LPG
A Key to Empowerment of Hill Women

MAMTA CHANDAR
VINAY TANDON

MAY 2004

Mamta Chandar, Director Jagriti, Kullu & Vinay Tandon works with Winrock India International, New Delhi.

ACRONYMS USED

CBO	**COMMUNITY BASED ORGANISATION**
DFID	**DEPARTMENT FOR INTERNATIONAL DEVELOPMENT (UK)**
FD	**FOREST DEPARTMENT**
HH	**HOUSEHOLD**
HP	**HIMACHAL PRADESH**
IOC	**INDIAN OIL CORPORATION**
LPG	**LIQUEFIED PRETROLEUM GAS**
MoEF	**MINISTRY OF ENVIRONMENT AND FORESTS**
NCAER	**NACTIONAL COUNCIL FOR AGRICULTURE & ECONOMIC RESEARCH**
NORAD	**NORWEGIAN AGENCY FOR DEVELOPMENT**
OC	**OTHER CASTES**
PRI	**PANCHAYATI RAJ INSTITUTIONS**
RD	**RURAL DEVELOPMENT DEPARTMENT**
SC	**SCHEDULED CASTES**
TERI	**THE ENERGY RESEARCH INSTITUTE**
WSCGs	**WOMEN'S SAVINGS & CREDIT GROUPS**
USEPA	**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

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Opportunities and challenges[1]

Liquefied Petroleum Gas or LPG has penetrated the urban and many rural middle class homes substantially. It is portable, clean, safe & extremely efficient and marks a major step in moving up the energy ladder in rural areas. It is by far the more efficient, reliable (unlike electricity) and cleaner means to cook food and its use for heating in urban areas is increasing.

LPG can provide a practical and reliable backup to compensate for the intermittent nature of renewable energy like wind or solar. This has important implications for initiatives that seek to advance the use of non-conventional energy use in rural areas especially in the mountains. When used in conjunction with solar cookers or other such non-conventional systems, LPG can greatly accelerate the switch to viable renewable energy systems.

On a community level once LPG use reaches certain critical levels, it can contribute significantly to conservation of trees and forests, fuelwood from where remains the most important and biggest source of energy in India today. A 1995 NCAER study convincingly establishes that fuelwood would remain the most dominant source in the bio-fuel sector[2]. LPG has much potential for generating more value added commercial and industrial applications. Expanded access to LPG can have a profound effect on the economy, environment and the quality of rural life thereby contributing to sustainable development.

The LPG demand in rural India is expected to jump from 0.05 million metric tonnes in 1997-98 by over 25 % in 2019-20[3]. However, the same study shows that LPG use is correlated to higher income levels. The question therefore is how to facilitate more equitable access to LPG by poorer groups and those living in harsh mountain conditions? Affordability, however, as experienced in a project area in Lag Valley in Kullu district of Himachal Pradesh has more to do with mind-sets than with money. What makes LPG a particularly interesting intervention is that in one stroke it improves living conditions. It liberates women and girl children from time and humongous effort spent on fuelwood collection thereby throwing open opportunities to pursue education, generate additional income at HH and/or community level and engage more actively in the social fabric of the community and local governance institutions like the Panchayats.

The case study here shows how by increasing access to LPG of poorer households, basic shifts not only in "living conditions" but changes in the inter and intra community dynamics are being brought about by women.

Current Project

Beginning December, 2001 a three-year NORAD assisted project entitled "Empowerment of Poor, Rural Women in Lag Valley, Kullu" is currently being implemented through a Community Based Organisation "Jagriti" (which is registered as a Society under Societies' Registration Act 1860). The project, *inter alia*, aims at reducing drudgery in the lives of women of Lag valley to enable them to step out of the house and begin the process of self-empowerment. This is being done primarily through promoting access to LPG to poor women members of over 55 Women's Savings & Credit Groups (WSCGs). Out of the 700 odd women members, over 343 have been helped to overcome the initial investment barrier to buy LPG connections and to begin to use it.

Background

The Lag valley (please see map at Annexure 1 and Annexure 2 for HH data) comprises the catchment of the Sarwari river, a tributary of the Beas that flows through the Kullu valley. It is near the bustling town of Kullu but at the same time very far with limited access by road, poor telecom connectivity and the people living in remote villages or scattered farm houses amidst their fields. The rain-fed, agro-pastoral economy of Lag valley, typical of many mountain regions, exacts much hard work but yields diminishing returns, like having to run faster to stay at the same place.

The ordinary woman's workday in Lag valley stretches between 16 and 18 hours. An analysis (carried out by Jagriti in Lag valley) of the activity breakup and hours spent on each activity shows that time spent on cooking, utensil washing and fuelwood gathering adds upto a daily total of 6 to 7 hours. This is followed by care and work related to domestic livestock (including grass/ fodder cutting and is carriage for stall fed animals) that takes another 3 to 4 hours every day. Thus about 50 to 60 % of the average woman's workday goes on a cluster of just two interconnected household chores. Often in carrying out both these unavoidable, daily drudgeries the help of the girl children is taken especially during sowing/ harvesting seasons or other peak work times during festivals, fairs, marriages etc. An

effective drudgery reducing intervention therefore needs to target these two major chores in the woman's workday.

The daily, holiday-less time schedule of the village woman has two serious implications for her economic condition and social mobility. The woman, (in fact all adult women in the household), become indispensable to day-to-day household chores and therefore importantly, do not have the time (and often the energy) for anything else. Her stepping out of the house is rare and any increase in the frequency of her leaving the house is discouraged if not resented by the men / in-laws of the household. Pre-occupation with household chores leave no time for the village women to even begin the empowerment journey.

The LPG Option? Hurdles in the Path

The underlying problem with buying a LPG connection is that men do not have to cook.

Another, though not insurmountable barrier, is a phobia among village women that the LPG cylinder will burst. In cases, LPG is opposed in HHs with small children for fear of children turning on the gas. The initial cost for a LPG connection in the Lag valley comes to about Rs 2,100 including security for a 14 kg cylinder.

with procuring a refill. The relatively high first cost of acquiring a LPG connection thus becomes the most important barrier to its widespread adoption. There are some cultural / traditional barriers like LPG being considered unsuitable for cooking maize "rotis" which is a staple food for many in HP. Also in cold regions LPG use does not replace the warmth and ambience of a traditional fireplace or "chulla" or "tandoor". Elders in the house insist on having a wood fire going in the kitchen even in summer.

The financial implication of using LPG involves recurrent cost of refills (Rs 261 for Lag valley in 2004) as against "free" fuelwood gathered by women of the household. Since men control the money & usually take decisions on what to spend on unilaterally, cost of using LPG is perceived as a luxury they can ill afford. Further in the hills heating of rooms, water, cattle feed etc. is done by burning wood or crop residues and use of LPG on these is seen as wasteful expenditure. Ironically, while women do not have time for themselves or for socializing, their time is undervalued or not valued at all. Thus even where households have acquired LPG connections, its over cautious use (reflected in a very slow refill rate) reveals deep-rooted biases against women's time and work values. Men are notorious for keeping an eye on "wasteful" expenditure (by women).

Picture 1 : Fuelwood dependence of poor households

A double connection (very useful for remote villages) with two cylinders would cost an additional Rs 700. The Indian Oil Corporation (IOC) has recently introduced smaller sized cylinders (5 kg) for remote mountain areas that cost Rs 350 less. But these are not preferred by users due to greater frequency of having to change them and the hassles involved

A more locale specific reason, in the case of Lag valley, is that since the turnover of refills is low, the suppliers provide replacement only when a certain minimum number of cylinders are to be replaced. This makes the case for acquiring a second cylinder strong. The uncertainty of supply raises doubts in the minds of prospective buyers. Moreover,

because many of the Lag villages are located away from the road, the transportation of refill cylinders to the village is for the men to do, something they are (obviously) reluctant to carry out.

With this background and notwithstanding the initial problems of introducing LPG to first time users and that too at the lower socio-economic scale in a highly stratified society, the CBO Jagriti launched its LPG initiative, hoping that the key intervention would begin to change the lives of local women, forever.

Objective

To provide members of WSCGs with the first opportunity to replace traditional cooking fuels with LPG

Members of Women's Savings & Credit Groups (WSCGs) in the Lag valley belong to the lowest rung in village society both socially and economically. Because of their poverty and the mind-set of perceiving most expenditure as superfluous, most have not even considered acquiring a LPG connection. As seen above, the initial high cost of obtaining a connection is the single most important barrier that stops low income people from acquiring LPG.

In order to bring down the initial high cost of a LPG connection, Jagriti successfully negotiated with the Indian Oil Corporation (IOC) and the local dealer in Kullu town to waive off the installation, testing and other service charges amounting to Rs 160 per connection. Gas stove manufacturers in Delhi were then contacted and per unit price brought down by Rs 240 in case bulk orders were placed. This resulted in bringing down the initial cost by Rs 400 per connection. The total cost of acquiring a LPG connection thus came down to Rs 1596 for the Lag valley. Through a series of discussions with staff and group members and animators it was felt that the women would by and large agree to shoulder 60 % of the cost and the remainder would be borne by Jagriti under the NORAD project. This meant that for a connection a member would have to pay Rs 996 while Rs 600 would be paid by the project. It also helped in sponsoring many more connections, contributing to reaching a critical mass that could catalyze economic growth locally.

The criteria adopted for selecting women members to be eligible to get a LPG connection through Jagriti include (i) Preference to women members belonging to Scheduled Caste groups (usually the poorest people), (ii) the group having been in existence for at least 5 months and (iii) the member having completed five months regular saving within that group. A penal condition applied is that should a woman member sell or pass on her connection to anybody else, she will lose her saving with the group and also ostracised by the group. In one case a member had passed on her connection to a relative in Kullu town. When caught by other group members, she was threatened with losing her saving and membership from the group. The culprit promptly got the LPG back to her house and is using it now.

Picture 2 : Lata 70 year old women lighting up gas for the first time

Table 1. Panchayat wise LPG distribution details

Panchayat	1st Round (02.11.02)		2nd Round (26.04.03)		3rd Round (07.07.03)		4th Round (29.10.03)		5th Round (03.02.04)		Total	
	SC	OC	SC	OC	SC	OC	SC	OC	SC	OC	SC	OC
Bhaliyani			4	6		2				40	4	48
Majhat		6					5	2	8	8	13	16
Brahman		8	1	5	1	4	4			17	6	34
Shilanal	3		2					4	1		6	4
Dughilag	3		7	3		2	9		2	4	21	9
Bhumteer		6		3		1	1	1		22	1	33
Dhunkhrigahar	6	2	3	1			5	3	2	15	16	21
Mangarh		5	1	2					2	4	3	11
Mashna	1		1	2	1		1			6	4	8
Phalan		4		3		2		4		12	0	25
Choparsa	7	7	2	3	1	5	2	2		19	12	36
GOs		4	2	4			1	1			3	9
Total	**20**	**42**	**23**	**32**	**3**	**16**	**28**	**17**	**15**	**147**	**89**	**254**

SC = Scheduled Castes, OC = Other Castes

The resultant spread of LPG (fairly equitably) across the 12 panchayats of Lag valley table 1 below shows an encouraging response from women members and demand continues to grow, for details please see Annexure 3.

It is noteworthy that prior to the Jagriti intervention, there were reportedly only 30 LPG connections in the entire Lag valley and none with SC households. There are now 89 connections in SC households and 254 with Other Castes. Still over 50 % SC members do not have LPG and demand from these groups and nature of barriers need to be better understood (an area for market research)?

Propelling LPG Growth?

Interestingly, there has been upward movement in the growth of LPG connections outside the project as well. The table below shows that more or less in parallel with or as a reaction to Jagriti's LPG distribution to WSCG members, there has been a significant increase in the number of connections sold directly by the INDANE (Brand name for LPG of IOC) dealer in Kullu, particularly in 2003. We see that 91 connections have been registered over the last two and a half years, about the same period as of the project, with 66 bought in 2003. It is also noticed that the majority of these connections are bought in the latter half of the year between August and December, possibly because people have money from apple and other cash crops then and also major local festivals like the Kullu Dushera / Diwali are during that period. Traditionally people buy kitchen gadgets / utensils during these festivals.

In addition, there is another LPG dealer within the Lag valley servicing 67 connections sold to local residents by another Oil Company, Bharat Gas. These 67 connections have been bought in the last three years.

Table 2 LPG Registration directly done by IOC in Panchayats of the Lag valley

Panchayat	2002	2003	5/2004	Total
Bhaliyani	4	15	4	23
Majhat		4	1	5
Brahman		1	1	15
Shilanal		10		12
Dugilag	2	7	3	12
Bhumteer	1	5	6	
Dhunkhrigahar	2	9	1	12
Mangarh	1	1		
Mashna	1	1		
Phalan	1	1		
Choparsa	1	2	3	
Totals	11	66	14	91

Source : M/s. Spick-n-Span, IOC, Kullu - April 2004

Taken together the spread of LPG in Lag valley has been notable over the last two and a half years.

LPG connections prior to Jagriti project:	**30**
Provided under Jagriti initiative	**343**
Directly through IOC*	**91**
Directly through Bharat Gas	**67**
Total	**531**

* Refer to Annexure 4 for details

There is, however, a long way to go considering that presently there are about 3200 households in the Lag valley. Of these between eleven and twelve hundred households are assessed to be poor in a Jagriti survey. Presuming that the Jagriti connections covered poorer HHs, around 75 % poor families still need to be connected to LPG.

Understanding Impacts of LPG Use

Jagriti has in 5 installments distributed 343 LPG connections to as many poor households in the Lag valley between November, 2002 and February, 2004. A questionnaire was administered to 21 women beneficiaries selected at random. Table 3. in the following page presents the findings in terms of understanding the impact of LPG use across the beneficiaries.

In terms of time saved two important impacts are clear. Time saved in cooking and in fuelwood collection are very significant and have critical implications for empowerment of women by greatly reducing their drudgery and toil and "freeing" them to pursue other income enhancement and/ or socially rewarding pursuits.

Fuelwood collection for most women involved a daily, backbreaking grind varying between 2 and 6 hours (depending on the distance of the forest), first thing in the morning. In all cases interviewed, this is now down between 1 to 4 trips (varying 2-6 hours) per week. In 9 cases, the collection frequency is down to 1 to 4 trip per month. Interestingly, in the case of two non-LPG holding women the fuelwood collection pattern is very different. It is done for a whole month involving all adults of the household twice a year. The wood so collected is then sufficient for the ensuing 5 to 6 months.

Time Saved

Daily cooking time is down by 1 to 2 hours for most women. There appears to be a correlation between the number of refills used and the daily time (in hours) saved by women. Those who have used more refills reported saving 2 hours a day as against 1 hour by those whose replacement rate is low. Significantly, other HH members including the husband have taken to helping with cooking as a result of acquiring LPG. This is an important attitudinal shift in a predominantly patriarchal society and it seems to appear across social and caste groups. It also has potentially significant implications for the girl children who could now grow up expecting help from male family members in cooking. This time saved on cooking in all cases is also due to the utensils not getting blackened by smoke and requiring less time to scrub & clean. On an average a woman saved between 15 and 30 minutes in cleaning utensils.

Wood & Forests Saved

However, none of women interviewed mentioned anything about the impact of less fuelwood collection on trees or forests, but when asked said that it was good for the forests. Apart from ocular estimates, clear and measurable indicators to monitor the impact on trees/ forests are needed to project the potential impact of LPG use on conservation of forests. From the interviews with women members, what can be

Table 3. Impact Analysis

Name of WS&CG Group Member	Using LPG since	Total Cooking Time (hrs) (Less Now)	Use Pressure Cooker	Cook Standing / post LPG	Others also cook?	Time saved on Utensils	LPG Cheaper?	Want 2nd Cylinder?	More time for IGAs?	Fuelwood Coll. Hours earlier	Fuelwood Coll Trips Now	Cylinders Used
Purthi Devi	Nov 02	1-2	Y	Y	Y	Y	Y	N	Y	D/3-4	W/2	3
Surti Devi	Nov 02	2	Y	Y	Y	Y	Y	Y	Y	W/5-6	M/3-4	5
Roshni Devi	Nov 02	2	Y	N	Y	Y	Y	Y	Y	D/1-2	M/2-3	5
Reshmu	Nov 02	1	Y	Y	Y	Y	Y	Y	Y	W/2/6	M/1	5
Nokhi Devi	Oct 03	1-2	Y	Y	Y	Y	Y	N	Y	D/5-6	W/1-2	1
Usma Devi	Oct 03	1-2	Y	Y	Y	Y	Y	Y	N/A	D/3-4	W/2	1
Rindu Devi	Oct 03	1	Y	Y	Y	Y	Y	Y	N/A	W/3/6	M/1	3
Mathra	Oct 03	2	Y	Y	Y	Y	Y	Y	N/A	W/5/6	M/1	4
Khaylu	Jul 03	1	N	Y	Y	Y	Y	Y	N/A	D/2-3	M/2-3	3
Shakuntala	Jul 03	2	Y	Y	Y	Y	Y	Y	N/A	D/4-5	W/3-4	2
Tara Devi	Apr 03	2	Y	Y	Y	Y	Y	Y	N/A	D/4-5	W/2-3	2
Puni Devi	Apr 03	1	N	Y	N	Y	Y	Y	Y	D/1-2	M/3-4	2
Nirmala	Apr 03	2	Y	Y	Y	Y	Y	Y	Y	D/1-2	M/4-5	3
Vyansru	Apr 03	1	Y	Y	Y	Y	Y	Y	Y	D/1-2	W/2-3	3
Surti Devi	Oct 02	1	Y	Y	Y	Y	Y	N	N/A	W/2/5	M/1-2	5
Anni Devi	Oct 02	2	Y	Y	Y	Y	Y	Y	N/A	W/3	M/1-2	6
Kanta	Apr 03	1	Y	Y	Y	Y	Y	Y	N/A	D/4	M/1	2
Shanti Devi	Oct 03	1	Y	Y	Y	Y	Y	Y	Y	W/2/5	W/1	1
Kala Devi	Apr 02	2	Y	Y	Y	Y	Y	Y	Y	D/4	W/2-3	6
Sumitra Thakur	Apr 03	2	Y	Y	N	Y	Y	N	Y	D/1	W/3	2
Loloma Devi	Feb 04	2-3	Y	Y	Y	Y	Y	N	N/A	D/2	W/2-3	1
NON LPG MEMBERS												
Garmi Devi		4-5									2 M/Yr	
Solma		4	Y								2 M/Yr	

D= Daily; W=Weekly; M=Monthly; Y=Yes; N=No; N/A= No Activity; Yr= Year; H=Hour;

(Refer to Annexure 5 for details)

inferred is that fuelwood collection (& therefore lopping of trees) is greatly reduced. An average fuelwood load is 20 kg, (several studies confirm this weight). For women who were collecting fuelwood daily, this totals to about 600 kg per month. After LPG these women are now collecting fuelwood about twice weekly. This gives a monthly average of 160 kg. Assuming that this reduced collection applies to the 300 women members (out of the total of 531 LPG connections in Lag valley), the total reduction in fuelwood collection comes to 1,32,000 kg per month. As the number of LPG users grows, the impact of reduced fuelwood collection on tree and forest growth would be significant.
Another important aspect, in terms of measuring impact of forests, is based on the fact that the preferred species for fuelwood and charcoal making are the slow growing hardwoods like oaks. Depletion in the growing stock of oaks for instance is hard to replace and regeneration is a very slow and costly affair. The white oak (*Quercus leucotricophloea*) and the green oak (*Quercus dilitata*) also form the major resource of green fodder for livestock particularly in winter and the need to use these sustainably has significant repercussions on livestock related livelihoods.

Health

Three of the above women mentioned about positive Health Impacts listing less coughing, eyes not hurting / watering as examples. They also mentioned that LPG use leads to more cleanliness, less sweating in summer and clothes not getting as dirty as before.

However, a longer and more structured study to be able to measure and develop indicators for monitoring health impact of LPG use are required to better inform the design and delivery of awareness building strategies to promote greater LPG use. As can be seen in Table 4. that cowdung and fuelwood burning are most damaging to human health.

Table 4. Air Borne emissions for HHs cooking stoves, India (g/M) delivered energy

Fuel	CO_2	N_2O
Wood fuel	**305**	**0.018**
Crop residues	**565**	**0.028**
Charcoal	**710**	**0.018**
Dung cake	**876**	**0.022**
Kerosene	**138**	**0.002**
Biogas	**144**	**0.002**
LPG	126	0.002

An interesting study based on NFHS (National Federation Health Survey) data reveals that there is a significant difference between the occurrence of cases of asthama (per 100,000 of population) between rural and urban areas. For India the incidence of asthama was 1966 cases/ lakh of population for urban areas, whereas this ratio went up to 2849 for rural areas. Similarly, for HP, against 841 cases of asthama in urban areas the rural figure per lakh of people was 1389. Similar is the story in most other states. The higher incidence of asthama in rural areas is most likely attributable to use of cow dung cakes and fuelwood for cooking.

Money Saved

There was unanimity among the women that LPG is cheaper. This is important coming from poor women. None mentioned about any money problem to get the re-fills. Obviously, their husbands having seen the benefits, fully back the switch to LPG. Though the re-fill rate has been on the lower side thereby implying low use of LPG, it needs to be appreciated that all are first time users belonging to socially "lower" groups or castes and as one woman said they have to hear snide remarks from their better off neighbors who still do not have LPG! It was nevertheless clear that none of the women had any thoughts of a life without LPG henceforth. 16 of the 21 women interviewed wanted a second cylinder, an indicator of the growing appreciation of using LPG.

However, only in a few cases was the saved time devoted to income generating activities. Most of the women do not have any income related activity at the household level. The time saved or generated, however, can easily be tapped for more group or social activities outside the house and this could contribute to income enhancement and social mobility of the women.

Considering this and potential environmental impact a case can be developed to influence public policy to support LPG use growth through annual budget lines of government departments like forests, rural development, health; public sector undertakings like IOC and even private LPG dealers / associations. Multi-lateral donors like DFID who are supporting a Forest Sector Reforms Project in HP could support or sponsor market research and development of fine tuned strategies to link improved livelihood opportunities through more widespread use of LPG.

Issues

Improving LPG Supply: Instances of delay in procurement of refills are noticed. In one case a woman had to wait for 3

months. While supply is supposed to be made on fixed days of the month to different areas within the Lag valley, in practice the schedules are rarely adhered to causing much inconvenience and waste of time. A second cylinder with the HHs or easy access to a refill, available within the village would adequately address this problem. General response to the smaller, 5 kg cylinder has been poor, but improved supply could make their use more popular in certain conditions.

Bringing down initial costs: The security deposit for the cylinder is the highest single down payment that has to be made initially. Reduction in that would need a national level policy change that could have vast implications. However, this is not impossible and the varied benefits of LPG use at the individual (health, liberating), HH (health, cleanliness), village economy (indirectly or directly boosting income generation activities) and environmental level (better forests) makes a strong case to consider appropriate, pro-LPG policy. A state or national forum of LPG dealers including a rural LPG Users Network would be a suitable mechanism to interface with government on such and related policy issues.

Spreading LPG Use: In the long term, securing a LPG dealership for a local institution like Jagriti could be a promising option. This would involve negotiation with the IOC and state level bureaucrats and politicians, a course of action worth exploring.

A usual complaint, across the country, is that dealers tamper with the weight of refills. No checking has been done in the Lag valley supply. While it is quite impossible to individually check the cylinders in rural areas, a watchdog role in monitoring for CBOs like Jagriti or the WSCGs is needed. This would help build trust among users and ultimately popularize the use of LPG further.

Picture 3 & 4 : LPG awareness programme Nov. 2, 2002

Money or Mindset?

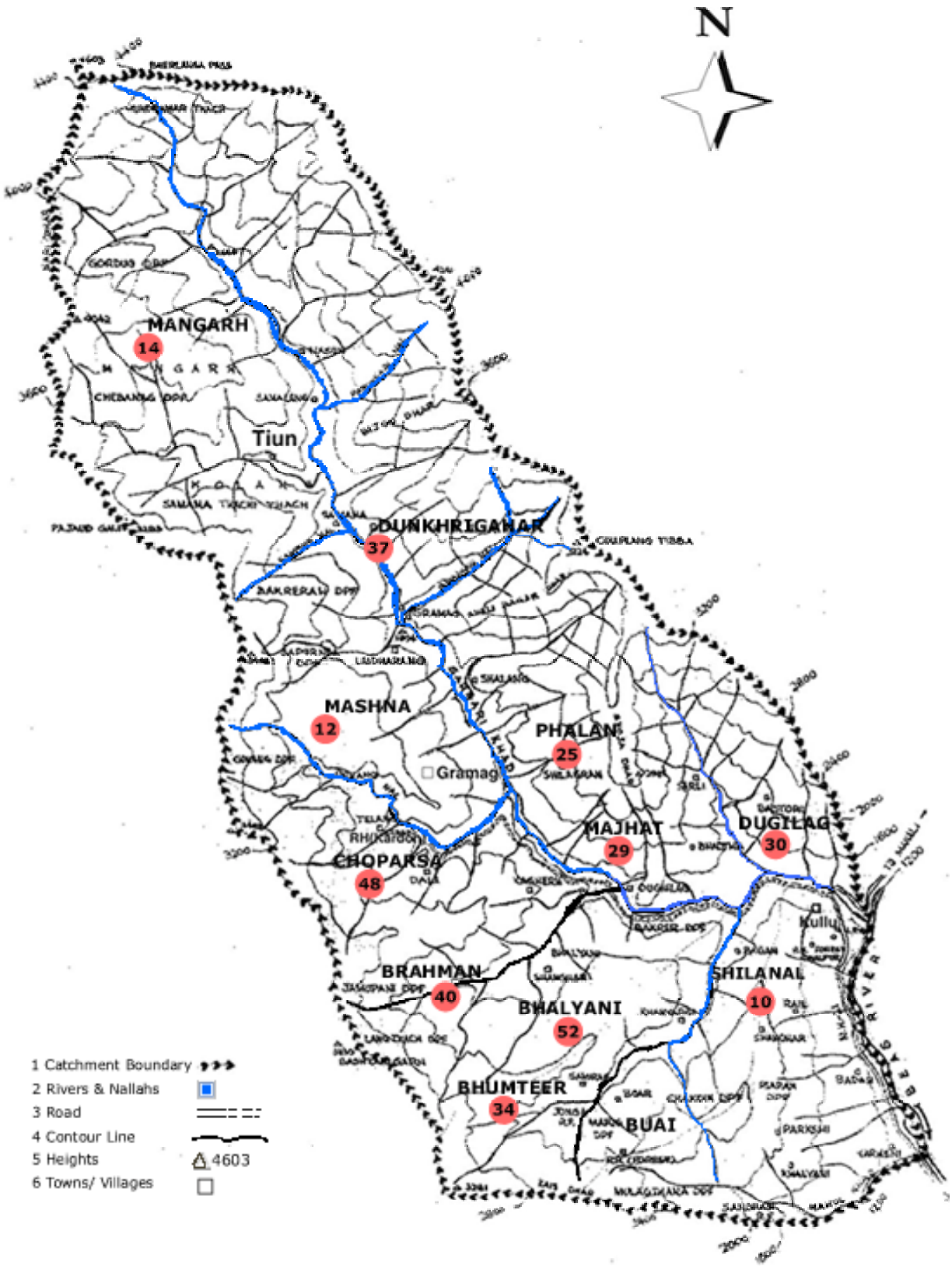
The Jagriti experience in spreading the use of LPG among poorer sections of village society in a remote, mountain area like Lag valley clearly shows that while the high initial cost of procuring a connection is a barrier, the problem has more to do with mindset. All women members have contributed 60 % of the initial cost (unexpected at first) and in this micro-credit has played a role. Once the LPG distribution got started, there was a clamour for more connections and the demand continues to grow. It is not that the people have suddenly found the money. What has happened is that having seen and realized the benefits of switching to LPG and the consequent improvement in living conditions, LPG has become a priority in the family spending budget and people are willing to cut corners to acquire a connection.

To be able to facilitate and service customer demand through innovative ways will remain a challenge for Jagriti. In doing so, the focus of reaching the poor must not be lost sight of.

References:

1. LP Gas Rural Energy Challenge, UNDP / WORLD LP GAS ASSOCIATION, JULY 2003
2. Quoted in DTE, Dec 2002, Phulmai's Walk, Richard Mahapatra
3. TEDDY, TERI Energy Data Directory & Yearbook, 1999-2000
4. First Annual Review Report of NORAD project in Lag valley, 2003
5. Third, Fourth Project Progress Report, March and September, 2003

Annexure 1. Lag Valley Map….



Annexure 2.

PANCHAYAT WISE HH & POPULATION DETAILS (Source: GP register 2001)

S.No	Panchayat	Total H.H.	OC		SC		ST		Total Male	Total Female	Sex Ratio	Lit.Rate (1991)	Total Popn
			M	F	M	F	M	F					
1	**Bhalyani**	289	920	833	75	57			995	890	894	45.4	**1885**
2	**Bhumteer**	237	554	484	166	171			720	655	910		**1375**
3	**Brahman**	348	869	830	69	47	19	14	957	891	931	53.4	**1848**
4	**Buai**	80	206	177					206	177	859		**383**
5	**Chauparrsa**	308	836	769	77	67			913	836	916	37.2	**1749**
6	**Dughilag**	377	722	667	332	287	7	4	1061	958	903	42.8	**2019**
7	**Dunkharigahar**	263	725	646	178	164			903	810	897	32.0	**1713**
8	**Majhat**	199	494	456	97	98			591	554	937	28.10	**1145**
9	**Mangarh**	277	601	594	147	138			748	732	979	25.90	**1480**
10	**Mashna**	200	583	515	80	67			663	582	878	25.30	**1245**
11	**Phalan**	195	485	454	140	135	2	1	627	590	941	30.90	**1217**
12	**Shilanal**	290	441	372	314	314			755	686	909	46.60	**1441**
	Total	**3063**	**7436**	**6797**	**1675**	**1545**	**28**	**19**	**9139**	**8361**	**915**	**34.20**	**17500**

***ST: Few HHs settled from Lahaul**

Annexure 3.
Status of Gas Programme as in May, 2004

Panchayat	Village	No of Groups	Group Name	Ist Round		2nd Round		3rd Round		4th Round		5th Round		Total	
				SC	OC	SC	OC	SC	OC	SC	OC	SC	OC	SC	OC
Bhaliyani	Galyana	6	Krishna			3								3	
	Kharka		Shanti			1	3		1				8	1	12
	Bhalyani		Shakti				2		1				7		10
	Bhalyani		Rupali				1						8		9
	Shanghan		Disha										4		4
	Jathani		Shyam										13		13
Majhat	P. Gadiyada	3	P. Gadiyada		3								4		7
	Dupkan		Shivradi Narayan		3						2		4		9
	Tandari		Jyoti							5		8		13	
Brahman	Ropari	4	Krishna		4		2						4		10
	Bhutti		Than		4	1	1						4	1	9
	Badagran		Badagran				2		4				9		15
	Kharshi		Phungni					1		4				5	
Shilanal	Bagan	2	Ajaypal	3		2					2	1		6	2
	Shilanal		Shilashakti								2				2
Dugilag	Suma	5	Draupadi	3		4				1		2		10	
	Bhaltha		Narayan			3				2				5	
	Dugilag		Seeta				3		2				4		9
	Dugilag		Ravi							4				4	
	Dugilag		Prakash							2				2	
Bhumteer	Bhumteer	4	Bhumteer		6								5		11
	Phalyani		Phalyani				3		1				3		7
	Kutlugran		Durga							1	1		2	1	3
	Bhumteer		Krishna										12		12

Panchayat	Village	No of Groups	Group Name	Ist Round		2nd Round		3rd Round		4th Round		5th Round		Total	
Dunkhrigahar	Baggi	5	Baggi	4		3				2		2		11	
	Dunkhrigahar		Kshetrapal	2						3			2	5	2
	Gramag		Gramag		2		1						6		9
	Baggi		Geetanjali								3		5		8
	Kadingcha		Rolang Phungni										2		2
Mangarh	Tiun	4	Tiun		2										2
	Sangochak		Sangochak		3		2						4		9
	Jakdale		Jakdale			1								1	
	Jakdale		Ajaypal									2		2	
Mashna	Dogri	3	Dogri	1						1				2	
	Ding Dingi		Ding Dingi				2						4		6
	Gadsade		Gadsade			1		1					2	2	2
Phalan	Shilagran	3	Jamlu Rishi		4		1		1		2		4		12
	Jindi		Mata Shojri				2		1				4		7
	Liyani		Phalani Narayan								2		4		6
Choparsa	Kadaun	6	Durga	5		1								6	
	Dalli		Dalli		6				2				3		11
	Rujak		Panchali	2	1	1		1		2	1			6	2
	Choti Neri		Phungni				1		2		1		1		5
	Kadaun		Shakti				2		1				5		8
	Telang		Mata Nauni										10		10
G.O.s		45			4	2	4			1	1			3	9
Total														**89**	**254**

Annexure 4

Monthwise LPG Registration by Indian Oil in Panchayats of Lag Valley (May 04)

Panchayats		**Bhalyani**			**Majhat**			**Brahman**			**Shilanal**			**Dugilag**			**Bhumteer**			**Dunkhrigahar**			**Mangarh**			**Mashna**			**Phalan**			**Choparsa**			
S.N.	Month	02	03	04	02	03	04	02	03	04	02	03	04	02	03	04	02	03	04	02	03	04	02	03	04	02	03	04	02	03	04	02	03	04	
1	Jan		1															1				1													3
2	Feb			1																														1	2
3	Mar															1																			1
4	Apr		3	2						1			2		3			1																1	13
5	May		1	1			1					2				2																			7
6	Jun					1									1						2												1		5
7	Jul		3						1									1									1			1					7
8	Aug		2			2			4			3			1						2														14
9	Sep		2						4									1			2														9
10	Oct		2						1			1						1			1														6
11	Nov	4				1						3		1	2		1				2			1											15
12	Dec		1					2	2			2		1						2															10
	Total	**4**	**15**	**4**		**4**	**1**	**2**	**12**	**1**		**11**	**2**	**2**	**7**	**3**		**5**		**2**	**9**	**1**		**1**			**1**			**1**			**1**	**2**	**91**

Source: Spick-n-span IOC, Kullu

Annexure 5

Survey to Understand Impact of LPG on Women's time, workload & HH finance:

S N	Name	LPG since	Cylinder Used	Indicators
1	Purthi Devi	Nov 2002	3	Total cooking Time: 1 hour less; Use of pressure cooker: Yes; Others helping with cooking: Yes; LPG is cheaper? Yes; Want second cyclinder? No; More time for IGAs? Yes; Reduced f-wood collection: Yes; Time taken? (earlier): Daily 3-4 hours; Trips? (now): Twice a week; Cook standing with LPG? No; Less scrubbing of utensils? Yes
2	Nokhi Devi	Oct 2003	1	Total cooking Time: 2 hour less; Use of pressure cooker: Yes; Others helping with cooking: Yes; LPG is cheaper? Yes; Want second cyclinder? No; More time for IGAs? Yes; Reduced f-wood collection: Yes; Time taken? (earlier): Daily 5/6 hours; Trips? (now): One/2 a week; Cook standing with LPG? Yes; Less scrubbing of utensils? Yes
3	Usma Devi	Sept 2003	1	Total cooking Time: 2 hours less; Use of pressure cooker: Yes; Others helping with cooking: Yes; LPG is cheaper? Yes; Want second cyclinder? Yes; More time for IGAs? N/A; Reduced f-wood collection: Yes; Time taken? (earlier): Daily 3-4 hrs; Trips? (now) :1-2 a week; Cook standing with LPG? Yes; Less scrubbing of utensils? Yes
4	Surti Devi (disabled daughter)	Oct 2002	5	Total cooking Time: 1 hour less; Use of pressure cooker: Yes; Others helping with cooking: Yes; LPG is cheaper? Yes; Want second cyclinder? Not yet; More time for IGAs? N/A; Reduced f-wood collection: Yes; Time? (earlier) 5/6 hrs 3-4 / wk; Trips? (now): 1-2 /wk in winter; Cook standing with LPG? Yes; Less scrubbing of utensils? Yes
5	Anni Devi	Oct 2002	6	Total cooking Time: 2 hours less; Use of pressure cooker: Yes; Others helping with cooking: Yes; LPG is cheaper? Yes; Want second cyclinder? Yes; More time for IGAs? N/A; Reduced f-wood collection: Yes; Time taken? (earlier): 5/6 hrs 3/wk; Trips? (now): 4-5 in winter; Cook standing with LPG? Yes; Less scrubbing of utensils? Yes
6	Kanta	Apr 2003	2	Total cooking Time: 1 hour less; Use of pressure cooker: Yes; Others helping with cooking: Yes; LPG is cheaper? Yes; Want second cyclinder?; Yes (no money); More time for IGAs? N/A; Reduced f-wood collection: Yes; Time taken? (earlier): Daily 4 hours; Trips? (now): 5-6 in all; Cook standing with LPG? Yes; Less scrubbing of utensils? Yes
7	Khayalu Devi	Jun 2003	3	Total cooking Time: 1 hour less; Use of pressure cooker: No; Others helping with cooking: Yes; LPG is cheaper? Yes; Want second cyclinder? Yes; More time for IGAs? N/A; Reduced f-wood collection: Yes; Time taken? (earlier): Daily 2-3 hours; Trips? (now): Monthly 2-3 trips; Cook standing with LPG? Yes; Less scrubbing of utensils? Yes

S N	Name	LPG since	Cylinders Used	Indicators
9	Tara Devi	Apr 2003	2	Total cooking Time: 2 hour less; Use of pressure cooker: Yes; Others helping with cooking: Yes; LPG is cheaper? Yes; Want second cyclinder? Yes; More time for IGAs? N/A; Reduced f-wood collection: Yes; Time taken? (earlier): Daily 4-5 hours; Trips? (now): 2-3 trips / wk; Cook standing with LPG? Yes; Less scrubbing of utensils? Yes
10	Kauli Devi (Disabled daughter)	Jun 2003	1	Total cooking Time: 1 hour less; Use of pressure cooker: Yes; Others helping with cooking: Yes; LPG is cheaper? Not sure; Want second cyclinder? Not yet; More time for IGAs? N/A; Reduced f-wood collection: Same as before; Time taken? (earlier): Same as before; Trips? (now): Same as before; Cook standing with LPG? No; Less scrubbing of utensils? Yes

Annexure 6

Perceptions of LPG use by women / men, Questionnaire

Name: Literacy: Village: WSCG:

1. What fuels do you presently use (or have used) for cooking & in what proportion?
    - Wood from forests
    - Wood from orchards
    - Both
    - Dung cakes
    - Charcoal
    - Kerosene
2. Would you like to own LPG? Yes / No
    - Why
    - What are the advantages of LPG
    - Have you had any problems using LPG, List
    - How will you meet the costs
    - Do you feel afraid of using LPG, Why
    - If you have the money, would you still need permission of your husband
3. For those who have LPG
    - How do you like using LPG
    - Since when are you using it
    - What are its advantages, incl health, cleanliness etc.
    - How much time do you save on cooking
    - How much time do you save of fuelwood collection
    - Do other members of your family cook on LPG, who
    - How long does one cylinder last, how many have you changed
    - Roughly, how much money have you saved since using LPG
    - Would you like to own a second cylinder
4. Questions for Man of the HH using LPG
    - Do you think LPG is useful, how
    - Why did you decided to buy a connection
    - Do you see any changes in the house after using LPG, What
    - Do you cook on the LPG, how often
    - Would you like to buy a second cylinder
    - What are the problems with procuring refills
    - Do you think LPG is cheaper than other fuels
    - Do you know that LPG is subsidized by GoI Yes / No

Name of Recorder
Date

Contact Details :

Green Oak

Jagriti

 # 341, Ward No 12, Shishamati,
Kullu (H.P.) 175101 INDIA
Phone: +91-1902-226537
E-mail: jagritiorg@sancharnet.in