



# **The Energy Poverty and Gender Nexus in Himachal Pradesh, India: The Impact of Clean Fuel Access Policy on Women's Empowerment**

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**Integrated Research and Action for Development**



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## WHY HIMACHAL PRADESH ?

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- Distinct features: Altitude, Climate, Soil, Flora, Fauna and Topography
- Has made more progress in terms of access to clean energy sources, water supply and sanitation
- High level of gender empowerment
- High forest cover: Issues of fuel wood has a direct bearing on air quality
- High altitude: Fuel required for space heating



## MOTIVATION

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- (a) Estimate economic cost of lack of access to clean fuels and reliance on often scarce bio-fuels, such as loss of time in gathering fuels, its opportunity costs and health impact associated with carrying heavy conventional fuels
- (b) Analyze role of women in decision making within the household and outside and also whether improved energy service lead to their social/economic empowerment.
- (c) Analyze the impact of use of clean fuel vs. traditional fuel on the basis of health indicators



## MOTIVATION (Contd...)

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(d) Analyze the working of Public Distribution System (PDS) and suppliers perspectives on the policy and lacunae therein in Himachal Pradesh.

(d) Estimate their willingness to pay so that measures can be designed considering people's preferences and their willingness to pay

(e) Discuss results and disseminate with policy makers and NGOs to improve the lives of the vulnerable poor.



## PROJECT OUTPUTS

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(i) Analysis of the fuel consumption pattern of the households

(ii) Economic burden of dirty fuels

(iii) Women empowerment and their role in decision making

(iv) Functioning of PDS (Public Distribution System) along with supplier's perspective

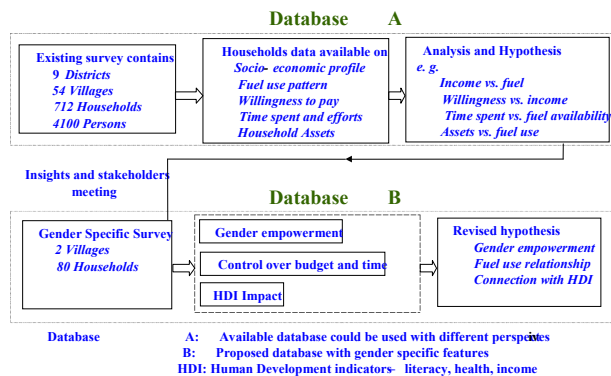
(iii) Willingness to pay for the clean fuels

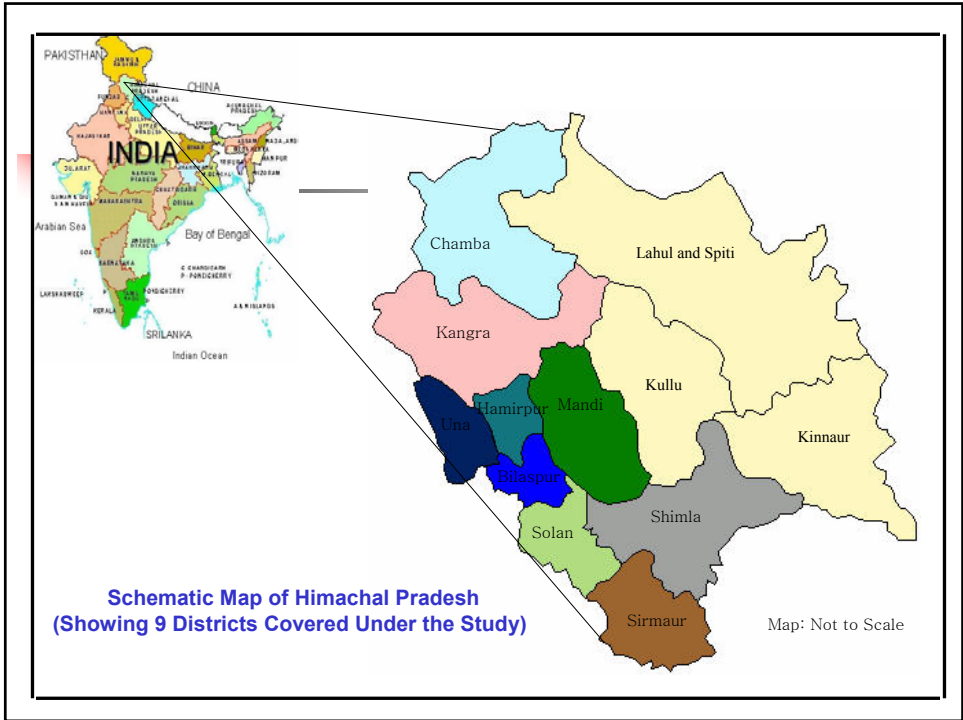
(iv) Analysis of the health impacts of indoor air pollution

## HIMACHAL PRADESH AT A GLANCE

Rural Population	5,016, 000
Rural Households	1,036,996
Actual Sample Size	Database A – 712 Database B – 80
Area (sq km)	55,673
Population Density	109
Sex Ratio	970
Literacy Rate (%)	74.4
Families Below Poverty Line (%)	27.59
Human Development Index	0.433

## IRADe's Case Study





## Districts Profile

## HIMACHAL PRADESH: DISTRICT PROFILE

State/ District	Area (Sq. km.)	Total Population 2001 (‘000)			Decadal growth rate 1991-2001	Density 2001	Sex ratio 2001	Percentage Families BPL
		Persons	Males	Females				
Bilaspur	1,167	341	171	170	15.35	292	992	26.62
Chamba	6,528	461	235	226	17.09	71	961	61.72
Hamirpur	1,118	412	196	216	11.62	369	1,102	24.16
Kangra	5,739	1,338	660	678	14.01	233	1,027	24.07
Mandi	3,950	901	447	454	16.05	228	1,014	24.73
Shimla	5,131	722	380	342	16.90	141	898	33.67
Sirmaur	2,825	458	241	217	20.72	162	901	22.89
Solan	1,936	499	269	230	30.64	258	853	27.44
Una	1,540	448	224	224	18.43	291	997	19.02

Source : Himachal Pradesh Human Development Report 2002

Not covered in the survey

## DISTRICT WISE HUMAN DEVELOPMENT INDICATORS AND LITERACY

District /State	Income Index	Rank	Educational Attainme nt Index	Rank	Health /Life Index	Rank	Human Develop ment Index	Rank	Rural Literacy Rate (%) – Census 2001			
									Persons	Males	Females	Literacy gap between males and females
Bilaspur	0.183	7	0.747	4	0.340	7	0.423	7	78.0	86.7	69.4	17.3
Chamba	0.191	6	0.510	12	0.569	2	0.423	7	61.5	75.7	46.8	28.9
Hamirpur	0.103	11	0.810	1	0.299	9	0.404	9	82.6	90.7	75.7	15.0
Kangra	0.163	8	0.752	3	0.382	10	0.432	6	80.3	88.0	73.0	15.0
Mandi	0.132	10	0.711	5	0.326	8	0.390	11	74.7	86.1	63.8	22.3
Shimla	0.304	3	0.681	6	0.569	2	0.518	2	75.8	85.5	65.5	20.0
Sirmaur	0.155	9	0.571	11	0.500	4	0.409	8	68.7	78.2	58.1	20.1
Solan	0.255	4	0.676	8	0.431	6	0.454	5	74.5	83.7	64.5	19.2
Una	0.090	12	0.759	2	0.347	5	0.399	10	80.9	88.6	73.5	15.1

Source: Computed by the Department of Planning, Govt. of HP



## Women Empowerment

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## WOMEN EMPOWERMENT

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- According to NFHS 2 (1998-99) 63.7% ever married women aged 15-49 years in HP have some level of education.
- More 80% of these women are regularly exposed to at least one form of mass media.
- Regular exposure to TV and radio is quite high (74% and 57% respectively).
- Exposure to print media is quite good (28%) because of high literacy rate.
- Most common form of employment of these women is working on a family farm or family business.
- These women are involved in decision making at various levels such as what to cook, purchasing jewellery, visit and staying with siblings, etc.
- High majority (80%) has access to money as well.



## **WOMEN'S EXPOSURE TO MASS MEDIA**

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- According to NFHS (1998-99) about 64% of ever-married women aged 15-49 years in HP have some level of education.
- More than 80% of these women are regularly exposed to at least one form of media.
  - Regular exposure to TV and radio is quite high (74% and 57%).
  - Even exposure to print media is quite good (28%) because of high literacy.
  - Visiting to cinema or theatre is not very popular among women (2%).



## **WOMEN'S PARTICIPATION IN WORK AND HH DECISION MAKING**

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- Women's work participation is 21% in HP. The most common form of employment is working on a family farm or in a family business.
- Women are involved in decision making at various levels. Moreover, high majority has access to money as well.
- Very low incidence of domestic violence which is 2% percent in HP as against average 11% in India.





## Sample Characteristics

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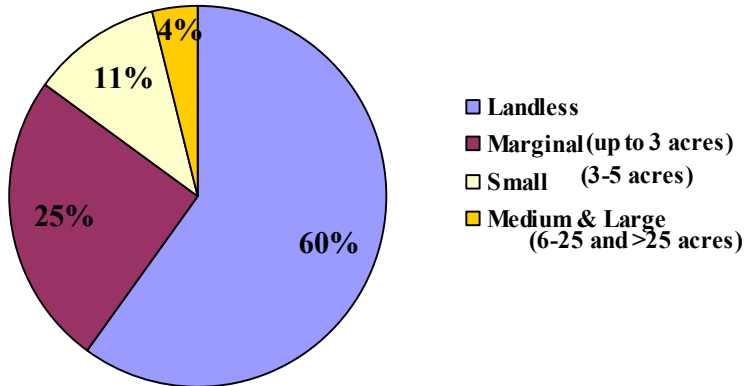


## AGE COMPOSITION BY SEX

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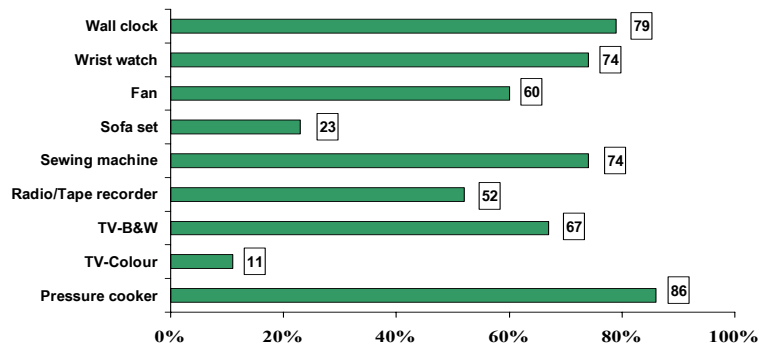
	Male	Female
<b>Base: All individuals</b>	<b>2,013</b>	<b>2,087</b>
	(%)	(%)
< 5 years	11	10
6 – 10 years	10	9
11 – 15 years	11	11
16 – 20 years	12	12
21 – 40 years	32	36
41 – 50 years	12	10
> 50 years	13	12

## LAND HOLDINGS



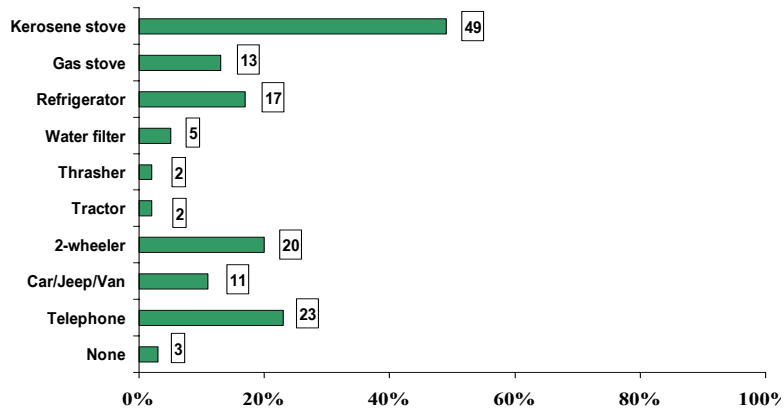
## DURABLES OWNED (% Households)

Base : All HHs = 712



## DURABLES OWNED (% Households)

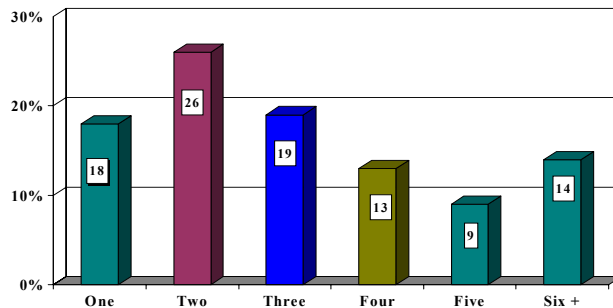
Base : All HHs = 712



## NUMBER OF ROOMS IN THE HOUSE

No. of rooms in the house has direct implication on exposure to indoor air pollution. However, majority of the rural households have more than one room due to better economic condition.

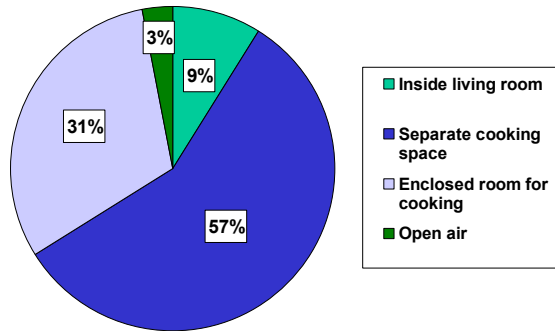
Base : All HHs = 712



## LOCATION OF KITCHEN

Kitchen location also has direct implication on exposure to indoor air pollution. About 88% of households have separate kitchen/cooking space and the remaining 12% have no separate kitchen.

Base : All HHs = 712



## Database A



# Sample Households

District	Rural Population 2001 ('000)	Estimated Rural HHs ('000)*	Proportionate Sample Size	Actual Sample Size	Percent
Bilaspur	319	64	46	58	8
Solan	408	82	58	50	7
Hamirpur	382	76	54	66	9
Sirmaur	411	82	58	51	7
Una	409	82	58	62	9
Chamba	426	85	60	59	8
Shimla	555	111	79	79	11
Mandi	840	168	119	112	16
Kangra	1,266	254	180	175	25
<b>Total</b>	<b>5,016</b>	<b>1,004</b>	<b>712</b>	<b>712</b>	<b>100</b>



# SAMPLING PROCEDURE

State : Himachal Pradesh

9 Districts

54 Villages dependent on accessibility proportion as to size

712 Households

Sub samples of 153 individuals for detailed enquiry in health

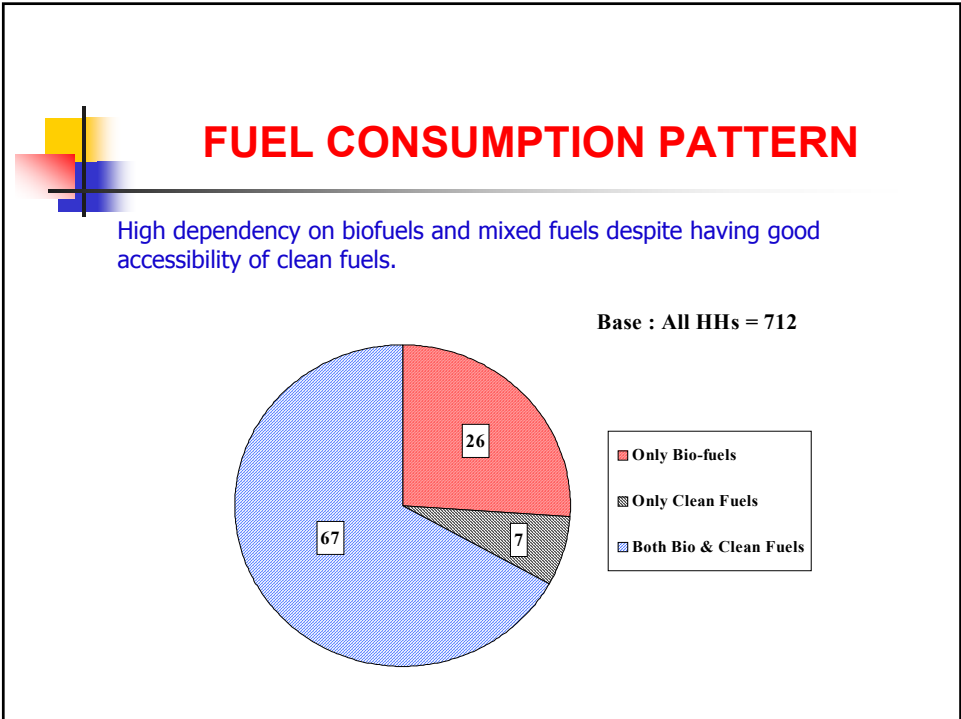
- 9 districts from a total of 12 district (75% coverage)
- Wider coverage of districts

- No. of Villages was flexible to cover the district wise sample as per universe distribution
- Stratification by village class was not feasible for HP

- Selection of Households within the village will be systematic random sampling

- Doctor's report on health status of chief cook and all other family members

# Analysis of Database A





## FUEL CONSUMPTION PATTERN Contd.....

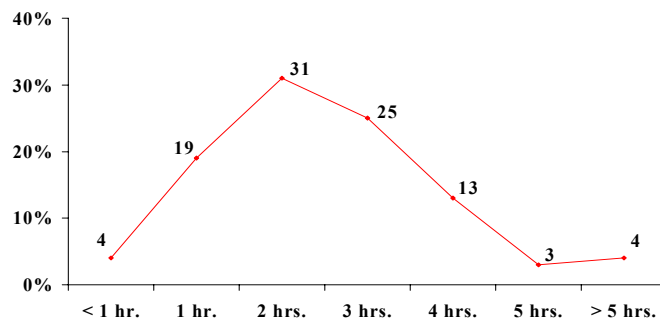
### Kerosene consumption

Litres of Kerosene per month	Households	Percent households using kerosene
Less than or equal to 5 litres	145	40
Greater than 6 to 10 litres	59	16
Greater than 10 and less then 40 litres	23	8



## AVERAGE TIME SPENT IN COLLECTION OF FUEL-WOOD (Person burs/Household/Trip)

Base : HHs which gathered fuel wood = 617

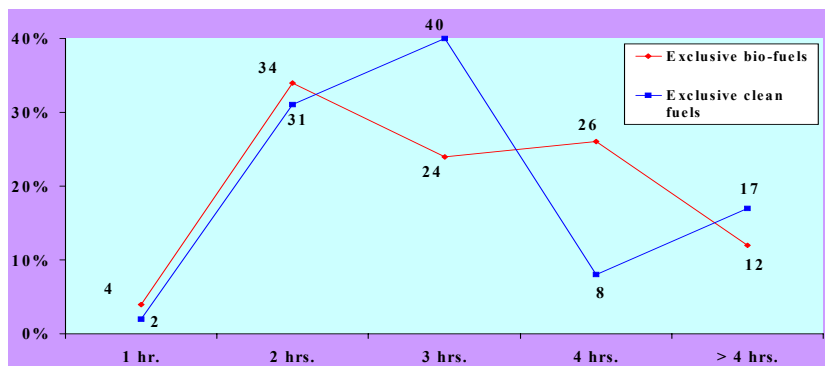


## TIME AND EFFORTS FOR COLLECTION OF FUEL WOOD

Districts	Total	Bilaspur	Solan	Hamirpur	Sirmaur	Una	Chamba	Shimla	Mandi	Kangra
Base: HHs always/ mostly gather wood	617	45	50	51	46	53	58	65	94	155
Up to 1 km (%)	42	27	28	65	26	21	36	23	65	52
Between 1 - 2 km (%)	31	35	26	22	24	51	40	40	26	28
Between 2 - 3 km (%)	12	16	20	6	20	17	14	18	1	8
More than 3 km (%)	14	20	26	6	30	11	10	18	4	12
Average time spent per trip (hours)	2.7	2.6	2.9	2.5	2.8	2.8	2.8	3.2	2.4	2.5
Average time spent per month per household (hrs)	40.8	25.5	45.0	34.3	50.7	29.7	53.2	57.3	32.9	37.8

## TIME SPENT BY HOUSEWIVES (INVOLVED IN COOKING) IN THE KITCHEN (hrs. per day)

Base : HHs using each fuel type







## COOKING INVOLVEMENT OF FEMALES AT DIFFERENT AGE GROUP

Age group	Unit	Involvement in cooking (percent of female)			
		Chief cook	Always assist	Sometimes assist	Not involved*
10 - 15 yrs.	%	2	7	69	22
16 - 20 yrs.	%	13	50	20	17
21 - 30 yrs.	%	51	14	5	30
31 - 40 yrs.	%	68	8	5	19
41 + yrs	%	28	11	8	53



## REASONS FOR NOT USING CLEAN FUELS

Reasons	No. of households	Percent of households
Not always available	22	12
It is very expensive	123	64
Scared or hesitant of using	43	22
Taste of food changes	2	1
Wood works as repellent for insects	4	2

## WILLINGNESS TO REDUCE KITCHEN SMOKE

### Willingness to pay for better indoor air quality

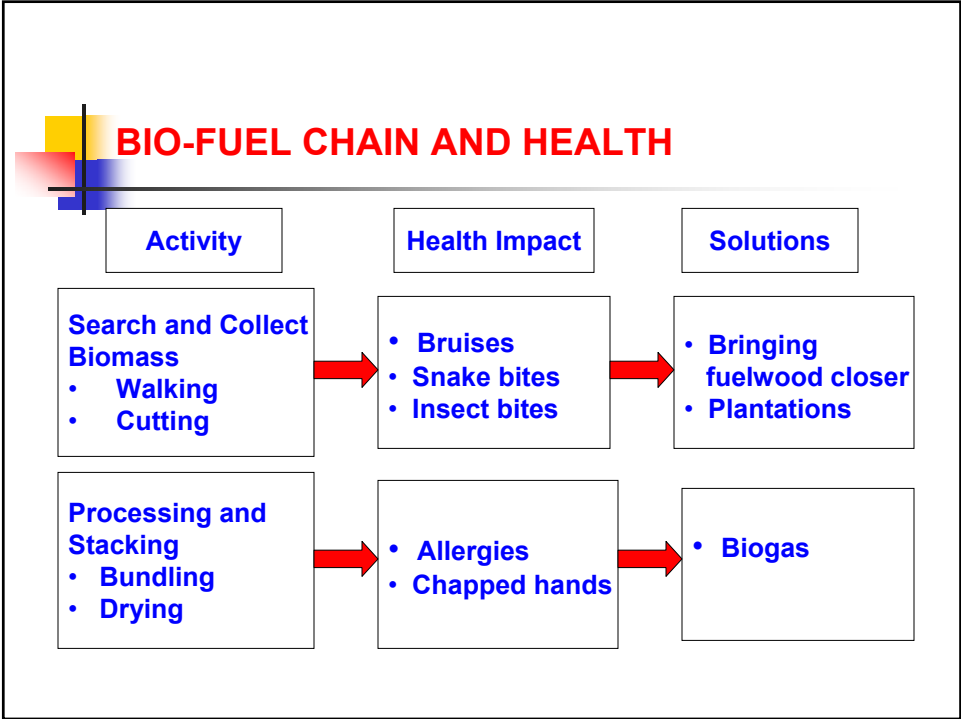
Facility	% of HHs
Fitting a window/ventilator	71.75
Fitting a chimney	55.73
Installation of improved cook stove	25.95
Switch to clean fuel	4.58
More doors	2.29
Others	6.87
Base: Households willing to spend money: 131	

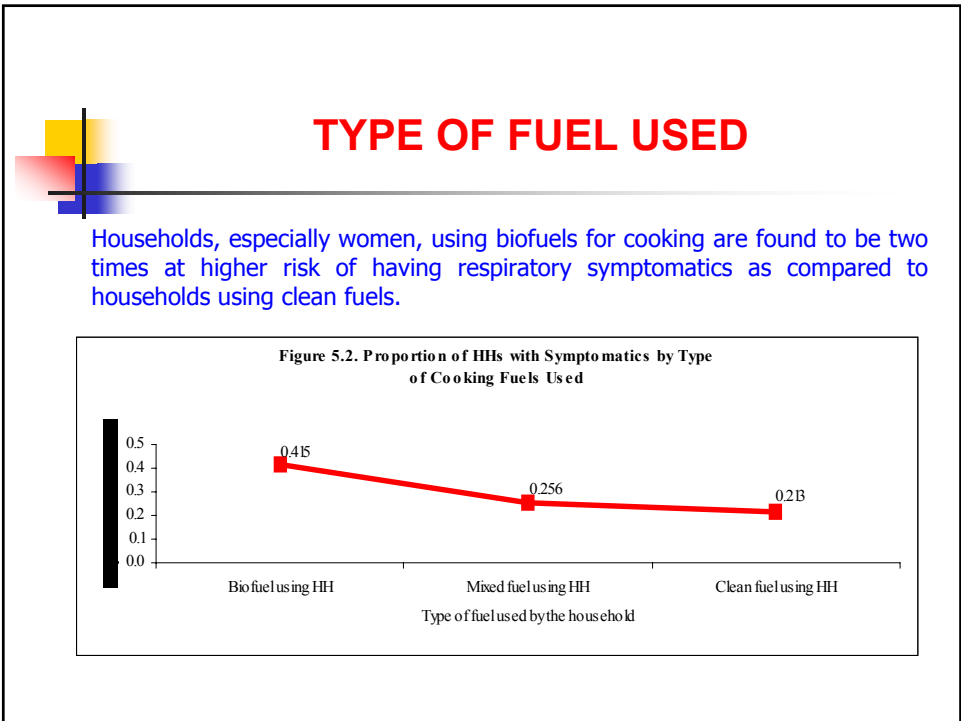
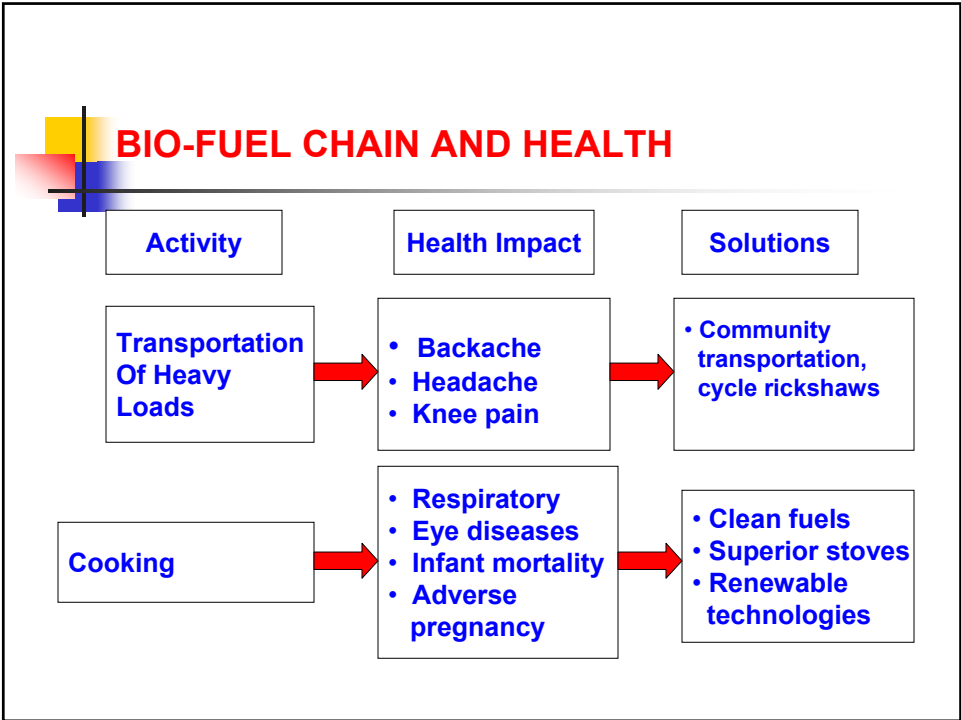
## WILLINGNESS TO REDUCE KITCHEN SMOKE

### Amount willing to pay for reducing kitchen smoke

Amount (in Rs.)	% of HHs
Up to 50	2.29
51 – 100	4.58
101 – 300	14.50
301 – 500	12.21
501 – 1000	29.01
1001 – 2000	19.08
More than 2000	11.45
No idea	6.87
Average (Rs.)	1340
Base: HHs willing to spend money	131

# Health and Gender

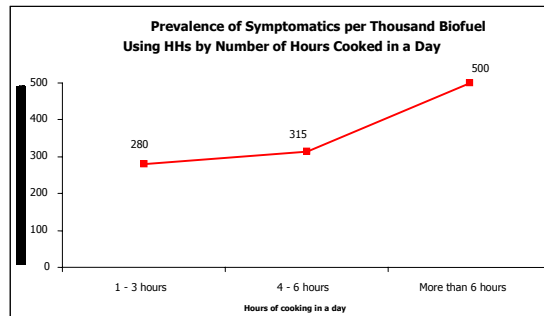






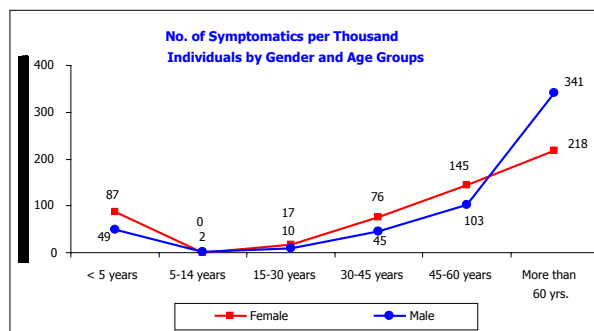
## NUMBER OF COOKING HOURS

Increasing risk is associated with increasing hours of cooking in a day with biofuels. Women being the chief cooks are thus at higher risk.



## VULNERABILITY BY GENDER AND AGE GROUP

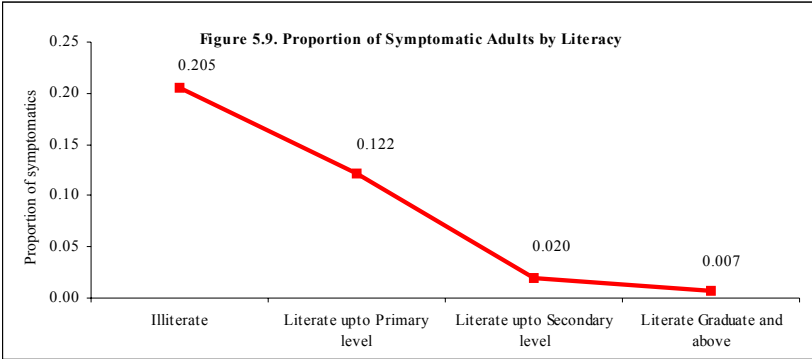
- Female adults between 30-60 years are at higher risk as compared to male adults in the same age group





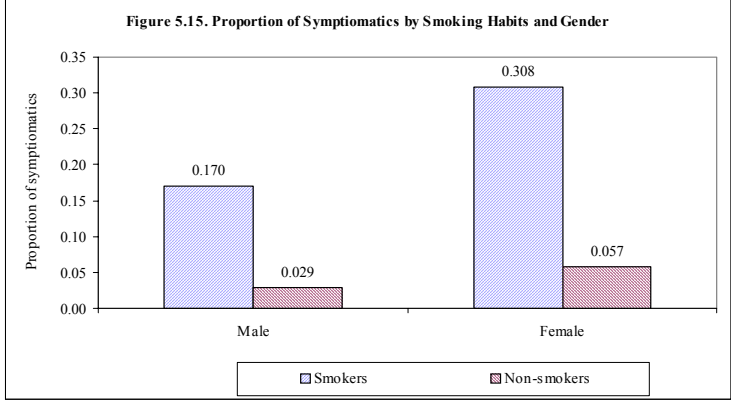
# ADULT LITERACY

With education level of adults economic condition improves and hence it reduces the risk of having respiratory symptomatics. The odds ratio for illiterates vs. literates is as high as 5.26.



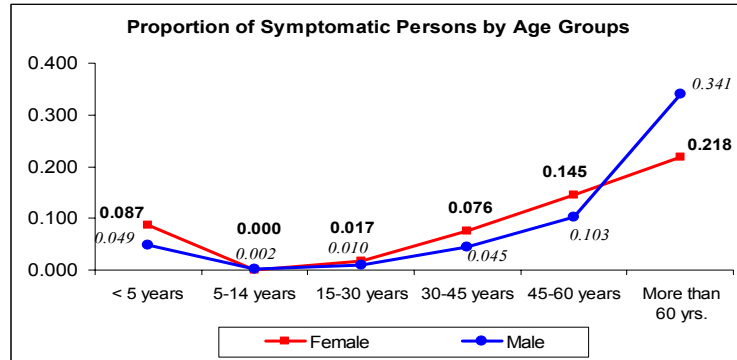
# SMOKING HABITS

Risk of having respiratory symptoms is significantly higher among smokers (females or males) as compared to that among non-smokers. This odds ratio is 4.11, which is much higher than that of biofuel users.



## VULNERABILITY BY AGE GROUPS

The risk of having respiratory symptoms among adults increases with age.



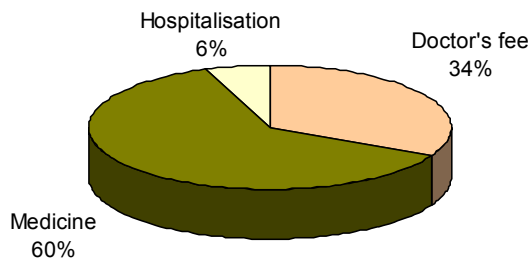
## SUSCEPTIBILITY OF VARIOUS GROUPS TO RESPIRATORY SYMPTOMS

	30-45 years of age	
	Female	Male
<b>Prevalence</b>		
No. of persons in the sample	396	374
Proportion reported symptomatics	7.6%	4.5%
Proportion having disease symptoms	0.8%	2.1%
<b>Household Characteristics (Odds ratios)</b>		
Biofuel vs. clean fuel using HHs	2.41	Infinity
High hilly areas vs. low hilly areas	9.38	1.43
Low income ( $\leq$ Rs.24,000 p.m.) vs. high income HH ( $>$ Rs.50,000 p.m.)	1.90	3.45
HHs with single room vs. HHs with more rooms	4.29	2.40
<b>Individual Characteristics (Odds ratios)</b>		
Illiterates vs. literates	2.24	5.30
High fuel index ( $>$ 6.15) vs. low fuel index ( $\leq$ 6.15) for females	5.35	-
Smokers vs. non-smokers for males	-	2.65
Dusty jobs vs. non-dusty jobs for males	-	1.27

## Economic Burden of Air pollution due to fuels

## EXPENDITURE ON RESPIRATORY DISEASES

Percentage break up of expenditure on health due to respiratory diseases



Average amount spent by a sick person in one month = Rs. 100.  
Base: 15 sick persons, which is 27 per cent of the disease cases (i.e. 56 cases)





## **ECONOMIC BURDEN OF INDOOR AIR POLLUTION**

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- Out of 1,580 self reported cases 21% (335 adults) reported some respiratory symptoms, leading to 56 disease cases (3.5%), of which 27% (15 cases) took treatment.
- Average frequency of visit to the doctor : 2.2 times in a month.
- Average amount spent on respiratory disease : Rs.100 per sick person in a month.
- Mostly rely on treatment by health centres (HCs) free of cost.
- Average 6 days were lost per month by sick individuals and 2 days by other members of the family due to respiratory illness.



## **TOLL ON HUMAN RESOURCES IN RURAL HP**

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0.7 million adults (21% of the total rural adults) have respiratory symptoms.

Break-up by disease type :

- 70,230 adults suffer from Bronchitis
- 39,130 adults suffer from Chest Infection
- 18,390 adults suffer from Pulmonary TB
- 13,710 adults suffer from Bronchial Asthma



## TOLL ON HUMAN RESOURCES

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- Private expenditure for treatment of respiratory diseases: Rs. 142 million in a year

Break up:

60 percent - medicine

34 percent - doctor's fee

6 percent - hospitalisation

- 32 person days are lost p.a. due to collection of fuel wood and due to respiratory diseases 3 days  
Valuation of this loss: Rs. 2 billion p.a.



## Database B

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## Study area profile

### List of Villages/Panchayats served by the retail depots covered under the survey:

- A) In Shimla District

**Panchayats:** *Thari; Jalail; Devnagar; Ghanahatti; Galot; Shakrah; Nehra and Anandpur*

**Villages:** *Moolbari; Sharog; Parot; Neog; Tikkari; Kuiru; Jubbar; Dochi; Nehra; Ghaneog; Kushah; Androl; Panesh; Kanda; Paresh; Dhar; Maghesh; Sanghseh; Seri; Salana etc*

- B) In Sirmour District

**Panchayats:** *Kothia Jagar; Tikker and Thornivar*

**Villages:** *Karganu; Nai Natti; Ranaghat; Shalangi; Kotla Bagi; Daro Dovria; Drobali; Khar Kot; Janger; Dhangol; Tikkar; Samdoh; Badgala; Madhera, Neharbagh; Rajgarh Nagar Panchayat; Kothia Jagar; and Thorniva etc.*



## Type and Number of Depots Surveyed

Type of ownership	Location		Total
	Shimla	Sirmour	
Individual/Private	8	9	17
Co-operative Societies of Co-operative department	1	2	3
Co-operative Societies of Civil Supplies	1	1	2
Total	10	12	22



## Analysis of Database B

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### **SUPPLY SITUATION OF KEROSENE**

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Monthly quota for individual family:

- 20 litres per month for the family having no LPG cylinder
- 3 litres per month for the family having single LPG cylinder
- Nothing is distributed to the family with 2 LPG cylinders
- Kerosene oil is distributed to only those families who have a Ration Card and
- This distribution is made irrespective of the family size.



## DEMAND OF KEROSENE OIL

Season	Shimla(% of total quota)	Sirmour(% of total quota)	Total(%of total quota)
Summer	40	35	37.5
Rainy	65	50	62.5
Winter	90	80	85



## REASONS FOR LOW UTILISATION OF QUOTA

Reasons for not availing the quota by the household as Perceived by Retailers

*(Per cent)*

Reason	Shimla	Sirmour
Expensive	05	20
Distance of the shop	10	25
Presence of LPG	40	10
Simply Forgoes their share	30	05
Irregular supply	00	10
Use of firewood	15	30
Use of Bio-gas	--	--
Any other	--	--
TOTAL	100	100



## LOW DEMAND

- Local residents do not usually use kerosene preferring LPG and even fire wood
- Labours use kerosene as do outsiders (officials etc) who are usually temporary residents
- Supplier does not give kerosene in the absence of a ration card



## LOW RETURNS

REGION	PROFIT IN PAISA PER LITER	
	Before 1998	After 1998
Rural	15	25
Urban	10	15

## SHARE OF INCOME FROM THE OIL DEPOT AND FROM ADDITIONAL SOURCE

Location	Depots/additional business				Type of business		Income share	
	Total Depots	Number of depots having Additional business			Oil depot Main	Oil depot Subsidiary	Income from Oil depot	Income from other business
		Ration shop	Fair price shop	Any other business				
Shimla	10	6	2	2*	0	10	2%	98%
Sirmour	12	8	3	1#	0	12	4%	96%
Total	22							

## REASONS FOR OPENING DEPOT

Reason	Shimla	Sirmour	Total
Economic Reason	10	25	17.5
Local Demand	20	25	22.5
<b>Supplementary Business</b>	<b>65</b>	<b>40</b>	<b>52.5</b>
Regular supply	0	0	0
Subsidies regarding the opening of the depot	5	10	7.5
Any other	0	0	0
<b>TOTAL</b>	<b>100</b>	<b>100</b>	<b>100</b>



## POSSIBLE REASONS FOR IRREGULAR SUPPLY

*(percentage of respondents)*

Reason	Shimla	Sirmour
Monsoon	30	45
Inadequate supply from source	30	40
Less supply to the wholesaler	--	--
Financial problem	--	--
Road Condition	05	10
Absence from the shop at the time of delivery	--	05
Any other	35	--
Total	100	100



## LOOPHOLES IN DELIVERY MECHANISM

- Tampering with weighing instrument
- Creating foam while pouring oil
- Distribution of oil at overcharged rates in the absence of ration card
- Black marketing
- Individual ration card owners can also racketeer
- Transference of ration card to potential customer or to needy household
- Customers could be willing to pay a little extra for supplies.



A slide with a white background and a black border. On the left side, there is a decorative graphic consisting of overlapping colored squares (yellow, red, blue) and a black crosshair. To the right of this graphic, the text "Village profile of study area" is written in a red, sans-serif font. A thin horizontal line is positioned below the text.

Shimla District			
Sr.no	Village	Type	Caste Composition % General: SC
1	Ganeogh	Revenue Village	100:00
2	Nehra	Hamlet	20:80
3	Jubbar	Revenue Village	100:00
4	Neogh	Revenue Village	80:20
5	Paroth	Hamlet	75:25
6	Rahu-Ki-Chauri	Hamlet	00:100
7	Queroo	Revenue Village	90:10
8	Sangech	Hamlet	70:30
9	Shanol	Revenue Village	100:00
10	Tikkari	Revenue Village	60:40
11	Jalel	Revenue Village	70:30
12	Anandpur	Revenue Village	65:35
13	Kot	Revenue Village	75:25



## Village profile contd.

Sirmour District			
Sr.no	Village	Type	Caste Composition % General: SC
1	Siari	Hamlet	55:45
2	Timbi	Revenue Village	60:40
3	Mila	Hamlet	100:00
4	Bhatodi	Hamlet	100:00
5	Pinjwana	Hamlet	00:100
6	Bakras	Revenue Village	95:05
7	Shalia	Hamlet	100:00
8	Dohor	Hamlet	00:100
9	Leonaina	Hamlet	80:20
10	Kuffar	Hamlet	95:05
11	Kotli	Hamlet	20:80
12	Dibbar-Dhal	Revenue Village	20:80
13	Kotla-Bangi	Hamlet	50:50
14	Shaya-Sanaura	Revenue Village	50:50
15	Maina	Revenue Village	100:00
6	Upper Rajana	Hamlet	60:40
17	Bounal	Hamlet	80:20



## RESPONDENTS AND HH PROFILE

### Respondent's Age Profile

District	<i>(age in years completed)</i>							
	Number of Respondents		Maximum Age		Minimum Age		Average Age	
	Male	Female	Male	Female	Male	Female	Male	Female
Shimla	73	43	75	69	25	22	44.95	39.62
Sirmour	68	12	62	55	25	28	41.72	41.66



# RESPONDENTS AND HH PROFILE

## Gender Profile

District	Gender	
	Male	Female
Shimla	114 [98.28%]	2 [01.72%]
Sirmour	74 [90.00%]	6 [10.00%]



# RESPONDENTS AND HH PROFILE

## Caste Structure

District	Social Affiliation				Total
	General		Scheduled Caste		
	Male	Female	Male	Female	
Shimla	60	38	13	5	116
Sirmour	45	4	23	8	80
Total	105	42	36	13	196



# RESPONDENTS AND HH PROFILE

## Occupations of Heads of Households

Occupations	Location							
	Shimla				Sirmour			
	Male		Female		Male		Female	
	MO	SO	MO	SO	MO	SO	MO	SO
Agriculture	24	73	2	-	49	8	6	-
Govt. Service	73	-	-	-	10	-	-	-
Private Works	12	-	-	-	-	-	-	-
Teaching	-	-	-	-	8	-	-	-
Business					5	7	-	-
Carpenter	-	-	-	-	1	-	-	-
Ironsmith	-	-	-	-	1	-	-	-
Labour	5				-	1	-	-
Politics	-	-	-	-	-	1	-	-
<b>TOTAL</b>	<b>114</b>	<b>73</b>	<b>2</b>	<b>0</b>	<b>74</b>	<b>17</b>	<b>6</b>	<b>0</b>



# RESPONDENTS AND HH PROFILE (CONTD...)

## Asset Ownership of Sample Household (Shimla)

Household durables	Response	Farm implements	Response	Kitchen appliances	Response
Bicycle	2 (1.72%)	Water pump set	0	Gas stove	84 (72.41%)
Motor Cycle/Scooter/ Moped	15 (12.93%)	Seed drill	0	Kerosene stove	17 (14.66 %)
Car / Jeep / Van	5 (4.31%)	Thrasher	4 (3.45 %)	Refrigerator	9 (7.7%)
Sewing Machine	98 (84.48%)	Tractor	0	Pressure Cooker	116 (100%)
Telephone	76 (65.52%)				
Fan	2 (1.72%)				
Radio / Tape Recorder	102 (87.93%)				
TV – Black & white	56 (48.27%)				
TV – Colour	72 (62.07%)				

## RESPONDENTS AND HH PROFILE (CONTD...)

### Asset Ownership of sample household (Sirmour)

Household durables	Response	Farm implements	Response	Kitchen appliances	Response
Bicycle	3 (3.75 %)	Water pump set	0	Gas stove	43 (53.75%)
Motor Cycle/Scooter/Moped	6 (7.5%)	Seed drill	0	Kerosene stove	57 (71.25%)
Car / Jeep / Van	7 (8.75%)	Thrasher	2	Refrigerator	1(1.25%)
Sewing Machine	42 (52.5%)	Tractor	0	Pressure Cooker	65 (81.25%)
Telephone	33 (41.25%)				
Fan	0				
Radio / Tape Recorder	78 (97.5%)				
TV – Black & white	51 (63.75%)				
TV – Colour	12 (15%)				

### Fuel usage in study area

## END-USE ACTIVITIES USING DIFFERENT KINDS OF FUELS

Fuel Type	Cooking		Boiling		Lighting		Livelihood/Business	
	Sh	Si	Sh	Si	Sh	Si	Sh	Si
Wood	37.5	57.5	54.00	68.00	0.00	0.00	8.00	32.50
Crop residue	0.00	0.00	3.00	7.50	0.00	0.00	0.00	8.00
Dung cake	0.00	1.50	0.00	0.00	0.00	0.00	0.00	0.00
Kerosene	12.5	20.00	4.00	12.50	2.50	24.00	20.00	35.00
Bio-gas	0.00	12.50	1.50	0.00	0.00	0.00	0.00	0.00
Cooking gas (LPG)	42.5	4.50	8.50	0.50	0.00	0.00	20.00	12.50
Electricity	7.5	4.00	29.00	11.50	97.50	84.00	8.00	3.00
Wood Charcoal	0.00	0.00	0.00	0.00	0.00	0.00	44.00	9.00
Total %	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

## FAMILY MEMBERS RESPONSIBLE FOR THE PROCUREMENT OF FUEL

Fuel Type	Gender (%)				Age (Average)			
	Shimla		Sirmour		Shimla		Sirmour	
	Male	Female	Male	Female	Male	Female	Male	Female
Wood	38.00	62.00	48.50	51.50	53.50	29.00	26.50	34.50
Agri. Residue	24.50	75.50	36.00	64.00	19.00	32.50	31.50	35.00
Dung cake	4.00	96.00	18.50	81.50	57.00	34.00	47.50	29.50
Kerosene	58.50	41.50	62.00	38.00	21.50	36.00	23.00	36.50
Cooking gas (LPG)	100.00	0.00	100.00	0.00	29.00	NA	31.00	NA
Others * (specify)	60.00	40.00	53.50	46.50	51.5	41.5	41.5	39.00

## SOURCE OF PROCUREMENT OF FUEL WOOD

Sr. No.	Source of Procurement	Response (%)	
		Shimla	Sirmour
1	Own Land or Nearby	26.00	31.50
2	Village forests	27.00	35.00
3	Market	0.00	0.00
4	Government forests	47.00	25.00
5	Other (Please specify)	0.00	8.50
Total		100.00	100.00

## DIFFICULTY IN COLLECTION OF FUEL WOOD

Sr. No.	Problem	Response (%)	
		Shimla	Sirmour
1	Walking	3.00	5.00
2	Searching and Gathering	31.00	24.00
3	Carrying Heavy Loads	20.00	19.00
4	Time Taken	32.00	29.00
5	Physically Strenuous	11.00	10.00
6	Any Other	3.00	13.00
Total		100.00	100.00



## WORKLOAD AND RESPONSIBILITY

- Agricultural activities were largely responsibility of women while marketing of crops were the responsibility of men.
- While fodder collection was the responsibility of women and older men, collection of minor products was the exclusive responsibility of older men
- Animal Husbandry was the responsibility of women alone.
- Livelihood Options especially for women were reported to be in the fields of post harvest management, handicrafts



## WILLINGNESS TO SHIFT TO CLEAN FUELS

### Shimla

Sr. No.	Yes (82.5%)		No (17.5%)	
	Reason	Response %	Reason	Response %
1	Convenient (to turn on/off)	18.00	It is expensive	49.00
2	Time Saving	39.00	The place is too far	5.00
3	Cleaner Household	36.00	Supply is Inadequate	7.50
4	Easy Accessibility	7.00	We do not need it	26.00
5			We Forgo our Share of Ration	12.50
	Total	100.00	Total	100.00





## WILLINGNESS TO SHIFT TO CLEAN FUELS

### Sirmour

Sr. No.	Yes (43%)		No (57%)	
	Reason	Response (%)	Reason	Response (%)
1	Convenient (to turn on/off)	22.00	It is expensive	42.00
2	Time Saving	37.50	The place is too far	37.50
3	Cleaner Household	38.50	Supply is inadequate	0.00
4	Easy Accessibility	2.00	We do not need it	19.00
5			We forgo our share of ration	1.50
	Total	100.00	Total	100.00



## CONCLUSION

- Empowerment level and access to energy are correlated in HP
- As women are the primary sufferers of the adverse impact of use of biofuels, there is a close linkage between gender and energy
- Gender and energy issues require greater political attention and backing
- Gender empowerment is clearly linked with access to modern fuels
- Impact on millennium development goals such as literacy, life expectancy and child mortality.



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**Thank You**