land distribution. In such curves a greater the curvature of the line indicates a greater the degree of inequality, so that the inequality appears to have diminished over the periods. In 1981, the bottom 50 percent of households – each operating less than 0.5 ha – possessed only about 7 percent of the total land, while the top 30 percent – with three hectares and above – and possessed nearly 48 percent of the total. Although land distribution in the 1990s has improved, distribution remained highly skewed, with around 43 percent of holders possessing less than 0.5 ha land accounting for almost 11 percent of land while proportion of land possessed by the top 10 percent holding around 3 ha amounted to around 42 percent.

Figure 3.1 Land distribution in 1981 and 1991
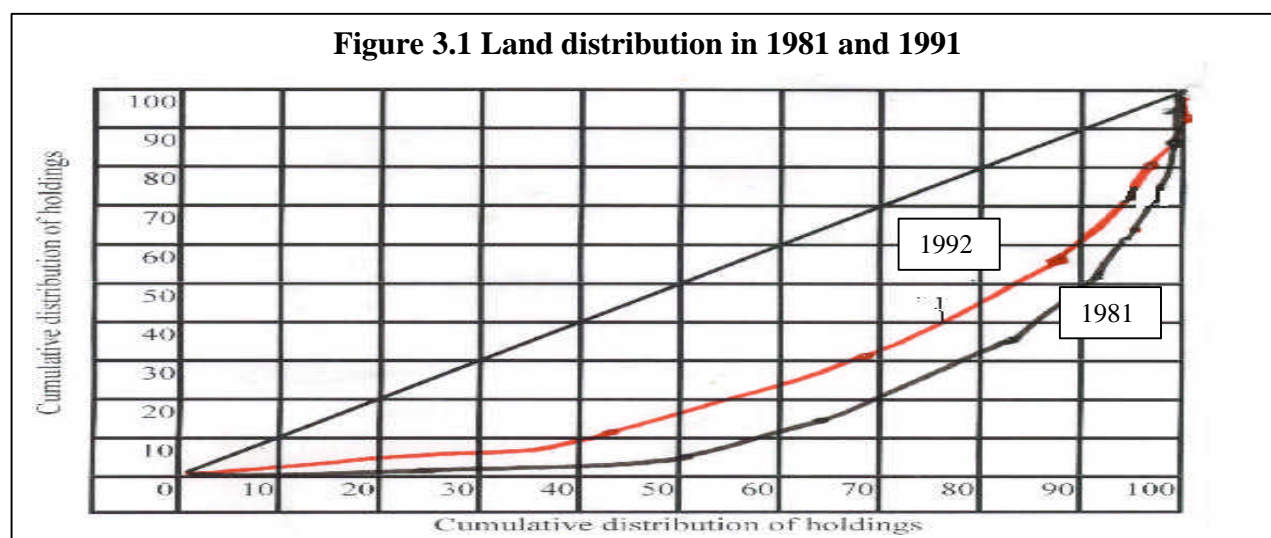
Given the social features of property inheritance prevalent in Nepal, land distribution is likely to improve in future even without implementation of land reform program. However, the impact of such improvement would not be food security enhancing as such improvement will come from continued fragmentation of holding with potentially damaging effect on land productivity and thus on food security. Thus any land reform program aimed at improving food security situation through redistributive measures should consider the economic size of land holding and discourage land fragmentation beyond certain parcel size.

Table 3.37 provides further details. A parallel dimension of inequality of land distribution is found in gender comparisons. About 94 percent of holdings in both 1981 and 1991 were controlled by men, an inequity that was worsened by the fact that the average size of land holding of men was 0.98 ha as against 0.66 ha for women farmers (CBS, 1994).

Table 3.37: Land tenure status in 1991

	Holding	**Area**
Proportion of large holdings	4.7	26.5
Proportion in one tenure form	85.2	82.9
Proportion of owner in one tenure form	97.2	98.0
Proportion of others in one tenure form	2.8	2.0
Proportion in more than one tenure form	14.8	17.1

Source: CBS, 1994.

Small and declining farm size, large and increasing family size and continuing (if somewhat mitigated) inequalities in the distribution of land resources unveils a clear picture of deteriorating population: land balance which is one of the factors contributing to the growing incidence of poverty and food insecurity.

3.5.7   Growth in livestock population and inequalities in distribution

Livestock are one of the important agricultural resources in Nepal. Figures on livestock population during three points in time in the 1980s and the 1990s are presented in Table 3.38. Between 1985/86 and 1999/00 number of all types of domestic animals increased. However there was a distinct difference growth patterns before and after the mid-1990s. While the growth rate in the number of large animals declined over the period, that of pigs and poultry grew. In addition, growth in number of milking animals and laying hens in the latter period has been higher than in the former period. These trends suggest an underlying farmer strategy of replacing large animals with smaller ones due to declining resource base (reduced forest and grazing lands) and to switch from less productive to more productive animals.

Table 3.38: Growth in livestock population and productive animals

Animal	**Population (million)**			**Growth rate (%)**	
Type	**1985/86**	**1995/96**	**2000/01**	**1985-95**	**1995-2000**
Large	9.27	10.3	10.61	1.06	0.59
Small	5.81	6.66	7.33	1.37	1.94
Pig	0.45	0.67	0.91	4.06	6.31
Poultry	9.6	14.92	20.2	4.51	6.25
Milch Animal	1.36	1.57	1.79	1.45	2.66
Laying birds	3.24	4.8	6.21	4.01	5.29

Source: SINA, 1994/95 and 2000/01.

In terms of ecological belts, the livestock population expressed as standard Livestock Units (LSUs) are shown in Table 3.39. It is significant that this distribution of LSUs does not follow that of

pasture resources shown earlier. However it does reflect the distribution of the livestock feed base. Two important facets of this difference are (a) the dominance of stall-feeding in the Tarai, and hence reduced reliance on pasture, and (b) the poor quality and low holding capacity of much of the pastureland in the Mountains compared with the Hills.

Table 3.39 Ecological distribution of livestock population and livestock feed base

Particulars	Unit	Country Total	Distribution (%)		
			Mountain	Hill	Tarai
LSU	Million	11.88	11.53	51.94	36.53
LSU feed base	000 ha	11.22	10.13	56.97	32.90

Notes: 1. LSU is the average of 1997 and 1998 and agriculture and forestland refers to 1986 figure.
    2. LSU is defined as cattle and buffalo as one and sheep and goat as 0.2.
    3. LSU feed base refers to agriculture and forest land.
Source: ACES, CBS, 1998 for land use data and SINA 1997/98 and 1998/99 for LSU data.

Compared to land, livestock are more evenly distributed across households. In 1991/92, GCs calculated for total livestock (cattle, buffalo, chauri, sheep and goat), large animals (cattle, chauri and buffalo) and small animals (sheep and goat) in terms of standard livestock units were respectively 0.084, 0.083 and 0.070[13].

3.5.8   Excessive dependence on agriculture

The role of the agricultural sector in the economy in terms of its share in GDP, households and population is depicted in Table 3.40. Although agriculture's share in GDP has been declining, it is still the largest single sector of the economy, while its position in terms of providing livelihoods to the great majority of the population has changed little over the years.

Table 3.40: Position of agriculture in the economy

Particulars	Share of Agriculture (%)		
	1980-81	1990-91	2000/01
GDP	57.40	48.80	40.10
Total households	84.90	82.20	84.08
Total population	85.70	87.90	85.80

Note: Share indicated in 2000/01 refers to rural households and population.
Sources: ES, MOF, 1998/99 and 2001/02 and CBS, 1994 and 2001 (NPC web site).

This can be seen by comparing the decline in the number of households in agriculture with the increase in the number of people in the sector, indicating that household size in agriculture is growing. The fact that farm population is increasing faster than total population while the declining contribution of AGDP to total GDP indicates declining productivity in the agricultural sector, which is nonetheless forced to absorb redundant labour due to lack of alternative livelihood opportunities. Because of the low base of employment in the non-agricultural sector, even a respectable rate of growth in the employment in this sector (which rose from about 8.9 percent in 1981 to about 18.8 percent in 1991) could not absorb the

incremental labour force over this decade. This is also reflected in the share of farm income, which is nearly half of total income for households in the highest income bracket (Appendix Table 5). Heavy dependence on an agricultural sector in which there is little technological progress means that agricultural productivity is at best stagnant, another factor contributing to persistent poverty and food insecurity, especially in rural areas.

3.5.9   Limited scope for the expansion of cultivated area

The interacting problems of people's heavy dependence on agriculture and higher growth of farm population than total population are compounded by extremely limited scope for expansion of cultivated area without heavy environmental cost.[14] This is the second factor contributing to accentuation of poverty and the possibility for further deterioration of poverty and food insecurity in the future. A look back at the Table 3.31 shows that cultivated area increased from about 2.32 million ha in 1975 to around 3.1 million ha in 1980 and then declined to about 2.6 million ha in 1985. Although the lower cultivated area reported in 1985 cannot be compared with that of 1980 figure due to data reconciliation problem, there is extremely limited scope for the expansion of cultivated land. It is significant that agricultural land, which increased by about 767 000 ha during the 1970s, increased only by 34 000 ha in the 1980s.

3.5.10   Slow and variable growth in agriculture and low productivity

Another phenomenon that helps account for the growing problems of poverty and food insecurity is the slow and variable growth of the dominant sector, agriculture. Table 3.41 shows the growth rate of several agricultural indices during the 1990s. Growth of AGDP was not significantly different from that of population. Annual growth in real AGDP was highly variable with the coefficient of variation (CV) of 123 percent (Table 3.2). During the period, cereal grain production grew by about 2.11 percent and cereal yield by about 1.20 percent, but again with high year-to-year variation. Growth in the production of cash crops, which account only for about 10 percent of cropped area, was modest. Growth in the production of other crops (horticulture, pulses and oilseeds) also remained low with a CV of 122 percent. However, output growth in livestock production has been more stable (CV 56.9 percent) and higher than population growth.

Table 3.41: Growth and variability of agriculture sector in 1990s (1990-2000)

Agriculture	Growth rate in Index (%)		Coefficient of variation in
Commodity groups	Compound	Annual	Annual growth
AGDP	2.97	3.02	104.13
Cereal grains			
Cropped area	0.90	0.92	264.67
Production	2.11	2.45	361.91
Yield	1.20	1.39	468.40
Cash crops production	6.46	6.52	54.63
Other crops production	3.85	3.95	121.71
Livestock products	2.74	2.75	56.92

Source: Computed from data provided in ES, MOF, 2001

Lack of progress in the agriculture sector vis-à-vis neighbouring countries is exemplified by the figures presented in Table 3.42. Nepal had the highest crop yields in South Asia during the early 1960s, but the situation in the late 1990s was the reverse of this.

Table 3.42: Per hectare yield and growth rates of major crops in Nepal and other Asian countries (1961-1999)

Yield Countries	1961-63				1997-99			
	Paddy	**Wheat**	**Sugar**	**All**	**Paddy**	**Wheat**	**Sugar**	**All**
Nepal yield (kg/ha)	1 940	1 230	1 979	1 854	2410.0	1630.0	3597.0	2940.00
Nepal yield as % of								
India	129	146	46	198	83.05	63.17	53.68	46.71
Bangladesh	116	198	53	111	85.81	74.43	84.92	87.05
Pakistan	140	150	61	212	84.38	75.78	74.68	46.32
Sri Lanka	101	NA	119	108	74.29	NA	66.02	64.91
Growth Rates (%)					1961-63 to 1997-99			
Nepal					0.59	0.76	1.63	1.25
India					1.79	3.07	1.20	5.28
Bangladesh					1.41	3.46	0.34	1.92
Pakistan					1.97	2.64	1.07	5.50
Sri Lanka					1.43	NA	3.26	2.66

Source: NSAC, 1999 for 1961-63 data and SINA, 1999/2000 for 1997-99 data.

3.5.11   Slow progress in adoption of modern agricultural technology

Application of improved agricultural technologies helps increase land and labour productivity and can thus contribute to poverty alleviation. The role of improved technology in alleviating rural poverty would be greatest in a country where agriculture is absorbing most of population growth and land resources are fixed, so that farm size is declining. This is the case in Nepal. Irrigation, improved seeds, fertilizers and other inputs and improved farm machinery are at the forefront of modern agricultural technology. The extent of coverage of these innovations and their adoption rate by farmers are to an important extent determined by farmers' access to these inputs and to the credit required to finance their purchase. These help determine the level of agricultural productivity, which in turn affects poverty and food security, particularly in rural areas where agriculture is the main source of livelihoods.[15]

3.5.11.1 Irrigation

Past efforts to develop irrigation increased irrigated area to about 193 182 ha by the end of the Fourth Plan period (1974/75). Continued emphasis on irrigation in subsequent plans resulted in the further increases as shown in Table 3.43. About 35 percent of agricultural land is irrigated (i.e. it is irrigated during at least one season in a year). Growth slowed slightly during the second period shown in the table. In terms of ecological belts, growth has been higher in the mountains and hills than in the Tarai, but this is largely a function of their relatively low starting points.

Table 3.43: Development of irrigation facilities 1974/1975-1999/2000

(Area in Ha)

Year	Hills & Mountains	Tarai	Total
1974/75	9 646	183 536	193 182
1997/98	142 990	687 425	886 249
1999/2000	140 910	781 026	921 936
Growth (1974/75-1996/97)	11.8%	5.9%	6.9%
Growth (1974/75-1999/2000)	11.3%	6.0%	6.5%

Source: Computed from Appendix Table 6.
Note: Analysis here has been confined to irrigation facility developed by the government. These figures thus do not include 130,277 ha of land irrigated through farmers system.

Farmer's access to irrigation in the 1980s and the 1990s is shown in Table 3.44. Comparing ecological regions, about 58 percent of holdings in the Mountains and about 50 percent each in the Hills and the Tarai had some access to irrigation in 1991. About 24 percent of the land in both the Mountains and the Hills was irrigated, compared to about 43 percent in the Tarai. The average size of irrigated area per holding in the three belts was 0.16 ha, 0.18 ha and 0.55 ha respectively. Between 1981 and 1991 irrigated area grew by an annual average of about 11 percent in both Mountains and Hills and by about 3.5 percent in the Tarai.

Table 3.44: Access of Landholders to Irrigation

Particulars	1981/82	1991/92			
		Mount	Hill	Tarai	Nepal
Proportion of landholders irrigating	38.6	57.9	50.4	49.9	50.9
Proportion of area irrigated	23.7	23.6	23.5	43.3	34.0
Average size of irrigated holding (ha)	0.24	0.16	0.18	0.55	0.33

Source: NSCA 1991/92 Highlights, CBS, 1994.

Table 3.45 tabulates size of holding against irrigation status of holdings. This indicates that the larger the holding the more likely is some of it to be irrigated. There is also evidence of a positive correlation between size of holding and the proportion of it under irrigation, although the smallest holding category tends to have a higher proportion irrigated than the middle category, so that the relationship is not perfect.

Table 3.45: Access to irrigation by size class of holding

Size class	% of holders irrigating	Mean size of holding (ha)	% of area irrigated
< 1 ha	46.6	0.42	28.5
1- < 3ha	60.3	1.60	22.9
3 ha & above	66.0	5.37	58.2
All holdings	50.4	0.96	35.4

Source: Computed from CBS, 1993, Table 4

3.5.11.2 Fertilizers

Although fertilizers were first introduced into Nepal in the early 1950s, use started picking up only after the establishment of the Agriculture Input Corporation (AIC) under the Ministry of Agriculture (MOA) in 1966, and the subsequent push to popularize and distribute this input. Table 3.46 shows growth of fertilizer consumption since the mid 1960s. The drop in consumption during the 1990s resulted from limitations on fertilizer supply, which in turn resulted from constraints on the amount of funding the government made available to AIC for subsidies. This led to pent-up demand and distortions in supply, and ultimately to a government decision to deregulate fertilizer trade and to phase out subsidies in a two-year process beginning in 1997[16]. With this process completed supply constraints were eased and consumption picked up significantly, as the Table shows.[17] This issue is further discussed in Chapter 5.

Table 3.46: Consumption and growth rates in fertilizer consumption in Nepal

Periods	Nitrogen	Phosphorus	Potash	Total
Fertilizer consumption (Mt nutrient)				
1965-66	342	99	10	451
1979-80	13746	3341	1456	18543
1990-91	49206	16742	1338	67286
1996-97	43231	19284	1635	64150
1999-2000	74196	12097	1258	85451
Growth Rates (% per annum)				
1965-90	21.99	22.78	21.63	22.17
1990-97	-2.13	2.38	3.40	-0.79
1997-2000	19.73	-14.40	-8.37	10.03
Per Hectare Fertilizer Use in 1998 (kg nutrient)				
Bangladesh	India	Nepal	Pakistan	Sri Lanka
140.5	99.1	40.9	111.7	123.4

Source: Computed from Tamrakar, 1998 and ES, MOF, 2001and SIFAD, 2000 for fertilizer consumption.

Initial confusion among private fertilizer dealers seems to have been reduced as Government has worked out the details of policy implementation. This has helped revive private sector confidence, resulting in improved fertilizer import after 2001/2002[18] (Poudel, 2001). Problems nevertheless remain. One is that overall fertilizer use is far below recommended levels and lags far behind that found in neighbouring countries (Table 3.46). Another is that fertilizer use is not balanced between different plant nutrients. Between 1990/91 and 1996/97, for every kilogram of nitrogen used, 0.38 kg of phosphorus and 0.03 kg of potash were used. This compares poorly with a recommended ratio of 1:0.54:0.34 (Poudel, 2000). Low use of phosphorous and potash in relation to nitrogen results is nutrient mining and consequent soil fertility decline, with long term negative implications on productivity.

Table 3.47 shows adoption of fertilizer for major crops in three time periods. Despite the fact that chemical fertilizers were introduced about half a century ago, almost half of farmers still do not use them. This is either because of lack of supply or lack of access to available supply. The issue of poor use or the restricted supply has already been discussed. The issue of relative access (approximated by the time taken to reach nearest co-operatives)[19] is discussed in the next paragraph.

Table 3.47: Adoption of fertilizers by farmers

Crop	Proportion of growers adopting (%)		
	1981/82	1991/92	1995/96
Paddy	16.0	48.8	54.6
Wheat	26.9	52.4	48.6
Maize	5.1	22.6	26.8
Potato	7.7	30.5	13.9
Sugarcane	14.3	71.2	NA

Sources: NSCA, 1991/92, CBS (1994) and NLSS 1999, CBS, 1997

Table 3.48 shows the relationship between fertilizer consumption (defined in quintiles based on ascending order of fertilizer use) and access to supplies (defined in terms of time taken to reach the nearest sales outlet).[20] This shows a clear negative correlation between level of use and ease of access. Poor and inequitable access to fertilizer could be major factors explaining the slow growth in the agriculture sector contributing to the problem of food insecurity and high and increasing trend of poverty in rural Nepal.

Table 3.48: Relative access to fertilizer sale outlets, 1995/96

Consumption group quintile	Mean consumption (Rs./capita/annum)	Percent of rural households	Average time taken (hours)
I	2 571	3.7	3.73
II	3 893	56.4	2.45
III	5 142	7.4	2.45
IV	7 147	10.4	2.28
V	15 243	22.1	1.82
Rural average	6 783	100.0	2.63

Source: NLSS, 1996, CBS, 1997.

3.5.11.3   Improved Seeds

Although efforts to modernize Nepalese agriculture through research and development of improved crop varieties started with the creation of the Department of Agriculture in 1924, real efforts at widespread distribution of improved seeds started only after the creation of AIC. However, the quantities of improved seeds of paddy, maize and wheat distributed by AIC have remained low (Table 3.49). Acreage covered by improved seeds in a particular year does not depend only on the amount of improved seeds distributed by formal sources, because there is also farmer-to-farmer spread. Thus actual coverage of crop acreage by improved seeds in a particular year is difficult to estimate in the absence of a large-scale survey. However, it is observed that farmers do not replace improved seeds as regularly as they should for optimal results.

Table 3.49: Consumption of improved seeds

(Unit = Mt)

Crop	1985	1990	1995	2000
Paddy	237	146	324	326
Maize	93	126	81	25
Wheat	1786	2122	3279	2234
Total	4101	4384	5679	4585
Growth rate (%)	**1985-90**		**1990-95**	**1995-2000**
Paddy	-9.23		17.28	0.12
Maize	6.26		-8.46	-20.95
Wheat	3.51		9.09	-7.39
Total	**2.50**		**9.00**	**-6.84**

Source: Economic Survey, 2002, MOF.

Available survey results, summarized in Table 3.50, indicate that adoption of improved seeds of paddy, wheat, maize, potato and sugarcane had increased during the 1991/92 agricultural census period compared to 1981/82 period, but had declined drastically by 1995/96 for all the crops for which data are available. The reasons are not clear, but the changes could be the result of statistical difficulties, such as definitional changes or failure in the latter survey to take account of farmer-to-farmer spread. The figures reported by NLSS (1996) are far below the area coverage of improved seeds reported by MOAC. The latter reports that coverage by improved seeds is around 61 percent for paddy, 87 percent for wheat and 64 percent for maize. These figures are also unsatisfactory, because they provide no information about seed replacement.

Table 3.50: Adoption of improved seeds

Crop	Proportion of growers adopting (%)		
	1981/82	**1991/92**	**1995/96**
Paddy	3.2	24.0	4.9
Wheat	4.8	30.7	7.8
Maize	2.4	11.9	4.5
Potato	1.0	17.9	7.6
Sugarcane	3.0	31.8	NA

Source: CBS (1994) and NLSS-1996, CBS, 1997

As in the case of fertilizers, AIC was the only recognized source for the import, production and distribution of improved seeds in the country until mid 1990s, and co-operatives were the principle sales outlets of improved seeds. Under this situation, improved seeds were not among the commodities easily accessible in rural Nepal, and the poor households were left out compared to their better-off counterparts in terms of practical access to the nearest co-operatives.

3.5.12   Access to Agricultural Services and Facilities

3.5.12.1Access to Extension Services

Adoption of improved technology by farmers depends, among other things, on the availability of, and access to, extension services. A study undertaken during 1970-71 indicated that the average number of contacts with agricultural extension personnel and activities was about four contacts per family per year (MOA, 1974)[21]. An NPC-UNICEF study in 1997-98 found that only 10 percent of the surveyed households which had visited the agriculture or livestock service centre and that extension workers visited only about 5 percent of households. The same survey indicated that the probability of a visit from an extension agent was five percent for better-off farmers and three percent for those who were worse off (well-being having been defined in terms of quality of housing). This suggests that access to extension services is still limited, and has not improved in any significant way in the past two and a half decades, despite several years' efforts to expand the service. If distance to nearest agriculture extension provider (using the time required to reach such source as a proxy) is a measure of access, the figures presented in Table 3.51 indicate an inverse relationship between access to agricultural extension service and level of consumption expenditure. This reinforces the above conclusion that low-income households have relatively poor access to government extension services.

Table 3.51: Average time taken to reach the nearest *Krishi Kendra* by level of consumption expenditure

Quintile*	Mean (minutes)
I (2 571)	192
II (3 893)	149
III (5 142)	154
IV (7 147)	137
V (15 243)	100

Source: CBS 1996.
* Figures within parenthesis indicate mean consumption of the group (Rs./capita/annum).

3.5.12.2Access to Credit

Given severe liquidity problems among poorer households, adoption of improved technology depends critically on availability of, and access to, agricultural credit. As elsewhere in the developing world, household demand for credit in Nepal is met through two sources. The first is the formal sector, comprising banks and co-operative societies and the second is informal, comprising traditional moneylenders, relatives, etc. Table 3.52 uses data from three successive national level agricultural credit surveys which were undertaken by NRB in 1969-70, 1976-77 and 1991-92 to measure changes in credit over time. This shows that the proportion of borrowers obtaining credit from institutional sources like commercial banks correlates positively and strongly with farm size in all three surveys. Smaller farmers are correspondingly dependent on non-institutional sources. However, for all farmers the largest single source of borrowing remains the non-institutional sector[22]. It should be noted, however, that this

information relates to number of loans, and not to amount borrowed, which may well have a much higher average in the case of institutional lending.

Table 3.52: Proportion of borrowers reporting borrowing from institutional and Non-institutional sources: 1969/70-1991/92

Source	Percent of borrowers by farm size					
	Large	**Medium**	**Small**	**Marginal**	**Landless**	**Average**
Institutional						
1969-70	30.8	25.4	15.2	NA	NA	18.1
1976-77	42.8	30.4	23.1	9.9	NA	24.0
1991-92	38.0	33.0	21.0	15.0	9.0	20.0
Non-Institutional						
1969-70	69.2	74.6	84.8	NA	NA	81.9
1976-77	57.2	69.6	76.9	90.1	NA	75.9
1991-92	68.0	78.0	87.0	91.0	93.0	86.0

Note: In 1991-91, figures sum more than 100 because some borrowers resort to both institutional and non institutional sources.
Sources: Based on NRB, 1972, Vol. IV, p 157; 1980, Vol. I p.160; and 1994, Vol. II, pp. 59 and 69.

Although NLSS 1996 data are not comparable with those of the rural credit surveys quoted above, the trend observed in earlier three surveys in terms of sources relied on and relative access of the poor and the non-poor households is also broadly in agreement with the NLSS data (Table 3.53). Access to institutional credit is positively related with the level of consumption expenditure – a proxy for income. As before, if the proportion of loan from a given source is also an indicator of relative access, then the poor compared to non-poor have less access to institutional sources of credit which is less costly compared to non-institutional source of credit.[23]

Table 3.53: Sources of credit by consumption group

Consumption Group	Percent of loans from: (Total = 100)			
	Bank	**Relatives**	**Moneylender**	**Others**
Ist Quintile	8.21	38.46	49.61	3.72
IInd Quintile	15.06	36.53	45.90	2.51
IIIrd Quintile	15.55	37.29	43.35	3.80
IVth Quintile	17.79	42.45	36.38	3.38
Vth Quintile	21.79	48.18	26.81	3.23
Total	16.14	40.84	39.70	3.33

Source: CBS, 1997. Table 6.2.

Co-operatives and banks are the two major sources of formal agricultural credit, so that time taken to reach these facilities by different types of household can serve as a proxy for accessibility. Data presented in NLSS 1996 shows access is positively correlated with consumption group measured in rupees per capita per annum (Table 3.54).

Table 3.54: Time taken to reach nearest co-operative and bank by quintile, 1996

(Time in minutes)

Consumption Quintile	Mean consumption (Rs per capita per annum).	Time taken to reach nearest	
		Co-operative	Bank
I	2 571	224	225
II	3 893	147	170
III	5 142	147	175
IV	7 147	137	157
V	15 243	109	125
Rural Average		**158**	**178**

Source: CBS 1997. pp. 80-83.

3.5.12.3 Access to market

Proximity to market also affects adoption of modern technology, as it reduces the farm-gate price of purchased inputs, increases farm-gate crop prices, and improves access to extension, credit and other services. Information on market access is not readily available, however. Information provided by NLSS on the time taken to reach nearest market centre, a paved road, a dirt road and a bus stop presented in Table 3.55. This indicates physical access to market. Access to market, assessed on the basis of different measures, invariably show that access to these facilities increases with the increase in the average household consumption expenditure that is also with the income level of households.

Table 3.55: Time taken to reach nearest facilities, 1996

Quintile*	Average time taken in minutes.				
	Market centre	Periodic market	Paved road	Motor road	Bus stop
I (2,571)	270	133	266	200	236
II (3,893)	187	108	266	172	218
III (5,142)	160	120	263	150	232
IV (7,147)	160	91	252	151	200
V (15,243)	123	76	218	143	172
Rural Areas	185	110	270	173	223

* Figures in the parenthesis indicate the mean consumption (Rs per capita per annum).
Source: CBS 1996, p. 43.

3.5.13 Access to Social Services

3.5.13.1 Access to Health Services

The general health condition of Nepalese people is far from satisfactory even by South Asian standards. Table 3.56 presents some basic statistics on health services in 1991 and 1998. Although much improvement occurred over the period, access of population to health facilities and services is still poor. This poor level of health services is reflected in realities such as poor reproductive health, more pregnant women with anaemia, low percentage of births attended by trained health workers, lack of access to

professional ante-natal care, high mortality of children due to lack of proper immunization, etc. (NHDR, 1998).

Table 3.56: Access to health services

	Status	
	1991	**1998**
Population (million)	18.5	23.2
No of health institutions	1 312	4 419
No of health workers	32 815	81 351
Population per institution (number)	14 093	5 250
Population per health worker (number)	563	285

Source: HMG, MOF (1999).

3.5.13.2 Access to Safe Drinking Water

Access to safe drinking water and basic sanitation is also poor. Table 3.57 indicates that the poor - non-poor gap is much less than the rural-urban gap in this respect, but since the proportion of the poor is greatest in the rural areas it will be obvious that the poor, generally speaking, are disadvantaged in the matter of drinking water supply and sanitation as they are in so many other areas. Another source reporting access to safe drinking water and sanitation facilities in rural areas by poverty class during 1997 supports these findings (APROSC, 1998).

Table 3.57: Access to drinking water and sanitation, 1996

(% of households)

	Sources of water			Households with toilet
	Piped	**Hand pump**	**Other**	
Dwelling area				
Nepal	40.7	30.8	28.5	38.9
Rural	29.1	33.3	37.6	17.7
Urban	57.4	27.3	15.3	73.7
Poverty class	**Safe Source**		**Others**	
All	60.5		39.5	18.4
Non-poor	63.5		56.5	28.1
Poor	59.2		40.8	15.8

Source: MOH, 1997, ISD/NPC, 1998 and APROSC, 1998.

3.5.14 Low and unequal distribution of income

The Table 3.58 presents the average household income and sources of income in 1996. Among the three ecological belts, the Tarai-Hills difference is too small to be considered significant, but the figure for the Mountain belt is significantly lower than the other two, adding to the picture of extreme deprivation in that part of the country. The rural-urban difference is also large and meaningful, also adding to the picture already built up, that poverty is particularly acute in rural areas. In terms of development regions, average household income is highest in the CR followed respectively by EDR, WDR, FWDR and MWDR. In terms of income sources, farm income invariably constitutes the major

source of although its share varies somewhat among the ecological belts. (The relatively low figure for the Hills is probably influenced by the importance of Kathmandu.)

Table 3.58: Level and sources of household income

	Income	Income by sources (%)		
	('000 Rs.)	Farm	Non-farm	Others
Mountains	32.3	62.0	18.0	20.0
Hills	45.0	58.0	24.0	18.0
Tarai	44.5	64.0	22.0	14.0
Nepal	**43.7**	**61.0**	**22.0**	**16.0**
Rural	40.4	65.0	20.0	15.0
Urban	86.8	16.0	54.0	31.0

Source: NLSSR, CBS, 1997.

Income distribution in three reference years is shown in Table 3.59. The distribution is obviously highly skewed, and although some improvements were seen in 1985, the overall situation seems to have worsened again in 1996. Changes in the Gini coefficients are somewhat puzzling, with no clear trend, but there is an overall impression that between 1977 and 1996 equity in terms of income distribution improved slightly in rural areas with simultaneously declining in urban areas.

Table 3.59 Income distribution

Ref	Household income share of			Gini coefficient		
Year	lowest 40 %	next 50 %	top 10 %	Rural	Urban	Nepal
1977*	12.6	28.2	59.2	0.60	0.50	-
1985	23.0	54.0	23.0	0.55	0.85	0.57
1996	11.0	37.1	52.0	0.51	0.55	0.57

Note: *last 10 percent shows last 20 percent for this year.
Source: NPC 1977, NRB, 1988 and CBS 1996.

3.6 Historical Roots of Institutional Dimensions of Poverty and Food Security

Information related to the history of institutions in Nepal is extremely limited. It is especially so for public institutions, including those related to policy planning and implementation. A similar lack of historical records concerning institutions related to poverty and food security prevents a thorough analysis of this aspect of the subject. Nevertheless, available information is generally unanimous on some important aspects of history that have a direct bearing on institutional dimensions of poverty and food security. First and foremost, land tax was the principal source of revenue for the rulers throughout the history of Nepal. The inscriptions on the Ashoka pillar in the Lumbini garden, dating back to the third century BC, constitute perhaps the earliest written record of the rulers of Nepal extracting land rent. Available documentation for later years confirms that not only was land tax a major source of government revenue, but that the administrative machinery and institutional mechanisms and structure designed for its administration were also a means to implement current state policies. In later centuries, the intermediaries instituted for the purpose of state administration also used the opportunities this presented to exploit the

peasantry and to establish and perpetuate feudalism. Right up until the mid-1950s land tax remained an important source of government revenue.

Any concern of rulers regarding the welfare of their subjects would be expressed by deferring collection of rent or through partial or full waiver of land tax for a specified period in times of calamity. The stone inscriptions mentioned above testify to such practices. They seem to have been continued much later in the history also. Available information indicates that these instruments were used during the period of unification of Nepal in the Eighteenth Century AD and later, during the Rana regime also. However, the evidence indicates that such relief would be provided only during periods of extreme difficulties such as serious drought and other extreme cases of natural calamity. The rulers would respond in this way when the dangers of people abandoning the land and emigrating would be real and high. They would wish to avoid this, as it would entail not only the loss of future revenue, but also the loss of recruits for the army. These were years of abundant land, and therefore subsistence affluence in years of normal weather.

The third area where historical evidence seems unanimous relates to the introduction of measures that would stabilise or increase agricultural output – the principal source of revenue. Since the rulers could not afford to provide tax relief over long periods, they had to find means of stabilising and increasing agricultural production. Irrigation was one way. Occasionally the state would require the peasantry to construct and maintain irrigation systems, so that the chances of crop failure were reduced. Minimal support was provided for this. The occasional reference to *Raj Kulos* or the 'State canals' during the reign of various rulers evince such measures. The success of these constructions encouraged the rulers to issue instructions or to dictate construction of a large number of irrigation systems throughout their territories, using various forms of corvée. The '*Begari*', *Beth* and '*Jhara*' systems are examples. Such unpaid labour was used initially by the state for the construction of temples, monasteries, shelters, inns, treks, trails, bridges, culverts, irrigation canals and other public works. Later such corvées were also imposed by local feudal rulers. The very large number of traditional 'farmer managed' irrigation systems found throughout Nepal is perhaps the product of such institutional innovation notwithstanding the exploitative nature of these institutions in a feudal system.

Reference to the provision of food with priority to children and elderly persons during periods of severe drought is also found in history. The state would procure, store, transport and distribute food among the people affected. Similarly, to ensure availability of foodgrains in local markets, bans on the export of foodgrains were sometimes imposed. To ensure that the following year's crop did not suffer due to seed shortages, the state would distribute seeds to the farmers. Appropriate administrative machinery and institutional mechanisms would be required in order for such policy instruments to be implemented effectively and sustained over a long period. Considering the high level of illiteracy and extremely rudimentary transport and communication facilities that existed, it can be assumed that the institutional mechanisms must have been very effective in order to produce the planned results. One instrument for ensuring this was the imposition of severe penalties for non-compliance with the rulers' orders and dictates. The threat to life due to the vagaries of nature must have been another factor encouraging co-operation and collective action.

The administrative machinery relied on a number of intermediaries who were given responsibility for such activities as tax collection, administration of relief measures and improvement of the production base, and who were provided with appropriate incentives. The various land tenure systems observed until recently are a reflection of the machinery and methods that have evolved over the past 25 centuries. Administrative instructions called *sanads* were issued from time to time, and the rules they promulgated remained in force for several decades – sometimes even for centuries. In essence they were policies expressed in the form of State instructions and rules.

In addion to the *begari, jhara* and *beth* systems mentioned earlier, other forms of communal effort developed, such as *Perma* and *Guthi*. *Perma* is a form of labour exchange among rural people especially during peak agricultural seasons such as transplanting and harvesting of rice. It could also be considered as a form of labour co-operative. *Guthi* is a form of religious trust wherein land is originally donated for some religious purpose and the actual cultivator is tenant of the *Guthi* or trust. All of them have direct bearing on poverty and food security.

Various forms of land tenure, such as *Raikar, Jagir, Rakam, Birta, Guthi*, *Ukhada* and *Kipat*, and related tenurial practices are examples of the institutions that evolved with initial support of the rulers and which later entered the legislative regime with the passage of time. Some of them, such as *Kipat* and *Guthi*, are indigenous innovations. Others, such as *Jagir, Ukhada* and *Zimindari*, were introduced later in history following developments in India during Muslim and British rule. These reinforced feudal forms of agrarian systems. Each of these tenurial forms has evolved its own institutional system of inter-personal and land-farmer relationships. Some of them, such as the *Guthi* system, have local variations. A number of laws, culminating in the enactment and enforcement of the Lands Act 1964 and Lands Rules 1964, and Nationalisation of Pasture Act 2031 (B.S.) have converted all forms of tenure other than *Guthi* to either *Raikar* or state ownership. The *Guthi* form of tenure survived because it is directly linked to religious institutions, but this tenurial system is also being converted to *Raikar*.

After Unification in the Eighteenth Century AD, the country was divided into districts, and an administrator appointed to each. His responsibilities included supervision of revenue collection, the judiciary, the military and general administration. Such administrators were often close to the kith and kin of the rulers - the monarch prior to the advent of the Rana regime (1847-1951) and later to the Ranas themselves. The basic purpose of administration was to maintain law and order and extract rent and surpluses for the personal benefit of the rulers and their families. Given the feudal structure of society of that time, concern for people's lives would generally arise when poverty and food insecurity among the masses became a factor that threatened the establishment.

After the First World War some initiatives were taken to facilitate agricultural development, and these had a direct bearing on food security. An Agricultural Office was established in 1921, and an Agricultural Council in 1927. In 1947-48 two Agricultural Stations were established – in Parwanipur in the Tarai and Kakani in the hills – to test and advise on appropriate technology for these two belts. New investments were made to expand irrigation facilities. The intrinsic purpose of these investments was to ensure perpetuation of the regime in a situation of growing awareness of people's right in South Asia.

Addressing their economic concerns was the instrument chosen to distract their attention from this. The system continued until the political changes of 1951.

An analytical review of the way rules and instructions were framed and presented during this period shows that the rulers left no ambiguity. Most of the instructions were clear in defining responsibilities, which could lie with an individual official, an office, or an agent of the establishment. Clarity in terms of the consequences of non-compliance – fines and other penalties – are important features of these policies. Most of them were in force for a long period. Clarity, consistency and long periods of enforcement are, perhaps, the key factors behind these instructions' efficacy and institutionalization. The resulting behaviour became a deeply rooted part of the socio-cultural milieu; clarity and continuity were perhaps the most significant reasons behind these policies' effectiveness and their success in achieving the intended results.

After the political changes of 1951, when the Rana regime was finally overthrown, efforts were made to initiate planned development. Concern for people's welfare also began to receive priority in formal policy planning. By 1956 a draft of the first Five Year Plan had been prepared. Creation of infrastructure, including the establishment of basic physical and institutional facilities and the organization of credible administrative and judicial machinery, received the highest priority. These priorities remained unchanged, albeit with minor adjustments, for the following 25 years.

Notes on Chapter 3

[1] The AGDP proportion of GDP has declined to about 39 percent in 1999/2000 and is estimated to have gone further down to about 37 percent in 2000/01

[2] M. Lipton (1983). *Poverty, Undernutrition, and Hunger*; World Bank Staff Working Paper No.597. quoted by WB/UNDP (1990)

[3] Since NLSS does not establish any poverty line, the estimates presented here are those presented in NHDR 1998, and thus vary from the estimates of poverty prepared by others using the same data set.

[4] A study conducted by APROSC using food sufficiency criteria in 1998 and covering 225 VDCs in the fifteen districts of Nepal has estimated rural poverty to be around 70 percent with 72 percent, 76 percent and 67 percent respectively in the Mountains, Hills and the Tarai. The proportion of population in the ultra poverty (food self-sufficiency for six months or below) groups was estimated at about 42 percent (39 percent in the Mountains, 43 percent in the Hills and 42 percent in the Tarai).

[5] Gender disaggregated poverty incidence calculated by MIMAP using NRB's Nepal Rural Credit Review 1991 data

[6] FAO. *Rome Declaration on World Food Security and World Food Summit Plan of Action*, 1996.

[7] Correlation coefficient between total cereal production and total paddy production between 1991 and 1997 is estimated at 0.92.

[8] Family Health Survey, 1996

[9] Annex 4, which deals with the micro-level information collected using participatory rural appraisal techniques explores some of the micro-level issues.

[10] See the papers by Caldwell and Rutherford and Thapa in Thapa et. al. 1998.

[11] These are concerned with crude participation rate and constitute population reported working in the last seven days of the reference period.

[12] Information available for 1985, which is based on LRMP data, showed a different picture. This cannot be compared due to lack of reconciliation of the two data sources.

[13] Calculations based on CBS 1991/92 data.

[14] Farm population between 1981 and 1991 grew by 2.4 percent per annum as against total population growth of 2.1 percent.

[15] Discussion has been limited to irrigation, fertilizers and improved seeds only.

[16] Components of fertilizer deregulation comprised of making fertilizers as free entity that could be imported by any agency, placing both public and the private sector on equal footing in fertilizer import and distribution, removing subsidies on fertilizers, making fertilizers an essential commodity protected by the Essential Commodity Act, regulation of prices, allowing transport subsidy on fertilizers to remote areas and defining the role of the government.

[17] Fertilizer subsidy was removed in all fertilizers effective November 1997 except for urea for which subsidy was removed in three stages with complete removal by November 1999.

[18] The government has been drafting fertilizer policy with the active participation of all the stakeholders including the private sector. This document was issued in the first half of 2002.

[19] Rural Sajhas (co-operatives) were the major rural outlets selling fertilizers until 1996/97.

[20] With the deregulation of fertilizer trade, the number of sales outlets selling fertilizers has increased substantially.

[21] The average number of contacts per family per annum estimated by MOAI in 1974 was 6.74 contacts in the case of adopters of 'improved' technology against one contact in the case of non-adopters(MOAI, 1974)

[22] The 1976/77 and 1991/92 surveys further classified small farmers into three categories as, small, marginal and landless farmers. The seemingly improved access of small farmers in the latter two surveys would disappear once these three categories are lumped together.

[23] The latest rural credit survey referred to here also confirms that the interest rates charged by the informal sources is more than twice the rates charged by the formal sources, and that the rate of interest increases with the decreasing size of holdings and economic status. (NRB, 1994).