

Use of Commercial and Non-commercial Fuels for Household Activities in the Panchrukhi Block of Himachal Pradesh

Neena Vyas and Rupa Bakshi

INTRODUCTION

In India, about eighty per cent population lives in villages and consumes energy in a manner different from urban population. The requirements of household energy are met from (a) commercial sources like coal, oil, electricity and gas, (b) non-commercial energy sources like firewood, agricultural/forest wastes and animal dung. Chatha (1989) found that the per cent share of non-commercial and commercial fuels for performing household activities was 80.36 and 9.58 respectively in rural homes. The household energy is required primarily for cooking and lighting. Therefore, a better understanding of energy use pattern and energy resources is important for estimating future requirements and in the study was undertaken with the objective to determine the types and quantities of fuels used for household activities by the farm women of Panchrukhi block.

MATERIAL AND METHODS

Stratified sampling technique was used for the selection of sample. A sample of 120 household was drawn by selecting thirty families each from four categories viz., farming nuclear, farming joint, non-farming nuclear and non-farming joint families. An interview schedule was prepared for collecting data. Direct personal interview method was adopted for data collection. The data were collected from homemakers who were supposed to perform the maximum number of household activities and using commercial and non-commercial fuels. Actual measurements as well as recall method were used for determining consumption of different commercial sources. After knowing the daily commercial consumption estimates in original units for each commercial source, they were converted into Mega Joules (MJ) for the purpose of total commercial consumption. The conversion fac-

tor (Binning et al., 1983) adopted are given in appendix I. The data collected were tabulated and simple percentage, means, standard deviation and standard error were worked out. The Student's t-test was applied to find out the statistical significance of the difference between the means.

RESULTS AND DISCUSSION

Table 1 shows the background information of the homemakers. The average age of homemakers in farming and non-farming families were 41.00 years and 37.50 years, respectively. The percentage of illiterate homemakers was 65 and 20.7 per cent in farming and non-farming categories, respectively. 45 and 38.33 per cent of the families belonged to the family size of 2-5 members of the joint families both in farming as well as in non-farming category had medium sized families (6-9). Table 2 shows the livestock population majority of farming families i.e. 48.3 per cent had animals in the range of 3-4, whereas 63.33 per cent of non-farming families has animals in the range of 1-2. The average herd size was 2.04 and 1.94 in farming and non-farming families, respectively. The total estimated average dung yield of the livestock population was 6197 and 5792 kg in farming and non-farming families, respectively. From Table 3, it was clear that commercial fuels used were firewood, dung cakes and agricultural/forest wastes. The daily consumption of firewood was 183.24 MJ and 151.00 MJ in farming and non-farming families, respectively. Daily consumption of dry dung cakes was more in farming families (28.98 MJ) where it was 22.5 MJ in non-farming families, respectively. Total commercial consumption from agricultural wastes was 33.48 MJ and 25.74 MJ for farming and non-farming category, respectively, the difference being statistically significant table 4 shows commercial sources, the main sources namely electricity, kerosene and

Table 1: Background conformation and family size

	Farming families			Non-farming families		
	Nuclear N=30	Joint N=30	Total N _f =60	Nuclear N=20	Joint N=30	Total N _f =60
<i>Age (years)</i>						
18-28	1 (3.33)	4 (13.33)	5 (6.33)	7 (23.33)	6 (20.00)	13 (21.66)
28-38	11 (36.66)	8 (26.66)	19 (31.66)	9 (30.00)	14 (46.66)	23 (38.23)
38-48	13 (43.33)	13 (43.33)	26 (43.33)	9 (30.00)	8 (26.66)	17 (28.33)
48-58	3 (10.00)	2 (6.66)	5 (8.33)	5 (16.66)	1 (3.33)	6 (10.00)
58 of above	2 (6.66)	3 (10.00)	5 (8.33)	1 -	1 (3.33)	2 (1.66)
Average years	41.50	42.00	41.00	38.00	37.00	37.50
<i>Family Size</i>						
2-5	26 (86.6)	1 (3.33)	27 (45.00)	23 (76.6)	-	23 (38.33)
6-9	4 (13.3)	24 (80.00)	28 (46.66)	7 (23.33)	20 (66.6)	27 (45.00)
10-13	-	5 (16.66)	5 (8.33)	-	10 (33.3)	10 (16.67)
Average size	4.7	7.8	6.25	4.73	8.6	6.6

Table 2: Details of Livestock population

Head Size	Farming families			Non-farming families		
	Nuclear N=30	Joint N=30	Total N _f =60	Nuclear N=30	Joint N=30	Total N _f =60
0	4 (6.67)	-	4 (10.00)	1 (3.33)	4 (6.67)	5 (8.33)
1-2	8 (26.66)	12 (40.00)	20 (33.33)	20 (66.67)	18 (60.00)	38 (63.33)
3-4	13 (43.33)	16 (53.33)	29 (48.33)	7 (23.33)	6 (20.00)	13 (21.66)
5 above	5 (16.67)	2 (6.66)	7 (23.33)	2 (6.66)	2 (6.66)	4 (6.66)
Average herd size	1.87	2.19	2.04	1.57	2.23	1.94
Total yield/day(kg.)	2543	3654	6197	2250	3542	5792

(Figures in Parentheses are percentages)

Table 3: Daily consumption of energy (MJ) from non-commercial fuels

	Farming families			Non-farming families			t-values
	Nuclear N= 30	Joint N=30	Total N _f =60	Nuclear N = 30	Joint N=30	Total N _f = 60	Farming vs Non-farming
<i>Non-commercial Fuels</i>							
Fire wood (kg)	171.00 ± 6.54	196 ± 8.25	183.24 ± 5.46	134 ± 9.09	163.80 ± 10.65	151 ± 7.38	3.573**
Dung cakes (kg)	27.54 ± 3.84	30.24 ± 2.50	28.98 ± 2.04	24.85 ± 5.39	20.80 ± 4.04	22.5 ± 3.23	1.788*
Agro/Faresit waste	30.06 ± 1.77	36.90 ± 2.17	33.48 ± 1.45	17.10 ± 2.57	34.56 ± 3.41	25.74 ± 2.22	3.049**

Values are mean of standard error figures in parentheses indicate number of families

* Significant of 10% level

** Significant of 1% level

Table 4: Daily consumption of energy (Kg.) from commercial fuels

	Farming families			Non-farming families			t-values
	Nuclear N=30	Joint N=30	Total N _f =60	Nuclear N=30	Joint N=30	Total N _n =60	
Commercial Fuels							
Electricity (Kwh)	19 ± 1.43	18.37 ± 1.46	18.85 ± 1.00	20.04 ± 1.54	19.08 ± 1.19	19.56 ± 0.98	0.506
Kerosene (l)	5.37 ± 0.76	4.55 ± 0.59	4.96 ± 0.47	11.98 ± 1.60	9.92 ± 0.85	10.74 ± 0.89	5.180*
L.P.G. (Kg)	-	17.5 ± 3.50	17.5 ± 3.50	20.5 ± 1.76	28.00 ± 3.17	24.00 ± 1.67	1.168

Values are mean of standard error

Figures in parentheses indicate number of families.

* Significant at 1% level

LPG were utilized in the household for cooking and lighting purpose. Energy consumption from electricity per day per family in farming and non-farming families was almost same as 18.85 and 19.56 MJ, respectively because it was used mainly for lighting purpose. Kerosene was used mainly for lighting lamps, as a fuel for lighting chullah and supportive fuel in kerosene stoves. The daily consumption of commercial fuels found to be 4.96 MJ and 10.74 MJ in farming and non-farming families, respectively. Higher consumption in non-farming category may be due to the reason that they used it's a supportive fuel in kerosene stoves for cooking purpose, whereas in farming category families used more of firewood and dung cakes. The difference was found to be statistically significant. Bicklyloves (1989) found in a rural household of Philipines that the total quantity of energy used per week was negatively related to number of cookstoves and non-electric items of equipment owned and positively related to the distance traveled each week to obtain fuels. The LPG was used by few families. The daily commercial consumption from LPG was 17.5 and 23.0 MJ in farming and non-farming families, respectively.

CONCLUSION

It was found that firewood was the major non-commercial commercial source required for cooking and heating activities in rural areas followed by agricultural/forest wastes which might be attributed to its easy availability and convenience in use. These results are in contradiction to the results of "Comparative study on commercial use pattern for households activities in rural and urban areas of Ludhiana district of Punjab state", where dung cakes and agricultural

waste were the major sources. It might be due to a large number of herd size and more cultivation in the areas as compared to villages under the present study. It may be concluded that the consumption of commercial fuels was more in case of non-farming families as compared to farming families. These findings are supported by the results of Bakshi et al. (1987) and Veena (1988). Thus, in rural areas, the requirements of household commercial were met from non-commercial sources. Commercial fuel were mainly used for lighting purposes.

KEY WORDS Commercial. Non commercial. Energy Farming. Non-farming

ABSTRACT The present study was conducted on the consumption of energy on 120 women in two villages of Panchrukhi block of Himachal Pradesh. A self structured interview schedule was prepared and administered on the respondent. Women were found to be mainly responsible for performing various household activities. The maximum energy was spent on meal preparation and service. The most commonly used rural cooking units were found to be ordinary chullah., smokeless chullah and kerosene stove. The total energy consumption was found to be 312.71 and 390.95 MJ per day per household in farming and non-farming families respectively. The main fuel used was firewood followed by agricultural/forest waste and dung cakes. The findings of the study revealed that a large amount of non-commercial energy is being used in rural homes, the home-makers can be made aware of the importance of conserving this energy by using non-conventional energy sources like solar energy and biogas.

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Appendix I: Conversion factors for energy

Energy source	Unit	Energy (MJ)
<i>Commercial Energy</i>		
a) L.P.G.	Kg	50
b) Kerosene oil	Litre	41.33
c) Electricity	Kwh	11.93
<i>Non-commercial Energy</i>		
a) Dung cakes	Kg	18
b) Agricultural waste	Kg	18
c) Wood	Kg	18

Authors' Address: Neena Vyas and Rupa Bakshi, Directorte of Extension Education, Chaudhary Sarwan Kumar Krishi Vishvavidyalaya, Palampur 176 062, Himachal Pradeh, India