Housing Conditions 2007

National Institute of Statistics
Ministry of Planning

Phnom Penh, August 2009

Report based on the
Cambodia Socio-Economic Survey

Foreword

It is my pleasure to introduce one of a series of reports on the Cambodia Socio-Economic Survey (CSES) 2007. The CSES 2007 is the sixth socio-economic survey conducted by the National Institute of Statistics (NIS) at the Ministry of Planning. From 2007 and onwards the CSES is conducted annually and will contribute to the development of the living standards of people in Cambodia.

The CSES 2007 provides main indicators on the living conditions in Cambodia and covers many areas, e.g. health, housing conditions, labour force and victimization. The Royal Government of Cambodia (RGC) will benefit from the results by using the data to monitor the National Strategic Development Plan (NSDP) and to develop effective policies for reducing poverty in Cambodia. Users such as researchers, analysts and NGO's can also benefit from the results to better understand the Cambodian socio-economic situation.

The survey was planned, designed and conducted by the staff of NIS with overall technical and management assistance provided by Statistics Sweden. The CSES 2007 will be the starting point for NIS to produce results annually on the living conditions in Cambodia and meet the data needs of many users.

The CSES is part of a capacity building project financed by the Swedish International Development Cooperation Agency (Sida). On behalf of the Royal Government of Cambodia, I would like to take the opportunity to thank Sida for the financial support. I would also like to express my gratitude to Statistics Sweden for the technical assistance in planning, designing and conducting the CSES and for assisting NIS in the preparation of this report.

Chhay Than

Senior Minister
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August, 2009

Preface

This is one of a series of reports on the Cambodia Socio-Economic Survey (CSES) 2007 produced by the National Institute of Statistics (NIS) of the Ministry of Planning. The results in this report cover the area of housing conditions. Results from other subject matter areas of the CSES 2007, such as health, education, labour force and victimization are released in separate reports.

Since 2007, NIS conducts the socio-economic survey annually. Previous surveys were undertaken in 1993/94, 1996, 1997, 1999, and 2004. The main objective of the CSES is to collect statistical information about living conditions of the Cambodian population and the extent of poverty. The survey can be used for identifying problems and making decisions based on statistical data.

The CSES is a very comprehensive survey which provides statistical data to be used for various purposes. The main user is the Royal Government of Cambodia (RGC) as the survey supports monitoring the National Strategic Development Plan (NSDP) by different socio-economic indicators. Other users are university researchers, analysts, international organizations e.g. the World Bank and NGO's. The primary data files are made available for research and analysis according to the procedures specified in the 2005 Statistics Law.

The Swedish International Development Cooperation Agency (Sida) sponsors the NIS for conducting the CSES while Statistics Sweden provides technical assistance. I am much obliged to both Sida and Statistics Sweden for their support. Furthermore, I wish to place on record my deep appreciation of the work carried out by the NIS staff, staff of provincial planning offices, the staff of the Ministry of Planning, and all who work with dedication and enthusiasm to sustain the survey quality. I also extend my thanks to all the participating households and individuals.

Responsible at NIS for this report is Mr. Tith Vong, Director of Social Statistics Department.

H. E. San Sy Than

Director General
National Institute of Statistics, August 2009
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Content

1 Introduction

In this report results of the subject matter area housing conditions from the Cambodia Socio-Economic Survey (CSES) 2007 are presented. The tabulations and comments to the results have been produced by the subject matter staff at NIS in cooperation with consultants from Statistics Sweden. Five rounds of the CSES have been conducted between 1993 and 2004. Since 2007 the CSES runs annually. The CSES is a household survey with questions to households and the household members. In the household questionnaire there are a number of modules with questions relating to the living conditions, e.g. housing conditions, education, health, expenditure/income and labour force.

There are no comparisons with previous CSES in this report. The first rounds had a different survey design than the surveys conducted in 2004 and 2007. The sampling design in CSES 2004 and 2007 was the same, where the sample selected for the 2007 survey is a subsample of the sample used in 2004. However comparisons between the published results of CSES 2004 in September 2005[1] and the results in this report should be made with caution. For further information on the problems with comparability see section 4.8.

The CSES 2007 was conducted from October 2006 till December 2007. The monthly sample size was 300 households. In this report all estimates presented are based on the 12 month samples (3,600 households), i.e. the calendar year 2007.

In CSES 2007 some changes have been introduced in the household questionnaire compared to 2004.

In section 2 some basic results on the demography in Cambodia are presented and in section 3 results of the subject matter area housing conditions from CSES 2007 are presented. In section 4 the methodology of the survey is described.

Information to the reader

As the results in this report are estimated values, all percentages and numbers are rounded off. A '0' (zero) means that there is a value. Therefore some tables with percentage do not sum up to 100 percent. In the tables the symbol (-) is used and means few or no observations in the cell.

All statistical surveys contain errors and the results from surveys are not the target values but estimates of them. There are many types of errors in a survey, e.g. measurement errors, coverage errors, non-response, data processing errors and in sample surveys there is also sampling errors. When conducting a survey it is important to minimize the total error so that accurate estimates can be produced. NIS has put a large effort in the work of minimizing the errors but recommends the reader to be aware of the possibility of deviations from the exact values.

[1] National Institute of Statistics (2005). Cambodia Socio-Economic Survey 2004, Summary Subject Matter Report. September 2005.

2 Demographic characteristics

Since 1980 there was a 15-year period with high fertility and strong population increase. After 1995 there has been a rapid decline in fertility and mortality. According to the population projections[2] the Cambodian population was predicted to be 13 million in 2004 and 15 million in 2010. According to the preliminary results from the General Population Census 2008[3], the Cambodian population was estimated to 13,388,900. The tables below show the estimated population and estimated number of households in different censuses and surveys. In September 2009 the final results from the 2008 Census will be released and detailed numbers will then be available.

In urban areas the estimated population in CSES 2007 was about 2.583 million compared to the preliminary results from the Population Census 2008 which estimated the urban population to 2.615 million. In rural areas the estimated population was about 10.6 million in CSES 2007 and in the Population Census 2008 it was estimated to about 10.8 million people, see Table 1.

Table 1. Estimated Population by urban and rural

In thousands

	CSES 2007	Population Census 2008 (preliminary)
Cambodia	13,230.0	13,388.9
Urban	2,583.0	2,614.5
Rural	10,647.0	10,774.4

In Table 2 results from four different surveys or censuses are presented. The results are from different years and explain the differences in results. Also, the results are based on censuses or sample surveys with different errors, e.g. coverage errors and sampling errors.

Table 2. Estimated Population by sex

In thousands

	Census 1998	Cambodian Inter-censal Population Survey 2004[4]	CSES 2007	Population Census 2008 (preliminary)
Total	11,437.7	12,824.0	13,230.0	13,388.9
Women	5,926.3	6,627.0	6,815.0	6,893.4
Men	5,511.4	6,197.0	6,414.0	6,495.5

[2] Neupert, R.F. (2005). New Demographic Estimates and Updated Projections for Cambodia. UNDP.

[3] National Institute of Statistics (2008). General Population Census of Cambodia 2008, Provincial Population Totals. August, 2008.

[4] National Institute of Statistics (2004). Cambodia Inter-Censal Population Survey 2004, General Report. November, 2004.

In Table 3 the estimated numbers of households are presented from CSES 2007 and preliminary results from the Population Census 2008. The number of households in the census data is slightly higher both in urban and rural areas. However one must remember that the census refers to 2008 and therefore should have higher numbers due to a continuous increase of the population and number of households.

Table 3. Estimated number of households by urban and rural

In thousands

	CSES 2007	Population Census 2008 (preliminary)
Cambodia	2,799.0	2,832.7
Urban	512.0	518.1
Rural	2,287.0	2,314.5

3 Results

In 2007 there were about 2.8 million households in Cambodia. Since each household occupies at least one dwelling, the number of occupied dwellings is at least 2.8 million. There may also be vacant dwellings, which would add to the housing stock. The purpose of this report is to present statistics on the number and quality of dwellings occupied by households in 2007.

The housing module contains 26 questions (see Annex 1) that were answered mostly by the household head in the first week of the interview month. The data collected on housing conditions includes e.g. floor area, rooms used by the household, materials used in the wall, floor and roof, source of lighting and drinking water, distance to drinking water source, treatment of drinking water, toilet facilities, collection of fuel for cooking, charges on water, light, fuel, sewage and garbage collection, rent paid by tenants, maintenance and minor repairs, and legal status of the dwelling occupied by the households. In addition, rent value of owner occupied housing was estimated.

In this report statistics on housing conditions by geographical domains are presented. This classification variable distinguishes between Phnom Penh, other urban areas and other rural areas. Several other classification variables are available, e.g. age, sex, and education of household head.

3.1 Building materials of dwellings (roof, wall, floor)

The materials used in roofs, walls and floors are important quality characteristics of a dwelling. They can be grouped as hard/permanent or soft/temporary after their capacity to withstand wind and rain. For example the materials considered as hard/permanent were tiles, fibrous cement/asbestos, galvanized iron, aluminum, concrete, brick, stone, wood/plywood for the walls, and polished stone and vinyl/asphalt strip for the floors. Bamboo for the walls and wood planks or bamboo strips for the floors were considered soft/temporary materials.

Roof materials

In overall Cambodia, about 80 percent of dwellings have hard permanent roof materials, and about 20 percent have soft/temporary roof materials. The most common roof material in the country as a whole was galvanized iron/aluminum, which constituted slightly more than 40 percent of total occupied dwellings, followed by tiles at about 29 percent and thatch 20 percent, see Table 4.

Table 4. Occupied dwellings by kind of roof materials and geographical domain, 2007. Percent.

Roof materials	Cambodia	Phnom Penh	Other urban	Other rural
Hard/permanent materials	80	99	91	76
Tiles	29	9	20	32
Fibrous cement	5	9	9	4
Galvanized iron/aluminum	41	40	60	39
Mixed, predominantly hard/permanent.	0	0	0	0
Concrete	4	41	1	0
Soft/temporary materials	20	1	9	24
Thatch	20	0	9	24
Salvaged materials	0	1	-	0
Mixed, predominantly soft/temporary	0	-	-	-
Plastic sheet	-	-	-	-
Other	0	-	-	0
Total percent	100	100	100	100
Number of households	2,799,000	255,000	274,000	2,270,000

The differences between geographical domains on this quality dimension of dwellings are considerable. In Phnom Penh, almost 100 percent of dwellings are protected by roofs of hard/permanent materials compared to about 76 percent in other rural areas with other urban areas in between at about 91 percent.

In Phnom Penh, about 41 percent have roofs of concrete. The same share (about 40 percent) of dwellings has galvanized iron/aluminum (GIA) followed by tiles and fibrous cement, about 9 percent respectively. GIA is the most common material for roofs also in other urban areas. At 60 percent the share of GIA-roofs is about 20 percentage points higher than in Phnom Penh. Also the share of tile roofs is higher in other urban areas than in Phnom Penh while roofs of fibrous cement are less common.

In other rural areas tiles and GIA roofs constitute about 32 and 39 percent respectively, followed by thatch at 24 percent. Roofs of thatch are not as rare a phenomenon in other urban areas as in Phnom Penh. In other rural areas, about 24 percent of roofs are of soft/temporary materials, but GIA and tiles are nowadays the most common roof materials also in other rural areas of Cambodia.

Wall materials

Slightly more than 60 percent of occupied housing units have hard/permanent wall materials (see Table 5). The most common materials in the walls are wood or logs (about 45 percent) considered as hard/permanent wall material. Bamboo and thatch are the most common soft/temporary material, about 36 percent of all occupied dwellings. In addition about 12 percent have walls made of concrete, brick or stone considered as hard/permanent material. Dwellings with other materials are rare.

Table 5. Occupied dwellings by kind of wall materials and geographical domain, 2007. Percent.

Wall materials	Cambodia	Phnom Penh	Other urban	Other rural
Hard/permanent materials	63	99	80	56
Wood or logs	45	21	57	47
Plywood	1	1	1	1
Concrete, brick, stone	12	75	16	5
Galvanized iron/aluminum or other metal sheets	4	2	5	4
Fibrous cement/ asbestos	0	-	1	0
Soft/temporary materials	37	1	20	44
Bamboo, thatch	36	1	19	42
Makeshift, salvaged materials	0	0	0	0
Clay/dung with straw	1	0	-	1
Other	0	0	1	0
Total percent	100	100	100	100
Number of households	2,799,000	255,000	274,000	2,270,000

As shown in detail in Table 5, almost all occupied housing units in Phnom Penh (about 99 percent) have walls made of hard/permanent materials, the most common are concrete, bricks and stone amounting to about 75 percent, followed by wood or logs (about 21 percent).

In other urban areas, four out of five occupied dwellings have hard/permanent wall materials, of which wood or logs were the most common followed by concrete, brick or stone. Soft/temporary materials in walls that hardly exist in Phnom Penh constitute about 20 percent in other urban areas, of which bamboo and thatch constitute the highest percent.

In other rural areas, more than 50 percent of occupied housing units use hard/permanent wall materials (56 percent). Wood or logs are the most common materials, followed by bamboo and thatch.

Floor materials

In Cambodia overall, more than 80 percent of occupied housing units have soft/temporary floor materials. Wooden planks and bamboo strips (about 47 percent and 29 percent respectively) are by far the most commonly used floor material. About 11 percent of dwellings have the more luxurious types of floor material such as parquet, polished wood or ceramic tiles, see Table 6.

Table 6. Occupied dwellings by kind of floor materials and geographical domain, 2007. Percent.

Floor materials	Cambodia	Phnom Penh	Other urban	Other rural
Hard/permanent materials	18	84	25	9
Cement	6	9	7	6
Parquet, polished wood	2	4	4	2
Polished stone, marble	0	1	0	-
Vinyl	0	0	-	-
Ceramic tiles	9	70	14	2
Soft/temporary materials	82	16	75	91
Earth/clay	7	1	5	8
Wooden planks	47	15	55	49
Bamboo strips	29	0	14	34
Other	0	-	1	0
Total percent	100	100	100	100
Number of households	2,799,000	255,000	274,000	2,270,000

The largest differences between the geographical domains are found as to which floor material is used. In Phnom Penh more than 80 percent of occupied dwellings have hard permanent floors, in other urban about 25 percent and in other rural areas only about 9 percent. In Phnom Penh ceramic tiles is the most common floor material (about 70 percent), followed by cement (about 9 percent). In other urban areas and in other rural areas, wooden planks and bamboo strips together dominate.

Phnom Penh differentiates itself from other urban areas and even more from other rural areas in all three-quality dimensions (roof, wall and floor).

3.2 Legal status of dwellings

More than 90 percent of all households in Cambodia own their dwelling, and only 2 percent rented their dwelling, see Table 7. About 5 percent have other arrangements, e.g. did not own the dwelling but did not have to pay rent.

Table 7. Occupied dwellings by legal status and geographical domain, 2007. Percent.

Legal Status	Cambodia	Phnom Penh	Other urban	Other rural
Owned by households	93	84	90	94
Not owned but no rent is paid	5	4	6	5
Rented	2	12	4	1
Other	0	-	-	0
Total percent	100	100	100	100
Number of households	2,799,000	255,000	274,000	2,270,000

Phnom Penh is again different from the other geographical domains. More than 80 percent of the households own their dwellings but this is clearly less than in other areas, about 90 percent and 94 percent in other urban and in other rural areas respectively. In Phnom Penh more than 10 percent of the households rent their dwelling compared to about 4 percent in other urban and about 1 percent in other rural areas.

3.3 Dwelling space by household

Floor area of occupied dwellings

In all Cambodia, the average dwelling space per household is 45 square meters, see Table 8. The average floor area of dwellings ranged from about 41 square meters per household in other rural areas to 52 square meters in other urban areas and to 77 square meters in Phnom Penh. The share of households in access of 100 square meters is about 20 percent in Phnom Penh, about 9 percent in other urban areas, and only about 2 percent in other rural areas.

Table 8. Floor area by geographical domain, 2007. Percent. Average square meters per household.

Floor area	Cambodia	Phnom Penh	Other urban	Other rural
–19	8	5	8	8
20–39	44	21	37	47
40–59	29	23	30	29
60–79	10	18	11	9
80–99	5	12	6	4
100–	4	20	9	2
Total	100	100	100	100
Average square meters per household	44.9	77.3	51.6	40.5

Table 8 also indicates that half of the households in other rural areas occupied floor areas less than 40 square meters, compared to one out of four households in Phnom Penh.

Square meters per person

Table 9 shows average square meters per person in dwellings occupied in 2007. In overall Cambodia, the average floor area occupied by one person is about 10 square meters. Square meters per person is about 15 in Phnom Penh, then followed by about 10 square meters in other urban areas and about 9 in other rural areas.

Table 9. Average floor area by geographical domain, 2007. Square meters per person.

	Cambodia	Phnom Penh	Other urban	Other rural
Average per person	9.5	15.0	10.4	8.7

Number of rooms per dwelling

The results in Table 10 show that slightly less than 75 percent of dwellings in Cambodia have only one room. About 20 percent have two rooms, and about 1 percent have five rooms and more. The rooms counted in the 2007 CSES included only sitting rooms and bedrooms, and not kitchen, toilet, bathroom or garage.

Table 10. Numbers of rooms by geographical domain, 2007. Percent and average.

Number of rooms	Cambodia	Phnom Penh	Other urban	Other rural
One room	73	37	68	78
Two rooms	20	33	21	18
Three rooms	5	15	8	3
Four rooms	1	6	2	1
Five or more rooms	1	9	1	0
Total	100	100	100	100
Average number of rooms	1.4	2.3	1.5	1.3

The share of one-room occupied dwellings is highest in other rural areas (about 78 percent). It is lowest in Phnom Penh (37 percent) with other urban areas in between (68 percent).

Number of persons per room

The results in Table 11 show that the average number of persons per room in overall Cambodia was estimated to be 3.4. It means that, in Cambodia, there are on average 3.4 persons per room in occupied dwellings.

Table 11. Number of persons per room by geographical domain, 2007.

	Cambodia	Phnom Penh	Other urban	Other rural
Number of persons per room	3.4	2.3	3.4	3.6

In Phnom Penh there were 2.3 persons living in one room as against 3.4 and 3.6 persons in other urban and other rural areas respectively. Table 11 shows that the number of persons per room is still far from one person per room, even in Phnom Penh.

3.4 Drinking water

One of the Millennium Development Goals adopted by the Royal Government of Cambodia is:

- Overall Target 14: Halve by year 2015 the proportion of people without sustainable access to safe drinking water.

Under this Overall Target there are two sub-targets formulated for the urban and rural populations separately:

- Target 7.10: Increasing the proportion of the rural population with access to safe water source from 24 percent in year 1998 to 50 percent in year 2015.
- Target 7.11: Increasing the proportion of urban population with access to safe water source from 60 percent in year 1998 to 80 percent in year 2015.

For Cambodia, access to water supply services is defined as the availability of an improved water source. An improved water source is not necessarily safe, but an improved source is more likely to provide safe water. Types of improved water sources are defined as follows in CSES 2007:

- Piped water in dwelling or on premises is defined as piped water connected with in-house plumbing to one or more taps, e.g. in the kitchen and bathroom. Sometimes called a house connection. Piped water also connected to a tap outside the house in the yard or plot (on premises).
- A public tap/stand pipe is defined as a public water point from which community members may collect water. A stand pipe may also be known as a public fountain or public tap. A public stand pipe can have one or more taps and are typically made of brick work, masonry or concrete.
- A tube well or borehole is defined as a deep hole that has been driven, bored or drilled with the purposes of reaching ground water supplies. Water is delivered from a tube well or borehole through a pump which may be human, animal, wind, electric, diesel or solar-powered.
- A protected dug well is defined as a dug well that is protected from runoff water through a well lining or casting that is raised above ground level and has a platform that diverts spilled water a way from the well and is covered so that bird droppings and animals can not fall down the hole.
- Rainwater collection is also considered as improved water if the rainwater catchments tank is completely closed, have a tap to withdraw and have a capacity of at least 3,000 liters.

Main sources of drinking water (wet and dry season)

Table 12 shows the main sources of drinking water used by households in both wet and dry seasons. Definition of improved water source includes the four first water sources, piped in dwelling, public tap, tube/piped well or borehole and protected dug well. About 50 percent of the households have a "safe/improved water source" in the wet season and about 59 percent in dry season. A difference between wet and dry season is that a higher share of households have access to rainwater in the wet season. The households can use rainwater through catchments tanks at home. There are no costs and efforts in obtaining rainwater.

Table 12. Main source of drinking water by season and geographical domain, 2007. Percent.

Water Source	Cambodia	Phnom Penh	Other urban	Other rural
Wet Season				
Piped in dwelling	14	97	29	3
Public tap	0	-	0	0
Tube/piped well or borehole	23	0	20	26
Protected dug well	13	-	7	15
Unprotected dug well	6	-	2	7
Pond, river or stream	13	0	8	15
Rainwater	27	1	26	30
Tanker truck, vendor	5	1	8	5
Other	0	0	-	-
Total percent	100	100	100	100
Number of households	2,799,000	255,000	274,000	2,270,000
Dry Season				
Piped in dwelling	16	98	33	4
Public tap	0	0	0	0
Tube/piped well or borehole	27	1	23	30
Protected dug well	16	-	11	19
Unprotected dug well	7	-	2	8
Pond, river or stream	22	0	16	26
Rainwater	2	-	0	2
Tanker truck, vendor	10	1	15	11
Other	0	0	1	0
Total percent	100	100	100	100
Number of households	2,799,000	255,000	274,000	2,270,000

The results in Table 12 show that for both seasons, more than 95 percent of the households in Phnom Penh have piped water in their dwellings, and other households depend on water sources from tube/piped wells, rainwater, tanker truck, vendor etc. In other urban areas, somewhat 30 percent of the households have piped water in their dwellings, 20 percent have tube/piped well or borehole. In other rural areas, only about 3 percent of the households have piped water in dwellings. More than 25 percent have tube/piped well or borehole (26 percent in wet season and 30 percent in dry season). Still many households in other rural areas depend on pond, river or stream and rainwater as drinking water.

Treatment of water for drinking

Table 13 shows that about 61 percent of Cambodian households say that they always treat water for drinking, and an additional 12 percent of households say that they sometimes treat water for drinking. One out of four households never treat drinking water.

Table 13. Households treating drinking water by geographical domain, 2007. Percent.

Treatment of drinking water	Cambodia	Phnom Penh	Other urban	Other rural
Always treat drinking water	61	91	72	57
Sometimes treat drinking water	12	6	7	13
Never treat drinking water	27	3	21	30
Total percent	100	100	100	100
Number of households	2,799,000	255,000	274,000	2,270,000

The results in Table 13 show that about 91 percent of the households in Phnom Penh, as much as about 72 percent in other urban areas and about 57 percent in other rural areas always treat drinking water. However 30 percent of households in other rural areas and about 21 percent in other urban areas never treat drinking water to use. In Phnom Penh this share is about 3 percent.

Distance to fetch drinking water sources (wet and dry season)

More than 90 percent of the households in Cambodia have access to water in a distance of less than 250 meters from the dwelling. As more households have access to rainwater in wet season, somewhat more households have closer to the drinking water source in the wet season than in the dry season, see Table 14.

Table 14. Distance to main drinking water source by geographical domain, 2007. Percent.

Distance in wet season	Cambodia	Phnom Penh	Other urban	Other rural
Less than 0.25 km	97	100	99	97
0.25 to 0.99 km	2	-	-	2
1.00 to 1.99 km	1	-	-	1
2.00 to 2.99 km	-	-	-	-
3 km or more	-	-	-	-
Total	100	100	100	100

Distance in dry season	Cambodia	Phnom Penh	Other urban	Other rural
Less than 0.25 km	93	100	97	92
0.25 to 0.99 km	4	-	3	5
1.00 to 1.99 km	2	-	0	2
2.00 to 2.99 km	0	-	-	1
3 km or more	-	-	-	-
Total	100	100	100	100

There are only small differences between the distance to fetch drinking water between households living in Phnom Penh, other urban and other rural areas for both seasons.

3.5 Sanitation facilities

One of the Millennium Development Goals adopted by the Royal Government of Cambodia is:

- Overall Target 15: Halve by year 2015 the proportion of people without sustainable access to improved sanitation.

Under this Overall Target there are two sub-targets formulated for the urban and rural populations separately:

- Target 7.10: Increasing the proportion of the rural population with access to improved sanitation from 8.6 percent in year 1998 to 30 percent in year 2015.

- Target 7.11: Increasing the proportion of urban population with access to improved sanitation from 49 percent in 1998 to 74 percent in 2015.

Improved sanitation facility is the facility that is private-owned by the household and it can effectively separate human excreta from human contact. Types of improved sanitation facility that the urban and rural populations have access to are defined as follows in CSES 2007:

- Pour flush/flush toilet connected to sewerage, septic tank or pit is defined as a flush toilet using a cistern or holding tank for flushing water and has a water seal, which is a U-shaped pipe below the seat or squatting pan, that prevents the passage of flies and odors. A pour flush toilet uses a water seal or a pour flush toilet uses water poured by hand for flushing.
- A pit latrine with slap is defined as that the excreta is deposited without flushing directly into a hole in the ground. Pit latrine can be a ventilated improved pit latrine (VIP).

Toilet facilities of dwellings

The type of toilet facilities used is a measure of sanitary conditions available. The definition of "improved sanitation facility" includes three types of toilets namely: "pour flush/flush toilet connected to sewerage", "pour flush/flush toilet connected to septic tank", and "pit latrine with slab". About 31 percent of all households in Cambodia have access to improved toilet facilities. Almost all of them have modern toilet facility connected to sewerage or septic tank in their dwellings, see Table 15.

Table 15. Toilet facilities by geographical domain, 2007. Percent.

Type of Facilities	Cambodia	Phnom Penh	Other urban	Other rural
Improved toilets	31	99	57	20
Pour flush/flush connected to sewerage	11	93	6	2
Pour flush/flush connected to septic tank	19	6	49	16
Pit latrine with slab	1	0	1	2
Unimproved toilets	69	1	43	80
Pit latrine without slab/open pit	2	-	2	2
Latrine overhanging field/water	3	0	5	3
Public toilet (pit latrine/latrine)	2	-	3	1
Open land	59	0	32	69
Other included in not improved	3	0	2	4
Total percent	100	100	100	100
Number of households	2,799,000	255,000	274,000	2,270,000

Table 15 shows that about 80 percent of households in other rural areas, and as much as more than 40 percent in other urban areas have access to unimproved toilet facilities. Many of them depend on "Open land", about 69 percent and 32 percent respectively.

In Phnom Penh, almost all households have access to improved toilet facilities, more than 90 percent have toilets connected to sewerage and about 6 percent have toilets connected to septic tank. The corresponding shares for households who have access to improved toilet facilities in other urban and other rural areas are lower, about 57 and 20 percent respectively.

3.6 Energy sources for lighting and cooking

Energy sources for lighting

The results in Table 16 show the main sources of lighting used by households in Cambodia. Of all Cambodian households, one out of four has access to publicly provided electricity or privately generated electricity. More households have electricity for lighting by using batteries, probably also

used for powering the TV set. The kerosene lamp is also likely to be the most commonly used energy source for lighting in Cambodia.

Table 16. Main source of lighting by geographical domain, 2007. Percent.

Sources of lighting	Cambodia	Phnom Penh	Other urban	Other rural
Publicly-provided electricity	23	98	60	10
Privately-generated electricity	1	1	2	1
Battery	38	0	14	45
Kerosene lamp	36	0	24	42
Candle	0	0	1	0
None	-	-	-	-
Other	1	-	0	1
Total percent	100	100	100	100
Number of households	2,799,000	255,000	274,000	2,270,000

In Phnom Penh, almost all households use publicly provided electricity or privately provided electricity as sources of lighting. The shares of households using publicly provided electricity in other urban and other rural areas are lower compared to Phnom Penh, about 60 percent and 10 percent respectively. In other rural areas, the most commonly used source of lighting is battery and kerosene lamp, about 45 percent and 42 percent respectively which are much higher shares than in the other areas.

Energy sources for cooking

One of the Millennium Development Goals, MDG, adopted by the Royal Government of Cambodia is:

- Overall Target 13: Integrate the principles of sustainable development into country policies and programs and reverse the loss of environmental resources.

Under this Overall Target, there are a number of sub-targets, of which one is concerned with energy for cooking: Wood fuel dependency as defined in the MDG to include the first three sources in Table 17 (firewood, charcoal and liquefied petroleum gas (LPG)). In all Cambodia, about 83 percent of the households use firewood for cooking, about 9 percent charcoal, and LPG respectively, see Table 17.

Table 17. Type of fuel for cooking by geographical domain, 2007. Percent.

Types of Fuel	Cambodia	Phnom Penh	Other urban	Other rural
Firewood	83	5	58	94
Charcoal	9	27	29	4
Liquefied petroleum gas (LPG)	9	67	12	2
Kerosene	0	0	-	-
Publicly-provided electricity/city power	0	2	1	0
Household generator	-	-	-	-
None/don't cook	0	0	-	-
Other	0	-	-	0
Total percent	100	100	100	100
Number of households	2,799,000	255,000	274,000	2,270,000

In rural areas more than 90 percent of the households used firewood as fuel for cooking. And in other urban areas more than half of the households also used firewood for cooking. In Phnom Penh liquefied petroleum gas (LPG) is the most common fuel; two out of three households used LPG for cooking. Only about 5 percent of the households used firewood for cooking.

4 About the Cambodia Socio-Economic Survey

4.1 Background and introduction

The Cambodia Socio-Economic Survey (CSES) has been conducted by the National Institute of Statistics (NIS) in 1993/94, 1996, 1997, 1999 and 2004. Since 2007 NIS conducts the CSES annually.The CSES is a household survey covering many areas relating to poverty and living conditions. Questions are asked for the household and for the household members.

The CSES is a sample survey and the sample used in 2007 is a subsample of the sample used in 2004.

In the 2004 survey the diary method for collecting data about household expenditure/consumption and household income was introduced. As the recall method has been used in the previous rounds it was decided to include also the recall modules. Both methods are retained in the annual CSES.

The following main areas have been surveyed in the previous survey rounds and in the annual CSES as well:

1. Level and structure of household expenditure/consumption, including poverty
2. Household production and cash income-earning activities by the labour force
3. Education and literacy
4. Health and access to medical care
5. Housing and amenities
6. Family and social relations, including gender and vulnerability issues.

In CSES 2007 some changes have been introduced in the household questionnaire.

4.2 Objective of the survey

The main objective of the survey is to collect statistical information about living conditions of the Cambodian population and the extent of poverty. The survey can be used for identifying problems and making decisions based on statistical data.

The main user is the Royal Government of Cambodia (RGC) as the survey supports monitoring the National Strategic Development Plan (NSDP) by different socio-economic indicators. Other users are university researchers, analysts, international organizations e.g. the World Bank and NGO's. The World Bank has published a report on poverty profile and social indicators using CSES 2007 data[5].

4.3 Sampling

The sampling design in the CSES survey is a three-stage design. In stage one a sample of villages is selected, in stage two an Enumeration Area (EA) is selected from each village selected in stage one, and in stage three a sample of households is selected from each EA selected in stage two. The sampling designs used in the three stages were:

[5] World Bank (2009). Poverty profile and trends in Cambodia, 2007 - Findings from the Cambodia Socio-Economic Survey (CSES). Report No. 48618-KH.

Stage 1: A stratified systematic πps[6] sample of villages was selected. Strata were defined by provinces and the urban/rural classification of villages. The size measure used in the systematic πps sampling was the number of households in the village according to the population census 1998.

Stage 2. One EA was selected by Simple Random Sampling (SRS), in each village selected in stage 1.

Stage 3. In each selected EA a sample of households was selected by systematic sampling.

The design described above was used for the CSES 2004 survey.[7] In 2007, a subsample of the villages, or EAs, in the 2004 sample was selected by SRS. The villages and EAs surveyed in 2007 were thus included in the sample in both years. In each selected EA a sample of households was selected by systematic sampling. The selected households in 2007 are not necessarily the same as those included in the sample in 2004.

The selection of households in stage three was done in field by first listing the households in the selected EA, and then selecting a systematic sample of households. Selected households were observed during one calendar month. The allocation of the households over the months in 2007 was done so that each village in the 2007 sample was observed in the same calendar month as in 2004.

The sample size in 2007 was 360 villages or 3,600 households, compared to the sample for the 2004 survey of 720 villages or 12,000 households.

Some provinces were excluded, due to cost and other reasons, in the sample for 2007. The estimates are however, adjusted for the under coverage error caused by excluding those provinces.

4.4 Estimation

Totals and ratios such as means or proportions are estimated for the total population or for subgroups of the population, i.e. domains of study. The domains are defined by, for instance, age groups or sex. In the CSES 2007 the sample size is not large enough for a detailed breakdown on e.g. provinces. Means and proportions are estimated by first estimating totals and then calculating the ratio of two estimated totals.

In order to estimate population totals or totals in domains from a sample, weights are needed. An estimator of a population total of a variable is the sum of the weighted variable values for the observed sample units.

The weights are determined by the sampling design, design weights, and adjusted for nonresponse and other imperfections such as under coverage or, adjusted to improve the precision of estimates. In CSES 2007, the design weights were adjusted using preliminary data on the number of persons and households from the population census 2008 and also the Neupert population projections[8].

[6] Systematic sampling with probabilities proportional to size.

[7] National Institute of Statistics (2005b). Cambodia Socio-Economic Survey 2004. Technical report on Survey Design and Implementation. September, 2005.

[8] National Institute of Statistics (2005a). Cambodia Inter-Censal Population Survey 2004. Demographic Estimates and Revised Population Projections. June, 2005.

4.5 Questionnaires

Four different questionnaires or forms were used in the CSES 2007:

1. **Household listing form**
   The listing of households was used for sampling households, see section 4.3.

2. **Village questionnaire**
   The village questionnaire was responded by the village leader or a representative of the village leader. The questions are about economy and infrastructure, crop production, health, education, retail prices, rental and sales prices of land etc.

3. **Household questionnaire**
   The household questionnaire was responded by the head of the household, spouse of the head of the household or of another adult household member.

   The household questionnaire includes questions about housing conditions, crop production and other agricultural activities, liabilities, durable goods, construction activities and income from other sources than economic activity.

   The household questionnaire also includes questions for each household member about education and literacy, migration, current economic activity and employment, health, smoking, HIV/AIDS awareness, and victimization. Some of these questions were responded by the head of household/spouse and some were responded by each household member.

   The questions in the first part of the household questionnaire are posed during the initial visit to the household. This part includes questions about e.g. the household member's age, sex, marital status, relation to head of household, and questions about household expenditure/consumption of food and non-food items.

   During a survey month different questions have been asked different weeks according to the following:
   - Week 1. Questions about education, migration, and housing
   - Week 2. Questions about economic activity, agricultural and non-agricultural business, household liabilities and other incomes.
   - Week 3. Questions about construction, durable goods, and child health
   - Week 4. Questions about current economic activities, health and victimization

4. **Diary sheet**
   The diary sheet on daily household expenditure, including value of own production, and income have been filled in during the entire month.

4.6 Data collection and field work

The fieldwork started in October 2006 and finished in the end of December 2007. The results in this report are based on data from the calendar year 2007, i.e. only 12 of the 15 survey months are included in the estimation.

Supervisors and enumerators were recruited by NIS and trained for the field work. The training took place at NIS in Phnom Penh. A comprehensive field manual was used during the training and the field work.

Each fieldwork team consisted of one supervisor and three enumerators. For each selected village one enumerator was assigned as responsible and carried out interviews of ten households in the village.

Altogether 30 enumerators and 10 supervisors, divided into 10 teams carried out the fieldwork at the same time. Two groups of teams were formed and alternated monthly so that each interviewer and supervisor worked in the field every second month.

For a given month the team arrived in the village 2–3 days before the first day of the month for preparatory tasks like discussing with village authorities, filling in the Household listing form and sampled the households to be interviewed.

The supervisor was the leader of the team and was responsible for the coordination of the interviews, collaboration with local authorities, and checking of the questionnaires during the interview month. If errors were found in the responses the enumerator was required to re-interview. The supervisor was also responsible for the village questionnaire and the interview of the village leader or representative of the village leader.

Any survey of the CSES dimensions needs a comprehensive system of quality management and monitoring. The CSES management group within NIS therefore is using a careful monitoring scheme. The monitoring team included four NIS staff including top ranked NIS officers. The supervision took place during the last two weeks of the interview month.

Before going to the villages the teams were briefed and introduced to adjustments of the interviewing procedure that had to be made as a result of monitoring activities and feed-back from the data processing.

4.7 Data processing

The data processing was done at NIS in Phnom Penh using the SQL data management system that verifies the data entry operation. A team of data editors, data coders and data entry staff was formed. The data editors were checking the questionnaires before the data entry and also took care of errors to ensure that entered data were consistent with the collected data in the questionnaires or diaries. Before the data entry the coders also put relevant codes in the questionnaire and diary.

4.8 Comparability

Comparisons of the results from the 2007 CSES with previous surveys, CSES 1993/94, 1996, 1997 and 1999, are not recommended due to differences in the survey design.

The CSES 2004 was conducted from November 2003 to January 2005, and the 2007 survey from October 2006 to December 2007. The monthly sample sizes were 1000 households in the 2004 survey and 300 households in the 2007 survey. Concerning CSES 2004 the, results presented in 2005[9] were based on both the 12 months and the 15 months samples, whereas in this report all estimates presented are based on the 12 month sample, i.e. the calendar year 2007.

The weights used in the reports from CSES 2004 are adjusted by using the preliminary population projections[10] which give over estimated population counts. The weights in CSES 2007 are adjusted by using the preliminary result from 2008 Population Census. A recalculation of the weights in CSES 2004 will be made for the coming analyses to obtain higher comparability between CSES 2004 and the surveys conducted from 2007 and onwards.

[9] National Institute of Statistics (2005). Cambodia Socio-Economic Survey 2004, Summary Subject Matter Report , September 2005.

[10] Neupert R.F.(2005). New Demographic Estimates and Updated Projections for Cambodia. UNDP.

4.9 Definitions

Geographical domains

The geographical domains used in this report are

1. Phnom Penh
2. other urban
3. other rural,

where Phnom Penh includes both urban and rural areas.

Age
Age is defined as completed years at the initial visit to the household.

Household
The survey covers private households with one or more persons. Nomadic households are included in principal. Households excluded from the survey are:

1. People living in institutions such as long term hospitals, prisons, monasteries, military quarters.
2. Diplomatic and UN households in the country.
3. Armed forces in military bases.

A household is defined as a group of persons, or a single person, who usually live together and have a common arrangements for food, such as using a common kitchen or a common food budget. The persons may be related to each other or may be non-relatives, including servants or other employees, staying with the employer.

4.10 Confidentiality

The Statistics Law Article 22 specifies matters of confidentiality. It explicitly says that all staff working with statistics within the Government of Cambodia "shall ensure confidentiality of all individual information obtained from respondents, except under special circumstances with the consent of the Minister of Planning. The information collected under this Law is to be used only for statistical purposes."

4.11 Contact person

Contact person for this report is Mr Tith Vong, Director of Social Statistics Department.

Annex 1 Module on Housing Conditions

04. HOUSING

Respondent: head of household, spouse of the head of household, or of another adult household member **WEEK 1**

The following questions should be asked of the head of household, spouse of the head of household, or of another adult household member, if both head and spouse are absent.

Q1 How many households reside in the same housing unit as your household? NUMBER OF HOUSEHOLDS: | | | |

Q2 What is the floor area of the housing/dwelling unit occupied by your household? NUMBER OF SQUARE METERS: | | | |

Q3 How many rooms in the dwelling unit are used by the household (other than kitchen, toilet and bathrooms)? NUMBER OF ROOMS: | | | |

Q4 What is the primary construction material of the wall of the housing/dwelling unit occupied by your household?

WALL CODES — CODE: |

1=Bamboo, Thatch/leaves, Grass
2=Wood or logs
3=Plywood
4=Concrete, brick, stone
5=Galvanized iron or aluminium or other metal sheets
6=Fibrous cement/Asbestos
7=Makeshift, mixed materials
8=Clay/dung with straw
9=Other, specify

Q5 What are the primary construction material of the roof of the housing /dwelling unit occupied by your household?

ROOF CODES — CODE: |

1 = Thatch/leaves/grass
2 = Tiles
3 = Fibrous cement
4 = Galvanized iron or aluminium
5 = Salvaged materials
6 = Mixed but predominantly made of galvanized iron/aluminium, tiles or fibrous cement
7 = Mixed but predominantly made of thatch/leave /grass or salvaged materials
8 = Concrete
9 = Plastic sheet
10 = Other (Specify)

Q6 What are the primary construction material of the floor of the housing /dwelling unit occupied by your household?

FLOOR CODES — CODE: |

1 = Earth, clay
2 = Wooden planks
3 = Bamboo strips
4 = Cement/Brick/Stone
5 = Parquet, polished wood
6 = Polished stone, marble
7 = Vinyl
8 = Ceramic tiles
9 = Other (Specify)

Q7 What is your household's main source of lighting?

LIGHTING SOURCE CODES — CODE: |

1 = Publicly-provided electricity/City power
2 = Generator
3 = Battery
4 = Kerosene lamp
5 = Candle
6 = None
7=Other (specify)

Q8 What is your household's main source of drinking water in wet season?

DRINKING WATER SOURCE CODES — CODE: |

1 = Piped in dwelling or on premises (=>> Q12)
2 = Public tap
3 = Tubed/piped well or borehole
4 = Protected dug well
5 = Unprotected dug well
6 = Pond, river or stream
7 = Rainwater (=>> Q12)
8 = Tanker truck, vendor or otherwise bought (vendor brought water home, write "0" in distance and ==> Q12)
9 = Tanker truck, vendor or otherwise bought (Any household member goes to collect bought water, write distance in Q9 then ask Q10 and Q11.)
10 = Other (Specify)

Q9 What is the distance to the main source of drinking water source in wet season? METERS: |

Q10 Which members of your household are fetching drinking water in the wet season? ID CODE OF HH MEMBERs: (1) | | (2) | | (3) | |

Q11 How many minutes per day do they spend in total on fetching drinking water in wet season? MINUTES: |

04. HOUSING (CONTINUED) **WEEK 1**

Q12 What is your household's main source of drinking water in dry season? CODE: ☐

DRINKING WATER SOURCE CODES

1 = Piped in dwelling or on premises (=>> Q16)
2 = Public tap
3 = Tubed/piped well or borehole
4 = Protected dug well
5 = Unprotected dug well
6 = Pond, river or stream
7 = Rainwater (=>> Q16)
8 = Tanker truck, vendor or otherwise bought (vendor brought water home, write "0" in distance and ==> Q16)
9 = Tanker truck, vendor or otherwise bought (Any household member goes to collect bought water, write distance in Q13 then ask Q14 and Q15.)
10 = Other (Specify)

Q13 What is the distance to the main source of drinking water in dry season source? METERS: ☐

Q14 Which members of your household are fetching drinking water in the dry season? ID CODE OF HH MEMBER: (1) ☐ (2) ☐ (3) ☐

Q15 How many minutes per day do they spend in total on fetching drinking water in dry season? MINUTES: ☐

Q16 How much water charges did (your HH) pay last month? (Put "0" for not buying water source) RIELS: ☐

Q17 Did your household boil or otherwise treat the drinking water last month?
1 = Yes, always 2 = Sometimes 3 = No, never (=>>Q19) ☐

Q18 How did you treat your drinking water last month?
1 = Yes
2 = No
a. Boil water? ☐ b. Filter water? ☐ c. Chemical? ☐ d. White alum? ☐ e. Other method (Specify)? ☐

Q19a What toilet facility does your household have inside the premises? (in the area close to the dwelling) CODE: ☐
1 = Pour flush (or flush) connected to sewerage =>> Q20
2 = Pour flush (or flush) to septic tank or pit =>> Q20
3 = Pit latrine with slab =>> Q20
4 = Pit latrine without slab or open pit =>> Q20
5 = Latrine overhanging field or water (drop in the field, pond, lake, river, sea) =>> Q20
6 = Latrine overhanging water (drop in lake, river, sea) =>> Q20 (Only for the household living in boat)
7 = None =>> Q19b
8 = Other, specify =>> Q20

Q19b What toilet facility does your household usually use? CODE: ☐
1 = Public toilet with pour flush (or flush) connected to sewerage
2 = Public toilet with pour flush (or flush) to septic tank or pit
3 = Public pit latrine with slab
4 = Public pit latrine without slab or open pit
5 = Public latrine overhanging field or water (drop in the field, pond, lake, river, sea)
6 = Public latrine overhanging water (drop in the lake, river, sea) (Only public boat)
7 = Open land
8 = Other (Specify)

Q20 How much did your household spend for sewage or waste water disposal last month? (Write 0 if nothing) RIELS: ☐

Q21 How much did your household spend for garbage collection last month? (Write 0 if nothing) RIELS: ☐

Q22 (a) What type of fuel does your household mainly use for cooking? CODE: ☐

FUEL CODES

1 = Firewood
2 = Charcoal
3 = Liquefied petroleum gas LPG (=>> Q23)
4 = Kerosene (=>> Q23)
5 = Publicly-provided electricity/City Power (=>> Q23)
6 = Household generator (=>> Q23)
7 = None/don't cook (=>> Q23)
8 = Other (Specify) (=>> Q23)

Note: For code "1 and 2 " if the vendor brought firewood/charcoal home, leave code box (b) and (c) blank, ==>Q23.

(b) Which household members are fetching firewood or charcoal? ID CODE OF HH MEMBERs: (1) ☐ (2) ☐ (3) ☐

(c) How many hours per week in total do they spend on collecting firewood/Charcoal? HOURS PER WEEK: ☐

04. HOUSING (CONTINUED) **WEEK 1**

Q23 How much did the household spend on the following last month (including lights and cooking)?

(ENTER " 0 " IF DID NOT SPEND ANYTHING)

	RIELS
a. Electricity	
b. Gas (LPG)	
c. Kerosene	
d. Firewood	
e. Charcoal	
f. Battery	
g. Other (Specify)	

Q24 What's the legal status of the dwelling?

LEGAL STATUS CODE CODE:

1 = Owned by the household (=>>Q25b)
2 = Not owned but no rent is paid (=>> Q25b)
3 = Rented
4 = Other (Specify) (=>>Q25b)

Q25a How much did you pay for rent of this house last month? (=>> Q26) RIELS:

Q25b How much would you have to pay per month to rent a similar dwelling? RIELS:

Q26 How much did you spend on maintenance and minor repairs of the dwelling last month? RIELS:

END OF WEEK 1

For more information

INTERNET	www.nis.gov.kh is the NIS web site for official statistics produced by NIS and other institutions and ministries within the Royal Government of Cambodia. The web site is the best place to start for access to summary data from the latest publications, and information about the NIS and other statistical units of the Royal Government.
Reference Library	A range of NIS reference publications are available for use by data users at the NIS Data User Service Center.
Information Service	The NIS staff at the Data Users Service Center can assist users in addressing their data requirements. NIS publications are available for sale and subscriptions services can be arranged. Special data services are also available, on a user pays basis.
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