2.4.2 Main Energy Source of fuel used for Cooking

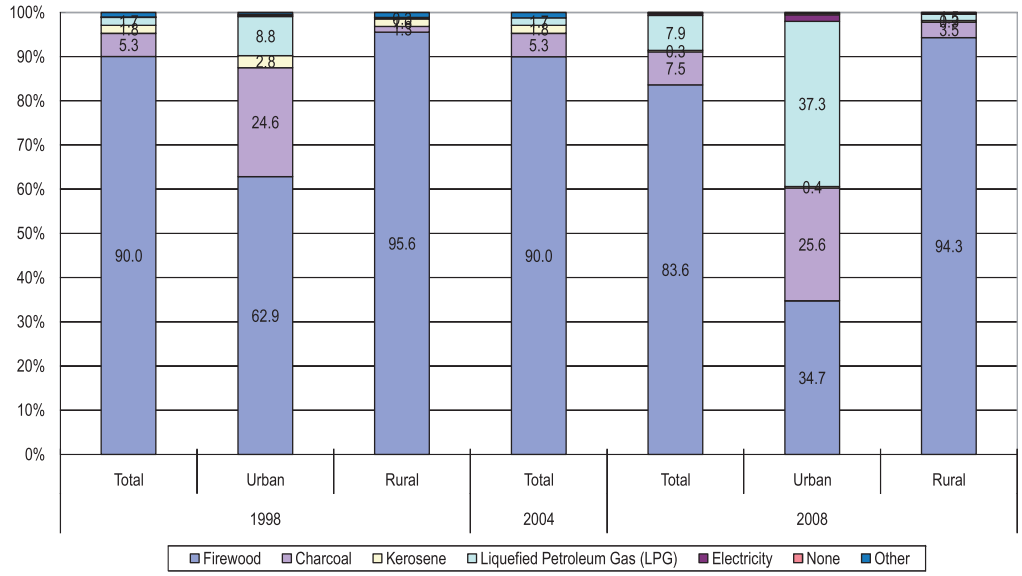
According to Table 2.7, nine out of ten households were using firewood for cooking in 1998, in ten years the proportion of households using firewood has decreased 6 percentage points in Cambodia (from 90.0 percent to 83.6 percent). Only in regard to rural area, it has decreased only 1 percentage point (from 95.6 percent to 94.3 percent).

Table 2.7 Distribution of Households by Type of Fuel for Cooking: Urban/Rural, 1998 and 2008

Type of Fuel for Cooking	Number of Households					
	1998			2008		
	Total	Urban	Rural	Total	Urban	Rural
Total	**2,162,086**	**364,581**	**1,797,505**	**2,817,637**	**506,579**	**2,311,058**
Firewood	1,946,789	229,263	1,717,526	2,355,884	175,962	2,179,922
Charcoal	113,700	89,819	23,881	210,567	129,471	81,096
Kerosene	39,390	10,028	29,362	9,732	1,839	7,893
Liquefied Petroleum Gas (LPG)	37,627	32,059	5,568	222,621	188,915	33,706
Electricity	1,068	810	258	10,684	7,699	2,985
None	1,569	1,159	410	6,156	2,001	4,155
Other	21,943	1,443	20,500	1,993	692	1,301
	Percentage					
	1998			2008		
	Total	Urban	Rural	Total	Urban	Rural
Total	100.0	100.0	100.0	100.0	100.0	100.0
Firewood	90.0	62.9	95.6	83.6	34.7	94.3
Charcoal	5.3	24.6	1.3	7.5	25.6	3.5
Kerosene	1.8	2.8	1.6	0.3	0.4	0.3
Liquefied Petroleum Gas (LPG)	1.7	8.8	0.3	7.9	37.3	1.5
Electricity	0.0	0.2	0.0	0.4	1.5	0.1
None	0.1	0.3	0.0	0.2	0.4	0.2
Other	1.0	0.4	1.1	0.1	0.1	0.1

Note: Excludes Institutional Homeless Boat and Transient Households.

Figure 2.6 Type of Fuel for Cooking: Urban/Rural, 1998 and 2004 and 2008



On the other hand, in urban areas, the households using Liquefied Petroleum Gas (LPG) have increased around 30 percentage points (from 8.8 percent to 37.3 percent) and the households using firewood have decreased almost same as LPG (from 62.9 percent to 34.7 percent). Figure 2.6 presents that using LPG for cooking has increased rapidly after ICPS 2004. These days, this type of fuel can be found even in small market in the country side. Charcoal is still popular as fuel for cooking in urban areas with 25.6 percent of households.

Table 2.8 shows the provincial data of the three leading energies for cooking which are Firewood, Charcoal and LPG. The majority of provinces having decreased the proportion of Firewood have increased the proportion of Charcoal. The decrease of firewood leads to the increase of LPG in urban areas, however, it leads to increase of charcoal rather than LPG in rural area. The proportion of using LPG for Cooking in Phnom Penh exceeds 50 percent but those in most provinces show very small values.

The conversion in energy source for cooking of Pailin is very different from other provinces, i.e. the proportion of charcoal has decreased and firewood has increased. The rapid increase in number of households in Pailin, mentioned above, might have affected its conversion.

Table 2.8 Leading Energies for Cooking: Province, 1998 and 2008

	Percentage										
	1998				2008				Differential { (2008) - (1998)}		
	Total Number of Households	Firewood	Charcoal	Liquefied Petroleum Gas (LPG)	Total Number of Households	Firewood	Charcoal	Liquefied Petroleum Gas (LPG)	Firewood	Charcoal	Liquefied Petroleum Gas (LPG)
Total	2,162,086	90.04	5.26	1.74	2,817,637	83.61	7.47	7.90	-6.4	2.2	6.2
Urban	364,581	62.88	24.64	8.79	506,579	34.74	25.56	37.29	-28.1	0.9	28.5
Rural	1,797,505	95.55	1.33	0.31	2,311,058	94.33	3.51	1.46	-1.2	2.2	1.1
Province											
Banteay MeanChey	110,994	90.65	7.64	0.51	144,658	76.88	17.43	4.39	-13.8	9.8	3.9
Battambang	146,661	92.43	4.35	0.64	209,702	83.23	12.86	2.95	-9.2	8.5	2.3
Kampong Cham	311,151	96.75	0.96	0.57	368,114	95.57	1.46	2.25	-1.2	0.5	1.7
Kampong Chhnang	81,201	95.84	1.90	0.41	100,801	93.06	5.15	1.23	-2.8	3.3	0.8
Kampong Spueu	114,959	96.72	1.09	0.34	149,270	95.61	1.99	1.66	-1.1	0.9	1.3
Kampong Thom	105,583	95.60	1.67	0.30	133,878	94.25	4.01	1.07	-1.3	2.3	0.8
Kampot	104,498	93.52	3.94	0.34	129,646	91.04	6.44	1.75	-2.5	2.5	1.4
Kandal	203,357	96.47	1.74	0.65	255,029	88.02	4.97	6.03	-8.4	3.2	5.4
Koh Kong	21,401	68.72	27.02	2.61	24,166	53.65	32.52	12.18	-15.1	5.5	9.6
Kratie	48,761	95.26	3.08	0.40	65,323	93.03	5.04	1.24	-2.2	2.0	0.8
Mondul Kiri	5,615	97.63	0.50	0.18	12,270	89.85	4.07	4.86	-7.8	3.6	4.7
Phnom Penh	167,758	43.14	34.34	16.34	250,597	18.01	23.11	56.45	-25.1	-11.2	40.1
Preah Vihear	21,007	98.42	0.87	0.23	33,115	93.13	5.54	0.80	-5.3	4.7	0.6
Prey Veng	192,735	91.97	1.24	0.41	226,312	96.84	1.11	1.32	4.9	-0.1	0.9
Pursat	67,022	94.87	1.87	0.59	83,412	93.38	4.24	1.34	-1.5	2.4	0.8
Ratanak Kikri	16,646	96.23	1.61	0.29	27,485	90.60	5.42	3.02	-5.6	3.8	2.7
Siem Reap	125,387	96.07	1.42	0.40	179,754	86.43	4.95	7.43	-9.6	3.5	7.0
Preah Sihanouk	30,075	71.18	25.04	1.89	44,656	52.43	34.16	11.33	-18.8	9.1	9.4
Stung Treng	14,126	94.63	4.37	0.45	20,922	88.71	9.11	1.49	-5.9	4.7	1.0
Svay Rieng	97,796	89.35	0.64	0.44	114,758	95.54	0.90	2.84	6.2	0.3	2.4
Takeo	153,863	96.18	1.01	0.34	183,742	95.75	1.60	2.11	-0.4	0.6	1.8
Otdar Meanchey	12,208	97.40	1.53	0.23	38,398	81.41	15.61	1.59	-16.0	14.1	1.4
Kep	5,282	96.29	1.42	0.28	7,193	93.84	2.72	1.86	-2.4	1.3	1.6
Pailin	4,000	40.48	56.45	1.30	14,436	65.78	22.62	9.41	25.3	-33.8	8.1

Note: Excludes Institutional Homeless Boat and Transient Households.

Figure 2.9a Location of Water Source by Main Source of Drinking Water: Cambodia Total, 2008

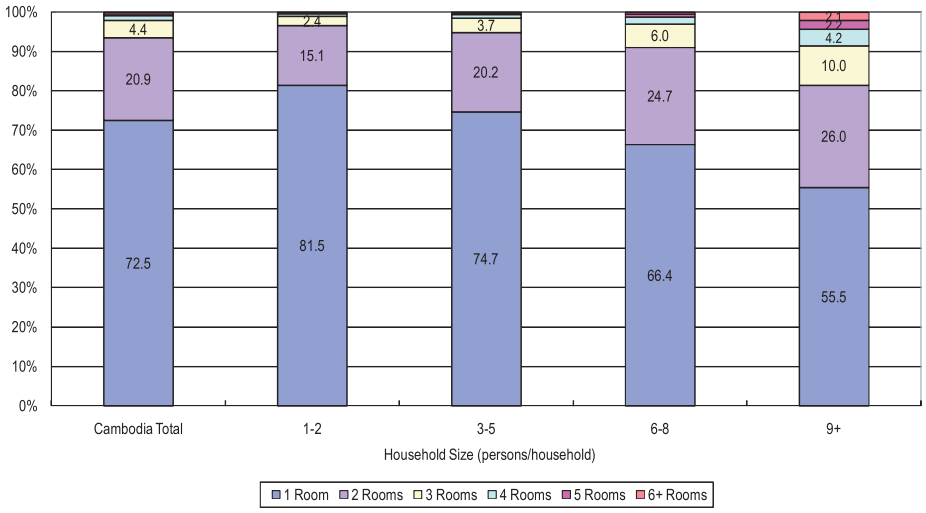


Figure 2.9a Location of Water Source by Main Source of Drinking Water: Cambodia Total, 2008

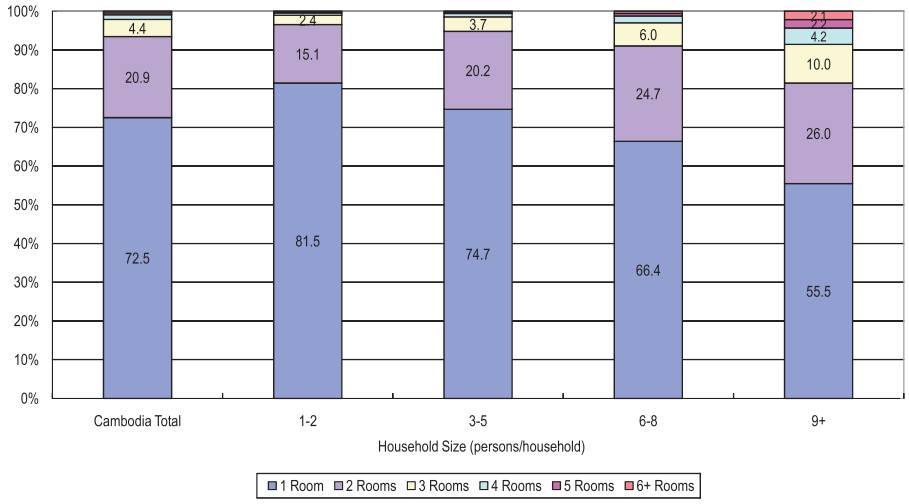
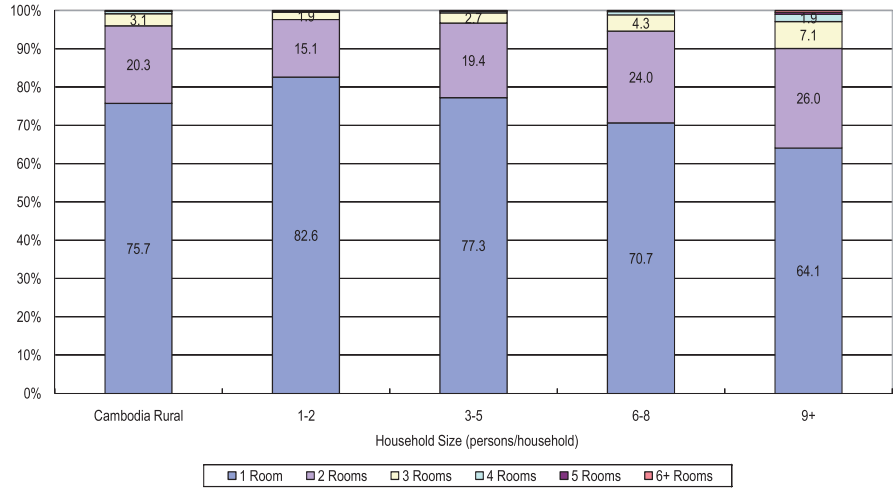
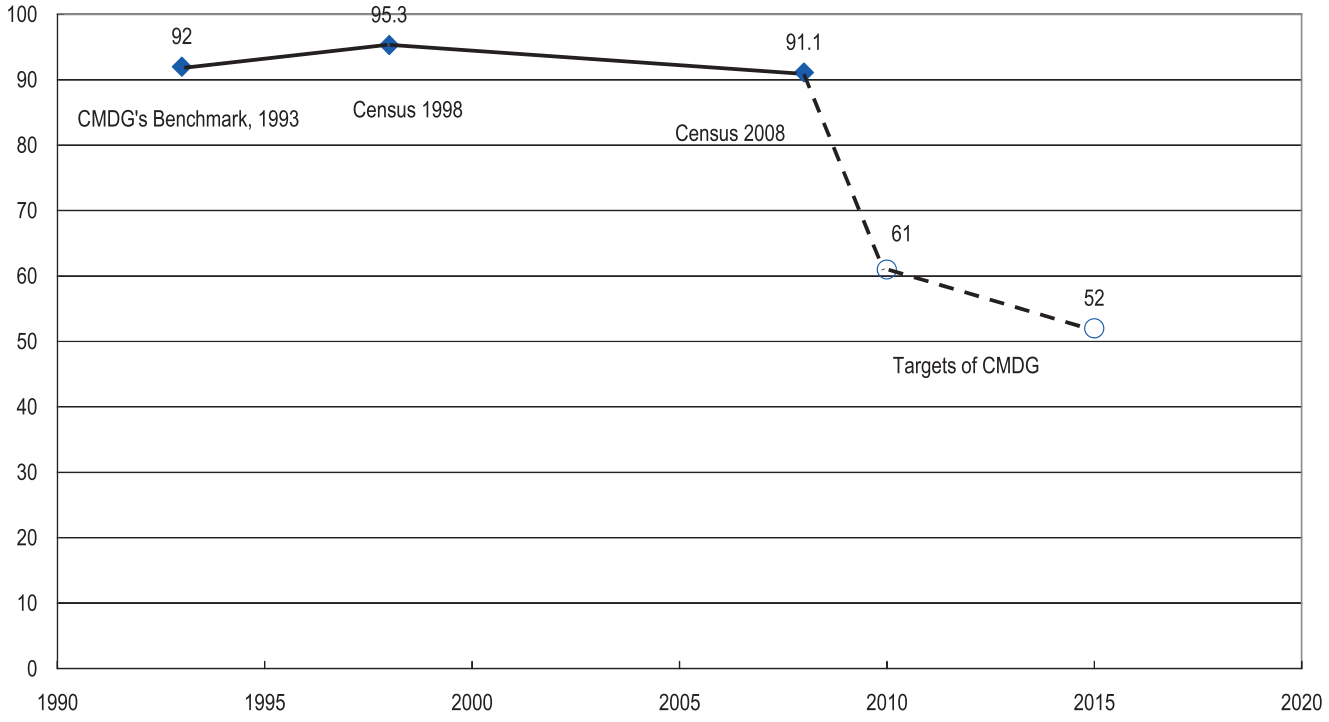


Figure 2.9c Location of Water Source by Main Source of Drinking Water: Cambodia Rural, 2008



One of the targets of Cambodian Millennium Development Goal 7 (CMDG 7) is to decrease fuel wood dependency defined by the percentage of households. In a past decade, the fuel wood dependency of households of Cambodia has decreased 4 percentage points (fuel wood consists of firewood and charcoal.) The present condition is far from achieving CMDG target value (Figure 2.7). The proportion has decreased but households using fuel wood as its primary energy source for cooking have increased around 500,000 (Table 2.8). Cooking is a daily activity in daily life. When a household wants to change energy source from fuel wood to LPG or some other non-wooden energy, they need prepare new cookers for cooking. The cost for preparing it may be much expensive for majority of households in Cambodia, especially in rural areas. This CMDG target has been set for achieving sustainable development. It is an important issue, but the way to reach the basic aim may need to be reexamined.

Figure 2.7 Trends and Cambodian Millennium Development Goal (CMDG) Targets in Fuel Wood Dependency



Note: 'Fuel Wood' includes 'Firewood' and 'Charcoal'
Source: Cambodian Millenium Development Goals Report 2003
General Population Census of Cambodia 2008

2.5 DRINKING WATER

2.5.1 Main Source of Drinking Water

A new category for classifying 'main source of drinking water' is applied in 2008 for the purpose of distinguishing 'protected dug well' and 'rain' from simple 'dug well' used in GPCC 1998 and from 'spring and river etc.' The category of main source of drinking water in 2008 consists of ‘Piped Water’, ‘Tube/Pipe well’,

'Protected dug well', 'Unprotected dug well', 'Rain', 'Spring and River etc.', 'Bought' and 'Other'. 'Bought' includes water bought from vendors with any manner as in bottles, containers and tanker trucks.

Table 2.9 and Figure 2.8 present the main source of drinking water for most Cambodian households, those are 'Tube/Pipe Well' (26.8 percent) followed by 'Springs and River' (23.1 percent) and 'Unprotected Dug Well' (20.7 percent).

In urban areas, the proportion of households using 'Piped Water' has greatly increased 30 percentage points (from 26.8 percent to 56.8 percent) and exceeded 50 percent in a decade, while the increase of this proportion was only 3 percentage points in rural area (1.5 percent to 4.4 percent). As a whole, the increase of this proportion in Cambodia was less than 10 percentage points (from 5.8 percent to 13.8 percent).

On the other hand, the proportion of 'Tube/Pipe Well' has mainly increased in rural area, and one quarter of households living there use this facility. The proportion of households using 'Spring, River, etc.' has decreased in rural areas and whole country but that decrease were not so big (around 5 percentage points).

Table 2.9 Distribution of Households by Main Source of Drinking Water: Urban/Rural, 1998 and 2008

Main Source of Drinking Water	Number of Households					
	1998			2008		
	Total	Urban	Rural	Total	Urban	Rural
Total	2,162,086	364,581	1,797,505	2,817,637	506,579	2,311,058
Piped Water	125,327	97,629	27,698	389,803	287,497	102,306
Tube/Pipe Well	323,194	45,537	277,657	755,652	74,460	681,192
Protected Dug Well	-	-	-	147,120	19,193	127,927
Unprotected Dug Well*	871,035	60,993	810,042	581,942	22,926	559,016
Rain	-	-	-	26,897	2,605	24,292
Spring, River, etc	609,773	48,553	561,220	650,082	31,503	618,579
Bought	179,393	106,389	73,004	230,177	65,666	164,511
Other	53,364	5,480	47,884	35,964	2,729	33,235
	Percentage					
	1998			2008		
	Total	Urban	Rural	Total	Urban	Rural
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Piped Water	5.8	26.8	1.5	13.8	56.8	4.4
Tube/Pipe Well	14.9	12.5	15.4	26.8	14.7	29.5
Protected Dug Well	-	-	-	5.2	3.8	5.5
Unprotected Dug Well*	40.3	16.7	45.1	20.7	4.5	24.2
Rain	-	-	-	1.0	0.5	1.1
Spring, River, etc	28.2	13.3	31.2	23.1	6.2	26.8
Bought	8.3	29.2	4.1	8.2	13.0	7.1
Other	2.5	1.5	2.7	1.3	0.5	1.4

Note: 1) Excludes Institutional Homeless Boat and Transient Households.
2)*In 1998, information was collected only relating to Dug well and not separately for "Protected" and "Unprotected" Dug wells
3) In 1998, "Spring, river, stream, lake/pond and rain" was one category.