



**National Institute of Statistics
Ministry of Planning
Phnom Penh, Cambodia**

NIS

Summary report on the

**Food Insecurity Assessment
in Cambodia
Cambodia Socio-Economic Survey 2004**

FAO



**PHNOM PENH
September 2007**



The EC-FAO Food Security "Information for Action" Programme is funded by the European Union and implemented by FAO

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ABBREVIATIONS

ADER	Average Dietary Energy Requirement
CV	Coefficient of variation
DEC	Dietary Energy Consumption
EC	European Community
FAO	Food and Agriculture Organization
FBS	Food Balance Sheet
FSSM	Food Security Statistical Module
CSES	Cambodia Socio Economic Survey 2003-04
MDER	Minimum Dietary Energy Requirement
MDG	Millennium development Goals
NIS	National Institute of Statistics of Cambodia
USDA	US Department of Agriculture
WFS	World Food Summit
WHO	World Health Organization

FOREWORD

The National Institute of Statistics (NIS) is pleased to present this Food Insecurity Assessment Report of Cambodia which has been produced with support from the EC-FAO Food Security "Information for Action" Programme. The Programme is financed by the European Union and implemented by FAO. This report is the result of the food consumption and security analysis of the CSES 2004 undertaken by the NIS with collaboration of representatives of various departments of Ministry of Agriculture and Ministry of Health under the technical assistance of the FAO Statistics Division. This collaborative effort was initiated in October 2006 following the Food Security Statistics Module (FSSM) training workshop held at the NIS.

The main objective of the FSSM is to strengthen the statistical analytical capacity of the NIS to derive food security statistics from the available food consumption data, particularly from the CSES 2004. The report presents a suite of food security indicators including the Millennium Development Goal indicator 5 on the prevalence of undernourishment at the national and sub national levels. The summarized findings cover a wide range of food security statistics which provide the analytical background for identifying and locating the food insecure population.

I am especially grateful to FAO Statistics Division for its continuous technical support provided to the NIS for the completion of this report in addition for sharing the Food Security Statistics Module (FSSM) software. Special thanks to the FAO personnel, namely, Mr Seevalingum Ramasawmy and Ms Nathalie Troubat for their long support and assistance in the use of the FAO statistical programs (FSSM) which started with the FSS training in October 2006; Ms Ana Moltedo for support in preparing files and programs, Mr Ricardo Sibrián and Mr Luca Alinovi in assisting the NIS in the dissemination of the draft preliminary version of this report at the National Seminar to the national and international stakeholders in food security issues in Cambodia, and Ms Françoise Trine for the NSC-FAO liaison at FAO Headquarters level.

I am grateful to Mr Pich Pothy, Deputy Director of the Economic Statistics Department of NIS and his team who have contributed in their personal capacity and generously volunteered their time for drafting the preliminary report. I recommend this report to all those who are actively involved in the fight against hunger and hope that it will provide useful inputs for practical strategies for efficient and effective implementation. The report is open to debate and we would be grateful to receive any comments or suggestions concerning its contents and findings as to improve the next report.



San Sy Than
Director General
National Institute of Statistics

Phnom Penh, Cambodia,
September 2007

EXECUTIVE SUMMARY

This summary report provides a brief assessment of food insecurity situation in Cambodia at the national and sub national levels based on food consumption statistics derived from data collected in the 2003/04 Cambodian Socio-Economic Survey (CSES 2004) using the FAO methodology.

The prevalence of undernourishment or food deprivation as defined in the Millennium Development Goals (MDG) indicator 5 was estimated at 23 percent for Cambodia in 2003-2004. At sub national levels, the highest prevalence of food deprivation occurred in the lowest income population group and in Phnom Penh, 69 and 41 percent respectively.

The food deprivation among rural population was 24 percent which was marginally higher than that of urban areas (22 percent). Population of female-headed households had a higher prevalence of food deprivation than male headed (28 percent and 22 percent respectively).

In 2003/04, the average Cambodian was consuming about 2310 kcal per day of which 75 percent were carbohydrates, 14 percent by fats and 11 percent by proteins. The Cambodian diet had a high share of carbohydrates due to a 70 percent contribution of cereals and cereals products to their diet. However, it was noted that there is a deficiency of fat consumption food items. A Cambodian spent on average 1388 Riel/day corresponding to about 71 percent of the total consumption expenditure revealing a high expenditure for the acquisition of food item which probably could be due to high food prices. A high percentage of about 66 percent of the acquired food were obtained from purchases and only 19 percent from own production.

The average Cambodian had a daily minimum dietary energy requirement (MDER) of 1715 kcal while the food deprived population had an average daily dietary energy consumption of 1435 kcal. This means that to alleviate the food deprived population, a daily additional amount of 280 kcal per person was needed. This food deficit was higher in rural (295 kcal/person) than in urban areas (269 kcal/person) with respect to their MDER of 1707 kcal and 1758 kcal.

The prevalence of critical food poverty, that is, the proportion of population living on less than the cost of a balanced diet equivalent to the MDER was 21.4 percent which was close to the national level of food deprivation. Higher levels of critical food poverty were noted among the sub national levels particularly among the populations of urban and rural areas and female-male headed households.

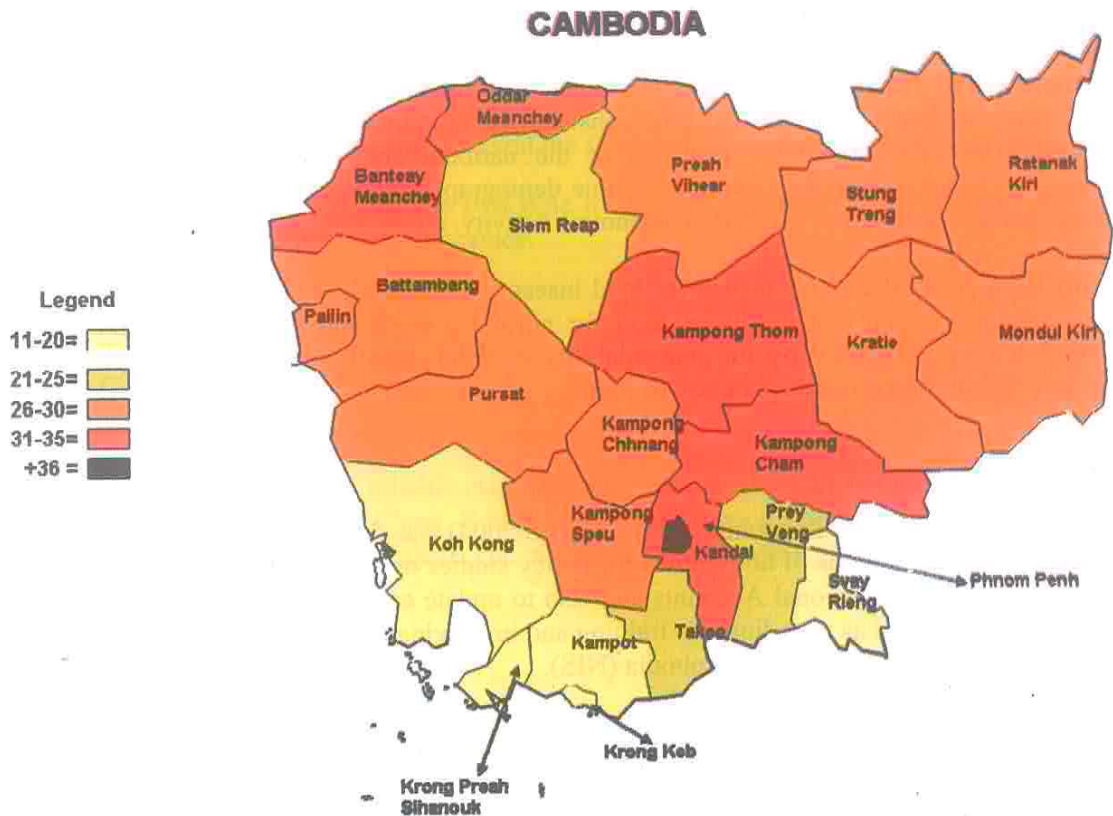
The dietary energy consumption inequality due to income was 27 percent while that of food consumption expenditure due to income was almost double 57.9 percent showing that there was large disparities in food prices in Cambodia.

This document can be downloaded from: [from: http://www.foodsec.org](http://www.foodsec.org)

I. BACKGROUND

Cambodia is a country located in Southeast Asia with a population of almost 15 million people, with Phnom Penh being the capital city. The country shares a border with Thailand to its west and northwest, with Laos to its northeast, and with Vietnam to its east and southeast. The geography of Cambodia is dominated by the Mekong river and the Tonlé Sap, an important source of fish.

Level of food deprivation in Cambodia based on food data from the 2003/05 Cambodian Socio Economic Survey.



Civil war and its aftermath have had a marked effect on the Cambodian population. The population often lacks education and productive skills, particularly in the poverty-ridden countryside, which suffers from a lack of basic infrastructure. The median age is 20.6 years, with more than 50 percent of the population younger than 25¹.

With a GDP per capita of \$2,423 PPP in 2004, and a Human Development index² of 0.583, Cambodia ranked 129th out of 177 countries.

In view of this economic and historical background, it appears important to assess the situation of food

¹. Source: <http://en.wikipedia.org/wiki/Cambodia>

². The HDI measures the average progress of a country in human development. Source UNDP, HDR 2006.

insecurity in the country based on food consumption statistics at national and sub national levels to identify population groups that are at risk of being food insecure. This report attempts to give a quick snapshot of the situation of Cambodia with respect to food in providing some key indicators on food security statistics based on data on food consumption derived from the latest Cambodia Socio-Economic Survey at national level in 2003/04 (CSES 2004).

The report gives a brief overview of the CSES 2004 and the available food consumption data used to derive the suite of food security statistics (FSS) in the first section. The MDG indicator 5, prevalence of undernourishment together with indicators on critical food poverty and depth of hunger are discussed in the subsequent following sections. The food consumption patterns in terms of dietary energy and monetary are analysed and is followed by an assessment of the diet diversity in terms of the quality and food consumption pattern in Cambodia. Inequalities estimates such as coefficient of variation (CV), Gini coefficients and dispersion ratios that provide an assessment of access to food are also discussed. Finally, the income demand elasticity of food consumption in terms of expenditure and dietary energy is examined. The FSS have been analysed at the national and sub-national levels relating to geographical and socio economic factors and some demographic characteristics of head of household such as age, gender, occupation, education, economic activity, etc.

This report is based on the assessment that “food insecurity exists when people lack secure access to sufficient amounts of safe and nutritious food for normal growth and development and an active, healthy life. It may be caused by the unavailability of food, insufficient purchasing power or the inappropriate distribution or inadequate use of food”.

II. THE SURVEY

The 2003/04 Cambodia Socio-Economic Survey (CSES 2004) was designed to provide information on social and economic conditions of households for policy studies on poverty, household production and final consumption for the National Accounts and also to update consumer price index (CPI) of goods and services. It also served as a medium for training and improving survey methods and analysis within the National Institutes of Statistics of Cambodia (NIS).

The CSES 2004 is the latest and most ambitious in a series of multi-objective national household surveys that have been conducted by the NIS with the following considerations:

- 1- It is the largest multi-objective household survey ever undertaken in Cambodia, including a total of 15,000 households interviewed in 900 villages during a 15-month period from November 2003 through January 2005.
- 2- It is the first multi-objective household survey that covers the entire country.
- 3- The CSES 2004 collects data on household consumption using two different data collection methodologies, i.e., recall questions similar to those used in previous surveys and a calendar month diary in which all household economic transactions were recorded. Consequently, the CSES 2004 survey teams spent more than one month in each surveyed village.
- 4- The range of data collected in the CSES 2004 was also more extensive than that collected in previous multi-objective household surveys.
- 5- In addition to data on household consumption and a wide range of social indicators, the

CSES 2004 collected data on the daily time use of all household members, data on sources of household income, village data on land use and access to community and social services (for examples, roads, electricity, water, markets, schools and health facilities), and data on up to three prices from local markets for 93 food and non-food items.

(A) Sample

The survey sample was selected to be representative of the country and representative monthly samples of 1000 households based on the fifteen months data (November 2003 to January 2005) was collected from 15,000 households with a total of about 75,000 individuals.

The fieldwork started in November 2003 and was scheduled to end in December 2004. However, some more basic data was needed for the analyses and the fieldwork was extended to include January 2005.

Survey estimates were produced for the first nine months of fieldwork for two strata, viz., 1-Urban area, 2-Rural area with the five following zones:

- 0 = Phnom Penh
- 1 = Plain
- 2 = Tonlé Sap
- 3 = Coastal
- 4 = Plateau/ Mountain

And at the end of the 15 months, reliable estimates were produced for 11 individual provinces; Banteay Meanchy, Battambang, Kampong Cham, Kampong Speu, Kampong Thom, Kandal, Phnom Penh, Prey Veng, Siem Reap, Svay Rieng and Takeo. The other 13 provinces were grouped according to zones.

(B) Questionnaires

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 were used for preparing the poverty profile of Cambodia and conducting poverty analysis.

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, housework, school, leisure and personal care.

(C) Food data

The CSES 2004 contained a wide range of information on the characteristics of households and their members together with food and non-food consumption expenditures and income. Data were collected over a period of fifteen months starting in November 2003 and ending in February 2005. Quantities and monetary values of food consumed by households were collected through a diary questionnaire over a period of one month, for 209 food items by source of acquisition such as purchased, received as gift or from stocks from own production. Food taken away from home was also identified using a special food code item.

Data on food item were collected in more than fifty different quantity units of measurements which included a large number of local units and only for a few of those units, it was possible to find the relative gram equivalent. The estimation of gram equivalent of most of the other local units was made by using the average unit value of each food items at regional level (Phnom Penh, Plain, Coastal, Tonlé Sap and Plateau/Mountain).

Finally, as Cambodia did not possess a food composition table to derive the nutrient values of each food items of the CSES 2004, the ASEAN food composition table was used and complemented by that of USDA.

III. RESULTS AND FINDINGS

Results are based on the process and analysis of the food and expenditure data provided by the CSES 2004. The FSSM statistical programs developed by the Statistic Division of FAO were used to perform the analysis of the food consumption data.

The prevalence of food deprivation depends among others on three components. First, the amount of dietary energy consumed; second, the inequality in access to food mediated mainly by income; and three, the minimum dietary energy requirement for a low acceptable weight to be healthy enough corresponding to a sedentary level of activity for different groups of age and sex. The weighted overall daily per person minimum dietary energy requirement (MDER) is used as the cut-off point of the distribution function of dietary energy consumption for estimating the prevalence of food deprivation. The MDER was computer at the national and sub national levels using height data of individuals available in the Cambodian 2002 Demographic Health Survey together with the corresponding age sex structure of the different population groupings. The MDER of Cambodia was of 1715 kcal/person/day and 1758 kcal/person/day for urban populations and 1707 kcal/person/day for rural populations.

Statistics on food consumption and food insecurity were derived at national level and for sub national groups of populations categorized according to the level of income, the regional location, the size of the household and some characteristics of the head of the household such as age, level of education, occupation and activity.

Given the role of Cambodian women as food producers, care givers and income generators and the fact that about one third of households are headed by a woman (35 percent), a deeper analysis of food security with respect to the gender of the head of the households was also conducted separating male headed households from female headed households. The main results are presented in this report³.

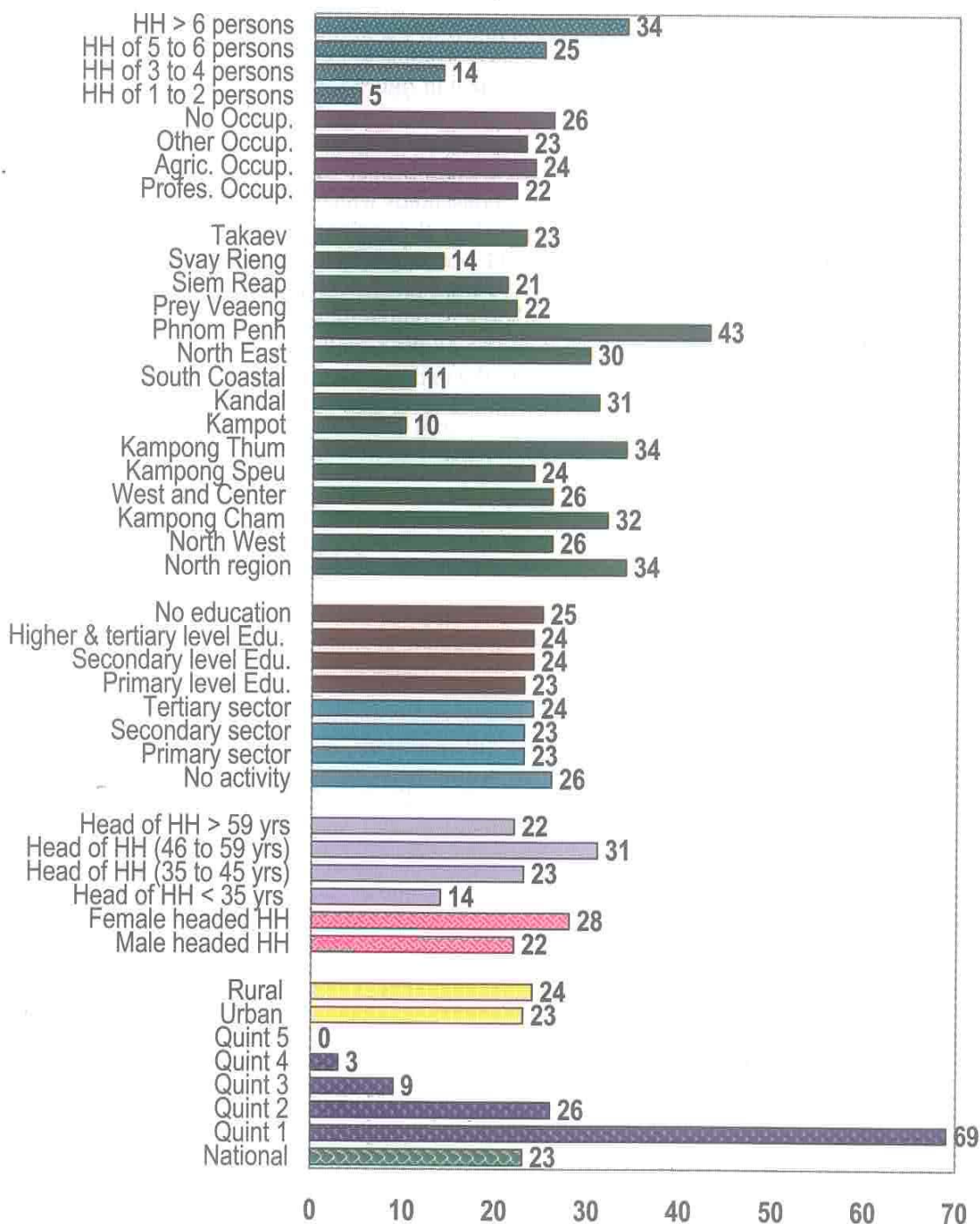
³. For further details see Pothy, Guarascio, Curry and Sibrian (2007).

(A) Magnitude of food deprivation

The magnitude of hunger as measured by the prevalence of food deprivation showed that in 2003/05 about one person out of five in Cambodia was undernourished. Levels of food deprivation were not the same for sub national groups of population. As shown in figure 1.

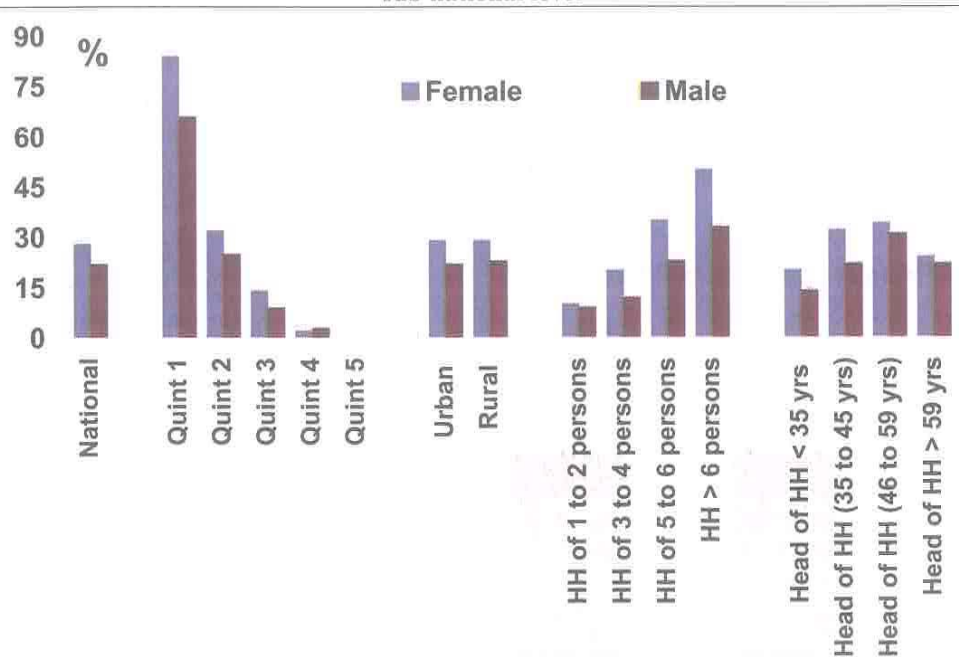
High levels of food deprivation were observed among people of the lowest income quintile, among households comprising more than six members, households which head of household's age is between 45 and 60 years old and mainly from Phnom Penh or the regions of North and Kampong Thum with prevalence of food deprivation of 69 percent, 34 percent, 31 percent, 43 percent, 34 percent and 34 percent, respectively. In contrast with those very high levels, food deprivation was almost inexistent among households with higher income or composed of one or two people. The different values used as cut off point in urban and rural areas did not impact on the level of food deprivation as it was found to be almost the same in the two areas and equal to the national average. This finding is explained by the difference in inequality in access to food at national level and between urban and rural areas for the same level of dietary energy consumption.

**Figure 1. Food deprivation (%) at national and sub national levels
Cambodia, CSES 2004**



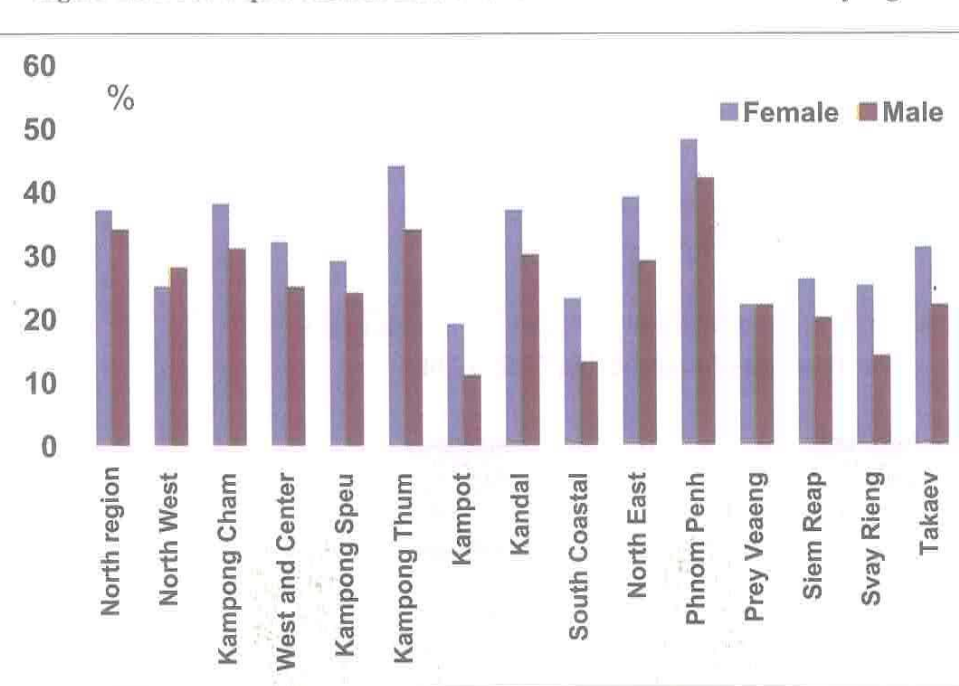
The food deprivation levels were not different by education level, economic activity or occupation of the household-head. However, as shown in figure 1 above food deprivation was higher for households headed by women than for households headed by men at national level (28 versus 22 percent).

Figure 1a. Food deprivation in male and female headed households at national and sub national level



When looking more closely at food deprivation in male or female headed households it appeared that overall female headed households were worst off than male headed households especially for low income group households (84 versus 66 percent) from rural areas (29 versus 23 percent). Food deprivation percentages were also considerably higher in female than in male headed households in the 35-45 age group (32 versus 22 percent) and in households with seven people and above, (50 versus 33 percent). Not shown in the figures above but households whose head was a woman working in the secondary sector as a manufacturer had higher food deprivation than households whose head was a male working also in the secondary sector (36 versus 22 percent).

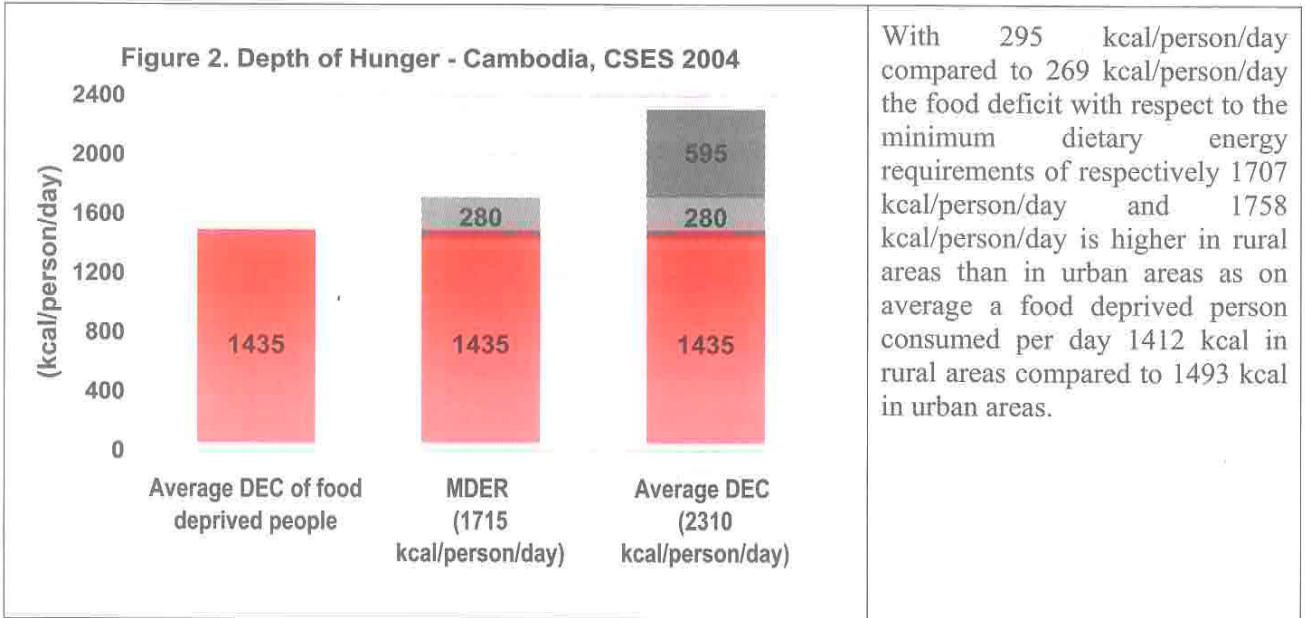
Figure 1b. Food deprivation in male and female headed households - by region



For selected provinces, the gap between male-and female-headed household proportions was notable for Kampong Thum and Svey Reung (female-headed households higher), and it was only for the provinces of North West that food deprivation was higher in male than in female headed households.

(B) Depth of hunger

On average, the daily consumption of a food-deprived person was 1435 kcal. It then required an additional 280 kcal for this person to reach the minimum dietary energy needed to maintain body-weight and perform a sedentary physical activity (see figure 2 below). An additional 595 kcal to reach the average of 2310 kcal/person/day consumed at national level (DEC). In other words, consumption of food deprived people would have to increase by 60 percent to reach the average level of food consumed.



The relative food deficit with respect to MDER was almost the same in both areas, this means a person undernourished in either urban or rural area would have to increase his/her consumption by about 18-21 percent to reach the respective MDER of the area (Figure 3).

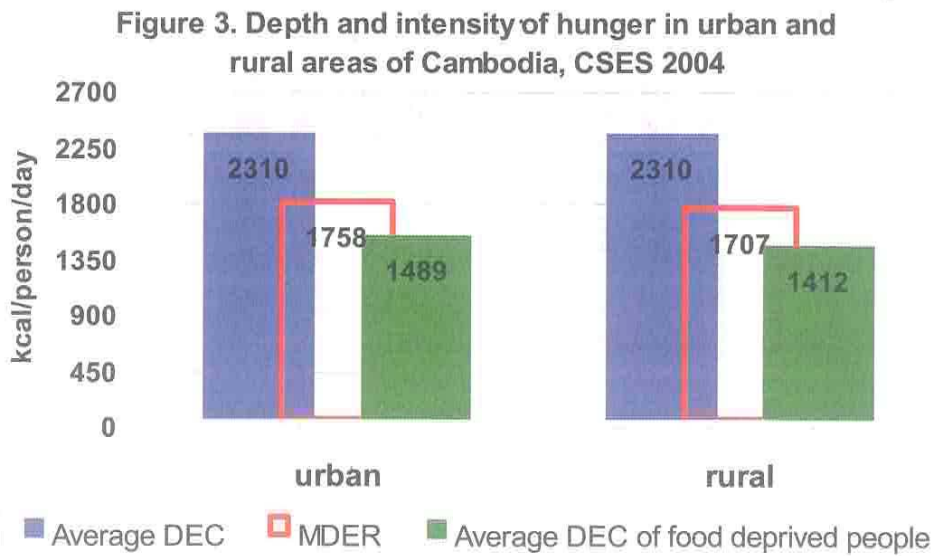


Figure 3a and 3b compare the three levels of dietary energy consumption based on geographical and demographic population groupings namely

- Average dietary energy consumption (DEC) and Minimum dietary energy (MDER) estimates of the population within the referenced population grouping;
- Average dietary energy consumption of the food deprived population with each population groupings.

The MDER levels for the geographical population groupings were more or less stable within a bound of 1000 kcals from 1659 in North East region to 1758 kcal in urban regions. The average dietary energy consumption of the population living in Kampot was the highest while Phnom Penh was the least at an average of 2060 kcal. Kampong Thum was the region where more attention has to be given as an average undernourished people of this region consumed less than undernourished people of the other regions.

Analysing the consumption among population grouping based on demographic characteristics shows that population living in large households of six or more persons were the most vulnerable probably not having resources to have sufficient food as both their overall consumption and those of the deprived population were low. Small household population had the highest average DEC and MDER and its deprived population the highest dietary consumption.

Figure 3a: Depth of Hunger at national and sub national levels
Cambodia CSES 2003/04

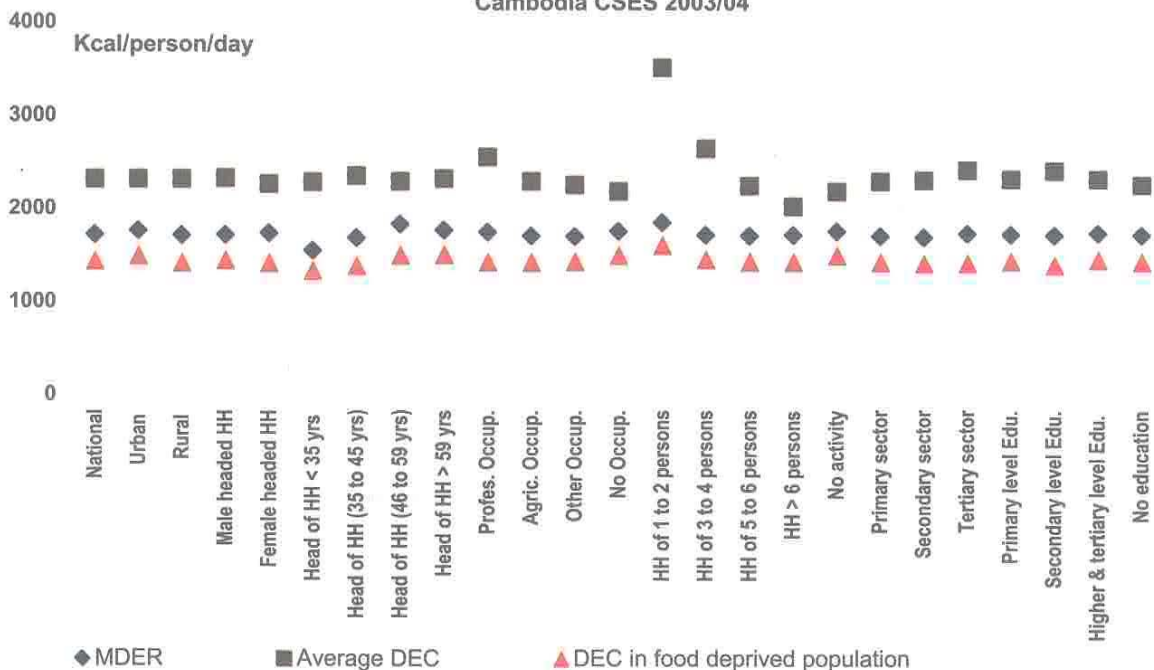
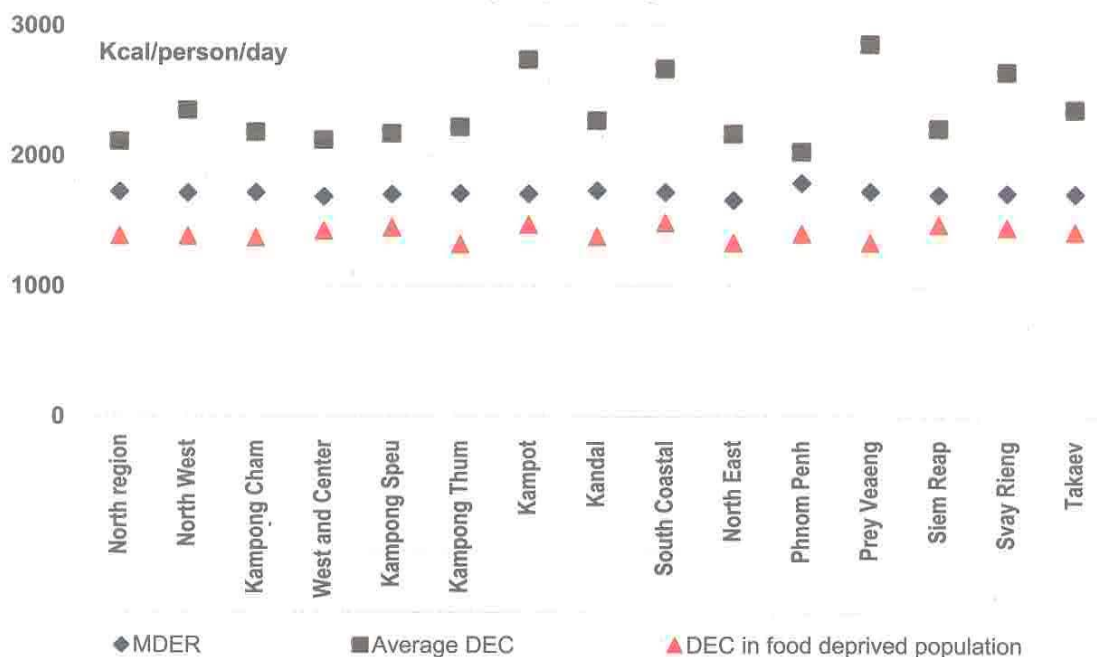


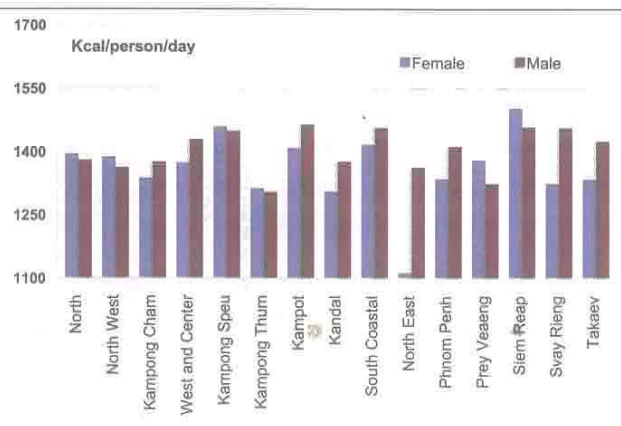
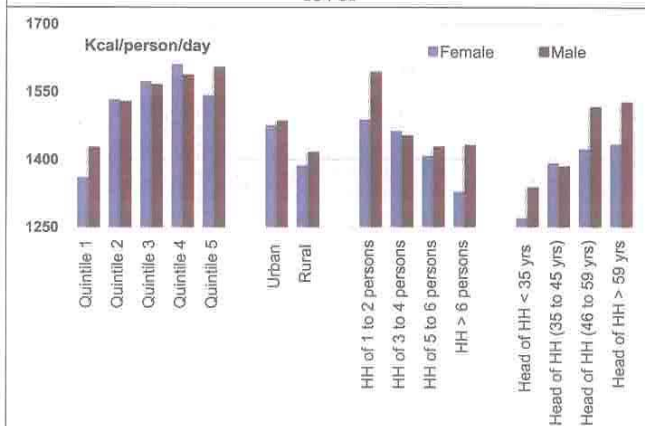
Figure 3b: Depth of Hunger by main regions - Cambodia CSES 2003/04



As shown in figures 3c and 3d below, the gap between consumption of undernourished people from male or female headed households was also important. On average an undernourished person from a household headed by a male consumed more than an undernourished person from a female headed household, the wider gap being observed for households of the North East where the absolute difference between average daily dietary energy consumption of undernourished people from male/female headed households was 250 kcal from an already very low level of consumption (1111 versus 1361 kcal/person/day). It was only among middle income groups of female headed households of the regions of Prey Vaeng and Siem Reap that the consumption of undernourished person was a bit higher than that of undernourished person from male headed households.

Figure 3c. Average DEC of food deprived people in male and female headed households – at sub national level

Figure 3d. Average DEC of food deprived people in male and female headed households - by region



(C) Critical food poverty

The prevalence of Critical Food Poverty (CFP) is the proportion of the population whose income is lower than the cost of a macronutrient-balanced food basket equivalent to the minimum dietary energy requirement (MDER). The MDER cost is valued using macro-nutrient unit costs from food consumed by households in the first income quintile. The macronutrient-balanced food basket provides 12.5, 22.5 and 65 percent energy from proteins, fats and carbohydrates respectively.

On average, it cost 876 Riel for a Cambodian to acquire a food basket corresponding to a MDER of 1715 kcal/person/day. Compared to the average daily income of 2001 Riel/person, this established the level of critical food poverty to 21 percent (see Figure 4).

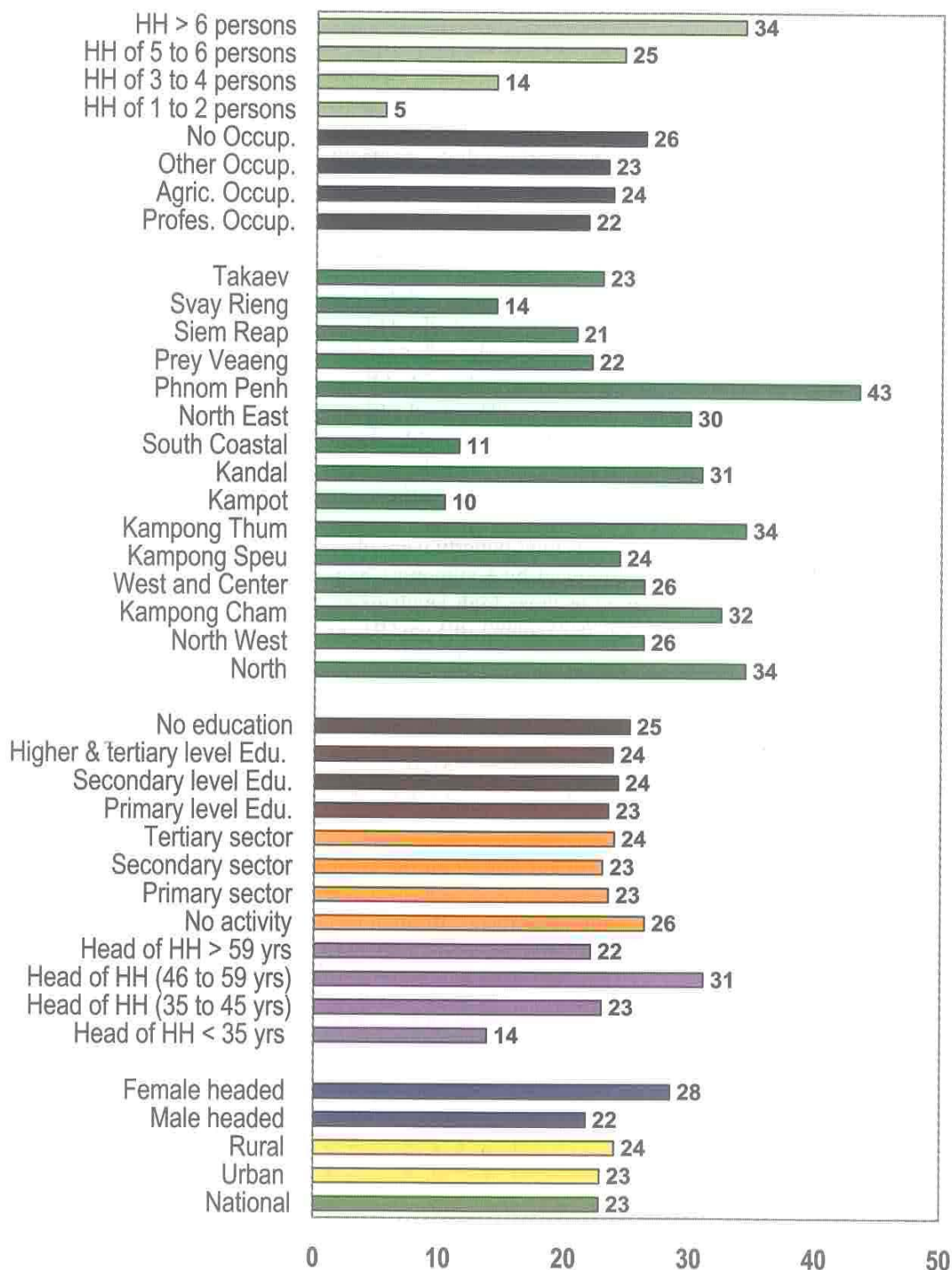
Using the age sex structure of the population and data on height it was possible to derive the MDER of each sub group of the population of interest in this analysis. This means that at sub national level, the critical food poverty lines differed and so the prevalence of critical food poverty with wide range of variations from a low 2 percent observed among households whose head had a high degree of education to a high 34 percent in the provinces of the north. In rural areas, the prevalence of critical food poverty was twice that observed in urban areas with more than one person over five being critically food poor. This was attributed to the fact that the average income in urban areas is almost twice that of rural areas for the same level of income inequality.

At regional level, the highest level of critical food poverty were observed for the provinces of the North with 34 percent as mentioned above, followed by Kampong Cham, Kampong Thum and North East with levels around 30 percent. Compared to those high levels of critical food poverty, with about one person over ten being critical food poor, the regions of Svay Rieng, Kampong Speu and South Coast were better off (Figure 4).

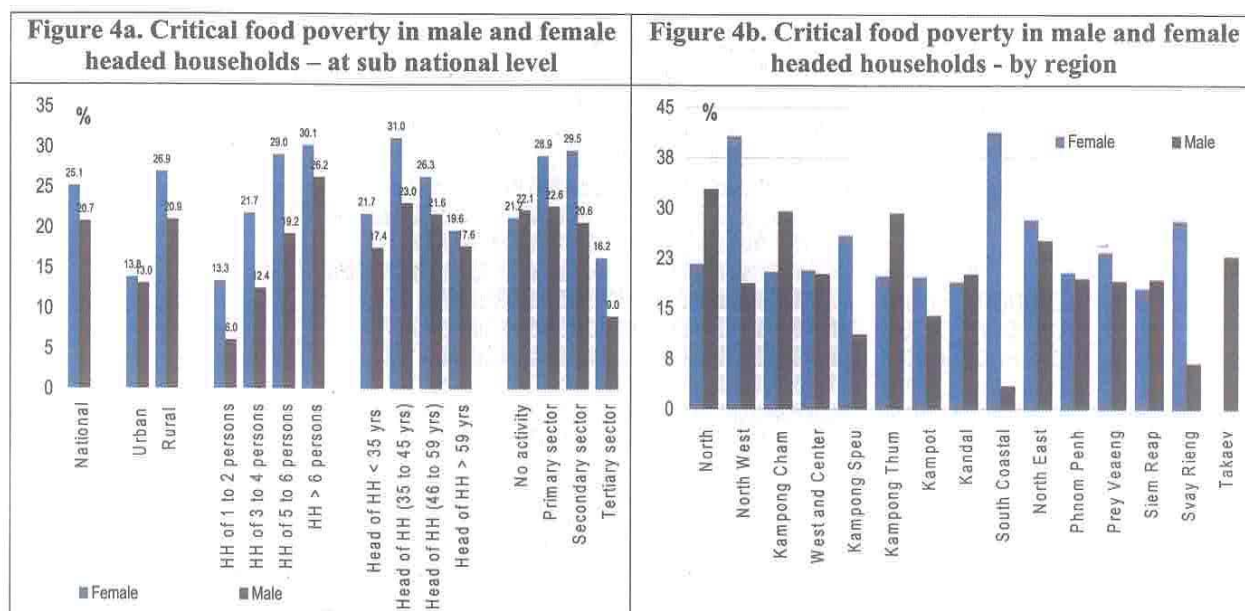
As shown from graph the region of location impacted on level of critical food poverty but also the demographic or socio economic characteristics of the household. The highest levels of critical food poverty were found among households of more than six people, whose head was more than 35 and less than 45 year old and involved in agriculture with more than one person over four being critically food poor.

The gender of the head of the household did not impact on the level of critical food poverty at national level but as shown in the graph, the gap between urban and rural areas and households headed by males and household headed by females was quite significant. Women headed households in rural areas were the worst off in terms of food and critical food poverty with 24 percent of households headed by women being critically food poor.

Figure 4. Prevalence of critical food poverty (%) at national and sub national levels, Cambodia, CSES 2004



As shown in figure 4a, rural female-headed households were more critically food-poor compared to male headed households, 25 versus 21 percent. Critical food poverty in households with heads aged between 35 and 45 years was higher in female than in male headed households, 31 versus 23 percent. Critical food poverty by economic activity shows that, among all other economic sectors, 29 percent of the population of female headed households working in manufacturing sectors were critically food poor, as compared to 21 percent in male headed households at national level. It was for the female headed households of the regions of Kampong Cham and the North East that the level of critical food poverty with 40 percent was the highest not only with respect to male headed households but also among all sub national groups or regions.

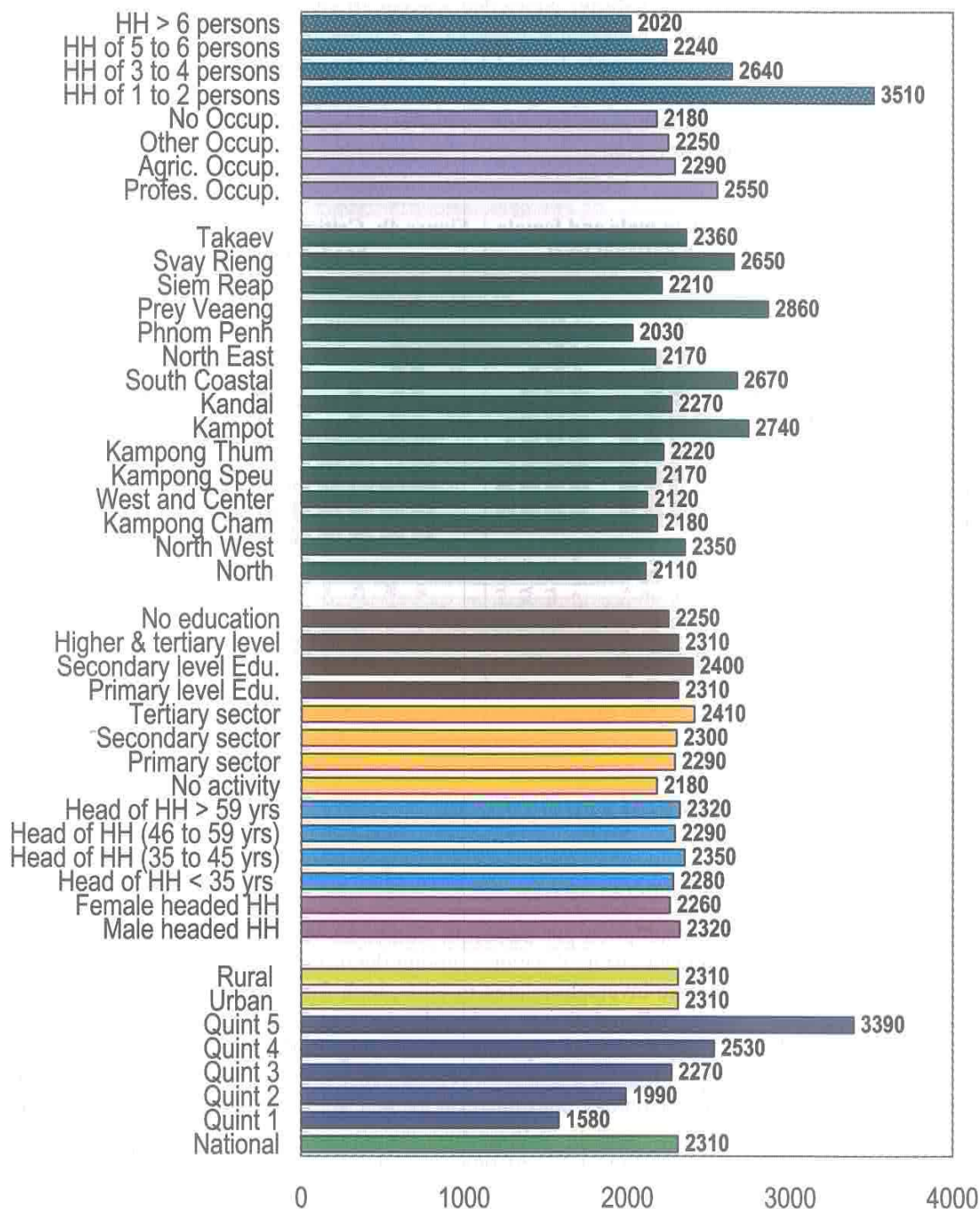


(D) Food consumption and expenditures

1. Dietary Energy consumption (DEC)

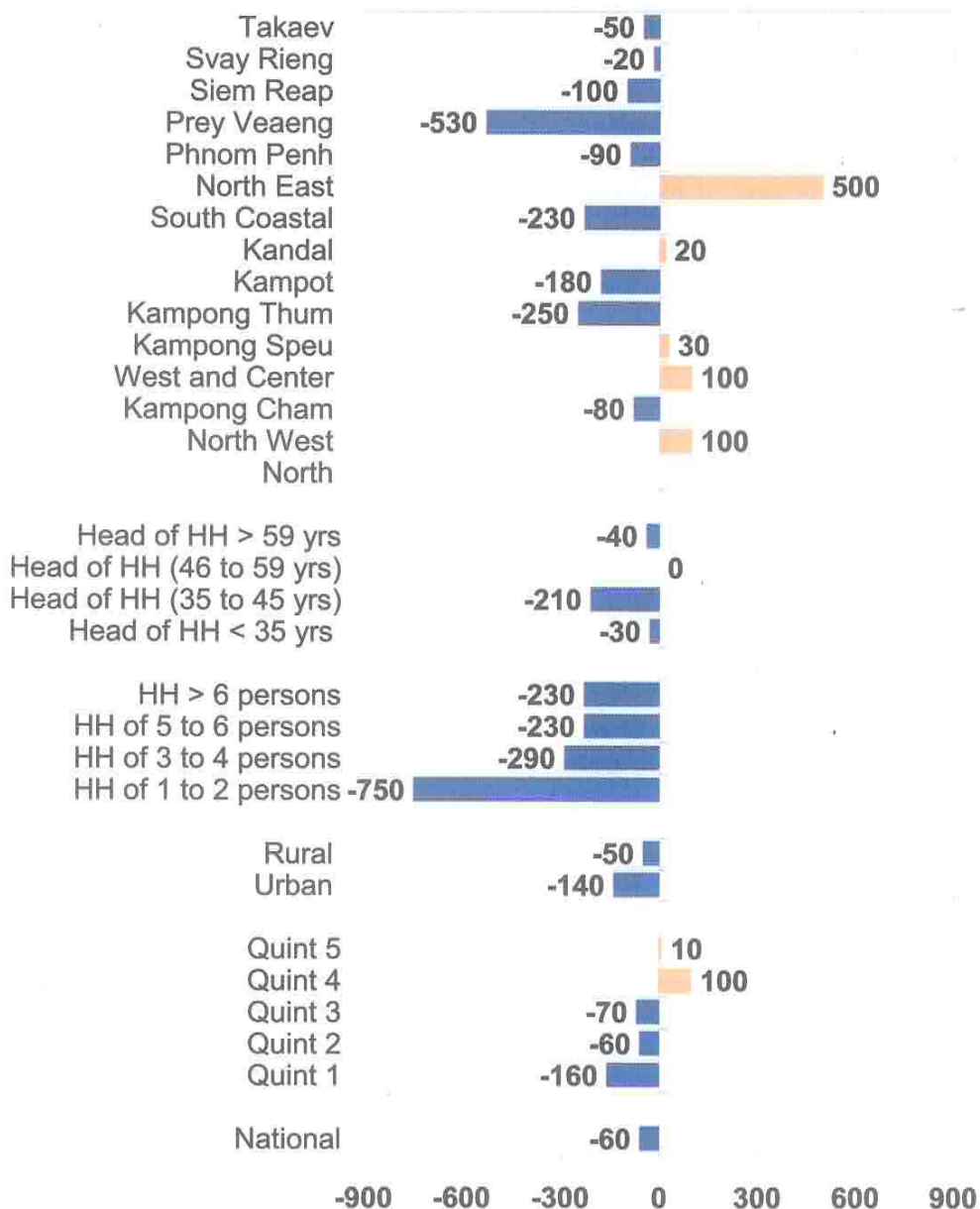
The average dietary energy consumption per person in Cambodia was of 2310 kcal. The DEC levels increased with income, but showed different patterns among the different population groupings (Figure 5). Levels of food deprivation are inversely related to DEC, high food deprivation is the result of low food dietary energy consumption. Population groupings having an average DEC less than the national average of 2310 Kcal/person/day had food deprivation levels higher than the national level of 23 per cent. Hence, the daily average of 1580 kcal/person consumed by low income group of populations contrasted with the 3390 kcal/person/day consumed on average by households with high income and comprising less than two people. Apart from these two extreme groups of populations, as shown by levels of food deprivation, the average DEC of other groups of population did not differ from one group to the other. However, differences were observed at regional level with average consumption in the region of Prey Veaeang being the highest with 2860 kcal consumed per person per day compared to the lowest level of 2030 kcal consumed in the region of Phnom Penh.

Figure 5. Dietary energy consumption (kcal/person/day) at national and sub national levels, Cambodia, CSES 2004



As discussed previously, the average dietary energy consumption was the same between urban and rural areas but quite different between male and female headed households (Figure 5a). Except in the region of the North East, on average, population of female headed households consumed less than those of the male headed households. The gap worsened at sub national level with the biggest absolute difference of 750 kcal per person per day observed among male-female headed households comprised of one or two people.

Figure 5a. Difference in DEC (kcal/person/day) of population in female and male headed households at national and sub national levels

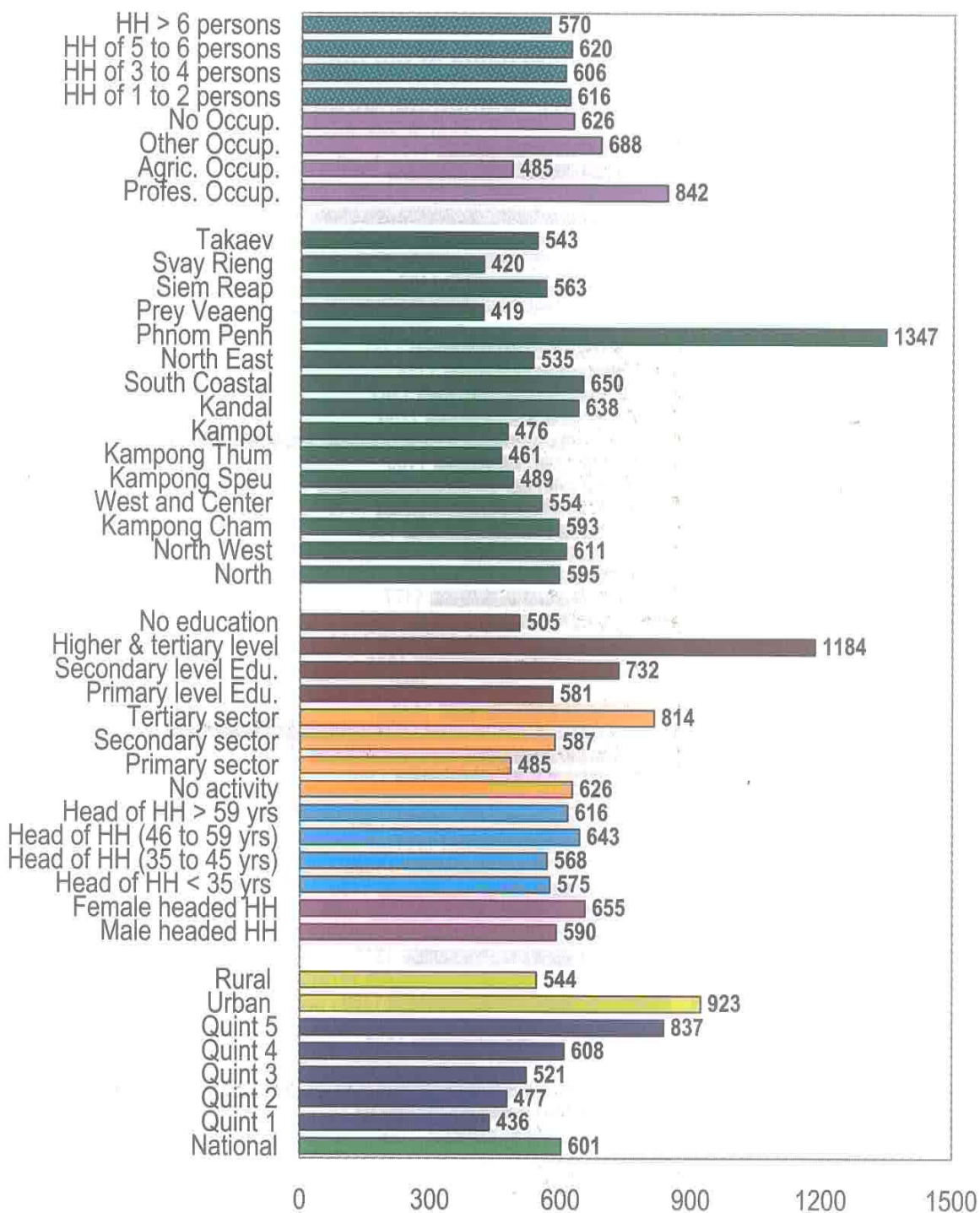


2. Dietary energy unit value

It costs on average 600 Riel to acquire 1000 kcal at national level. But the dietary energy unit value (which does not include the cost of energy needed to bring the food from as purchased to ready to eat) differed according to the sub national groups of population. The value for 1000 kcal was 436 Riel for low income group but twice more for the highest income group (Figure 6).

The same difference was observed between urban and rural areas where the cost of 1000 kcal in urban areas was higher by 40 percent than that in rural areas. Households with a high level of education were consuming food of higher prices than the national average. Cambodian female-headed households spent more on food than male headed households and their dietary energy prices were higher compared to male headed household (650 versus 590 Riel per 1000 kcal). Finally, the higher dietary energy unit value was found for Phnom Penh where 1000 kcal cost on average 1323 Riel which represented a cost 2.2 times higher than the national average. This high dietary energy cost observed for Phnom Penh explained a part the 41 percent of food deprivation in the capital city where price of food reflected diversity, quality, costs of transportation from rural areas, processing costs or importing costs when relevant.

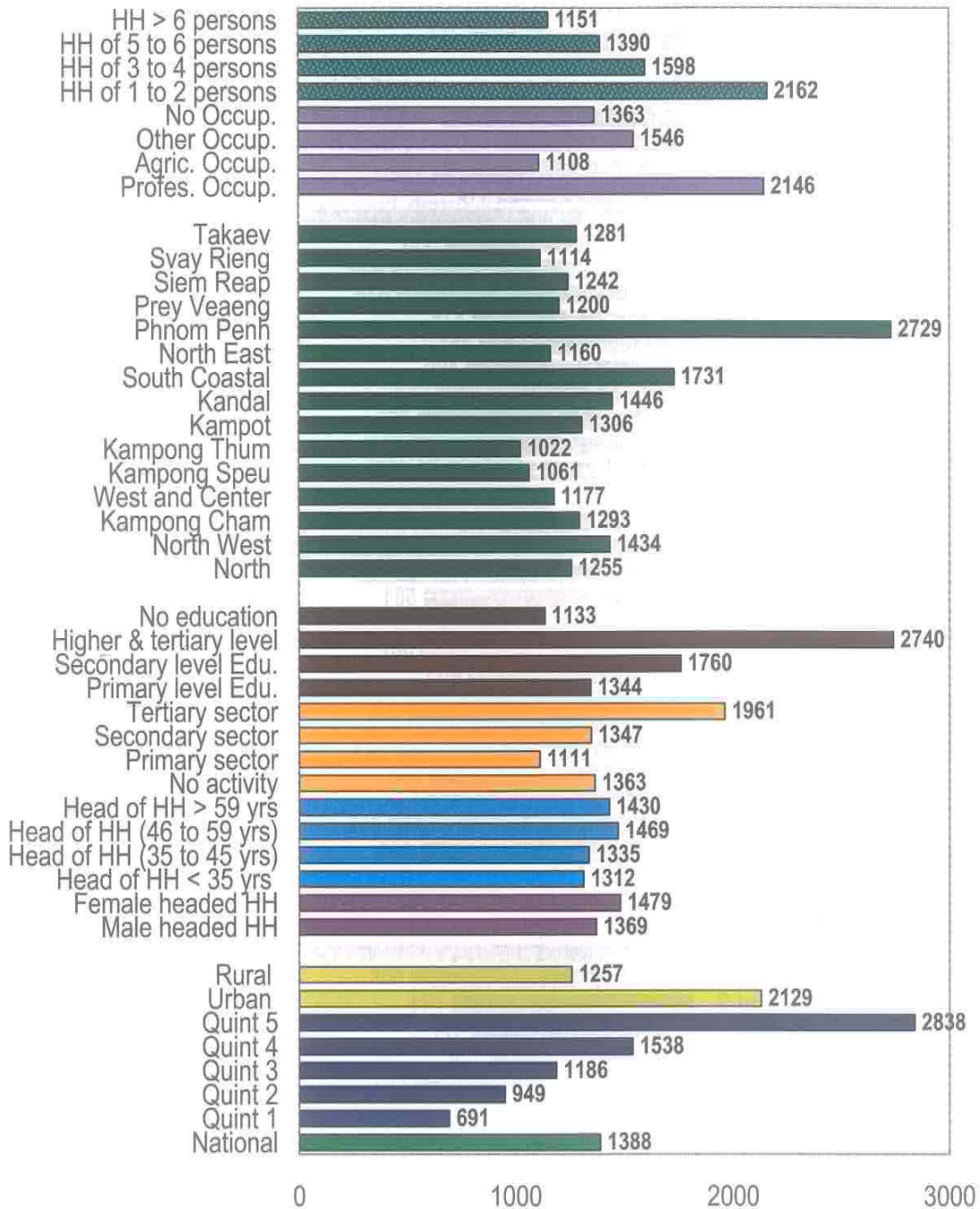
Figure 6. Dietary energy unit value (Riel/1000kcal) - Cambodia, CSES 2004



3. *Monetary value of food consumed and Engel ratio*

On average, it cost 1388 Riel a day to a Cambodian to acquire a food basket corresponding to the national consumption of 2310 kcal (see Figure 7).

**Figure 7. Food monetary value of the food consumed
(Riel/person/day) - Cambodia, CSES 2004**

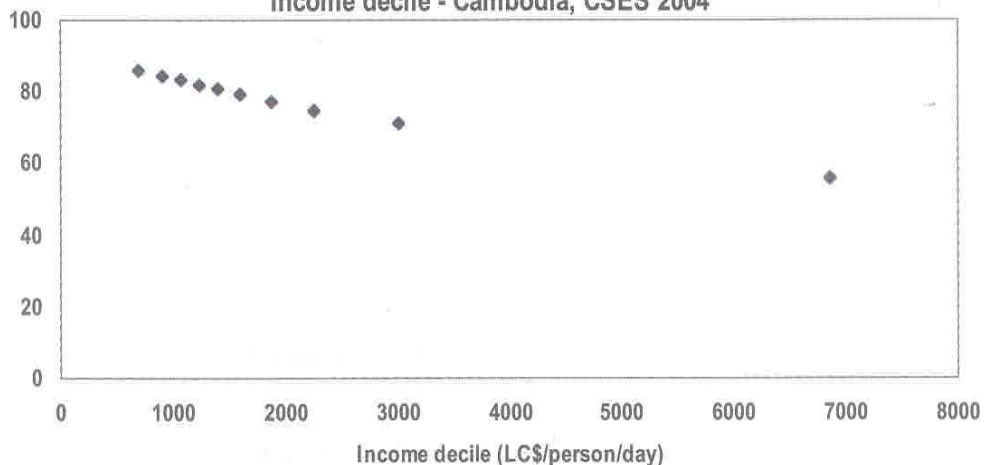


Again, differences could be found between and within groups of population. Households of the highest income quintile or from the region of Phnom Penh and headed by a person who had a tertiary level of education were those who spent the most to acquire food.

The larger the size of the household the lower the overall amount spent to provide food to each member of the household. This is simply a consequence of economy of scale as cooking for one person is always more expensive than cooking for a large family. Rural households involved in agriculture activities were also spending less on food compared to urban households.

On average 71 percent of the budget of a Cambodian was devoted to acquire food. According to Engel law, the share of food expenditures in total consumption expenditure decreases with higher income.

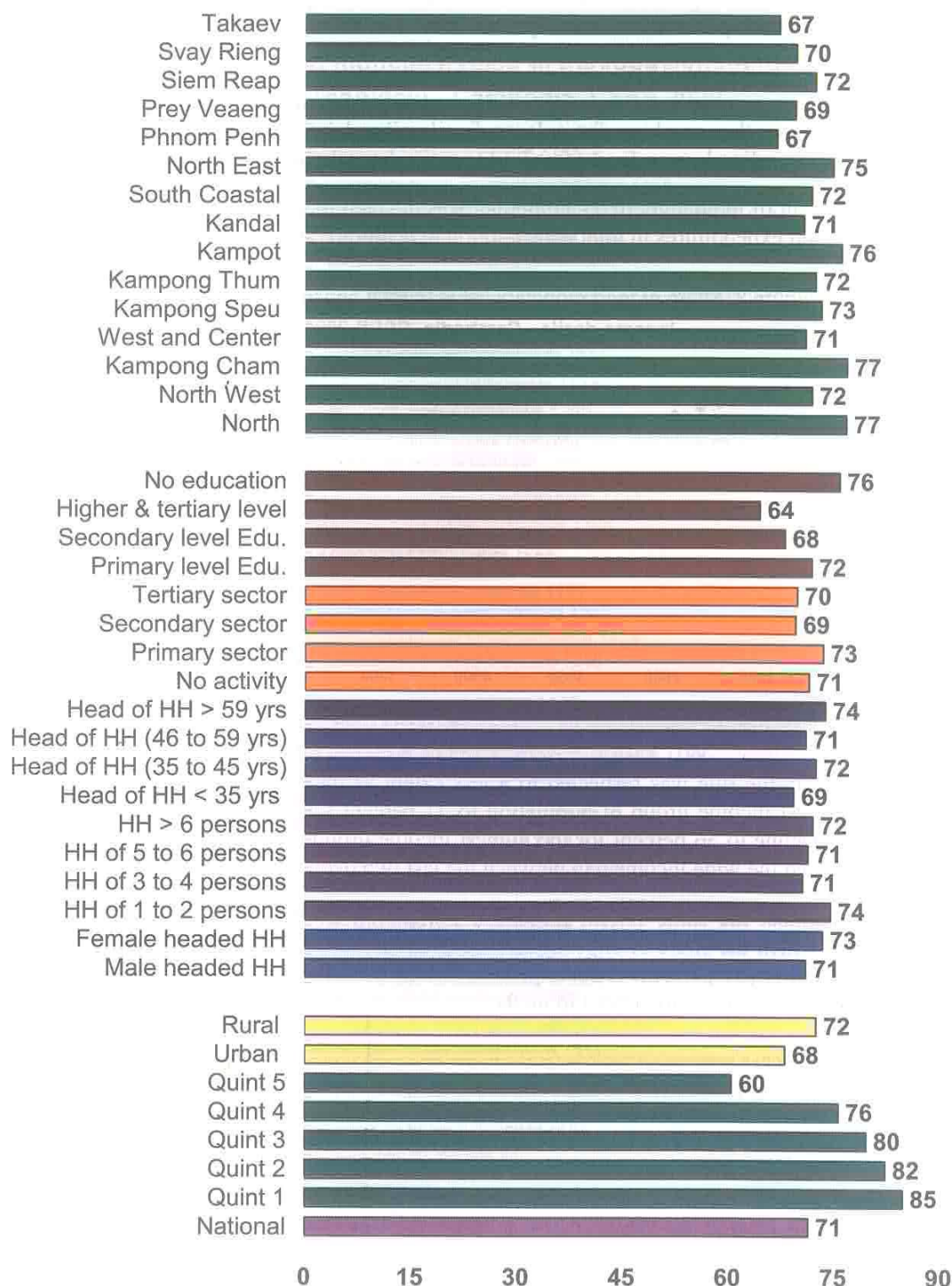
Figure 8. Share of food monetary value to total consumption (%) by Income decile - Cambodia, CSES 2004

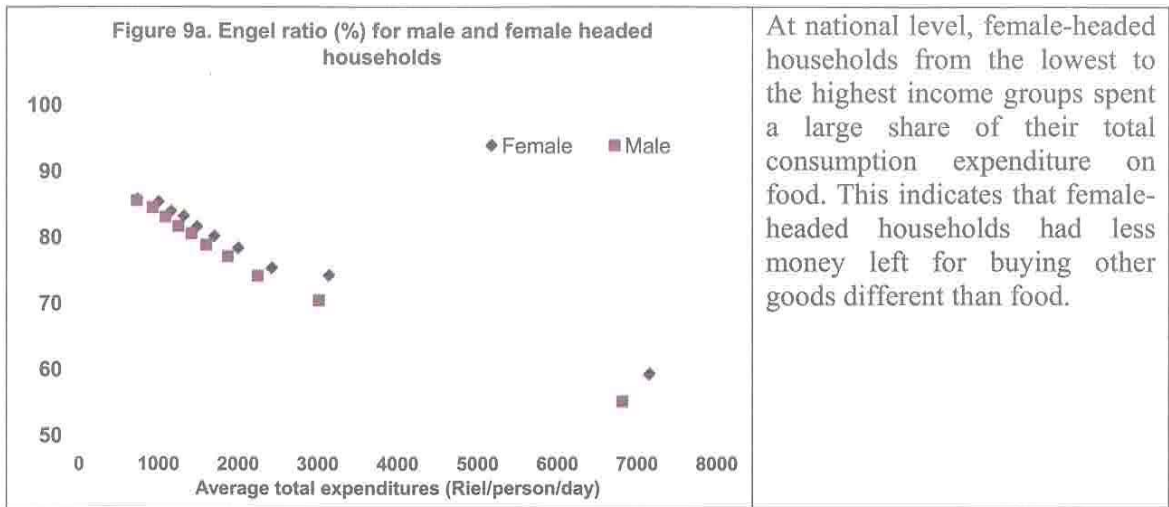


In case of Cambodia, the rule was respected to a less extent as the share decreased slightly from 85 percent for the lowest income group of population to 71 percent for the ninth decile of income, to a more spectacular decline to 56 percent for the highest income group of the population (Figure 8). This trend mainly reflected the wide income gap between the last two deciles of the population.

Engel ratios are almost the same for all groups of population except for those with high level of education and for which the share of expenditures devoted to food corresponded almost to that of the highest income quintile (61 percent) reflecting the fact that most of the people of the higher quintile were having high level of education (See Figure 9).

Figure 9. Share of food consumption expenditure to total consumption (%) - Cambodia, CSES 2004





4. Share of food consumption by food source

Most of the food consumed at national level was from purchased with a share of 66 percent of total food acquired and a smaller share from own production 20 percent, the rest being mainly food consumed away from home or from other sources such as gifts or payments in kind (Figure 10).

But this share varied according to regions and sub national groups as rural households tended to consume more food from their own production 23 percent, compared to urban households only 5 percent with the highest reliance on food production (more than 30 percent) found for groups of households of the first income quintile who did not attend school and from the regions of the other plain or from the Plateau. On reverse, with more than 20 percent of total consumption, food eaten away from home represented quite a high share of total food consumed by households of the highest quintile from urban areas and mainly from the region of Phnom Penh and with a higher level of education. The sources of acquisition of food did not differ according to the age of the household-head, the food sources presented the same pattern. But when looking at those shares in terms of dietary energy consumption then the picture slightly differed (Figure 11).

This mainly because the food that is coming from own production has a high energetic value and a lower cost than food purchased in market that is of higher quality and usually includes costs such as transport costs or processing costs. It is observed that at national level, the 19 percent of food in monetary value coming from own production is translated to 36 percent in dietary energy value while the 67 percent monetary share of purchased food fell to one half of its shares in total DEC. This is due to the low food prices of own consumption food items. The highest shares of DEC from own production were found for rural households involved in agriculture with a share exceeding 45 percent of total DEC. In case of Phnom Penh, the share of food consumption from purchased was the same in both monetary and dietary energy terms reflecting a strong reliance and hence vulnerability of households of the capital to prices of food and market access.

Figure 10. Food Consumption Expenditure by Food Sources (%) at national and sub national levels

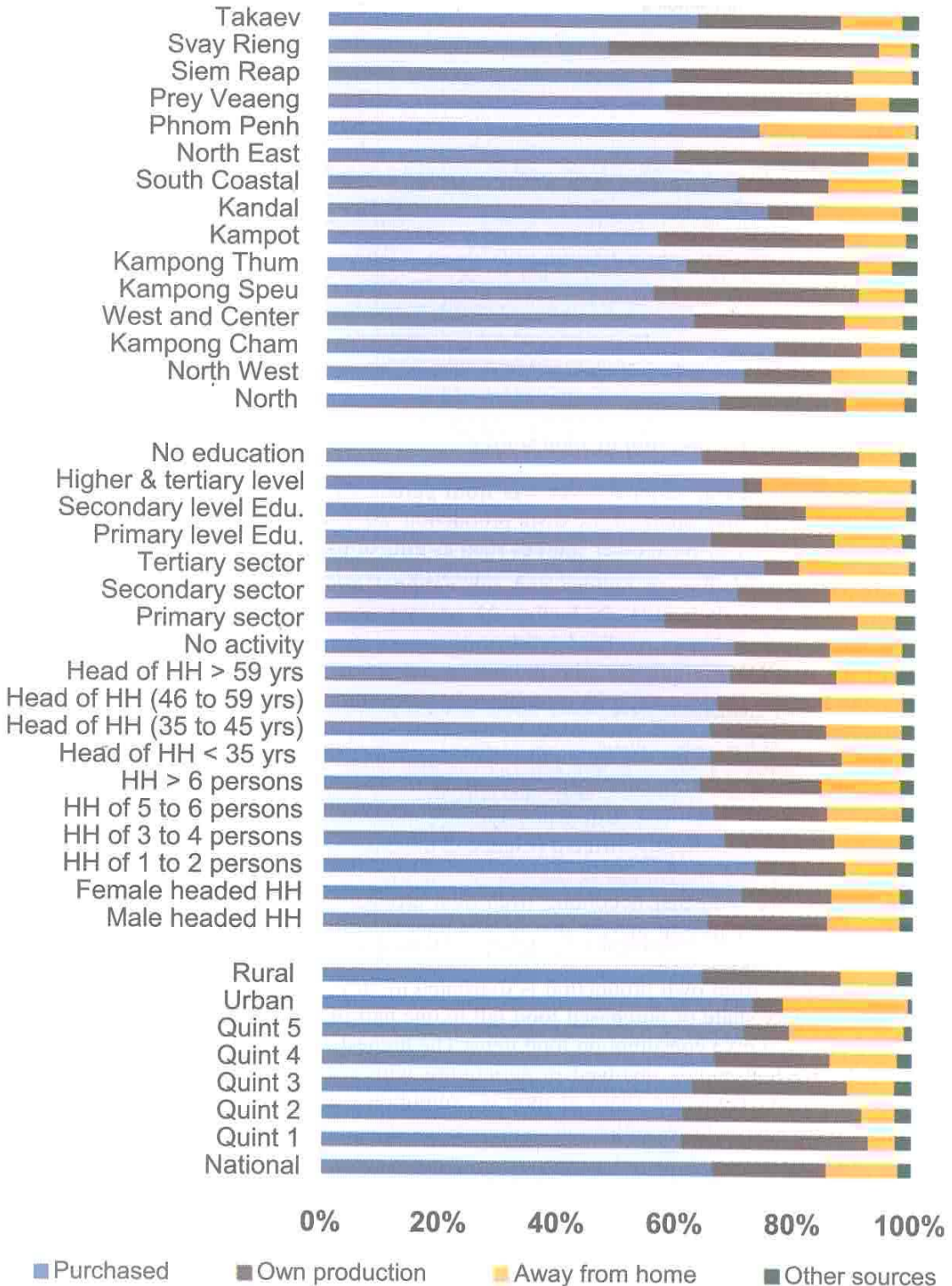
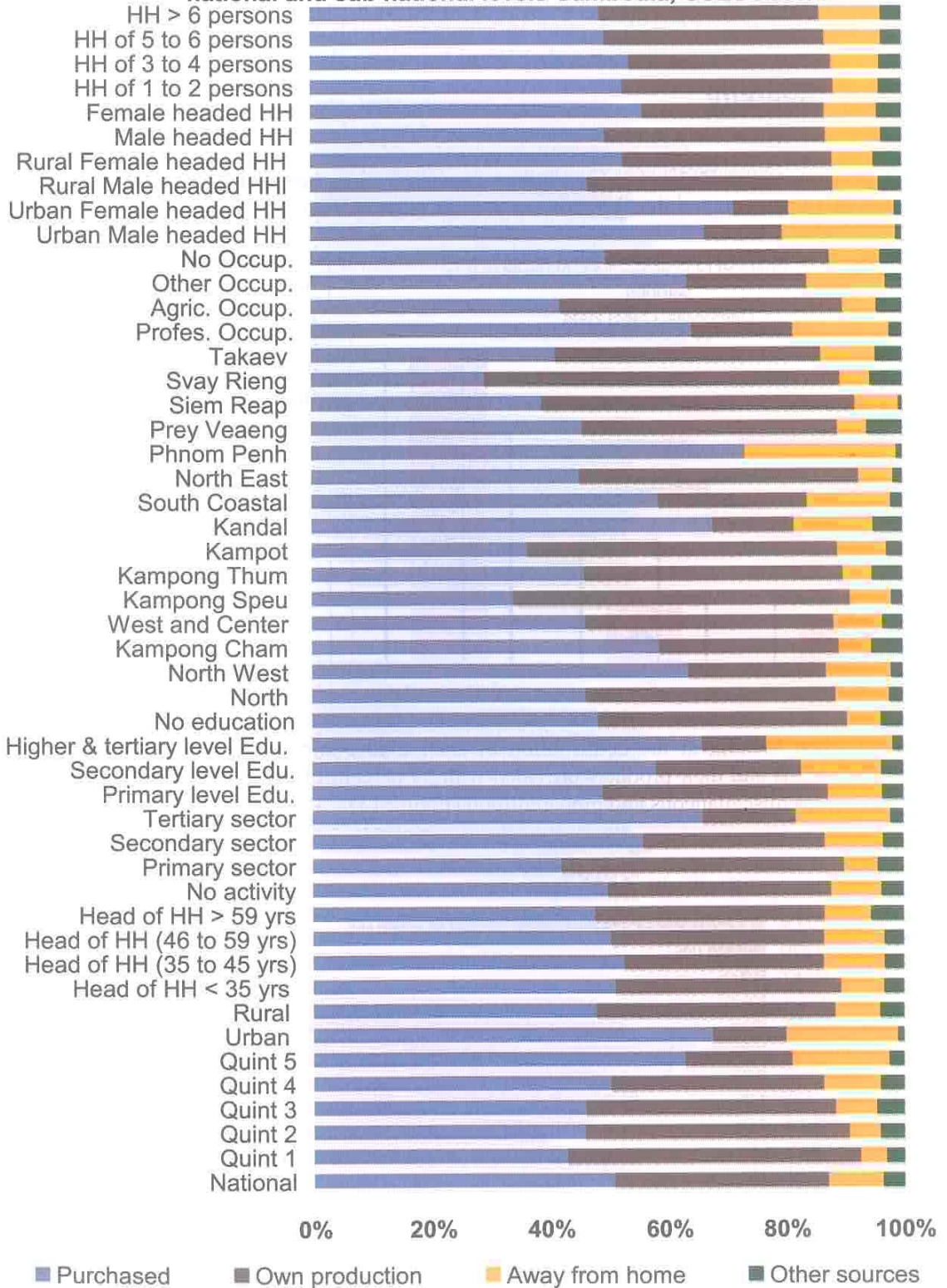


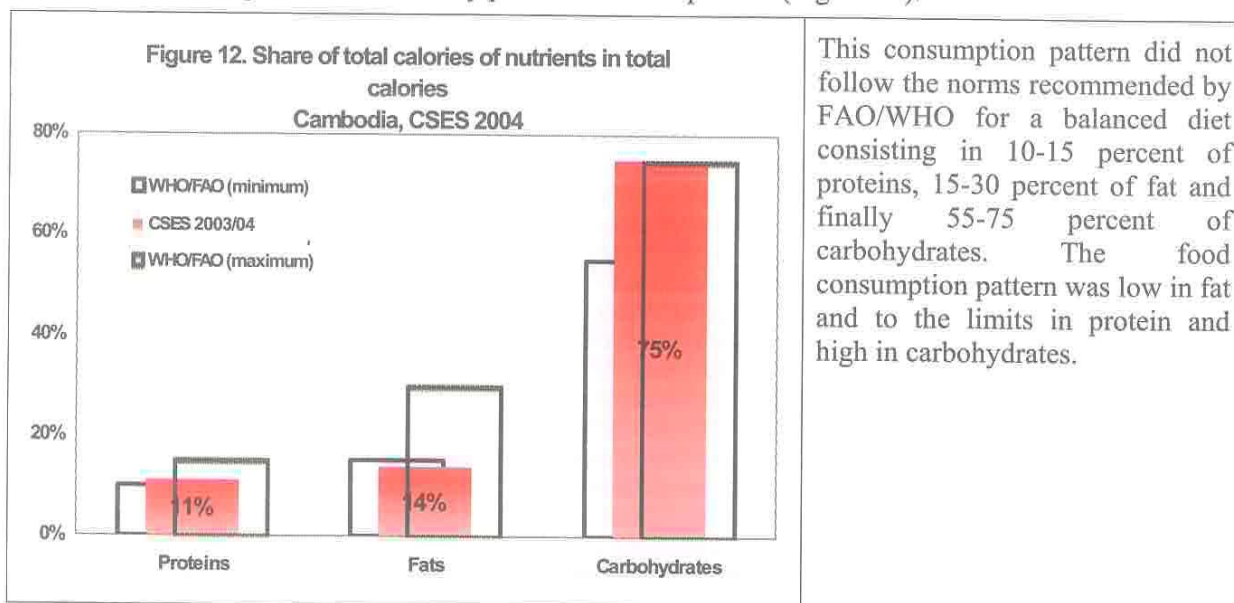
Figure 11. Dietary Energy Consumption by Food Sources (%) at national and sub national levels Cambodia, CSES 2003/4



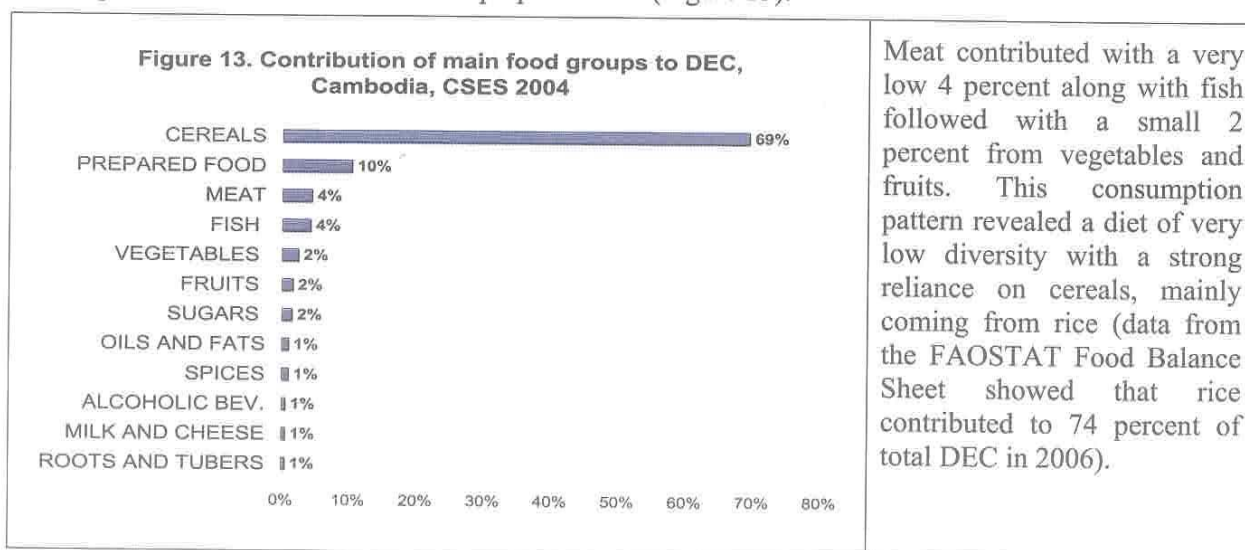
Finally, the share of food from purchased was higher in female headed households than in male headed households (71 versus 65 percent), these later consuming a higher share of food from their own production, the share of food from own production being higher both in monetary and energy values.

(E) Dietary Diversity

About 75 percent of the DEC of a Cambodian consisted of carbohydrates, followed by fat with a contribution of 14 percent, and then by proteins with 11 percent (Figure 12).



Furthermore when looking at the contribution of each food commodity group to the total DEC it appeared that cereals and their products provided with 69 percent of the total dietary energy, followed by 10 percent from miscellaneous and prepared food (Figure 13).



On average, a Cambodian was consuming 436 grams of carbohydrates with larger amount found among households of small size and of the highest income quintile (Figures 14,14a and14b).

Figure 14a: Consumption of carbohydrates at national and sub national level (g/person/day)

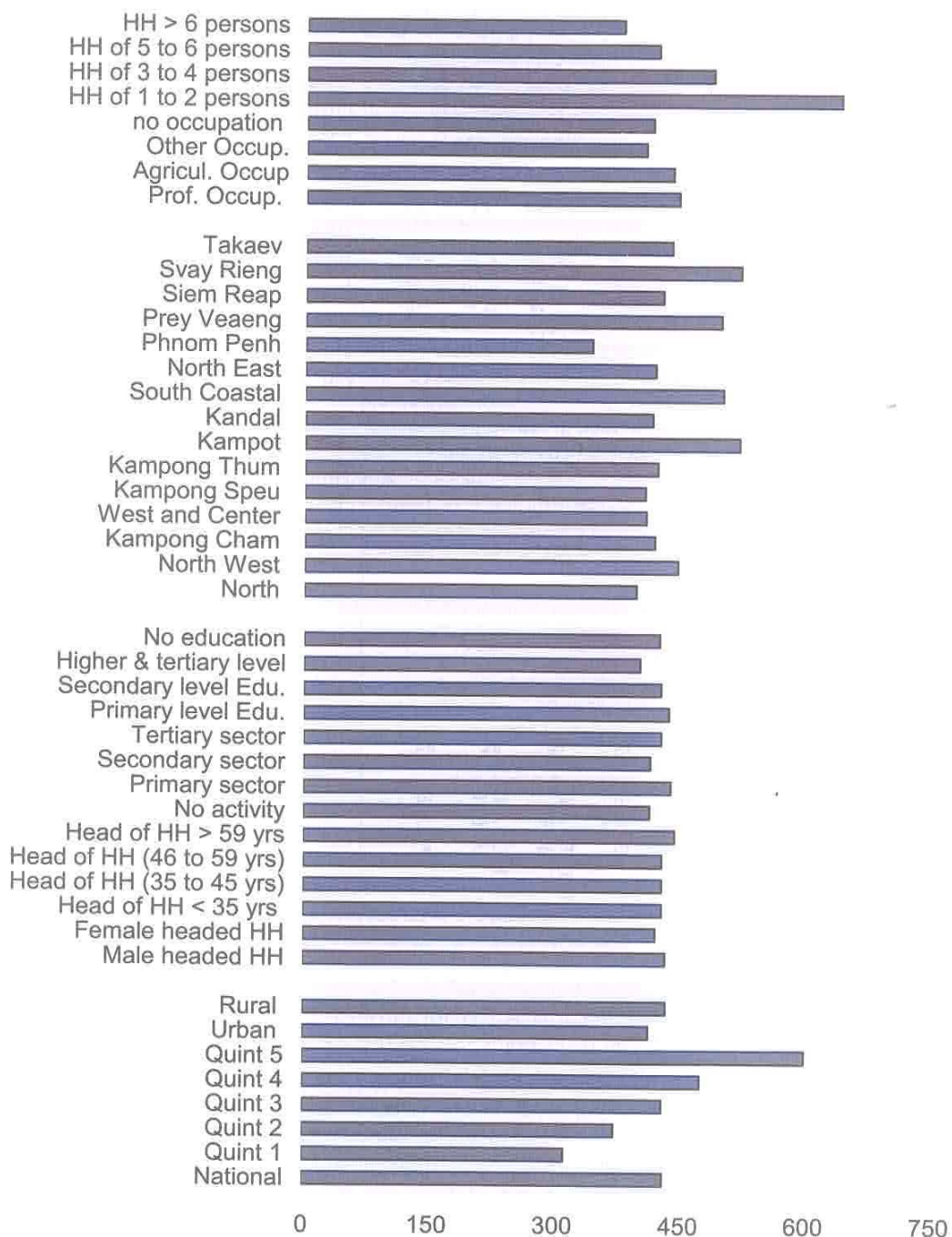


Figure 14b. Contribution of main food group in quantities of carbohydrates consumed (%)

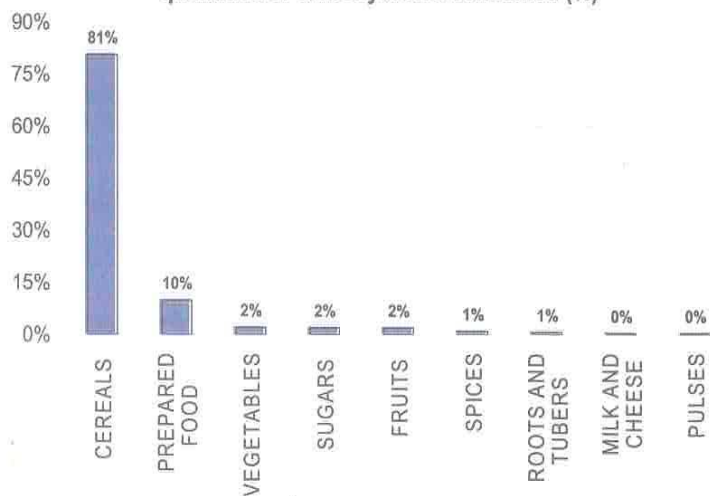
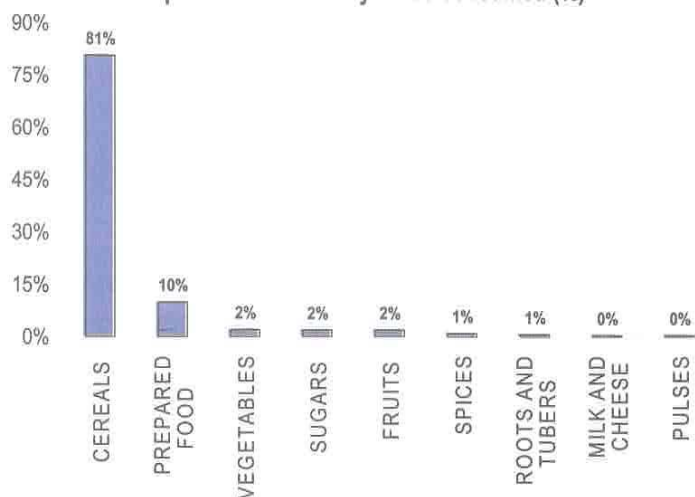


Figure 14b. Contribution of main food group in quantities of carbohydrates consumed (%)



This high level of carbohydrates was mainly coming from a higher consumption of sugar and syrups and prepared food. On reverse, the lower level of carbohydrates consumed by people of the first quintile represented 79 percent of their total DEC and almost 90 percent of those carbohydrates were coming from cereals. In case of Phnom Penh, diet was more diversified as carbohydrates represented only 68 percent of DEC, followed by 20 percent of fats and 12 percent of proteins. The diet of a household from Phnom Penh consisted mainly in cereals and products (providing 57 percent of total carbohydrates), meat (providing 13 percent of proteins and 37 percent of fats), fish (18 percent of proteins) and finally prepared food (26 percent of proteins, 28 percent of carbohydrates and 27 percent of fats).

On average, the consumption of proteins was low with only 65 grams/person/day (Figures 18c and 18d). At sub national level, consumption of proteins followed the same pattern as that of carbohydrates, that is small size households from the highest income quintile were consuming 45 grams of proteins more than the national average and most of the proteins consumed were coming from fish, meat and prepared food. At national level, half of the proteins consumed were of vegetable origin. The contribution of fish and their products was also quite important in the overall diet of a representative Cambodian as one protein consumed almost out of four was provided by fish. Other proteins from animal origins were of a lower importance with respective contributions of 7 percent from meat and 1 percent from eggs and dairy products.

Figure 14c: Consumption of proteins at national and sub national level (g/person/day)

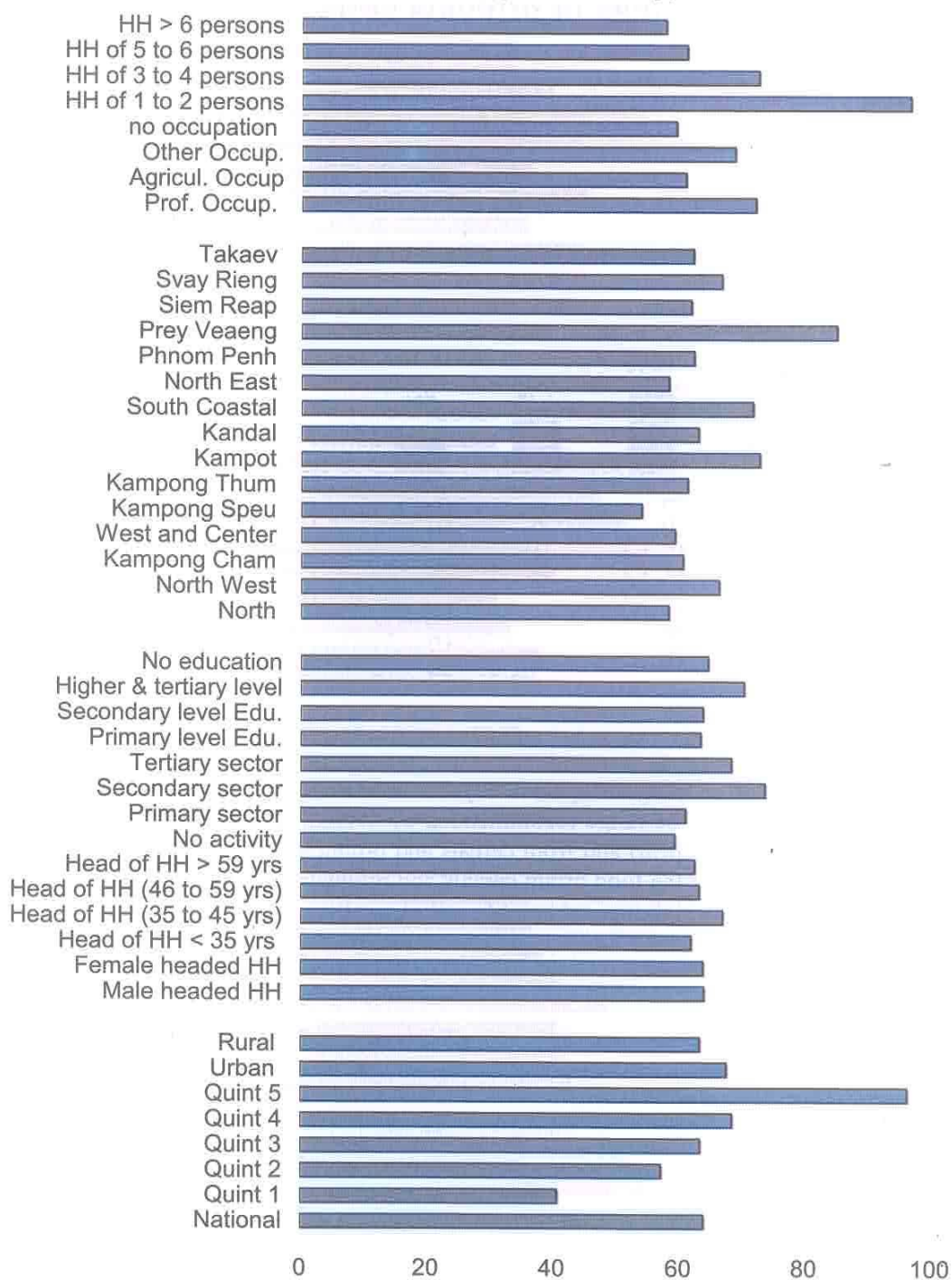
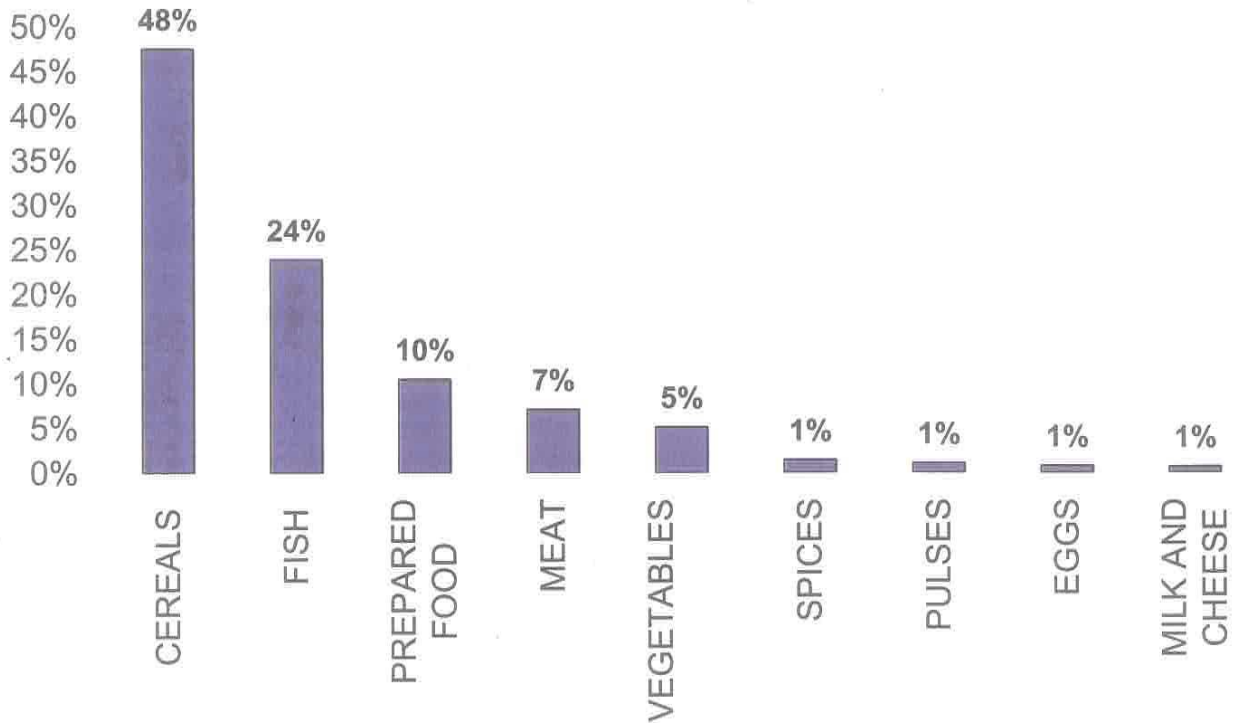


Figure 14d. Contribution of main food group in quantities of proteins consumed (%)



Finally, with a consumption of 36 grams/person/day and a contribution of 14 percent to total DEC, consumption of fats was below the range recommended by WHO/FAO with a larger contribution of fats from animal origin (mainly meat) and from cereals and products (this later results is explained by the classification of pastries into the food group cereals and products). Again, consumption of fats was the highest for household of the high income quintile and of small size.

Figure 14e: Consumption of fats at national and sub national level (g/person/day)

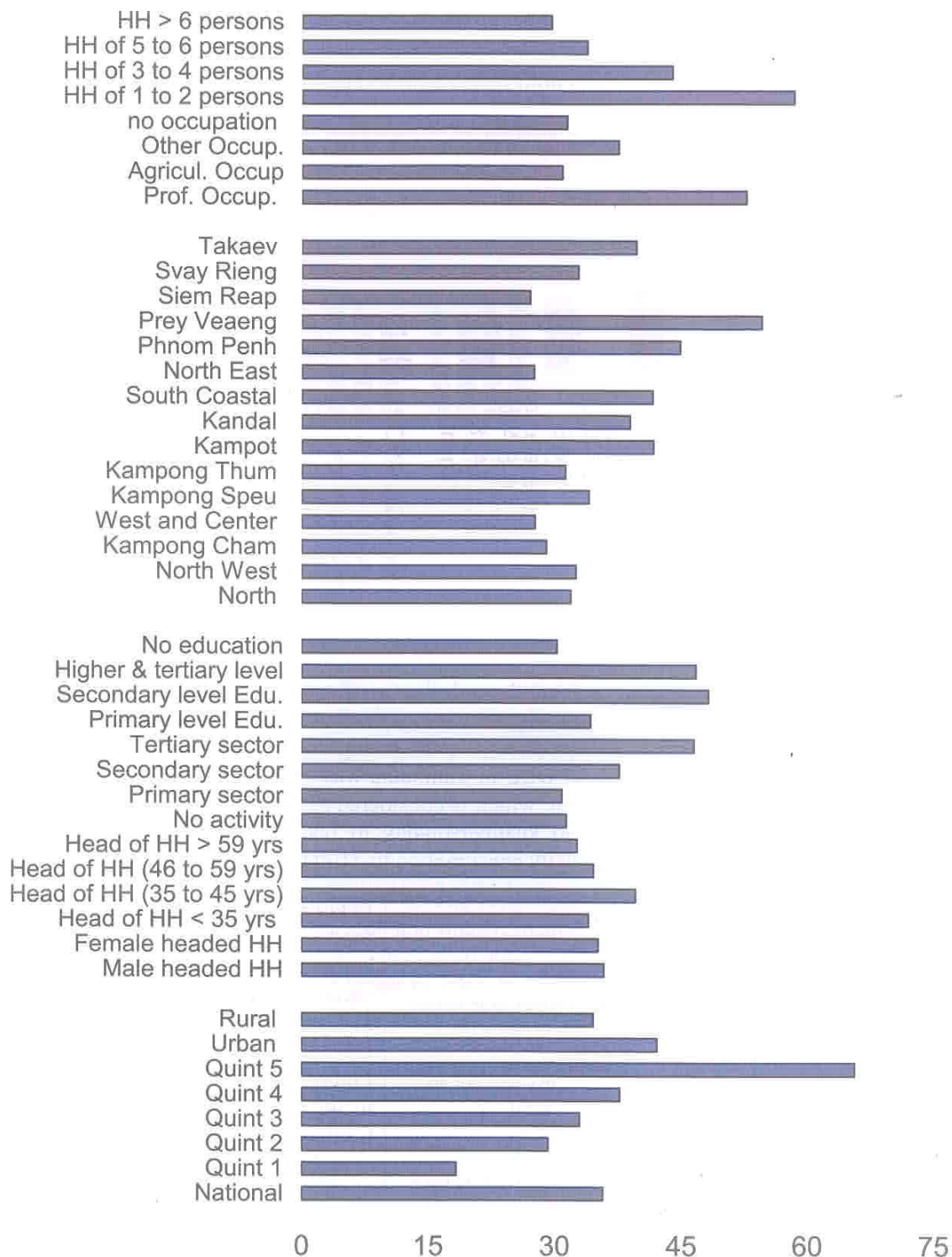
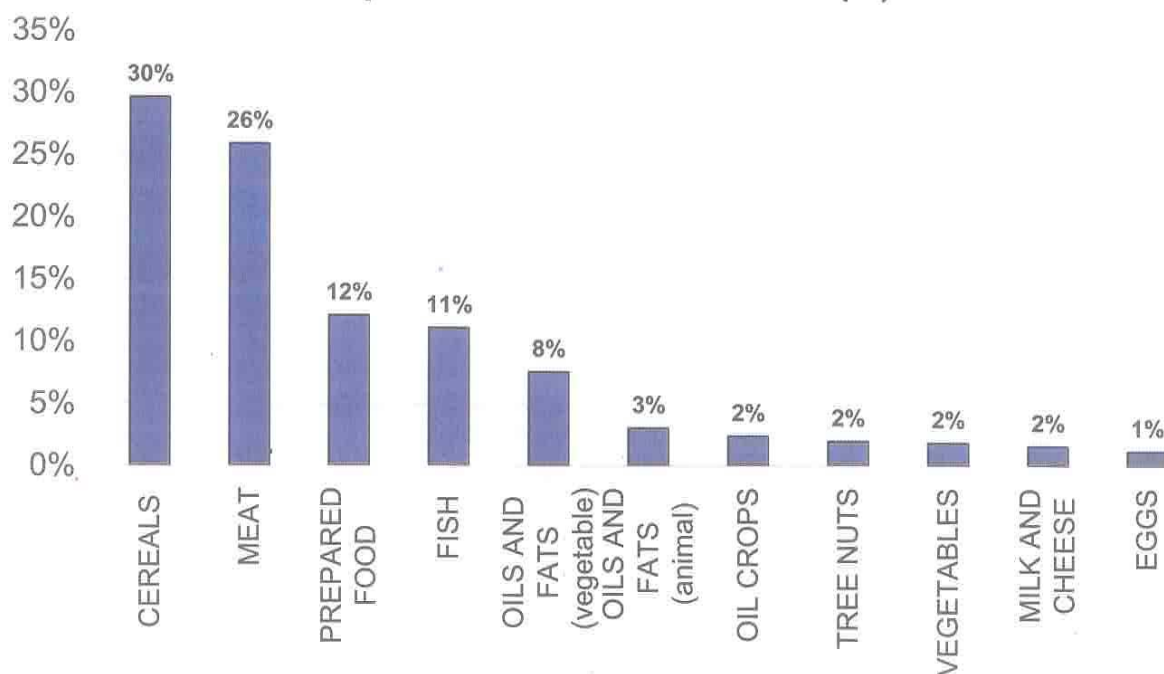


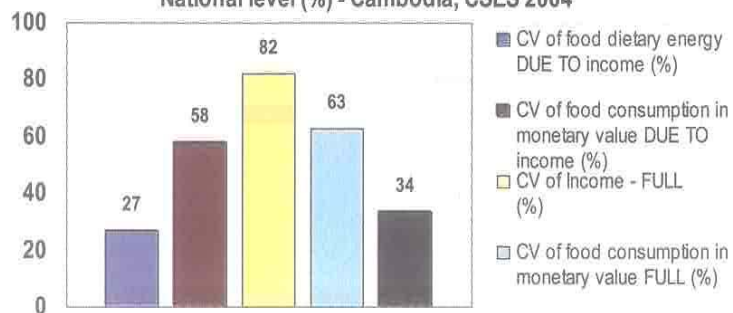
Figure 14f. Contribution of main food group in quantities of fats consumed (%)



(F) Food and Income inequality

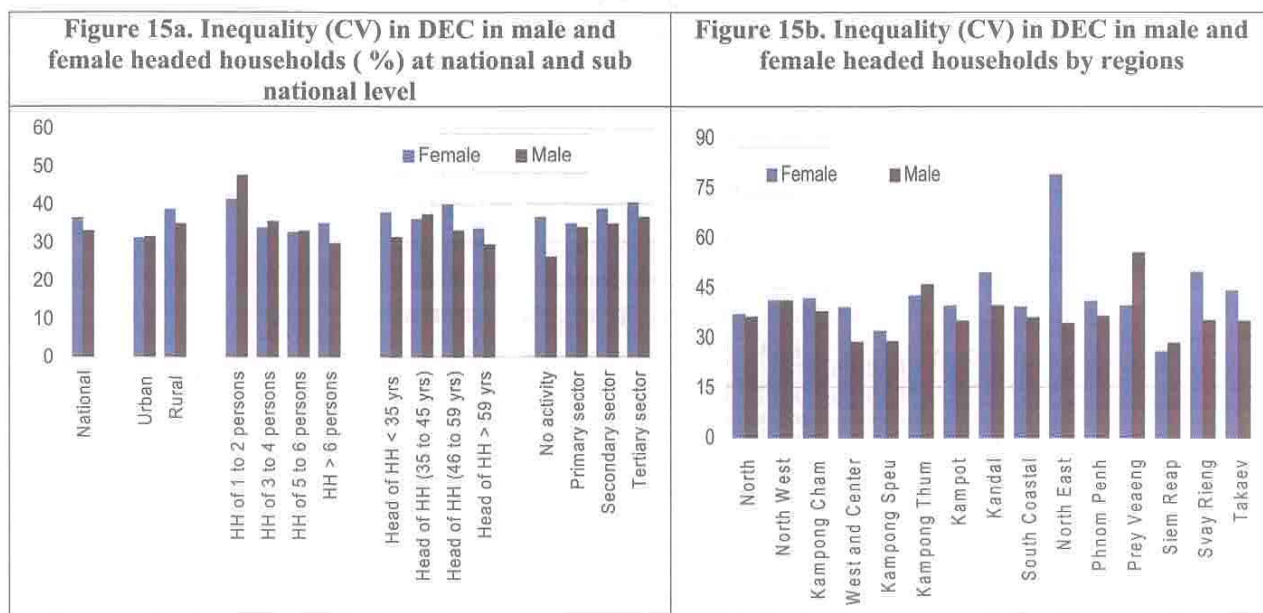
Inequality in access to food is estimated by FAO through the Coefficient of Variation (CV) of dietary energy consumption. This CV results of two components to capture on one side the variation of DEC owing to income and on the other side the variation of DEC owing to energy requirement. This later has been set to 20 percent. The overall CV of DEC in Cambodia was 34 percent for a value of CV of DEC due to income of 27 percent, which is considered as a high value. Keeping this CV constant, it would require an additional 790 kcal/person/day to reach a 5 percent level of food deprivation in Cambodia raising the average daily consumption to 3100 kcal per person.

Figure 15: Coefficients of Variation (CV) of dietary energy consumption, food monetary value and income at National level (%) - Cambodia, CSES 2004



In terms of monetary value, the CV of food consumption due to income is higher as it takes into account the variations of prices. It was 58 percent in Cambodia, twice the value of the CV of DEC due to income (See Figure 15). And finally the CV of income was the highest and in case of Cambodia, it was equal at 82 percent revealing an inequality in income of almost twice that of total DEC.

Inequalities in access to food were overall higher among female headed households than male headed households (37 versus 33 percent) except for households of less than two people where inequalities in access to food were higher for male headed than woman headed households (48 versus 41 percent). It was in the provinces of the North East that the inequalities among and within female and male headed households were the highest. Those high levels of inequalities combined with lower level of food consumed explained the higher level of food deprivation observed in female headed households than in male headed households.

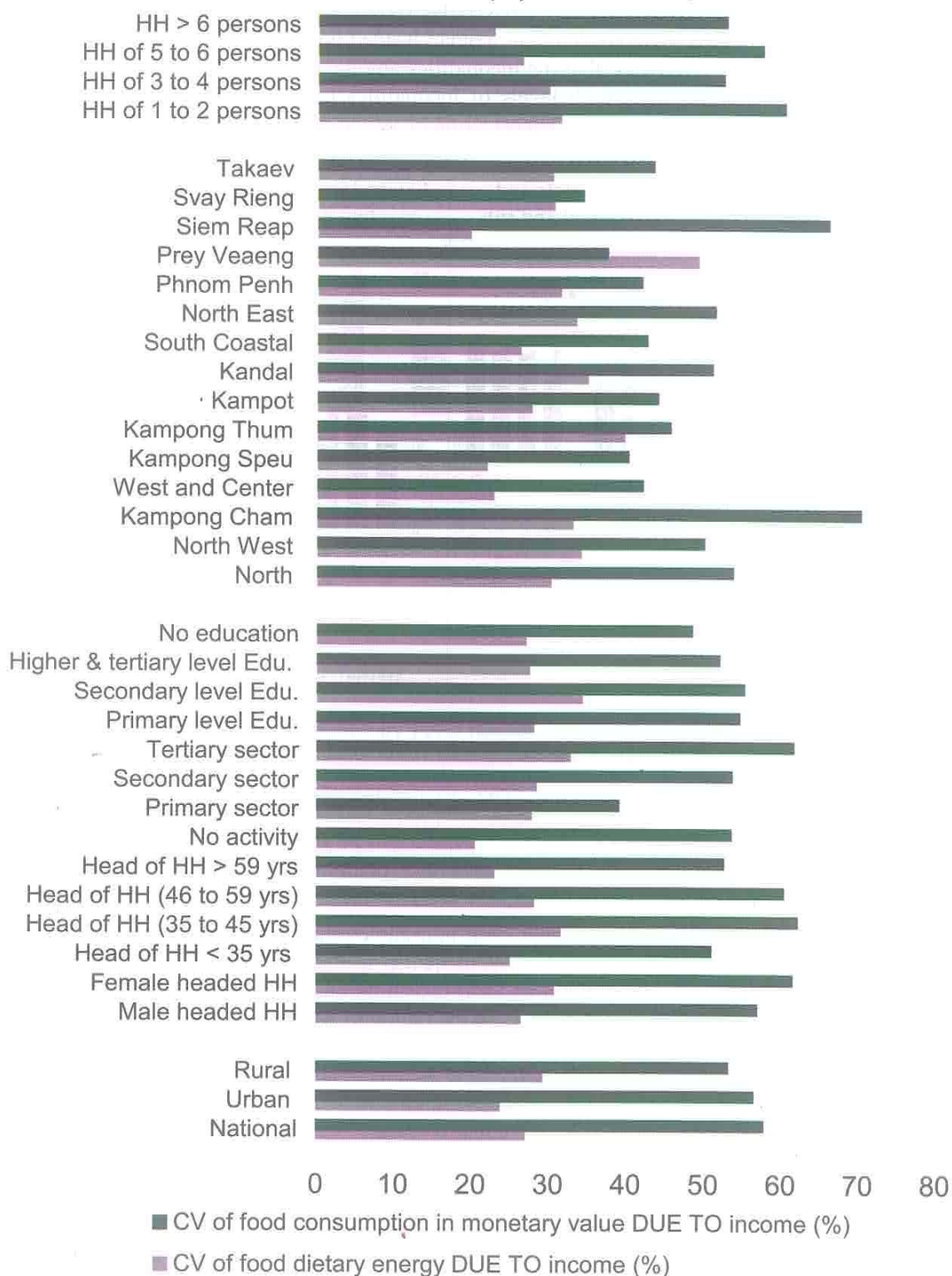


1. Inequality in access to food consumption due to income

Inequality in access to food as measured by the CV of DEC due to income was 27 percent nationwide. The highest inequality was observed among households located in the region of Prey Veaeang. On reverse, the lowest inequality was observed among households located in the region of Siem Reap (Figure 16).

Access to food was also more unequal among rural households than urban households with a CV of respectively 29 percent and 24 percent, and finally, inequality in Phnom Penh reflected that observed at national level. When looking at distribution of food consumption in monetary value inequalities are wider as they include variations in prices of food. In the region of Kampong Cham in which inequality in access to food in both dietary energy and monetary value was almost the same revealed that in this region variations in food prices were almost inexistent. But, inequality in monetary terms reversed between rural and urban areas. With a CV of food monetary value due to income of 70 percent the region of Kampong Cham exhibited the highest level of inequality

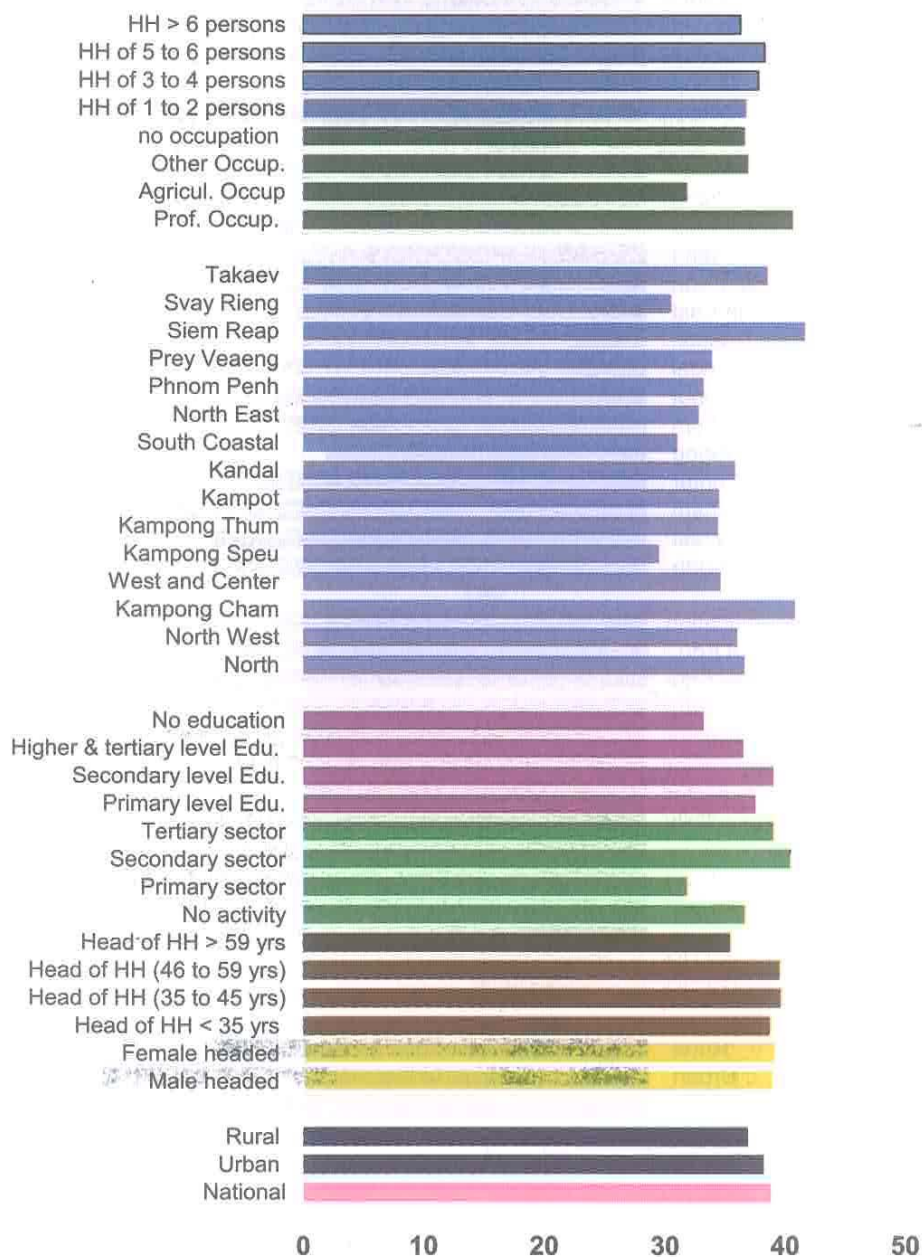
Figure 16: Inequality in access to food as measured by the coefficient of variation (%) - Cambodia, CSES 2004



2. Income inequality

With a value of gini coefficient of 39 percent and a dispersion ratio of six, income inequality could be considered as high in Cambodia in 2004 (See Figures 17a and 17b).

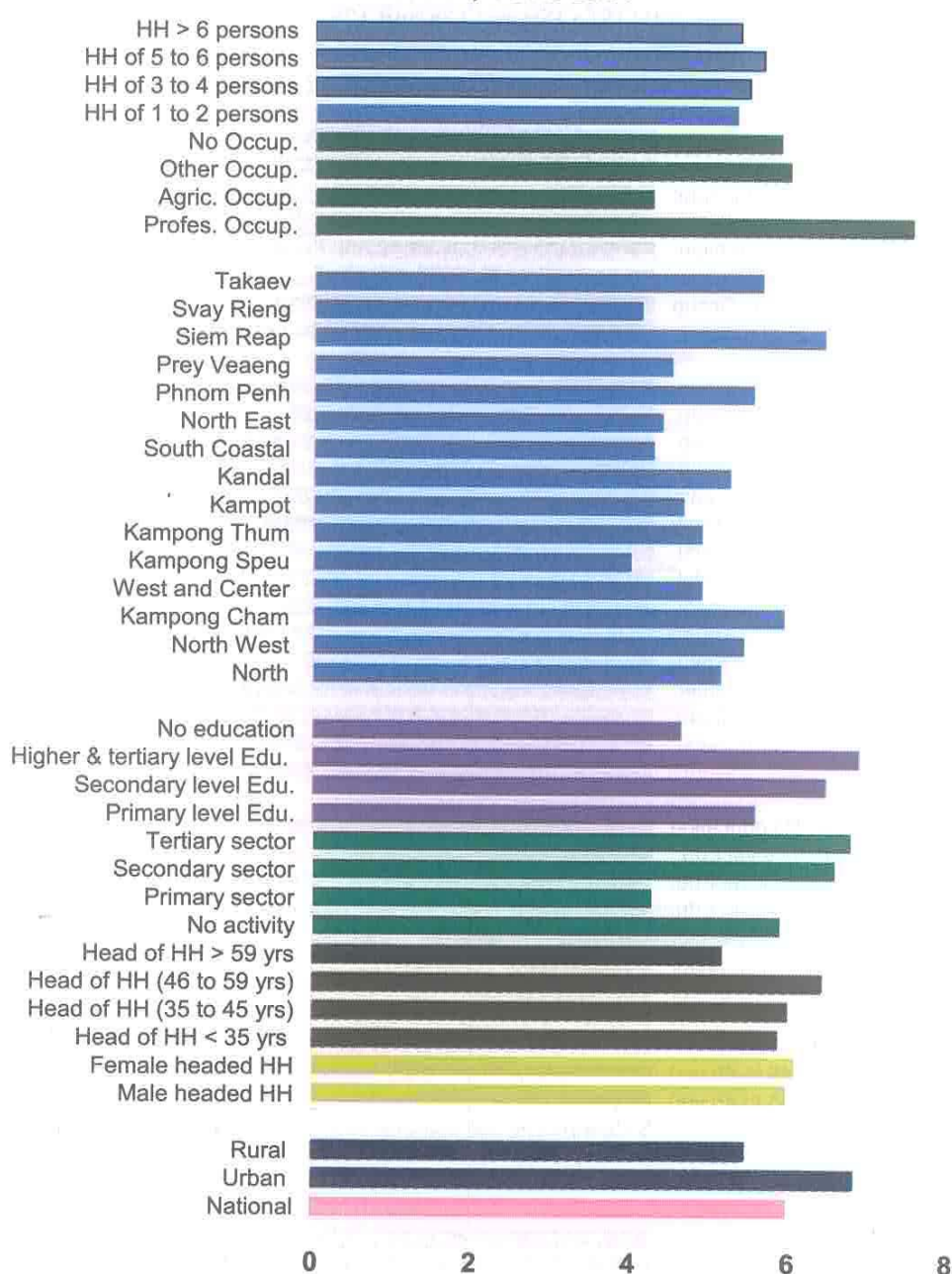
Figure 17a: Gini of income - Cambodia, CSES 2004



Compared to the value of 40.4 from 1997 survey⁴, situation in terms of income inequality has almost remained the same.

⁴. This value remains very close to 1997 value of gini of 40.4% as given by UNDP, HDR 2006.

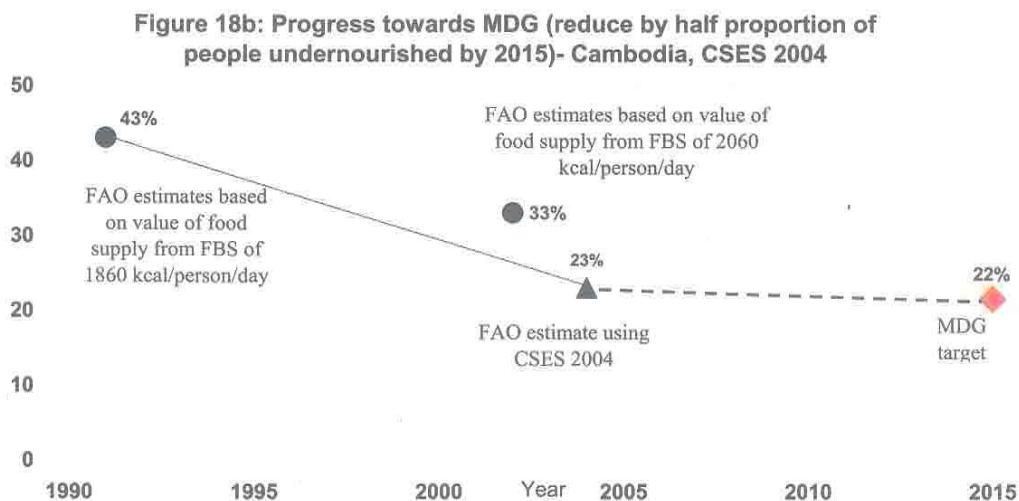
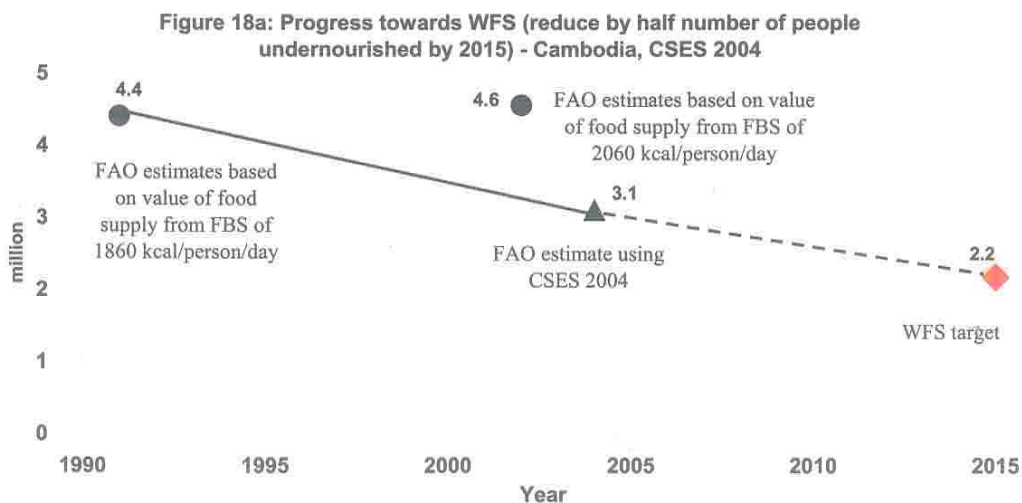
Figure 17b: Dispersion ratio of income (80/20) - Cambodia, CSES 2004



Inequality among households involved in agriculture and from the region of the Plateau/Mountain was the lowest with a gini coefficient of 32 percent and both groups had dispersion ratios of four. While with a gini of more than 41 percent, households of the highest income quintile group had an income dispersion ratio of about seven. Income inequality was the highest among professionals and households with a higher level of education. Income inequality was also very high among urban households compared to inequality among rural households (39 percent versus 37 percent).

(G) Towards the WFS and MDG

According to the results from the CSES 2004, Cambodia is moving towards the achievement of the WFS and MDG, which set as a target to decrease by half respectively the number and the proportion of people undernourished by 2015. To reach WFS target, the number of undernourished people in Cambodia should be of about 2.2 million in 2015 (Figures 18a and 18b).



With a decrease from 4.3 million to 3.0 million, Cambodia is on the way towards the target but the pace of decrease should accelerate in the next years. Compared to FAO estimate based on FBS, the food data from the CSES 2004 gave lower estimates of both number and proportion and higher level of DEC with 2340 kcal/person/day compared to 2060 kcal/person/day. Those results raised the issue of the importance of having good and reliable data on food consumption when monitoring achievement towards the MDG and WFS.

IV. CONCLUSION

This report analyses the food security situation in Cambodia using data on food consumption from the Cambodian Socio Economic Survey 2003-2004. Various indicators on food and poverty deprivations together with a large range of food security statistics were derived at national and sub national levels. These information are very useful in defining the profile of food insecure population and their location for more focused policy interventions in the fight against hunger. However, these statistics should be used with caution given the limitations of the available food data in the CSES 2004 whose primary objectives were other than the food security analysis. This exercise shows that such type of household survey can provide reliable statistics for the assessment and monitoring of the food situation both at the country and sub national levels. Below are discussed some limitations which were observed while processing the food consumption data. Some recommendations are also provided to enhance the collection of food consumption data in future CSES for more reliable, consistent and comparable food security indicators useful for policy makers for assessing food policy programmes.

(A) Limitations:

- 1- Total expenditures were used as proxy of income as no reliable data for this variable were available. Total expenditures were aggregated as sum of food and non-food consumption expenditure including housing, medical expenses, education, purchase of durable good during the period of the survey. The use of this series as a proxy of income distribution may affect overall results on food and critical food poverty.
- 2- Some food quantities reported, particularly those from own production, were found to be out of range which probably referred to production instead of consumption and had to be re-estimated using their corresponding monetary value and the average dietary unit value at regional level.
- 3- Food quantities were collected in a large number of local units of quantity measurement besides the standard ones like Kg, litre, gram, unit and millilitres. These local quantity units vary among the different regions of the country and it was difficult to get the appropriate gram or millilitres equivalent. However, the corresponding monetary values were used to derive the respective gram quantities using the gram unit value of the food item at the regional level.
4. In spite of having a long list of food items, the CSES 2004 contains a few broad groups of food items for which it was difficult to find corresponding nutrient values.

(B) Recommendations:

1. The number of unit of quantity measurement should be reduced and limited to the standard kilogram, gram, litre and millilitre. In addition, these standard units together with those local units should be appropriately converted directly in grams or millilitres during the data entry. Efforts should be taken during field data collection to have the gram equivalent of all local units of quantity measurement, at the regional level such as villages through adhoc surveys in the local markets.
- 2- The quality of the food consumption data should be checked as some quantities reported appear out of range. Consistency checks have to be performed between the quantity and monetary values reported at the collection and data entry stages. It is advisable to have a price survey incorporated in the CSES for editing and subsequent estimation procedures particularly for own consumption food items.

- 3- The ASEAN food composition table supplemented by the USDA were used to build the nutrient conversion table of the CSES 2004 food items. However, it is important that such table be reviewed with relevant experts from health and nutrition institutions for future use.
4. The food security analysis has an added value of deriving hunger indicators at sub national levels from the CSES 2004. However, improved measures of those estimates need additional data of height of all household individuals in the sample for computing the respective values of minimum and average dietary energy requirements which are functional to body weight, age, sex and activity level of the population groupings. It is recommended that height data be collected in future CSES.
5. Finally, more reliable estimates could be obtained with the review of the CSES questionnaires as to collect the household food outlay in terms of food stocks (from own consumption and purchases) food consumption and expenditure and food given away. In addition, more consistent income data have to be catered for in the questionnaire design...

V. GLOSSARY

BALANCED DIET

The diet is balanced when is judged to be consistent with the maintenance of health in a population. The balance can be examined in terms of the contributions of the various energy-supplying macronutrients and other nutrients. A macronutrient-based balance food consumption pattern should contribute to total energy from proteins, fats and carbohydrates within recommended ranges as follows: proteins from 10 percent to 15 percent, fats from 15 percent to 30 percent and carbohydrates from 55 percent to 75 percent as from a technical report of a 2002 joint WHO/FAO Expert Consultation (WHO 2003).

CRITICAL FOOD POVERTY

The prevalence of critical food poverty (pCFP) refers to the proportion of persons living on less than the cost of the macro-nutrient balanced MDER (for MDER see below and for balanced diet see above) with food prices from households in the lowest income quintile. It can be estimated at national and sub-national levels.

DIETARY ENERGY UNIT COST

The dietary energy unit cost is the monetary value of 1000 kilo-calories of food consumed.

DEPTH OF FOOD DEPRIVATION

It refers to the difference between the average dietary energy consumption of an undernourished population and its average minimum energy requirement (MDER).

DIETARY ENERGY CONSUMPTION

Food consumption expressed in energy terms. At national level, it can be calculated from the FBS (see below); this estimate refers to both private and public food consumption. At sub-national levels is estimated using food consumption data in quantities collected in national household surveys; this estimate refers to private food consumption.

DIETARY ENERGY DEFICIT

Same as Depth of Food deprivation

DIETARY ENERGY REQUIREMENT

It refers to the amount of energy required by an individual to maintain body functions, health and normal physical activity.

The *minimum* dietary energy requirement (MDER) refers to the amount of energy considered adequate to meet the energy needs for normative *minimum* acceptable weight for attained height while performing *light* physical activity in good health.

The *average* dietary energy requirement (ADER) refers to the amount of energy considered adequate to meet the energy needs for normative *average* acceptable weight for attained height while performing *moderate* physical activity in good health.

FOOD BALANCE SHEETS

The food balance sheets (FBS) are derived for each commodity using data on food production and imports and opening-year food stocks after deduction of food export and end-year food stocks and all non-food consumption (animal feed, industrial use, seed, wastage and other non-food use); this estimate refers to both private and public food consumption.

FOOD CONSUMPTION DISTRIBUTION

Food consumption distribution refers to the variation of consumption within a population. It reflects both the disparities due to socioeconomic factors and differences due to biological factors, such as sex, age, body weight and physical activity levels.

FOOD DEPRIVATION

Food deprivation refers to the condition of people whose food consumption is continuously below its requirements. FAO's measure of food deprivation refers to the proportion of the population whose dietary energy consumption is below the MDER.

FOOD INSECURITY

A situation when people lack secure access to sufficient amounts of safe and nutritious food for normal growth and development and an active and healthy life. It may be caused by the unavailability of food, insufficient purchasing power or inappropriate distribution. Food insecurity may be chronic, seasonal or transitory.

FOOD SECURITY

A situation that exists when all people, at all time, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.

GINI COEFFICIENT

The Gini coefficient is a measure of inequality and ranges from 0 (perfect equality) to 1 (perfect inequality). In this document it refers to inequality of income.

GINI COEFFICIENT DUE TO INCOME

The Gini coefficient is a measure of inequality in food consumption due to income and ranges from 0 (when income has no effect on food consumption) to 1 (when food consumption depends only on income). In this document it refers to inequality in food consumption in monetary or in energy terms.

HOUSEHOLD CONSUMPTION EXPENDITURE

Total household consumption expenditure as defined in the United Nations guidelines is the sum of all monetary value or expenditure on goods and services intended for consumption, goods produced and consumed from own production or own-business stocks, including the imputed rent of owner-occupied housing, and goods and services received in kind.

HOUSEHOLD FOOD CONSUMPTION EXPENDITURE

Household consumption expenditure refers to food consumed by household members during a specified period, at home and outside the home, for example, at restaurants, bars, the work place, school, and so on. It includes food from all sources, purchased or from garden or farm. Further deductions should be made to allow for wastage and losses occurring from acquisition to cooking and plate and kitchen wastage.

HOUSEHOLD NON CONSUMPTION EXPENDITURE

It refers to income taxes, other direct taxes, pension and social security contributions, remittances, gifts and similar transfers made by the household in monetary terms or in kind, including food such as given away raw or ready to eat.

HOUSEHOLD EXPENDITURE

Consumption plus non-consumption expenditure made by the household, including food.

HOUSEHOLD INCOME

Income is the sum of all receipts, in money or in kind, which as a rule are received regularly and are of recurring nature, including food.

INCOME ELASTICITY OF FOOD DEMAND

The income elasticity of food demand measures the responsiveness of the food demanded (quantity, monetary or nutrient terms) to a unit change of income.

INCOME INEQUALITY

Inequality refers to disparities in the distribution of income.

INEQUALITY IN FOOD CONSUMPTION DUE TO INCOME

The inequality refers to the variation of the food consumption level within a population due to disparities in the income distribution.

KILOCALORIE (Kcal)

Kilocalorie is a unit of measurement of dietary energy. In the International System of Units (ISU), the universal unit of dietary energy is the joule (J) but Kcal is still commonly used. One kilocalorie = 4.184 kilojoules (KJ).

MICRONUTRIENTS

The vitamins, minerals and certain other substances required by the body in small amounts. They are measured in milligrams or micrograms.

NUTRITIONAL STATUS

The physiological state of an individual that results from the relationship between nutrient intakes and requirements and from the body's ability to digest, absorb and use these nutrients. Lack of food as well as poor health and sanitation and inappropriate care and feeding practices are the major causes of poor nutritional status.

SHARE OF FOOD EXPENDITURE

The proportion of household consumption expenditure allocated to food ; it is also known as Engel ratio.

UNDERNOURISHMENT

Same as Food Deprivation.

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VII. ANNEXES

Annex Table1. Selective Statistics of food consumption

<u>Selective statistics of food consumption</u>						
Region: Asia Country: Cambodia Year: 2003/04						
Categories and Groupings	Number of sampled households	Average number of people in household	Average food consumption in dietary energy value (kcal/person/day)	Average food consumption in monetary value (LC\$/person/day)	Average dietary energy unit value (LC\$/1000kcal)	Average total consumption (LC\$/person/day)
Nationwide	14981	5.0	2310	1388.13	601.09	1943.93
Income level						
Quintile 1	2996	6.0	1580	691.08	436.45	814.26
Quintile 2	2996	5.4	1990	948.88	476.97	1152.10
Quintile 3	2997	4.9	2270	1186.03	521.47	1488.90
Quintile 4	2996	4.5	2530	1537.50	608.15	2032.29
Quintile 5	2996	4.3	3390	2837.99	837.04	4693.50
Area						
Urban	2993	5.1	2310	2120.66	922.59	3128.45
Rural	11988	5.0	2310	1256.79	544.14	1733.85
Age of head of HH						
HH of age less than 35	3770	4.2	2280	1311.56	575.37	1895.02
HH of age between 35 and 45	4164	5.5	2350	1335.21	568.34	1843.88
HH of age between 45 and 60	4563	5.5	2290	1469.43	642.74	2071.03
HH of age higher than 60	2484	4.3	2320	1430.09	615.80	1939.25
Economic activity of head of HH						
no activity or not known	1813	4.7	2180	1363.25	626.16	1909.28
Primary (agriculture- fishing- hunting- mining)	7495	5.0	2290	1110.87	485.16	1512.49
secondary (manufacturing)	1419	4.9	2300	1346.81	586.82	1938.58
services	4254	5.0	2410	1961.19	814.18	2813.00
Education						
primary level	7567	5.1	2310	1343.96	580.76	1871.93
secondary level	2525	5.0	2400	1759.77	732.49	2588.77
higher & tertiary level	439	5.0	2310	2739.95	1184.48	4253.05
other	4450	4.7	2250	1133.41	504.64	1496.68
Region						
North	870	4.8	2110	1255.05	595.08	1637.55
North West	1057	5.0	2350	1433.68	611.24	1997.22
Kampong Cham	2040	4.8	2180	1292.89	593.18	1683.94
West and Center	1030	4.9	2120	1176.51	553.89	1659.32
Kampong Speu	768	5.0	2170	1061.28	488.65	1451.34
Kampong Thum	740	5.2	2220	1021.83	460.81	1413.36
Kampot	697	4.7	2740	1305.95	475.76	1717.96
Kandal	1349	5.3	2270	1445.69	638.07	2046.23
South Coastal	480	5.3	2670	1731.19	649.51	2412.91
North East	739	5.1	2170	1160.13	534.72	1551.15
Phnom Penh	1394	5.2	2030	2729.40	1346.73	4082.16
Prey Veaeang	1277	4.5	2860	1200.06	419.15	1727.80
Stiem Reap	870	5.4	2210	1241.69	562.92	1716.86
Svay Rieng	640	4.7	2650	1113.88	419.67	1599.51
Takaev	1030	4.9	2360	1280.82	542.50	1904.94
Occupation						
professional and others	2652	5.0	2550	2145.81	842.05	3112.77
agricultural and related workers	7646	5.0	2290	1108.22	484.82	1508.11
others	2882	5.0	2250	1545.51	688.41	2196.43
no occupation	1801	4.7	2180	1363.48	625.61	1909.06
Gender and area						
Male headed urban	2261	5.3	2340	2121.43	907.99	3108.41
Female headed urban	732	4.4	2200	2155.99	961.25	3204.22
Male headed rural	9392	5.3	2320	1242.03	535.92	1729.68
Female headed rural	2596	3.8	2270	1329.95	585.70	1754.53
Gender						
Male headed	11653	5.3	2320	1368.87	589.96	1928.53
Female headed	3328	3.9	2260	1479.49	655.40	2016.97
Household size						
one or two persons	1377	1.8	3510	2161.61	615.96	2901.77
three to four people	5214	3.6	2640	1598.14	605.92	2265.89
five to six people	5208	5.4	2240	1389.56	619.90	1949.83
more than 6 people	3182	7.9	2020	1151.45	570.39	1600.11

Annex Table 2. Food deprivation at national and sub national levels

Food deprivation and parameters by population groupings						
Region: Asia Country: Cambodia Year: 2003/04						
Categories and Groupings	Number of sampled households	CV (%) of food dietary energy consumption (kcal/person/day) - FULL as defined by FAO	Minimum dietary energy requirement (kcal/person/day) as defined by FAO	Average of food dietary energy consumption (kcal/person/day)	Proportion of food deprivation in total population (%) as defined by FAO	Dietary energy consumption in food deprived population (kcal/person/day)
Nationwide	14981	34.0	1715	2310	23	1435
Income level:						
Quintile 1	2996	20.0		1580	69	1417
Quintile 2	2996	20.0		1990	26	1529
Quintile 3	2997	20.0		2270	9	1568
Quintile 4	2996	20.0		2530	3	1591
Quintile 5	2996	20.0		3390	0	1600
Area						
Urban	2993	31.0	1758	2310	23	1489
Rural	11988	35.0	1707	2310	24	1412
Age of head of HH						
HH of age less than 35	3770	32.0	1545	2280	14	1329
HH of age between 35 and 45	4164	37.0	1684	2350	23	1384
HH of age between 45 and 60	4563	35.0	1831	2290	31	1497
HH of age higher than 59	2484	30.0	1766	2320	22	1502
Economic activity of head of HH						
no activity or not known	1813	29.0	1753	2180	26	1492
Primary (agriculture- fishing- hunting- mining)	7495	34.0	1703	2290	23	1419
secondary (manufacturing)	1419	35.0	1690	2300	23	1406
services	4254	38.0	1729	2410	24	1411
Education						
primary level	7567	34.0	1717	2310	23	1429
secondary level	2525	40.0	1709	2400	24	1385
higher & tertiary level	439	34.0	1731	2310	24	1443
other	4450	34.0	1710	2250	25	1423
Region						
North	870	36.0	1721	2110	34	1383
North West	1057	40.0	1712	2350	26	1382
Kampong Cham	2040	39.0	1715	2180	32	1369
West and Center	1030	30.0	1684	2120	26	1421
Kampong Speu	768	30.0	1701	2170	24	1446
Kampong Thum	740	44.0	1708	2220	34	1317
Kampot	697	34.0	1707	2740	10	1470
Kandal	1349	40.0	1732	2270	31	1377
South Coastal	480	33.0	1720	2670	11	1483
North East	739	39.0	1659	2170	30	1330
Phnom Penh	1394	37.0	1789	2030	43	1398
Prey Veaeng	1277	53.0	1723	2860	22	1328
Siem Reap	870	28.0	1698	2210	21	1465
Svay Rieng	640	36.0	1713	2650	14	1445
Takaev	1030	36.0	1709	2360	23	1412
Occupation						
professional and others	2652	40.0	1746	2550	22	1421
agricultural and related workers	7646	34.0	1703	2290	24	1417
others	2882	32.0	1697	2250	23	1427
no occupation	1801	29.0	1754	2180	26	1493
Gender and area						
Male headed urban	2261	32.0	1754	2340	22	1484
Female headed urban	732	31.0	1766	2200	29	1475
Male headed rural	9392	35.0	1704	2320	23	1415
Female headed rural	2596	39.0	1724	2270	29	1386
Gender						
Male headed	11653	33.0	1711	2320	22	1438
Female headed	3328	37.0	1731	2260	28	1409
Household size						
one or two persons	1377	37.0	1849	3510	5	1601
three to four people	5214	36.0	1714	2640	14	1450
five to six people	5208	33.0	1705	2240	25	1425
more than 6 people	3182	30.0	1713	2020	34	1423

Annex Table 3. Share of food consumption in monetary value by food sources

Share of food consumption to total consumption in monetary value and by food sources						
Region: Asia Country: Cambodia Year: 2003/04						
Categories and Groupings	Number of sampled households	Share of food consumption in monetary value to total consumption (%)	Share of food consumption in monetary value purchased to total food value (%)	Share of food consumption in monetary value from own production to total food value (%)	Share of food consumption in monetary value eaten away from home to total food value (%)	Share of food consumption in monetary value from other sources to total food value (%)
Nationwide	14981	71.4	66.4	19.1	12.3	2.2
Income level						
Quintile 1	2996	84.9	61.1	31.5	4.7	2.7
Quintile 2	2996	82.4	61.3	30.2	5.8	2.7
Quintile 3	2997	79.7	62.9	26.1	8.2	2.8
Quintile 4	2996	75.7	66.5	19.5	11.6	2.4
Quintile 5	2996	60.5	71.6	7.5	19.6	1.3
Area						
Urban	2993	68.0	73.0	5.0	21.4	0.6
Rural	11988	72.5	64.4	23.3	9.6	2.6
Age of head of HH						
HH of age less than 35	3770	69.2	65.6	22.0	10.4	2.0
HH of age between 35 and 45	4164	72.4	65.4	19.5	13.0	2.1
HH of age between 45 and 60	4563	71.0	66.6	17.6	13.8	2.0
HH of age higher than 60	2484	73.7	68.8	17.9	10.3	3.1
Economic activity of head of HH						
no activity or not known	1813	71.4	69.4	16.1	12.4	2.1
Primary (agriculture- fishing- hunting- mining)	7495	73.4	57.6	32.6	6.5	3.2
secondary (manufacturing)	1419	69.5	69.9	15.6	12.7	1.8
services	4254	69.7	74.4	5.8	18.7	1.1
Education						
primary level	7567	71.8	65.4	20.8	11.5	2.3
secondary level	2525	68.0	70.6	10.6	17.1	1.6
higher & tertiary level	439	64.4	70.7	3.1	25.4	0.8
other	4450	75.7	63.7	26.5	7.0	2.7
Region						
North	870	76.6	66.6	21.4	10.0	2.0
North West	1057	71.8	70.8	14.7	13.1	1.5
Kampong Cham	2040	76.8	75.9	14.7	6.7	2.8
West and Center	1030	70.9	62.3	25.4	9.9	2.4
Kampong Speu	768	73.1	55.5	34.5	7.9	2.1
Kampong Thum	740	72.3	60.9	29.1	5.6	4.3
Kampot	697	76.0	56.0	31.5	10.6	1.9
Kandal	1349	70.7	74.7	7.6	15.1	2.6
South Coastal	480	71.7	69.4	15.3	12.5	2.7
North East	739	74.8	58.7	32.9	6.6	1.7
Phnom Penh	1394	66.9	73.0	0.1	26.5	0.4
Prey Veang	1277	69.5	57.1	32.3	5.7	4.9
Siem Reap	870	72.3	58.3	30.6	10.1	1.0
Svay Rieng	640	69.6	47.5	45.7	5.8	1.2
Takaev	1030	67.2	62.7	24.0	10.5	2.8
Occupation						
professional and others	2652	68.9	74.4	5.8	18.8	1.0
agricultural and related workers	7646	73.5	57.8	32.5	6.5	3.2
others	2882	70.4	72.8	9.2	16.6	1.3
no occupation	1801	71.4	69.4	16.1	12.4	2.1
Gender and area						
Male headed urban	2261	68.2	72.4	5.4	21.5	0.6
Female headed urban	732	67.3	75.0	3.6	20.6	0.8
Male headed rural	9392	71.8	63.3	24.2	9.9	2.6
Female headed rural	2596	75.8	69.5	19.2	8.6	2.7
Gender						
Male headed	11653	71.0	65.3	20.0	12.5	2.2
Female headed	3328	73.4	71.0	15.1	11.8	2.2
Household size						
one or two persons	1377	74.5	73.3	15.1	9.0	2.6
three to four people	5214	70.5	68.0	18.5	11.3	2.2
five to six people	5208	71.3	66.1	19.1	12.8	2.0
more than 6 people	3182	72.0	63.7	20.5	13.5	2.2

Annex Table 4. Share of dietary energy consumption by food source

Share of food dietary energy by food sources to total food dietary energy consumption					
Region: Asia		Country: Cambodia		Year: 2003/04	
Categories and Groupings	Number of sampled households	Share of dietary energy purchased to total food consumption (%)	Share of dietary energy from own production to total food consumption (%)	Share of dietary energy eaten away from home to total food consumption (%)	Share of dietary energy from other sources to total food consumption (%)
Nationwide	14981	50.8	36.3	9.3	3.6
Income level					
Quintile 1	2996	42.8	49.7	4.4	3.0
Quintile 2	2996	45.8	44.8	5.3	4.0
Quintile 3	2997	46.0	42.4	7.1	4.6
Quintile 4	2996	50.2	36.1	9.6	4.0
Quintile 5	2996	62.8	18.2	16.5	2.5
Area					
Urban	2993	67.5	12.4	19.0	1.1
Rural	11988	47.8	40.5	7.6	4.0
Age of head of HH					
HH of age less than 35	3770	51.1	38.3	7.3	3.3
HH of age between 35 and 45	4164	52.6	33.8	10.4	3.2
HH of age between 45 and 60	4563	50.3	36.2	10.3	3.2
HH of age higher than 59	2484	47.6	39.0	7.9	5.5
Economic activity of head of HH					
no activity or not known	1813	49.8	37.9	8.6	3.7
Primary (agriculture- fishing- hunting- mining)	7495	42.0	47.9	5.8	4.3
secondary (manufacturing)	1419	55.8	30.8	10.0	3.4
services	4254	66.0	15.7	16.1	2.2
Education					
primary level	7567	49.0	38.2	9.2	3.6
secondary level	2525	58.0	24.6	13.7	3.7
higher & tertiary level	439	65.9	10.9	21.5	1.7
other	4450	48.2	42.3	5.7	3.7
Region					
North	870	46.2	42.4	9.1	2.3
North West	1057	63.6	23.4	11.1	2.0
Kampong Cham	2040	58.7	30.5	5.6	5.2
West and Center	1030	46.2	42.1	8.3	3.4
Kampong Speu	768	34.0	57.1	7.0	1.9
Kampong Thum	740	46.0	43.9	5.0	5.1
Kampot	697	36.5	52.5	8.4	2.7
Kandal	1349	67.8	13.8	13.5	4.9
South Coastal	480	58.6	25.3	14.2	2.0
North East	739	45.2	47.4	5.9	1.6
Phnom Penh	1394	73.2	0.1	25.7	1.0
Prey Veang	1277	45.7	43.2	5.0	6.0
Siem Reap	870	38.9	53.1	7.4	0.6
Svay Rieng	640	29.2	60.3	5.1	5.4
Takaev	1030	41.2	45.0	9.3	4.5
Occupation					
professional and others	2652	64.4	17.1	16.4	2.1
agricultural and related workers	7646	42.0	47.9	5.8	4.3
others	2882	63.5	20.4	13.3	2.8
no occupation	1801	49.8	37.9	8.6	3.7
Gender and area					
Male headed urban	2261	66.5	13.2	19.2	1.0
Female headed urban	732	71.6	9.3	17.9	1.2
Male headed rural	9392	46.8	41.5	7.8	3.9
Female headed rural	2596	52.7	35.5	7.0	4.8
Gender					
Male headed	11653	49.7	37.4	9.4	3.5
Female headed	3328	56.0	30.9	6.9	4.1
Household size					
one or two persons	1377	52.6	35.8	7.7	3.8
three to four people	5214	53.8	34.2	8.2	3.7
five to six people	5208	49.7	37.2	9.6	3.5
more than 6 people	3182	48.8	37.3	10.4	3.5

Annex Table 5. FAO indicators on food deprivation and food poverty

FAO indicators on hunger based on total consumption expenditure and the first quintile										
Region: Asia Country: Cambodia Year: 2003/04										
Categories and Groupings	Prevalence of food deprivation (%)	CV of dietary energy consumption FULL as FAO (%)	Average food consumption in dietary energy value (kcal/person/day)	Minimum dietary energy requirement (kcal/person/day)	Balanced dietary energy unit value of the first quintile (LC\$/1000kcal)	Critical food poverty line of the 1st quintile	Total consumption expenditure (LC\$/person/day)	CV of total consumption expenditure - FULL (%)	Prevalence of Critical Food Poverty (%)	Income quintile having better balance nutritional diet
Nationwide	22.8	33.6	2310	1715	510.63	875.74	1943.93	79.4	21.4	5
Area										
Urban	22.9	31.1	2310	1758	601.73	1057.84	3128.45	78.1	11.0	3
Rural	24.0	35.5	2310	1707	491.30	838.66	1733.85	73.6	21.9	5
Age of head of HH										
HH of age less than 35	13.8	32.0	2280	1545	510.63	788.93	1895.02	79.3	18.2	5
HH of age between 35 and 45	23.0	37.4	2350	1684	510.63	859.91	1843.88	82.4	24.2	5
HH of age between 45 and 60	31.1	34.5	2280	1831	510.63	934.97	2071.03	81.1	22.3	5
HH of age higher than 60	22.1	30.5	2320	1766	510.63	901.78	1939.25	69.6	17.8	5
Economic activity of head of HH										
no activity or not known	26.4	28.6	2180	1753	510.63	895.14	1809.28	73.9	20.7	5
Primary (agriculture- fishing- hunting- mining)	23.5	34.2	2290	1703	510.63	869.61	1512.49	69.1	23.6	5
secondary (manufacturing)	23.0	34.7	2300	1690	510.63	862.97	1938.58	81.5	21.8	5
services	23.9	38.4	2410	1729	510.63	882.89	2813.00	80.9	10.1	5
Education										
primary level	23.5	34.5	2310	1717	510.63	876.76	1871.93	75.4	21.3	5
secondary level	24.3	39.7	2400	1709	510.63	872.67	2588.77	79.1	11.3	5
higher & tertiary level	23.8	34.0	2310	1731	510.63	883.91	4253.05	75.0	2.2	5
other	25.1	33.6	2250	1710	510.63	873.18	1496.68	63.9	26.5	5
Region										
North	34.3	36.2	2110	1721	584.63	1006.14	1637.55	72.9	33.7	5
North West	26.2	39.5	2350	1712	537.90	920.88	1997.22	71.1	18.7	5
Kampong Cham	32.4	38.6	2180	1715	528.18	905.83	1683.94	84.7	31.7	5
West and Center	26.3	30.3	2120	1684	516.34	869.52	1659.32	62.9	20.3	5
Kampong Speu	24.3	29.7	2170	1701	397.39	675.97	1451.34	56.9	11.9	5
Kampong Thum	34.3	44.4	2220	1708	488.41	834.20	1413.36	67.5	29.0	4
Kampot	10.3	34.1	2740	1707	431.61	736.76	1717.98	69.0	14.8	2
Kandal	30.9	40.2	2270	1732	552.12	956.28	2046.23	72.6	19.9	2
South Coastal	11.4	33.0	2670	1720	619.13	1064.90	2412.91	60.0	11.6	4
North East	29.9	38.9	2170	1659	583.78	968.50	1551.15	61.9	29.4	5
Phnom Penh	43.4	37.2	2030	1789	1200.67	2148.00	4082.16	63.9	21.0	1
Prey Veaseng	22.0	53.1	2660	1723	503.85	866.14	1727.80	64.8	19.3	2
Siem Reap	20.8	28.1	2210	1698	427.66	726.17	1716.86	81.3	19.7	5
Svay Rieng	14.4	36.5	2650	1713	386.17	661.51	1589.51	57.1	8.1	5
Takeo	22.9	36.3	2360	1709	528.31	902.89	1904.94	79.2	23.5	2
Occupation										
professional and others	21.7	40.3	2550	1746	510.63	891.57	3112.77	85.6	9.4	5
agricultural and related workers	23.7	34.3	2290	1703	510.63	869.61	1508.11	60.0	23.7	5
others	23.3	32.4	2250	1697	510.63	866.55	2196.43	73.8	14.0	5
no occupation	26.3	28.6	2180	1754	510.63	895.65	1909.06	74.0	20.8	5
Gender and area										
Male headed urban	22.0	31.6	2340	1754	510.63	895.65	3108.41	78.3	7.3	5
Female headed urban	28.8	31.3	2200	1766	510.63	901.78	3204.22	76.8	6.4	5
Male headed rural	23.2	35.1	2320	1704	510.63	870.12	1729.68	73.0	23.4	5
Female headed rural	29.2	38.8	2270	1724	510.63	880.33	1754.53	75.8	24.6	5
Gender										
Male headed	21.7	33.2	2320	1711	510.63	873.69	1928.53	79.0	21.5	5
Female headed	28.4	36.7	2260	1731	510.63	883.91	2016.97	80.8	20.9	5
Household size										
one or two persons	5.5	37.2	3510	1849	510.63	944.16	2901.77	74.6	8.8	5
three to four people	14.3	35.9	2640	1714	510.63	875.23	2265.89	76.0	14.2	5
five to six people	24.6	33.1	2240	1705	510.63	870.63	1949.83	78.2	20.6	5
more than 6 people	34.2	30.3	2020	1713	510.63	874.72	1600.11	72.1	27.1	5

Annex Table 6. Dispersion ratios of income, food and total consumption

<u>Inequality measures (Dispersion Ratios) of food consumption, total consumption and income</u>				
Region: Asia Country: Cambodia Year: 2003/04				
Categories and Groupings	Dispersion ratio of food consumption in dietary energy (80/20)	Dispersion ratio of food consumption in monetary value (80/20)	Dispersion ratio of total consumption (80/20)	Dispersion ratio of income (80/20)
Nationwide	2.1	4.1	5.8	6.0
Area				
Urban	1.8	4.6	6.6	6.8
Rural	2.2	3.7	5.2	5.5
Age of head of HH				
HH of age less than 35	2.1	3.7	5.7	5.9
HH of age between 35 and 45	2.3	4.2	5.8	6.0
HH of age between 45 and 60	2.3	4.4	6.2	6.4
HH of age higher than 60	1.9	3.7	4.9	5.2
Economic activity of head of HH				
no activity or not known	1.7	4.0	5.7	5.9
Primary (agriculture- fishing- hunting- mining)	2.1	2.9	4.1	4.3
secondary (manufacturing)	2.2	4.1	6.1	6.6
services	2.4	4.7	6.6	6.8
Education				
primary level	2.1	3.8	5.3	5.6
secondary level	2.4	4.1	6.1	6.5
higher & tertiary level	2.2	4.3	6.8	6.9
other	2.1	3.4	4.5	4.6
Region				
North	2.3	3.7	4.9	5.1
North West	2.4	3.7	5.2	5.4
Kampong Cham	2.2	4.4	5.7	5.9
West and Center	1.9	3.1	4.4	4.9
Kampong Speu	1.6	2.9	3.9	4.0
Kampong Thum	2.7	3.3	4.7	4.9
Kampot	1.9	3.1	4.5	4.7
Kandal	2.6	3.6	5.1	5.2
South Coastal	2.0	3.1	4.2	4.3
North East	2.5	3.5	4.2	4.4
Phnom Penh	2.6	3.4	5.3	5.5
Prey Veang	3.0	2.8	4.3	4.5
Siem Reap	1.7	4.6	5.8	6.4
Svay Rieng	1.9	2.7	3.9	4.1
Takaev	2.4	3.3	5.4	5.6
Occupation				
professional and others	2.7	5.2	7.3	7.5
agricultural and related workers	2.1	2.9	4.1	4.3
others	2.2	4.0	5.7	6.0
no occupation	1.7	4.0	5.7	5.9
Gender and area				
Male headed urban	2.0	4.7	6.7	7.0
Female headed urban	2.0	4.0	6.0	6.2
Male headed rural	2.1	3.6	5.2	5.4
Female headed rural	2.5	4.2	5.4	5.6
Gender				
Male headed	2.1	4.0	5.7	6.0
Female headed	2.3	4.4	5.9	6.1
Household size				
one or two persons	1.5	4.1	5.2	5.3
three to four people	2.2	3.7	5.3	5.5
five to six people	2.1	3.9	5.5	5.7
more than 6 people	2.0	3.7	5.2	5.4

Annex Table 7. Inequality measures of food consumption and income, gini coefficients

<u>Inequality measures (GINI coefficients – Log normal assumption) of food consumption, total consumption and income by population groupings</u>									
Region: Asia Country: Cambodia Year: 2003/04									
Categories and Groupings	Number of sampled households	Average number of people in household	GINI of Food dietary energy Consumption DUE TO income (Log Normal assumption) (%)	GINI of Food Consumption in monetary value DUE TO income (Log Normal assumption) (%)	GINI of total consumption DUE TO income (%)	GINI of Income - FULL (%)	GINI of Food dietary energy Consumption - FULL (Log Normal assumption) (%)	GINI of Food Consumption in monetary value - FULL (Log Normal assumption) (%)	GINI of Food dietary energy consumption - FULL as defined by FAO (%)
Nationwide	14981	5.0	14.9	29.6	37.9	38.8	31.2	31.7	18.3
Area									
Urban	2993	5.1	13.2	29.1	37.4	38.2	30.9	30.5	17.0
Rural	11988	5.0	16.1	27.6	35.8	36.9	31.8	30	19.2
Age of head of HH									
HH of age less than 35	3770	4.2	13.8	26.6	37.8	38.7	29.2	28.8	17.5
HH of age between 35 and 45	4164	5.5	17.3	31.4	38.9	39.6	33.9	33.2	20.2
HH of age between 45 and 60	4563	5.5	15.5	30.7	38.5	39.5	29.6	32.9	18.8
HH of age higher than 60	2484	4.3	12.8	27.4	34	35.4	31.4	29.4	16.7
Economic activity of head of HH									
no activity or not known	1813	4.7	11.4	27.8	35.9	36.6	31.6	30.2	15.7
Primary (agriculture- fishing- hunting- mining)	7495	5.0	15.3	21.1	30.5	31.8	29.1	23.1	18.6
secondary (manufacturing)	1419	4.9	15.6	27.8	38.6	40.4	33.1	30.2	18.9
services	4254	5.0	17.9	31.2	38.4	39	33.9	33.2	20.7
Education									
primary level	7567	5.1	15.4	28.2	36.5	37.5	30.9	30.6	18.7
secondary level	2525	5.0	18.7	28.5	37.8	39	33.2	30.6	21.3
higher & tertiary level	439	5.0	15.1	27.1	36.3	36.5	28.1	28.8	18.5
other	4450	4.7	14.9	25.5	32.1	33.2	30.7	27.8	18.3
Region									
North	870	4.8	16.6	27.8	35.6	36.6	25.5	28.8	19.6
North West	1057	5.0	18.5	28.2	34.9	36	28.3	28.7	21.2
Kampong Cham	2040	4.8	18	34.6	39.7	40.8	35.1	36.8	20.8
West and Center	1030	4.9	12.6	22.5	31.7	34.6	23	26.7	16.6
Kampong Speu	768	5.0	12.2	21.6	29.2	29.5	22	23.5	16.3
Kampong Thum	740	5.2	21.3	24.2	33.5	34.4	35.7	26.3	23.6
Kampot	697	4.7	15.2	23.4	34.1	34.5	34.7	25.1	18.6
Kandal	1349	5.3	18.9	26.7	35.4	35.8	34.8	29.4	21.6
South Coastal	480	5.3	14.5	22.8	30.5	31	31.7	23.5	18.0
North East	739	5.1	18.2	26.8	31.3	32.8	26.1	28.1	20.9
Phnom Penh	1394	5.2	17.2	22.4	32.1	33.2	29.4	24.1	20.1
Prey Veaeng	1277	4.5	25.8	20.3	32.5	33.9	40.2	22.9	27.5
Siem Reap	870	5.4	11	33	38.6	41.6	22.6	35	15.4
Svay Rieng	640	4.7	16.7	18.7	29.3	30.5	33.3	22.2	19.7
Takaov	1030	4.9	16.6	23.1	37.8	38.5	29.4	25.8	19.7
Occupation									
professional and others	2652	5.0	19	33	40	40.6	35.1	34.9	21.6
agricultural and related workers	7646	5.0	15.3	21	30.5	31.8	29	23.1	18.7
others	2882	5.0	14.1	27.5	35.9	36.9	32.4	29.7	17.7
no occupation	1801	4.7	11.4	27.8	36	36.6	31.6	30.2	15.7
Gender and area									
Male headed urban	2261	5.3	13.6	29.5	37.5	38.3	31.6	30.9	17.3
Female headed urban	732	4.4	13.4	26.9	37	37.5	27.8	29	17.1
Male headed rural	9392	5.3	15.8	26.9	35.6	36.8	32	29.3	19.0
Female headed rural	2596	3.8	18.1	30.8	36.6	37.4	29.2	33.2	20.9
Gender									
Male headed	11653	5.3	14.6	29.2	37.8	38.8	31.5	31.3	18.1
Female headed	3328	3.9	16.8	31.2	38.4	39	28.3	33.3	19.8
Household size									
one or two persons	1377	1.8	17.1	30.7	36.2	36.7	35.5	32.4	20.1
three to four people	5214	3.6	16.3	27.3	36.7	37.8	30.4	29.2	19.4
five to six people	5208	5.4	14.5	29.5	37.5	38.3	27.7	31.5	18.0
more than 6 people	3182	7.9	12.6	27.4	35.3	36.3	28.4	29.5	16.6

Annex Table 8. Inequality measures of food consumption and income – Coefficient of variation

Inequality Measures (CV – Coefficient of variation - Log normal assumption) of food consumption, total consumption and income by population groupings									
Region: Asia Country: Cambodia Year: 2003/04									
Categories and Groupings	Number of sampled households	Average number of people in household	CV of food dietary energy DUE TO income (%)	CV of food consumption in monetary value DUE TO income (%)	CV of total consumption DUE TO income (%)	CV of income-FULL (%)	CV of food dietary energy consumption FULL (%)	CV of food consumption in monetary value FULL (%)	CV of food dietary energy consumption - FULL as defined by FAO (%)
Nationwide	14981	5.0	27.0	57.9	79.4	82.1	61.6	63.0	33.6
Area									
Urban	2993	5.1	23.8	56.6	78.1	80.4	60.9	60.0	31.1
Rural	11988	5.0	29.3	53.3	73.6	76.5	63.2	58.7	35.5
Age of head of HH									
HH of age less than 35	3770	4.2	25.0	51.1	79.3	81.6	57.0	56.1	32.0
HH of age between 35 and 45	4164	5.5	31.6	62.2	82.4	84.4	68.4	66.6	37.4
HH of age between 45 and 60	4563	5.5	28.1	60.5	81.1	84.1	57.8	65.9	34.5
HH of age higher than 60	2484	4.3	23.0	52.7	68.6	72.5	62.1	57.4	30.5
Economic activity of head of HH									
no activity or not known	1813	4.7	20.5	53.6	73.9	75.7	62.6	59.2	28.6
Primary (agriculture- fishing- hunting- mining)	7495	5.0	27.8	39.1	60.1	63.1	56.6	43.5	34.2
secondary (manufacturing)	1419	4.9	28.4	53.7	81.5	86.8	66.5	59.3	34.7
services	4254	5.0	32.8	61.7	80.9	82.6	68.5	66.7	38.4
Education									
primary level	7567	5.1	28.1	54.7	75.4	78.2	60.9	60.2	34.5
secondary level	2525	5.0	34.3	55.3	79.1	82.6	66.6	60.3	39.7
higher & tertiary level	439	5.0	27.5	52.1	75.0	75.4	54.3	56.0	34.0
other	4450	4.7	27.0	48.5	63.9	66.7	60.5	53.6	33.6
Region									
North	870	4.8	30.2	53.8	72.9	75.7	48.5	56.1	36.2
North West	1057	5.0	34.1	50.1	71.1	74.1	54.7	55.8	39.5
Kampong Cham	2040	4.8	33.0	70.3	84.7	89.2	71.6	76.3	38.6
West and Center	1030	4.9	22.8	42.1	62.9	70.3	43.2	51.1	30.3
Kampong Speu	768	5.0	21.9	40.2	56.9	57.7	41.1	44.3	29.7
Kampong Thum	740	5.2	39.7	45.7	67.5	69.8	73.4	50.3	44.4
Kampot	697	4.7	27.7	44.1	69.0	70.2	70.6	47.7	34.1
Kandal	1349	5.3	34.9	51.1	72.6	73.5	70.9	57.4	40.2
South Coastal	400	5.3	26.2	42.7	60.0	61.3	63.0	44.3	33.0
North East	739	5.1	33.4	51.5	61.9	65.6	49.9	54.3	38.9
Phnom Penh	1394	5.2	31.4	42.0	63.9	66.6	57.3	45.6	37.2
Prey Veaeng	1277	4.5	49.1	37.5	64.8	68.4	66.2	43.0	53.1
Siem Reap	870	5.4	19.7	66.1	81.3	90.5	42.4	71.5	28.1
Svay Rieng	640	4.7	30.5	34.4	57.1	60.1	66.9	41.5	36.5
Takaev	1030	4.9	30.3	43.5	79.2	81.2	57.4	49.1	36.3
Occupation									
professional and others	2652	5.0	35.0	66.3	85.6	87.5	71.6	71.1	40.3
agricultural and related workers	7646	5.0	27.9	39.1	60.0	63.1	56.4	43.5	34.3
others	2882	5.0	25.4	53.1	73.8	76.5	64.7	58.1	32.4
no occupation	1801	4.7	20.5	53.7	74.0	75.8	62.7	59.2	28.6
Gender and area									
Male headed urban	2281	5.3	24.5	57.7	78.3	80.7	62.7	61.0	31.6
Female headed urban	732	4.4	24.1	51.5	76.8	78.2	53.6	56.5	31.3
Male headed rural	9392	5.3	28.8	51.7	73.0	76.2	63.7	57.1	35.1
Female headed rural	2596	3.8	33.3	60.7	75.8	77.9	56.9	66.6	38.8
Gender									
Male headed	11653	5.3	26.5	57.0	79.0	82.0	62.4	62.0	33.2
Female headed	3328	3.9	30.7	61.6	80.8	82.7	54.9	67.1	36.7
Household size									
one or two persons	1377	1.8	31.3	60.4	74.6	76.1	72.6	64.6	37.2
three to four people	5214	3.6	29.8	52.5	76.0	79.0	59.7	57.0	35.9
five to six people	5208	5.4	26.4	57.5	78.2	80.5	53.5	62.3	33.1
more than 6 people	3182	7.9	22.7	52.8	72.1	74.8	55.0	57.6	30.3

Annex Table 9. Food demand elasticity with respect to income

<i>Demand elasticity with respect to Income and population groupings</i>					
Region: Asia Country: Cambodia Year: 2003/04					
Categories and Groupings	Income deciles	Income (LC\$/person/day)	Demand elasticity of food dietary energy consumption (DEC) respect to income (%)	Demand elasticity of food consumption in monetary value (FMV) respect to income (%)	Demand elasticity of Engle ratio respect to income (%)
Income level					
Decile	1	712.04	0.7	4.2	0.9
Decile	2	926.27	0.6	2.0	0.8
Decile	3	1090.13	0.5	1.5	0.8
Decile	4	1245.35	0.5	1.3	0.8
Decile	5	1414.63	0.5	1.1	0.8
Decile	6	1605.54	0.4	1.0	0.8
Decile	7	1883.65	0.4	0.8	0.8
Decile	8	2272.08	0.4	0.7	0.8
Decile	9	3023.16	0.3	0.6	0.8
Decile	10	6858.33	0.3	0.4	0.8
Area					
Urban	1	948.82	0.5	4.3	0.9
Urban	2	1199.84	0.5	2.1	0.9
Urban	3	1491.27	0.4	1.5	0.8
Urban	4	1810.69	0.4	1.1	0.8
Urban	5	2028.98	0.4	1.0	0.8
Urban	6	2503.53	0.3	0.8	0.8
Urban	7	3010.03	0.3	0.7	0.8
Urban	8	3840.75	0.3	0.6	0.8
Urban	9	4858.37	0.3	0.5	0.8
Urban	10	10083.64	0.2	0.4	0.8
Rural	1	662.09	0.9	3.6	0.8
Rural	2	886.65	0.7	1.8	0.8
Rural	3	1042.71	0.6	1.4	0.8
Rural	4	1186.72	0.6	1.2	0.8
Rural	5	1335.55	0.5	1.0	0.8
Rural	6	1503.16	0.5	0.9	0.8
Rural	7	1708.29	0.5	0.8	0.8
Rural	8	2036.33	0.4	0.7	0.8
Rural	9	2601.42	0.4	0.6	0.8
Rural	10	5821.49	0.3	0.4	0.8

Annex Table 10. Diet composition - Nutrient consumption

<i>Food consumption in monetary and nutrient values by national, sub national and population groupings</i>					
Region: Asia Country: Cambodia Year: 2003/04					
Categories and Groupings	Average food dietary energy consumption (kcal/person/day)	Average food consumption in monetary value of food consumed (LC\$/person/day)	Average food protein consumption (g/person/day)	Average food carbohydrates consumption (g/person/day)	Average food fat consumption (g/person/day)
Nationwide	2310	1388.13	64.0	430.0	35.7
Income level					
Quintile 1	1580	691.08	40.7	312.2	18.4
Quintile 2	1990	948.88	57.2	371.6	29.2
Quintile 3	2270	1196.03	63.4	428.8	33.0
Quintile 4	2530	1537.50	68.5	474.0	37.7
Quintile 5	3390	2837.99	96.3	599.3	65.6
Area					
Urban	2310	2128.66	67.6	412.3	42.1
Rural	2310	1256.79	63.3	433.1	34.6
Age of head of HH					
HH of age less than 35	2280	1311.56	61.9	427.5	34.0
HH of age between 35 and 45	2350	1335.21	66.9	428.0	39.6
HH of age between 45 and 60	2290	1469.43	63.2	427.9	34.6
HH of age higher than 60	2320	1430.09	62.5	442.9	32.7
Economic activity of head of HH					
no activity or not known	2180	1363.25	59.3	413.0	31.4
Primary (agriculture- fishing- hunting- mining)	2290	1110.87	61.0	438.2	30.9
secondary (manufacturing)	2300	1346.81	73.6	413.7	37.6
services	2410	1961.19	68.3	426.6	46.4
Education					
primary level	2310	1343.95	63.4	435.7	34.2
secondary level	2400	1759.77	63.8	426.0	48.2
higher & tertiary level	2310	2739.95	70.2	401.2	46.7
other	2250	1133.41	64.6	424.3	30.2
Region					
North	2110	1255.05	58.2	396.0	31.9
North West	2350	1433.68	66.3	445.5	32.5
Kampong Cham	2180	1292.89	60.5	417.6	29.0
West and Center	2120	1176.51	59.2	407.1	27.6
Kampong Speu	2170	1061.28	53.9	406.1	34.0
Kampong Thum	2220	1021.83	61.2	420.9	31.2
Kampot	2740	1305.95	72.7	518.6	41.6
Kandal	2270	1445.69	62.9	414.4	38.9
South Coastal	2670	1731.19	71.6	498.8	41.6
North East	2170	1160.13	58.2	417.9	27.5
Phnom Penh	2030	2729.40	62.2	342.4	44.8
Prey Veang	2860	1200.06	84.9	496.6	54.5
Siem Reap	2210	1241.69	61.7	426.7	27.0
Svay Rieng	2650	1113.88	66.6	519.5	32.8
Takaev	2360	1280.82	62.1	436.8	39.6
Occupation					
professional and others	2550	2145.81	71.9	444.8	52.7
agricultural and related workers	2290	1108.22	60.9	437.5	30.8
others	2250	1545.51	68.6	405.0	37.5
no occupation	2180	1363.48	59.3	413.5	31.4
Gender and area					
Male headed urban	2340	2121.43	68.0	417.4	42.8
Female headed urban	2200	2155.99	66.0	392.9	39.6
Male headed rural	2320	1242.03	63.3	434.5	34.6
Female headed rural	2270	1329.95	63.4	426.2	34.2
Gender					
Male headed	2320	1368.87	64.0	432.1	35.8
Female headed	2260	1479.49	63.8	420.2	35.2
Household size					
one or two persons	3510	2161.61	96.5	638.3	58.3
three to four people	2640	1598.14	72.4	485.8	43.8
five to six people	2240	1389.56	61.0	420.3	33.8
more than 6 people	2020	1151.45	57.6	378.2	29.5

Annex Table 11. Total energy and macro nutrient by food commodity group

<u>Food consumption in quantity equivalent, monetary and nutrient values by food commodity groups</u>						
Region: Asia Country: Cambodia Year: 2003/04						
Food commodity group	Average food quantity consumed (g/person/day)	Average food consumption in monetary value (LC\$/person/day)	Average food dietary energy consumption (kcal/person/day)	Average food proteins consumption (g/person/day)	Average food carbohydrates consumption (g/person/day)	Average food fats consumption (g/person/day)
CEREALS AND PRODUCTS	447.9	403.61	1602	30.4	347.1	10.6
ROOTS AND TUBERS AND PRODUCTS	6.4	4.49	12	0.0	3.0	0.0
SUGARS AND SYRUPS AND PRODUCTS	9.4	11.49	35	0.1	8.8	0.0
PULSES	7.1	7.53	11	0.7	2.0	0.0
TREE NUTS	2.1	2.45	10	0.4	0.5	0.7
OIL CROPS	5.3	3.09	9	0.1	0.2	0.9
VEGETABLES AND PRODUCTS	220.4	95.16	57	3.3	9.4	0.7
FRUITS AND PRODUCTS	76.4	53.01	38	0.5	8.6	0.2
STIMULANTS	0.4	2.44	1	0.0	0.1	0.0
SPICES	50.7	61.30	24	0.9	4.4	0.3
ALCOHOLIC BEVERAGES	9.4	13.48	14	0.0	0.2	0.0
MEAT	36.7	215.08	103	4.6	0.0	9.3
EGGS	4.8	19.62	8	0.5	0.1	0.6
FISH AND FISH PRODUCTS	111.2	290.85	98	15.3	0.3	4.0
MILK AND CHEESE	4.0	6.24	13	0.4	1.9	0.4
OILS AND FATS (vegetable oils)	2.7	4.43	24	0.0	0.0	2.7
OILS AND FATS (animal fats)	2.2	5.18	10	0.0	0.0	1.1
NON ALCOHOLIC BEVERAGES	7.0	4.88	2	0.0	0.4	0.0
MISCELLANEOUS AND PREPARED FOOD	18.3	183.80	239	6.7	43.1	4.3

Annex Table 12. Energy contribution of each nutrient by food commodity group

<u>Nutrient's contribution to dietary energy consumption</u>				
Region: Asia Country: Cambodia Year: 2003/04				
Categories and Groupings	Average food dietary energy consumption (kcal/person/day)	Share of DEC in total DEC coming from proteins (%)	Share of DEC in total DEC coming from fats (%)	Share of DEC in total DEC coming from carbohydrates (%)
Nationwide	2310	11.08	13.9	75.0
Income level				
Quintile 1	1580	10.29	10.4	79.3
Quintile 2	1990	11.50	13.2	75.3
Quintile 3	2270	11.15	13.0	75.8
Quintile 4	2530	10.83	13.4	75.7
Quintile 5	3390	11.36	17.4	71.2
Area				
Urban	2310	11.71	16.4	71.8
Rural	2310	10.97	13.5	75.6
Age of head of HH				
HH of age less than 35	2280	10.86	13.4	75.7
HH of age between 35 and 45	2350	11.40	15.2	73.4
HH of age between 45 and 60	2290	11.06	13.6	75.3
HH of age higher than 59	2320	10.76	12.7	76.6
Economic activity of head of HH				
no activity or not known	2180	10.89	13.0	76.1
Primary (agriculture- fishing- hunting- mining)	2290	10.66	12.1	77.2
secondary (manufacturing)	2300	12.83	14.8	72.4
services	2410	11.34	17.4	71.3
Education				
primary level	2310	10.96	13.3	75.7
secondary level	2400	10.62	18.1	71.3
higher & tertiary level	2310	12.15	18.2	69.7
other	2250	11.50	12.1	76.4
Region				
North	2110	11.04	13.6	75.4
North West	2350	11.30	12.5	76.2
Kampong Cham	2180	11.11	12.0	76.9
West and Center	2120	11.15	11.7	77.2
Kampong Speu	2170	9.93	14.1	76.0
Kampong Thum	2220	11.04	12.7	76.3
Kampot	2740	10.59	13.7	75.8
Kandal	2270	11.11	15.4	73.4
South Coastal	2670	10.74	14.0	75.2
North East	2170	10.74	11.4	77.9
Phnom Penh	2030	12.28	19.9	67.8
Prey Veang	2860	11.86	17.1	71.0
Siem Reap	2210	11.20	11.0	77.8
Svay Rieng	2650	10.03	11.1	78.9
Takaev	2360	10.52	15.1	74.4
Occupation				
professional and others	2550	11.29	18.6	70.1
agricultural and related workers	2290	10.65	12.1	77.2
others	2250	12.23	15.0	72.7
no occupation	2180	10.89	13.0	76.1
Gender and area				
Male headed urban	2340	11.64	16.5	71.9
Female headed urban	2200	12.02	16.2	71.8
Male headed rural	2320	10.93	13.5	75.6
Female headed rural	2270	11.16	13.5	75.3
Gender				
Male headed	2320	11.03	13.9	75.1
Female headed	2260	11.31	14.0	74.7
Household size				
one or two persons	3510	11.00	15.0	74.0
three to four people	2640	10.98	15.0	74.1
five to six people	2240	10.89	13.6	75.6
more than 6 people	2020	11.42	13.2	75.4

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