Kingdom of Cambodia

A Poverty Profile of Cambodia
2004

Otdar Mean Chey

Banteay Mean Chey

Siem Reab

Preah Vihear

Stueng Traeng

Rotanak Kiri

Bat Dambang

Krong Pailin

Kampong Thum

Kracheh

Mondol Kiri

Pousat

Kampong Chhnang

Kampong Cham

Kaoh Kong

Kampong Spueu

Phnom Penh

Prey Veaeng

Kandal

Svay Rieng

Kampot

Takaev

Krong Preah Sihanouk

Krong Kaeb
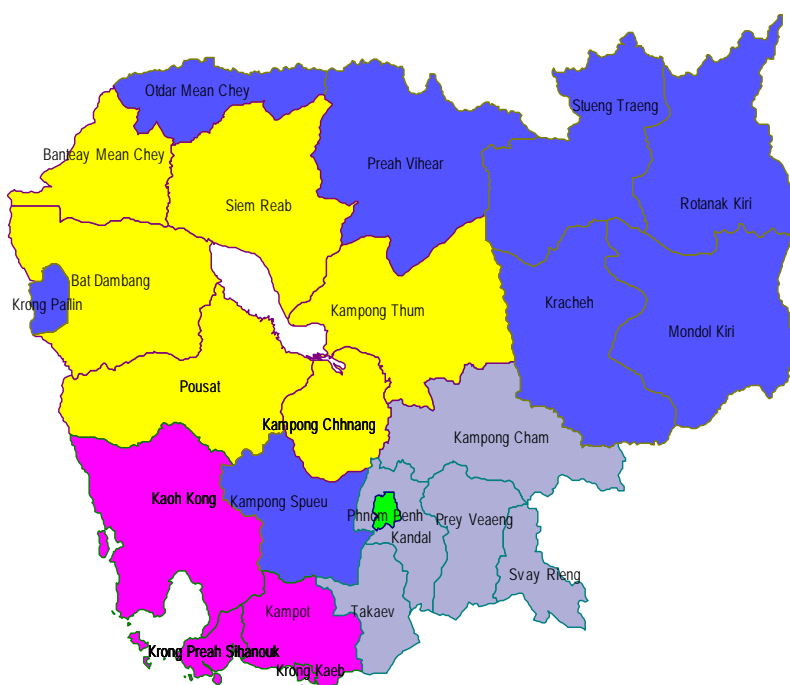
Royal Government of Cambodia
Ministry of Planning
February 2006

Foreword

The Poverty Profile of Cambodia 2004 presents the major descriptions of poverty and examines its pattern using the Cambodia Socio-Economic Survey (CSES) 2003/04. It shows, among others, how poverty varies with geography and how it is affected by different village/community characteristics or by household-level attributes. The poverty profile thus contains valuable information needed to develop effective anti-poverty policies and programs. The information is also useful for monitoring and evaluating progress in poverty reduction in the country.

The present Poverty Profile also provides a rich and systematic information base on distribution of living standards of all Cambodians and thereby supports the Royal Government's efforts to strengthen its poverty reduction policies. I am glad to learn that preliminary version of the poverty profile provided important information in preparing the country's comprehensive National Strategic Development Plan (NSDP) 2006-2010.

The 2004 Poverty Profile brings out a number of insights on how Cambodia can reduce poverty faster by realizing a more pro-poor growth in the coming years. The existence of a great variety in income strategies and asset holdings of the country's poor makes it clear that no single remedy is adequate to reduce poverty in Cambodia. The need is to provide a multi-pronged attack on poverty. The results also bring out the major challenge of accelerating poverty reduction in the rural areas through adopting deliberate, focused and targeted strategies and actions.

The analysis points to the critical need of policies and actions which will ensure that growth reaches the poor and expands their opportunities. For this, we have to build the required assets of the poor--education, good health, access to inputs and markets, voices and power, social inclusion and participation--to help them capitalize on expanding opportunities of growth. I am confident that the findings of this poverty profile will help translate Cambodia's poverty reduction strategies into concrete and effective actions by bringing about changes in emphasis, in practices, and in policies to ensure healthy economic growth benefiting the poor.

The Ministry of Planning gratefully acknowledges the technical, financial and other support provided by the United Nations Development Programme (UNDP), World Bank, Statistics Sweden and the Swedish International Development Agency (SIDA) for conducting the CSES 2003/04 and for processing and analyzing the collected data. Background reports prepared by the World Bank consultant, Dr. J.C. Knowles, using the CSES 2004 recall data and by Professors S. Johansson and S. Backlund of Statistics Sweden using the CSES 2004 diary data provided useful information in preparing the poverty profile. I express my sincere thanks to them. Special thanks are due to Dr. Mustafa. K. Mujeri, Poverty Monitoring and Analysis Advisor, Ministry of Planning/UNDP for his efforts in preparing the poverty profile. I would also like to thank H.E. Ou Orhat, Secretary of State, Ministry of Planning; H.E. San Sy Than, Director General, National Institute of Statistics (NIS); Ms. Heang Siekly, Deputy Director General of the General Directorate of Planning and other staff in the ministry for their sincere efforts in bringing out this report.

I am confident this poverty profile will be useful to the policy makers and to all others who are concerned with the development of Cambodia.

Chhay Than
Senior Minister/Minister
Ministry of Planning

Table of Contents

Abbreviations

CIPS	Cambodia Inter-Censual Population Survey
CPI	Consumer Price Index
CSES	Cambodia Socio-Economic Survey
EU	European Union
FGT	Foster Greer Thorbecke (poverty index)
FPL	Food Poverty Line
MFA	Multi-Fiber Arrangements
MOP	Ministry of Planning
NIS	National Institute of Statistics
NSDP	National Strategic Development Plan, 2006-2010
SESC	Socio-Economic Survey of Cambodia
UXOs	Unexploded Ordnances

Cambodia: Selected Information

Total geographical area:	181,035 sq. km.
No. of provinces:	24
No. of districts:	185
No. of communes:	1,621
No. of villages:	13,890
No. of households (CIPS 2004):	2.6 million
Fiscal year:	January-December
Currency:	Cambodian Riel
Exchange rate (used in this report for 2004):	US$ 1= Riel 4,000
Population:	13.7 million in 2005.
Annual population growth rate:	1.81% in 2004
Share of rural population:	85% in 2005.
Labor force, 10 years and above:	7.5 million in 2004.
Share in employment (2004):	
Agriculture 60.3%	
Industry 12.5%	
Services 27.2%	
Per capita GDP:	Riel 1,400,000 (US$ 350) in 2005.
Annual GDP growth rate (constant prices):	7% in 2005.
Literacy rate 15-24 years:	83.4% in 2005

Executive Summary

1. The Royal Government of Cambodia prepares the poverty profile as an important part of its periodic poverty analysis. This helps to develop anti-poverty programs and monitor and evaluate progress in poverty reduction. The first poverty profile of Cambodia was prepared using 1993/94 Socio-Economic Survey of Cambodia (SESC). Subsequent poverty profiles were prepared for 1997 and 1999 using the Cambodia Socio-Economic Survey (CSES) data for the respective years.

Poverty Profile 2004

2. The 2004 poverty profile provides the major descriptions of poverty in the country and examines its pattern using CSES 2004 data. It gives simple but comprehensive poverty comparisons, showing how poverty has varied over time and across sub-regions and sub-groups of population in Cambodian society.

3. The poverty profile is organized in two parts since the consumption data for CSES 2003/04 were collected using both recall and diary methods. Part I of the report provides new benchmarks and poverty estimates using the diary data. Part II gives poverty estimates for 2004 and poverty comparisons with base-year of 1993/94 using recall data.

4. Despite many differences, poverty estimates under the two methods are similar. The head-count ratio in Cambodia under the diary method is 35.9% in 2004 compared with 34.7% under the recall method. The differences in other two poverty measures, e.g. poverty gap and squared poverty gap indexes are even less. In view of this, Cambodia's detailed poverty profile for 2004 is presented using the results of the recall method to facilitate comparison with 1993/94 when the data were collected by recall method only.

Cambodia Socio-Economic Survey (CSES) 2003/04

5. The National Institute of Statistics (NIS) of the Ministry of Planning conducted the CSES 2003/04 between November 2003 and January 2005 covering 15,000 sample households across the entire country. This is the fifth such survey conducted by NIS, following the socio-economic surveys in 1993/94, 1996, 1997 and 1999. The main objective of the survey was to collect statistical information on living standards of Cambodians and estimate poverty in the country to support credible policy making and evaluate progress in poverty reduction.

6. The socio-economic surveys conducted in Cambodia are not entirely comparable for many reasons. The 1993/94 SESC covered only 59% of the villages and 68% of the households of the country due to security problems at the time. In subsequent surveys, the coverage progressively increased. The 2003/04 CSES is Cambodia's first socio-economic survey that is based on a sampling frame covering the entire country, drawing on the first Population Census conducted in 1998. The implication of expanding sampling frame over successive surveys, including differences in survey design, timing of implementation and many other aspects, is that the estimated poverty rates are not comparable. This indicates that changes in poverty since the 1990s cannot be deduced directly from these numbers.

7. In view of lack of comparability across surveys, poverty comparison in 2004 poverty profile is restricted only to 1993/94 base-year and with estimates from recall method since the 1993/94 survey collected consumption data through recall method alone. The 2004 recall poverty estimates are also made using methods that ensured maximum possible comparability with 1993/94 estimates. Since the full sample estimates for 2004 are not suitable for comparing changes with 1993/94 estimates due to difference in geographical coverage, estimates from geographically comparable areas (that is, from the same geographical areas that were included in 1993/94 survey) are used to assess poverty changes since 1993/94.

Part I: New Benchmarks and Poverty Estimates using Diary Data

8. Diary estimates of poverty using CSES 2004 data differ from corresponding recall estimates in several other ways. Some major differences include: (i) diary estimates are based on the food basket and non-food allowance of the second quintile (instead of the third quintile for recall estimates) in the distribution of per capita household total consumption; (ii) diary estimates use adult equivalent scale to make households comparable across differences in size and composition whereas recall estimates are based on per capita terms; (iii) diary estimates adopt comprehensive price indexes at the household level for food based on unit values instead of using village prices as in recall estimates; (iv) diary estimates use house rents which are adjusted for quality differences through hedonic regressions; and (v) diary estimates adopt 'use value' based on depreciation of durables in possession of households instead of value of purchased durables in the last twelve months as in recall estimates.

Level and Structure of Household Consumption

9. The mean daily per capita household consumption in Cambodia is Riel 3,606 (US$ 0.90) in 2004 at average 2004 Phnom Penh prices; while the mean consumption in per adult equivalent per day is Riel 3,720 (US$ 0.93). The per capita and per adult equivalent consumption estimates show substantial differences in living standard in the three regions. Total expenditure per capita per day is Riel 3,164 (US$ 0.79) in rural areas, Riel 5,007 (US$ 1.25) in other urban areas and Riel 8,324 (US$ 2.08) in urban Phnom Penh.

10. In terms of per adult equivalent, mean expenditure per day is Riel 3,296 (US$ 0.82) in rural areas, Riel 5,111 (US$ 1.28) in other urban areas and Riel 8,140 (US$ 2.04) in urban Phnom Penh. The differences among the three regions are similar for expenditure per capita and expenditure per equivalent scale. Per capita estimates are slightly higher in urban Phnom Penh than adult equivalence estimates while the reverse is true for other urban and rural areas. This reflects the difference, though small, in the family structure and composition between urban and rural areas in Cambodia.

11. The share of food in total expenditure is 55% for Cambodia; which varies from 39% in urban Phnom Penh to 48% in other urban areas and 59% in rural areas. Such differences are in line with expectations since income and living standards are high in urban Phnom Penh followed by other urban and rural areas.

12. In Cambodia, cereals are the largest food item group both in value (31%) and in calories (65%). The three regions have pronounced differences in such shares. The share

of cereals in total food expenditure is only 11% in urban Phnom Penh compared with 25% in other urban areas and 35% in rural areas.

13. Cambodians get almost two-thirds of their calories from cereals. The share of cereals in total calories, however, varies from 34% in urban Phnom Penh to 58% in other urban areas and 69% in rural areas.

14. The average calorie intake per day per adult equivalent is not very different between urban Phnom Penh (2,406 calories), other urban areas (2,515 calories) and rural areas (2,504 calories) despite considerable difference in income between the three regions.

15. Differences in calorie consumption among the five quintiles are considerable. This ranges from 1,476 calories per adult equivalent per day in the poorest quintile to 4,006 calories in the richest quintile. An average calorie intake at less than 1,500 calories per adult per day of the poorest quintile implies that these households suffer from constant hunger.

16. The cost per calorie is the cheapest for cereals (Riel 0.38) followed by fruits (Riel 0.68), take-home food (Riel 0.81) and food away from home (Riel 0.83). The average cost per calorie is Riel 1.33 in urban Phnom Penh compared with Riel 0.99 in other urban areas and Riel 0.77 in rural areas.

17. The per unit cost of calorie from cereals is considerably lower in rural areas (Riel 0.37) than in urban Phnom Penh (Riel 0.45) or other urban areas (Riel 0.42). This lower price of cereals in rural areas is important since cereals are the staple food for most Cambodians, and more so for poor people.

18. Within non-food consumption, housing (including rent, maintenance and repair) is the main item at 43% of total non-food expenditure for all Cambodians. On average, residents in urban Phnom Penh spend 43.5% of total non-food expenditure for housing compared with 49.1% in other urban areas and 41% in rural areas.

19. For expenditures directly related to human resource development, shares are relatively small. The share of health care in total non-food consumption is 4.5% in all Cambodia. Similar shares are 3% in urban Phnom Penh, 2.4% in other urban areas and a relatively high of 5.3% in rural areas. This shows a disproportionate burden of health care cost on the rural population. The share of education in total non-food expenditure is only 1.8% for all Cambodians which is much less than similar shares in recreation and culture (6%) and even tobacco (1.9%). The share is 3.9% in urban Phnom Penh followed by 2.1% in other urban areas and a low of only 1.3% in rural areas.

20. The average total expenditure per adult equivalent per day in Cambodia is Riel 3,720 (US$ 0.93). The per adult equivalent per day total consumption of the poorest quintile is only Riel 1,322 (US$ 0.33). Such consumption is less than one dollar for all quintiles except the richest one; for which it is Riel 9,068 (US$ 2.27).

21. The expenditure share of the poorest quintile in the distribution of total expenditure per adult equivalent per day is only 7.1% whereas the richest quintile's share is 48.7%. This shows that almost half of the country's total consumption is enjoyed by the richest 20% of Cambodians.

22. The value of the Gini coefficient of consumption per equivalent adult per day is 0.403 for Cambodia. This shows a relatively high degree of inequality compared with many countries in the region. Among the regions, other urban areas have the highest Gini-coefficient (0.425) followed by rural areas (0.372) and urban Phnom Penh (0.351).

Estimates of Poverty

23. The estimated food poverty line is Riel 1,684 (US$ 0.42) and the total poverty line is Riel 2,124 (US$ 0.53) in average 2004 Phnom Penh prices. The non-food allowance is Riel 440 (US$ 0.10).

24. The head-count index in Cambodia is 35.9% in 2004. Similarly, 20% of the population lives below the food poverty line. The poverty gap index is 9.2% while the squared poverty gap index (poverty severity) is 3.4% for Cambodia. For the food poverty line, poverty gap index is 4.3% and poverty severity index is 1.4%.

25. Considerable differences exist in poverty between urban Phnom Penh, other urban areas and rural areas. In urban Phnom Penh, the food poverty rate is 1.0% and the total poverty rate 2.4%. These rates are 11.4% and 20.9% respectively in other urban areas. In rural areas, the food poverty and total poverty rates are much higher at 22.2% and 39.7% respectively.

26. Out of the estimated population of 13.04 million in 2004, the total number of people below the food poverty line is 2.6 million; the number below the (total) poverty line is 4.7 million.

27. Poverty in Cambodia is overwhelmingly a rural phenomenon. Of the country's total number of poor, 4.4 million (93.4%) live in rural areas while 0.3 million (6.2%) live in other urban areas and only 15,000 live in urban Phnom Penh. The share of the food poor also follows a similar pattern. This shows that the fight against poverty in Cambodia must involve development and productivity increase of the rural economy to accelerate the growth of rural incomes and opportunities.

Part II: Poverty Estimates and Comparison using Recall Data

28. Cambodia's base-year (1993/94) poverty line consists of a single national food poverty line defined in terms of a reference food bundle providing a subsistence diet of 2,100 calories per person per day and three minimal regional (Phnom Penh. other urban areas, and rural areas) non-food allowances.

Updated Poverty Lines

29. The updated poverty lines for 2004 show that inflation has been most rapid in rural areas. Between 1993/94 and 2004, food prices increased at an average annual rate of 4.6% in rural areas compared with 4.2% in Phnom Penh and 4.6% in other urban areas. Non-food prices increased at an annual rate of 4.4% in rural areas and at 3.8% in Phnom Penh and 3.6% in other urban areas. At current prices, the (total) poverty line in 2004 is estimated at Riel 2,351 (US$ 0.59) in Phnom Penh, Riel 1,952 (US$ 0.49) in other urban areas and Riel 1,753 (US$ 0.44) in rural areas.

Composition and Distribution of Household Consumption

30. In 2004, per capita household consumption in real terms is estimated at Riel 2,585 (US$ 0.65) for entire Cambodia. This figure is Riel 5,501 (US$ 1.38) in Phnom Penh, Riel 3,389 (US$ 0.85) in other urban areas and Riel 2,170 (US$ 0.54) in rural areas.

31. The geographically comparable sample shows that real per capita consumption in all three regions increased between 1993/94 and 2004. The highest increase took place in other urban areas followed by Phnom Penh and rural areas. The share in total consumption increased for Phnom Penh and other urban areas, while it declined for rural areas.

32. At constant prices, the average per capita daily consumption of the poorest 20% was only Riel 927 (US$ 0.23) in 2004 while the same for the richest 20% was more than six times at Riel 6,151 (US$1.54).The comparable sample shows that real per capita consumption increased for all quintiles between 1993/94 and 2004 although relative gains are higher for the richer quintiles. For the poorest 20%, average real per capita consumption increased by only 8% whereas similar rates rose consistently for higher quintiles reaching 45% for the richest quintile. As a result, the shares of consumption of the poorer groups in the country's total consumption declined between 1993/94 and 2004 contributing to higher inequality

33. In 2004, the share of food in total consumption was 42% in Phnom Penh, 57% in other urban areas and 65% in rural areas. In terms of quintile, whereas the poorest 20% spent 70% on food, the richest 20% spent only 47%. The comparable sample shows decline in food share in all regions and for all quintiles between 1993/94 and 2004. This shows increased capacity and spending on non-food items by all quintiles. This also implies that all Cambodians can now afford to spend more on non-food basic needs.

34. Significant differences exist in per capita consumption across geographical zones and provinces. Both urban and rural areas of Phnom Penh and urban areas in the Plains, Tonle Sap and the Coastal zone have average levels of consumption higher than the national average. In terms of per capita consumption, Plateau/Mountains is the poorest zone followed by Tonle Sap and the Plains. Provinces with relatively low per capita consumption include Kompong Speu, Kompong Thom, Svay Rieng and Prey Veng while Phnom Penh, Sihanoukville/Kep/Koh Kong and Kandal have higher per capita consumption than the national average.

35. In 2004, consumption inequality measured by the Gini coefficient is 0.40 in Cambodia which is relatively high compared with many Southeast Asian countries. Consumption inequality is highest in other urban areas followed by Phnom Penh and rural areas. The geographically comparable sample shows a sharp increase in consumption inequality in rural areas between 1993/94 and 2004 although it is still lower than inequality in Phnom Penh or in other urban areas. Such increase in inequality, especially in rural areas, has major impacts on poverty reduction and is a cause of concern.

Poverty Incidence

36. In 2004, poverty incidence in Cambodia is around 35%. Significant regional differences exist in the poverty rate. While only about 5% of the Phnom Penh residents are poor, nearly 25% in other urban areas are poor. In rural areas, poverty rate is more

than 39%. Of the total number of the poor, more than 91% lives in rural areas compared with 8% in other urban areas and only 1% in Phnom Penh.

37. Cambodians living below the food poverty line is 20% in 2004. In Phnom Penh, the rate is 3% compared with around 14% in other urban areas and 22% in rural areas.
38. In case of poverty gap and squared poverty gap measures, the three regions show similar rankings for both poverty and food poverty lines. These are highest in rural areas followed by other urban areas and Phnom Penh.

39. For the geographically comparable sample, poverty incidence declined from 39% in 1993/94 to 28% in 2004. The food poverty index fell from 20% to 14.2% over the same period. Poverty declined in all three regions but the reduction rate was not uniform. The rural areas still experience much higher poverty rate. In 2004, poverty rate in the 41% excluded areas from 1993/94 SESC is estimated at 45.6% compared with 28% in the included areas. This shows that the excluded areas are more disadvantaged and need special attention in poverty reduction efforts.

40. Among the geographical zones, Phnom Penh has the lowest poverty rate at 4.6% in 2004. On the other hand, Plateau/Mountains is the poorest zone with a poverty rate of more than 52%. Tonle Sap has a poverty rate of 43% compared with 32% in the Plains and 27% in the Coastal zone. The Plains has the largest share of the poor (40%) followed by Tonle Sap (37%), Plateau/Mountains (16%) and the Coastal zone (6%). Poverty is higher in rural areas than in urban areas in all geographical zones.

41. In case of provinces, poverty rate in 2004 is highest in Kompong Speu (57.2%) followed by Kompong Thom (52.4%) and Siem Reap (51.8%). On the other hand, the lowest poverty incidence is in Phnom Penh (4.6%), Kandal (22.2%) and Sihanoukville/Kep/Koh Kong (23.2%). Poverty gap and poverty severity indexes also follow similar trends.

Poverty Characteristics of Household Head

42. The highest poverty incidence and the largest number of the poor belong to households headed by persons aged between 30 and 50 years. Both female and male headed households experience similar rates of poverty in Cambodia. Similarly, not much difference exists in poverty rate in terms of marital status, ethnicity or reported disability of household heads.

43. Poor households tend to have larger dependency ratio and family size. Poverty incidence significantly rises for household sizes larger than five persons.

44. Poverty rates are high among those whose household heads have little or no education. Similarly, years of schooling and literacy of household heads are strongly related to poverty. This shows the lack of human capital on the part of the poor and brings out the importance of investing in human capital as an effective means of fighting poverty in Cambodia.

45. In case of sector of employment, poverty incidence is high among households whose heads earn their living as mining, agricultural and construction workers. Targeting agriculture, however, is most important as it accounts for 63% of the total number of the poor in the country.

46. In terms of employment status, poverty incidence is highest among households headed by domestic workers followed by self-employed farmers and the unemployed. In terms of number, self-employed farmers form the largest group with 48% of the total number of the poor. Thus, the most effective way for poverty reduction in Cambodia is to accelerate rural (agricultural) growth that would benefit the overwhelming majority of the poor.

Social Indicators by Consumption Quintiles

47. Socio-economic indicators are useful measures of living standard and provide information on various non-income dimensions of poverty. Many of these indicators such as quality of housing, ownership of consumer durables, status of human development and access to infrastructure are important in analyzing the poverty situation and designing appropriate measures.

48. Several household-level social indicators by consumption quintile show the extremely disadvantaged situation of the poorer quintiles. The poorer quintiles live in low quality houses with less living area and limited number of rooms; are more deprived in terms of access to clean water and improved sanitation; and rely heavily on firewood for fuel and kerosene for lighting. The gaps between the poorest 20% and the richest 20% are high in these respects. Nearly 94% in the poorest quintile use open land or do not have any toilet facilities and more than 97% use firewood as fuel. Less than 2% in the poorest quintile have access to piped water or public tap. Relatively richer quintiles have smaller household size and lower dependency burden.

49. Glaring disparity also exists in ownership of consumer durables among different consumption quintiles. The ownership of different items such as radio, television, furniture, transport and other household equipment is much less among the poorest 20% of the population.

50. The poor, especially the poorest 20%, tend to reside in remote and isolated areas where they have limited access to infrastructure and basic services. The distance to roads, markets, bus stop, and many other extension and input services monotonically increases from higher to lower quintiles. The poorest 20% are especially isolated from permanent markets and health care facilities.

51. Villages in which the poor reside have much less health and education facilities. In particular, sharp differences exist in access to secondary schools and all types of modern health service providers. Conversely, the poor have more access to untrained and traditional health service providers.

52. Education-related indicators show systematic variation with consumption quintiles indicating the importance of education in poverty reduction. Sharp differences exist in schooling indicators among quintiles. Differences in net enrolment ratios are more marked than those in gross enrolment ratios partly reflecting the tendency of the poorer children to start schooling at a later age. A more disturbing feature from the equitable access point is the wide difference in the amount parents spend per enrolled child. The amount is nearly 25 times larger per year for children in the richest quintile than for children in the poorest quintile.

53. Agricultural land is the most important source of income for most Cambodian households, especially among the poorer quintiles. Around 84% of the population in the poorest quintile lives in households who own or operate agricultural land. While access to irrigation facilities is limited for all quintiles, this is extremely low for the poorest quintile.

54. Among those who own land, the security of tenure increases with consumption quintile. Only 16% in the poorest quintile owns land secured by a title. The poorer quintiles show their high dependence on common property resources such as fishing, collecting firewood, foraging or hunting wild animals as major sources of livelihood.

55. Although income from non-agricultural sources is more important for the richer quintiles, these sources have a significant vulnerability-reduction role for the poorer quintiles. Such sources provide important income/consumption security and stability in the face of wide fluctuations in agricultural production that result from crop failures due to droughts and floods. These are also important means of the poorer quintiles to meet other crisis events such as illness and thereby help them to avoid forced asset depletion or falling into debt-trap. The poorer quintiles show more vulnerability in all aspects such as degree of indebtedness, food insecurity and malnutrition, high morbidity and mortality, and facing adverse law and order situation compared with the richer quintiles.

56. The poorer quintiles experience higher incidence of disability and low health status. The richer quintiles, on the other hand, tend to utilize health care more intensively (especially hospitalization) and spend more during each episode of illness. The indicators on preventive health care among children and mothers also reveal the disadvantaged situation of the poorer quintiles.

57. The multivariate analysis shows significant relationships of poverty and per capita consumption with a range of demographic features, multiple income sources, and other socio-economic variables. This shows the multi-dimensional nature of poverty in Cambodia.

Conclusions

58. Cambodia's poverty profile for 2004 gives a number of insights on how Cambodia can accelerate its rate of poverty reduction by realizing a more pro-poor growth through adopting appropriate policies.

59. The existence of a great variety in income strategies and asset holdings of the poor makes it clear that no single remedy is adequate to reduce poverty in Cambodia. The need is to provide a multi-pronged attack on poverty.

60. The profile of Cambodia's poor is not very different from that of the poor in other low income countries. Poverty, as well as food poverty, is much higher in rural areas than in Phnom Penh and other urban areas. Besides living in rural areas, the poor tend to have low levels of education, limited access to land and other productive assets, and are highly concentrated in low-paying, physically demanding and socially unattractive occupations. In both urban and rural areas, the poor have less access to modern amenities and services. They reside in houses of inferior quality with no or limited access to basic services like safe water and improved sanitation. The poor are more likely to

reside in households with large membership sizes, have more children, and have a household head who is less educated. They also have much less access to public services.

61. The major asset of Cambodia's poor is their labor; so the need to invest adequately and effectively in building their human capital and skills is clear. Since more than 90% of the poor live in rural areas, acceleration of agricultural growth through both intensification and diversification is crucial. Similarly, poor households would benefit from expansion of employment opportunities in the rural non-farm sector. Rapid improvements in rural infrastructure are important both for developing a modern agriculture sector and for spurring non-farm growth.

62. The impact of economic growth on poverty, in addition to its rate, depends on what happens to inequality. It is important to recognize that past patterns of Cambodia's growth have an underlying tendency towards generating higher inequality, especially in the rural areas. With the vast majority of the poor living in the rural areas, it is important for Cambodia to examine the inequality issue further and identify the sources of rising inequality covering all dimensions, such as uneven spread of economic and social opportunities, skewed distribution of financial and human capital, and growing disparities in other spheres of life.

63. Success in reducing poverty and improving the living standard of all Cambodians depends on giving attention to creating and maintaining a more enabling environment for rapid and pro-poor growth. Sound macroeconomic management and good governance are important pre-requisites for establishing such an environment. Reforms in all areas, especially in improving public administration and devolving power to accountable local institutions, will create a more open environment in which the poor can access opportunities and build assets according to their needs to move out of poverty.

64. At its present level of development, an important concern for Cambodia is to ensure synergy and bring quick and efficient poverty reduction outcomes. This can be realized through specific actions on what has been achieved so far in reducing poverty; building socio-economic institutions for accelerating pro-poor growth and replicating best practices. Through changes in emphasis, in practices, and in policies, these will bring healthy growth benefiting the rural poor. This will also ensure a more rapid and sustained movement towards greater equality and justice for all Cambodians.

65. For the coming decade, the critical element of Cambodia's development vision will be to ensure that growth reaches the poor and expands their opportunities. In turn, this requires policies which ensure that the poor have the assets--education; good health; access to inputs and markets, voices and power; and participation in decision making--to capitalize on expanding opportunities of growth. Thus, translating Cambodia's poverty reduction strategy into concrete and effective actions requires determination and imagination, both from the Royal Government and its partners.

1. Introduction

Poverty has many aspects of deprivation. People are poor if they do not have adequate resources to buy all the commodities that they need. Similarly, people who lack the ability to live and function properly in society or are more vulnerable to shocks and disasters have less well-being and are likely to be poor.

Thus, poverty entails either lack of command over commodities in general (e.g. severe constriction of the choice set) or of specific type of consumption (e.g. too little food energy intake) essential to enjoy a reasonable standard of living in the society.

Box 1.1: Poverty and Well-Being

There are many different concepts and definitions of well-being and hence of poverty. People are better off if they have greater command over resources and commodities; alternatively, they can be worse-off if they have limited command over specific type of consumption goods, such as food or housing. Similarly, people who lack capability to live with dignity in the society or are more vulnerable to shocks and disasters have lower well-being and are likely to be poor.

Poverty has both monetary and non-monetary perspectives. In addition to income and consumption, poverty is associated with low outcomes in respect to health, nutrition and education; with social exclusion and deficient social relations; with vulnerability and insecurity; and with low voices, power and self-confidence. Poverty is deprivation of essential assets and opportunities to which every human being is entitled and which are necessary for a reasonable standard of living in the society.

Poverty, as a "*pronounced deprivation of well-being*", requires multi-dimensional policy and program interventions to ensure sustained improvement in the well-being of individuals to help them move out of poverty. Measuring poverty is important since "*a credible measure of poverty can be a powerful instrument for focusing attention of policy makers on the living conditions of the poor*".

Source: Ravallion 1998, World Bank 2000

Poverty is associated with insufficient outcomes with respect to many human development indicators, such as health, nutrition, education and literacy. Poverty is also related to social exclusion and deficient social relations, vulnerability and insecurity, and to low voices, power and self-confidence. Poverty is also a lack of opportunity, and an inability to make use of existing opportunities.

Another important concept related to poverty is inequality. Inequality focuses on the distribution of an attribute, such as income or consumption across the population. The premise is that the relative position of an individual or household in the society is an important aspect of welfare. Moreover, the overall level of inequality in a country, region or population group is a summary indicator of welfare that has far-reaching implications for social and economic development.

Although economic growth is crucial to the creation of opportunities, it is usually not enough. The poor and vulnerable groups may not have the ability to benefit from growth because they lack good health, education and skills, or the basic infrastructure needed to access the opportunities. Along with pro-poor growth, empowerment of the poor is important to enable them to grasp the opportunities of growth. This requires measures to increase the capacity of the poor to influence decisions that affect their lives. It means investing in people who are poor and removing barriers that preclude them from economic, social and political activities.

Similarly, there may be others who are vulnerable to risks of different types, such as illness, natural disasters, market fluctuations and other unforeseen events which limit their ability to survive and prosper. Enhancing their ability to avail of the opportunities requires public safety-net mechanisms that reduce their vulnerability and increase their capacity to cope with crises.

This is why adequate measurement and analysis of poverty should cover numerous dimensions of well-being of the individuals in the society. These include income, consumption, health, education, land and asset ownership, vulnerability, voices and power, social inclusion and a host of other factors that govern the socio-economic and political processes in a country.

This 2004 poverty profile of Cambodia focuses on what is typically referred to as poverty, namely whether households or individuals have adequate resources or abilities to meet their minimum basic needs. This is based on a comparison of individual's consumption with a defined threshold below which they are considered as being poor. It only casually refers to other dimensions of poverty.

1.1 Preparation of Poverty Profile

The preparation of a poverty profile is an important element of poverty analysis. Poverty analysis, in order to be policy-relevant by helping to develop anti-poverty programs and monitoring and evaluating progress, needs to provide reliable and timely answer to four critical questions, shown in Table 1.1.

Table 1.1: Critical Issues in Poverty Analysis

Issues	Source of information
• What is the extent of poverty?	• Poverty measures
• Who are the poor?	• Poverty profile
• Why are they poor?	• Poverty determinants
• What happens to poverty if policy 'X' is implemented?	• Policy analysis and implications

Box 1.2: Poverty Profile: Providing a Systematic Description of Poverty

A poverty profile provides the major descriptions of poverty in a country and examines its

pattern using important indicators. For example, it shows how poverty varies with geography (e.g. by region, urban/rural, provinces); by village/community characteristics (e.g. with/without a school or health clinic, accessibility by road, availability of market or electricity); or by household characteristics (e.g. education/literacy of household head, size of household, employment/occupation of household head, age/sex of household head).

The extent to which a detailed poverty profile can actually be constructed depends on what data are available. Nevertheless, certain indicators such as education, health, access to essential services and similar other information provide the most basic components of poverty profiles across all countries. The relevance of many other indicators depends on country characteristics. The general rule is that all variables which correlate with poverty and are relevant for policy should be included in a poverty profile. By this rule, all income generating activities; pattern of consumption; distribution of assets including land; access to human development inputs such as health, nutrition and education; access to social and infrastructure services; and other important elements in the livelihoods of the population should be included in a poverty profile.

The first poverty profile of Cambodia was prepared using 1993/94 Socio-Economic Survey of Cambodia (SESC) data (Prescott and Pradhan 1997). Subsequent poverty profiles were prepared for 1997 and 1999 using the Cambodia Socio-Economic Survey (CSES) data for the respective years (MOP 1998, 2000).

Source: NIS

A poverty profile gives a simple but comprehensive poverty comparison, showing how poverty varies over time and across sub-regions and sub-groups of population in the society. Although the poverty profile is usually prepared using basic techniques (e.g. tables and graphs), a well-presented poverty profile provides useful information to policy makers.

1.2 Organization of Poverty Profile 2004

The present poverty profile for the year 2004 has been organized in two parts. Part I provides new benchmarks and poverty estimates using diary data from the Cambodia Socio-Economic Survey (CSES) 2003/04. Part II of the report gives poverty estimates for 2004 and poverty comparisons with base-year of 1993/94 using the recall data collected under CSES 2003/04.

It should be mentioned here that CSES 2003/04 collected consumption data using both recall and diary methods.[1] Although the data were collected from the same set of sample households, the two methods arrived at separate estimates of poverty due to differences in estimated consumption under the two methods and adoption of different methodology.[2]

---

[1] The details of these methods are described in Section 2 and introductory remarks in respective parts of the report.

[2] Initial comparison of diary and recall estimates of consumption showed that diary estimates were 17% lower than recall estimates. The difference in finally edited data came down to 11.7%. For a discussion on this and methodological differences between the poverty estimates under the two methods, see details in respective sections of the report.

Despite such differences, poverty estimates under the two methods are similar. The head-count ratio in Cambodia under the diary method is estimated at 20.0% for food poverty and 35.9% for total poverty in 2004 compared with 19.7% and 34.7% respectively under the recall method. The differences in other two poverty measures, e.g. poverty gap and squared poverty gap indexes are even less. In view of this, Cambodia's detailed poverty profile for 2004 is presented using the results of the recall method to facilitate comparison with 1993/94 when the data were collected by recall method only.

2. Major Characteristics of CSES 2003/04

The National Institute of Statistics (NIS) of the Ministry of Planning conducted the CSES 2003/04. This is the fifth such survey conducted by NIS, following the socio-economic surveys in 1993/94, 1996, 1997 and 1999. The main objective of the survey was to collect statistical information on living standards of the Cambodians and estimate poverty in the country to support credible policy making and evaluate progress in poverty reduction.

Box 2.1: Measuring Poverty in Cambodia: Cambodia Socio-Economic Surveys

In Cambodia, the data for measuring poverty are collected through periodic socio-economic surveys. Since the re-establishment of peace and security after the Paris Peace Accord in 1991, the National Institute of Statistics (NIS) of the Ministry of Planning has conducted five surveys to collect socio-economic data on living conditions of Cambodians. These are:

- Socio-Economic Survey of Cambodia (SESC) 1993/94;
- Socio-Economic Survey of Cambodia (SESC) 1996;
- Cambodia Socio-Economic Survey (CSES) 1997;
- Cambodia Socio-Economic Survey (CSES) 1999;
- Cambodia Socio-Economic Survey (CSES) 2003/04.

Unfortunately, these surveys are not entirely comparable for many reasons. The 1993/94 SESC, for instance, covered only 59% of the villages and 68% of the households in the country due to security problems at the time. In subsequent surveys, the coverage progressively increased. The 2003/04 CSES is Cambodia's first socio-economic survey that is based on a sampling frame covering the entire country, drawing on the data from the first Population Census conducted in 1998. The implication of expanding sampling frame over successive surveys, along with differences in survey design, timing of implementation and many other aspects, is that the estimated poverty rates of these surveys are not comparable. Therefore, changes in poverty since the 1990s cannot be deduced directly from these numbers.

In view of the lack of comparability across surveys, poverty comparison in the present poverty profile has been restricted only to 1993/94 base-year. This is done with recall estimates since the 1993/94 survey collected consumption data through recall method alone. The 2004 recall poverty estimates have also been made using methods that ensured maximum possible comparability with 1993/94 estimates. Similarly, since the full sample estimates for 2004 are not suitable for comparing changes with 1993/94 estimates due to difference in geographical coverage, estimates from geographically comparable areas (that is, from the same geographical areas that were included in 1993/94 survey) have been used to assess poverty changes since 1993/94. The details of these are explained in relevant sections.

In CSES 2003/04, six main areas of social concern were surveyed covering (i) level and structure of household consumption including poverty and nutrition; (ii) household production and cash income; (iii) education and access to schooling; (iv) health and access to medical care; (v) housing and amenities; and (vi) family and social relations.

2.1 Design and Coverage

The CSES 2003/04 was carried out on a nation-wide representative sample of 15,000 households within 900 primary sampling units (PSUs). It was divided into 15 monthly samples of 1,000 households each in 60 PSUs covering the period from November 2003 to January 2005.

A three-stage sample design was employed for the CSES 2003/04. The 1998 Population Census, carried out by NIS, provided the sampling frame in the sampling design of the survey.[3]

2.2 Survey Questionnaire

Five different questionnaires or forms were used in CSES 2003/04. These covered: (i) household listing sheets; (ii) village questionnaire; (iii) household questionnaire; (iv) expenditure and income diary forms; and (v) time use form. Several modules were included in the household questionnaire that provided a very rich dataset with information that can be used for preparing the poverty profile of Cambodia and conducting poverty analysis. The modules covered:

- Basic household information:
    - (i) List of household members;
    - (ii) Summary of presence in the household;
    - (iii) Information on migration;
    - (iv) Food consumption during the last seven days (recall method).
- Education and literacy.
- Housing.
- Household economic activities:
    - (i) Land ownership;
    - (ii) Production of crops;
    - (iii) Cost of cultivation;
    - (iv) Hypothetical questions on rental and sales market;
    - (v) Inputs to and outputs of livestock raising activities;
    - (vi) Inputs to and outputs from fish cultivation;
    - (vii) Inputs to and outputs from forestry and hunting;
    - (viii) Inventory of household non-agricultural economic activities during

---

[3] For technical and other details, see NIS/UNDP 2005.

the past 12 months.
- Household liabilities.
- Household income from other sources.
- Durable goods and other expenditures (partial non-food recall).
- Construction activities in the past 12 months.
- Nutrition.
- Fertility and child care:
    (i) Fertility history;
    (ii) Child feeding and vaccinations.
- Mortality.
- Health check of children.
- Current economic activity:
    (i) Activity status during the past seven days;
    (ii) Main occupation during the past seven days;
    (iii) Employment and earnings during the last 12 months.
- Health:
    (i) Illnesses during the past four weeks;
    (ii) Smoking.
- HIV/AIDS.
- Victimization.

For the diary method, the diary sheet recorded information on:

(i) Expenditure and consumption of own-produced food and non-food items (209 food and 396 non-food items) according to quantity and value classified according to mode of acquisition, origin and purpose; and

(ii) Household income and receipts classified as kind of income (cash, in kind, etc.) as well as type of income (wages/salaries, income from sales by main industry, etc.)

The time use form was used to record main activities in half-hours during a sampled 24 hour period. The activities were grouped into 22 categories covering daily activities, such as market work, agriculture, household work, house work, school, leisure, and personal care.

2.3 Data Collection and Fieldwork

The fieldwork started in November 2003 and was completed in January 2005. For the survey, 200 interviewers and 50 supervisors were recruited by NIS and trained for fieldwork in two rounds. The first round lasted for two weeks followed by a full-scale month long pilot with fieldwork. The second round of training lasted three weeks for the supervisors and two weeks for the enumerators. Before the start of each month of fieldwork, briefing and re-training sessions were also conducted.

Interviewers and supervisors were divided into 50 teams of one supervisor and four interviewers for the fieldwork. Each month 25 teams worked in the field with a workload of 10 households per interviewer. The fieldwork plan was designed to gather information for around 40 households per month per team.

The team arrived in the village three days before the first day of the month to undertake preparatory tasks like discussing with village authorities, filling out the household listing form and sample the households to be interviewed. The supervisors did the interviews with village leaders to complete the village form. The household questionnaire had 16 sections that were scheduled to be completed by the interviewer during the first visit to the household and in the following four weeks following a fixed order.

2.4 Data Processing

Data processing was done at NIS using a CSPro data management system that strictly controls the data entry operation.[4] Careful data editing was undertaken in order to secure the best possible quality of the survey data.

In order to secure the survey data and facilitate the production of statistical tables, a reference database in the SQL standard format was designed and set-up. To populate the reference database, pre-formatted SPSS data files were used. After the first version of the reference database was established, all data were checked for inconsistencies compared to their source data in SPSS and errors were corrected. Key characteristics of CSES 2003/04, along with those of earlier surveys, are given in Table 2.1.

Table 2.1: Key Characteristics of Socio-Economic Surveys in Cambodia

Characteristics	SESC 1993/94	CSES 1997	CSES 1999	CSES 2003/04
Sample size	Villages: 498 Households: 5,578	Villages: 474 Households: 6,010	Villages: 600 Households: 6,000	Villages: 900 Households: 15,000
Sample coverage a	Provinces: 15 Rural: 68% Urban: 95.2%	Provinces: 21 Rural: 88.4% Urban: 97.4%	Provinces: 24 Rural: 96.2% Urban: 99.7%	Provinces: 24 Rural: 100% Urban: 100%
Survey timing	October 1993-September 1994	June 1997	**Round 1**: January-March 1999; **Round 2:** June-August 1999.	November 2003-January 2005.
No. of items of consumption recall	Food: 177 Non-food: 266	Food: 20 Non-food: 13	Food: 23 Non-food: 13	**Recall:** Food: 19 Non-food: 14 **Diary:** Food: 209 Non-food: 396
No. of field staff b	n.a	210	92	250
Period of training	n.a.	6 days	3 weeks c	2 weeks d

---

[4] CSPro is a freeware developed by the US Census Bureau for data entry, editing and tabulation.

Note: [a] In terms of households; [b] Total of enumerators, supervisors and coordinators; [c] 2 weeks in Round 2. [d] 3 weeks for supervisors and carried out for two groups separately. This was followed by briefing sessions prior to field operations each month. The SESC 1996 has not been included as its results are not officially used due to gross weaknesses in survey data.
Source: NIS

Part I:

New Benchmarks and Poverty Estimates using Diary Data*

9

3. CSES 2003/04 Diary Data

Under the diary method of collecting data in CSES 2003/04, the sample households were asked to report, on almost a daily basis, the value and quantity of each item purchased in cash or acquired in kind as payment for work, as a gift or taken from stock of own-produced goods. This is in contrast to the recall method under which the households were asked to report their expenditures based on memory during a specific reference period.

Box 3.1: Diary Method vs. Recall Method of Collecting Consumption Data

There are two methods of collecting consumption data from the sample households in a socio-economic survey: the recall method and the diary method.

In the *recall method*, households are asked to report their expenditures based on memory during a specific reference period. For instance, the reference period could be "last seven days" for food or "last six months for clothing and footwear". The information is usually collected in one single interview with the household member who knows most about food and other expenditures of the household (e.g. the household head).

This is a formidable task to correctly report the details of household consumption over a period of time. It is observed that on average a Cambodian household makes about 30 expenditures per week on food alone, the quantity and value of which must be correctly reported. In addition, the method is very sensitive to the nature of training of the interviewers and the exact design of the question put forward to the household respondent. Nevertheless, the method works reasonably well for comparison over time since the household respondents usually resort to reporting the expenditures for a typical seven-day period rather than over the last seven days.

Under the *diary method*, the households report, on almost a daily basis, the value and quantity of each item purchased in cash or acquired in kind as payment for work, as gift or taken from stock of own-produced goods. The interviewers actually become acquainted with the households well since most of them stay in the villages for the entire diary period. As such, both reporting by the households and recording by the interviewers are not too demanding on memory or on ability to correctly add together food expenditures over several days.

The main difficulty with the diary method, however, is to get the households to participate conscientiously over a long period of time needed for data collection. This was not a major problem in CSES 2003/04 since almost 100% of the sample households willingly participated in diary keeping. Nevertheless, some "fatigue effects" might be present as revealed in the consumption estimates for the last seven days of each month along with some "conditioning effects" for the first day and the first week.

An initial comparison of the recall and the diary estimates of consumption under CSES 2003/04 showed that the diary estimate was 17% lower than the recall estimate. The difference in finally edited data came down to 11.7%. Such a difference is expected since these are two distinct methods of collecting the consumption data. In principle, there is no major advantage of one method over the other in collecting household consumption data, and each has its own advantages and disadvantages. Using two methods simultaneously in the same survey will, therefore, generate different estimates of consumption and hence of poverty. Which method or whether both methods should be used in future socio-economic surveys in Cambodia needs to be decided considering existing realities, e.g lessons learned from CSES 2003/04 when both the methods were used simultaneously, institutional capacity of NIS, best use of limited resources to carry out such surveys, and, above all, the importance of avoiding any confusion among the users caused by multiple estimates of poverty for the same year resulting from using two methods.

Diary estimates of poverty using CSES 2003/04 data also differ from corresponding recall estimates in other ways. For example, (i) diary estimates are based on the food basket and non-food allowance of the second quintile (instead of the third quintile for recall estimates) in the distribution of per capita household total consumption; (ii) diary estimates use adult equivalent scale to make households comparable across differences in size and composition whereas recall estimates are based on per capita terms; (iii) diary estimates adopt comprehensive price indexes at the household level for food based on unit values instead of using village prices as in recall estimates; (iv) diary estimates use house rents which are adjusted for quality differences through hedonic regressions; and (v) diary estimates adopt 'use value' based on depreciation of durables in possession of households instead of value of purchased durables in the last twelve months as in recall estimates.

Despite significant differences, poverty estimates under the two methods for 2004 using CSES 2003/04 data are very similar. The headcount index of poverty in 2004 has been estimated at 35.9% for Cambodia under the diary method compared with 34.7% for the recall method showing a difference of only 1.2 percentage points. For the poverty gap index, the estimates are closer: 9.2% for the diary method and 9.0% for the recall method; whereas for the squared poverty gap index, the figures are 3.4% and 3.3% respectively.

An initial comparison of the recall and the diary estimates of consumption under CSES 2003/04 showed that the diary estimates were 17% lower than the recall estimates.[5] After recoding non-specific codes and reallocating some items classified as production inputs to consumption expenditure, the difference in finally edited data came down to 11.7%.

3.1 Identifying Reference Households

For constructing an absolute poverty line, a realistic procedure is to allow for households to consume a typical basket of foods reflecting local tastes and customs, which would satisfy the minimum requirement of 2,100 calories per capita per day which is the norm adopted in Cambodia. Similar arguments can also be made for minimal non-food allowances.

In Cambodia, the 1993/94 food poverty line (which was updated in subsequent poverty estimates) adopted households in the third quintile in the distribution of household total consumption expenditure as its reference population. In retrospect, this reference food bundle refers to a diet that is of better quality and more urban than the typical diet of the poor.[6] This biases the 1993/94 reference food basket towards a composition which has a higher cost per calorie than poor households normally consume.

For the new reference food basket and new poverty baselines, therefore, households in the second quintile were taken as the reference population to

---

[5] Such difference, however, did not affect the estimates of poverty very much. For plausible explanations, see Johansson 2005.

[6] In support of the argument, two factors may be noted. First, the food bundle refers to the average diet of the third quintile of the population whereas the head count index in 1993/94 was 39%. Second, the 1993/94 sample covered almost all urban households but only 65% of the rural households.

better reflect the food basket of the poor households. This is likely to have the effect of lowering the poverty line since households in the second quintile tend to compensate their lower incomes by buying foods that cost less per calorie. Table 3.1 shows the differences in the dominant food items between the food baskets of the second and the third quintiles.[7]

Table 3.1 Shares of Dominant Food Items in Food Baskets of Second and Third Quintiles, 2004

Food item	%of total food expenditure	
	Second quintile	Third quintile
Rice quality 2	29.9	25.7
Pork with fat	6.4	7.1
Rice quality 1	6.2	5.3
Mud fish (small)	3.2	3.3
Cat fish	2.0	2.0
Pork without fat	1.8	2.1
Monosodium glutamate	1.8	1.7
Dressed chicken	1.4	2.0
Duck eggs	1.3	1.3
Fermented /cheese fish	1.2	1.1
Beef no. 1	0.7	1.0

Source: Johansson and Backlund 2005, CSES 2003/04.

3.2 Processing of Diary Data

The total set of diary data comprises more than 3.1 million entries covering such information as item code, unit code, quantity (in units), expenditure value in Riel, form of acquisition, origin and purpose. All diary entries were repeatedly edited to eliminate errors wherever possible. In all data preparations, the reported value in Riel was taken as true. This means that no changes were made to this variable except for correcting data entry errors identified when inspecting questionnaires during manual editing.

Expenditures coded as inputs were reallocated to consumption in cases where inputs were not for an external business activity, but rather for household production consumed by the household itself. Such inputs could not be identified except by income and expenditure limits as proxy criteria.[8]

3.3 Food Items

In case of food consumption, certain entries were split into five datasets depending on the values of certain variables:

1. Meals (item codes in the range 9355 -9399);
2. New converted unit code is set missing:

---

[7] The complete food basket is given at Annex 1.See also Annex 4.
[8] For details of these procedures and adopted rules for unit/quantity conversions, see Johansson and Backlund 2005.

3. Value/quantity ratio is out of range (the z-scores were used and all items where the absolute value of the Z-score was greater than 2 were included in this dataset);
4. Quantity is less than 10 grams;
5. Quantity is greater than 50,000 grams.

Table 3.2 shows the details of the food consumption entries with non-standard units for which quantities were imputed.

Table 3.2 Food Consumption Entries Selected for Imputation of Quantities, 2004

Dataset	No. of entries	% of all
All food consumption	*1,919,691*	100
Accepted (unit code = 12,32)	1,226,320	63.9
Meals	187,683	9.8
Z-scores too high	45,441	2.4
Quantity < 10 gm	5,325	0.3
Quantity > 50,000 gm	937	0.0
Unit code missing	453,985	23.6

Source: Johansson and Backlund 2005, CSES 2003/04

The entries with "good" data (1,226,320 in number as given in Table 3.2) were used to compute median unit values for each item. The ratio 'value'/'quantity' was first computed and then a weighted median calculated for each stratum. These medians were used in the imputations of quantities used for calculation of unit values, the calorie content of household diet and cost per calorie.

However, 'meals' were handled in a different way since there were no valid quantities to rely on. In this case, a median calorie price on all food (Riel 0.74) was used to estimate the total caloric content for each entry. This method was the same as the one used in 1993/94. The resulting data file with almost 2 million food entries was the basis for computations of per adult equivalent food consumption per day for each household.

3.4 Non-Food Consumption

In case of non-food consumption, durable goods and house rent were treated in a special way. These non-food diary entries (7.8% of all diary non-food entries) were processed separately to avoid any double-counting.

Consumer Durables

Households derive use-value from their possession of durables, that is items of consumption that last longer than one year. Estimates of use-value of durables are often replaced by recent purchases of durables, usually over the last 12 months. This would be theoretically acceptable if recent purchases represent replacements needed in a stock of durables.

However, if recent purchases are additions to the stock of durables rather than replacements, this entails problems of comparability between households. In such cases, use value of durables in household possession was computed by using depreciation rates.[9] Depreciation rates for different types of durables that are used by the tax department in the Ministry of Finance of the Royal Government of Cambodia were adopted.

In CSES 2003/04, household ownership of durables was reported in a specific module of the questionnaire that included two cases:

- The item was bought during the last 12 months. Here the amount paid was recorded.
- The item was bought before the last 12 months. In this case, the amount that the household could get if it was sold in the market was recorded.

To calculate the use-value per adult equivalent per day, the following depreciation methods were applied:

Method 1: equal depreciation rates.

Method 2: progressive depreciation rates.

The household durables were classified as follows:

- Category 1: buildings, infrastructure of buildings and construction etc.
  method 1 was applied with a rate of 5% per annum;

- Category 2: computers, software, electronic information systems, etc
  method 2 was applied with a rate of 50% on the remaining value annually;

- Category 3: cars, lorries, furniture, office equipment, etc.
  method 2 was applied with a rate of 25% on the remaining value annually;

- Category 4: all other assets
  method 2 was applied with a rate of 20% on the remaining value annually.

Rent for Housing

In case of housing, households who owned their dwellings were assigned a "use-value" of the dwelling. It may be noted here that, outside Phnom Penh and other

---

[9] A similar procedure is followed in Vietnam.

major cities, there hardly exist any rented dwellings and hence no regular market for rented dwellings. Hence, the values used were the owners' estimate of how much he/she "would have to pay to rent a building like this in the village", which is the standard practice in such cases. Hypothetical rent was imputed for each household using a hedonic regression approach, described at Annex 2. .

3.5 Summary of Major Findings

4   For the new reference food basket and new poverty baselines, households in the second quintile have been taken as the reference population to better reflect the food basket of the poor households.

5   In case of non-food consumption, durable goods and house rent have been treated in a special way. In case of consumer durables, use-value was calculated by using depreciation rates for different types of durables that are used by the tax department of the Ministry of Finance of the Royal Government of Cambodia were adopted.

6   In case of housing, a use-value was assigned to those households who owned their dwellings through imputing rent for each household using a hedonic regression approach to control for quality differences.

4. Computing Household Consumption

In computing daily household consumption for estimating poverty, the analysis of diary data took into account two important considerations: (i) adoption of an equivalence scale that takes varying calorie and other needs by age and sex into account rather than household size in simple per capita terms; and (ii) use of comprehensive price indexes at the household level.

4.1 Equivalence Scale

A big household with more family members needs more food and other consumption items than a small household. Therefore, in order to make living standards of big and small households more comparable, the usual practice is to take household size into account by estimating consumption in per capita terms.

A widely discussed issue in this context is whether there are economies of scale in household consumption and whether such factors should be taken into account in estimating consumption per head needed for measuring poverty. Households also differ by their composition in terms of sex and age. These differences in household characteristics suggest that consumption needs vary considerably by sex and age and other characteristics of household members. The estimates of consumption in simple per capita terms are, therefore, likely to overestimate poverty among households with young children since children in such families will be treated as having the same calorie needs as the adult males doing hard physical labour.

In order to address this problem, an alternative which is adopted in many countries is to take differences in needs (implicitly the calorie needs and

economies of scale) into consideration by using the equivalence scale, which takes the age and sex of the household members into account. For this exercise, calorie needs by sex and age as adopted in Thailand were used since time and other constraints did not permit the calculation of an equivalence scale based on Cambodian data. In the equivalence scale for Cambodia, the calorie needs per person per day were normalized at 2,100 calories per person per day as presented in Table 4.1.

Box 4.1: Equivalence Scale--Accounting for Household Composition Differences

In Cambodia as elsewhere, households differ in size and composition. So a simple comparison of aggregate household consumption can be quite misleading to judge the level of welfare of household members. The common practice of using household expenditure per capita is not entirely satisfactory since different individuals (e.g. young child or adult) have different needs and there are economies of scale in consumption.

One solution to the problem is to apply a system of weighting so that each member of the household is counted as some fraction of an adult male. The household size is the sum of these fractions and is not measured in terms of number of persons but in number of adult equivalents. Economies of scale can be allowed for by transforming the number of adult equivalents into 'effective' adult equivalents. Often the equivalence scales are based on different calorie needs of individuals of different ages.

Table 4.1 Calorie Needs and Equivalence Scale for Cambodia, 2004

Age group (years)	Calorie needs per person per day by age and sex		Equivalence scale with 2,100 calories per person per day	
	Male	Female	Male	Female
1 - 3	1,200	1,200	0.571	0.571
4 - 6	1,450	1,450	0.690	0.690
7 - 9	1,600	1,600	0.762	0.762
10 - 12	1,850	1,700	0.881	0.810
13 - 15	2,300	2,000	1.095	0.952
16 - 19	2,400	1,850	1.143	0.881
20 - 29	2,787	2,017	1.327	0.960
30 - 59	2,767	2,075	1.318	0.988
60 +	1,969	1,747	0.938	0.832

Source: Johansson and Backlund 2005, CSES 2003/04

In principle, the equivalence scale should give the same average as the household size. However, as Figure 4.1 shows, there is some difference between the two under the adopted methodology in Cambodia. Average household size is 4.99 whereas the corresponding adult equivalence is 4.81. This might be due to differences in population structure of the two countries. The population age structure of Cambodia is slightly younger than that of Thailand. Moreover, less than one year olds were excluded from the analysis, In future, Cambodia needs to estimate the equivalence scale using its own data.

Figure 4.1: Household Size and Adult Equivalence by Consumption Quintiles, 2004
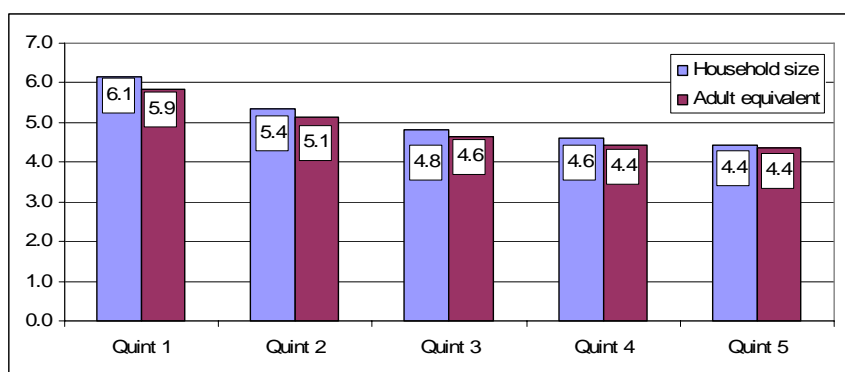
Source: Johansson and Backlund 2005, CSES 2003/04

4.2 Comprehensive Price Index at Household Level

The comprehensive price index translates the prices that one specific household has paid for its food items to the prices a household in Phnom Penh paid on average during 2004 for the same basket of food. This lends unique precision to the comparability of household living standards and in relation to the poverty lines. This kind of index was not possible to construct with the village prices normally collected with a special questionnaire in various CSES rounds since 1997, not even with the detailed list used in the 1993/94 survey.[10]

4.3 Per Capita and Per Adult Equivalent Consumption

As per the survey, the mean per capita per day household consumption in Cambodia was Riel 3,606 in 2004 at average 2004 Phnom Penh prices. The mean consumption expenditure, when measured in per adult equivalent per day, stood at Riel 3,720. The adult equivalent scale makes households more comparable by taking into account the variation in calorie needs by age and sex.

The per capita and per adult equivalent consumption estimates, given in Table 4.2, show substantial difference in living standards in the three regions of the country. Total expenditure per capita per day is estimated at Riel 3,164 (US$ 0.79) in rural areas, Riel 5,007 (US$ 1.25) in other urban areas and Riel 8,324 (US$ 2.08) in urban Phnom Penh. In terms of per adult equivalent, mean expenditure per day is Riel 3,296 (US$ 0.82) in rural areas, Riel 5,111 (US$ 1.28) in other urban areas and Riel 8,140 (US$ 2.04) in urban Phnom Penh.

While the differences among the three regions are similar for expenditure per capita and expenditure per equivalent scale, per capita estimates are slightly

---

[10] The diversity of the 2003/04 diary data made it possible to construct a food price index for each household. On average, households provided 160 entries of food expenditures for the month. Even at the lowest 5th percentile in the distribution of per capita per day total consumption, there were 83 entries for the month. Only less than 5% of the households had less than 2.8 entries per day.

higher in urban Phnom Penh than adult equivalence estimates. The reverse is true for other urban and rural areas. This reflects the differences, though small, in the family structure and composition between urban and rural areas in Cambodia.

Table 4.2: Consumption per Capita and per Adult Equivalence by Region, 2004

Expenditure category	Mean expenditure per capita per day				Mean expenditure per adult equivalent per day			
	Cambodia	Urban Phnom Penh	Other urban areas	Rural areas	Cambodia	Urban Phnom Penh	Other urban areas	Rural areas
Food	1,981	3,242	2,429	1,854	2,055	3,196	2,476	1,938
Non-food	1,624	5,083	2,577	1,310	1,665	4,944	2,635	1,359
Total	3,606	8,324	5,007	3,164	3,720	8,140	5,111	3,296

Note: Figures are in Riel at average 2004 Phnom Penh prices.
Source: Johansson and Backlund 2005, CSES 2003/04.

4.4 The Share of Food

The share of food in total consumption expenditure is an indicator of household economic status and sometimes used as a measure of poverty. According to Engel's Law, as household income per capita rises, spending on food rises less quickly. As a result, the proportion of expenditure devoted to food falls as per capita income rises. The Law also works at a point in time in that the food share is lower for high-income groups than for low-income groups.

Figure 4.2: Food Share by Region, 2004 (percent)
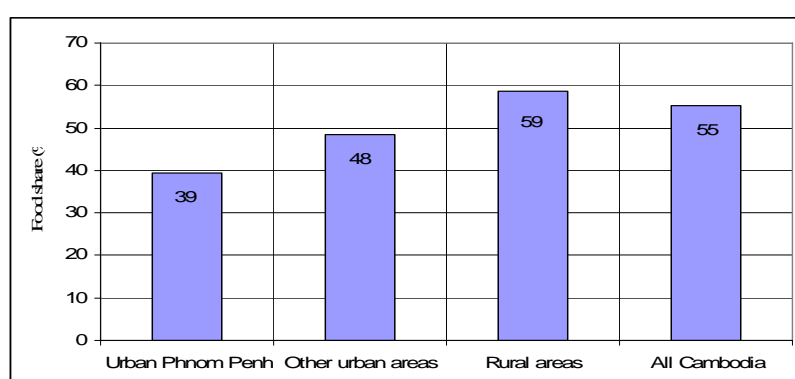
Source: Johansson and Backlund 2005, CSES 2003/04

Figure 4.2 shows that, while the share of food in total expenditure is 55% for Cambodia, the share varies from 39% in urban Phnom Penh to 48% in other urban areas and 59% in rural areas. Such differences are in line with expectations since income and living standards are high in urban Phnom Penh followed by other urban and rural areas.

In view of the robustness of the relationship, the behaviour of food share is sometimes used as an indicator of the quality of consumption data from

household surveys. Both recall and diary data on household consumption from CSES 2003/04 behave in accordance with Engel's Law as can be seen in Figure 4.3, with diary data showing a closer relationship than the recall data.

Figure 4.3: Food Share by Consumption Quintile per Equivalent Adult per Day, 2004
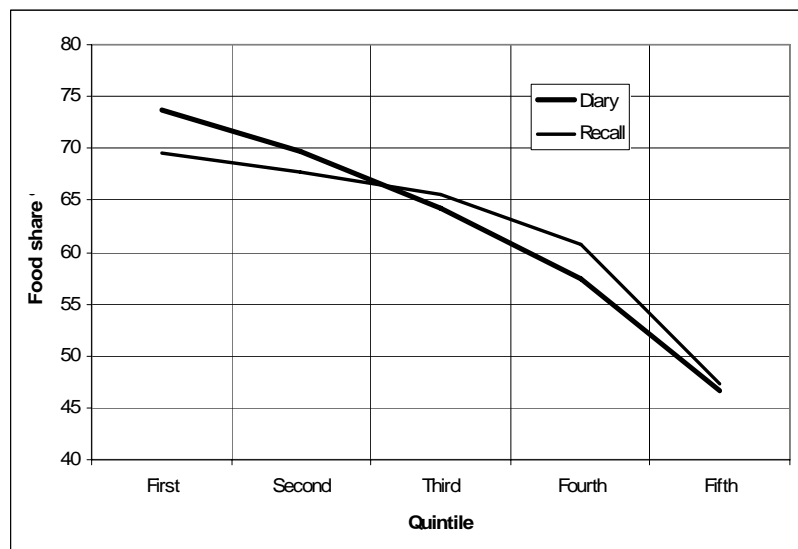
Source: Johansson and Backlund 2005, CSES 2003/04

The figure shows that households in the lower quintiles tend to underestimate their food consumption or to overestimate their non-food consumption under the recall method when compared with the diary method. The bulge in the recall data for the third and fourth quintiles is due to households overestimating their food consumption or underestimating their non-food consumption.

4.5 Summary of Major Findings

5   The daily household consumption for estimating poverty in the present analysis of diary data takes into account two important considerations: (i) adoption of equivalence scale that considers varying calorie and other needs by age and sex rather than in simple per capita terms; and (ii) use of comprehensive price indexes at the household level.

6   The mean per capita per day household consumption in Cambodia is Riel 3,606 in 2004 at average 2004 Phnom Penh prices while the mean consumption expenditure in per adult equivalent per day is Riel 3,720.

7   The per capita and per adult equivalent consumption estimates show substantial

difference in living standards in the three regions of the country. Total expenditure per capita per day is estimated at Riel 3,164 (US$ 0.79) in rural areas which is Riel 5,007 (US$ 1.25) in other urban areas and Riel 8,324 (US$ 2.08) in urban Phnom Penh. In terms of per adult equivalent, mean expenditure per day is Riel 3,296 (US$ 0.82) in rural areas, Riel 5,111 (US$ 1.28) in other urban areas and Riel 8,140 (US$ 2.04) in urban Phnom Penh. While the differences among the three regions are similar for expenditure per capita and expenditure per equivalent scale, per capita estimates are slightly higher in urban Phnom Penh than adult equivalence estimates. The reverse is true for other urban and rural areas. This reflects the differences, though small, in the family structure and composition between urban and rural areas in Cambodia.

8   The share of food in total expenditure is 55% for Cambodia; the share varies from 39% in urban Phnom Penh to 48% in other urban areas and 59% in rural areas. Such differences are in line with expectations since income and living standards are high in urban Phnom Penh followed by other urban and rural areas.

5. Structure of Consumption

The structure of household consumption is relevant to measuring the living standards of the population in general and poverty in particular. Households adapt to changing incomes not only by changing the mix between food and non-food items (i.e. the food share) in their consumption basket but also by changing the internal structure of both food and non-food consumption.

5.1 Food Consumption

Table 5.1 shows the structure of food consumption both in terms of shares of total expenditure and of total calories.[11] For Cambodia, cereals are the largest food item group both in value (31%) and in calories (65%). The three regions have pronounced differences in case of such shares. The share of cereals in total food expenditure is only 11% in urban Phnom Penh compared with 25% in other urban areas and 35% in rural areas. For calorie intake, only 34% comes from cereals in urban Phnom Penh whereas the share is 58% in other urban areas and 69% in rural areas.

In urban Phnom Penh, three categories--"food out of home" (20.8%), "meat and fish" (20.7%) and "fish and seafood" (15.4%)--are more important in food expenditure than cereals (11.4%). On the other hand, cereal is still the most important item accounting for 24.6% and 34.5% of total food expenditure in other urban and rural areas respectively. As a share of total food expenditure, food out of home constitutes 11.3% in other urban areas and 6.2% in rural areas. The results suggest an Engel type of relationship in Cambodia for the share of cereals in total food expenditure like the food share in total consumption.

This pattern is even more apparent in the structure of food consumption in terms of calorie sources. Cambodians get almost two-thirds of their calories from cereals. The share of cereals in total calories, however, varies from 34% in urban

---

[11] For calorie conversion the ASEAN calorie table, given at Annex 3, was used.

Phnom Penh to 58% in other urban areas and 69% in rural areas. With such high dependency on cereals, it is likely that the poor especially in the rural areas might be suffering from protein and micro-nutrient deficiency which has significant implications for nutrition and cognitive development among the children.

Table 5.1: Structure of Household Food Consumption, 2004

Food groups	As % of total food expenditure value				As % of total calories			
	Cambodia	Urban Phnom Penh	Other urban areas	Rural areas	Cambodia	Urban Phnom Penh	Other urban areas	Rural areas
Cereals	31.3	11.4	24.6	34.5	65.4	33.7	57.7	69.4
Fish & seafood	19.9	15.4	21.2	20.2	8.0	20.7	11.4	6.3
Meat & poultry	15.6	20.7	15.8	15.0	6.0	12.0	6.9	5.4
Vegetables	8.7	9.7	8.4	8.7	5.6	10.5	8.1	4.8
Food out of home	8.0	20.8	11.3	6.2	5.7	8.0	5.0	5.7
Seasonings, salt etc.	5.8	3.9	6.7	5.8	2.3	5.4	3.2	1.9
Fruits	4.3	7.0	4.5	4.0	3.6	3.6	4.4	3.4
Take-home food	2.1	5.4	2.8	1.6	1.8	3.5	1.5	1.7
Eggs & dairy	1.7	2.6	2.2	1.5	0.7	1.3	0.9	0.6
Alcoholic beverages	1.1	1.1	1.0	1.1	0.4	1.0	0.4	0.3
Non-alcoholic	0.7	1.1	0.8	0.7	0.5	0.2	0.4	0.6
Oils & fats	0.7	0.7	0.7	0.7	0.1	0.2	0.1	0.1
Group Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Johansson and Backlund 2005, CSES 2003/04

This indicates the tendency of the households with higher incomes to eat more fish and seafood, meat and poultry, vegetables and similar items which have higher cost per calorie than cereals. The average calorie intake per day per adult equivalent is not very different between urban Phnom Penh (2,406 calories), other urban areas (2,515 calories) and rural areas (2,504 calories) despite considerable difference in income between the three regions.

Differences in calorie consumption among the five quintiles are, however, considerable; ranging from 1,476 calories per adult equivalent per day in the poorest quintile to 4,006 calories in the richest quintile (Figure 5.1). An average calorie intake at less than 1,500 calories per adult equivalent per day of the poorest quintile implies that these households suffer from constant hunger.[12]

Figure 5.1: Average Calories per Adult per Day, 2004

---

[12] This is supported by the positive answer given by 22% of all households in CSES 2003/04 when they were asked: *"In the last 12 months, has this household had enough food all days or were there days and weeks with very little or no food so that the household members had to starve?"*
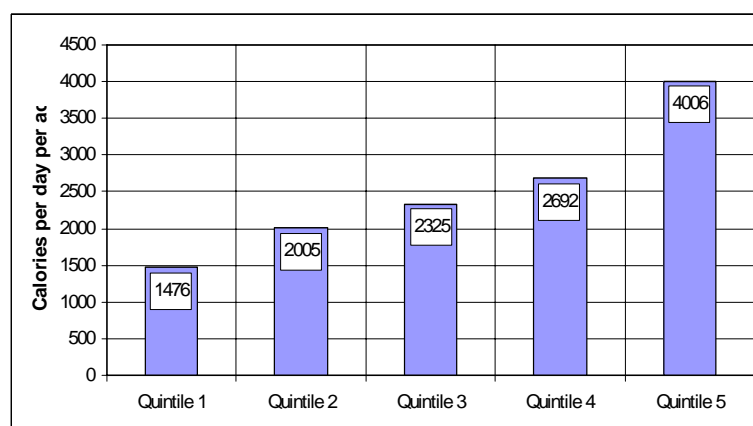
Source: Johansson and Backlund 2005, CSES 2003/04

Table 5.2 shows the average cost per calorie (in Riel) by major food item groups and regions. The cost per calorie is the cheapest for cereals (Riel 0.38)   followed by fruits (Riel 0.68). The next cheapest sources of calorie are take-home food (Riel 0.81) and food away from home (Riel 0.83).[13] The average cost per calorie is Riel 1.33 in urban Phnom Penh compared with Riel 0.99 in other urban areas and Riel 0.77 in rural areas. Similar trends are shown for most of the individual item groups except for sugar, salt and seasonings, oils and fats, eggs and dairy products, and vegetables. Calories from alcoholic beverages are very expensive in urban Phnom Penh (Riel 7.46 per calorie) compared with other urban (Riel 2.25) and rural areas (Riel 1.56), probably because of more home-produced, cheaper alcohol in other urban and rural areas than in urban Phnom Penh.

The per unit cost of calorie from cereals is considerably lower in rural areas (Riel 0.37) than in urban Phnom Penh (Riel 0.45) or other urban areas (Riel 0.42). This lower price of cereals in rural areas is important since cereals are the staple food for most Cambodians, and more so for poor people.

Table 5.2: Average Cost per Calorie in Riel, 2004

Food item group	Cambodia	Urban Phnom Penh	Other urban areas	Rural areas
Cereals	0.38	0.45	0.42	0.37
Fruits	0.68	1.20	0.89	0.61
Take-home food	0.81	1.33	0.85	0.71
Food away from home	0.83	1.28	0.95	0.72
Sugar, salt & seasonings	0.91	0.50	0.82	0.99

---

[13] This might be due to the method used in imputing calories to meals and beverages under these two categories. The method is similar to that used in the 1993/94 poverty report (see Prescott and Pradhan 1997). Under the method, median cost per calorie of all foods is used for the imputation of quantities from values of the meals along with the assumption that half the cost of prepared and served meals is cost of labour input. The underlying assumption is that meals in canteens and restaurants or in street food stands have the same mix as meals eaten at home that is with rice as the main ingredient. The method needs re-consideration in the future.

Oils & fats	0.93	0.84	0.86	0.95
Alcoholic beverages	1.73	7.46	2.25	1.56
Meat & poultry	2.22	2.30	2.28	2.20
Eggs & dairy products	4.11	3.25	4.55	4.20
Vegetables	4.11	4.41	5.54	3.91
Fish	4.71	5.53	4.70	4.66
Non-alcoholic beverages	7.82	9.39	11.89	7.07
All item groups	*0.82*	*1.33*	*0.99*	*0.77*

Source: Johansson and Backlund 2005, CSES 2003/04.

5.2 Non-Food Consumption

Within non-food consumption, housing (including rent, maintenance and repair) is the main item at nearly 43% of total non-food expenditure for all Cambodians (Table 5.3). On average, residents in urban Phnom Penh spend 43.5% of total non-food expenditure for housing compared with 49.1% in other urban areas and 41% in rural areas.

The use-value of durables forms the second largest category in non-food consumption. Expenditure on durables has an average share of 14.5% in total non-food consumption varying from 22.8% in urban Phnom Penh to 17.3% in other urban areas and 12.2% in rural areas. While the housing share may not change much over time as total expenditure or income increases, the share of durables will probably rise especially as the rural households tend to increase their possession of durables.

For expenditures directly related to human resource development, the shares are relatively small. The share of health care in total non-food consumption is 4.5% in all Cambodia. Similar shares are 3% in urban Phnom Penh, 2.4% in other urban areas and a relatively high of 5.3% in rural areas. This shows a disproportionate burden of health care cost on the rural population. A proportionality larger share of non-food expenditure on health by the rural population also shows a link between hunger and health in Cambodia. The implications of this in terms of cognitive ability and inter-generational transmission of poverty need further study to work out appropriate strategies.

The share of education in total non-food expenditure is only 1.8% for all Cambodians which is much less than similar shares in recreation and culture (6%) and even tobacco (1.9%). The share is 3.9% in urban Phnom Penh followed by 2.1% in other urban areas and a low of only 1.3% in rural areas.

Table 5.3: Structure of Non-Food Consumption, 2004

Non-food groups	% of total non-food expenditure	Mean value in Riel

	Cam-bodia	Urban Phnom Penh	Other urban areas	Rural areas	Cam-bodia	Urban Phnom Penh	Other urban areas	Rural areas
Housing	42.8	43.5	49.1	41.0	555	1,880	1,102	427
Use value of durables	14.5	22.8	17.3	12.2	244	1,128	458	167
Furnishings & household operations	11.1	7.8	8.7	12.3	8	62	13	7
Transport & communication	7.2	8.9	6.8	6.9	42	51	45	40
Miscellaneous	6.9	4.0	5.9	7.8	89	148	123	81
Recreation & culture	6.0	2.3	3.5	7.3	35	110	51	32
Health care	4.5	3.0	2.4	5.3	54	88	56	52
Clothing & footwear	2.0	2.0	1.9	2.1	76	193	89	66
Tobacco	1.9	0.8	1.4	2.2	5	13	6	4
Education	1.8	3.9	2.1	1.3	18	43	23	12
Personal care & effects	1.4	1.1	1.0	1.6	20	43	17	20
Total	100.0	100.0	100.0	100.0	38	164	67	30

Source: Johansson and Backlund 2005, CSES 2003/04

5.3 Distribution of Consumption

Figure 5.2 shows the mean total expenditure per adult equivalent per day in Cambodia as well as for different consumption quintiles. The average for Cambodia is Riel 3,720 which is equivalent to US$ 0.93. The per adult equivalent per day total consumption of the poorest quintile is Riel 1,322 (US$ 0.33). As a matter of fact, the per capita level of consumption is less than one dollar for all quintiles except the richest one; for which the estimated value is Riel 9,068 (US$ 2.27).

Figure 5.2: Mean Total Expenditure per Adult Equivalent per Day, 2004
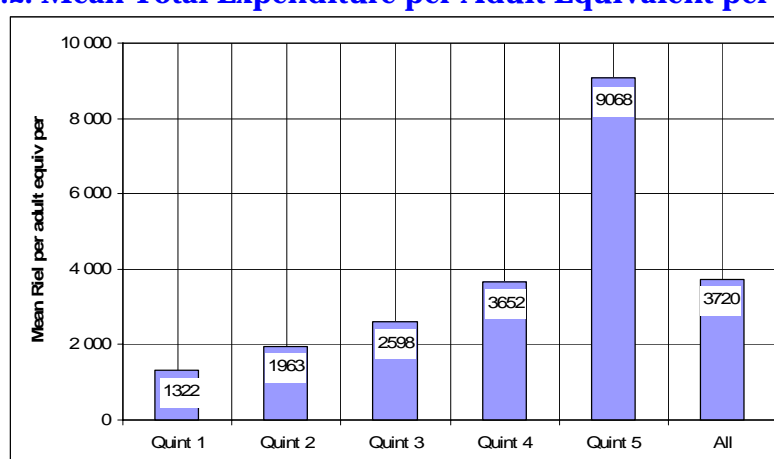
Source: Johansson and Backlund 2005, CSES 2003/04.

The expenditure share of each quintile in total consumption is shown in Figure 5.3. The share of the poorest quintile in the distribution of total expenditure per adult equivalent per day is only 7.1% whereas the richest quintile's share is

48.7%. This shows that almost half of the country's total consumption is enjoyed by the richest 20% of Cambodians.

Figure 5.3: Expenditure Share by Consumption Quintiles, 2004
(percent)
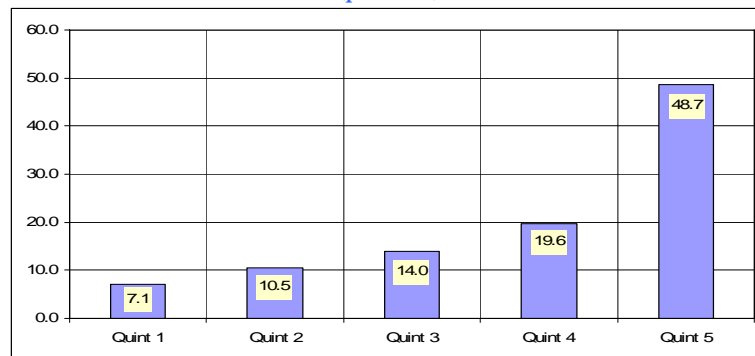
Source: Johansson and Backlund 2005, CSES 2003/04.

A more popular way to present and illustrate overall income and consumption inequality in a society is to use the *Lorenz* curve and *Gini*-coefficient as shown in Figure 5.4. The Gini coefficient is based on the Lorenz curve, which is the cumulative percentage of households (from poor to rich) on the horizontal axis and the cumulative percentage of (in this case) expenditure on the vertical axis. The diagonal line represents complete equality; all having the same expenditure level. The Gini coefficient is defined as the ratio of the area between the two lines (A) and the whole area below the diagonal line (A+B), or A/(A+B). A value of Gini coefficient of zero represents complete equality; while a value of one shows complete inequality in that one person has all expenditure. In the real world, the Gini co-efficient usually lies between these two extreme values.

The estimated value of the Gini coefficient of consumption per equivalent adult per day is 0.403 for Cambodia which shows a relatively high degree of inequality compared with many countries in the region. Among the regions, other urban areas have the highest Gini-coefficient (0.425) followed by rural areas (0.372) and urban Phnom Penh (0.351).

Figure 5.4: Distribution of Total Consumption per Adult Equivalent per Day, 2004

25
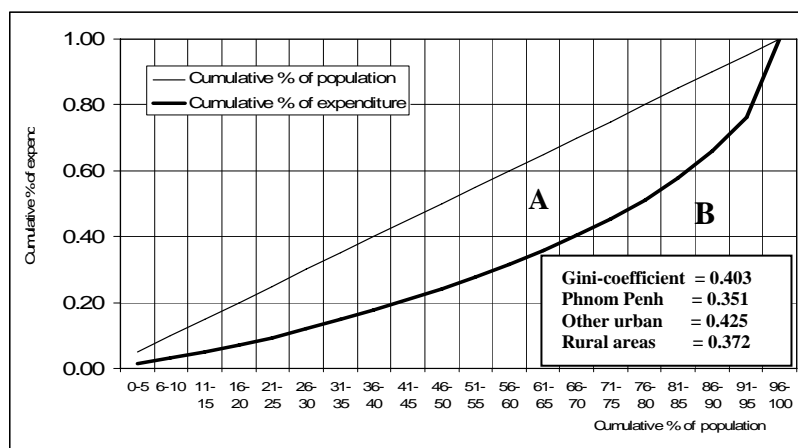
5.4 Summary of Major Findings

6   For Cambodia, cereals constitute the largest food item group both in value (31%) and in calories (65%). The difference between the three regions is pronounced for such shares. The share of cereals in total food expenditure is only 11% in urban Phnom Penh compared with 25% in other urban areas and 35% in rural areas.

7   Cambodians get almost two-thirds of their calories from cereals. The share of cereals in total calories, however, varies from 34% in urban Phnom Penh to 58% in other urban areas and 69% in rural areas.

8   The average calorie intake per day per adult equivalent is not very different between urban Phnom Penh (2,406 calories), other urban areas (2,515 calories) and rural areas (2,504 calories) despite considerable difference in income between the three regions.

9   Differences in calorie consumption among the five quintiles are considerable, ranging from 1,476 calories per adult equivalent per day in the poorest quintile to 4,006 calories in the richest quintile. An average calorie intake at less than 1,500 calories per adult equivalent per day of the poorest quintile implies that these households suffer from constant hunger.

10 The cost per calorie is the cheapest for cereals (Riel 0.38) followed by fruits (Riel 0.68), take-home food (Riel 0.81) and food away from home (Riel 0.83). The average cost per calorie is Riel 1.33 in urban Phnom Penh compared with Riel 0.99 in other urban areas and Riel 0.77 in rural areas.

11 The per unit cost of calorie from cereals is considerably lower in rural areas (Riel 0.37) than in urban Phnom Penh (Riel 0.45) or other urban areas (Riel 0.42). This lower price of cereals in rural areas is important since cereals are the staple food for most Cambodians, and more so for the poor people.

12 Within non-food consumption, housing (including rent, maintenance and repair) is the dominant item covering nearly 43% of total non-food expenditure for all Cambodians. On average, the residents in urban Phnom Penh spend 43.5% of total non-food expenditure for housing compared with 49.1% in other urban areas and 41% in rural areas.

13 For expenditures directly related to human resource development, the shares are relatively small. The share of health care in total non-food consumption is 4.5% for all Cambodians. Similar shares are 3% in urban Phnom Penh, 2.4% in other urban areas and a relatively high of 5.3% in rural areas. This shows a disproportionate burden of health care cost on the rural population. The share of education in total non-food expenditure is only 1.8% for all Cambodians which is much less than similar shares in recreation and culture (6%) and even tobacco (1.9%). The share is 3.9% in urban Phnom Penh followed by 2.1% in other urban areas and a low of only 1.3% in rural areas.

14 The average total expenditure per adult equivalent per day in Cambodia is Riel 3,720 (US$ 0.93). The per adult equivalent per day total consumption of the poorest quintile is only Riel 1,322 (US$ 0.33). Such consumption is less than one dollar for all quintiles except the richest one for which the estimated value is Riel 9,068 (US$ 2.27).

15 The expenditure share of the poorest quintile in the distribution of total expenditure per adult equivalent per day is only 7.1% whereas the richest quintile's share is 48.7%. This shows that almost half of the country's total consumption is enjoyed by the richest 20% of Cambodians.

16 The estimated value of the Gini coefficient of consumption per equivalent adult per day is 0.403 for Cambodia which shows a relatively high degree of inequality compared with many countries in the region. Among the regions, other urban areas have the highest Gini-coefficient (0.425) followed by rural areas (0.372) and urban Phnom Penh (0.351).

6. Poverty Estimates for 2004

In estimating new poverty lines based on diary data, the methodology follows the basic approach of the World Bank as implemented in many developing

countries. For the new baseline poverty estimates for 2004, deviations have been made in a number of ways from the earlier approach (as explained in Prescott and Pradhan 1997) besides using the diary data. As explained above, these include: (i) use of an adult equivalence scale instead of a per capita scale; (ii) households in the second quintile used as reference population for the food basket instead of the third quintile; (iii) use of new types of comprehensive price indexes at the household level for food and non-food items; and (iv) adoption of use-value of durables instead of value of durables purchased in the last twelve months.

6.1 Poverty Lines and Poverty Rates

The estimated food poverty line is Riel 1,684 and the total poverty line is Riel 2,124 in average 2004 Phnom Penh prices. The non-food allowance is estimated at Riel 440. This is derived from the non-food consumption of households with constant price total expenditure per adult equivalent per day within the band of 90% and 110% of the poverty line, covering households between the first and the third deciles in the distribution.

Table 6.1: Poverty Measures using Diary Data, 2004

(percent)

Poverty measures	Food poverty line	Total poverty line
Headcount index	20.0	35.9
Poverty gap index	4.3	9.2
Squared poverty gap index	1.4	3.4

Source: Johansson and Backlund 2005, CSES 2003/04

The poverty estimates in Table 6.1 show that the head-count index in Cambodia is 35.9% in 2004. Similarly, 20% of the population lives below the food poverty line. The poverty gap index is 9.2% while the squared poverty gap index (poverty severity) is 3.4% for Cambodia as a whole. For the food poverty line, the poverty gap index is 4.3% and the poverty severity index is 1.4%.

Table 6.2 indicates considerable differences in poverty between urban Phnom Penh, other urban areas and rural areas. In urban Phnom Penh, the food poverty rate is 1.0% and the total poverty rate 2.4%. These rates are 11.4% and 20.9% respectively in other urban areas. In rural areas, the food poverty and total poverty rates are much higher at 22.2% and 39.7% respectively.

Table 6.2: Poverty Rates by Regions of Cambodia, 2004

(percent)

	Cambodia	Urban Phnom Penh	Other urban areas	Rural areas
Food poverty line				
Headcount index	20.0	1.0	11.4	22.2
Poverty gap index	4.3	0.2	2.2	4.8
Squared poverty gap index	1.4	0.0	0.7	1.6
Total poverty line				

Headcount index	35.9	2.4	20.9	39.7
Poverty gap index	9.2	0.4	5.1	10.2
Squared poverty gap index	3.4	0.1	1.8	3.8

Source: Johansson and Backlund 2005, CSES 2003/04.

The poverty gap index and the squared poverty gap index both show that those below the poverty lines fare better in urban Phnom Penh than in other urban areas and in the rural areas. In urban Phnom Penh, those in food poverty are marginally below the food poverty line (0.2%) whereas the gap is 11 times higher in other urban areas and 24 times higher in rural areas.

6.2 Number of the Poor

Table 6.3 gives the number of poor people in Cambodia. Out of the estimated population of 13.04 million in 2004, the total number of people below the food poverty line is 2.6 million; the number below the (total) poverty line is 4.7 million.

The table shows that poverty in Cambodia is overwhelmingly a rural phenomenon. Of the country's total number of poor of 4.7 million, 4.4 million (93.4%) live in rural areas while 0.3 million (6.2%) live in other urban areas and only 15,000 live in urban Phnom Penh.

The share of the food poor also follows a similar pattern indicating that the fight against poverty in Cambodia must involve enhancing the productivity of the rural economy to accelerate the growth of rural incomes and opportunities.

Table 6.3: Estimated Number of Poor in Cambodia, 2004

(in thousand)

	Cambodia	Urban Phnom Penh	Other urban areas	Rural areas
Total population	13,035	610	1,417	11,008
Number of food poor	2,607	6	162	2,439
Number of poor	4,685	15	296	4,374
% of food poor	100.0	0.2	6.2	93.4
% of poor	100.0	0.3	6.3	93.4

Source: Johansson and Backlund 2005, CSES 2003/04.

6.3 Summary of Major Findings

17 The estimated food poverty line is Riel 1,684 and the total poverty line is Riel 2,124 in average 2004 Phnom Penh prices. The non-food allowance is Riel 440.

18 The poverty estimates show that the head-count index in Cambodia is 35.9% in 2004. Similarly, 20% of the population lives below the food poverty line. The poverty gap index is 9.2% while the squared poverty gap index (poverty severity) is 3.4% for Cambodia as a whole. For the food poverty line, poverty gap index is 4.3% and poverty severity index is 1.4%.

19 The estimates indicate the existence of considerable difference in poverty between urban Phnom Penh, other urban areas and rural areas. In urban Phnom Penh, the food poverty rate is 1.0% and the total poverty rate 2.4%. These rates are 11.4% and 20.9% respectively in other urban areas. In rural areas, the food poverty and total poverty rates are much higher

at 22.2% and 39.7% respectively.

20   Out of the estimated population of 13.04 million in 2004, the total number of people below the food poverty line is 2.6 million; the number below the (total) poverty line is 4.7 million.

21   The results show that poverty in Cambodia is overwhelmingly a rural phenomenon. Of the country's total number of poor, 4.4 million (93.4%) live in rural areas while 0.3 million (6.2%) live in other urban areas and only 15,000 live in urban Phnom Penh. The share of the food poor also follows a similar pattern. This indicates that the fight against poverty in Cambodia must involve enhancing the productivity of the rural economy to accelerate the growth of rural incomes and opportunities.

Part II:

Poverty Estimates and Comparison using Recall Data*

7. CSES 2003/04 Recall Data

Part II of this poverty profile gives poverty estimates for 2004 using recall data from CSES 2003/04. Using comparable sub-samples, different sections also show trends and changes in various measures of poverty against the base-year poverty estimates from SESC 1993/94. This is intended to help assess the progress in poverty reduction in Cambodia from when poverty data first became available after almost three decades of war and civil conflict.[14]

The analysis in this part is an overall picture of Cambodian living standards. It identifies characteristics of the people who are categorized as poor. This will help in better understanding their lives and the factors that create and perpetuate poverty in the country. Wherever possible, these characteristics are also compared with earlier estimates to show changes over time. Such an analysis will help to design and implement more efficient anti-poverty interventions in Cambodia to create opportunities and assets for the poor.

7.1 Characteristics of Recall Data

The CSES 2003/04 recall data covered 15,000 households in 900 villages across the country. The information was collected over a 15-month period from November 2003 to January 2005. This was the first socio-economic survey of Cambodia that covered the entire country.

The sample of CSES 2003/04 was selected using a three-step procedure from 45 strata. These were divided into urban and rural areas in 24 provinces using the1998 Population Census as the sampling frame.[15] *In the first step,* 900 villages were selected from various strata using systematic random sampling with over-sampling in the urban strata. *Secondly,* one enumeration area was randomly selected from each sample village. *In the third step,* 10 households from each urban and 20 households from each rural sample area were selected randomly, thus giving a total of 15,000 sample households. In each of the 15-months of data collection for the survey, 1,000 households were interviewed in a randomly selected sample of 60 villages.

The CSES 2003/04 is not self-weighting. Two sets of adjusted sample design weights were calculated; one for use with the 2004 calendar year sample of 12,000

---

[14] In addition to 1993/94, poverty estimates and poverty profiles are available for 1997 and 1999 using respective socio-economic surveys. See, Prescott and Pradhan 1997, MOP 1998, 2000. In the present analysis, poverty comparisons have been restricted only to 1993/94 base-year in order to minimize confusions due to differences in coverage, methodology, timing and other aspects of these surveys. The 2004 poverty estimates used methods that ensured maximum possible comparability with 1993/94 estimates.

[15] Three of Cambodia's 24 provinces--Kep, Sihanoukville, and Pailin--do not have any rural areas.

households, and the other for the full sample of 15,000 households.[16] In order to avoid seasonal bias, all estimates, unless otherwise noted, used in this report are based on the 2004 calendar year sample of 12,000 households instead of the full sample of 15,000 households. These have been duly weighted to be representative of the Cambodian population and are called 2004 estimates.

7.2 Comparability with 1993/94 SESC

The 2004 and 1993/94 surveys are not geographically comparable. The 2004 CSES covered the entire country whereas the 1993/94 SESC covered only 59% of the country's total villages and 68% of the households or 65% of the individuals due to difficult terrain and security problems at the time (see, page 4, Prescott and Pradhan 1997). Hence, poverty estimates from 1993/94 SESC are not fully representative of entire Cambodia because of a large share of the population who lived in the excluded areas.[17]

The full-sample estimates for 2004 are, therefore, not suitable for comparing changes with 1993/94.These estimates reveal the poverty situation for the entire country in 2004. These can be meaningfully used to compare changes between sub-samples, such as among the regions or for geographically comparable areas.

By contrast, samples from geographically comparable areas (that is, the same geographical areas that were included in 1993/94 survey) can be used to compute poverty estimates for 2004 which are suitable to assess poverty changes since 1993/94.[18] The number of excluded villages in the 1993/94 SESC by provinces is given in Table 7.1. In total, 5,093 rural and 90 urban villages were excluded from the survey due to difficult terrain and security reasons. The survey fully excluded six provinces--Koh Kong, Kratie, Mondul Kiri, Preah Vihear, Ratanak Kiri and Stung Treng. The table also shows that the left-out villages in the 1993/94 SESC were located mostly in the rural areas.

Table 7.1: Number of Excluded Villages in 1993/94 SESC

Province	Number of excluded villages	
	Urban	Rural
Banteay Mean Chey	7	345
Battambang	…	291
Kompong Cham	…	334
Kompong Chhnang	…	268
Kampong Som/ Sihanouk Ville	…	59
Kampong Speu	…	968
Kampong Thom	…	663

---

[16] The sample design weights are equal to the inverse of the probability of each household's selection and are based on the population structure (e.g. province, urban/rural. age and sex) of the 1998 Population Census.

[17] It is estimated that, in 2004, about 38% of the total population lived in the excluded areas from 1993/94 SESC.

[18] For details, see Annex 6.

Kompot	…	315
Kandal	…	109
Koh Kong*	10	109
Kratie*	…	243
Mondul Kiri*	13	74
Phnom Penh	…	…
Preah Vihear*	27	170
Prey Veng	…	…
Pursat	…	51
Ratanak Kiri*	16	227
Siem Reap	…	689
Stung Treng*	17	112
Svay Rieng	…	…
Takeo	…	66
Total	**90**	**5,093**

Note: Provinces marked with asterisk (*) were totally excluded from the survey. In the 1993/94 SESC sample frame, the province of Krong Kaeb was included in Kompot, Otdar Mean Chey in Siem Reap, and Krong Pailin in Battambang.
Source: NIS

7.3 Summary of Major Findings

- The socio-economic surveys in 1993/94, 1996, 1997, 1999 and 2003/04 are not comparable due to differences in sampling frame and coverage, survey design, and implementation methodology. The 1993/94 Socio-Economic Survey of Cambodia (SESC) covered only 59% of the country's total villages and 65% of the individuals due to security problems at the time whereas the 2003/04 Cambodia Socio-Economic Survey (CSES) was the first such survey that covered the entire country.

- While 2003/04 CSES provides information on poverty and living standards of the people across the entire country, the comparison of household consumption and poverty between 1993/94 and 2004 is limited to the same geographical areas covered in 1993/94 SESC.

8. Updating Base-Year Poverty Line

For preparing poverty estimates in 2004 which are as comparable as possible with the base-year estimates of 1993/94, three important steps are needed:

(i)   Updating of base-year poverty lines for food and non-food price changes;

(ii)   Preparation of per capita consumption estimates for 2004; and

(iii)   Calculation of poverty rates by comparing per capita consumption estimates and the updated poverty lines for 2004.

In this section, the process of updating the base-year poverty line to 2004 is summarized. Cambodia's base-year poverty line consists of a single national food poverty line and three regional (Phnom Penh, other urban areas, and rural areas) non-food allowances. The base-year values are set in 1993/94 Riel and refer to

daily per capita levels of food and non-food consumption. The updating of the poverty line therefore involves converting both the food poverty line and the non-food allowances into average prices of 2004 through appropriate adjustments for inflation.

8.1 Updating Food Poverty Line

In 1993/94, the base-year food poverty line (FPL) was set for Cambodia.[19] The 1993/94 FPL is defined as the cost of a food basket just sufficient to meet a minimum food requirement of 2,100 calories per person per day. The estimates are based on 1993/94 SESC and use a reference bundle of 155 food items.[20] For the reference food bundle, the average food consumption quantities of individuals in the third quintile of the per capita consumption distribution were taken.[21]

The prices used to cost the reference food bundle were calculated using regional medians of unit values, as 1993/94 survey did not collect any data on village prices. These were derived from household responses on the value and quantity of individual food items consumed in the 1993/94 SESC.[22] The cost of the reference food bundle was estimated for three regions (Phnom Penh, other urban areas and rural areas) separately to produce three regional base-year food poverty lines.[23]

Updating the regional food poverty lines to 2004 involved a three-step procedure.[24] *First,* CSES 2004 data on village food prices were used to estimate the percentage increase (compared with 1993/94) in the cost of the reference food bundle in each region using quantity weights of the 1993/94 reference food bundle. *Second,* the consumer price index (CPI) data on Phnom Penh food prices were used to obtain a second estimate of the percentage increase in the cost of the reference food bundle in Phnom Penh (using the same quantity weights from the reference food bundle rather than the CPI weights).[25] *Third,* estimates obtained in

---

[19] For details see Prescott and Pradhan 1997.

[20] The 1993/94 SESC contained a total of 177 different food items, but the population group used to establish the reference food bundle had zero weight for 22 of them.

[21] In retrospect, one may argue that the reference food bundle chosen to define the food poverty line is more likely to refer to a diet that is of better quality and more urban than the typical diet of the poor since it is based on the food consumption pattern of a group of households which is not poor (the head-count index is estimated at 39% in 1993/94 but it is the 40-60 percentile group whose average diet has been adopted as the reference food bundle) and from a sample that covers almost all urban households but includes only 65% of the rural households.

[22] Only cash transactions were used in computing unit values as these were considered as more reliable proxies of actual prices.

[23] For details of 1993/94 methodology, see Prescott and Pradhan 1997. For some minor corrections introduced later on, see MOP 2000

[24] For details of the methodology, see Annex 1 in Knowles 2005.

[25] The implicit assumption is that the second step estimates for Phnom Penh are more reliable than the first step estimates as Phnom Penh CPI contains a larger number of food prices.

the first step for all three regions were adjusted using the ratio of the CPI price estimates to village price estimates for Phnom Penh.

The above procedure is equivalent to using village food prices to estimate a spatial price index (a price index for each region with current year Phnom Penh prices equal to 100) and using Phnom Penh CPI prices to estimate a temporal price index for Phnom Penh (with 1993/94 Phnom Penh prices equal to 100). Finally, the estimated spatial and temporal price indexes were combined to obtain an overall price index (with1993/94 Phnom Penh prices as 100) as well as temporal price indexes for each region (with each region's 1993/94 prices equal to 100). Either of these two indexes can be used to update the 1993/94 food poverty lines to 2004.[26]

Table 8.1: Updated Food Poverty Lines for 2004

Region	Food poverty line[1]		Food price index[2]		Yearly food price inflation[3] (%)
	1993/94	2004	1993/94	2004	1993/94-2004
Phnom Penh	1,185	1,782	100.0	150.4	4.2
Other urban areas	996	1,568	84.1	132.3	4.6
Rural areas	882	1,389	74.4	117.2	4.6

Note: 1. Current Riel per capita per day. 2. 1993/94 Phnom Penh=100 and weighted by the reference food bundle. 3. Weighted by the reference food bundle.
Source: Knowles 2005, CSES 2004.

Table 8.1 presents the updated food poverty lines for 2004 and associated food price index and annual rates of food price inflation using the quantities in the reference food bundle as weights.

8.2 Updating Non-Food Allowance

The 1993/94 SESC had no unit values for non-food items. Following Ravallion and Bidani (1994), a regression method was used by Prescott and Pradhan (1997) to calculate non-food allowances for the 1993/94 poverty line. Under the method, the base-year non-food allowance was taken as the estimated value of non-food consumption of Cambodians whose total per capita household consumption was just equal to the food poverty line.

Under this method, the allowance is minimal as it represents the non-food consumption at the expense of food consumption that could otherwise be used to achieve minimum calorie requirements.[27] Although a single reference food

---

[26] The advantage of using the above three-step methodology is that it generates two independent estimates of changes in food prices in Phnom Penh which helps assess the reliability of the estimates.

[27] In addition to sacrificing some food consumption to meet essential non-food requirements, the substitution of cheaper foods for more expensive ones within the reference food bundle is a practical possibility open to such households. The scope of making such substitutions is also wide within the reference food basket. For example, despite absorbing similar shares in the total cost of

bundle is used for all regions in computing the food poverty line, the base-year non-food allowances vary in composition over the three regions.[28]

For updating the regional non-food allowances, a non-food price index (similar to the food price index) is required. The lack of time-series data on non-food prices outside Phnom Penh is a major constraint in constructing such an index.[29] Estimates of inflation in non-food prices used in the present study are based on this limited set of data. The methodology is similar to that used in estimating inflation in food prices. The non-food price data from Phnom Penh CPI (weighted for different commodity compositions of each regional non-food allowance) were used to estimate inflation in Phnom Penh non-food prices while survey data were used to estimate spatial differences in non-food prices.[30]

Table 8.2 shows the updated non-food allowances and average annual rates of inflation in non-food prices during the period 1993/94 to 2004. The table also shows non-food price indexes in different regions. These estimates indicate that inflation in non-food prices was more rapid in rural than in urban areas. Non-food prices increased at an average annual rate of 3.8% in Phnom Penh, 3.6% in other urban areas and 4.4% in rural areas. Inflation in non-food prices was lower than inflation in food prices in all three regions during the period.

Table 8.2: Updated Non-Food Allowances for 2004

Region	Non-food allowances[1]		Non-food price index[2]		Yearly non-food price inflation[3] (%)
	1993/94	2004	1993/94	2004	1993/94-2004
Phnom Penh	393	569	100.0	144.8	3.8
Other urban areas	269	384	90.4	129.0	3.6
Rural areas	236	364	78.0	120.4	4.4

Note: 1. Current Riel per capita per day. 2. 1993/94 Phnom Penh prices=100 and weighted according to the estimated commodity composition of regional non-food allowances. 3. Weighted by the estimated commodity composition of regional non-food allowances.
Source: Knowles 2005, CSES 2004.

The estimated food and non-food price indexes, as given above, can be used to convert food and non-food consumption estimates in current Riel to constant Riel so that consumption data from all three regions can be combined to form consumption quintiles or to calculate measures of consumption inequality (such as the Gini coefficient) for Cambodia as a whole.

---

the reference food bundle, the cost per 100 calories for rice was around Riel 20 in 1993/94 compared with Riel 342 for a small mudfish. See, MOP 2000.

[28] In 1993/94, Phnom Penh households with levels of per capita non-food consumption within 20% of the Phnom Penh non-food allowance allocated a greater share to housing and utilities than corresponding households in other urban or rural areas. This is due to use of the regression method in estimating non-food allowance.

[29] Apart from data on non-food prices in the Phnom Penh CPI, which dates back to July-September 1994, data on non-food prices in other regions are extremely limited.

[30] For details, see Annex 2 in Knowles 2005.

8.3 Estimate of Poverty Line

The estimate of poverty line for 2004 is the sum of the updated food poverty line and the updated non-food allowance. The estimated poverty lines for the three regions are given in Table 8.3. These inflation-adjusted poverty lines can be used to estimate poverty rates by comparing each person's daily total consumption in current Riel to the updated poverty line for the region in which the person resides.

Table 8.3: Updated Poverty Lines, 2004

Region	Food poverty line[1]		Non-food allowances[1]		Poverty line[1]	
	1993/94	2004	1993/94	2004	1993/94	2004
Phnom Penh	1,185	1,782	393	569	1,578	2,351
Other urban areas	996	1,568	269	384	1,265	1,952
Rural areas	882	1,389	236	364	1,118	1,753

Note: 1. Expressed in current Riel per capita per day.
Source: Knowles 2005, CSES 2004.

Figure 8.1: Updated Poverty Lines, 2004
(in current Riels)
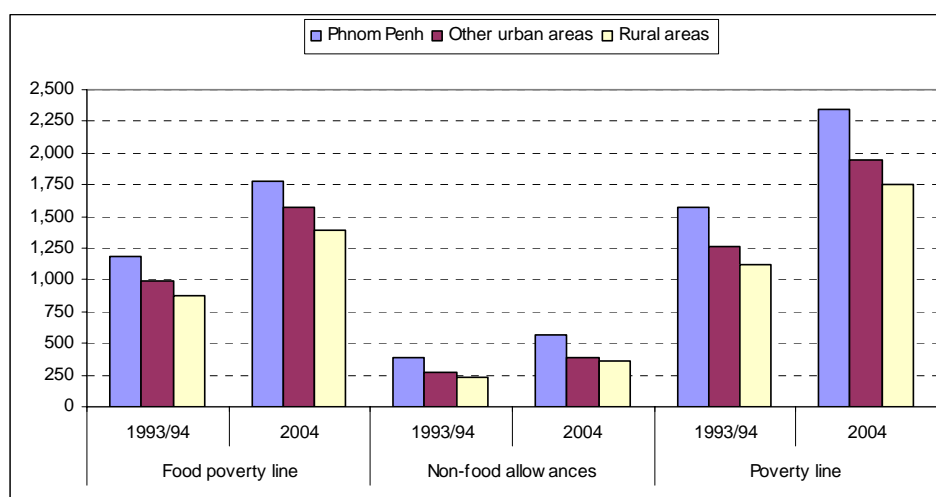
8.4 Summary of Major Findings

- Cambodia's base-year (1993/94) poverty line consists of a single national food poverty line defined in terms of a reference food bundle providing an average subsistence diet of 2,100 calories per person per day and three minimal regional (Phnom Penh. other urban areas, and rural areas) non-food allowances.
- The updated poverty lines for 2004 show that inflation has been most rapid in rural areas. Between 1993/94 and 2004, food prices increased at an average annual rate of 4.6% in rural areas compared with 4.2% in Phnom Penh and 4.6% in other urban areas. Non-food prices, on the other hand, increased at an annual rate of 4.4% in rural areas

> and at 3.8% in Phnom Penh and 3.6% in other urban areas.
> - At current prices, the (total) poverty line in 2004 is estimated at Riel 2,351 in Phnom Penh, Riel 1,952 in other urban areas and Riel 1,753 in rural areas.

9. Estimate of Consumption

For estimating poverty and making meaningful poverty comparisons, accurate and comparable estimates of household consumption as well as consistent poverty lines are required. This section provides estimates of household consumption from CSES 2004 along with those for 1993/94 SESC.[31]

In the 1993/94 SESC, data on household consumption were collected for a sample of 5,578 households through the recall method for 177 food and 266 non-food items in four rounds over a 12-month period. Accordingly, estimates of average household consumption for 1993/94 are relatively free from seasonal variation in both price and quantity.

The 2004 CSES collected consumption data from 14,984 households using both recall and diary methods.[32] The present estimates of consumption are based on recall data collected during the 2004 calendar year.[33] For two categories (transportation/communications and personal care), diary data were used since no recall data were collected in these areas. No adjustment was made to the reported data apart from imputing rental value to owner-occupied housing.[34] Although the consumption data for both 1993/94 and 2004 surveys covered at least a 12-month period, the 2004 CSES collected recall data for only 19 food categories and 14 non-food categories.

9.1 Consumption Estimate by Region

The estimates of mean per capita daily household consumption are presented in Table 9.1. For 2004, these are provided for the 12-month sample covering entire Cambodia as well as, for comparison purposes, covering the same 59% of the villages covered under the 1993/94 SESC.[35] It shows that Phnom Penh residents

---

[31] It should, however, be emphasized that comparability of estimates of consumption from different socio-economic surveys over time are affected, in addition to changes in survey design (such as sample coverage, survey timing, detail and length of consumption recall, and similar other factors), by even subtle changes in interviewing, data cleaning and other survey practices. While the effort during conducting surveys is to minimize such discrepancies, certain degree of incomparability is inherent in such surveys conducted over different periods of time.

[32] For the first method, a set of recall questions similar to those used in 1997 and 1999 surveys was used while, for the second, a calendar-month diary was completed by the respondents with the assistance of the interviewers who remained in each sample village for one full month.

[33] For a summary of the procedures, see Annex 5.

[34] Such imputation was made for 5.9% of sample households who did not report the value and for 2.4% of households that reported a zero value.

[35] For convenience, the estimates with samples covering whole Cambodia for 2004 are called "Full 12-month sample 2004" whereas those using the sample for 2004 limited to geographical areas included in 1993/94 SESC are called "1993/94 SESC comparable sample" in all tables.

enjoy the highest real per capita consumption level, having an estimated value of Riel 5,501 per day in 2004 which is more than twice the national average of Riel 2,585. The per capita consumption is the lowest in rural areas with an average value of Riel 2,170 per day.

The geographically comparable estimates show that, in real terms, per capita daily consumption increased in all regions between 1993/94 and 2004 with the highest increase (nearly 36%) in other urban areas. The lowest increase (24%) was in the rural areas. Also, a lower value of mean real consumption in 2004 for the entire Cambodia (Riel 2,585) compared with the mean in areas included in 1993/94 SESC (Riel 2,932) suggests that the people living in the excluded areas have a lower mean per capita real consumption than those included in the 1993/94 SESC. The share in total consumption for the comparable sample increased between 1993/94 and 2004 in Phnom Penh (from 21% to 26%) and other urban areas (from 14% to 16%), while it declined (from 65% to 58%) in rural areas.

Table 9.1: Per Capita Daily Household Consumption

Region	Full 12-month sample	!993/94 SESC comparable sample		Increase (1993/94=100)		Share in total consumption (%)	
	2004	1993/94	2004	1993/94	2004	1993/94	2004
i) in current prices (Riel)							
Phnom Penh	8,067	...	...	...	...	...	...
Other urban areas	4,424	...	...	...	...	...	...
Rural areas	2,571	...	...	...	...	...	...
Cambodia	3,238	...	...	...	...	...	...
ii) in constant prices[1] (Riel)							
Phnom Penh	5,501	4,367	5,501	100.0	126.0	21.0	25.9
Other urban areas	3,389	2,782	3,770	100.0	135.5	13.8	16.4
Rural areas	2,170	1,857	2,303	100.0	124.0	65.2	57.7
Cambodia	2,585	2,228	2,932	100.0	131.6	100.0	100.0

Note: 1. For entire Cambodia in 2004, adjusted for inflation using appropriate price indexes and, for comparison, 1993/94 Phnom Penh prices=100.
Source: Knowles 2005, CSES 2004.

Figure 9.1: Per Capita Daily Household Consumption, 2004
(in constant Riels)
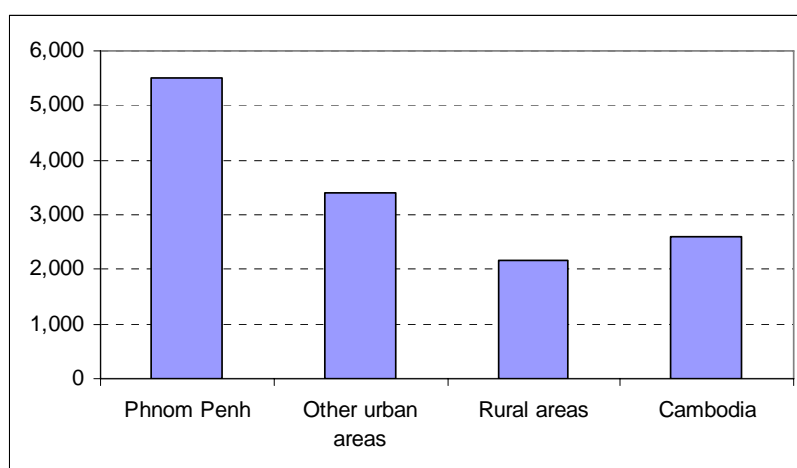
9.2 Consumption by Per Capita Quintiles

Changes in per capita consumption by quintiles over time provide useful information on how the observed changes in overall per capita consumption are enjoyed by different groups in the consumption distribution.[36] The estimates given in Table 9.2 indicate that, at constant prices, the average per capita daily consumption of the poorest 20% in Cambodia was only Riel 927 in 2004 while the same for the richest 20% was more than six times at Riel 6,151.

The comparable data for 1993/94 and 2004 show that real per capita consumption increased for all quintiles over the period although the relative gains are higher for the richer quintiles. For the poorest 20%, the average real per capita consumption increased by only 8% whereas the rate increased consistently for higher quintiles reaching 45% for the richest quintile. The share of consumption of the richest 20% Cambodians in total consumption increased from 44% to 48% between 1993/94 and 2004, while similar shares declined for all other quintiles with the largest decline taking place for the two poorest quintiles.

Table 9.2: Distribution of Consumption by Per Capita Consumption Quintiles

Quintiles	Full 12-month sample	!993/94 SESC comparable sample		Increase (1993/94=100)		Share in total consumption (%)	
	2004	1993/94	2004	1993/94	2004	1993/94	2004
1 (poorest)	927	951	1,026	100.0	107.9	8.5	7.0
2	1,388	1,336	1,537	100.0	115.0	12.0	10.5
3	1,851	1,696	2.077	100.0	122.5	15.2	14.2
4	2,604	2,271	2,954	100.0	130.1	20.4	20.2
5 (richest)	6,151	4,883	7,067	100.0	144.7	43.8	48.2
Cambodia	2,585	2,228	2,932	100.0	131.6	100.0	100.0

Note: The figures refer to per capita daily household consumption measured in Riel at constant prices with 1993/94 Phnom Penh prices=100.

---

[36] The estimates of per capita consumption at constant prices can be used to form per capita consumption quintiles, by dividing the population into five equal-sized groups ranked from the poorest to the richest in terms of the level of per capita consumption.

Figure 9.2: Distribution of Consumption by Per Capita Consumption Quintiles
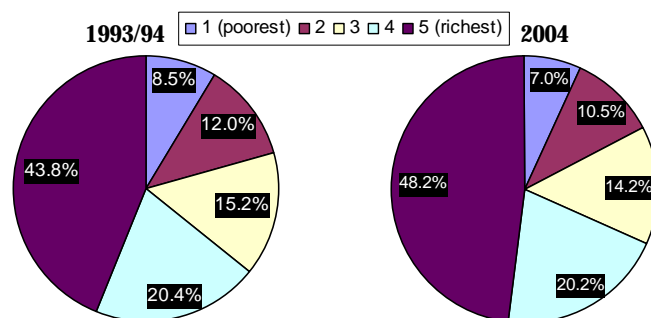
9.3 Share of Food in Total Consumption

The share of consumption allocated to food in total consumption usually tends to fall as the level of real per capita consumption increases.[37] The estimated shares of food in total consumption are given in Table 9.3. In 2004, the average share of food in total per capita consumption is 42% in Phnom Penh compared with 65% in rural areas. Similarly, for comparable samples, the food share has declined in all regions and for all quintiles between 1993/94 and 2004 with increase in real per capita household consumption. Nevertheless, for the full sample, it remains at a high of nearly 70% for the poorest 20% as against 47% for the richest 20% in 2004.

Table 9.3: Share of Food in Per Capita Real Consumption

(in percent)

Regions/ Quintiles	Full 12-month sample	!993/94 SESC comparable sample	
	2004	1993/94	2004
Region			
Phnom Penh	42.1	55.6	42.1
Other urban areas	57.1	68.4	55.4
Rural areas	65.0	70.3	64.2
Cambodia	62.2	68.5	60.0
Quintiles			
1 (poorest)	69.5	75.4	67.4
2	67.8	72.4	66.9
3	65.5	70.2	63.8
4	60.8	67.0	58.3
5 (richest)	47.3	57.8	43.6

Note: The figures refer to shares in per capita daily household consumption measured in Riel at constant prices with 1993/94 Phnom Penh prices=100.
Source: Knowles 2005, CSES 2004.

---

[37] This is the famous Engel's Law according to which food share falls regularly as income increases over time. This is often taken as an indicator of the standard of living of the population. The law also holds at a point in time so that the food share is lower for high income groups than for low income groups in a cross-section of population.

9.4 Consumption Level by Geographical Zone and Province

The estimates of per capita household consumption by different geographical zones and provinces are presented in Table 9.4. These estimates have been computed using the full 15-month sample (that is, not limited to the calendar year 2004 sample only) to take the advantage of the entire sample of 2003/04 CSES. The per capita daily household consumption at constant prices for five geographical zones (Phnom Penh, Plains, Tonle Sap, Coastal, and Plateau/Mountain) shows that both urban and rural areas in Phnom Penh and the

Table 9.4: Daily Per Capita Household Consumption by Geographical Zones, 2004

(Riel at constant prices)

Geographical zone	Per capita consumption[1]			Ratio (national mean=100)[2]			Share in total consumption (%)[3]		
	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
Phnom Penh	9,687	6,186	8,120	254.6	162.6	213.4	11.7	6.1	17.8
Plains	6,320	3,467	3,583	166.1	91.1	94.2	2.9	37.7	40.7
Tonle Sap	4,844	3,009	3,286	127.3	79.1	86.4	5.8	20.3	26.1
Coastal	4,745	3,415	3,810	124.7	89.7	100.1	2.7	4.6	7.3
Plateau/Mountain	3,734	2,620	2,820	98.1	68.8	74.1	1.9	6.2	8.1
Cambodia	6,341	3,355	3,805	166.6	88.2	100.0	25.1	74.9	100.0

Note: 1. Expressed in Riel at constant 2004 prices with 2004 Phnom Penh prices=100. 2. These are ratios (expressed in %) to national mean level of consumption (total for Cambodia at Riel 3,805). 3. The shares are % of total household consumption.
Source: Knowles 2005, CSES 2004.

urban areas in the Plains, Tonle Sap and the Coastal zone have average levels of consumption which are higher than the national average. The per capita consumption level in urban Phnom Penh is more than 2.5 times higher than the national average whereas the same is nearly 63% higher than national average in rural Phnom Penh. In terms of per capita consumption, Plateau/Mountain is the poorest zone followed by Tonle Sap and the Plains. The rural areas of Plateau/Mountain and Tonle Sap have the lowest average levels of real per capita consumption with only 69% and 79% of the national average respectively. It may be mentioned here that more than one-third of Cambodia's population live in these two poorest rural areas.

The mean level of per capita daily consumption by provinces is presented in Table 9.5.[38] The provinces located in the Tonle Sap and Plateau/Mountain zones are also among the ones with the lowest average levels of per capita consumption. The provinces with relatively low per capita consumption include Kompong Speu, Kompong Thom, Svay Rieng and Prey Veng while Phnom Penh,

---

[38] The estimated consumption is presented for larger individual provinces and for groups of smaller provinces due to selection of sample households from clusters (900 in number) rather than pure random sampling. With the sample, reliable estimates separately for all provinces, especially for the smaller ones, are not possible.

Sihanoukville/Kep/Koh Kong, and Kandal have higher per capita consumption than the national average.

Table 9.5: Daily Per Capita Household Consumption by Provinces, 2004

(Riel at constant 2004 prices)

Province	Mean consumption[1]	Ratio (national average=100)
Phnom Penh	8,120	213.4
Kompong Cham	3,469	91.2
Kandal	4,233	111.3
Prey Veng	3,140	82.5
Svay Rieng	3,007	79.0
Takeo	3,729	98.0
Banteay Meanchey	3,525	92.6
Battambang	3,614	95.0
Kompong Thom	2,773	72.9
Siem Reap	3,270	85.9
Kompong Chhnang/Pursat	3,214	84.5
Kampot	3,456	90.8
Sihanoukville/Kep/Koh Kong	4,390	115.4
Kompong Speu	2,480	65.2
Others[2]	3,139	82.5
Cambodia	3,805	100.0

Note: 1. Per capita daily household consumption in Riel at constant 2004 prices (with 2004 Phnom Penh prices=100). 2. Include Kratie, Mondul Kiri, Preah Vihear, Ratanak Kiri, Stung Treng, Oddar Meanchey, and Pailin.
Source: Knowles 2005, CSES 2004.

9.5 Inequality in Per Capita Household Consumption

Changes in the incidence of poverty over time, measured by household consumption, depend on changes in the average level of per capita consumption as well as on what happens to its distribution across different consumption groups. The Gini coefficient provides a useful summary measure of inequality in the distribution of per capita consumption.[39] Table 9.6 shows the estimated values of the Gini coefficient for 1993/94 and 2004. According to the Gini coefficient, consumption inequality at constant prices is 0.40 in Cambodia in 2004 which is relatively high compared with many countries in Southeast Asia. In terms of region, inequality is the highest in other urban areas (0.44) followed by Phnom Penh (0.37) and rural areas (0.34).

Table 9.6: Gini Coefficient of Per Capita Consumption

Region	Full 12-month sample (current prices)	Full 12-month sample (constant prices)	1993/94 SESC comparable sample (constant prices)	
	2004	2004	1993/94	2004

---

[39] The Gini coefficient is one of the most commonly used measure of inequality. Its value ranges from zero to one. A value of zero indicates complete equality in the distribution while a value of one implies complete inequality. Usually, the estimates of inequality in the real world lie within these two extreme values.

Phnom Penh	0.367	0.369	0.393	0.369
Other urban areas	0.433	0.435	0.439	0.437
Rural areas	0.343	0.342	0.265	0.333
Cambodia	0.417	0.396	0.347	0.403

Note: Constant price estimates refer to 1993/94 Phnom Penh prices=100.
Source: Knowles 2005, CSES 2004.

Figure 9.3: Gini Coefficient of Per Capita Consumption, 2004
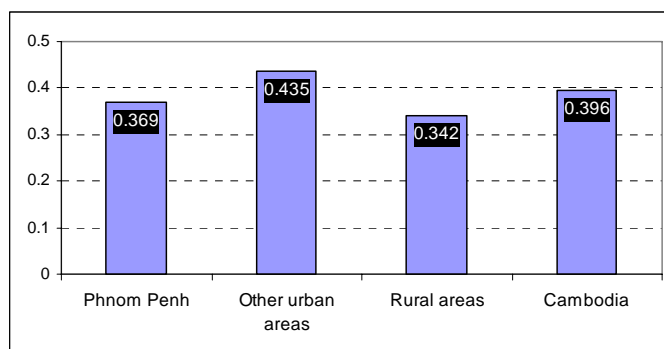
The estimates of geographically comparable areas indicate that inequality in the distribution of per capita consumption has increased sharply in rural areas (from 0.27 to 0.33) between 1993/94 and 2004 although it is still lower than inequality in Phnom Penh or in other urban areas. In Phnom Penh, inequality has declined marginally (from 0.39 to 0.37) over the period while, in other urban areas, it has remained almost constant at around 0.44. Such a difference in region-specific changes in inequality in per capita consumption, especially a sharp increase in rural areas where more than 85% of the population lives, has a significant effect on poverty reduction across different regions of the country.

9.6 Summary of Major Findings

- In 2004, per capita household consumption in real terms is estimated at Riel 2,585 for entire Cambodia. This figure is Riel 5,501 in Phnom Penh, Riel 3,389 in other urban areas and Riel 2,170 in rural areas.

- The geographically comparable sample shows that real per capita consumption in all three regions of the country increased between 1993/94 and 2004 with the highest increase taking place in other urban areas followed by Phnom Penh and rural areas. The share in total consumption increased for Phnom Penh and other urban areas, while it declined for rural areas.

- At constant prices, the average per capita daily consumption of the poorest 20% was only Riel 927 in 2004 while the same for the richest 20% was more than six times at Riel 6,151.

- The comparable sample shows that real per capita consumption increased for all quintiles between 1993/94 and 2004 although relative gains are higher for the richer quintiles. For the poorest 20%, average real per capita consumption increased by only 8% during the period whereas similar rates rose consistently for higher quintiles reaching 45% for the richest quintile. The shares of consumption of the poorer groups

in the country's total consumption declined between 1993/94 and 2004 contributing to higher inequality in consumption.

- In 2004, the share of food in total consumption was 42% in Phnom Penh, 57% in other urban areas and 65% in rural areas. In terms of quintile, whereas the poorest 20% spent 70% on food, the richest 20% spent only 47%. The comparable sample shows decline in food share in all regions and for all quintiles between 1993/94 and 2004. This shows increased capacity and spending on non-food items by all quintiles. This implies that all Cambodians can now afford to spend more on non-food basic needs.

- Significant differences exist in per capita consumption across geographical zones and provinces. Both urban and rural areas of Phnom Penh and urban areas in the Plains, Tonle Sap and the Coastal zone have average levels of consumption higher than the national average. In terms of per capita consumption, Plateau/Mountains is the poorest zone followed by Tonle Sap and the Plains. Provinces with relatively low per capita consumption include Kompong Speu, Kompong Thom, Svay Rieng and Prey Veng while Phnom Penh, Sihanoukville/Kep/Koh Kong and Kandal have higher per capita consumption than the national average.

- In 2004, consumption inequality measured by the Gini coefficient is 0.40 in Cambodia which is relatively high compared with many Southeast Asian countries. Consumption inequality is highest in other urban areas followed by Phnom Penh and rural areas. The geographically comparable sample shows a sharp increase in consumption inequality in rural areas between 1993/94 and 2004 although it is still lower than inequality in Phnom Penh or in other urban areas. Such increase in inequality, especially in rural areas, has a major impact on poverty reduction in the country and is a cause of concern.

10. Estimate of Poverty 2004

Estimate of poverty is by far the most important element of a poverty profile. Poverty estimates are arrived at by comparing per capita daily consumption (in current Riel) for each individual in the sample with the updated poverty line for the region where the person resides. Likewise, poverty rates can then be estimated over different observable characteristics of the population, such as location, age, gender, education and occupation. How poverty varies with observable characteristics is important in designing targeted policies and programs. This also helps to identify the causal factors of poverty.

There are different measures of poverty. In the present report, the FGT measures of poverty have been calculated.[40] The FGT indexes consist of three poverty rates. *First,* the poverty head count index (P_0) which provides the incidence of poverty and is the percentage of population with per capita consumption below the poverty line. *Second,* the poverty gap index (P_1) which measures the depth of poverty. This is calculated as the average difference over the total population between a person's per capita consumption and the poverty line, with a zero

---

[40] These are the most widely used poverty measures proposed by Foster, Greer and Thorbecke (1984).

value assigned to all people above the poverty line.[41] *Third,* the squared poverty gap index (P_2) which measures the severity of poverty and is the poverty gap squared before it is averaged, thereby giving greater weights to larger poverty gaps.

10.1 Poverty by Region

Poverty estimates for three regions (Phnom Penh, other urban areas, and rural areas) identify the concentration of the poor in specific locality and help to target development activities. These are shown in Table 10.1 using the full 12-month sample of 2004 for whole of Cambodia.

Table 10.1: Poverty Estimates by Region in Cambodia, 2004

Region	Headcount		Poverty gap		Squared poverty gap	
	Index (%)	% of all poor	Index (%)	% of all gaps	Index (%)	% of all squared gaps
Poverty line						
Phnom Penh	4.60 (0.99)	1.1	1.23 (0.37)	1.2	0.49 (0.20)	1.2
Other urban areas	24.73 (2.18)	7.8	6.55 (0.75)	7.9	2.48 (0.37)	8.1
Rural areas	39.18 (1.13)	91.1	10.17 (0.42)	90.9	3.76 (0.20)	90.7
Cambodia	34.68 (0.97)	100.0	9.02 (0.36)	100.0	3.34 (0.17)	100.0
Food poverty line						
Phnom Penh	2.55 (0.78)	1.1	0.54 (0.24)	1.1	0.21 (0.12)	1.3
Other urban areas	14.15 (1.61)	7.8	3.28 (0.52)	8.4	1.15 (0.23)	8.9
Rural areas	22.23 (0.97)	91.1	4.78 (0.28)	90.5	1.56 (0.11)	89.8
Cambodia	19.68 (0.81)	100.0	4.25 (0.24)	100.0	1.40 (0.10)	100.0

Note: Figures in parentheses are estimated standard errors. The results are based on full 12-month sample of 2004 covering whole of Cambodia.
Source: Knowles 2005, CSES 2004.

Figure 10.1: Poverty by Region in Cambodia, 2004

---

[41] In other words, poverty gap index indicates the percentage of total household consumption that would be required for redistribution with perfect targeting to eliminate poverty.

Legend: ■ Headcount index % (+/- 2std errors)　■ % of All Poor

Chart categories: Phnom Penh, Other urban areas, Rural areas, Cambodia

Data labels: 1.1, 7.8, 91.1, 100
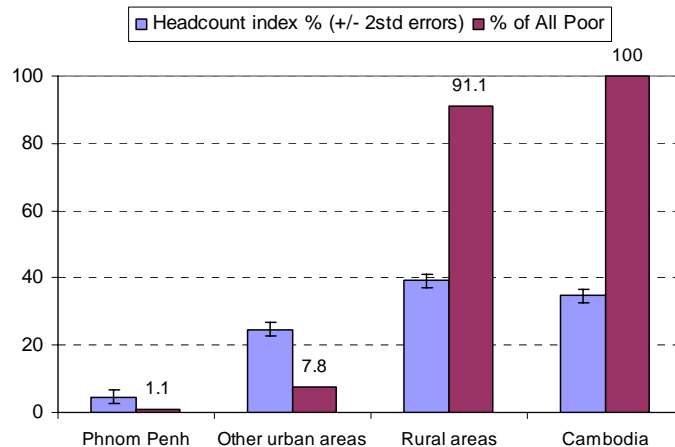
Nearly 35% of Cambodians lived in poverty in 2004. However, there are significant regional differences in the poverty rate. While only about 5% of the Phnom Penh residents are poor, nearly 25% of the residents in other urban areas are poor. In the rural areas, the poverty rate is much higher at more than 39%.

Of the total number of the poor, more than 91% lives in rural areas, compared with 8% in other urban areas and only 1% in Phnom Penh. Both the intensity of poverty and the concentration of the poor are much higher in rural areas. This makes poverty largely a rural phenomenon in Cambodia.

For the food poverty line, the situation is similar. A total of 20% of the Cambodians lived below the food poverty line in 2004. In Phnom Penh, the rate is below 3%, compared with around 14% in other urban areas and 22% in rural areas. Moreover, more than 91% of those living below the food poverty line lives in rural areas.

The three regions also show similar rankings for other poverty measures (poverty gap and squared poverty gap) for both poverty and food poverty lines. These indexes are the highest in rural areas followed by other urban areas and Phnom Penh. The above results imply that the rankings of the regions are robust with respect to all three poverty measures, and that poverty incidence, along with its depth and severity, is the highest in rural areas.

10.2 Changes in Poverty since 1993/94

Poverty incidence in Cambodia was 34.7% in 2004. There is no comparable estimate for 1993/94 for entire Cambodia because the geographical coverage of 1993/94 SESC was different which covered only 59% of the country's total villages.

Poverty rates, however, can be compared between 1993/94 and 2004 with estimates from samples of 2004 CSES covering the same geographical areas included in 1993/94 SESC. Poverty estimates from such comparable sub-sample of 2004 CSES, along with poverty rates in 1993/94, are given in Table 10.2. These

figures are consistent for comparing change in poverty rates over the period. With this sample limited to the same geographical areas, the results show a strong decline in Cambodia's poverty rate from 39% in 1993/94 to 28% in 2004. This represents a decline of about 11 percentage points over the period, that is, an average of 1 percentage point decline per year.

Similarly, for the geographically comparable samples, the food poverty index fell from 20% to 14.2% over the same period, 1993/94 to 2004. Poverty, including food poverty, declined in all three regions. In Phnom Penh, the headcount index (using the poverty line) declined from 11.4% to 4.6% over the period, whereas similar decline was from 36.6% to 20.5% in other urban areas and from 43.1% to 33.7% in rural areas.

Changes in two related poverty measures, poverty gap index (P_1) and squared poverty gap index (P_2), broadly reflect similar changes as the head-count ratio. These indexes declined consistently in all three regions for comparable samples suggesting that, even among the poor, a greater share of the people is now closer to the poverty line than they were in 1993/94.[42]

In 2004, the higher poverty rate for Cambodia as a whole compared with that for the areas included in 1993/94 SESC implies that the areas not covered in the 1993/94 survey (41% of the total villages of the country) have significantly higher incidence of poverty. A simple calculation shows that the head-count ratio in these excluded areas is 45.6% in 2004 (compared with 28% in included areas) while the food poverty index is 28.7% (compared with 14.2% in included areas).[43]

Table 10.2: Changes in Poverty Rates in Cambodia, 1993/94 and 2004

Region	Headcount Index (%)		% of all poor		Poverty gap index (%)		Squared poverty gap index (%)	
	1993/94	2004	1993/94	2004	1993/94	2004	1993/94	2004
Poverty line								
Phnom Penh	11.39	4.60	3.1	2.3	3.06	1.23	1.18	0.49
Other urban areas	36.62	20.54	10.3	9.4	9.66	5.74	3.58	2.24
Rural areas	43.12	33.66	86.5	88.3	9.99	7.84	3.32	2.71
Cambodia	39.00	27.97	100.0	100.0	9.21	6.66	3.11	2.35
Food poverty line								
Phnom Penh	6.19	2.55	3.3	2.5	1.29	0.54	0.40	0.21
Other urban areas	19.63	12.50	10.8	11.3	4.46	2.97	1.45	1.08
Rural areas	21.95	16.66	85.9	86.2	4.00	3.34	1.12	1.05
Cambodia	20.00	14.18	100.0	100.0	3.76	2.90	1.08	0.94

[42] The first-order stochastic dominance of the cumulative distribution of real per capita expenditure in 2004 over the 1993/94 distribution in Cambodia also confirms that trends in poverty during the period would be similar over the range of virtually all possible poverty lines.
[43] With an estimated population share of around 38% in the excluded areas in 2004 and, assuming x is the poverty index in the not covered areas in 1993/94 survey, for poverty index, 0.62 * 27.97 + 0.38 * x = 34.68 gives x= 45.63%. Similarly, for food poverty index, 0.62 * 14.18 + 0.38 * x = 19.68 gives x = 28.65%.

Note: These results are based on 2004 samples limited to geographical areas covered in 1993/94 SESC.
Source: Knowles 2005, CSES 2004.

Figure 10.2: Changes in Poverty in Cambodia, 1993/94 and 2004
(based on comparable samples)
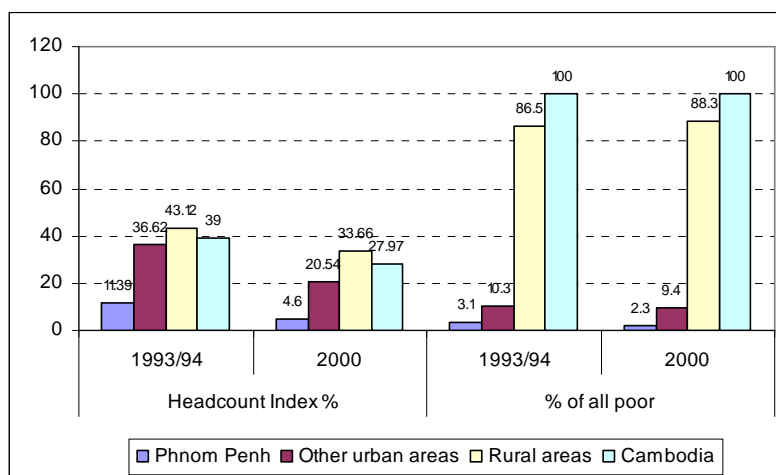
For the comparable sample, more than 88% of the total number of the poor lived in the rural areas in 2004. As noted in section 10.1, this is more than 91% for the full sample. This indicates that Cambodia's poverty is rooted in its large rural (agricultural) sector which has low productivity and low growth, but provides livelihood to the vast majority of the country's population.

Along with sharp differences in the rates of poverty, rural-urban difference in the share of the poor also widened during the period. For the comparable sample, the share of rural areas in the country's total poor population increased from 86.5% in 1993/94 to 88.3% in 2004 whereas corresponding shares of Phnom Penh and other urban areas declined.

10.3 Regional Poverty Trends: Some Implications

The poverty trend since 1993/94 shows that poverty has remained consistently high in rural areas. Poverty also had a slower rate of decline in rural areas than poverty in Phnom Penh or in other urban areas. The overwhelming majority of the poor also live in rural areas.

The better poverty reduction performance of Phnom Penh and other urban areas (and generally in areas included in the 1993/94 survey) can be attributed to several factors. An important factor is the concentration of public investments in these areas and strong urban bias in growth that persisted during the last decade. Cambodia also derived significant peace dividends by successfully coming out of more than two decades of conflict and isolation that resulted in fairly rapid initial

increase in investment and economic growth, mostly in favorably located areas.[44] Economic growth was unbalanced during the period, centered in Phnom Penh and other urban areas. This was narrowly based as well driven by such activities as garment manufacturing, construction and tourism. Consequently, poverty in urban areas declined at a relatively rapid rate compared with that in rural areas.

In contrast, growth of rural activities based primarily on agriculture showed considerable variability and lagged behind the growth of the rest of the economy. Moreover, agricultural growth of the period was significantly concentrated in rural areas having more favorable locations and better infrastructural facilities. In addition to higher initial poverty rates, such spatial and sectoral imbalances in economic performance also explain the large difference that currently exists in the poverty level between the included and the excluded areas in 1993/94 SESC.

If growth continues to remain urban-focused in Cambodia, rural poverty will remain high. This is especially because the depth of poverty is greater in rural areas. In such a situation, Cambodia's poverty reduction gains will be much less. One of Cambodia's major challenges is therefore to adopt focused and targeted strategies to accelerate the rate of poverty reduction in the rural areas, especially in those high poverty-stricken areas that were excluded from the 1993/94 SESC.

In the coming years, it is more likely that the better-off urban and rural areas which were included in the 1993/94 survey will continue to grow. Poverty levels in these areas will decline with Cambodia's general economic growth which averaged more than 6% during the last decade. On the other hand, the excluded areas from the 1993/94 survey will require special attention including growth-promoting measures, targeted programs and investments to bring down poverty rapidly from their existing high levels. Such measures will also be necessary in communes and villages in other areas which are remote and have high concentration of the poor. These efforts should also encompass the needs of minority and indigenous people of the country whose poverty rate is high and results from complex linkages between economic, social, cultural, legal, political and other issues.

Several actions, however, will form the critical elements of the above poverty reduction interventions. Their relative importance will depend on existing situations and specific local needs. These include: more and better health care, expanded educational facilities, development of agriculture and rural non-farm activities, improved infrastructure, generation of sustainable livelihoods, and similar other priorities.

Box 10.1: Trends in Poverty and Inequality

The consumption-based headcount poverty rate in Cambodia has declined over the last decade

---

[44] During the period, Cambodia also benefited from specific favorable conditions, e.g. MFA from the late 1990s to 2005 and its extended lease of life in US and EU safeguards until 2008.

although the rate is still high at 34.7% in 2004. Poverty gap and squared poverty gap yardsticks also show decline in poverty. Progress in reducing poverty incidence has been made in both urban and rural areas, but the most success has taken place in Phnom Penh. The rural areas, especially those with disadvantaged locations and difficult terrains, still have very high poverty rates and need special and targeted attention.

Data on food consumption patterns also confirm the fall in poverty. Anthropometric data indicate good progress in reducing infant and child mortality as well as in associated measures of life expectancy. Cambodia's achievement in reducing fertility has been substantial. Progress in increasing literacy and school enrolments has been encouraging; although high drop-out rates and the quality of education are causes of considerable and rising concern.

Consumption inequality is relatively high in Cambodia; with the geographically comparable sample showing a sharp increase in inequality in rural areas between 1993/94 and 2004. Though all consumption quintiles gained, growth benefited the relatively affluent more than the poorer groups. Growth in rural areas appears to have been less broad-based than in urban areas.

The poor in Cambodia have characteristics which are not very different from those of the poor in other low income countries. Of the total number of the poor, more than 90% live in the rural areas making poverty largely a rural phenomenon. This implies that Cambodia's poverty is rooted in its large agricultural sector, which has low productivity and low growth but provides livelihood to the vast majority of the country's population.

The poor tend to have low level of education, have limited access to land and other productive assets, and are highly concentrated in low-paying, physically-demanding and socially-unattractive occupations. The poor have less access to modern amenities and services. They reside in houses of inferior quality with no or limited access to basic services like safe water and improved sanitation. The poor are more likely to reside in households with large membership size, have more children, and have a household head who is less educated. In order to be effective, poverty reduction policies in Cambodia should take into account these multi-dimensional disadvantages that the poor face in improving their situations.

Another major issue in poverty reduction is the rising trend in consumption inequality. In addition to its rate, the impact of economic growth on poverty depends on what happens to inequality.[45] Increasing inequality, particularly in the rural areas, suggests that the past pattern of Cambodia's growth has a strong underlying tendency towards generating higher inequality. To counteract this, along with promoting higher productivity and returns, the country's growth strategies and policies must address the sources of rising inequality, such as uneven spread of economic and social opportunities, skewed distribution of financial and human capital, and growing disparities in other spheres of life.

---

[45] See Table 9.6.The estimated Gini coefficient of per capita consumption for Cambodia as a whole is 0.40 in 2004 with a high of 0.44 in other urban areas, 0.37 in Phnom Penh and 0.34 in rural areas. This shows that inequality in Cambodia is amongst the highest in the East Asia-Pacific region. For geographically comparable sample, the Gini coefficient increased from 0.35 in 1993/94 to 0.40 in 2004 for Cambodia (declining from 0.39 to 0.37 in Phnom Penh and remaining almost constant at 0.44 in other urban areas but increasing sharply from 0.35 to 0.40 in rural areas). Data on income inequality are not available, but it is more likely that income inequality has also followed similar trends.

Economic growth has to come both from farm and non-farm activities, a mix that is necessary to sustain poverty reduction during the coming decades.

In Cambodia, raising agricultural incomes requires actions in several key areas, such as increasing crop (especially rice) productivity through greater use of improved seed varieties and other inputs, appropriate soil and pest management, and better water control especially through small-scale irrigation facilities. Increasing livestock and fisheries production will require improved technical services for animal health and fisheries research, conservation and management. Support for expanding access to formal rural financial institutions will be important for farmers and rural entrepreneurs to enable them to expand their scale of operation and diversify towards more profitable and sustainable activities. Similarly, easing the land constraint will require speeding up the land-titling efforts as part of creating a transparent and secure land market.

The rural non-farm economy is composed of trade, transport, processing, small-scale manufacturing, retail sales and services. It holds significant potential for strong growth and rapid poverty reduction in Cambodia. The country needs to adopt appropriate policies to capitalize on this potential. Policies aimed at increasing physical assets of the poor, such as land, credit and rural infrastructure will be an integral part of promoting rapid growth of the rural sector and the economy as a whole.

To ensure synergy and quick and efficient outcomes, specific actions will have to be built on what has been achieved so far. Through changes in emphasis, in practices, and in policies, healthy growth will benefit the rural poor. This will also ensure a more rapid and sustained movement towards equality and justice.

Box 10.2: Promoting Broad-Based Economic Growth

Since 1994, Cambodia has achieved a relatively high rate of economic growth averaging around 7% per year, largely fueled by rapid expansion of garment manufacturing and tourism. While further acceleration of the existing sources of growth is a priority, Cambodia also needs to expand the sources of growth more towards the rural areas to increase the rate of poverty reduction. The fuel for rural economic growth has to come both from farm and non-farm activities, a mix that would be necessary to sustain poverty reduction during the coming decades.

In Cambodia, raising agricultural incomes requires actions in several key areas, such as increasing crop (especially rice) productivity through greater use of improved seed varieties and other inputs, appropriate soil and pest management, and better water control especially through small-scale irrigation facilities. Increasing livestock and fisheries production is also important, and this will require improved technical services for animal health and fisheries research, conservation and management. Support for expanding access to formal rural financial institutions will be important for farmers and rural entrepreneurs to enable them to expand their scale of operation and diversify towards more profitable and sustainable activities. Similarly, easing the land constraint will require speeding up the land-titling efforts as part of creating a transparent and secure land market.

The rural non-farm economy--composed of trade, transport, processing, small-scale

manufacturing, retail sales and services, and the like--holds significant potential for strong growth and rapid poverty reduction in Cambodia. The country needs to adopt appropriate policies to capitalize on these potentials. In this context, policies aiming at increasing physical assets of the poor, such as land, credit and rural infrastructure will be an integral part of promoting rapid growth of the rural sector and the economy as a whole.

Overall, the critical element of the strategy needs to ensure that growth reaches the poor and expands their opportunities. In turn, this requires policies that create assets for the poor--education; good health; access to inputs, markets, voices and power; and participation in decision making—to benefit from expanding opportunities of growth. Translating the strategies into concrete and effective actions for poverty reduction requires determination and imagination on the part of policy makers and all other stakeholders.

10.4 Poverty by Geographical Zone and Province

The estimates of poverty in five geographical zones (Phnom Penh, Plains, Tonle Sap, Coastal, and Plateau/Mountains) of the country are presented in Table 10.3.

Table 10.3: Poverty Estimates by Geographical Zones, 2004

Geographical zone	Urban	Rural	Total	Urban	Rural	Total
i) Headcount ratio		Index (%)			% of all poor	
Phnom Penh	1.11	8.92	4.60	1.9	1.1	1.1
Plains	13.74	32.86	32.07	8.9	42.3	39.7
Tonle Sap	28.21	45.38	42.80	46.3	36.2	37.0
Coastal	20.41	30.07	26.84	19.7	5.0	6.1
Plateau/Mountains	32.61	56.34	52.02	23.2	15.4	16.0
Cambodia	17.62	37.82	34.68	100.0	100.0	100.0
ii) Poverty gap		Index (%)			% of all poverty gaps	
Phnom Penh	0.16	2.54	1.23	1.1	1.2	1.2
Plains	3.00	7.64	7.45	7.4	37.9	35.4
Tonle Sap	8.51	12.79	12.15	53.1	39.2	40.4
Coastal	4.22	6.41	5.68	15.6	4.1	5.0
Plateau/Mountains	8.44	16.72	15.21	22.8	17.6	18.0
Cambodia	4.63	9.83	9.02	100.0	100.0	100.0
ii) Squared poverty gap		Index (%)			% of all squared poverty gaps	
Phnom Penh	0.04	1.06	0.49	0.7	1.3	1.3
Plains	0.93	2.64	2.57	6.1	35.4	33.0
Tonle Sap	3.46	4.94	4.72	57.3	41.1	42.4
Coastal	1.37	2.13	1.87	13.4	3.7	4.4
Plateau/Mountains	3.13	6.52	5.91	22.4	18.6	18.9
Cambodia	1.75	3.63	3.34	100.0	100.0	100.0

Note: The results refer to estimates using the poverty line based on full 12-month sample of 2004 covering whole of Cambodia.
Source: Knowles 2005, CSES 2004.

Figure 10.3: Poverty Estimates by Geographical Zones, 2004

(percent)
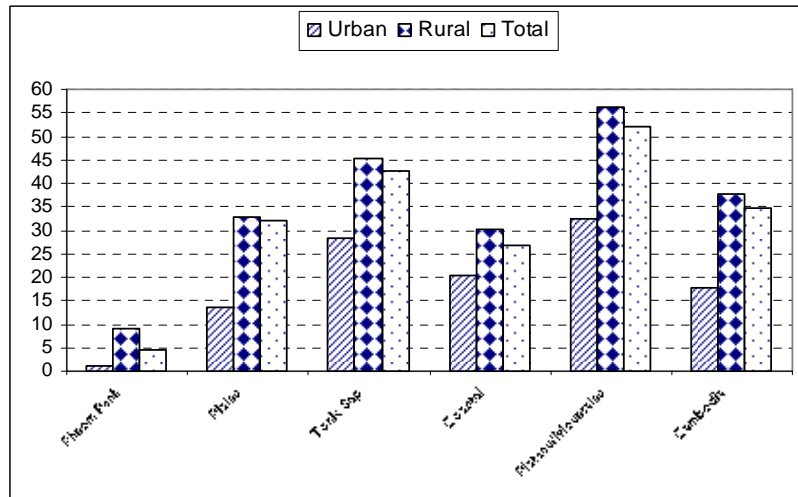
Phnom Penh belongs to a separate geographical category with very low rates of poverty; having a headcount rate of only 4.6% and accounting for 1.1% of the total number of the poor in the country. On the other hand, Plateau/Mountains is the poorest zone with a poverty rate of more than 52%. Tonle Sap has a poverty rate of nearly 43% compared to 32% in the Plains and 27% in the Coastal zone. However, because of higher population share (about 43%), the Plains zone has the largest share of the poor (40%), followed by Tonle Sap (37%), Plateau/Mountains (16%) and the Coastal zone (6%). In general, poverty rates in terms of all three poverty measures are higher in rural areas than in urban areas in all geographical zones.

Figure10.4: Poverty Map by Geographical Zones

Headcounter Index (%)

4.60	Phnom Penh Zone
28.80	Coastal Zone
32.50	Plain Zone
42.66	Tonle Sap Zone
51.78	Planteu/Mountain Zone

54
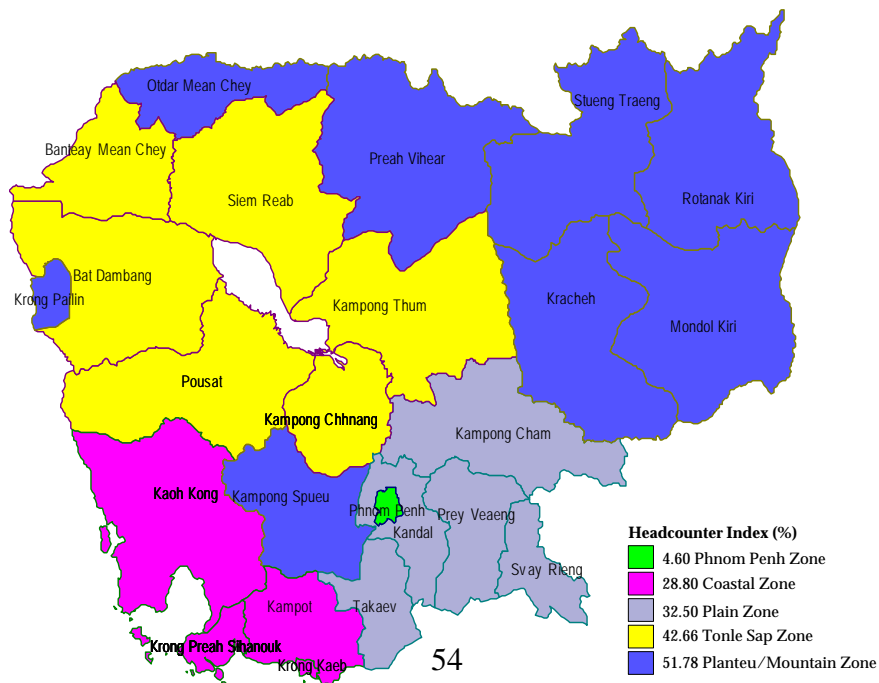
Table 10.4 shows poverty estimates by provinces for 2004 using the full 15-month 2003/04 CSES sample. The full sample has been used to take the maximum advantage of the collected data under the survey.

Table 10.4: Poverty Estimates by Provinces, 2004

Province	Poverty headcount index (%)	Poverty gap index (%)	Squared poverty gap index (%)
i) Phnom Penh zone	**4.60**	**1.23**	**0.49**
Phnom Penh	4.60	1.23	0.49
ii) Plains zone	**32.50**	**7.62**	**2.65**
Kompong Cham	37.04	9.28	3.34
Kandal	22.24	4.81	1.68
Prey Veng	37.20	8.09	2.65
Svay Rieng	35.93	8.35	2.75
Takeo	27.71	6.31	2.09
iii) Tonle Sap zone	**42.66**	**12.09**	**4.74**
Banteay Meanchey	37.15	9.82	3.58
Battambang	33.69	7.94	2.65
Kompong Thom	52.40	15.55	6.23
Siem Reap	51.84	17.31	7.46
Kompong Chhnang/Pursat	39.57	10.35	3.78
iv) Coastal zone	**28.80**	**6.11**	**2.02**
Kampot	29.96	6.60	2.30
Sihanoukville/Kep/Koh Kong	23.18	4.60	1.38
v) Plateau/Mountain zone	**51.78**	**15.47**	**6.22**
Kompong Speu	57.22	16.98	6.72
Other provinces[1]	46.11	13.20	4.98
Cambodia	**35.13**	**9.19**	**3.45**

Note: 1. Include the provinces of Kratie, Mondul Kiri, Preah Vihear, Ratanak Kiri, Stung Treng, Oddar Meanchey and Pailin. These and in two other instances, the estimates are provided in group of provinces due to limited number of samples to generate statistically significant separate estimates. The poverty estimates in this table are slightly different from previous tables since these results are based on full 15-month sample of 2003/04 CSES whereas the earlier results are based on 12-month calendar year sample of 2004.

Source: Knowles 2005, CSES 2004.

Figure 10.5: Poverty Headcount Index by Provinces (%)
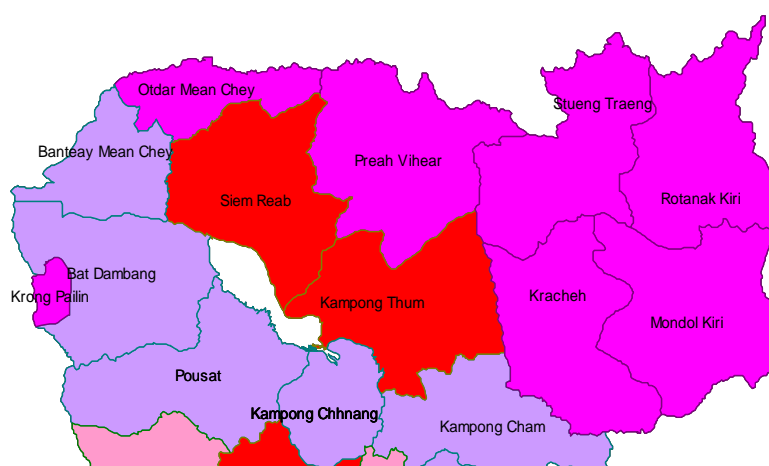
Figure 10.6: Poverty Gap Index by Provinces (%)
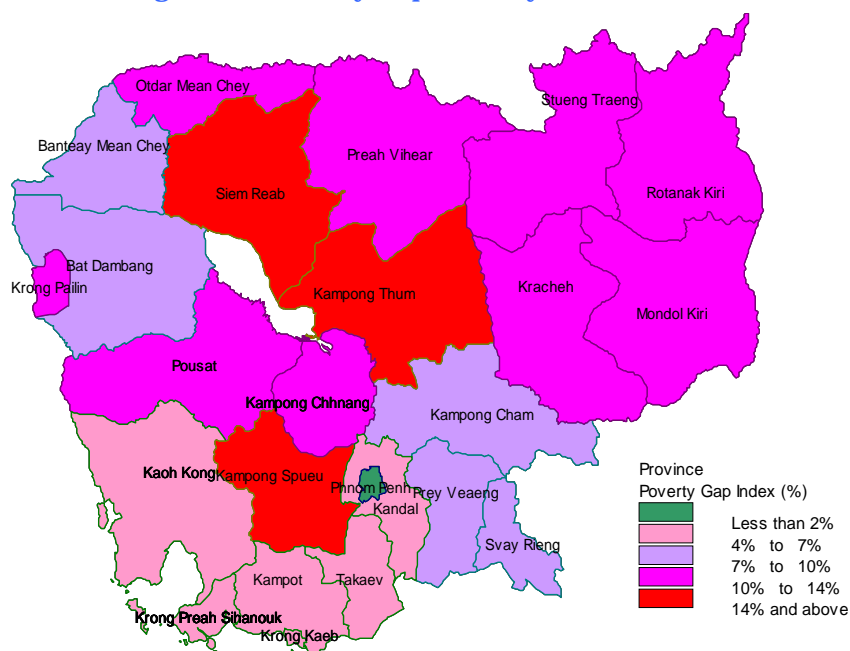
The poverty headcount index is the highest in Kompong Speu (57.2%) followed by Kompong Thom (52.4%) and Siem Reap (51.8%). Poverty gap and squared poverty gap indexes are also high in these provinces compared with other areas indicating that poverty in these provinces are deeper and more severe.

10.5 Summary of Major Findings

- In 2004, poverty incidence in Cambodia is around 35%. There are significant regional differences in the poverty rate. While only about 5% of Phnom Penh residents are poor, nearly 25% of the residents in other urban areas are poor. In rural areas, poverty rate is more than 39%. Of the total number of the poor, more than 91% lives in rural areas compared with 8% in other urban areas and only 1% in Phnom Penh.

- A total of 20% of all Cambodians lived below the food poverty line in 2004. In Phnom

Penh, the rate is 3% compared with around 14% in other urban areas and 22% in rural areas.

- In case of poverty gap and squared poverty gap measures, the three regions show similar rankings as above for both poverty and food poverty lines. These are highest in rural areas followed by other urban areas and Phnom Penh.

- For the geographically comparable sample, poverty incidence declined from 39% in 1993/94 to 28% in 2004. The food poverty index fell from 20% to 14.2% over the same period. Poverty declined in all three regions but the reduction rate was not uniform. The rural areas still experience much higher poverty rate.

- In 2004, poverty rate in the 41% excluded areas from 1993/94 SESC is estimated at 45.6% compared with 28% in the included areas. This shows that the excluded areas are more disadvantaged and need special attention in poverty reduction efforts.

- Among the geographical zones, Phnom Penh has the lowest poverty rate at 4.6% in 2004. On the other hand, Plateau/Mountains is the poorest zone with a poverty rate of more than 52%. Tonle Sap has a poverty rate of 43% compared with 32% in the Plains and 27% in the Coastal zone. The Plains has the largest share of the poor (40%) followed by Tonle Sap (37%), Plateau/Mountains (16%) and the Coastal zone (6%). Poverty is higher in rural areas than in urban areas in all geographical zones.

- In case of provinces, poverty rate in 2004 is highest in Kompong Speu (57.2%) followed by Kompong Thom (52.4%) and Siem Reap (51.8%). On the other hand, the lowest poverty incidence is in Phnom Penh (4.6%), Kandal (22.2%) and Sihanoukville/Kep/Koh Kong (23.2%). Poverty gap and poverty severity indexes also follow similar trends.

11. Poverty by Characteristics of Household Head

In common with earlier poverty profiles, this section presents poverty status of the population in terms of important characteristics of the head of household. Many of these characteristics are readily identifiable and relatively fixed so that these can provide useful guidance in targeting actions to specific groups.[46]

Changes in poverty in terms of a given characteristic (e.g. education or occupation) do not necessarily indicate any causal relationship between the two. For example, such a relationship may result from the impact of other factors (e.g. education and living in urban areas are likely to be highly correlated so that any observed relationship between poverty and education may conceal the impact of location of residence). Similarly, the observed relationship in certain cases may reflect the impact of unobservable factors that are correlated with both poverty

---

[46] For example, if benefits are targeted in terms of age or gender of the head of the household, it is unlikely that the non-target groups can receive the benefits by changing their characteristics. One possible option, however, is to re-arrange the headship to conform to the adopted criteria and become eligible to receive the benefits. This reflects the inherent difficulty of using the characteristics of a single household member for targeting purposes. Moreover, the concept of 'headship' used in household surveys may differ from the economic concept of household head relevant for decision making and resource allocations within the household.

and the characteristic under consideration.[47] Thus, while caution is needed in interpretation, poverty estimates by characteristics of household heads will help understand various dimensions of poverty in Cambodia.

11.1 Poverty by Demographic Characteristics

Poverty estimates by age of the household head are presented in Table 11.1. Poverty rates tend to decline with age beyond 50 years, probably reflecting less dependency burden and higher incomes and assets in the life cycle of the household head. The poverty headcount ratios are very similar (varying between 36% and 38%) for households with relatively young heads (age below 50 years). Similarly, poverty rates vary between 28% and 29% for household heads aged 50 years and above. The figures suggest that the highest poverty incidence and the largest number of the poor are concentrated in households whose heads are aged between 30 and 50 years. This age group covers more than 61% of the total number of the poor in the country.

More than 55% of household heads belong to age group 30-49 years while nearly 35% are aged 50 years and above. Less than 10% of the household heads are aged below 30 years. The household composition by age of household head, given in Table 11.2, shows that the number of household members tends to increase with age and reaches a high of 6.48 in the age group of 40-49 years and then falls to around 5 for age group 70 years and above. The average number of children under 15 years also follows similar trends. The average number of working age adults is the highest at 4.54 for the age group 50-59 years.

Table 11.1: Poverty Estimates by Age of Household Head, 2004

Age group (years)	Headcount		Poverty gap		Squared poverty gap		% of total population
	Index (%)	Contribution to total (%)	Index (%)	Contribution to total (%)	Index (%)	Contribution to total (%)	
i. Poverty line							
Less than 30	35.7	10.1	9.0	9.9	3.3	9.8	9.9
30-39	38.4	29.2	10.3	30.1	3.8	29.8	26.3
40-49	37.9	31.9	10.1	32.8	3.9	33.8	29.2
50-59	29.2	17.2	7.3	16.5	2.6	16.1	20.5
60-69	28.1	8.1	6.7	7.5	2.4	7.1	10.0
70 and above	28.8	3.4	7.2	3.3	2.6	3.2	4.1
Total	34.7	100.0	9.0	100.0	3.3	100.0	100.0
ii. Food poverty line							
Less than 30	20.2	10.1	4.2	9.8	1.4	9.7	9.9
30-39	23.0	30.8	4.9	30.2	1.5	29.0	26.3
40-49	22.0	32.6	5.0	34.0	1.7	35.5	29.2
50-59	15.3	15.9	3.3	15.9	1.1	15.8	20.5
60-69	14.3	7.3	3.0	6.9	1.0	6.9	10.0
70 and above	15.5	3.2	3.3	3.2	1.1	3.1	4.1
Total	19.7	100.0	4.3	100.0	1.4	100.0	100.0

Source: Knowles 2005, CSES 2004.

---

[47] While the former problem can be tackled by using multivariate analysis, the latter is difficult to address, particularly in the absence of longitudinal data on relevant variables.

Table 11.2: Household Composition by Age of Household Head, 2004

Age group (years)	Children under 15	Working age adults	Elderly, 65+	Total
Less than 30	1.81	2.22	0.08	4.11
30-39	2.93	2.46	0.13	5.51
40-49	2.52	3.84	0.11	6.48
50-59	1.64	4.54	0.09	6.27
60-69	1.27	4.26	0.10	5.63
70 and above	1.15	3.44	0.40	4.99
Total	2.20	3.49	0.12	5.80

Source: Knowles 2005, CSES 2004.

Poverty estimates by sex of the household head are presented in Table 11.3. Poverty rates are not significantly different between male and female-headed households.[48] Female-headed households account for around 17% of all households in Cambodia.

Table 11.4 provides estimates of poverty by marital status of the household head. It shows that, in general, poverty rates are lower in households headed by a person who is never married; conversely, members in households headed by a divorced person have higher poverty rates than persons in households headed by either married or widowed person.

Table 11.3: Poverty Estimates by Sex of Household Head, 2004

Sex of household head	Headcount		Poverty gap		Squared poverty gap		% of total population
	Index (%)	Contribution to total (%)	Index (%)	Contribution to total (%)	Index (%)	Contribution to total (%)	
i. Poverty line							
Female	33.6	16.6	9.1	17.2	3.5	17.7	17.7
Male	34.9	83.4	9.0	82.8	3.3	82.3	82.8
Total	34.7	100.0	9.0	100.0	3.3	100.0	100.0
ii. Food poverty line							
Female	19.4	16.9	4.4	17.8	1.5	18.6	17.2
Male	19.7	83.1	4.2	82.2	1.4	81.4	82.8
Total	19.7	100.0	4.3	100.0	1.4	100.0	100.0

Source: Knowles 2005, CSES 2004.

Figure 11.1: Poverty Estimates by Sex of Household Head, 2004
(percent)

---

[48] Knowles (2005) also computed separate poverty estimates for female-headed households with no other working-age (15-65 years) person in the household but with one or more dependents. The headcount index for such households is 38.6% compared with 34.1% for other female-headed households.

Legend: Squared poverty gap ▫ Poverty gap ▪ Headcount Index
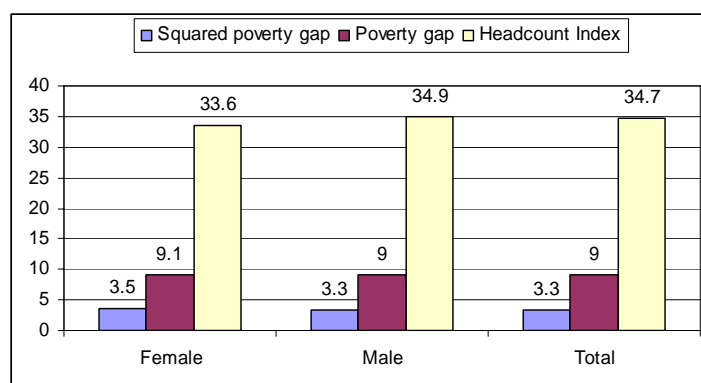
Table 11.4: Poverty Estimates by Marital Status of Household Head, 2004

Marital Status of household head	Headcount		Poverty gap		Squared poverty gap		% of total population
	Index (%)	Contribution to total (%)	Index (%)	Contribution to total (%)	Index (%)	Contribution to total (%)	
i. Poverty line							
Never married	27.2	0.7	6.9	0.7	2.7	0.8	1.0
Married	34.8	84.4	9.0	83.9	3.3	83.4	84.1
Widowed	34.2	13.0	9.1	13.4	3.5	13.7	13.2
Divorced	37.3	1.8	10.4	2.0	4.2	2.1	1.7
Total	34.7	100.0	9.0	100.0	3.3	100.0	100.0
ii. Food poverty line							
Never married	13.8	0.7	3.5	0.8	1.2	0.8	1.0
Married	19.7	84.2	4.2	83.3	1.4	82.4	84.1
Widowed	19.7	13.2	4.4	13.8	1.5	14.3	13.2
Divorced	21.7	1.9	5.3	2.1	2.0	2.5	1.7
Total	19.7	100.0	4.3	100.0	1.4	100.0	100.0

Source: Knowles 2005, CSES 2004.

The estimates of poverty by household size are given in Table 11.5. It shows that poverty rates steadily increase with the size of the household until household size reaches eight. Above the household membership of eight, observed differences in poverty rates become somewhat less systematic and statistically insignificant.[49] Similar pattern was also observed in earlier poverty profiles.

Table 11.5: Poverty Estimates by Size of Household, 2004

---

[49] The positive relationship between household size and poverty, which is often due to the presence of larger number of children in the households, needs analysis in terms of equivalence scale in consumption. The argument is based on the premise that children do not require equal amount of food and other consumption items as the adults require to reach the same level of welfare. Since CSES 2004 data show that the mean number of children under 15 years increases more than proportionately with household size, measure of household size in terms of equivalence scale (using less than one weights for children) is likely to generate changed relationships. This suggests that alternative poverty measures should be computed using household consumption divided by the number of equivalent adults rather than the present practice of using household consumption per capita. In this context, a related argument runs in terms of economies of scale in household consumption. It is argued that households with larger number of members do not need to consume as much, in per capita terms, as households with smaller number of members (holding age and sex composition constant) to attain the same level of welfare due to inherent economies of scale that can be derived in household consumption. Thus conclusions on relationships between poverty and household size are not straightforward.

| Household size | Headcount | | Poverty gap | | Squared poverty gap | | % of total |
(number)	Index (%)	Contribution to total (%)	Index (%)	Contribution to total (%)	Index (%)	Contribution to total (%)	population
i. Poverty line							
1	2.9	0.0	0.3	0.0	0.0	0.0	0.3
2	10.0	0.9	2.0	0.7	0.7	0.6	3.1
3	18.8	4.9	3.7	3.7	1.1	3.0	8.9
4	25.1	11.7	5.8	10.3	2.0	9.6	16.1
5	31.0	17.5	7.4	16.0	2.6	15.0	19.6
6	38.2	19.8	9.6	19.2	3.4	18.3	18.0
7	42.5	17.8	11.6	18.7	4.4	19.1	14.6
8	48.4	13.1	13.7	14.2	5.3	14.8	9.4
9	47.6	7.3	14.0	8.3	5.8	9.2	5.3
10 and above	51.9	7.0	17.3	8.9	7.5	10.5	4.7
Total	34.7	100.0	9.0	100.0	3.3	100.0	100.0
ii. Food poverty line							
1	0.0	0.0	0.0	0.0	0.0	0.0	0.3
2	3.9	0.6	0.8	0.6	0.2	0.5	3.1
3	7.8	3.5	1.3	2.7	0.3	2.1	8.9
4	12.8	10.5	2.5	9.3	0.8	8.7	16.1
5	16.0	16.0	3.2	14.6	1.0	13.7	19.6
6	21.1	19.2	4.2	17.8	1.3	17.0	18.0
7	25.9	19.2	5.6	19.3	1.9	19.3	14.6
8	30.7	14.6	6.8	15.0	2.3	15.4	9.4
9	29.7	8.0	7.8	9.7	2.7	10.4	5.3
10 and above	35.3	8.4	10.0	10.9	3.8	12.8	4.7
Total	19.7	100.0	4.3	100.0	1.4	100.0	100.0

Source: Knowles 2005, CSES 2004.

11.2 Poverty by Ethnicity and Disability

The ethnicity, disability and health status of the household head are observable characteristics that can be used as useful proxies for targeting specific programs. In Cambodia, one of the legacies of decades of armed conflict is the presence of large number of people with disabilities caused by war, conflicts, landmines and unexploded ordnance (UXOs).

Table 11.6 provides poverty estimates by ethnicity of the household head. The results indicate not much difference in poverty rates between the populations living in Khmer and non-Khmer households. The overwhelming majority (nearly 96%) of the population is Khmer and they constitute about the same percentage of the total number of the poor in the country.

Poverty estimates by number of disabilities of the household head are given in Table 11.7. Of the total, 9.5% of the household heads reported some form of disabilities and 1.7% reported two or more disabilities. As expected, poverty rates rise with the number of reported disabilities.

Table 11.6: Poverty Estimates by Ethnicity of Household Head, 2004

| Ethnic Status of household head | Headcount | | Poverty gap | | Squared poverty gap | | % of total population |
	Index (%)	Contribution to total (%)	Index (%)	Contribution to total (%)	Index (%)	Contribution to total (%)	
i. Poverty line							
Khmer	34.6	95.7	9.0	95.9	3.4	96.2	95.8

		Headcount		Poverty gap		Squared poverty gap		% of total
Others	35.8	4.3	8.8	4.1	3.0	3.8	4.2
Total	34.7	100.0	9.0	100.0	3.3	100.0	100.0
ii. Food poverty line							
Khmer	19.7	95.9	4.3	96.3	1.4	96.5	95.8
Others	19.3	4.1	3.8	3.7	1.2	3.5	4.2
Total	19.7	100.0	4.3	100.0	1.4	100.0	100.0

Source: Knowles 2005, CSES 2004.

Table 11.7: Poverty Estimates by Reported Disability of Household Head, 2004

No. of reported disabilities	Headcount		Poverty gap		Squared poverty gap		% of total population
	Index (%)	Contribution to total (%)	Index (%)	Contribution to total (%)	Index (%)	Contribution to total (%)	
i. Poverty line							
None	34.4	89.7	8.9	89.6	3.3	89.4	90.5
One	36.6	8.2	9.5	8.2	3.6	8.3	7.7
Two and more	42.2	2.1	11.4	2.2	4.3	2.2	1.7
Total	34.7	100.0	9.0	100.0	3.3	100.0	100.0
ii. Food poverty line							
None	19.5	89.5	4.2	89.6	1.4	88.9	90.5
One	21.0	8.3	4.5	8.2	1.6	8.7	7.7
Two and more	24.6	2.2	5.3	2.2	2.0	2.4	1.7
Total	19.7	100.0	4.3	100.0	1.4	100.0	100.0

Source: Knowles 2005, CSES 2004.

Poverty estimates using the self-assessed health status of the household head are given in Table 11.8.[50] The results indicate that about 66% of the households head considered their health status the same as others of the same age. On the other hand, nearly 18% household heads reported their health status somewhat worse while around 11% reported somewhat better. Only about 4% reported their health status as much better while less than 1% reported as much worse.

In general, poverty rates are lower among the people in households with heads reporting better health status. Health status of the household head is, however, not a major factor in explaining poverty differentials in Cambodia.

Table 11.8: Poverty Estimates by Self-Assessed Health Status of Household Head, 2004

Health status	Headcount		Poverty gap		Squared poverty gap		% of total population
	Index (%)	Contribution to total (%)	Index (%)	Contribution to total (%)	Index (%)	Contribution to total (%)	
i. Poverty line							
Much better	30.4	3.7	7.5	3.6	2.7	3.5	4.3
Somewhat better	31.3	10.3	8.0	10.1	2.9	9.9	11.4
About the same	35.5	67.5	9.4	68.5	3.5	69.2	65.9
Somewhat worse	34.4	17.7	8.5	16.9	3.1	16.4	17.8

---

[50] Such data were not collected in earlier socio-economic surveys in Cambodia. The information is based on response to a question comparing the respondent's health status to that of others having the same age. More specifically, the question asked was: "How would you rate your health compared to others having the same age as yourself?"

Much worse	43.0	0.7	13.5	0.9	6.0	1.1	0.6
Total	34.7	100.0	9.0	100.0	3.3	100.0	100.0
ii. Food poverty line							
Much better	17.3	3.7	3.4	3.4	1.1	3.3	4.3
Somewhat better	17.2	10.0	3.6	9.6	1.2	9.6	11.4
About the same	20.3	68.1	4.5	69.9	1.5	69.9	65.9
Somewhat worse	19.0	17.2	3.8	16.0	1.2	15.8	17.8
Much worse	28.1	0.9	7.5	1.1	3.3	1.4	0.6
Total	19.7	100.0	4.3	100.0	1.4	100.0	100.0

Source: Knowles 2005, CSES 2004.

Figure 11.2: Poverty by Self-Assessed Health Status of Household Head, 2004
(percent)
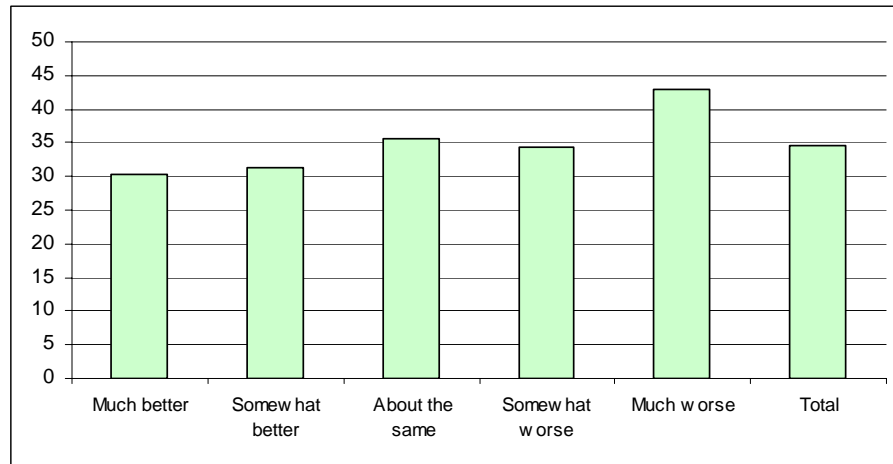
11.3 Poverty by Education and Literacy

In low income countries, it is usually observed that poverty rates are high among those whose household heads have no or little education. Education is the most important element of human resource development and social returns to education are especially high in a country like Cambodia.

Box 11.1: Investing in Human Capital--Education

Development of human capital through investments in education, health and nutrition--a major pillar of the Royal Government's poverty reduction strategy--has strong poverty

reduction effects.

Cambodia's achievement in education over the last decade has been impressive: a focus on primary education backed by rising public spending has increased primary enrolment rates, particularly rapidly among girls and children from poorer households. Several areas of concern, however, still persist such as (i) widespread late entry into the schooling system, especially among children from poorer quintiles, that potentially curtails enrolment and attainment; and (ii) low enrolments cannot be fully explained by child labor alone as a large share of poor children who are not working never enroll at school. This is partly explained by informal costs and low perceived quality of education. Although direct costs of education are declining, out-of-pocket expenses continue to remain a significant barrier to schooling of the children from poor households.

Along with significantly increasing public expenditure on the education sector, the priority is to adopt appropriate policies to improve educational opportunities and outcomes, especially for the poor.

Table 11.9 gives estimated poverty rates by different level of schooling of the household heads in Cambodia.[51] The figures show that nearly 27% of the household heads have no schooling and another 44% have only primary schooling. Around 20% of the household heads have schooling at the lower secondary level and 7% at the upper secondary level; while only 1.5% has either technical/vocational or university education.

In terms of poverty, one can observe a sharp decline (from 48% to 36%) in headcount index between households in which the head has no schooling and households where the head has primary schooling. The index falls further to 24% for households with heads having lower secondary education and to 16% with upper secondary education. The headcount index is only 10% for households with heads having technical/vocational education and 2% with university education. These results show a very strong association between the level of education and poverty and point to the importance of investing in human capital as a means of fighting poverty in Cambodia.

Table 11.9: Poverty Estimates by Level of Education of Household Head, 2004

Education level	Headcount		Poverty gap		Squared poverty gap		% of total population
	Index (%)	Contribution to total (%)	Index (%)	Contribution to total (%)	Index (%)	Contribution to total (%)	
i. Poverty line							
None	47.6	36.3	13.8	40.4	5.4	43.0	26.5
Primary	35.5	45.2	9.0	44.0	3.3	43.2	44.1
Lower secondary	24.2	14.2	5.4	12.2	1.8	10.8	20.4
Upper secondary	16.3	3.2	3.1	2.4	1.0	2.0	6.8
Technical/ vocational	10.4	0.3	2.6	0.3	0.9	0.2	0.9

---

[51] For ensuring consistency with earlier poverty profiles, the adopted definitions are as follows: None (0 grades completed/never attended school); Primary (grades 1-6 completed); Lower secondary (grades 7-9 completed); Upper secondary (grades 10-12 completed); Technical/vocational (technical/vocational, pre-secondary or post-secondary); University (college/university, undergraduate, graduate or post-graduate); Other (other/not specified).

	Headcount		Poverty gap		Squared poverty gap		% of total population
	Index (%)	Contribution to total (%)	Index (%)	Contribution to total (%)	Index (%)	Contribution to total (%)	
University	2.2	0.0	0.0	0.0	0.0	0.0	0.6
Other	36.3	0.8	9.1	0.8	3.4	0.8	0.7
Total	34.7	100.0	9.0	100.0	3.3	100.0	100.0
ii. Food poverty line							
None	30.0	40.4	7.1	44.2	2.4	46.0	26.5
Primary	19.7	44.1	4.1	42.8	1.3	42.2	44.1
Lower secondary	11.8	12.3	2.1	10.2	0.6	9.1	20.4
Upper secondary	7.0	2.4	1.2	1.8	0.3	1.7	6.8
Technical/ vocational	5.1	0.2	1.1	0.2	0.3	0.2	0.9
University	0.0	0.0	0.0	0.0	0.0	0.0	0.6
Other	18.3	0.7	4.3	0.8	1.6	0.8	0.7
Total	19.7	100.0	4.3	100.0	1.4	100.0	100.0

Source: Knowles 2005, CSES 2004.

Figure 11.3: Poverty by Level of Education of Household Head, 2004
(percent)
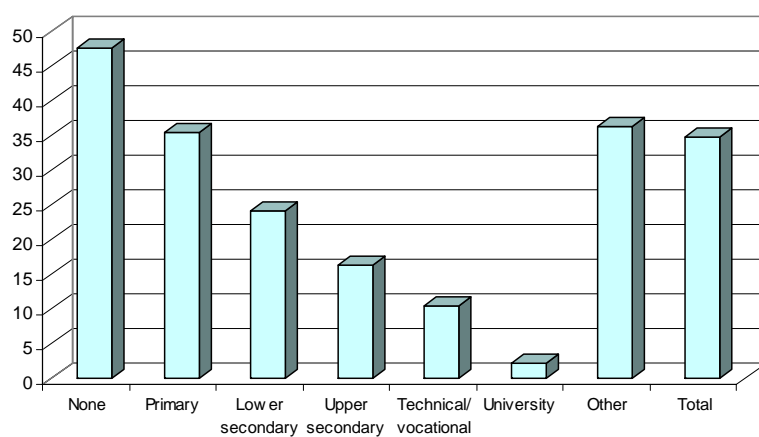
Poverty estimates by literacy of the household head are given in Table 11.10. Nearly 30% of the household heads are illiterate and poverty rates are significantly higher among people who live in households with illiterate heads.

Table 11.10: Poverty Estimates by Literacy of Household Head, 2004

	Headcount		Poverty gap		Squared poverty gap		% of total population
Literacy status	Index (%)	Contribution to total (%)	Index (%)	Contribution to total (%)	Index (%)	Contribution to total (%)	
i. Poverty line							
Illiterate	47.5	40.4	13.7	44.8	5.4	47.8	29.5

Literate	29.3	59.6	7.1	55.2	2.5	52.2	70.5
Total	34.7	100.0	9.0	100.0	3.3	100.0	100.0
ii. Food poverty line							
Illiterate	29.9	44.8	7.1	49.0	2.5	51.6	29.5
Literate	15.4	55.2	3.1	51.0	1.0	48.4	70.5
Total	19.7	100.0	4.3	100.0	1.4	100.0	100.0

Source: Knowles 2005, CSES 2004.

Figure 11.4: Poverty Estimates by Literacy of Household Head, 2004
(percent)
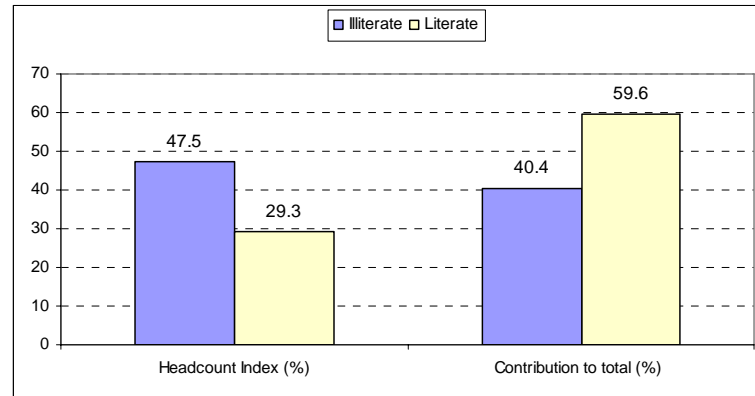
11.4 Poverty by Sector and Status of Employment

Devising appropriate strategies to accelerate pro-poor growth requires knowledge of the main activities and sectors from which the poor derive their livelihoods, both to help them build key assets needed to raise their incomes and to create an enabling environment to help raise returns to these assets. The understanding of the pattern of poverty across sector and status of employment of household heads is also important for designing effective poverty reduction strategies and actions.

Table 11.11: Poverty Estimates by Sector of Employment of Household Head, 2004

Sector	Headcount		Poverty gap		Squared poverty gap		% of total population
	Index (%)	Contribution to total (%)	Index (%)	Contribution to total (%)	Index (%)	Contribution to total (%)	
i. Poverty line							
Agriculture	42.9	63.3	11.1	63.0	4.1	62.3	51.1
Mining	44.2	0.2	10.4	0.2	2.7	0.2	0.2
Manufacturing	36.0	6.0	10.8	7.0	4.5	7.8	5.8
Construction and utilities	42.0	4.7	11.1	4.8	4.1	4.8	3.9
Trade	18.0	5.5	4.3	5.0	1.4	4.5	10.6
Transport and communications	20.6	2.7	4.9	2.5	1.7	2.3	4.6
Public administration and defense	12.8	1.9	3.3	1.9	1.3	2.0	5.2
Education and health services	13.5	1.1	2.7	0.8	0.9	0.7	2.9
Other services	29.4	3.7	7.3	3.5	2.6	3.4	4.3
Employed, sector not reported	37.4	0.6	10.4	0.6	3.7	0.6	0.5
Unemployed	38.9	0.4	8.0	0.3	3.4	0.3	0.3
Not in labour	32.3	9.9	8.8	10.4	3.5	11.2	10.6

	Headcount		Poverty gap		Squared poverty gap		% of total population
	Index (%)	Contribution to total (%)	Index (%)	Contribution to total (%)	Index (%)	Contribution to total (%)	
force							
Total	34.7	100.0	9.0	100.0	3.3	100.0	100.0
ii. Food poverty line							
Agriculture	24.5	63.7	5.2	62.0	1.7	60.9	51.1
Mining	31.1	0.3	2.7	0.1	0.3	0.0	0.2
Manufacturing	22.7	6.7	5.9	8.1	2.1	8.8	5.8
Construction and utilities	23.7	4.7	5.1	4.7	1.7	4.7	3.9
Trade	9.9	5.3	1.8	4.4	0.5	3.6	10.6
Transport and communications	11.2	2.6	2.2	2.3	0.6	2.1	4.6
Public administration and defense	6.8	1.8	1.6	2.0	0.6	2.2	5.2
Education and health services	5.6	0.8	1.1	0.8	0.3	0.6	2.9
Other services	17.2	3.8	3.3	3.3	1.0	3.1	4.3
Employed, sector not reported	24.3	0.6	4.5	0.5	1.4	0.5	0.5
Unemployed	16.4	0.3	4.3	0.3	1.9	0.5	0.3
Not in labour force	17.4	9.4	4.5	11.4	1.7	12.8	10.6
Total	19.7	100.0	4.3	100.0	1.4	100.0	100.0

Source: Knowles 2005, CSES 2004.

Poverty estimates by sector of employment of household heads are given in Table 11.11. Out of 12 categories in the table, the headcount index is high among those working in mining (44%), agriculture (43%), and construction and utilities (42%). However, poverty among persons in households in which the household head is employed in agriculture is significant as the sector accounts for 51% of the population and more than 63% of the poor. In contrast, mining accounts for only 0.2% of both the population and the poor and, for construction and utilities, the share of population is 4% and the share of poor is nearly 5%. The poverty rate in manufacturing is 36% and this sector accounts for around 6% of the population and the poor. Significantly lower poverty rates are found in households in which the household head is employed in trade, transport and communications, public administration and defense, and education and health services.

The employment status of the household head is useful in both identifying activities where reforms are needed to enhance the productivity of and the returns to the poor's livelihoods as well as tracing effective mechanisms to deliver benefits to the poor households. Poverty estimates by employment status of the household head are given in Table 11.12.

Table 11.12: Poverty Estimates by Status of Employment of Household Head, 2004

Employment status	Headcount		Poverty gap		Squared poverty gap		% of total population
	Index (%)	Contribution to total (%)	Index (%)	Contribution to total (%)	Index (%)	Contribution to total (%)	
i. Poverty line							
Self-employed, farm	40.8	48.2	10.4	47.3	3.8	46.1	41.0
Self-employed, non-farm	27.7	17.4	6.8	16.4	2.4	15.7	21.7
Unpaid family worker	32.3	2.7	8.8	2.8	3.2	2.8	2.9
Public sector	13.4	3.2	3.4	3.1	1.3	3.3	8.3
Private wage	28.9	3.5	7.4	3.4	2.7	3.3	4.1

Domestic worker	49.8	12.9	14.2	14.1	5.6	15.0	9.0
Other, unspecified	32.2	1.8	9.3	2.0	3.6	2.1	2.0
Unemployed	38.9	0.4	8.0	0.3	3.4	0.3	0.3
Not in labour force	32.3	10.0	8.8	10.5	3.5	11.3	10.7
Total	34.7	100.0	9.0	100.0	3.3	100.0	100.0
ii. Food poverty line							
Self-employed, farm	22.8	47.6	4.7	45.6	1.5	44.4	41.0
Self-employed, non-farm	15.3	16.9	3.1	15.7	0.9	14.6	21.7
Unpaid family worker	20.5	3.0	4.2	2.8	1.3	2.6	2.9
Public sector	7.2	3.0	1.7	3.3	0.6	3.7	8.3
Private wage	16.3	3.4	3.3	3.2	1.1	3.2	4.1
Domestic worker	31.0	14.2	7.2	15.3	2.5	16.1	9.0
Other, unspecified	21.7	2.2	4.9	2.3	1.5	2.1	2.0
Unemployed	16.4	0.3	4.3	0.3	1.9	0.5	0.3
Not in labour force	17.4	9.5	4.5	11.4	1.7	12.9	10.7
Total	19.7	100.0	4.3	100.0	1.4	100.0	100.0

Source: Knowles 2005, CSES 2004.

Figure 11.5: Poverty by Status of Employment of Household Head, 2004
(percent)
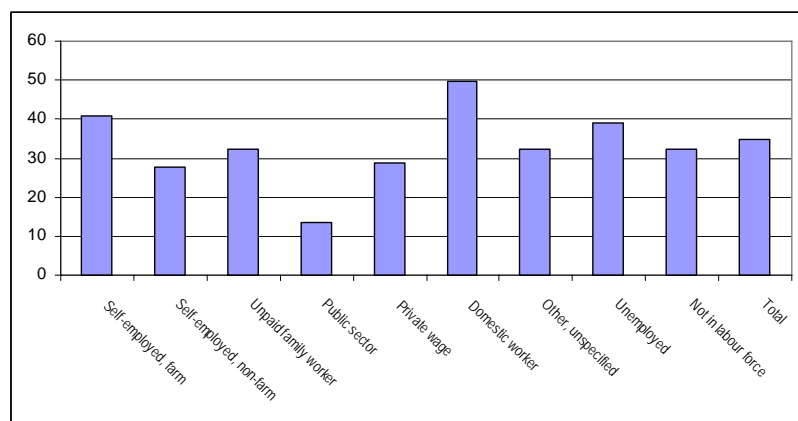
The headcount index is the highest (50%) among members of households headed by domestic workers followed by self-employed farmers (41%) and the unemployed (39%). In terms of number, self-employed farmers form the largest group with 41% of the population and 48% of the total number of the poor. The

domestic worker category accounts for 9% of the population and 13% of the poor. This category deserves special attention in poverty reduction efforts due to increasing share of such households compared with earlier surveys. There is also a high depth and severity of their poverty. Both poverty gap and squared poverty gap indexes are highest for this group and these households account for 14% of the total poverty gap and 15% of the total squared poverty gap in the country despite constituting only 9% of the total population.

In general, poverty rates are not very different among persons in households headed by non-farm self-employed, unpaid family workers, private wage employees, and other workers. The poverty rates among persons in households headed by employees in the public sector are, however, significantly lower (13%) than all other groups.

11.5 Summary of Major Findings

- The highest poverty incidence and the largest number of the poor belong to households headed by persons aged between 30 and 50 years. Both female and male headed households experience similar rates of poverty in Cambodia. Similarly, not much difference exists in poverty rate in terms of marital status, ethnicity or reported disability of household heads.

- Poor households tend to have larger dependency ratio and family size. Poverty incidence significantly rises for household sizes larger than five persons.

- Poverty rates are high among those whose household heads have little or no education. Similarly, years of schooling and literacy of household heads are strongly related to poverty. This shows the lack of human capital on the part of the poor and brings out the importance of investing in human capital as an effective means of fighting poverty in Cambodia.

- In case of sector of employment, poverty incidence is high among households whose heads earn their living as mining, agricultural and construction workers. Targeting agriculture, however, is most important as it accounts for 63% of the total number of the poor in the country.

- In terms of employment status, poverty incidence is highest among households headed by domestic workers followed by self-employed farmers and the unemployed. In terms of number, self-employed farmers form the largest group with 48% of the total number of the poor. Thus, the most effective way for poverty reduction in Cambodia is to accelerate rural (agricultural) growth that would benefit the overwhelming majority of the poor.

12. Social Indicators by Consumption Quintiles

Social indicators provide powerful tools for monitoring progress in poverty reduction. In addition, these indicators can often be used as effective proxies for targeting programs to specific poor groups. Many of these indicators are easily

observable and can be tracked through 'quick and dirty' rapid appraisal methods rather than conducting large and integrated surveys.

The present section provides the status of some social indicators in Cambodia (at village, household and individual levels) in terms of per capita consumption quintile.[52] The ratio of the estimated mean of each indicator in the total sample to the mean in the first (poorest) quintile has also been presented to help identify indicators that vary most among per capita consumption quintiles.[53]

12.1 Social Indicators at Household Level

Several household-level social indicators by per capita consumption quintile are presented in Table 12.1. Most of the indicators are related (either positively or negatively) to consumption/income and are, therefore, income-sensitive. The values of these indicators reveal significant variations across different consumption quintiles, and especially bring out the disadvantaged situation of the poorer quintiles. For example, nearly 94% in the poorest quintile use open land or do not have any toilet facilities compared with 35% in the richest quintile.

Table 12.1: Selected Social Indicators at Household Level by Consumption Quintiles, 2004

Indicator	1 (Poorest)	2	3	4	5 (Richest)	Total	Ratio (total to poorest)
Housing							
No. of rooms	1.15	1.21	1.26	1.40	1.88	1.38	1.20
Living area (sq. meter)	32.85	37.83	40.26	46.45	63.35	44.15	1.34
Roof (%)							
-thatched	37.4	25.7	19.1	14.2	5.1	20.3	0.54
-tiled	19.6	28.1	30.6	36.4	30.7	29.1	1.49
-GI/aluminum	25.5	33.6	36.6	36.0	40.7	34.5	1.35
-concrete/cement	3.9	3.5	5.6	7.8	20.8	8.3	2.12
-other	13.6	9.1	8.0	5.7	2.7	7.8	0.57
Wall (%)							
-bamboo	38.3	33.6	29.3	21.7	9.6	26.5	0.69
wood/plywood/log	33.1	41.2	47.5	54.6	53.1	45.9	1.39
concrete/cement-	0.3	1.0	3.1	8.2	29.1	8.3	25.38
-other	28.3	24.3	20.1	15.5	8.2	19.3	0.68
Floor (%)							
-earth/clay	6.6	7.6	7.4	7.2	5.7	6.9	1.05

---

[52] The figures are population-weighted so that these refer to characteristics of the population residing in households with a given characteristic and not to the number of households with the characteristic.

[53] Indicators with such ratios close to one suggest little variation among quintiles. On the other hand, values substantially above or below one indicate wide variation across quintiles. In such cases, two common patterns can be observed. First, monotonic (systematic) increase or decrease from the poorest (first) to the richest (fifth) quintile. Such indicators are likely to be more closely related to consumption/income. Second, little variation across the first four quintiles and sharp increase/decrease for the richest quintile. Such indicators are more likely to be associated with urban residence (since the percentage of urban residents is much higher in the richest quintile than in other quintiles).

-wood/bamboo	82.5	81.5	79.0	70.4	48.2	72.3	0.88
-cement	0.7	1.7	2.8	7.3	10.1	4.5	6.69
-parquet/polished wood	7.7	7.7	7.9	9.7	11.4	8.9	1.15
-ceramic tiles	0.1	0.3	1.6	4.2	23.2	5.9	67.83
-other	2.4	1.2	1.3	1.1	1.4	1.5	0.62
Water supply(%)							
-piped/public tap	1.6	2.5	3.9	10.6	36.1	10.9	6.83
-tube/piped well	25.3	29.1	29.3	28.4	21.4	26.7	1.06
-dug well	41.5	33.2	29.0	25.0	17.6	29.3	0.71
-purchased	4.2	6.3	9.7	10.3	10.2	8.1	1.96
-other	27.5	28.8	28.1	25.6	14.7	24.9	0.91
Toilet facility (%)							
-watersealed/connected to sewage/septic tank	3.5	7.4	12.8	26.9	58.8	21.9	6.32
-closed/open pit	1.3	2.2	2.4	3.1	2.7	2.3	1.80
-other	1.5	2.4	4.1	3.5	3.2	2.9	1.98
-open land/none	93.8	88.0	80.7	66.5	35.4	72.9	0.78
Lighting source (%)							
power/generator/battery	18.8	30.4	43.0	57.1	81.6	46.2	2.46
-kerosene	79.4	68.4	56.2	42.4	18.2	52.9	0.67
-other	1.8	1.2	0.9	0.5	0.3	0.9	0.52
Fuel use (%)							
-firewood	97.4	96.5	92.1	83.5	51.7	84.2	0.87
-charcoal/firewood	1.6	2.3	5.6	10.9	22.1	8.5	5.22
-gas/electricity	0.2	0.2	1.2	4.6	24.4	6.1	33.91
-other	0.8	1.0	1.1	1.1	1.7	1.1	1.37

Source: Knowles 2005, CSES 2004.

Similarly, less than 19% in the poorest quintile have access to city power, generator or battery for lighting as against 82% in the richest quintile. More than 97% in the poorest quintile are still dependent on firewood as fuel compared with around 52% in the richest quintile.

12.2 Ownership of Consumer Durables

Data on ownership of consumer durables by per capita consumption quintiles are presented in Table 12.2. Most widely owned consumer durable items include radios, televisions, bicycles, motorcycles, batteries and bed sets. It may be noted that only 0.5% of the households reported ownership of telephone while another 14% owned cell phones. Less than 2% of the households reported ownership of computers, whereas the two poorest quintiles did not own any computer.

Table 12.2: Ownership of Consumer Durables by Consumption Quintiles, 2004

(% of households)

IItem	1 (Poorest)	2	3	4	5 (Richest)	Total	Ratio (total to poorest)
Electronic goods							
Radio	27.8	33.9	36.3	41.0	44.8	36.8	1.3
Television	26.3	38.7	48.6	58.5	78.7	50.2	1.9
Video tape recorder/player	0.5	1.3	2.4	7.9	22.5	6.9	15.2
Stereo	13.8	18.9	20.1	28.1	42.5	24.7	1.8
Camera	0.5	0.9	1.1	1.4	8.5	2.5	4.7
Telephone	0.0	0.1	0.2	0.2	2.1	0.5	...
Cell phone	0.5	2.0	5.1	14.5	48.1	14.0	26.3
Computer	0.0	0.0	0.4	0.7	7.5	1.7	...
Transport equipment							
Cart	33.5	34.2	32.4	27.0	14.0	28.2	0.8
Bicycle	61.6	70.9	71.2	72.1	65.0	68.1	1.1
Motor vehicle	10.5	19.1	26.5	40.6	65.2	32.4	3.1
of which: motorcycle	10.4	18.9	26.0	40.0	62.1	31.5	3.0
Rowing boat	9.5	11.2	11.8	9.3	5.0	9.3	1.0

Motor boat	1.9	2.2	3.2	2.7	3.3	2.7	1.4
Appliances							
Kitchen stove	0.0	0.1	0.3	1.6	13.2	3.0	...
Refrigerator	0.0	0.1	0.2	0.7	9.8	2.1	...
Electric fan	0.6	1.2	5.2	13.9	45.6	13.3	21.3
Air conditioner	0.1	0.2	0.2	0.5	4.4	1.1	14.1
Sewingmachine	1.1	2.7	4.4	8.0	17.5	6.7	6.1
Generator	0.6	1.1	1.4	2.8	5.2	2.2	3.5
Batteries	59.6	66.1	69.4	63.2	42.3	60.1	1.0
Electric iron	0.3	0.5	2.2	7.5	34.6	9.0	32.4
Others							
Sofa set	0.2	0.3	1.1	2.3	13.9	3.6	16.9
Dining set	0.3	1.3	2.3	6.9	26.5	7.5	21.4
Bed set	13.4	17.9	25.4	38.8	61.9	31.5	2.3
Wardrobe/cabinet	2.2	7.4	11.6	25.0	51.5	19.5	8.8
Suitcases	12.0	16.0	20.4	24.1	33.7	21.2	1.8

Source: Knowles 2005, CSES 2004.

12.3 Village Characteristics

The characteristics of the sample villages by per capita consumption quintile are given in Table 12.3. The data, in most cases, refer to percentages of population in each quintile that reside in a village with the noted characteristic. In some cases, the figure refers to the mean value of the given characteristic in the village of the population in each quintile (e.g. distance to the nearest bus stop). The results indicate that the villages in which the poor live are generally disadvantaged. The poor are more likely to reside in small and remote villages, in villages with less access to all-weather roads, with a poor transport network and other infrastructure facilities, such as electricity, permanent markets and lending institutions and in villages which are more disaster-prone.

Table 12.3: Selected Village Characteristics by Consumption Quintiles, 2004

Indicator	1 (Poorest)	2	3	4	5 (Richest)	Total	Ratio (total to poorest)
Population							
Total population	1,146	1,294	1,544	1,904	2,610	1,700	1.48
Land							
Agricultural land (ha):							
-Total	254	278	282	242	164	244	0.96
-Per capita	0.22	0.21	0.18	0.13	0.06	0.14	0.65
Irrigated land (ha)							
-Total	37	46	51	44	30	42	1.13
-Per capita	0.03	0.04	0.03	0.02	0.01	0.02	0.76
Accessibility							
Distance to (km)[a:]							
-Nearest bus stop	24.08	22.46	20.09	18.04	12.61	19.47	0.81
-Nearest taxi stop	8.52	7.87	7.03	6.39	3.55	6.68	0.78
-Nearest all-weather road	5.22	3.68	3.33	3.07	1.93	3.45	0.66
-District headquarters	13.80	13.21	11.86	11.45	8.63	11.79	0.85
-Provincial headquarters	41.89	40.87	37.81	34.57	24.67	35.98	0.86
-Food shop	10.06	9.59	8.17	6.95	3.84	7.73	0.77
-bank/loan credit unit	10.5	9.7	12.0	12.4	14.4	11.7	1.12
-Agricultural extension worker	21.35	21.24	18.87	17.45	13.68	18.56	0.87
Permanent market	10.81	9.59	8.14	7.07	4.21	7.98	0.74
-Shop selling	10.54	9.37	8.19	7.26	4.93	8.11	0.77

manure/agro-chemicals							

Access (%):

-Tomotorable road	86.7	88.6	90.2	90.1	93.6	89.8	1.04
--By 4WD vehicles	92.9	93.1	93.5	93.4	95.1	93.6	1.01
-To all weatherroads	70.6	74.1	77.0	79.6	88.0	77.8	1.10

Existence of Facility							
% of households:							
-With electricity	4.7	6.9	11.3	20.0	45.7	17.7	3.80
-With piped water	2.2	3.6	5.5	11.5	33.6	11.2	5.00
Government development projects:							
-% of villages	41.2	41.0	40.2	38.6	40.7	40.4	0.98
-Number	0.72	0.74	0.76	0.72	0.71	0.73	1.01
NGO development projects:							
-% of villages	30.0	32.2	32.6	30.7	26.7	30.5	1.01
-Number	0.60	0.66	0.65	0.57	0.44	0.58	0.97

Existence of services and amenities (%)							
-Large enterprise	26.2	31.9	36.8	42.6	58.7	39.2	1.50
-Public telephone	23.8	31.4	34.6	44.3	62.2	39.2	1.65
-Access to electricity	13.5	18.9	24.8	36.0	58.0	30.2	2.24
-Access to gas	6.3	10.7	15.8	26.0	46.7	21.1	3.35
-Access to gasoline	67.7	75.4	79.3	83.4	84.8	78.1	1.15
-Technical support to agriculture	53.0	51.6	50.3	43.3	31.0	45.9	0.87
-Food shop	7.6	9.7	15.4	23.2	44.3	20.0	2.63
-Bank/loan credit unit	10.5	9.7	12.0	12.4	14.4	11.7	1.12
-Agricultural extension worker	6.7	5.4	7.4	7.0	8.6	7.0	1.05
-Permanent market	6.3	7.1	9.4	12.5	21.5	11.3	1.80
-Shop selling manure/agro-chemicals	10.7	14.0	16.9	19.9	22.2	16.6	1.56

Disaster and availability of common property resources (%)							
-Disaster during past five years	90.1	90.2	88.8	84.0	66.0	83.9	0.93
-land for cultivation	35.5	33.3	32.6	32.0	24.8	31.7	0.89
Firewood/charcoal for collection	19.1	18.9	16.8	15.7	11.6	16.5	0.86
-Timber for house construction	2.5	4.4	4.7	4.3	3.6	3.9	1.54
-Fish from lake/river	36.8	39.1	38.0	37.8	27.7	36.0	0.98
--Bamboo	8.6	6.5	6.4	6.7	3.5	6.4	0.74
-Open grazing land	24.1	18.9	18.7	17.1	13.0	18.5	0.77
-Fruits for picking	7.2	6.9	6.0	6.4	4.0	6.1	0.85
-Wild animals to hunt	2.1	2.8	2.5	2.6	1.7	2.4	1.10

Note: a. Assumed to be zero for villages in which amenity/facility is located. % of population in a given quintile residing in villages with given characteristic unless otherwise indicated.
Source: Knowles 2005, CSES 2004.

Some village education and health indicators by per capita consumption quintile are given in Table 12.4. As expected, villages in which the poor tend to reside have inadequate health and education facilities. In particular, there are sharp differences in access to secondary schools and all types of health facilities, especially modern health service providers. Conversely, the poor have more access to untrained and traditional health service providers.

Table 12.4: Village Education and Health Indicators by Consumption Quintiles, 2004

Indicator	1 (Poorest)	2	3	4	5 (Richest)	Total	Ratio (total to poorest)
Education							
Location in village (%)							
-Primary school	49.2	53.6	56.3	55.9	48.6	52.7	1.07
-Lower secondary school	8.4	9.9	12.4	14.3	15.9	12.2	1.45
-Upper secondary school	3.4	3.4	4.9	5.0	5.9	4.5	1.34
-Adult literacy programme	18.7	20.8	19.7	18.2	16.3	18.7	1.00
Distance (km) to nearest:							
-Primary school	2.3	1.8	2.0	1.7	1.1	1.8	0.78
-Lower secondary school	8.4	9.9	12.4	14.3	15.9	12.2	1.45
-Upper secondary school	16.9	13.4	11.6	9.9	7.3	11.8	0.70
Health							
Location in village (%)							
-Private clinic	7.7	9.0	11.5	15.9	28.4	14.4	1.87
-Dedicated drug shop	4.2	5.2	9.2	15.1	27.4	12.0	2.88
-Other shop selling drug	24.1	27.4	31.5	34.8	36.0	30.6	1.27
-Communal health centre	8.5	8.9	11.6	13.5	12.9	11.1	1.30
Referral/district hospital	1.8	2.1	3.0	3.4	3.5	2.8	1.52
-Provincial hospital	0.3	0.2	0.6	1.0	1.2	0.7	2.23
-National hospital	0.0	0.0	0.0	0.1	0.6	0.2	...
-Private hospital	0.3	0.6	1.0	1.7	4.6	1.6	5.38
-Doctor	4.0	5.3	9.2	15.1	35.2	13.7	3.43
-Nurse	27.4	29.0	33.0	38.5	48.0	34.9	1.28
-Trained midwife	29.4	33.4	38.1	39.4	44.5	36.8	1.25
-Traditional birth attendant	76.8	71.5	69.2	62.7	47.1	65.8	0.86
-Kru khmer	58.7	60.6	62.0	58.2	48.1	57.5	0.98
-Other traditional practitioner	44.8	42.8	41.8	36.4	28.8	39.0	0.87
-Immunization programme	38.4	40.6	42.1	40.5	38.4	40.0	1.04
-MCH/family planning programme	24.3	28.6	32.9	34.9	31.8	30.5	1.26
-Iodine deficiency programme	29.8	32.4	36.6	37.4	42.6	35.7	1.20
-HIV testing	16.2	18.0	20.3	24.1	35.1	22.7	1.40
-HIV cases	32.2	39.8	43.0	48.9	52.9	43.4	1.35
-HIV cases (number)	0.96	1.57	1.46	2.65	4.47	2.22	2.32
Distance (km) to nearest:							

-Private clinic	17.1	14.1	12.9	11.6	7.7	12.7	0.74
-Dedicated drug shop	14.5	11.9	10.0	8.6	5.2	10.1	0.70
-Other shop selling drug	7.4	6.3	5.5	5.0	3.2	5.5	0.75
-Communal health centre	7.6	6.8	7.0	5.8	6.0	6.6	0.88
Referral/district hospital	15.9	14.1	12.8	11.7	9.3	12.8	0.80
-Provincial hospital	41.7	40.2	37.5	34.5	26.1	36.0	0.86
-National hospital	149.2	129.9	122.8	104.5	86.8	118.7	0.80
-Private hospital	92.8	73.3	64.6	56.0	40.9	65.5	0.71
-Doctor	18.6	15.5	14.5	11.9	7.6	13.6	0.73
-Nurse	7.6	6.7	5.7	5.1	3.5	5.8	0.76
-Trained midwife	6.7	6.4	5.7	5.4	3.8	5.6	0.84
-Traditional birth attendant	1.1	1.5	1.8	2.1	3.6	2.0	1.83
-Kru khmer	2.4	2.9	2.9	3.3	3.7	3.0	1.28
-Other traditional practitioner	4.4	5.7	5.8	7.1	5.6	5.7	1.29

Note: a. Assumed to be zero for villages in which service/facility is located. % of population in a given quintile residing in villages with given characteristic unless otherwise indicated.
Source: Knowles 2005, CSES 2004.

12.4 Household Characteristics

The household level indicators, presented in this section, provide general demographic and economic characteristics of households divided in terms of consumption quintiles.

Table 12.5 provides some characteristics of household heads differentiated by consumption quintiles. It can be seen that many indicators (such as age, sex, marital status, ethnicity, current employment, hours worked, health status and disability) show little or no systematic variation across quintiles. A notable exception, however, is the education-related indicators which show sharp and systematic variation with per capita consumption quintiles. This shows the importance of education in poverty reduction which emerges as vital to enhancing the consumption status of the households and reducing poverty levels.[54]

Table 12.5: Selected Characteristics of Household Head by Consumption Quintiles, 2004

Indicator	1 (Poorest)	2	3	4	5 (Richest)	Total	Ratio (total to poorest)
Demography							
-Age in years	43.3	44.7	45.4	45.9	46.1	45.2	1.04
-% female	17.8	16.1	17.3	17.2	18.6	17.4	0.98

---

[54] The sharp difference in terms of education indicators among quintiles points out the importance of additional schooling as an important explanatory factor of observed differences. This, however, should not be overplayed as additional schooling also tends to be correlated with unobserved genetic endowments (such as intelligence) as well as with geographically favored locations and relatively well-off households.

Indicator	1 (Poorest)	2	3	4	5 (Richest)	Total	Ratio (total to poorest)
-% married	84.1	84.8	83.5	84.5	83.2	84.0	1.00
-% ethnic minority	4.2	4.8	4.4	4.2	3.4	4.2	1.00
Education							
-% literate	55.1	64.8	70.0	75.5	84.7	70.0	1.27
-% attended school	60.0	69.8	74.2	78.8	85.6	73.7	1.23
-% secondary schooling or above	16.4	22.0	26.0	34.2	48.9	29.5	1.80
-% highest school grade completed	2.9	3.5	4.0	4.7	6.3	4.3	1.48
-% can speak English or French	0.7	1.5	2.2	4.7	14.6	4.7	6.34
Employment							
-% currently employed	90.3	88.8	90.0	89.1	87.4	89.1	0.99
-% currently unemployed	0.3	0.5	0.3	0.2	0.4	0.4	1.10
-% currently employed in agriculture	65.6	63.2	59.3	48.0	26.4	52.5	0.80
-% currently paid employee	18.9	16.3	16.6	21.4	30.3	20.7	1.09
-Hours worked during past week	43.3	43.8	43.4	45.8	47.0	44.6	1.03
-% want more hour of work	11.7	11.8	11.6	8.8	6.3	10.1	0.86
Health							
-% status good for age	13.7	15.4	16.1	16.8	17.1	15.8	1.15
-% status poor for age	19.5	20.0	21.1	20.4	17.4	19.7	1.01
-% with one or more disabilities	11.5	11.0	11.5	9.7	9.0	10.5	0.91

Source: Knowles 2005, CSES 2004.

The information on size and composition of sample households is given in Table 12.6. One can see some systematic variation in these characteristics among per capita consumption quintiles. Relatively richer quintiles have smaller household size and lower dependency burden.[55] The education profile of the household members also varies markedly among the quintiles. For instance, only 7% of the adults aged 15 years and above in the poorest quintile have some secondary schooling compared with 37% in the richest quintile. More importantly, education differentials are very marked among the females. If one considers such differential as causal (at least in part), the indication is that additional female schooling is likely to contribute more to per capita household consumption than additional male schooling. Obviously, no strong conclusions can be drawn as the above observed relationship is not necessarily causal and may be the outcome of unobserved past and present characteristics of better-educated females.

Table 12.6: Selected Household Characteristics by Consumption Quintiles, 2004

Indicator	1 (Poorest)	2	3	4	5 (Richest)	Total	Ratio (total to poorest)
Demography							
-Household size	6.6	6.1	5.7	5.4	5.2	5.8	0.88

---

[55] As measured by the ratio of children under 15 and elderly aged 60 years and above to the number of working age adults.

-% children under 15	45.7	41.2	37.8	33.1	28.8	37.8	0.83
-% children under 5	12.5	10.0	9.3	8.5	7.3	9.7	0.77
% working age adults (15-59 years)							
Total	50.8	54.2	56.6	60.7	64.8	57.0	1.12
Male	23.9	25.7	27.4	29.0	31.1	27.2	1.14
Female	26.9	28.5	29.2	31.6	33.7	29.8	1.11
-Dependency burden[1]	96.9	84.5	76.6	64.9	54.3	75.4	0.78
Literacy and Education							
% literate adults (15 and above)							
Total	29.3	38.3	43.2	51.1	60.8	43.6	1.49
Male	16.6	21.0	24.0	27.3	31.3	23.6	1.42
Female	12.6	17.3	19.2	23.7	29.5	20.0	1.58
% secondary educated adults							
Total	7.1	11.8	15.5	23.5	37.2	18.2	2.58
Male	4.9	7.8	10.1	14.4	21.4	11.2	2.28
Female	2.1	4.0	5.4	9.1	15.9	7.0	3.25
Mean school grades completed by adults							
Total	2.8	3.5	3.9	4.6	6.3	4.2	1.53
Male	3.3	4.1	4.6	5.4	7.0	4.9	1.46
Female	2.1	2.7	3.1	3.7	5.2	3.4	1.63

Note: 1. Ratio in percentage of children under 15 and adults aged 60 and above to working age adults aged 15-59 years.
Source: Knowles 2005, CSES 2004.

Table 12.7 gives information on major sources of income by per capita income quintiles. Agricultural land is the most important source of income for most Cambodian households, especially among the poorer quintiles. For example, 84% of the population in the poorest quintile lives in households who own or operate agricultural land whereas similar share is 49% in the richest quintile. In addition to urban-rural difference in the composition of population in each quintile, this, in part, reflects the fact that relatively better-off residents, even in the rural areas, tend to be involved more in non-agricultural activities.

Among those who own their land, security of tenure increases as people move up the per capita consumption quintile. Only 16% of the population in the poorest quintile belongs to households that own land secured by a title compared with 29% in the richest quintile. This is a source of greater vulnerability of the poor households. Moreover, the poorer quintiles have a high dependency on access to common property resources such as fishing, collecting firewood, foraging or hunting wild animals as sources of livelihood.

Table 12.7: Income Sources of Households by Consumption Quintiles, 2004

Indicator	1 (Poorest)	2	3	4	5 (Richest)	Total	Ratio (total to poorest)
Agricultural land							
-% owns or operates	83.9	85.4	80.9	72.3	49.4	74.4	0.89
-% owned land	92.3	93.9	92.5	92.6	89.4	92.4	1.00
-% owned land secured by paper	36.7	49.3	58.9	59.1	62.8	52.2	1.42
-% owned land secured by a title	15.6	21.6	24.5	25.3	28.6	22.5	1.44
-% owned land can be used as collateral for loan	82.2	81.9	84.1	80.4	79.6	81.9	1.00

Crop production							
-% grows crops	81.6	82.4	77.9	68.4	44.0	70.8	0.87
Number of crops grown:							
Wet season	1.4	1.4	1.4	1.2	0.8	1.2	0.88
Dry season	0.3	0.5	0.5	0.5	0.3	0.4	1.26
Non-crop agriculture							
-% raises livestock	83.9	86.2	81.9	74.6	48.7	75.0	0.89
-% raises fish	1.6	3.5	3.1	3.4	3.0	2.9	1.80
-% owns fish pond	1.1	2.4	2.1	2.2	2.2	2.0	1.91
Common property resources							
-% catches fish/seafood	72.5	68.3	58.3	44.0	22.9	53.2	0.73
-% collects firewood or other forest products	92.2	88.8	80.0	65.1	35.5	72.3	0.78
-% forages or hunts wild animals	30.5	27.2	22.7	17.3	8.9	21.3	0.70
Non-agricultural activities							
-% operates one or more businesses	24.5	31.1	36.4	45.0	57.7	39.0	1.59
-Number of businesses operated	0.3	o.4	0.4	0.6	0.8	0.5	1.65
-% owns building used for other purpose	97.0	97.1	96.3	94.8	93.9	95.8	0.99
Remittances during past 12 months							
-% received domestic remittances	11.4	11.4	12.8	11.5	10.9	11.6	1.02
-% received foreign remittances	2.9	3.6	4.0	5.2	8.5	4.8	1.65
-Value of domestic remittance (000 Riel)	36.9	37.8	35.6	40.7	92.3	48.7	1.32
-Value of foreign remittance (000 Riel)	23.3	36.3	46.0	77.1	219.7	80.5	3.45

Source: Knowles 2005, CSES 2004.

Although income from non-agricultural sources such as businesses and remittances is more important for the richer quintiles, the importance of these sources for the poorer quintiles has several dimensions. For example, businesses provide additional income security for the poorer quintiles through generating income that is less sensitive to variations in weather than agricultural production. Similarly, remittances help to buffer the poorer quintiles against crop failures and meet other crisis events that cause unexpected short-term income fluctuations and lead to forced asset depletion and the vicious cycle of debt burden.

Indicators related to household security and vulnerability are given in Table 12.8. The pattern that emerges from the table is that populations in poorer quintiles have more vulnerability in most areas than those in the richer quintiles.

Table 12.8: Household Security and Vulnerability by Consumption Quintiles, 2004

Indicator	1 (Poorest)	2	3	4	5 (Richest)	Total	Ratio (total to poorest)
-% able to borrow	77.2	83.2	84.5	84.3	87.9	83.4	1.08
-% with one or more loans outstanding	50.0	48.3	45.6	40.7	31.4	43.2	0.86
-Number of loans outstanding	0.5	0.5	0.5	0.4	0.3	0.5	0.87
-Value of outstanding loan (000 Riel)	233.4	284.8	329.8	425.4	846.6	424.0	1.82
Food security and nutrition							
-% with enough food during past 12 months	63.0	71.7	78.6	82.4	91.1	77.4	1.23
-Number of weeks starved during past12 months	3.7	2.3	1.8	1.4	0.7	2.0	0.53
-% used iodized salt yesterday	12.5	17.7	24.2	31.8	53.2	28.1	2.24
Mortality							
-% death in household during past 12 months	3.5	3.7	3.1	3.0	2.9	3.3	0.92
Law and order							
-% feel safe from crime and violence in neighbourhood	49.9	55.4	57.3	57.2	59.6	55.9	1.12
-% can rely on local police for protection	49.6	50.0	52.4	50.1	50.6	50.5	1.02
-% victim of theft/robbery during past 12 months	2.9	3.5	4.2	5.2	7.0	4.6	1.58
-% victim of accident during past 12 months	4.5	5.2	6.6	7.8	8.0	6.4	1.42

Source: Knowles 2005, CSES 2004.

12.5 Indicators at Individual Level

Indicators at the individual level covering dimensions such as demographic characteristics, education and employment, and health and nutrition are useful in understanding poverty processes and in identifying priority areas for intervention.

Table 12.9 gives some demographic indicators for the sample population by per capita consumption quintile. The estimated mean age of the population increases with consumption. Although the female share of the population remains mostly unchanged over quintiles, the percentage of women in child-bearing ages (15-49 years) and married people increases as per capita consumption increases.

The percentage of migrants increases and the share of persons who have always resided in the same village decreases markedly by quintile. Similarly, the share of

urban residents increases consistently by quintile, with a sharp increase for the richest quintile.

Table 12.9: Demographic Indicators by Consumption Quintiles, 2004

Indicator	1 (Poorest)	2	3	4	5 (Richest)	Total	Ratio (total to poorest)
Age and sex							
-Age in years	21.4	22.9	24.3	25.9	27.1	24.3	1.14
-% female	51.5	51.2	51.2	50.9	51.3	51.2	1.00
-% women of child bearing age (15-49)	24.6	25.2	25.5	27.1	29.1	26.3	1.07
-% school age children (6-17)	38.5	37.4	35.3	31.6	28.2	34.2	0.89
Marital status							
-% single	65.9	63.3	60.6	57.0	55.8	60.5	0.92
-% married or living together	29.2	32.0	33.9	37.5	38.2	34.2	1.17
-% widowed	4.1	4.0	4.8	4.9	5.1	4.6	1.12
-% divorced or separated	0.7	0.7	0.7	0.6	0.8	0.7	1.01
Residency status and migration							
-% absent from household	5.4	4.4	4.0	3.8	4.5	4.4	0.82
-Months absent	20.5	17.7	14.8	15.5	17.6	17.2	0.84
-% always resided in village (age 5 and above)	82.4	80.9	77.1	71.5	54.9	73.2	0.89
-% inter-district migrant during past 5 years (age 5 and above)	4.3	4.2	5.2	7.4	12.8	6.8	1.58
-% urban resident *de jure*	7.2	7.9	11.2	14.7	35.6	15.3	2.13

Source: Knowles 2005, CSES 2004.

Education and employment-related indicators for the sample population are given in Table 12.10. The table shows sharp differences in schooling indicators among quintiles. The differences in net enrolment ratios are more marked than those in gross enrolment ratios. This is partly because poorer children tend to begin schooling at a later age and probably repeat grades more often as well, especially at the primary level. A more disturbing feature from the point of view of equitable access is the even wider differential in the amount parents spend per enrolled child. Such spending is nearly 25 times higher for children in the richest quintile (Riel 388,000) than for the children in the poorest quintile (Riel 15,600).

Table 12.10: Education and Employment Characteristics by Consumption Quintiles, 2004

Indicator	1 (Poorest)	2	3	4	5 (Richest)	Total	Ratio (total to poorest)
Education							
-% currently enrolled in school, age 5+	30.7	33.1	33.2	31.6	33.8	32.5	1.06
-Gross primary enrolment ratio	119.2	134.6	141.1	141.5	136.9	133.8	1.12

(age 6-11), %							
- Net primary enrolment ratio (age 6-11), %	64.6	75.8	80.3	82.4	86.9	76.8	1.19
-Gross lower secondary enrolment ratio (age 12-14), %	19.5	34.3	42.3	65.4	88.9	47.8	2.45
-Net lower secondary enrolment ratio (age 12-14), %	3.3	8.7	13.6	21.1	36.4	15.5	4.65
-Gross upper secondary enrolment ratio (age 15-17), %	4.2	6.3	13.3	22.0	50.2	19.1	4.52
-Net upper secondary enrolment ratio (age 15-17), %	1.0	2.5	5.1	7.5	22.5	7.7	7.68
-Annual education expenditure per enrolled child (000 Riel)	15.6	26.3	40.6	91.8	388.0	118.0	7.58
-% ever attended school, age 5+	63.1	73.2	76.9	81.0	87.7	76.5	1.21
-% literate, age 5+	40.6	52.2	58.4	65.2	75.0	58.3	1.43
-% ever attended non-formal class	0.6	0.8	1.1	2.2	4.7	1.9	3.09
-% currently attending non-formal class	0.2	0.2	0.4	0.9	2.4	0.8	3.49
-% speaks English or French, age 10+	0.4	1.1	1.6	3.7	12.8	4.2	9.64
Employment							
-% currently employed, age 10+	74.5	75.7	75.4	74.5	68.3	73.6	0.99
-Hours worked last week	37.3	38.0	38.2	40.5	42.6	39.4	1.06
-% main job in agriculture	73.7	73.9	69.1	58.1	34.3	61.7	0.84
-% main job as paid employee	19.0	16.5	17.1	19.9	28.4	20.2	1.06
-Number of jobs, age 10+	0.86	0.89	0.89	0.88	0.78	0.86	1.00
-% currently unemployed, age 10+	0.5	0.6	0.4	0.7	0.9	0.6	1.29

Source: Knowles 2005, CSES 2004.

Several health and nutrition indicators are presented in Table 12.11. The data are presented in terms of consumption quintiles and show higher incidence of several indicators of disability and low health status among the poorer quintiles. On the other hand, individuals in richer and better educated households tend to report more frequent illnesses and health problems. For example, 20% in the richest quintile report a recent illness or health problem compared with 15% in the poorest quintile. This is possibly because more of the rich and educated identify poor health conditions as a problem, whereas the poor and uneducated are more likely to treat this as a common feature of daily life. Moreover, the

better-off households are more likely to be aware of health problems through better knowledge and more frequent interactions with health service providers.

Box 12.1: Health and Nutrition

Over the last decade, Cambodia has made great strides in improving the health and nutrition of its people. Along with impressive gains in child immunization rates, life expectancy, infant and child mortality, and access to safe water and improved sanitation have improved considerably. The population growth rate has fallen from 2.49% in 1998 to 1.81% in 2004 and the total fertility rate has also declined to around 3.3 in 2005.

At the same time, considerable public health challenges remain. Maternal mortality and child malnutrition rates are high, some deadly diseases persist, and glaring disparities in access to health care services continue to separate the poorer and the better-off groups placing challenges on the health system.

Despite recent improvements in accessibility of health facilities, public health expenditures in Cambodia will have to play a stronger re-distributive role in favor of the poor. For example, increased expenditure on child care, family planning, control of communicable diseases, and prenatal care is likely to benefit the poor most.

Malnutrition rates in Cambodia are still very high, but considerable progress has been made on this front in recent years. While child malnutrition is strongly linked with income levels, low income is only one of many explanatory factors. Behavioral change communication, for example, has an extremely important role to play in reducing malnutrition. Similarly, access to safe water and sanitation, health facilities, and quality of village infrastructure are important factors that explain variation in nutritional status across villages.

Persons in the richer quintiles tend to utilize health care more intensively (especially hospitalization), and spend more during each episode of illness. The average health expenditure in connection with a reported health problem is more than 14 times for the richest quintile (Riel 74,599) compared with the poorest quintile (Riel 5,317). Similarly, the annual per capita health expenditure is more than 19 times higher for the richest quintile than similar expenditure by the poorest quintile (about US$ 48 against US$ 2.50). For the entire population, the average annual per capita health expenditure is about US$ 15 which is low by any standards.[56]

In preventive health care, although 94% of the Cambodians use mosquito net while sleeping, the use of mosquito net impregnated with insecticide is very low at only 4%. Similarly, although 87% of the adult population is aware that smoking is dangerous to health, more than 21% are daily smokers. The rate is nearly 26% among persons in the poorest quintile compared with 14% in the richest quintile. Only 5.4% of adult Cambodians (aged 15 and above) report that they have ever been tested for HIV, which varies from 2.1% for the poorest quintile to 11.2% for the richest quintile.

Table 12.11: Health and Nutrition Indicators by Consumption Quintiles, 2004

---

[56] The figure, however, does not include expenditure on preventive health services or on medications and supplies for chronic illnesses.

Indicator	1 (Poorest)	2	3	4	5 (Richest)	Total	Ratio (total to poorest)
Health							
-% good health relative to age	10.7	12.7	13.1	11.7	13.1	12.2	1.15
-% poor health relative to age	10.3	11.4	11.6	12.0	10.8	11.2	1.09
Disabilities							
-% with one or more disabilities	4.1	4.2	4.6	4.4	4.2	4.3	1.04
Illness and Health care							
-% with illness or health problem during past four weeks	15.0	17.0	18.2	19.5	19.7	17.9	1.19
-% obtained health care for reported problem	56.1	63.1	63.7	68.5	75.7	66.0	1.18
-% hospitalized with reported health problem	1.5	1.6	2.2	3.5	6.4	3.2	2.09
-Number of days hospitalized with reported problem	5.0	4.7	6.1	5.1	7.5	6.2	1.24
-Health expenditure (000 Riels) for reported health problem	5.3	8.9	13.1	20.9	74.6	26.2	4.94
-Annual health expenditure per capita (000 Riels)	10.4	19.5	31.1	53.1	190.7	61.0	5.88
-% use mosquito net while sleeping	89.5	94.1	95.8	95.3	96.6	94.3	1.05
-% use insecticide impregnated mosquito net during past 12 months	4.6	3.9	3.7	4.0	3.8	4.0	0.87
-% daily smoker (age 15+)	25.8	23.9	23.9	20.8	14.2	21.3	0.83
-% think smoking is dangerous to health (age 15+)	82.5	84.0	86.6	88.2	92.0	87.0	1.05
-% ever tested for HIV (aged 15+)	2.1	2.3	3.9	5.1	11.2	5.4	2.49
-% exposed to injury-causing violence during past 12 months	1.7	1.6	1.1	0.8	0.9	1.2	0.72
-Number of plates of rice eaten yesterday	2.5	2.6	2.7	2.8	2.7	2.7	1.07

Source: Knowles 2005, CSES 2004.

Maternal and child health indicators are given in Table 12.12. The results show that women in the child-bearing age (15-49 years) in the poorest quintile report more births (2.8) than women in the richest quintile (1.6). Women belonging to poorer quintiles also report higher percentages of child-deaths (including infant and under-five mortalities).

Table 12.12: Maternal and Child Health Indicators by Consumption Quintiles, 2004

Indicator	1 (Poorest)	2	3	4	5 (Richest)	Total	Ratio (total to poorest)
Child birth and child mortality							
-Number of births by women aged 15-49	2.8	2.4	2.3	1.9	1.6	2.2	0.79
of which: Male	1.4	1.2	1.2	1.0	0.8	1.1	0.80
Female	1.4	1.2	1.1	0.9	0.8	1.1	0.78
-Children died, % of births	11.5	10.8	11.8	11.4	9.5	11.1	0.97
-Male children died, % of male births	12.6	11.9	12.7	12.0	10.4	12.0	0.95
-Female children died, % of female births	10.2	9.7	10.8	10.6	8.6	10.1	0.98
-Children under five died, % of births	7.4	6.5	7.3	6.6	5.6	6.7	0.91
-Male children under five died, % of male births	7.5	6.5	7.0	6.3	6.0	6.7	0.89
-Female children under five died, % of female births	7.2	6.4	7.6	6.8	5.2	6.7	0.93
-Infants (under 1) died, % of all births	4.0	3.5	4.7	3.9	3.1	3.9	0.96
-Male infants (under 1) died, % of male births	3.8	3.3	4.2	3.6	3.0	3.6	0.96
-Female infants (under 1) died, % of female births	4.3	3.8	5.1	4.1	3.1	4.2	0.96
Child anthropometry, children < 6 years							
-Height-for-age, % z-score< -2 SD	61.5	55.4	57.7	54.4	49.9	56.4	0.92
-Height-for-age, % z-score< -3 SD	40.8	35.1	34.5	32.2	28.9	35.0	0.86
-Weight-for-age, % z-score< -2 SD	56.2	50.4	47.5	44.9	37.2	48.3	0.86
-Weight-for-age, % z-score< -3 SD	22.9	19.6	17.5	15.7	12.8	18.3	0.80
-Weight-for-height, % z-score< -2 SD	11.8	13.3	11.0	10.6	11.6	11.7	1.00
-Weight-for-height, % z-score< -3 SD	2.1	2.6	2.1	3.2	4.0	2.7	1.29
Maternal and child health							
-% children under 6 given vitamin A	79.1	83.9	83.6	85.8	85.2	83.1	1.05
-% children under 6 suffer from night blindness	2.1	2.7	2.6	3.4	3.4	2.7	1.29
-% children under 2 first given breast milk	27.1	28.7	30.7	31.2	34.7	30.1	1.11
-Delay in hours before breastfeeding children under 2	30.3	26.1	27.0	25.2	23.9	26.8	0.89
-% children under 2 having vaccination card	77.6	79.9	81.0	84.6	86.4	81.4	1.05
-% children	56.1	57.6	60.8	61.9	62.7	59.5	1.06

under 2 received three DPT doses							
-% children under 2 never vaccinated	15.4	13.8	14.4	9.4	9.4	12.9	0.84
-% mother of children under 2 had night blindness during pregnancy	5.4	4.0	2.8	3.6	2.8	3.8	0.71

Source: Knowles 2005, CSES 2004.

The anthropometric data on children under six years of age indicate that more than 56% are moderately stunted (that is, height-for-age z-score less than two standard deviations below the standard) in Cambodia, while 35% are severely stunted. The prevalence of moderate stunting is higher (nearly 62%) among children in the poorest quintile compared with 50% for children in the richest quintile. The prevalence of moderately low weight-for-age among children under six is 48%, which is again higher for the poorer quintiles. More than 18% of these children are severely under weighed. In the case of wasting (weight-for-height), 12% are moderately wasted, while nearly 3% are severely wasted. However, the differences amongst the quintiles are not so pronounced in this case.

The indicators on preventive health care among children and mothers, in most cases, show the disadvantaged situation of the poorer quintiles. In total, less than 60% of the children under two have received three DPT doses, and 13% of such children have never been vaccinated.

12.6 Social Indicators as Proxy Poverty Indicators

In poverty analysis, one of the major objectives of collecting information on social indicators is to suggest appropriate indicators that can be used as efficient proxies to identify the poor. Such indicators, in order to be useful in designing appropriate programs and ensuring efficient targeting at the grassroots level, should possess several characteristics, such as (i) they should be readily observable by the field data collectors and program managers or others concerned with identifying the poor; (ii) these indicators should distinctly and sharply change over different income and expenditure groups (especially among the poorer groups) so that the poor (as well as different groups of the poor) can be identified with a reasonable degree of accuracy; and (iii) these indicators should be applicable to the large majority of the population (especially among the poor) so that the identification process can be inclusive and representative.

In the previous sections, several social indicators at the household and village levels have been shown to characterize the differences among the five per capita consumption quintiles. Knowles (2005) has identified 16 indicators from these which have the above characteristics. Hence they can be used as useful proxies for identifying the poor. The mean values of these indicators, in terms of three mutually exclusive groups of Cambodian population, are presented in Table 12.13. The groups are: (i) **food poor,** that is, persons whose consumption is below

the food poverty line in 2004; (ii) **moderate poor,** that is, persons whose consumption is equal to or above the food poverty line but below the poverty line; and (iii) **non-poor,** that is, persons whose consumption is equal to or above the poverty line. The table shows marked and visible differences in the values of most of these indicators across the three groups indicating that they can lead to reasonably accurate identification of the groups.

Table 12.13: Proxy Social Indicators for Identifying the Poor, 2004

Indicator	Food poor	Moderate poor	Non-poor	Cambodia
-% having thatched roof in dwelling	37.6	27.8	13.4	20.6
-% having tiled roof in dwelling	19.2	28.2	32.3	29.0
-% of dwelling having walls of wood, logs or plywood	34.8	40.7	51.1	46.2
-% having protected or unprotected dug well as water source	41.0	33.4	24.7	29.3
-% having city power, generator or battery as lighting source	19.3	29.7	57.5	45.5
-% using kerosene as lighting source	78.1	68.5	41.8	53.3
-% owning radio	29.0	33.9	40.2	36.9
-% owning television	27.5	38.0	60.0	50.0
-% owning motorcycle	11.5	17.9	40.5	31.1
-% owning one or more beds	20.4	22.4	42.7	35.1
-Household size	6.57	6.13	5.45	5.78
-% villages having food shop	7.6	9.7	26.4	20.1
-Population in village	1,147	1,277	1,968	1,698
-Distance (km) to all-weather road	5.23	3.76	2.83	3.45
-% of village with accessible electricity	13.6	18.9	37.9	30.2
-% of villages with accessible gas	6.3	10.8	28.2	21.2

Note: The figures indicate mean values of respective indicators.
Source: Knowles 2005, CSES 2004.

The practical issue, however, is to devise the best way of using the collected information to identify the poor for designing appropriate interventions. Several methodologies are available. One approach is to collect information on all indicators from a set of households; and use some scoring method to combine the values of individual indicators into a poverty index. One can set a threshold value for the index so that all members in those households which fall below the threshold value are classified as poor. A major drawback of the approach, however, is that both the methods of forming the index and setting the critical value of dividing the poor from the non-poor are subjective and somewhat arbitrary.

A more satisfactory approach is to use multivariate statistical techniques to construct the index and determine the threshold value. Knowles (2005) provides an illustration using CSES 2004 data to obtain coefficient estimates that can be used to score 16 poverty indicators (listed in Table 12.13) using logit analysis.[57] The dependent variable was a dummy variable indicating whether or not the individual was either (i) food poor (1 if food poor, 0 if not); or (ii) poor (1 if poor, 0 otherwise). The explanatory variables covered the 16 poverty indicators mentioned above and a set of regional dummies. The predicted probabilities from the estimated logit functions can be used to classify individuals as poor or non-poor.[58] Regression analysis was used to predict per capita consumption at constant 1993/94 Phnom Penh prices on the basis of the 16 poverty indicators and the regional dummy variables. The predicted value of an individual's consumption was then compared with the food poverty line to classify the individual as food poor or otherwise; and with the poverty line to determine the person's status as poor or not.

The results indicated that more than one-half of the poverty indicators were significantly related to poverty status or to per capita household consumption even holding other indicators constant.[59] All indicators did not come out statistically significant, presumably due to high correlation among many of them. This partly explains why a simple scoring of the indicators is less satisfactory than scoring based on multivariate analysis.[60] Regression analysis performed better than logit analysis in correctly classifying the individuals in the estimated sample as poor or non-poor. The performance of regression analysis, however,

---

[57] Knowles used one-half of the full 15-month sample of CSES 2003/04 to obtain the estimates; while the other half was used to evaluate the performance of the estimated scores in identifying the poor.

[58] The threshold value used to classify a household as poor was approximately the same as the sample proportion, e.g. 0.20 for food poverty and 0.35 for total poverty.

[59] For details on the results, see Knowles 2005.

[60] This points out that, other things remaining the same, poverty indicators which show low correlation with other indicators should be given more score than the ones which are more closely related.

was less satisfactory than logit analysis in correctly classifying the poor, especially the food poor.[61]

In evaluating such performance of logit and regression functions, a different sample from that used to estimate the functions is preferred. The summary results of using estimated logit and regression functions to classify sample individuals with part of the sample not used for estimation are given in Table 12.14.

Table 12.14: Relative Performance of Logit and Regression Functions

Method	% of all individuals classified correctly	% of poor individuals classified correctly	% of non-poor individuals classified correctly
Logit Function			
i.16 poverty indicators and regional dummies			
Food poverty	71.7	76.7	70.4
Total poverty	72.7	78.2	69.8
ii. village indicators and regional dummies			
Food poverty	62.5	66.8	61.3
Total poverty	61.9	72.2	56.0
Regression function			
i.16 poverty indicators and regional dummies			
Food poverty	85.1	22.7	97.1
Total poverty	77.0	55.2	86.1

Note: The performance relates to correctly classifying individuals as poor or non-poor in the non-estimation portion of the sample with a size of 7,509.
Source: Knowles 2005.

The results suggest that, although the estimated regression function provides overall better classification performance, its capacity in correctly classifying the poor is much worse than that of the estimated logit function. This shows that the logit function is a useful tool in correctly classifying individuals as poor or non-poor.

12.7 Multivariate Analysis of Poverty

In poverty analysis, an important element is to identify the underlying factors that are the causes of poverty. Obviously, the aim is to understand the causal factors, such as access to physical, human and other forms of capital and associated economic, social and other processes that create and perpetuate poverty. From this perspective, an important limitation of household surveys, such as the CSES 2004, is that it generates cross-section data that are not adequate to establish causal relationships between poverty and the individual, household or village-level characteristics.[62]

---

[61] The reason, as noted by Knowles, is that the predicted values from an estimated regression function exhibit less variation than actual values and, hence, fewer individuals than in the sample are predicted to have relatively low per capita consumption.

[62] A serious constraint is the existence of unobserved factors, for which no data are available in CSES 2004, but which are likely to be strongly correlated with many (if not all) individual, household or village characteristics available from the survey. In a situation like this, any estimate

A significant advantage of multivariate analysis is that it helps to understand the *correlates of poverty,* that is, it reveals which characteristics are more closely related to poverty when other characteristics are held constant. Obviously, this is a step forward from the simple two-way relationships examined earlier. Such analysis is an important initial step towards understanding the factors that contribute to poverty and identifying appropriate and effective policies to address poverty in Cambodia.[63]

Knowles (2005) has used a multivariate probit analysis to identify the indicators that are closely related to an individual's poverty status.[64] The dependent variable was a qualitative one; indicating whether an individual's consumption was below the poverty line (or the food poverty line).[65] The explanatory variables covered the broad range of individual, household and village level indicators from the 2004 CSES. The analysis was carried out in four steps. First, only indicators covering the characteristics of the household head were included in the analysis. In the second step, other household-level indicators were added followed by the village-level indicators in the third stage. Finally, a set of regional indicators were added in the fourth step.

After step one (that is, only with characteristics of household head as included explanatory variables), the model could classify 58% of the individuals correctly, including 68% of the food-poor and 55% of the non-food poor. With all the explanatory variables included at the end of step four, the ability increased to 71% covering 79% of the food-poor and 69% of the non-food-poor sample individuals.

The analysis provides some interesting results on individual's poverty status, of which some important ones are summarized below:

(i)   Several demographic features have relationships with poverty; such as strong positive association between household size and food poverty;

---

of causal relationships between poverty and these characteristics is likely to be biased. In principle, consistent causal relationships can be estimated by using suitable instrumental variables (e.g. a variable which is strongly correlated to the factor in question, say education, but is highly unlikely to be related to the unobserved factor). Unfortunately, it is extremely difficult to conceive such instrumental variables and collect data on them.

[63] For adequate analysis of the causes of poverty and identifying the effectiveness of alternative anti-poverty measures, in addition to such analysis, one needs to combine information and analysis using different forms of data, e.g. longitudinal data to reveal relationships between inter-temporal changes in poverty and its related factors; qualitative and quantitative data at the local level; field data from actual poverty reduction interventions; research results and experience from other countries with similar situations; and drawing conclusions using appropriate analytical tools.

[64] For details of the analysis, see Knowles 2005.

[65] That is, this is taken as a dummy variable having a value of 1 if below the poverty line and 0 if not.

and negative and significant relationship between ethnic minority headship and household head's age and food poverty.

(ii)   Negative and significant relationship between additional schooling of household head and food poverty. Although evidence is there that household head's schooling acts as a proxy for schooling of other household members, still the household head's schooling appears to be more important than that of other household members.

(iii)   Of the variables related to household size and composition, the ones having strong relationship with food poverty include: positive relationship between food poverty and household size (although this is probably overstated due to the use of per capita household consumption rather than adoption of equivalence scale); negative and significant relationship between the number of working-age adults and the number of adults with some secondary schooling and food poverty; and existence of no significant gender difference in the relationship between food poverty and additional male or female working-age adults or adults with some secondary schooling.

(iv)   Several household-level variables relating to sources of income are significantly related to food poverty. The ones having negative relationships with food poverty include: number of crops grown in the dry season (suggesting the importance of irrigation); households raising fish or other aquatic products; households operating one or more household businesses; value of land owned or operated by household (importance of agricultural land secured by a title is also evident) ; and value of remittances received from foreign sources. Two variables are positively and significantly related to food poverty: households catching fish, shrimp, crabs or oysters; and households who collect firewood, charcoal, timber or other forest products. This indicates that food-poor households are more likely to use these activities to meet subsistence needs and points out the importance of access to common property resources as a coping mechanism of the food-poor households.

(v)   A few village-level indicators are also significantly related to food poverty, such as positive relationship with distance to the nearest bank of credit unit; negative relationship with village population size; and negative relation with village having access to gas.

(vi)   There are important regional effects which are not captured by indicators at lower levels. Food poverty is positively and significantly related to residence, as expected, in any region other than Phnom Penh; and the likelihood of being food poor increases most with residence in the Tonle Sap region. Similarly, residence in a rural area of both the

Plateau/Mountains and Phnom Penh rural regions is associated with a much greater likelihood of being food-poor than residence in the urban areas of these two regions.

The results with the probit analysis of factors associated with total poverty were similar. The percentage of individuals correctly classified increased from 59% in step one to 72% in step four. Most of the explanatory variables, as discussed above for food poverty, were statistically significant for total poverty as well with similar signs.

12.8 Multivariate Analysis of Per Capita Consumption

The results of multivariate regression analysis of factors associated with per capita household consumption are presented in this section. Whereas the probit analysis in the previous section was concerned with the classification of the poor and the non-poor, the analysis of per capita household consumption deals with issues related to the depth of poverty that is how far below the poverty line a given household subsists.

Overall, the results are very similar to those obtained in the case of probit analysis of poverty. The important results can be summarized as follows:[66]

(i)   There are two gender-related issues. First, members in a household headed by a divorced or separated person have significantly lower consumption. Since the same is true for female-headed households, this implies that a person in a household headed by a female who is divorced or separated would have lower levels of consumption, holding other factors constant. Second, the number of working-age females in a household is less closely related to the level of consumption than the number of working-age males. The situation, however, is reversed for adult females with some secondary schooling.

(ii)   In addition to households operating one or more businesses, the number of businesses operated is positively and significantly related to per capita consumption. Moreover, the values of both domestic and foreign remittances are positively and significantly related to per capita household consumption.

(iii)   In case of village-level indicators, a disaster in the village during the past five years is negatively and significantly related to per capita consumption. Although the presence of a recent disaster seems to act as a proxy for an unobserved fixed effect at the region level.

12.9 Summary of Major Findings

---

[66] For details of the analysis, see Knowles 2005.

- Socio-economic indicators are useful measures of living standards and provide information on various non-income dimensions of poverty. Many of these indicators such as quality of housing, ownership of consumer durables, status of human development and access to infrastructure are important in analyzing the poverty situation and designing appropriate measures.

- Several household-level social indicators by consumption quintile show the extremely disadvantaged situation of the poorer quintiles. The poorer quintiles live in low quality houses with less living area and limited number of rooms; are more deprived in terms of access to clean water and improved sanitation; and rely heavily on firewood for fuel and kerosene for lighting. The gaps between the poorest 20% and the richest 20% are extremely high in these respects. Nearly 94% in the poorest quintile use open land or do not have any toilet facilities and more than 97% use firewood as fuel. Less than 2% in the poorest quintile have access to piped water or public tap. Relatively richer quintiles have smaller household size and lower dependency burden.

- Glaring disparity also exists in ownership of consumer durables among different consumption quintiles. The ownership of different items such as radio, television, furniture, transport and other household equipment is much less among the poorest 20% of the population.

- The poor, especially the poorest 20%, tend to reside in remote and isolated areas where they have limited access to infrastructure and basic services. The distance to these services such as roads, markets, bus stop, and many other extension and input services monotonically increases from higher to lower quintiles. The poorest 20% are especially isolated from permanent markets and health care facilities.

- Villages in which the poor reside have significantly lower health and education facilities. In particular, sharp differences exist in access to secondary schools and all types of modern health service providers. Conversely, the poor have more access to untrained and traditional health service providers.

- Education-related indicators show systematic variation with per capita consumption quintiles indicating the importance of education in poverty reduction. Sharp differences exist in schooling indicators among quintiles. Moreover, differences in net enrolment ratios are more marked than those in gross enrolment ratios partly reflecting the tendency of the poorer children to start schooling at a later age. A more disturbing feature from the equitable access point is the wide difference in the amount parents spend per enrolled child. The amount is nearly 25 times larger per year for children in the richest quintile than for children in the poorest quintile.

- Agricultural land is the most important source of income for most Cambodian households, especially among the poorer quintiles. Around 84% of the population in the poorest quintile lives in households who own or operate agricultural land. While access to irrigation facilities is limited in general for all quintiles, this is extremely low for the poorest quintile.

- Among those who own land, the security of tenure increases as one moves up the per capita consumption quintile. Only 16% in the poorest quintile owns land secured by a title. The poorer quintiles show their high dependence on access to common property resources such as fishing, collecting firewood, foraging or hunting wild animals as major sources of livelihood.

- Although income from non-agricultural sources is more important for the richer quintiles, these sources have a significant vulnerability-reduction role for the poorer

quintiles. These sources provide important income/consumption security and stability in the face of wide fluctuations in agricultural production resulting from crop failures due to droughts and floods. These are also important means of the poorer quintiles to meet other 'crisis events' (such as illness) and thereby help them to avoid forced asset depletion or falling into debt-trap. The poorer quintiles, nevertheless, show more vulnerability in all aspects such as degree of indebtedness, food insecurity and malnutrition, high morbidity and mortality, and facing adverse law and order situation compared with the richer quintiles.

- The poorer quintiles experience higher incidence of disability and low health status. The richer quintiles, on the other hand, tend to utilize health care more intensively (especially hospitalization) and spend more during each episode of illness. The indicators on preventive health care among children and mothers also reveal the disadvantaged situation of the poorer quintiles.

- The multivariate analysis shows significant relationships of poverty and per capita consumption with a range of demographic features, multiple income sources, and other socio-economic variables revealing the multi-dimensional nature of poverty and the need to initiate a multi-pronged attack on poverty in Cambodia.

13. Conclusions and Recommendations

13.1 Major Conclusions

This part of Cambodia's poverty profile examines the recall data from CSES 2004 and compares changes in poverty with the base-year poverty rates in 1993/94. Estimates from recall data suggest that 34.7% of the population lived in poverty in 2004 in Cambodia. There are no comparable estimates of poverty for the whole of Cambodia in 1993/94, so one cannot say what has happened to poverty incidence during the period.

It is, however, possible to compare poverty rates for a narrower geographical sample covering people living in the same geographical areas included in the SESC 1993/94. This covered only 59% of the country's total villages and 68% of the households, excluding many poor and inaccessible areas due to security problems at the time. These estimates show a strong decline in poverty rate from 39% in 1993/94 to 28% in 2004 across all three regions of the country.

Similarly, the proportion of people living below the food poverty line for the entire country was 19.7% in 2004, but the country-wide figure for 1993/94 is not available. The estimates from the comparable geographical sample show that the proportion of people living below the food poverty line also fell substantially from 20% in 1993/94 to 14.2% in 2004.

The robustness of the above conclusions of declining poverty is supported by consistent change in estimates, especially for the two poorest quintiles, in income and consumption related indicators during the time, such as food share in total consumption, housing characteristics, and ownership of consumer durables.

Since the poverty rate for the whole of Cambodia was 34.7% in 2004 compared with 28% for the narrower geographic area, this implies that areas not covered by the 1993/94 SESC have a significantly higher incidence of poverty. A simple calculation shows that the poverty rate in these excluded areas was 45.6% in 2004, compared with 28% for the included areas. Similarly, in 2004, the food poverty index was 28.7% in the excluded areas compared with only 14.2% in the included areas.

Of the total number of the poor, more than 91% live in the rural areas and most of the poor earn their livelihoods in agriculture. This indicates that Cambodia's poverty is rooted in its large agricultural sector. The sector has low productivity and low growth, but provides livelihood to the vast majority of the country's population. In the past, the growth of rural activities, based primarily on agriculture, showed considerable variability and significantly lagged behind the rest of the economy. Although Cambodia achieved an impressive economic growth averaging more than 6% over the last decade, growth remained narrowly-based fuelled by two main engines--garment manufacturing and tourism.

Box 13.1: Looking Ahead--Accelerating Poverty Reduction in Cambodia

Cambodia's poverty profile for 2004 gives a number of insights on how Cambodia can accelerate its rate of poverty reduction by realizing a more pro-poor growth through adopting appropriate policies.

The existence of great variety in income strategies and asset holdings of the poor makes it clear that no single remedy is adequate to reduce poverty in Cambodia and the need is to provide a multi-pronged attack on poverty.

The major asset of the poor is their labor; so the need to invest adequately and effectively in building their human capital and skills is clear. Since more than 91% of the poor live in rural areas, acceleration of agricultural growth through both intensification and diversification is crucial. Similarly, poor households would benefit from expansion of employment opportunities in the rural non-farm sector. Rapid improvements in rural infrastructure are important both for developing a modern agricultural sector and for spurring non-farm growth.

Success in all these areas depends on giving attention to creating and maintaining a more enabling environment for rapid growth. Sound macroeconomic management and good governance are important pre-requisites for establishing such an environment. Reforms in all areas, especially improving public administration and devolving power to accountable local institutions, will create a more open environment in which the poor can access opportunities and build assets according to their needs and move out of poverty.

If growth continues to remain narrowly-based and urban-focused as in the past, rural poverty is unlikely to reduce quickly especially since the depth of poverty is higher in rural areas. In such a situation, overall poverty reduction gains of Cambodia will be much less. A major challenge for Cambodia is, therefore, to adopt deliberate, focused and targeted strategies and actions to accelerate poverty reduction in the rural areas, especially in those high poverty-stricken areas that were excluded from the 1993/94 SESC.

As the comparable sample suggests, progress in poverty reduction since 1993/94 has been considerably less in the rural areas than in either Phnom Penh or other urban areas. In addition to geographical bias in development, one important factor that has contributed to slow poverty reduction in rural areas is the sharp and significant increase in inequality in the distribution of per capita consumption. For comparable samples, while the Gini coefficient of consumption inequality has declined in Phnom Penh (from 0.39 in 1993/94 to 0.37 in 2004) and remained almost constant at around 0.44 in other urban areas, it increased sharply from 0.35 in 1993/94 to 0.40 in 2004 in rural areas.

The impact of economic growth on poverty, in addition to its rate, depends on what happens to inequality. Past patterns of Cambodia's growth have an underlying tendency towards generating higher inequality, especially in the rural areas.[67] With the vast majority of the poor living in the rural areas, it is important for Cambodia to examine the inequality issue further and identify the sources of rising inequality covering all dimensions, such as uneven spread of economic and social opportunities, skewed distribution of financial and human capital, and growing disparities in other spheres of life.

The profile of Cambodia's poor is not very different from that of the poor in other low income countries. Poverty, as well as food poverty, is much higher in rural areas than in Phnom Penh and other urban areas. Besides living in rural areas, the poor tend to have low levels of education, limited access to land and other productive assets, and are highly concentrated in low-paying, physically demanding and socially unattractive occupations. In both urban and rural areas, the poor have less access to modern amenities and services. They reside in houses of inferior quality with no or limited access to basic services like safe water and improved sanitation. The poor are more likely to reside in households with large membership sizes, have more children, and have a household head who is less educated. They also have much less access to public services.

At its present level of development, an important concern for Cambodia is to ensure synergy and bring quick and efficient poverty reduction outcomes. This can be achieved through specific actions building on progress made so far in reducing poverty, creating socio-economic institutions for accelerating pro-poor growth and replicating best practices. Through changes in emphasis, in practices, and in policies, these will bring healthy growth benefiting the rural poor. This will also ensure a more rapid and sustained movement towards greater equality and justice for all Cambodians.

For the coming decade, the critical element of Cambodia's development vision will be to ensure that growth reaches the poor and expands their opportunities. In turn, this requires policies which ensure that the poor have the assets--education; good health; access to inputs and markets, voices and power; and

---

[67] Reliable data on income inequality are not available, but it is more likely that income inequality also follows similar rising trends of consumption inequality as shown in the present report.

participation in decision making--to capitalize on expanding opportunities of growth. Thus, translating the poverty reduction strategy into concrete and effective actions requires determination and imagination, from the RGC and all other stakeholders.

13.2 Recommendations

In view of the existing limitations of the base-year poverty estimates for 1993/94 (e.g. incomplete geographical coverage), Cambodia should adopt a new set of poverty lines and develop new base-year poverty estimates. At the same time, maintaining and updating existing poverty lines and previously used poverty estimation methodologies is important to monitor changes and compare progress with the past.

In terms of specific issues in data collection, improvements in several areas should be targeted in future socio-economic surveys:

(i)   Need to rationalize the data on prices, such as bringing more correspondence between food items for which village prices are collected and those in the reference food bundle; use of a more relevant set of non-food commodity bundle (e.g. coverage of all important non-food items as represented in the base-year non-food allowances); strengthening existing frameworks for regular data collection for constructing separate CPI for other urban areas (which started in January 2001) and starting a similar process for constructing rural CPI.

(ii)   Careful designing of survey questionnaires for collecting consumption data to ensure maximum comparability across different surveys. This requires use of similar consumption modules and unchanged reference period for consumption recall.

Obviously, ensuring maximum consistency is an important pre-requisite of collecting survey data that can be used to make meaningful poverty comparisons over time.

The 2003/04 CSES, with its wide coverage and availability of data using both recall and diary methods, provides an excellent data base to construct new poverty lines and adopt new base-year poverty estimates. Along with the choice of a new reference food bundle (which remains uniform across regions), it may be necessary to adopt a new non-food allowance that represents a single bundle of non-food commodities across regions.[68] Many developing countries define an 'upper poverty line' corresponding to a more generous non-food allowance. This could also be explored in Cambodia.

---

[68] Kakwani (2002) provides a useful summary of various methods of developing such a non-food bundle.

Another important issue is the most appropriate method for collecting data on household consumption. In 2003/04 CSES, both recall and diary methods were used for collecting such data. In principle, there is no distinct advantage of one method over the other in collecting such data, and each has its own advantages and disadvantages.

The decision has, therefore, to be taken considering the existing realities in Cambodia, especially on the basis of experience and lessons learned from the 2003/04 CSES when both methods were used simultaneously. Using both methods has the advantage of assessing comparability of recall-based estimates with diary-based estimates and draw useful conclusions. But it raises the issue of whether this is the best use of Cambodia's scarce resources available for conducting socio-economic surveys. This is also related with limited institutional capacity of NIS to conduct such surveys in a timely and regular manner due to competing demands from other surveys and censuses. In this context, one should also consider avoiding any confusion among the users caused by multiple estimates of poverty for the same year. This is likely to result from using two methods since recall and diary methods are two distinct methods and will generate different estimates of consumption and hence of poverty.

The decision should also take into consideration the demands from the users, particularly the monitoring requirement of the National Strategic Development Plan (NSDP) 2006-2010. The NSDP monitoring and evaluation framework will provide important information on many aspects of designing future socio-economic surveys, such as how frequent the surveys should be conducted and what are the indicators that should be covered in such surveys. Since regular monitoring of progress of NSDP on an annual basis is the priority, the need is to devise mechanisms to do annual (or fixed-term) tracking surveys covering relevant core indicators of NSDP. The conduct of such surveys for collecting basic poverty monitoring data on a regular basis will require institutional capacity at NIS and a group of well-trained interviewers, data processors and other staff.

References

Foster, J, J. Greer and E. Thorbecke, 1984, ' A Class of Decomposable Poverty Measures', *Econometrica,* 52: 761-765.

Johansson, S. 2005, *Recall and Diary Estimates of Food Consumption--Understanding the Differences in CSES 2004,* (mimeo), National Institute of Statistics, Ministry of Planning, Royal Government of Cambodia, Phnom Penh.

Johansson, S. and S. Backlund 2005, *A New Set of Poverty Estimates for Cambodia 2004 Based on the CSES 2004 Diary Data,* (mimeo), National Institute of Statistics, Ministry of Planning, Royal Government of Cambodia, Phnom Penh.

Kakwani, N. 2002, *Issues in Setting Absolute Poverty Lines,* Poverty and Social Development Paper No. 4, Asian Development Bank, Manila.

Knowles, J.C, 2005, *A New Set of Poverty Estimates for Cambodia, 1993/94 to 2004,* A Report to the EAS Country Units of the World Bank, Washington D.C.

MOP 2000, *A Poverty Profile of Cambodia 1999,* Ministry of Planning, Royal Government of Cambodia, Phnom Penh.

MOP 1998, *A Poverty Profile of Cambodia 1997,* Ministry of Planning, Royal Government of Cambodia, Phnom Penh.

NIS/UNDP 2005, *Technical Report on Survey Design and Implementation,* National Institute of Statistics, Ministry of Planning, Royal Government of Cambodia, Phnom Penh.

Prescott, N. and M. Pradhan 1997, *A Poverty Profile of Cambodia,* World Bank Discussion Paper No. 373, World Bank, Washington D.C.

Ravallion, M. 1998, *Poverty Lines in Theory and Practice,* Living Standards Measurement Study Working Paper No. 133, World Bank, Washington D.C.

Ravallion, M. and B. Bedani 1994, 'How Robust is a Poverty Profile?', *World Bank Economic Review,* 8(1): 75-102.

World Bank 2000, *World Development Report 2000-2001,* World Bank, Washington D.C.

Annexes

Annex 1: Median Consumption Values per Adult Equivalent per Day, Second Quintile

Food poverty line, 2nd quintile   **1683.64**

Item Code	Val PDPA	Cal PDPA	Cal Cost	Cum Val PDPA	Cum Cal PDPA	Cum Cost Cal	Cum PctFC	Cum PctCal
1027	496.1	1467.6	0.34	496.1	1467.6	0.34	13.9	33.1
1019	453.3	1295.2	0.35	949.4	2762.9	0.34	26.7	62.2
1401	153.6	39.0	3.95	1103.0	2801.9	0.39	31.0	63.1
1569	108.5	9.6	11.32	1211.5	2811.5	0.43	34.0	63.3
1219	90.7	64.1	1.42	1302.2	2875.5	0.45	36.6	64.8
2945	72.3	3.4	17.96	1374.6	2879.0	0.48	38.6	64.8
1551	62.1	18.0	3.45	1436.7	2897.0	0.50	40.4	65.3
2061	60.8	17.8	3.42	1497.5	2914.8	0.51	42.1	65.7
1243	58.8	19.8	2.97	1556.3	2934.6	0.53	43.7	66.1
1035	58.6	137.0	0.38	1614.9	3071.5	0.53	45.4	69.2
1335	56.4	9.4	6.08	1671.3	3080.9	0.54	47.0	69.4
1201	55.7	18.0	3.02	1727.0	3098.9	0.56	48.5	69.8
9315	47.1	61.3	0.76	1774.1	3160.2	0.56	49.8	71.2
1386	41.8	7.0	6.00	1815.9	3167.2	0.57	51.0	71.3
1251	37.3	15.4	2.52	1853.2	3182.6	0.58	52.1	71.7
1351	35.8	5.7	6.34	1889.0	3188.3	0.59	53.1	71.8
1327	33.5	7.4	4.49	1922.5	3195.7	0.60	54.0	72.0
2895	33.2	5.7	5.82	1955.8	3201.4	0.61	54.9	72.1
1377	31.9	6.8	4.67	1987.6	3208.2	0.62	55.8	72.3
1369	31.1	6.8	4.47	2018.8	3215.0	0.63	56.7	72.4
1227	30.0	6.9	4.69	2048.7	3221.9	0.64	57.6	72.6
1269	28.5	10.1	3.12	2077.3	3232.0	0.64	58.4	72.8
2761	28.4	9.0	3.16	2105.7	3241.0	0.65	59.2	73.0
1128	27.1	2.4	11.29	2132.7	3243.4	0.66	59.9	73.1
2803	26.9	1.1	24.61	2159.7	3244.5	0.67	60.7	73.1
2661	24.2	2.8	8.16	2183.8	3247.3	0.67	61.4	73.1
1435	23.6	7.1	3.15	2207.5	3254.4	0.68	62.0	73.3
1293	22.3	3.7	6.05	2229.7	3258.1	0.68	62.6	73.4
1069	21.6	67.8	0.34	2251.3	3325.8	0.68	63.2	74.9
1787	21.6	42.4	0.74	2272.9	3368.2	0.67	63.9	75.9
1493	20.7	4.9	4.06	2293.6	3373.1	0.68	64.4	76.0
1469	19.3	3.7	5.16	2312.9	3376.8	0.68	65.0	76.1
1277	18.7	0.5	39.42	2331.6	3377.3	0.69	65.5	76.1
2811	18.3	1.2	15.20	2349.9	3378.5	0.70	66.0	76.1
1343	17.9	2.9	5.76	2367.7	3381.4	0.70	66.5	76.2
1929	17.4	3.6	4.79	2385.1	3385.0	0.70	67.0	76.2
9323	17.3	23.5	0.71	2402.4	3408.5	0.70	67.5	76.8
9349	17.2	19.2	0.78	2419.6	3427.7	0.71	68.0	77.2
2129	16.9	2.5	6.56	2436.5	3430.2	0.71	68.5	77.3
1543	16.9	8.6	2.22	2453.4	3438.9	0.71	68.9	77.5
2337	16.7	1.3	13.52	470.1	3440.2	0.72	69.4	77.5

2829	16.5	15.3	1.06	2486.7	3455.5	0.72	69.9	77.8
1427	16.2	2.6	6.23	2502.9	3458.0	0.72	70.3	77.9
2887	16.2	26.7	0.58	2519.1	3484.7	0.72	70.8	78.5
9357	16.2	22.4	0.75	2535.3	3507.2	0.72	71.2	79.0
2911	15.8	7.9	1.97	2551.2	3515.0	0.73	71.7	79.2
2861	15.3	0.0	0.00	2566.4	3515.0	0.73	72.1	79.2
1419	15.1	1.5	13.16	2581.5	3516.5	0.73	72.5	79.2
9365	13.8	19.4	0.77	2595.3	3536.0	0.73	72.9	79.6
9373	13.5	16.9	0.80	2608.8	3552.9	0.73	73.3	80.0
1979	13.3	15.6	0.85	2622.1	3568.5	0.73	73.7	80.4
1837	13.2	3.0	3.76	2635.4	3571.5	0.74	74.0	80.4
1845	13.2	7.0	1.77	2648.6	3578.5	0.74	74.4	80.6
1120	13.1	3.2	4.04	2661.7	3581.7	0.74	74.8	80.7
1443	13.1	1.9	6.09	2674.7	3583.6	0.75	75.1	80.7
1753	12.4	5.8	1.90	2687.2	3589.4	0.75	75.5	80.8
1911	12.0	1.3	6.86	2699.1	3590.7	0.75	75.8	80.9
1101	11.8	22.4	0.29	2710.9	3613.1	0.75	76.2	81.4
2087	11.5	3.3	3.33	2722.4	3616.4	0.75	76.5	81.5
1695	11.4	2.2	4.86	2733.8	3618.6	0.76	76.8	81.5
2187	11.3	2.0	5.98	2745.1	3620.6	0.76	77.1	81.5
2703	11.1	6.9	2.00	2756.2	3627.5	0.76	77.4	81.7
1119	10.9	11.6	0.88	2767.1	3639.1	0.76	77.7	82.0
1593	10.8	2.2	4.92	2777.9	3641.3	0.76	78.0	82.0
1385	10.8	1.1	8.61	2788.7	3642.4	0.77	78.3	82.0
2179	10.7	3.1	3.07	2799.3	3645.5	0.77	78.6	82.1
1577	10.7	1.0	11.12	2810.0	3646.5	0.77	78.9	82.1
1319	10.5	3.5	3.63	2820.5	3650.0	0.77	79.2	82.2
2279	10.5	1.4	7.76	2831.1	3651.4	0.78	79.5	82.2
1895	10.3	1.1	4.45	2841.4	3652.5	0.78	79.8	82.3
1185	10.3	22.2	0.45	2851.6	3674.7	0.78	80.1	82.8
1477	10.1	3.4	2.86	2861.8	3678.1	0.78	80.4	82.8
1535	10.1	0.1	248.31	2871.9	3678.1	0.78	80.7	82.8
1127	10.0	4.4	2.33	2881.9	3682.5	0.78	81.0	82.9
1135	9.9	2.4	5.86	2891.8	3684.9	0.78	81.2	83.0
2103	9.9	2.1	4.57	2901.7	3687.0	0.79	81.5	83.0
2787	9.4	1.6	6.45	2911.1	3688.6	0.79	81.8	83.1
1285	9.3	5.5	2.11	2920.4	3694.1	0.79	82.0	83.2
2579	9.2	11.8	0.75	2929.6	3706.0	0.79	82.3	83.5
2237	9.1	1.7	5.74	2938.8	3707.6	0.79	82.6	83.5
2561	9.1	5.4	1.72	2947.8	3713.0	0.79	82.8	83.6
2453	9.0	16.5	0.54	2956.9	3729.6	0.79	83.1	84.0
1937	8.9	1.1	7.84	2965.7	3730.7	0.79	83.3	84.0
2411	8.8	1.9	4.60	2974.6	3732.6	0.80	83.6	84.1
1485	8.5	1.6	5.62	2983.1	3734.2	0.80	83.8	84.1
1394	8.5	5.7	2.64	2991.5	3739.8	0.80	84.0	84.2
1737	8.4	0.3	27.36	2999.9	3740.1	0.80	84.3	84.2
1393	8.3	8.8	1.00	3008.2	3749.0	0.80	84.5	84.4
2353	8.3	24.0	0.55	3016.5	3772.9	0.80	84.7	85.0
2153	8.3	3.6	1.93	3024.8	3776.5	0.80	85.0	85.1
2211	8.3	2.7	2.85	3033.1	3779.3	0.80	85.2	85.1

2445	8.2	16.8	0.51	3041.3	3796.1	0.80	85.4	85.5
1945	8.1	3.7	2.36	3049.4	3799.8	0.80	85.7	85.6
1687	8.1	21.2	0.37	3057.5	3821.0	0.80	85.9	86.1
2611	8.0	1.1	7.49	3065.5	3822.1	0.80	86.1	86.1
2079	8.0	7.7	1.28	3073.5	3829.8	0.80	86.3	86.3
2753	8.0	0.3	27.66	3081.4	3830.1	0.80	86.6	86.3
1861	7.9	4.7	1.62	3089.4	3834.8	0.81	86.8	86.4
1235	7.9	1.9	4.11	3097.2	3836.7	0.81	87.0	86.4
1051	7.8	27.0	0.28	3105.1	3863.6	0.80	87.2	87.0
2795	7.7	0.5	14.56	3112.7	3864.1	0.81	87.4	87.0
2011	7.6	35.3	0.24	3120.4	3899.4	0.80	87.7	87.8
2837	7.6	0.1	145.57	3128.0	3899.5	0.80	87.9	87.8
1501	7.4	1.0	6.82	3135.4	3900.5	0.80	88.1	87.9
2745	7.4	0.3	29.75	3142.8	3900.8	0.81	88.3	87.9
1395	7.2	2.5	2.53	3150.0	3903.3	0.81	88.5	87.9
2603	7.2	0.0	0.00	3157.1	3903.3	0.81	88.7	87.9
1679	7.2	3.3	2.25	3164.3	3906.6	0.81	88.9	88.0
1903	7.1	0.8	9.20	3171.4	3907.4	0.81	89.1	88.0
2137	7.0	1.3	4.96	3178.4	3908.7	0.81	89.3	88.0
2503	7.0	0.0	775.77	3185.4	3908.7	0.81	89.5	88.0
1637	7.0	9.7	0.70	3192.3	3918.4	0.81	89.7	88.3
1729	6.9	12.6	0.58	3199.3	3930.9	0.81	89.9	88.5
1043	6.9	20.9	0.33	3206.2	3951.9	0.81	90.1	89.0
1661	6.9	4.2	1.65	3213.1	3956.1	0.81	90.3	89.1
1077	6.8	3.8	1.51	3219.9	3959.9	0.81	90.5	89.2
1169	6.8	1.0	6.65	3226.7	3960.9	0.81	90.6	89.2
1629	6.7	7.4	1.07	3233.4	3968.4	0.81	90.8	89.4
1151	6.7	4.9	1.78	3240.0	3973.2	0.82	91.0	89.5
1527	6.6	1.6	4.19	3246.6	3974.8	0.82	91.2	89.5
1711	6.5	10.8	0.66	3253.1	3985.6	0.82	91.4	89.8
1143	6.5	3.1	2.49	3259.6	3988.7	0.82	91.6	89.8
2329	6.4	1.0	6.55	3266.0	3989.7	0.82	91.8	89.9
1519	6.4	1.0	6.81	3272.4	3990.7	0.82	91.9	89.9
2929	6.2	2.0	3.59	3278.6	3992.7	0.82	92.1	89.9
2295	6.2	9.6	0.61	3284.8	4002.3	0.82	92.3	90.1
1987	6.1	1.0	9.52	3290.9	4003.3	0.82	92.5	90.2
2161	6.1	1.0	6.86	3297.0	4004.2	0.82	92.6	90.2
2529	6.0	7.7	0.77	3303.0	4011.9	0.82	92.8	90.4
1177	5.9	12.4	0.50	3309.0	4024.3	0.82	93.0	90.6
1611	5.9	5.0	1.17	3314.9	4029.3	0.82	93.1	90.8
2253	5.9	2.5	2.65	3320.8	4031.8	0.82	93.3	90.8
2195	5.9	3.8	1.37	3326.6	4035.6	0.82	93.5	90.9
2303	5.8	10.6	0.45	3332.4	4046.2	0.82	93.6	91.1
2229	5.6	1.1	4.90	3338.1	4047.4	0.82	93.8	91.2
2387	5.5	0.6	8.43	3343.6	4048.0	0.83	93.9	91.2
2537	5.5	26.5	0.18	3349.0	4074.5	0.82	94.1	91.8
1193	5.4	8.1	0.68	3354.5	4082.6	0.82	94.2	92.0
2203	5.3	1.3	4.37	3359.8	4083.9	0.82	94.4	92.0
1085	5.3	3.3	3.12	3365.1	4087.2	0.82	94.5	92.1
2311	5.3	5.1	1.15	3370.4	4092.3	0.82	94.7	92.2
1703	5.3	21.3	0.24	3375.6	4113.6	0.82	94.8	92.7

2379	5.2	0.8	6.61	3380.9	4114.4	0.82	95.0	92.7
2737	5.2	4.5	2.23	3386.1	4118.9	0.82	95.1	92.8
1779	5.1	3.6	1.40	3391.2	4122.5	0.82	95.3	92.9
1803	4.4	9.8	0.47	3395.6	4132.3	0.82	95.4	93.1
1301	4.4	1.5	4.81	3400.0	4133.7	0.82	95.5	93.1
2845	4.4	0.6	7.75	3404.3	4134.3	0.82	95.6	93.1
2003	4.3	1.8	1.55	3408.7	4136.1	0.82	95.8	93.2
2361	4.3	0.8	4.96	3413.0	4136.9	0.83	95.9	93.2
2437	4.2	0.4	11.37	3417.2	4137.3	0.83	96.0	93.2
2403	4.2	0.5	9.24	3421.4	4137.8	0.83	96.1	93.2
1995	4.2	2.2	1.94	3425.6	4140.0	0.83	96.2	93.2
2853	4.1	0.2	17.57	3429.7	4140.2	0.83	96.4	93.3
2695	4.1	1.4	3.26	3433.8	4141.6	0.83	96.5	93.3
1093	4.1	16.9	0.24	3437.9	4158.5	0.83	96.6	93.7
2395	4.0	0.2	22.71	3441.9	4158.6	0.83	96.7	93.7
1451	4.0	0.7	7.32	3445.9	4159.3	0.83	96.8	93.7
9331	3.9	4.9	0.80	3449.9	4164.2	0.83	96.9	93.8
2261	3.7	0.5	6.42	3453.6	4164.7	0.83	97.0	93.8
2511	3.6	2.3	1.73	3457.2	4166.9	0.83	97.1	93.9
1887	3.6	11.6	0.43	3460.8	4178.5	0.83	97.2	94.1
2479	3.6	14.8	0.22	3464.3	4193.3	0.83	97.3	94.4
1761	3.5	0.6	5.86	3467.9	4193.9	0.83	97.4	94.5
2145	3.5	0.4	10.08	3471.4	4194.3	0.83	97.5	94.5
1879	3.5	20.6	0.26	3474.9	4214.9	0.82	97.6	94.9
2679	3.5	0.4	8.87	3478.4	4215.3	0.83	97.7	94.9
2545	3.4	0.5	6.66	3481.8	4215.8	0.83	97.8	95.0
1645	3.4	5.5	0.61	3485.1	4221.3	0.83	97.9	95.1
2595	3.3	0.7	5.41	3488.5	4222.0	0.83	98.0	95.1
2287	3.3	1.5	3.10	3491.7	4223.4	0.83	98.1	95.1
2645	3.2	0.4	8.96	3495.0	4223.9	0.83	98.2	95.1
2937	3.2	0.0	127.18	3498.1	4223.9	0.83	98.3	95.1
2029	3.2	12.9	0.26	3501.3	4236.8	0.83	98.4	95.4
2111	3.2	0.3	12.61	3504.5	4237.1	0.83	98.5	95.4
2429	3.1	0.4	6.29	3507.5	4237.5	0.83	98.5	95.4
2345	3.0	0.3	8.57	3510.6	4237.9	0.83	98.6	95.5
2729	2.9	7.7	0.42	3513.5	4245.6	0.83	98.7	95.6
2587	2.8	2.1	1.44	3516.3	4247.7	0.83	98.8	95.7
2053	2.8	3.1	1.10	3519.2	4250.8	0.83	98.9	95.7
2045	2.8	1.6	2.18	3521.9	4252.4	0.83	98.9	95.8
2637	2.7	0.2	25.58	3524.6	4252.5	0.83	99.0	95.8
2879	2.7	0.0	0.00	3527.3	4252.5	0.83	99.1	95.8
2553	2.7	131.0	0.02	3530.0	4383.5	0.81	99.2	98.7
2487	2.7	7.3	0.51	3532.7	4390.8	0.80	99.2	98.9
1653	2.6	7.3	0.36	3535.3	4398.2	0.80	99.3	99.1
2903	2.4	1.5	1.62	3537.7	4399.7	0.80	99.4	99.1
1745	2.3	0.3	7.24	3540.0	4400.0	0.80	99.5	99.1
2711	2.3	1.7	1.64	3542.3	4401.7	0.80	99.5	99.1
2037	2.3	3.5	0.60	3544.5	4405.2	0.80	99.6	99.2
2779	2.2	1.8	1.14	3546.8	4407.0	0.80	99.6	99.3
2095	2.1	0.2	8.86	3548.9	4407.2	0.81	99.7	99.3
1853	2.1	18.8	0.09	3551.0	4426.0	0.80	99.8	99.7

2653	1.9	0.0	49.35	3552.8	4426.0	0.80	99.8	99.7
2495	1.8	2.6	0.65	3554.6	4428.6	0.80	99.9	99.7
2461	1.5	7.4	0.39	3556.1	4436.0	0.80	99.9	99.9
2629	1.4	0.2	8.44	3557.5	4436.2	0.80	99.9	99.9
2687	1.3	2.7	0.51	3558.8	4438.9	0.80	100.0	100.0
1829	0.8	0.9	0.83	3559.5	4439.8	0.80	100.0	100.0

nnex 2: Price Indexes at the Household Level

1. Introduction

During calculation of 2004 poverty baseline estimates for Cambodia, the households were ranked according to their actual consumption, as measured by the Cambodian Socio-Economic Survey (CSES). In this survey, consumption was measured in both value and quantity terms, during each month from November 2003 to January 2005 in monthly representative sample of villages. The ranking of the households, from the poorest to the richest, must be made in real (price-adjusted) terms to be meaningful for poverty measurement.

For preparing 2004 poverty baseline, it was proposed to use household level price indexes. In these indexes, the price level of each household is to be compared with the average price level in Phnom Penh (PP) in 2004. In this way, a comparison of the level of real consumption can be made over all households in Cambodia and a ranking of their level of real consumption can be made. This is possible only because households have reported all their expenditures for daily recording by the interviewers.

In this technical note, we describe how these indexes were obtained. Two different price indexes were computed: one for food and one for housing. The index for housing used hedonic regression. For other nonfood than housing, estimates based on village prices were used.

2. Household Price Indexes for Food

The computation of household price indexes for food involved the following steps:

- A file with all diary transactions in the 2004 CSES, and in the calendar year of 2004, was used. The file was edited for mistakes and the quantity data were based on standardized units. Only transactions coded to be for own household consumption or other consumption purposes (purpose code 1 or >=5) were used and transactions coded for production were thus excluded. Own production used for consumption as well as all other forms of acquisition were included. The inclusion of own production is crucial, since its price level is lower than for market production and consumption values from own production thus represent larger consumed quantities.
- For each item, all transactions made by a single household were accumulated. This means that values and quantities were summed for each item code. Prices (unit values) were calculated by dividing the monthly household consumption in value terms by the consumption in quantity terms.
- Only item codes which are among the 75 highest aggregate consumption values and are at the same time deemed to be homogeneous enough for price comparisons are

included. Table 5 gives the included and excluded items among the 75 largest. The included food items covered 63 % of all food consumption.

- In Phnom Penh, a unit value for each item code was calculated over all households, weighted by the sample household weights, multiplied by number of persons in the household.

- For each consumption item found in the monthly diary of each sample household (including those in PP), a price index was calculated by dividing the PP unit value with the household unit value.

- The household price index was finally computed as a weighted average of price indexes of all consumption items found in the monthly diary of the household. The weights were the actual diary consumption values of that specific household.

---

* This annex is based on the draft prepared by Jorgen Dalen of Statistics Sweden and included as Annex 2 in Johansson and Backlund 2005.

The final price index is to be interpreted as the amount that the consumption of each household is to be multiplied by in order to reach the price level of an average PP household. By doing this, the real consumption of all households in Cambodia is obtained and can be compared with all other households for poverty comparison purposes.

In order to illustrate the household indexes for food, we provide some basic statistics on the calculations. On average[69] food consumption values were to be increased by 3% in Phnom Penh, 25% in other urban areas and 125% in rural areas in order to make them comparable in quantity terms. In Phnom Penh, the distribution of the indexes was concentrated with a small standard deviation whereas, partly due to some outliers, the standard deviations were much larger in other urban and in rural areas.

Table 1: Food Indexes, Basic Statistics

	Urban Phnom Penh	Other urban areas	Rural areas
Geometric mean	1.032	1.246	2.252
Standard deviation	0.15	2.22	2.85
Maximum	2.68	93.24	268.82
Minimum	0.57	0.67	0.80

2. Household Price Indexes for Housing

For housing, the household price index is based on a regression model similar to the one used by Knowles (2005). A difference in this case is that the models are applied to single dwellings rather than to all dwellings in a region.

The following regression model was used:

$$\log P_j = \alpha + \sum_k \beta_k x_{jk} + \sum_l \gamma_l \log y_{jl} + \varepsilon_j \tag{1}$$

---

[69] The geometric mean is more appropriate than the arithmetic mean to use for averaging when changes or index numbers are concerned.

P_j, the dependent variable is the rent value of the dwelling. Two kinds of explanatory variables were used:

- Quantitative variables, y_{jl}, reflecting the size of the dwelling. Logged versions of two variables were used: number of rooms (logroomnum) and floor area (logfloorarea). The month of the year (1-12) was also used as a quantitative variable (not logged).

- Dummy variables, x_{jk}, describing properties of the house construction and facilities in the house. Variables are generally self-explanatory. These variables reflect responses to questions regarding:
  - The floor of the house (6 variables, clay floor was set as base category);
  - The roof of the house (6 variables, simple roofs, either thatched, salvaged, mixed or with plastic sheets were set as base category);
  - The walls of the house (4 variables, simple walls, either thatched, by bamboo, salvaged or made by other material were set as base category);
  - Water availability in and around the house (4 variables, no availability to clean water was set as the base category);
  - Toilet facilities in and around the house (4 variables, no own toilet was set as the basic category)
  - Fuel use (7 variables, simple fuel solutions such as by kerosene or private electricity was set as base category)
  - Lighting in the house (2 variables, simple light solutions such as by kerosene, battery or others was set as base category)

The coefficients obtained in the regressions were used to estimate a "model rent", which is what the dwelling should rent for according to the regression model. This model rent could be interpreted as some kind of objective estimate of what the rented dwelling is worth on the market. It could be written as

$$\hat{P}_j = \exp(\hat{\alpha} + \sum_k \hat{\beta}_k x_{jk} + \sum_l \hat{\gamma}_l \log y_{jl}) \,, \tag{2}$$

where the hat over the coefficients now signifies that they are estimated in the regression.

Since three regressions were run, one for each of the regions, we can now calculate three price levels for a given house defined by a given set of characteristics. In practice only the Phnom Penh price level was used so that a price index for the dwelling of household j was calculated as

$$Rentindex_j = \frac{\hat{P}_j^{PP}}{P_j} \tag{3}$$

The rent index thus shows by what factor the rent value stated by the household itself would have to be multiplied in order to obtain the average price level of a house with the same characteristics in the Phnom Penh urban area rented in the same month.

Some statistics on the rent indexes are given in Table 2. The average rent indexes are close to one in Phnom Penh, as expected, but above 2 in other areas. This could be interpreted in two ways: either the households in other areas underestimate the rent value of their houses or, perhaps more likely, the same house in Phnom Penh has a higher rent value simply due to its more central location.

Table 2: Rent Indexes, Basic Statistics

Geometric mean	0.979	2.119	2.218
Standard deviation	2.25	5.09	6.33
Maximum	35.80	119.69	237.93
Minimum	0.04	0.02	0.005

Table 3 compares the level and distribution of rent, before and after rent-adjustment according to formula (3) above. The effect of adjustment has been to narrow down the differences in rent between the three regions, and also between households within regions as can be seen from the smaller standard deviation for the adjusted rent. Households who stated very high rental values for their dwellings tend to have rent indexes smaller than one and vice versa.

Table 3: Nominal Rent and Adjusted Rent

	Urban Phnom Penh		Other urban area		Rural areas	
	Nominal rent	Rent in average Phnom Penh price level	Nomi-nal rent	Rent in average Phnom Penh price level	Nomi-nal rent	Rent in average Phnom Penh price level
Average (Riels)	500,420	332,697	116,479	173,592	41,392	73,522
Coefficient of variation	1.54	0.67	2.90	1.46	3.60	1.47

Table 4 provides the regression coefficients for the estimated regressions in the three regions. As expected, the size variables (floor area and number of rooms) are strongly significant in all regions. Various characteristics relating to the construction of the house (roof, floor, wall) and utilities (water, light, toilet) are very strongly significant in rural areas but less so in urban areas. Fuel use is not significant in any area.

Table 4: Estimated Coefficients in Household Regressions

Category of variables	Variable name	Urban Phnom Penh	Other urban areas	Rural areas
Quantitative variables	Intercept	6.964 (5.6)	8.149 (13.4)	7.758 (31.2)
	Month	0.001 (0.1)	0.005 (0.7)	0.012 (4.5)
	Logfloorarea	0.412 (7.5)	0.574 (12.5)	0.457 (22.6)
	Logroomnum	0.441 (6.1)	0.264 (4.4)	0.138 (4.5)
Dummy variables, roof	roof_tiles	0.535 (1.2)	0.323 (3.8)	0.477 (15.7)
	roof_fibrouscement	0.421 (1.0)	0.503 (4.7)	0.544 (11.0)
	roof_gia	0.243 (0.6)	0.181 (2.7)	0.379 (14.4)
	roof_mixed6	-0.203 (-0.3)	0.006 (0.0)	0.414 (3.8)
	roof_concrete	0.273 (0.6)	0.396 (2.7)	0.455 (4.6)
	roof_other	0.313 (0.5)	-0.074 (-0.4)	0.065 (1.8)
Dummy variables, wall	wall_woodlogs	1.124 (2.8)	0.208 (3.3)	0.283 (11.4)
	wall_plywood	0.601 (1.6)	0.075 (1.1)	0.137 (4.7)
	wall_concrete	1.043 (2.8)	0.554 (5.0)	0.375 (5.1)
	wall_gia	1.533 (3.0)	0.059 (0.5)	0.243 (3.7)
Dummy variables, floor	floor_wood	0.384 (0.9)	-0.019 (-0.2)	0.162 (4.8)
	floor_cement	0.596 (1.5)	-0.049 (-0.4)	0.236 (3.7)
	floor_parquet	0.815 (2.0)	0.069 (0.7)	0.222 (4.7)
	floor_polishedstone	2.161 (3.1)	0.491 (1.0)	1.041 (3.0)
	floor_ceramictiles	0.720 (1.8)	0.124 (1.0)	0.410 (4.1)
	floor_other	0.683 (1.5)	-0.204 (-1.1)	-0.136 (-1.6)
Dummy variables, water	water_pipedindwelling	0.133 (0.4)	0.089 (1.1)	0.324 (5.5)
	water_public	0.239 (0.4)	0.189 (2.8)	-0.100 (-4.2)
	water_dugwell	0.785 (1.0)	-0.013 (-0.2)	-0.183 (-7.8)
	water_bought	-0.091 (-0.2)	-0.082 (-1.0)	0.043 (1.1)
Dummy variables, toilet	toilet_connectedtosewerage	0.250 (0.5)	0.505 (4.3)	0.917 (10.1)
	toilet_septictank	0.315 (0.6)	0.238 (3.7)	0.357 (10.7)
	toilet_pitlatrine	-0.417 (-0.4)	0.055 (0.4)	0.288 (4.9)
	toilet_publicshared	-0.421 (-0.7)	0.202 (1.6)	0.294 (2.9)
Dummy variables, light	light_public	0.873 (2.2)	0.654 (9.7)	0.558 (10.2)
	light_private	0.806 (1.9)	0.412 (5.0)	0.364 (8.3)
Dummy variables, fuel	fuel_firewood	0.514 (0.6)	-0.775 (-1.3)	-0.323 (-1.4)
	fuel_charcoal	0.292 (0.4)	-0.416 (-0.7)	0.085 (0.4)
	fuel_firewoodcharcoal	0.284 (0.4)	-0.619 (-1.0)	-0.232 (-0.9)
	fuel_gas	0.463 (0.6)	-0.250 (-0.4)	0.156 (0.6)
	fuel_publicelectric	0.624 (0.7)	0.202 (0.3)	0.112 (0.3)
	fuel_gaselectr	0.492 (0.6)	-0.496 (-0.8)	0.502 (1.6)
	fuel_other	0.798 (0.9)	-0.514 (-0.9)	-0.496 (-2.0)
	R²	**0.431**	**0.648**	**0.456**

Note: Figures in parentheses are estimated t-values.

3. Household Price Indexes for Other Non-Food excluding Housing

For other non-food excluding housing, quality variation in the diary transactions is not under control. No indexes were therefore calculated at the household level for other non-food. Instead, price indexes based on village prices were used for three regions in aggregate. Thus, all households in rural areas were given the price index of 102.2 (Phnom Penh price level divided by rural price level) and the households in other urban

areas were given a price index of 100.0 with Phnom Penh urban price level set at 100 (which was then also the price index of all households in that area).

<div align="center">

Table 5: Largest 75 Food Items included in Price Indexes

</div>

ITEMCODE	Item name	Consumption value[70]	Rank number	Homogeneous (yes=1, no=0)
1027	"Rice quality 2"	108.06	1	1
1401	"Other fresh fish"	62.17	2	0
1219	"Pork with fat"	42.84	3	1
9315	"Meals at work, shool, restaurants"	34.30	4	0
1019	"Rice quality 1"	30.21	5	1
1201	"Pork without fat"	21.21	6	1
1227	"Beef no.1"	17.20	7	1
1335	"Mud fish (small)"	16.65	8	1
1243	"Dressed chicken"	14.14	9	1
9323	"Snacks, coffee, softdrinks, etc"	11.77	10	0
1351	"Cat fish"	10.70	11	1
1035	"Other rice"	8.67	12	0
2661	"Monosodium glutamate"	7.85	13	1
2129	"Other leafy vegetables"?	7.38	14	0
1493	"Duck eggs"	7.15	15	1
1327	"Mud fish (large)"	6.61	16	1
1435	"Dried fish"	5.88	17	1
2279	"Other vegetables"	5.46	18	0
1469	"Other processed fish"	5.30	19	0
1687	"Banana"	5.03	20	1
2695	"Other spices and seasonings"	4.87	21	0
1427	"Fermented /cheese fish"	4.87	22	1
1945	"Other fresh fruits"	4.83	23	0
1069	"Other grains"	4.79	24	0
9357	"Prepared meal"	4.79	25	0
9373	"Other take-home meals"	4.63	26	0
2187	"Cucumbers"	4.47	27	1
2087	"Trakun (watercress marsh cabbage)"	4.33	28	1
1185	"Others traditional cakes"	3.98	29	0
1269	"Other fresh meat"	3.71	30	0
9365	"Cooked rice"	3.46	31	1
2179	"White/yellow/green gourd"	3.27	32	1
2453	"Brown sugar"	3.06	33	1
2211	"Other fruit vegetables"	2.97	34	0
1377	"Sea fish (small)"	2.96	35	1
2103	"Cabbage leaves"	2.87	36	1
2611	"Garlic"	2.77	37	1
2579	"Fish sauce"	2.72	38	1
2537	"Ice "	2.69	39	1
2445	"Granulated (refined) sugar"	2.54	40	1
1119	"Fermented rice noodles"	2.50	41	1
2411	"Cabbage pickles"	2.49	42	1
2945	"Other beers"	2.44	43	0
1845	"Water melon"	2.44	44	1
2911	"Other wine"	2.29	45	0

---

[70] In billions of Riel, estimated from CSES 2004 for Cambodia as a whole.

1135	"Yellow noodles"	2.29	46	1
1127	"White rice/clear"	2.13	47	1
1661	"Pork fat"	2.05	48	1
1419	"Smoked fish"	2.01	49	1
1729	"Other mangoes"	2.01	50	0
2153	"Ridge gourd"	1.81	51	1
2603	"Salt"	1.76	52	1
2529	"Other sugary products"	1.73	53	0
2137	"Tomatoes"	1.71	54	1
1319	"Other locally processed meat"	1.70	55	0
1385	"Shrimps/prawns"	1.52	56	1
2011	"Coconut"	1.49	57	1
1251	"Fresh duck"	1.49	58	1
1477	"Other processed marine products n.e.c"	1.44	59	0
1169	"Other biscuit/cookies"	1.38	60	0
1543	"Condensed (sweetened)"	1.30	61	1
2811	"Bottled soft drinks (pepsi, etc.)"	1.30	62	1
9349	"Snacks (Coffee)"	1.29	63	0
2887	"Distilled spirits and liqueurs"	1.26	64	0
2203	"Brinjals/eggplant"	1.18	65	1
1193	"Other cereal preparations"	1.17	66	0
1629	"Vegetable oil / soybean"	1.16	67	1
1695	"Oranges"	1.15	68	1
2379	"Long green beans"	1.11	69	1
2345	"Soybean"	0.99	70	1
1343	"Snake fish"	0.96	71	1
1443	"Canned fish"	0.94	72	1
1779	"Papaya"	0.89	73	1
1393	"Crabs"	0.86	74	1
2195	"Squash"	0.86	75	1
	Sum of included food items	371.90		
	Sum of all food items in CSES 2004	591.99		
	Inclusion percentage	62.82%		

Annex 3: ASEAN Calorie Table

Item code	Item description	Calories per 100 grams
1019	Rice quality 1	355
1027	Rice quality 2	355
1035	Other rice	355
1043	Whole grain maize	363
1051	Corn on the cob	148
1069	Other grains	354
1077	Pnum pan	243
1085	Other bread	250
1093	Wheat	354
1101	Other flours	363
1119	Fermented rice noodles	106
1127	White rice/clear	107
1135	Yellow noodles	315
1143	Others noodles	353
1151	Cakes/tarts/pies/quiches/pizzas	433
1169	Other biscuit/cookies	460
1177	Rice cakes	262
1185	Others traditional cakes	300
1193	Other cereal preparations	320
1201	Pork without fat	329
1219	Pork with fat	603
1227	Beef no.1	252
1235	Buffalo Meat	121
1243	Dressed chicken	288
1251	Fresh duck	233
1269	Other fresh meat	171
1277	Imported processed meat	200
1285	Roasted pork	625
1293	Roasted/fried chicken	210
1301	Treated beef	204
1319	Other locally processed meat	340
1327	Mud fish (large)	150
1335	Mud fish (small)	99
1343	Snake fish	100
1351	Cat fish	92
1369	Sea fish (large)	100
1377	Sea fish (small)	100
1385	Shrimps/prawns	98
1393	Crabs	104
1401	Other fresh fish	102
1419	Smoked fish	146
1427	Fermented /cheese fish	70
1435	Dried fish	266
1443	Canned fish	176
1451	Dried prawns/shrimps	263
1469	Other processed fish	102
1477	Other processed marine products n.e.c	263

1485	Chicken eggs	159
1493	Duck eggs	183
1501	Other fresh eggs	128
1519	Boiled duck eggs	150
1527	Fermented/salted eggs	190
1535	Other processed eggs	190
1543	Condensed (sweetened)	337
1551	Powdered	508
1569	Powdered (baby)	500
1577	Other processed milk	62
1585	Cheese	210
1593	Other diary products n.e.c.	405
1611	Rice bran oil	447
1629	Vegetable oil / soybean	447
1637	Other cooking oils	817
1645	Butter	760
1653	Margarine and other vegetable fats	779
1661	Pork fat	428
1679	Other fats	481
1687	Banana	126
1695	Oranges	48
1703	Pineapple	353
1711	Coconut milk mangoes	88
1729	Other mangoes	94
1737	Lemon	31
1745	Lime	50
1753	Rambutan	69
1761	Mangosteen	71
1779	Papaya	42
1787	Durian	317
1795	Breadfruit	95
1803	Sugar cane	50
1811	Apricot	33
1829	Lotus fruit	100
1837	Pomelo/grapefruit	39
1845	Water melon	25
1853	Calamansi	100
1861	Chico	100
1879	Jackfruit	130
1887	Jackfruit (ripe)	102
1895	Grapes (red/black/green)	55
1903	Grapes (red)	55
1911	Apples (red/granny/golden etc.)	55
1929	Apples (red)	63
1937	Blackberry	27
1945	Other fresh fruits	102
1953	Canned pineapple	92
1961	Canned lychees	71
1979	Canned fruit/salad/fruit cocktail	86
1987	Dates	302
1995	Tamarind	91

2003	Other dried and preserved fruits	260
2011	Coconut	580
2029	Cashew nuts	589
2037	Lotus nuts	339
2045	Peanuts	315
2053	Peanuts, no shell	621
2061	Gourd seeds	400
2079	Other nuts	400
2087	Trakun (watercress marsh cabbage)	23
2095	Onion / leeks leaves / shallots	37
2103	Cabbage leaves	32
2111	Leaf and stem vegetables	13
2129	Other leafy vegetables	20
2137	Tomatoes	25
2145	Bell peppers, sweet	36
2153	Ridge gourd	17
2161	Bitter gourd	22
2179	White/yellow/green gourd	17
2187	Cucumbers	17
2195	Squash	41
2203	Brinjals/eggplant	26
2211	Other fruit vegetables	28
2229	Onions	44
2237	Cauliflower	34
2245	Radish/white radish	23
2253	Turnip	45
2261	Carrots	43
2279	Other vegetables	18
2287	Potatoes	79
2295	Sweet Potatoes	111
2303	Cassava	155
2311	Traov	122
2329	Other tubers and products of tuber vegetables	20
2337	Green gram	20
2345	Soybean	20
2353	Cowpea	357
2361	Bean sprouts	26
2379	Long green beans	20
2387	Short green beans	20
2395	Other pulses/legumes	20
2403	Cucumber pickles	19
2411	Cabbage pickles	38
2429	Tomato pasta	25
2437	Other prepared and preserved vegetables	20
2445	Granulated (refined)	398
2453	Brown sugar	353
2461	Juggery (coconut, sugar cane, etc).	374
2479	Chocolate candy bars	553
2487	Others	493
2495	Sweets, hard candy	403
2503	Chewing gum, tofees, pastilles, others	307

2511	Syrups	260
2529	Others	243
2537	Ice	100
2545	Ice cream	140
2553	Other edible ices	267
2561	Soy sauce	179
2579	Fish sauce	179
2587	Totato sauce / tomato catsup	116
2595	Other sauces	41
2603	Salt	0
2611	Garlic	51
2629	Coriander	37
2637	Ground black/white pepper	353
2645	Black/white peppercorns	221
2653	Red pepper spice	75
2661	Monosodium glutamate	100
2679	Ginger	44
2687	Palm vinegar	100
2695	Other spices and seasonings	100
2703	Fried Insects	400
2711	Peanut Preparation	585
2729	Flavored Ice	200
2737	Other food products	200
2745	Instant	129
2753	Ground	129
2761	Powdered tonic drinks (Milo, etc.)	432
2779	Processed cocoa	465
2787	Tea leaves/dust	357
2795	Other teas	357
2803	Canned soft drinks (coke, etc.)	43
2811	Bottled soft drinks (pepsi, etc.)	29
2829	Other soft drinks	30
2837	Fruit drinks (pineapple, mangoes, oranges...)	14
2845	Other fruit juices	15
2853	Vegetable drinks (gourd...)	7
2861	Mineral Waters	0
2879	Other bottled water	0
2887	Distilled spirits and liqueurs	235
2895	Rub keylakas	76
2903	Toro, SKD	76
2911	Other wine	76
2929	Angkor	44
2937	Tiger	44
2945	Other beers	44

1. **Proposed food bundle based on the consumption pattern of the 2nd quintile per adult equivalent per day**

Description	Item code	Mean value	Sum of values	Percent
Rice quality 2	1027	496.6	1062430921	29.87
Pork with fat	1219	108.8	228961320	6.44
Rice quality 1	1019	430.1	221717248	6.23
Mud fish (small)	1335	75.3	113621356	3.19
Cat fish	1351	48.8	71019991	2.00
Pork without fat	1201	80.6	64180783	1.80
Monosodium glutamate	2661	27.6	64144258	1.80
Dressed chicken	1243	79.4	51265480	1.44
Duck eggs	1493	25.8	47433161	1.33
Fermented /cheese fish	1427	21.5	43802416	1.23
Trakun (watercress marsh cabbage)	2087	14.7	34866017	0.98
Cucumbers	2187	15.2	31593824	0.89
Beef no.1	1227	40.7	26155883	0.74
Dried fish	1435	33.7	25449531	0.72
White/yellow/green gourd	2179	13.4	24122771	0.68
Mud fish (large)	1327	54.9	22621552	0.64
Garlic	2611	10.7	21662192	0.61
Brown sugar	2453	12.8	20850007	0.59
Smoked fish	1419	22.5	20120085	0.57
Fish sauce	2579	11.6	19669365	0.55
Pork fat	1661	12.0	19390836	0.55
Cabbage leaves	2103	14.5	17708146	0.50
Sea fish (small)	1377	60.3	17350788	0.49
Ridge gourd	2153	11.8	16129840	0.45
Cabbage pickles	2411	12.4	15903200	0.45
Granulated (refined)	2445	13.2	15785525	0.44
Water melon	1845	20.8	14658583	0.41
Salt	2603	11.7	14173736	0.40
Banana	1687	13.1	13201140	0.37
Yellow noodles	1135	15.0	12526198	0.35
Fermented rice noodles	1119	20.7	11979706	0.34
Brinjals/eggplant	2203	8.4	10765887	0.30
Tomatoes	2137	11.0	9861001	0.28
Coconut	2011	18.8	9201731	0.26
Fresh duck	1251	53.0	7337177	0.21
Squash	2195	8.5	7189949	0.20
Long green beans	2379	7.3	6567282	0.18
Papaya	1779	7.3	6503740	0.18
Canned fish	1443	18.7	6350177	0.18
Vegetable oil / soybean	1629	10.0	5489316	0.15
Crabs	1393	17.0	5020071	0.14
Ice	2537	11.7	4697339	0.13
White rice/clear	1127	14.5	2784392	0.08
Condensed (sweetened)	1543	35.4	2689571	0.08

Description	Item code	Mean value	Sum of values	Percent
Bottled soft drinks (pepsi, etc.)	2811	23.1	2524761	0.07
Cooked rice	9365	28.8	2234655	0.06
Snake fish	1343	21.3	1662504	0.05
Oranges	1695	13.0	973476	0.03
Shrimps/prawns	1385	16.4	874665	0.02
Soybean	2345	11.8	162927	0.00
Other items	9999	29.8	1079078408	30.34

2. A corresponding food bundle based on the 3rd quintile per adult equivalent per day for comparison

Description	Item code	Mean value	Sum of values	Percent
Rice quality 2	1027	538.4	1114666784	25.70
Pork with fat	1219	141.9	308323543	7.11
Rice quality 1	1019	421.8	231027259	5.33
Mud fish (small)	1335	94.1	141657732	3.27
Pork without fat	1201	102.6	91680627	2.11
Dressed chicken	1243	99.9	87850185	2.03
Cat fish	1351	58.9	87047494	2.01
Monosodium glutamate	2661	31.7	73297540	1.69
Duck eggs	1493	30.7	58261477	1.34
Fermented /cheese fish	1427	23.9	46562770	1.07
Beef no.1	1227	55.9	43955196	1.01
Trakun (watercress marsh cabbage)	2087	16.1	38496629	0.89
Dried fish	1435	42.6	37154534	0.86
Cucumbers	2187	17.3	37084482	0.86
Sea fish (small)	1377	88.7	29690313	0.68
Brown sugar	2453	18.0	29370110	0.68
White/yellow/green gourd	2179	14.8	27557923	0.64
Mud fish (large)	1327	57.1	26581372	0.61
Garlic	2611	12.2	24721276	0.57
Fish sauce	2579	13.7	23471994	0.54
Water melon	1845	28.1	22967787	0.53
Cabbage leaves	2103	17.7	22752197	0.52
Banana	1687	18.5	20979910	0.48
Pork fat	1661	13.1	20616834	0.48
Smoked fish	1419	25.2	20607917	0.48
Granulated (refined)	2445	15.1	20030684	0.46
Salt	2603	14.2	17950451	0.41
Cabbage pickles	2411	13.5	17042149	0.39
Fermented rice noodles	1119	24.5	16671460	0.38
Ridge gourd	2153	12.6	16636908	0.38
Fresh duck	1251	74.2	14837900	0.34
Yellow noodles	1135	15.7	14493717	0.33
Coconut	2011	23.7	13677921	0.32
Tomatoes	2137	13.0	13643518	0.31
Brinjals/eggplant	2203	9.7	12436366	0.29
Squash	2195	13.3	10876613	0.25
Canned fish	1443	24.8	9787270	0.23
Ice	2537	17.6	9419684	0.22
Long green beans	2379	9.1	9052968	0.21
Papaya	1779	8.1	7673880	0.18

117

Vegetable oil / soybean	1629	13.6	7306762	0.17
Crabs	1393	24.6	6181752	0.14
Cooked rice	9365	40.2	5463897	0.13
Condensed (sweetened)	1543	41.2	5092036	0.12
Bottled soft drinks (pepsi, etc.)	2811	31.8	4892672	0.11
White rice/clear	1127	19.5	4283744	0.10
Oranges	1695	17.4	1892758	0.04
Shrimps/prawns	1385	17.1	1756572	0.04
Snake fish	1343	21.5	1230154	0.03
Soybean	2345	6.6	135106	0.00
Other items	9999	36.1	1428317166	32.93

3. Comparison of base food bundles between 2nd and 3rd quintiles by per adult equivalent median consumption values.

2nd quintile			3rd quintile		
Item	Value	Item Description	Item	Value	Item description
1027	496.1	Rice quality 2	1027	532.7	Rice quality 2
1019	453.3	Rice quality 1	1019	432.5	Rice quality 1
1219	90.7	Pork with fat	1219	117.0	Pork with fat
1243	58.8	Dressed chicken	1243	74.1	Dressed chicken
1335	56.4	Mud fish (small)	1201	70.8	Pork without fat
1201	55.7	Pork without fat	1335	63.8	Mud fish (small)
1251	37.3	Fresh duck	1251	56.6	Fresh duck
1351	35.8	Cat fish	1327	42.8	Mud fish (large)
1327	33.5	Mud fish (large)	1227	41.3	Beef no.1
1377	31.9	Sea fish (small)	1351	39.9	Cat fish
1227	30.0	Beef no.1	1377	32.5	Sea fish (small)
2661	24.2	Monosodium glutamate	1435	27.1	Dried fish
1435	23.6	Dried fish	2661	26.9	Monosodium glutamate
1493	20.7	Duck eggs	2811	25.8	Bottled soft drinks (pepsi, etc.)
2811	18.3	Bottled soft drinks (pepsi, etc.)	1493	23.3	Duck eggs
1343	17.9	Snake fish	9365	17.5	Cooked rice
1543	16.9	Condensed (sweetened)	1427	17.2	Fermented /cheese fish
1427	16.2	Fermented /cheese fish	1543	17.0	Condensed (sweetened)
1419	15.1	Smoked fish	1419	16.0	Smoked fish
9365	13.8	Cooked rice	1343	15.4	Snake fish
1845	13.2	Water melon	1443	15.4	Canned fish
1443	13.1	Canned fish	1119	14.7	Fermented rice noodles
2087	11.5	Trakun (watercress marsh cabbage)	1845	14.6	Water melon
1695	11.4	Oranges	1695	12.9	Oranges
2187	11.3	Cucumbers	2187	12.5	Cucumbers
1119	10.9	Fermented rice noodles	2087	12.1	Trakun (watercress marsh cabbage)
1385	10.8	Shrimps/prawns	2103	11.6	Cabbage leaves
2179	10.7	White/yellow/green gourd	1127	11.5	White rice/clear
1127	10.0	White rice/clear	2179	11.5	White/yellow/green gourd
1135	9.9	Yellow noodles	2453	11.2	Brown sugar

2103	9.9	Cabbage leaves	1393	10.8	Crabs
2579	9.2	Fish sauce	2579	10.5	Fish sauce
2453	9.0	Brown sugar	1687	10.5	Banana
2411	8.8	Cabbage pickles	2445	10.5	Granulated (refined)
1393	8.3	Crabs	1135	9.7	Yellow noodles
2153	8.3	Ridge gourd	2611	9.5	Garlic
2445	8.2	Granulated (refined)	2411	9.3	Cabbage pickles
1687	8.1	Banana	2011	8.9	Coconut
2611	8.0	Garlic	2153	8.8	Ridge gourd
2011	7.6	Coconut	1385	8.4	Shrimps/prawns
2603	7.2	Salt	1629	8.1	Vegetable oil / soybean
2137	7.0	Tomatoes	2603	7.7	Salt
1661	6.9	Pork fat	2137	7.5	Tomatoes
1629	6.7	Vegetable oil / soybean	1661	7.2	Pork fat
2195	5.9	Squash	2195	7.0	Squash
2537	5.5	Ice	2537	6.6	Ice
2203	5.3	Brinjals/eggplant	2379	6.5	Long green beans
2379	5.2	Long green beans	2345	6.3	Soybean
1779	5.1	Papaya	2203	6.0	Brinjals/eggplant
2345	3.0	Soybean	1779	4.8	Papaya

Table 1 defines the sources of data from the CSES 2004 used to prepare estimates of household consumption. The table also provides the reference period for each source of data and the assumptions made concerning the number of days in each reference period (since consumption is calculated on a daily per capita basis to keep it consistent with the previous Poverty Profiles).

As with previous surveys, the consumption data refer to a variety of different reference periods. Accordingly, reference to consumption data "for calendar year 2004" means consumption data collected from households *interviewed* during calendar year 2004. The reference period of the actual consumption data varies, from relatively close to the interview date (recall data on food, beverage and tobacco, housing and medical care consumption as well as the diary data) to recall data that, in some cases, refer to the last 12 months (i.e., education, recreation, personal effects and special occasions).[71]

The above implies that at least some (but not a large part) of the "calendar year 2004" consumption data are actually data that refer in part to calendar year 2003. Consistent with previous practice, no effort has been made to treat consumption data referring to calendar year 2003 differently from consumption data referring to calendar year 2004.

The CSES 2004 provides data on household consumption for a total of 14,984 households (12,000 of which were interviewed during the calendar year 2004), in most cases, from two different sources, i.e., from the monthly diaries of household income, expenditures and consumption that were completed for all households and from "recall" questions similar to those used in the 1997 and 1999 CSES (SESC 1993/94 consumption data are also recall data, but for a much more detailed set of consumption categories).

However, there are no recall data in CSES 2004 for two major consumption categories (e.g, transportation and communications; and personal care) and for one minor category, expenditure on hotel and other accommodation (i.e., housing expenses other than for rented or owner-occupied housing). In these cases, diary data were used.

In addition, data on housing and utilities consumption were collected differently in the CSES 2004 from the way in which they were collected in earlier surveys (i.e., a set of four questions in the nonfood consumption section for house rent and house maintenance and repair, water charges, wood fuel, and other fuel and power). Data on actual rent paid as well as expenditures on household maintenance and repair and utilities (fuel, water and sanitation charges) were collected in the housing section of the household questionnaire (section 3) instead of in the "Other Expenditures" section of the

----

* Drawn from Knowles 2005.

questionnaire (section 7.B) that was used to collect data for most other nonfood consumption categories, while data on the estimated rental value of dwellings were collected in the construction section of the household questionnaire (section 8).

[71] The data on education expenses in the 2004 CSES refer to the "past school year." If interpreted literally, some of these expenses could have been incurred during calendar year 2002.

The detailed consumption categories used in SESC 1993/94 serve as the reference point for defining the various categories of household consumption presented in Table 1 as these categories were also used to define the various CSES recall categories (as indicated by the capsule descriptions of each category that are provided in the CSES questionnaires). One important feature of the estimated consumption data in SESC 1993/94 (as well as in the later surveys) is that they include expenditure on consumer durables. Prior to CSES 2004, no data were collected on consumer durables that would permit an even reasonably accurate estimate of their annual use value. Accordingly, the non-food allowances and measures of household consumption used in earlier poverty profiles include (at least in principle) all expenditure on consumer durables during the reference period as part of household consumption.

Table 1: Definition of Household Consumption Based Mainly on Recall Data from CSES 2004

Consumption category	Source of information	Period	Number of days
1.Food & beverages	Household questionnaire, Section 1D: questions 1-16, 18-20	Last 7 days	7
2. Clothing & footwear	Household questionnaire, Section 7B, question 1	Last 6 months	182.5
3. Housing & utilities 3.1 Housing 3.1.1 Rent/accommodation			
Paid rent	Household questionnaire, Section 3, question 28	Last month	30.4
Estimated rent	Household questionnaire, Section 8, question 6	Month	30.4
Hotel/accommodation charges	Diary, items 9407, 9415	Calendar month	Number of days in calendar month
3.1.2 Housing maintenance	Household questionnaire, Section 3, question 29	Last month	30.4
3.2 Utilities 3.2.1 Water & sanitation charges			
Water charges	Household questionnaire, Section 3, question 17	Last month	30.4
Sewage/waste water charges	Household question, Section 3, question 21	Last month	30.4
Garbage collection charges	Household question, Section 3, question 22	Last month	30.4
3.2.2 Fuel/power for cooking & lighting 3.2.2.1 Non-wood fuels			
Electricity	Household question, Section 3, question 24a	Last month	30.4
Gas	Household question, Section 3, question 24b	Last month	30.4
Kerosene	Household question, Section 3, question 24c	Last month	30.4
Battery	Household question, Section 3, question 24f	Last month	30.4
3.2.2.2 Wood fuels			
Firewood	Household question, Section 3, question 24d	Last month	30.4
Charcoal	Household question, Section 3, question 24e	Last month	30.4
3.2.2.3 Other fuels	Household question, Section 3, question 24g	Last month	30.4

Consumption category	Source of information	Period	Number of days
4. Household furnishings and household operations	Household questionnaire, Section 7B, question 2	Last 6 months	182.5
5. Medical care	Household questionnaire, Section 14, question 12 (only for those reported ill).	Past 4 weeks	28
6. Transportation and communications	Diary, items 7111-8081	Calendar month	Number of days in calendar month
7. Recreation	Household questionnaire, Section 7B, question 3	Last 12 months	365
8. Education	Household questionnaire, Section 2, questions 14a-14h (total is given in question 14h)	Past school year	365
9. Personal care & personal effects			
9.1 Personal care	Diary, items 9513-9721, 9805, 9813	Calendar month	Number of days in calendar month
9.2 Personal effects	Household questionnaire, Section 7B, question 4	Last 12 months	365
10. Tobacco	Household questionnaire, Section 1D, question 17	Last 7 days	7
11. Miscellaneous	Household questionnaire, Section 7B, question 5	Last 12 months	365

Source: CSES 2003/04 Questionnaires.

Table 2 presents the distribution of per capita household consumption based on calendar year 2004 data from CSES 2004 (weighted by the population). The data show important differences in regional consumption patterns, with the consumption pattern of Phnom Penh residents usually at one extreme and those of the rural population at the other while those of other urban population in-between the two. This is certainly the pattern for the two most important consumption categories, food and housing. Food and beverage consumption accounts for 59% of rural household consumption, compared with only 36% of Phnom Penh consumption and 47% of other urban consumption. Housing and utilities absorb 39% of Phnom Penh consumption compared with only 19% of rural consumption and 28% of other urban consumption.

Another striking difference is in spending on education to which the Phnom Penh population allocates 7% of its total consumption, compared with only 3.2% by the other urban population and only 1.6% by the rural population. Both the rural and other urban populations allocate more of their consumption to the miscellaneous category, which consists mainly of expenditure on special events such as weddings and funerals.

Table 2: Distribution (%) of Household Consumption by Commodity Category, 2004[a]

Category	Phnom Penh	Other urban	Rural	Cambodia
Food & beverages	36.2	47.4	58.6	52.2
Cereal products	6.0	10.2	16.6	13.4
Clothing & footwear	2.4	2.6	2.9	2.8
Housing & utilities	38.7	28.0	18.7	24.3
Housing (rent + house maintenance)	30.8	20.7	12.5	17.6
Rent	27.8	16.1	8.3	13.6
House maintenance & repairs	3.0	4.6	4.2	4.0
Utilities	7.9	7.3	6.2	6.7

Category	Phnom Penh	Other urban	Rural	Cambodia
Food & beverages	36.2	47.4	58.6	52.2
Household furnishings and household operations	0.6	0.8	0.7	0.6
Medical care	4.8	4.2	5.4	5.1
Transportation & communications	4.2	5.4	3.1	3.7
Recreation & entertainment	1.5	1.1	0.7	1.0
Education	7.0	3.2	1.6	2.9
Personal care & effects	1.0	1.9	1.3	1.3
Personal effects	0.3	0.4	0.2	0.3
Personal care	0.7	1.4	1.1	1.0
Tobacco products	0.7	1.3	1.9	1.5
Miscellaneous	3.0	4.2	5.2	4.6
Totals (%)	100.0	100.0	100.0	100.0
Total per capita household consumption per day (Riel)	8,076	4,428	2,573	3,241
% home-produced food in total food consumption	1.3	10.5	25.7	20.1

a The figures are weighted by population.
Source: CSES 2003/04.

Table 3 presents similar data from the 1993/94 SESC in order to see how consumption patterns may have changed during the past 10 years. These data show that the main changes include a sharp decline in the share of total household consumption allocated to food & beverages in all three regions (although cereals consumption maintains its original share of total consumption, both nationally and within each region). During this 10-year period there has been a sharp increase in the share of housing and utilities in total household consumption in all three regions.

Other changes include significant decreases in the shares of clothing and footwear, transportation and communications, medical care, personal care and personal effects and increases in the shares of education, tobacco products and miscellaneous consumption. The sharp increase in the share of education spending in the total consumption of the Phnom Penh population (from 2.5% in 1993/94 to 7% in 2004) is matched by a similarly sharp decline in spending on transportation and communication. However, there has not been any significant increase in the share of education spending in total consumption among the rural population.

Table 3: Distribution (%) of Household Consumption by Commodity Category, 1993/94[a]

Category	Phnom Penh	Other urban	Rural	Cambodia
Food & beverages	48.4	56.7	66.5	60.5
Cereals	6.4	10.3	17.4	13.6
Clothing & footwear	3.6	3.1	4.1	3.8
Housing & utilities	23.7	20.5	8.3	14.0
Household furnishings and household operations	2.1	2.1	2.1	2.1
Medical care	5.8	5.9	8.9	7.7
Transportation & communications	8.9	5.7	3.9	5.5
Recreation	0.7	0.5	0.2	0.4
Education	2.5	1.6	1.4	1.7

Category	Phnom Penh	Other urban	Rural	Cambodia
Personal care and effects	2.5	2.2	2.2	2.3
Tobacco products	0.5	0.6	0.6	0.6
Miscellaneous	1.3	1.1	1.7	1.5
Total	100.0	100.0	100.0	100.0
Total per capita household consumption per day (Riel)	4,367	2,412	1,403	1,833

.ª The figures are weighted by the population
Source: 1993/94 SESC

Food and beverage consumption. Data on food consumption during the last 7 days were obtained for 19 items from the "Food Consumption" section of the household questionnaire (Section 1.D), which included three separate questions for the value of purchased, home-produced (as well as food consumption in the form of wages in kind, gifts, and free collections) and total consumption of each food item.[72] The total food consumption variable was equal to the sum of the purchased and home-produced components in all cases. Total food consumption was calculated as the simple sum of the 19 items and converted into a daily per capita value by dividing this sum by the product of 7 and the number of household members.

Clothing and footwear consumption. Data on clothing and footwear consumption during the last 6 months, including "tailored clothes, ready-made clothes, rain clothes, underwear, baby clothes, diapers, hats, shoes, boots, etc." were obtained from the "Other Expenditures" section of the questionnaire (Section 7.B), with separate questions for purchased, "in-kind expenditure or gifts given away," and total "expenditure".The household response was converted into a daily per capita value by dividing it by the product of 182.5 and the number of household members.

Housing and utilities. This was by far the most complex consumption category. Data on actual rent paid was collected from the housing section of the household questionnaire (Section 3). Only 206 households reported non-zero values of rent actually paid (an additional 18 households that responded that their dwellings were "rented" reported a zero value of rent actually paid). Most households (14,167) indicated that they owned their dwellings. An additional 561 households indicated that their dwellings were not owned but that they pay no rent, while 32 households responded that the legal status of their residence was "other" (unspecified). Households were also asked to estimate the rental value of dwellings that they owned in the Construction section of the questionnaire (Section 8). Excluding dwellings that were reported to be rented out, 13,890 households reported an estimated rental value (338 of which reported a rental value of zero and 12 of which reported rental values for two properties not rented out). Because of ambiguity in interpreting the reported rental values for two properties, these 12 estimated rental values were recoded to missing. That left 13,878 valid estimated rental values. When combined with the data for 224 households on rent actually paid, a total of 14,102 of 14,984 households (94.1%) provided data on either rent actually paid or an estimated rental value (including 384 households that reported a zero rental value).

A rental value was imputed for the remaining households based on one of the two regressions reported in Table 4. The left-hand-side (dependent) variable is the natural

---

[72] Data on tobacco consumption were also obtained in this section of the questionnaire (question 17) for the same 7-day reference period.

logarithm of the reported monthly rental value (which has the effect of excluding households reporting rental values of zero from the estimation sample). The estimation sample is restricted to households reported rental values of less than 2 million Riel per month (about $US500), which has the effect of excluding 52 households from the estimation sample.

Table 4: Hedonic Regressions for Imputing Missing Rental Values, 2004

Variable	Full specification		Abbreviated specification	
	Estimated coefficient	t-statistic	Estimated coefficient	t-statistic
Household size	0.0373	*7.95	0.0453	*9.24
Living area (sq. meters)	0.0008	*1.97	0.0012	*2.11
Number of rooms	0.2101	*10.43	—	—
Owner-occupied	0.3631	*4.18	0.3943	*4.41
Other urban location	-0.4326	*-5.62	-0.5610	*-7.25
Rural location	-0.6863	*-8.35	-0.9404	*-11.81
Year	0.0663	1.13	0.0611	1.02
Roof-thatched	-0.1493	*-2.68	-0.1848	*-3.32
Roof-tiled	0.4731	*8.83	0.5243	*9.64
Roof-galvanized iron or aluminum	0.3232	*6.66	0.3400	*6.97
Roof-concrete or fibrous cement	0.5129	*8.89	0.5330	*9.19
Wall-bamboo	0.0857	1.93	0.1015	*2.25
Wall-wood, plywood or log	0.3107	*7.96	0.3866	*9.67
Wall-concrete or fibrous cement	0.6060	*9.26	0.7582	*11.09
Floor-earth or clay	0.0466	0.49	0.0470	0.47
Floor-wood or bamboo	0.2235	*2.66	0.2235	*2.47
Floor-cement	0.2365	*2.52	0.3144	*3.14
Floor-parquet or polished wood	0.2531	*2.59	0.2804	*2.70
Floor-ceramic tiles	0.3754	*3.58	0.5362	*4.75
Water-piped or public tap	0.1958	*2.92	—	—
Water-tube or piped well	-0.0672	-1.41	—	—
Water-protected or unprotected dug well	-0.1378	*-2.79	—	—
Water-purchased	-0.0275	-0.38	—	—
Toilet-water sealed, connected to sewage or septic tank	0.2283	*2.54	—	—
Toilet-closed or open pit	0.0660	0.65	—	—
Toilet-open land or none	-0.2384	*-2.64	—	—
Light-city power, generator or battery	0.1057	0.64	0.1605	0.99
Light-kerosene	-0.1268	-0.78	-0.1943	-1.22
Fuel-firewood	0.0087	0.06	-0.0880	-0.52
Fuel-charcoal or firewood and charcoal	0.3239	*2.05	0.4144	*2.39
Fuel-gas or electricity	0.5886	*3.62	0.7712	*4.30
Constant	-123.6491	-1.05	-113.1107	-0.94
R^2		0.53		0.50
N		13,559		13,685

.* Indicates statistical significance at the 0.05 level (estimated standard errors have been adjusted for the clustered sampling in CSES 2004).
Source: CSES 2004

Table 5 compares the predicted rental values from the regressions reported in Table 4 for a comparable sub-sample of households for which both values are available (and excluding households with reported rental values of zero or reported rental values equal to or greater than 2 million Riel per month). These data indicate that the median imputed values are fairly similar to the median reported values. However, the predicted means are considerably lower than the reported means. This is what one would expect from a highly skewed distribution since the predicted values from a regression do not generally exhibit as much variation as the actual values. However, this implies that the imputed rental values tend to under-estimate actual rental values (assuming that "actual" is equivalent to "reported" in this context).[73]

Table 5: Predicted versus Reported Rental Values (Riels) by Region, 2004

	Phnom Penh	**Other urban**	**Rural**	**Cambodia**
Median				
Predicted	233,104	54,954	19,970	37,191
Reported	308,011	94,451	31,158	55,346
Mean				
Predicted	205,259	32,874	15,920	17,690
Reported	200,000	30,000	15,000	20,000
N	1,041	1,893	10,625	13,559

Source: CSES 2004.

One issue is how to treat the zero rental values that 356 households reported. One possibility is that the households considered the corresponding dwellings to be essentially worthless, which would imply that a zero rental is the correct value. However, another possibility (supported by the evidence presented below) is that zero rental values are essentially unreported values for which a value should also be imputed from the regression. Table 6 presents data on the mean predicted monthly rental values (from the regressions reported in Table 4) for two groups of households, i.e., households that reported zero rental values and households that reported non-zero rental values (again, limited to households with reported monthly rental values of less than 2 million Riel). These data, which show fairly small differences in predicted rental values between households reporting zero rental values and those reporting positive values (except in Phnom Penh, where the predicted values of households reporting zero rental values are about 50% *higher* than those of households reporting nonzero rental values), are consistent with the second hypothesis. Accordingly, reported rental values of zero are treated as missing values and a predicted value based on the regressions reported in Table 4 is given to these 356 households. At the end of this process, all 14,984 households have a nonzero rental value, which was divided by the product of 30.4 and the number of household members to convert it to a daily per capita rental value.

---

[73] Such under-estimation would bias upwards estimated poverty rates. However, the fact that the under-estimation is concentrated at the upper ranges of the rental housing distribution suggests that it is unlikely to affect the estimated poverty rates.

Table 6: Comparison of Predicted Rental Values between Households reporting Positive and Zero Rental Values, 2004

	Households reporting zero rental values		Households reporting positive rental values		Combined	
	[a]Mean	N	Mean	N	Mean	N
Phnom Penh	360,808	75	231,091	1,055	241,233	1,130
Other urban	62,616	34	54,992	1,899	55,133	1,933
Rural	18,838	247	19,954	10,731	19,929	10,978
Cambodia	92,631	356	37,113	13,685	38,544	14,041

[a] The means are weighted by household sampling weights.
Source: CSES 2004.

The rental component of housing consumption is completed by adding an estimate of the value of household expenditure on hotel and other forms of accommodation other than rented and owner-occupied housing.[74] Data on this item are obtained from the diary. 22 households reported a nonzero value for this item, and there were no apparent irregularities in the reported values. The value of this item in the remaining households was assumed to be equal to zero. Because the estimated value of this item was based on diary data, its value was divided by the product of the actual number of days in the calendar month in which the diary data were collected and the number of household members before being added to the previously calculated rental value variable.

In addition to rent, the consumption of housing services includes the value of housing maintenance and repairs, data on which were obtained for the last month from the housing section of the household questionnaire (Section 3). A total of 1,682 households provided nonzero values of expenditure on house maintenance and repair during the last month. However, it was necessary to recode three of these reported values (equal to 99999999) to missing. The remaining unreported values were assumed to be equal to zero.[75] This item was divided by the product of 30.4 and the number of household members before being added to rent to obtain the per capita daily value of housing consumption.

The last step in the process of estimating housing and utilities consumption involves the estimation of utilities consumption, data on which were collected for the last month in the housing section of the household questionnaire (Section 3). The separate items recorded include water, sewage and garbage charges (3 items) and consumption of electricity, gas, kerosene, batteries, firewood, charcoal and other energy (7 items). A few irregularities were found in the values of some of these items and had to be recoded to missing, i.e., values of 9999999 in water charges and values of 99999999 in sewage and garbage charges and electricity consumption. The remaining values were summed and divided by the product of 30.4 and the number of household members before being

---

[74] This is one of the four components of the housing "rent" category as defined in the 1993/94 SESC.

[75] The practice of recoding unreported consumption and expenditure responses to zero has been adhered to in all of the previous Poverty Profiles. Prior to the 1997 CSES, unreported values were recoded to zero before the data were released to the public (for example, there are no non-responses in either the 1993/94 or 1996 SESC). It is also likely that some undocumented imputation was also done prior to the public release of these data sets (as well as in the 1999 CSES). However, there are no imputed values in CSES 2004.

adding to the previously estimated housing consumption value to obtain a per capita daily estimate of housing and utilities consumption.

Household furnishings and household operations. Data on the consumption of "furnishings and household equipment and operation (curtain, household appliances, cooking utensils, servant's salary, etc." during the last 6 months were collected in the "Other Expenditures" section of the household questionnaire (the same section used to collect data on clothing and footwear consumption). There were no irregularities in the data for this consumption category. Each household response was converted into a daily per capita value by dividing it by the product of 182.5 and the number of household members.

Medical care. The data on medical care spending during the past four weeks were obtained from one question in the Health section of the household questionnaire (Section 14.A). The question asks how much in total was spent on medical care in the past four weeks. The question was asked to all household members who reported any illness, injury or other health problem in the past four weeks. The data on medical care spending are therefore "conditional" on reported morbidity, which means that they are probably an under-estimate of actual household spending on medical care (for example, they would not include spending on preventive care or on chronic conditions that were being adequately controlled). There were no irregularities in the data themselves, apart from the need to recode 32 "9999999" values to missing. Including these missing responses, about 16.5% (12,377) of the sample individuals responded that they had medical care spending during the past four weeks. The responses were summed over the individuals in the household (after assigning a zero value for individuals that did not report any medical care spending during the reference period) and divided by the product of 28 and the number of household members to obtain an estimate of per capita daily expenditure on medical care.

Transportation & communications. Data on the consumption of transportation and communications services are available only in the diary. As previously noted, and consistent with previous practice in Cambodia, this consumption category includes all expenditure during the reference period on transportation equipment, including purchases of cars and motorbikes. There were no irregularities in the diary data for this item (except one misreporting). The relevant diary entries were summed by household and divided by the product of the actual number of days in the calendar month in which the diary data were collected and the number of household members to obtain an estimate of per capita daily consumption of transportation and communications services.

Recreation. Data on the consumption of "recreation (entertainment services, recreational goods and supplies, tourist travel)" during the last 12 months were collected in the "Other Expenditures" section of the household questionnaire (the same section used to collect the data on clothing and footwear consumption). There were no irregularities in the data for this item. The household response was converted into a daily per capita value by dividing it by the product of 365 and the number of household members.

Education. Data on household spending on education during the "past school year" were collected in the Education section of the household questionnaire (Section 2) for all household members currently "in the school system," "taking private lessons after school," or "attending nonformal classes." Data on education expenses were only obtained for individuals that currently met these criteria, raising the possibility that the data on education expenses may be under-reported (for example, they would not include expenses for recent dropouts or for those recently enrolled—although there

would be double counting if expenses for both groups were included). There were also some irregularities in the data. Eight individual responses were 99999999 and had to be recoded to missing. Including these missing data, 20,852 individuals (27.9% of the sample) reported educational expenses during the past school year, including 697 individuals who reported expenses of zero.[76] About 600 of these individuals either only reported their total expenses or had one or more unreported items among the seven detailed expense categories (i.e., school fees, tuition, text books, other school supplies, allowances for children studying away from home, transport cost, and gifts to teachers, building fund, etc.). Only the reported total expense variable was used to calculate total education spending (there were no cases where individual items were reported without a total being reported). The individual totals were summed over the individuals in each household (after assigning a value of zero to household members who did not report any school expenses during the past school year) and divided by the product of 365 and the number of household members to obtain an average per capita daily expenditure on education services.

Personal care and effects. Data on personal care consumption are available only in the diary. No irregularities were found in the diary data for this item. The relevant diary entries were summed by household and divided by the product of the actual number of days in the calendar month in which the diary data were collected and the number of household members in order to convert them into estimates of daily per capita consumption. Many households did not report any personal care consumption in the diary (9,227 households). This item was recoded to zero for households that did not report any personal care consumption during the 30-day reference period. The recoded values of personal consumption were then added to recall data on "personal effects (costume/gold jewelry, handbags, wallets, wristwatch, clocks, umbrellas)" consumption during the last 12 months that were collected in the "Other Expenditures" section of the household questionnaire (the same section used to collect the data on clothing and footwear consumption). There were no irregularities in the data for this consumption category. The household response was converted into a daily per capita value by dividing it by the product of 365 and the number of household members.

Tobacco. Data on the value of tobacco consumption during the past seven days were collected in the Food section of the household questionnaire (Section 1.D). There were no irregularities in these data, which were divided by the product of seven and the number of household members to obtain an estimate of per capita daily consumption of tobacco products.

Miscellaneous. Data on household "consumption" in connection with "special occasions, as funerals, weddings, parties, rituals, cash gifts, charity etc" during the last 12 months were collected in the "Other Expenditures" section of the household questionnaire (the same section used to collect data on clothing and footwear consumption). Although some of these items are clearly not part of household consumption as it is usually defined, the inclusion of these items is consistent with the definition of household consumption in the base-year (1993/94) and subsequent poverty estimates in Cambodia. There were no irregularities in the data for this consumption category, which was converted into a daily per capita value by dividing the household response by the product of 365 and the number of household members.

---

[76] Consistent with the conjecture above about under-reporting, 37% of the currently enrolled children reporting zero educational expenses during the past school year were currently enrolled in preschool or in grade one.

One major problem in preparing a comparable series of poverty estimates over time in Cambodia is the changing (increasing) geographical coverage of different socio-economic surveys over time. Table 1 presents data on the geographical coverage of 1993/94 and 2004 surveys. Coverage was quite low in SESC1993/94 due to security reasons, particularly in the rural areas. On the other hand, geographical coverage was 100% in CSES 2004.

Table 1: Comparison of Survey Coverage, 1993/94 and 2004
(% of coverage)

	SESC 1993/94	CSES 2004
Provinces (number covered)	15	24
Villages		
Phnom Penh	100.0	100
Other Urban	84	100
Rural	56	100
Cambodia	59	100
Households		
Phnom Penh	100.0	100
Other urban	91	100
Rural	65	100
Cambodia	68	100
Individuals		
Phnom Penh	100	100
Other urban	90	100
Rural	60	100
Cambodia	65	100

Source: NIS

It has always been assumed that poverty estimates prepared from SESC 1993/94 data were biased upwards because of the survey's exclusion from its sample (for security reasons) of a large segment of the rural population that is believed to have been significantly poorer, at least at the time, than the included rural population. However, this conjecture could not be tested because the sampling frame used in the SESC1993/94 was not available. Although it was clear that six provinces at the time were not included at all in SESC 1993/94 sampling frame (e.g., Koh Kong, Kratie, Mondul Kiri, Preah Vihear, Ratanak Kiri, Stung Treng), these six provinces accounted for only 18% of the excluded villages. Fortunately, the 1993/94 SESC sampling frame has now been found in NIS which makes it possible to prepare a geographically comparable set of poverty estimates for villages that had a non-zero probability of being included in the 1993/94 SESC sample (i.e., villages that were included in the sampling frame).

----

* Drawn from Knowles 2005.

With the 1993/94 sampling frame, it is relatively simple to prepare comparable poverty estimates over time. The original geographical codes (e.g., for provinces, districts, communes and villages) have mostly been maintained since 1993/94, except in Phnom Penh and a few large provincial towns (all of which were 100% included in the 1993/94 sampling frame). Since 1993/94, three new provinces have been created (Kep, Oddar Meanchey and Pailin), but none of their villages were included in the 1993/94 sampling

130

frame. The sampling frame can simply be merged with CSES 2004 data files using the same geographical codes. Those villages that match can be assumed to have been included in SESC1993/94 sampling frame, while those that do not match can be assumed not to have been included in SESC1993/94 sampling frame. A few erroneous classifications may result, but these are very few in number.[77]

Table 2 presents the regional and province distributions of the comparable samples from the two surveys, weighted by the estimated populations at the time of each survey. In principle, one would expect the changing percentages over time in the table (which are nevertheless not very large) to reflect mainly differential rates of population growth among the provinces.

Table 2: Distribution (%) of Comparable Samples by Province, 1993/94 and 2004

	1993/94	2004
Region		
Phnom Penh	10.74	13.81
Other urban	11.02	12.79
Rural	78.25	73.40
Cambodia	100.00	100.00
Province		
Banteay Meanchey	3.61	2.49
Battambang	4.68	4.36
Kampong Cham	18.85	17.03
Kampong Chhnang	2.48	3.14
Kampong Speu	2.16	2.41
Kampong Thom	0.92	0.83
Kampot	2.64	2.51
Kandal	13.19	13.85
Koh Kong	—	—
Kratie	—	—
Mondul Kiri	—	—
Phnom Penh	10.74	13.81
Preah Vihear	0.00	0.00
Prey Veng	15.32	13.64
Pursat	3.81	4.18
Ratanak Kiri	—	—
Siem Reap	2.96	3.29
Sihanoukville	0.72	1.91
Stung Treng	—	—
Svay Rieng	7.08	6.60
Takeo	10.84	9.95
Oddor Meanchey	—	—
Kep	—	—
Pailin	—	—
Cambodia	100.00	100.00
N	5,578	7,596

Source: 1993/94 SESC, 1997 CSES, 2004 CSES.

---

[77] A check was done by comparing the 1993/94 district, commune and village names of the 560 villages that matched with 2004 CSES sample villages with the current names of the villages and of the communes and districts in which they are located. All but 14 of the village names matched.