Chapter 5

A CRITIQUE OF GOVERNMENT POLICIES IN THE CONTEXT OF ENERGY AND HEALTH

From the findings of the previous chapters it is evident that the socio economic condition has a very strong effect on the health of the slum dwellers. It is seen that it is the poorest of the poor who are suffering the most from the use of unprocessed biomass fuel. Along with their low social standing in the social mesh their purchasing power is also low. The morbidity rates also bear credence to the fact that it this section of the society that needs the most medical attention even though their morbidity reporting is low in hospitals. Thus it is imperative for the government to step in and pay special attention to them. So it can be concluded that it is vital to understand the 'macro – micro' links between the policy at the national (macro) level and how in practice it affects the poor at the local (micro) level.  

The main objective of this chapter is to

a) To understand the profitability of shifting to cleaner fuels, vis-à-vis LPG

b) review the existing energy and health policies of India in the light of the current problem

c) to suggest certain policy changes and measures to rectify the situation
For the purpose of fulfilling the above objectives this chapter is divided into three sections:

5.1 Cost – Benefit analysis of shifting to LPG

Dependence on traditional forms of biomass adversely affects human productivity particularly when time is increasingly spent farther and farther afield for diminishing fuel-wood sources and if the health of those exposed is endangered by high concentration of particulate matter from inefficiently burnt biomass fuels. While individuals (mainly women and girls) are exposed to the injurious effects (of smoke inhalation, the emission of unburned hydrocarbons through traditional stoves, and soot deposits when washed off vessels, etc.) and also have to spend time on fuel gathering, the community as a whole is adversely affected by the ambient pollution created by simultaneous cook-fires. In the urban slums, the cost is not only to health but also precious time is lost, when the woman could be engaged in gainful employment. The amount of time that is spent by the women in these two slums, in the sample population are given below

Table 5.1

<table>
<thead>
<tr>
<th>Time spent for collection of fuel</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 1 hr</td>
<td></td>
</tr>
<tr>
<td>Kusumpur</td>
<td></td>
</tr>
<tr>
<td>Pahari</td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>54</td>
</tr>
<tr>
<td>9.15</td>
<td>12.68</td>
</tr>
<tr>
<td>23</td>
<td>34</td>
</tr>
<tr>
<td>Shahadra</td>
<td></td>
</tr>
<tr>
<td>7.72</td>
<td>11.41</td>
</tr>
</tbody>
</table>

In both the slums it is seen that the majority of the women spend 2 – 3 hrs collecting materials that could be used for fuel. They spend this long time collecting fuel walking to different locations that could be found, namely, garbage dumps. In Kusumpur Pahari the women roam over the entire ridge area, competing with each other for wood, hunting around garbage dumps is less here. They even travel to neighbourhood areas of Vasant Kunj and JNU in search of firewood. Whereas in Shahadra, the
women spend this time scrounging around wood shops, tailoring shops, restaurant backyards and garbage dumps for different categories of fuel which are more hazardous as they expose themselves to outdoor pollution and toxic waste fumes.

Unfortunately, while households around the world have moved to higher quality energy rungs of the ladder, in the slums and in the rural areas of the developing countries, especially India, many are still dependent on fuel-wood or have been forced down by local wood shortage to crop residues or even shrubs and grasses (UNDP, 1998). It therefore is pertinent to assess the current use of various domestic cooking fuels and the possibility of shifting to cleaner and more efficient options. One of these options is liquefied petroleum gas (LPG).

The shift to cleaner fuels is necessary from the point of view of the costs incurred by these families. The use of these particular fuels trigger off a chain of events that lead to huge costs on the part of the householder; costs that they can ill afford and sometimes these costs are more than financial.
5.2 Concept of the Burden of Illness on the Household

The above chart gives an idea of the household costs of illness, coping strategies, and their economic consequences at the household level as derived from various studies\(^1\),\(^2\). The household is the unit of analysis for assessing the costs of illness because decisions about treatment and coping are based on negotiations within the household (but not necessarily from an equal bargaining position), illness costs are incurred by caregivers as well as the sick, and all costs accrue to the household budget.

When the illness is perceived, decisions are made by the head of the household or by the person is the most educated adult of the family, whether or not to seek professional medical help and from which source (i.e. whether


to visit the local RPM or a Hospital or Hakim/Vaid or rely completely on home or self medication). The health system is a resource which common to all household and therefore lies outside the household system and on which members of any household can draw upon. Illness costs are broken down into two components: a) direct costs which pertains essentially to expenditures on Medicine, hospitalization including non medical costs like expenses on nutritious food etc and b) indirect costs which refers to loss of productive labour time on the part of both the patient and the care givers.

The term cost burden refers to the cost (both direct and indirect expenses) expressed as a percentage of the household income. Some researchers are of the opinion that a cost burden of over 10% would be catastrophic for the household\(^3\), meaning that it is likely to force the slum dweller to cut on consumption of essential necessities like food, trigger productive asset sale or lead to high and larger debts and finally complete impoverishment.

The direct and indirect costs would depend largely on the severity of the illness. More often than not the slum dwellers down play the severity of the disease which only aggravates to a full blown chronic problem later on, thereby increase the cost of burden. It is often a case that in the slums, where households struggle daily to meet the food and fuel needs, the loss of daily wage due to illness or even expenses towards medication could trigger off coping strategies which might include drawing upon social networking resources outside the household, like borrowing from a neighbour or taking credit from a money-lender. Illness costs and coping strategies then have an enormous impact on the household consumption pattern, asset portfolios and process of destitution.

---

\(^3\) Prescott, N., (1999), 'Coping with Catastrophic Health Shocks', Inter American Development Bank, Conference on Social and Poverty, Washington DC

Cost Factor in the Sample slums.

Components of Direct costs
a) Expenses on fees to the doctor
b) Expenses on Medication
c) Expenses on Travel.

Expenses on fees and medication.
To the slum dweller sickness of any kind means a lot of expenses. As a result more often than not they prefer to down play the importance of the problem, hoping it will go away with time. Little do they realise that it only blows up the problem. As a direct result of this attitude, they often rely on Home medication or self medication. At times they work and at times they fail miserably. Moreover, these people tend to neglect the health of their women and the girl child as they are deemed as not so important to the production process and also because females have low social standing to merit attention.

<table>
<thead>
<tr>
<th>Table 5.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment availed by the sample population</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>-----------------</td>
</tr>
<tr>
<td>Kusumpur Pahari</td>
</tr>
<tr>
<td>Shahadra</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

The above table gives an idea about the type of treatment that is availed by the slum dwellers. As has been stated earlier people prefer Home and self medication to other forms of treatment together they account for over 60% of all types of treatment availed. In Shahadra, do not turn to the RPM or vaid for treatment at all. For minor health problems (minor according to their perception) in this case ARI they prefer to rely on their own knowledge. It is only when the ARI shows symptoms of going beyond the control of the householder do they seek profession help. For which reason, they then turn
directly to allopathic medicine or a professional health practitioner for treatment. For treatment of Pneumonia, Asthma, Pleurisy and dangerous forms of ARI (they have no understanding of the type that has affected them and only come to know after the diagnosis) to they go to proper hospitals and doctors. Often they prefer to go to private practitioners as they need fast treatment and fast results. There they incur a higher expenditure than if they had availed treatment at government hospitals. Though in Kusumpur Pahari, they avail the services of both the RPM and Hakim/vaid, they still prefer to rely on their self and local knowledge for treatment and finally when matters go beyond their control they prefer visiting the allopath. In Kusumpur Pahari, the inhabitants have a tendency to show off. It is more so among the men than the women. If the women respondent happens to have the man of the house around and if their economic condition is a little better, then often there is a tendency to colour up their answers. They would often come up relies like how they only avail private health care, when their economic status completely belies this fact. It often meant serious cross questioning before the truth of their treatment would emerge.

Table 5.3

<table>
<thead>
<tr>
<th>Expenses on fees to the doctor and medication</th>
<th>&lt;100</th>
<th>101-200</th>
<th>201-400</th>
<th>401-800</th>
<th>801-1600</th>
<th>&gt;1600</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kusumpur Pahari</td>
<td>71</td>
<td>14</td>
<td>14</td>
<td>70</td>
<td>57</td>
<td>43</td>
<td>269</td>
</tr>
<tr>
<td></td>
<td>26.4</td>
<td>5.3</td>
<td>5.3</td>
<td>26.2</td>
<td>21.1</td>
<td>15.8</td>
<td></td>
</tr>
<tr>
<td>Shahadra</td>
<td>54</td>
<td>43</td>
<td>32</td>
<td>11</td>
<td>0</td>
<td>11</td>
<td>151</td>
</tr>
<tr>
<td></td>
<td>35.7</td>
<td>28.6</td>
<td>21.4</td>
<td>7.1</td>
<td>0</td>
<td>7.1</td>
<td></td>
</tr>
</tbody>
</table>

The above table gives idea of the cost of fees and medication as incurred by the dwellers of Kusumpur Pahari and Shahadra. This cost includes expenses on medication as prescribed by the RMP and Homeopath and private health professional. The fees paid to the RMP or the vaid/ hakim is often in the form of kind rather than cash up front. In Kusumpur Pahari it was found that that the RMPs always demanded cash before treatment and more so from the poorest of the poor. As according to him, this section of the people often move away to other slums without paying and so credit was only extended to those
who were settled in the slum for a long time. Here again the slum dynamics of survival comes into play. These poor people who are recent migrants from villages where they found survival impossible, move to these slums where again they get marginalised by their own kinds and find the conditions even tougher for the struggle. The show-off factor is again noticed when the cost of treatment is enquired into. 15% of those who are ill from any form of ARI spend over Rs 1600. There is no way of ground truthing this matter. Mostly the expenses on treatment lie in the range of Rs 400 to Rs 800. In Shahadra, maybe due to the upheaval of the slum, there was no Hakim/vaid or a homeopath. These people had not much faith in their local RMP for which reason they relied essentially on self and home medication which do not incur heavy expenses and this is borne out by the fact that the first three categories of income have the highest return. As has been stated earlier allopathy cost money and the people of these slums of Shahadra prefer private health care professional for speedy treatment. So a lot of people spend to the tune of Rs 800 and above.

Expenses on travel
Expenses on travel is only incurred when the slum dwellers goes to visit the government hospital or the local private clinic or maybe visit a homeopath (though this is a very rare occasion.). The people of Kusumpur Pahari if they need serious medical care either visit All India Institute of Medical Sciences. Since this is an apex referral hospital they are either referred from Vardhaman Mahavir Medical College and Hospital (popularly called Safdurjung hospital). AIIMS too has an OPD for the general public but the queue for outstation patients is so long that unless its imperative they prefer to visit Safdurjung. For ARI cases, these patients would move to either Ram Manohar Lohia Hospital (RML) or Ganga Ram Bux hospital. If they are availing private care then they access Holy Angels or Basant lok Hospital in the neighbouring Vasant Vihar. For Shahadra, the people mostly avail the
services of Guru Tegh Bahadur Hospital, which is run by the government and located in Dilshad Gardens. For Private care they access the services of Sriram Hospital in Krishna Nagar and Holy Child Hospital near Laxmi Nagar. Few patients from Shahadra also visit Lok Nayak JaiPrakash hospital (LNJP) too.

If one has to look at the cost incurred for travel it is seen to be quite large. Since their preferred mode of travel is Bus, this study has looked into the expenses for this mode only.

For a single person availing the services of Ganga Ram hospital by bus from Munirka would be around Rs 20. Expenses on food at the hospital would be around Rs 10. Therefore for a single visit to the hospital, on travelling alone per capita expenses amount to Rs 30, which they can ill afford. For private care there is no cost for travelling as they walk to the neighbourhood nursing home. But this is made up by the high expenditure on fees and medication.

For Shahadra, a person travelling to Guru Tegh Bahadur Hospital the cost is around Rs 10. Not accounting for food expenses (as the distance between the slum and the hospital is not much) they still spend Rs 10 per visit. Visits to the private clinics cost around Rs 4 per person. Added to this is the high cost of treatment.

For both the slums expenses on travel is substantial and for the poorest of the poor a single visit (on travelling alone) is a sure path to complete destitution.

So, Direct cost

\[ x = Ji + Ki + Li \]

Where, 
\[ X = \text{Direct cost}, \]
\[ Ji = \text{Fee component of the doctor for the ith household}, \]
\[ Ki = \text{Cost of medication of the ith household}, \]
\[ Li = \text{Cost of travel for the ith household}. \]
Components of Indirect Costs

a) loss of Productive labour time

Loss of labour wages
Lost labour time translates into loss of wages due to illness of the individual or somebody in the household for who care is needed. This essentially means that the capacity of the household is reduced and at times stopped at a time when additional income is most necessary for treatment. The inhabitants of both the slums under consideration do not have any fixed means of employment. Infact, there is no saying that they would have regular employment for all days of the month. For Kusumpur Pahari, where unskilled manual wage labourers are the maximum among all categories of employment, there is no fixed number of days when they work. As a result whenever there is employment, loosing that also due to sickness in the household may tantamount to disaster. For Shahadra, the major source of earnings is vending and hawking. If they do not go out for their business, they too loose day's earnings. After paying the rent of the cart and the cost of the material they hawk, the margin they eke out is so small that they cannot have two healthy meals a day. In the case of both these slums, they do not have the concept of saving. Since there is no surplus creation then the question of saving does not arise. Whatever they earn they consume. In such a condition loss of man days is a sure way to destitution.

At the same point of time understanding the indirect costs alone would not complete the picture as one has to understand the cost of coping strategies adopted by the household to deal with ARI and its associated illnesses.

In response to illness, the head of the household or household members decide on the method of treatment, if the illness is serious and they have to resort to allopathic treatment, then they may have to reallocate tasks of caring for the sick person and borrow money to replace loss of earnings. Ultimately the coping strategies that a household decides upon are methods
to maintain sustainability and economic viability of the household. There is another coping strategy that could be applied in these slums and that is putting their women to gainful employment. This study has analysed for a sample population where the women do not go out to work. If this section of the population could be put to work even during some hours of the day then there are chances of additional earnings and this might save the family from drawing on their social networks for credit and subsequently save them from disposing their productive asset portfolio.

5.3 Shift to clean fuel (LPG)

The advantages of LPG over the traditional biomass-based fuels are numerous – reduced pollution and thereby improved health, improved efficiency and reduced cooking time, and reduced fuel collection time and effort. However, factors like the beneficial (or reduction of harmful) effects on health are not being quantified or even included in the households' consideration. But now the question that arises is how to provide LPG to the most vulnerable section of the society. Since there is a lack of data on the slum dwellers, it is difficult to implement strategies and subsidies such that this segment can be serviced. They neither have the infrastructure nor the purchasing power to shift to LPG, yet they require this option the most.

There are certain considerations that need attention from the government to make LPG accessible to the urban poor. They are:

a) Subsidy

Methods of Subsidising LPG for the urban poor

---

5 Prescott, N., (1999), 'Coping with Catastrophic Health Shocks', Inter American Development Bank, Conference on Social and Poverty, Washington DC

Choices have to be made from among the many subsidy-options – either on the initial costs of setting up the infrastructure like the connections/stoves, or on the fuel, and either cross-subsidies or budgeted from the exchequer. In particular, the following aspects should be considered:

- **Initial (first-cost) subsidies** – Subsidising initial costs seem preferable to fuel (or refill) subsidies because the latter could encourage inefficient use or could be diverted to other uses/users (as has been seen in the case of Kerosene. A one-off fee-waiver on the connection/stove makes sense. However, first-cost subsidies leave possibilities for dropouts from those who cannot afford the fuel costs, resulting in “dead” investments, as noted in the case of the Deepam scheme in the state of Andhra Pradesh.

- **Operating (fuel) subsidies** – There could be rationing/quotas (quantitative limits) for the subsidized fuel (as with ration cards) and/or coupons (as with food stamps).

- **Cross subsidies from other distillates** – This has been the Indian practice for many years, but would need to be weighed against the disadvantages of higher transportation costs.

From the above analysis it is clearly visible as how essential clean cooking energy is for freeing women and girls from the burden of indoor air pollution and the drudgery of long hours spent in gathering fuelwood and dung. Clean cooking energy is thus a tool for empowering girls & women to pursue education and enriched livelihoods.

---

7 An important scheme implemented for the expansion of domestic LPG use has been the Deepam LPG scheme in the state of Andhra Pradesh. This project was launched on the 9th July 1999 for the distribution of domestic connections to women of below the poverty line (BPL) families in the rural areas of the state. Each connection was accompanied by a one-off subsidy to the extent of the initial cost, to overcome the barrier to fuel switching. It was meant to reduce dependence on firewood, reduce the drudgery of collection of/cooking on firewood, reduce pollution and improve the health of women.

Keeping this consideration in mind the next section looks at the role of the government in terms of its policies and programmes.

Background

Over time across various industrial phases in both the industrialized and emerging countries alike, research and development investments have been carried out to improve energy services which play a pivotal role in the economic growth of a country. By improving accessibility to reliable energy sources, governments have primed growth in productivity and output. In recent years, there have been growing concern over environmental and health related issues. The governments are keen to adopt commercial standards through structural & regulatory reforms taking into account the shift to clean fuels. Irrespective of the approach, the linkage between energy and economic development has been reiterated in a number of studies.

The relationship between energy programs and poverty alleviation has gained more clarity over time. Access to better, cheaper and cleaner energy services improve the welfare of the poor is apparent but more often than not the poor are the worst sufferers of the recent sector specific and pro-efficiency reforms. Thus certain issues arise which seem to focus attention directly on the energy debate. The issues are identified as follows:

a) What is the role that is played by access to efficient and sustainable energy in reducing poverty and what can the liberalizing energy market do in improving the accessibility of the poor?

b) How the programs for liberalizing the energy market can improve the options for expanding the accessibility of both the rural and urban poor?

c) What are the key energy policy instruments which should be held responsible for improving and strengthening the accessibility of the poor to clean household fuel?
Link between access to energy and the lot of the poor.

Poor households rely on combination fuel using different categories of fuel for different purposes. The reliance on biomass seems to be the highest. Often the real per unit cost of these energy sources are high as the cost of externalities like health issues are not internalised and often exceed those of electricity or gas delivered to better – off households. Women and children spending time on collection of firewood and slaving away hours in front of a smoke filled chulha, affects not only their education but often lead to irreparable damage to their respiratory system. Even if the poor shift to clean energy (understanding that the cost is more in the long run if they stick to traditional biomass fuels), the supply drastically falls short of the demand. Thus meeting the energy needs of the poor (i.e. provision of clean fuel) involves finding a low cost technology and the institutional support to lower the cost of obtaining and using the energy. Thus the existing market requires to be aligned with the needs of the poorer consumers and also symmetric information on the nature & pattern of energy usage in the context of a supply constrained scenario.

Energy services and the urban poor

There are two reasons why the urban poor in our country deserve a much closer attention and concern than they normally receive from energy policies of the governments. The first reason stems from the debate of welfare and distributional justice. Adequate fuel for cooking, heating and lighting is an essential requirement for the survival of the urban in a more inhospitable milieu than rural areas. Their heavy dependence on biomass fuels goes to show the use of most inefficient, inconvenient and, very often the costliest energy sources. Their share of income spent on energy is normally much greater than that of upper and middle income groups\(^9\). Their fuel supplies are often precarious as they lack the safety nets of the rural poor, who usually

find firewood, dung and crop residues to gather, even if illegally, when fuel supply fails.

In every respect – the quantity and quality of energy use, security of supply, fuel costs and budget shares, and sensitivity to rising prices in the petroleum sector – the urban poor is positioned at the bottom of the energy ladder. Added to this is the disparity between the poor and the others is a yawning one in the cities. In the rural areas the rich and the poor alike tend to have similar trends in consumption pattern and faces the same restrictions of problems which monetary resources cannot smoothen out.

The second reason for focus on the urban poor stems from their dependence on wood based fuels. In many developing countries having a large poverty stricken population, there are large rings and patches of deforestation around urban centres which are in part, at least, due to cutting of firewood and charcoal to meet growing urban demand. In particular, as the pressure from urban commercial fuel wood markets spread outwards, rural firewood supplies become monetised. As firewood is commoditised, access to 'free' sources is often reduced for landless, small farmers and others who cannot grow sufficient fuel for their own use.

**Trends in Income and Energy Consumption**

For cooking and heating progression is noticed from firewood, sticks, scraps of paper and leaves to kerosene stoves and finally to LPG cylinders and electricity. For lighting, in poor households the movement is from wicker lamps and cooking fire to kerosene lamps, candles, glass chimneys, kerosene hurricanes and finally electric lighting. Although lighting uses relatively little energy, it has an important place in the household energy behaviour. Improved lighting is usually given a high priority in an improvement of better living standards.

---

The fuel choices and substitutions are strongly motivated by the desires for greater convenience, quality and quantity of energy output and cleanliness. The progression also leads to time savings in obtaining and using fuels, often a crucial factor for the poor. The extent of these fuel and equipment
substitutions and the income levels at which they take place are obvious critical parameters for energy policy. Generally within India these factors are captured by the size of the urban centre. That is the number of households in a particular urban centre consuming or needing to consume energy which gives an indication of the current demand and supply picture. This urban size effect provides insights to important policy options.

No less important is the progression towards increased fuel efficiency. This effect more than offsets the trend of increasing fuel prices across the wood-petroleum-electricity range. Although efficiencies vary significantly depending on the type of equipment and its usage, the reasonable rule of the thumb for cooking is as given in table 1.2

<table>
<thead>
<tr>
<th>Type of fire</th>
<th>Type of stove</th>
<th>Utensil</th>
<th>Fuel</th>
<th>Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open wood fire</td>
<td>-</td>
<td>Clay pots</td>
<td>Wood</td>
<td>5-10%</td>
</tr>
<tr>
<td>Open wood fire</td>
<td>-</td>
<td>Aluminium</td>
<td>Wood</td>
<td>12-15%</td>
</tr>
<tr>
<td>Partially open</td>
<td>Metal stove</td>
<td>-</td>
<td>wood</td>
<td>20-30%</td>
</tr>
<tr>
<td></td>
<td>Charcoal stoves</td>
<td>-</td>
<td>coal</td>
<td>15-35%</td>
</tr>
<tr>
<td>Closed fire</td>
<td>Multiple wick</td>
<td>-</td>
<td>Kerosene</td>
<td>25-45%</td>
</tr>
<tr>
<td>Pressure stoves</td>
<td>-</td>
<td>-</td>
<td>Kerosene</td>
<td>25-55%</td>
</tr>
<tr>
<td>Burner</td>
<td>-</td>
<td>-</td>
<td>Gas</td>
<td>40-60%</td>
</tr>
<tr>
<td>Blocked</td>
<td>-</td>
<td>-</td>
<td>Electricity</td>
<td>55-75%</td>
</tr>
</tbody>
</table>

Source: World Bank, 1986.11

For lighting, a kerosene pressure lamp is about 12 times more efficient than a simple wick lamp; an electric incandescent lamp is 10times more efficient than the pressure lamp. Table 1.3 presents data on the light output, efficiency and cost of lighting equipment which underscores the remarkable differences in the performance of technologies used by the poor and higher income families.

Table 5.6

<table>
<thead>
<tr>
<th>Fuel and Lamp type</th>
<th>Light output*</th>
<th>Fuel consumption**</th>
<th>Cost (Rs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kerosene</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wick lamp</td>
<td>0.5</td>
<td>130</td>
<td>1-2.5</td>
</tr>
<tr>
<td>Chimney lamp</td>
<td>1.5</td>
<td>50</td>
<td>3.5-28</td>
</tr>
<tr>
<td>Hurricane lamp</td>
<td>3</td>
<td>25</td>
<td>17.5-28</td>
</tr>
<tr>
<td>Pressure lamp</td>
<td>30</td>
<td>10</td>
<td>high</td>
</tr>
<tr>
<td>Electricity</td>
<td>60w bulb</td>
<td>40</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4-5(a)</td>
</tr>
</tbody>
</table>

*Foot candles at 30cm from lamp.  ** rate of energy consumption (eg litres/hr, watt) normalised to one electric bulb (a) Excluding connection charges, wiring etc
Source: World Bank, 1986

**Energy Budget Shares**

A major consequence of these typical fuel consumption and income trends is that the fraction of income or expenditure devoted to household energy (other than transport) decreases sharply across the income range. This appears to be an almost universal rule, due to the combination of improved energy efficiency with greater income and low income elasticity of demand for useful heat. That is, the rich do not need significantly more useful heat for cooking than the poor, but cook more efficiently with fuels that not greatly more expensive.12

*The urban slum situation*

The destitute of the urban areas, living in urban slums face a range of fuel problems mostly due to the physical or non-market factors. It is generally the way of life for these people to scavenge for any scraps of burnable material – weeds, animal dung, saw dust, plastics etc. – because there are few trees to gather firewood from and purchasing commercial fuels are beyond their pockets.

Two inferences follow the above argument: First, the slum dwellers are therefore forced to use inefficient open fires as they can accept any shape, size or type of fuel. Second, their supplies are precarious because they can be destroyed at the slightest change of environment and lifestyle. In some slums of Delhi there used to be cow dung cakes and twigs aplenty till the surrounding areas were built up. Today the slum dwellers buy kerosene and burn tyres in winter for heating (CSE, 1990)\textsuperscript{13}. In those slums near the green belt of Delhi, the people spend considerable time collecting twigs, while those away from the belt rely completely on burning of biomass and poly hydrocarbons. They are also prevented from shifting to kerosene, (even if this costs less) due to the nature of their dwellings and occupancy rights (CSE, 1990)\textsuperscript{14}. None of their belongings together costs much and are very much mobile in character. Their housing, too, is inadequate to prevent the theft of valuable items such as kerosene lamps and stoves. Electricity or piped gas lines are often ruled out due to the unauthorised nature of the squatter. Therefore, in such a situation the poor of the urban areas are left with no other option but to stick to the short-run and highly non real cost inefficient method of heating, cooking and lighting. The household use of unprocessed biomass fuel, and concentration of health-damaging air pollutants tends to be highest indoors.

Indoor air pollution has thus become a major concern in India in the recent times both because it is now clear that large parts of the of the Indian urban population are exposed to some of the highest pollutant levels in the world and also because new studies around the world on the health effects of air pollution have increased confidence in estimates of the risks posed by air pollution exposures. In the last decade, a number of quantitative

\textsuperscript{13} Centre for Science and Environment, (1990), "The State of India's Environment", Down to Earth. New Delhi.
\textsuperscript{14} Centre for Science and Environment, (1990), "The State of India's Environment", Down to Earth. New Delhi.
epidemiological studies of specific diseases have been undertaken that allow for the estimation of total burden of disease (mortality and morbidity) attributable to solid fuels in adult women and young children, who jointly receive the highest exposures because of their household roles, in Latin America and in South East Asia. Few studies are available yet in this light in India. Existing studies pertain mostly to the rural India and its women and children and a few in urban India. The slums, which happen to be at a most vulnerable situation environmentally seems to be sadly neglected.

For the women a severe form of ARI associated with bio fuel smoke is Chronic Obstructive Pulmonary Disease (COPD) and Cor Pulmonale. A number of studies have examined chronic respiratory ill health in women cooking with open biomass stoves and concluded a direct linkage between the two. Yet these studies have been undertaken mostly for rural women. These studies have found severe impairment of lung function, cough and various other respiratory conditions associated with biomass smoke exposure among women.

In India, where sons are preferred over daughters and where the status of women is lower, health problems are less likely to be reported for women. This may lead to an impression that the problem is less serious among women than it actually is, particularly more so for the slums. This differential underreporting is more likely to occur among less educated women and among women living in biomass–fuel–using households. Not only the health problems in women and girls are less likely to be reported but also reported later when their problems reach a more acute status. And, when sick, women and girls are less likely to receive proper medical attention, which may aggravate their situation and lead to more permanent damage or higher mortality. Such discrimination against women and girls are more
likely to be greater among biomass-fuel-using households than among cleaner-fuel-using households.

As women do most of the cooking and spend more time indoors, they are exposed more to the pollutants and are believed to have greater adverse health impacts. Young children who usually stay with their mothers indoors also have increased exposures. Yet, there are few studies that differentiate exposure to indoor air pollution by sex and still fewer that examine the effects on the two sexes separately. Most studies are grounded in the assumption that women have higher exposures and greater health impacts than men. IAP studies on children often include both boys and girls but do not study the exposure effects separately. Moreover, exposure is usually measured using proxy variables such as type of cooking fuel used in the households, which does not allow sex-disaggregation of exposure data.

Availability of quantitative exposure information is a crucial requirement for assessment of associated health risks. Determination of 24-hr averages (for which health standards exist for outdoor areas) has been thus far attempted in very few studies. Initial studies determined. Some studies have been carried out for determination of concentrations for particulates and other pollutants, including CO, SO₂, and NO₂. Most studies point out that particulate matter is a good surrogate for overall indoor pollution levels associated with biomass consumption. Studies that monitor for 24-hr concentrations and exposures are difficult to conduct and usually very resource intensive. At the same time there is little understanding about the different factors that affect exposure to indoor air pollution and their inter-linkages i.e. to what extent fuel use patterns or housing characteristics are responsible for household air pollution concentrations. In addition, while a number of studies with IAP measurements have been undertaken in rural
India, very little information on exposures in urban slums is currently available.

This is contrary to the belief that air pollution is mainly associated with vehicular motor vehicles and industries. These fuels will continue to be a primary source of heating, lighting and cooking in the poor households in the foreseeable future till they are able to break the vicious circle of poverty. About three fourths of all households in India use traditional biomass – wood and dung (mainly) – as household fuel in 1999 – 2000 (NSSO, 55th round). Approximately 5,00,000 population are estimated to be affected by it as result of exposure to smoke emissions, making indoor air pollution (IAP) the third leading health risk factor. Traditional biomass use has other adverse social impacts: principal being that the fuel collection can take long hours and entail significant drudgery, consuming time that could be put to more effective use in other activities. As a result the World Bank has designated IAP resulting from cooking, heating, and lighting with traditional fuels, as one of the four most critical environmental problems in the developing countries.

In the last decade, a number of epidemiological studies of specific diseases have been undertaken, that allow for the estimation of total burden of disease (mortality and morbidity) attributable to solid fuels in adult women and young children, who jointly receive the highest exposures because of their household roles, in Latin America and in South East Asia.

There are large numbers of options for mitigating the effects of traditional biomass use ranging from behavioural change to better household ventilation, more fuel and emission efficient stoves or the use of cleaner fuels. This study focuses on the two most commercially used fuels in India that can mitigate this problem i.e. kerosene and liquid petroleum gas (LPG) and how accessible they are to the poor under the current market structure and economic philosophy. These are the two principle clean fuels in India that
have substituted biomass fuel use, that too principally in urban India. The other alternatives such as electricity and piped gas are still not readily available and command high prices. Clean bio-fuels like biogas has not yet been commercialised to the extent that it is able to meet the rural as well as the urban needs. This study is based on The National Sample Survey (NSS) data pertaining to the 50th (1993 - 94) and 55th (1999 - 2000) rounds and the data supplied by the Ministry of Petroleum and Natural Gas.

*Kerosene and LPG markets in India.*
The Government of India (GOI) provides large universal price subsidies for kerosene (distributed through the PDS) and LPG (through dealers of state owned oil companies). The subsidised fuels are handled exclusively by state oil companies. In 1993, the government allowed private marketers to start selling LPG and kerosene, but at market based, rather than subsidised, end-user prices. This unequal treatment of the private marketing companies has made it very difficult for them to expand their market share. The allocation of subsidised kerosene by the central government varies from state to state, with an urban bias in a number of states. As LPG is relatively expensive cooking fuel, and as most users reside in urban areas where there is more cash income and free biomass is not often readily available, the distribution of subsidised LPG, historically, has thus been confined largely there. It has also been seriously supply constrained: until recently there has been a long waiting list to sign up for subsidised LPG (in April 2000 the list extended to more than 6 million users). Moreover, the state oil companies marketed LPG only in towns and cities with a minimal population of 20,000. Having met the demand of these towns, they have now turned their attention to the lower order towns and the rural areas. This in a way is an option opening for the rural areas where now the people who are able to afford the LPG can go for a fuel shift. This foray into the rural areas has closed to the private sector the chunk of the market where previously they had a complete command and control.
The allocation of kerosene through the PDS varies from state to state based on historical patterns rather than demand or consideration of relative poverty levels. Distribution of kerosene within a state depends on whether or not the household has LPG connection. Households with double cylinder LPG connection receive the lowest quantity of Kerosene. At this level there seems to be equity in allocation though an urban bias is still noticed in several states. From the table 1 it becomes amply clear that in certain states both urban and rural receive the same quantity regardless of their LPG consumption status. Jammu and Kashmir, Chandigarh, Assam, Meghalaya and two three other states corroborates this fact.

Table 5.7

<table>
<thead>
<tr>
<th>States and union Territories</th>
<th>Kerosene in metric tones</th>
<th>Urban Households with</th>
<th>Rural Households with</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern Region</td>
<td></td>
<td>No LPG</td>
<td>1 Cylinder</td>
</tr>
<tr>
<td>Haryana</td>
<td>171732</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>Himachal Pradesh</td>
<td>61846</td>
<td>25</td>
<td>10</td>
</tr>
<tr>
<td>J &amp; k</td>
<td>111764</td>
<td>10/15</td>
<td>10/15</td>
</tr>
<tr>
<td>Punjab</td>
<td>343128</td>
<td>20</td>
<td>3</td>
</tr>
<tr>
<td>Rajasthan</td>
<td>443179</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>Uttar Pradesh</td>
<td>1410902</td>
<td>8</td>
<td>3</td>
</tr>
</tbody>
</table>
All these states are some of the less developed ones in India and with such an apparent urban bias the poor of these states are bound to suffer more.

**Fuel expenditure comparison**

What finally influences the consumers' choice in case of a fuel shift or otherwise is how much the household would have to spend on the given amount of cooking and other household activities that needs to be done. In
this case the study considers fuel consumed for cooking to represent the total
need as a major portion of consumption is directed here\textsuperscript{15}.

Table 5.8

<table>
<thead>
<tr>
<th>Fuel</th>
<th>Price / unit</th>
<th>Stove Efficiency (%)</th>
<th>Rs / MJ</th>
<th>Equivalent Quantity$</th>
<th>Rs / Month$</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPG 241/ cylinder(©)</td>
<td>55</td>
<td>0.67</td>
<td>14.2</td>
<td>241</td>
<td></td>
</tr>
<tr>
<td>LPG 469 / cylinder(©)</td>
<td>55</td>
<td>1.31</td>
<td>14.2</td>
<td>469</td>
<td></td>
</tr>
<tr>
<td>Kerosene § 9 / litre(©)</td>
<td>40</td>
<td>0.52</td>
<td>21</td>
<td>188</td>
<td></td>
</tr>
<tr>
<td>Kerosene high pressure § 9 / litre(©)</td>
<td>45</td>
<td>0.47</td>
<td>19</td>
<td>167</td>
<td></td>
</tr>
<tr>
<td>Kerosene 16.54 / litre(©)</td>
<td>40</td>
<td>0.96</td>
<td>21</td>
<td>345</td>
<td></td>
</tr>
<tr>
<td>Kerosene high pressure 16.54 / litre(©)</td>
<td>45</td>
<td>0.85</td>
<td>19</td>
<td>307</td>
<td></td>
</tr>
</tbody>
</table>

\(\$\) as a liquid, \(\$\) as a high pressure stove © Unsubsidised prices ® Unsubsidised prices •Fuel Quantity required to deliver the same quantity of energy to the cooking pot. #Rs per month per household for purchasing the quantity indicated under “equivalent quantity”. Source: World Bank (2003) ‘Household Energy Strategies for Urban India: The Case for Hyderabad’, ESMAP Report. JRs/ mega joule of energy delivered.

Table 1.5 compares the cost per unit of energy supplied to the burner tip. The subsidised and unsubsidised prices of LPG and Kerosene as informed by the Ministry of Petroleum and Natural gas to the Ministry of Finance in 2003 and as reported by the Business Standard (2003) are used as retail prices. Cooking with LPG costs about Rs 240 per month assuming that only one cylinder is used. This again is a representative of the urban middle and higher income groups as the others are too poor to afford it. The cost of cooking with kerosene comes to about Rs 170 and Rs 190 seems unrealistic as very few households in the rural areas and among the urban poor can afford to purchase 20 litres of kerosene from PDS leaving alone the question whether they have access to that particular amount or not. Thus Kerosene too, is accessed by the urban and rural rich who are able to pay the price, whether it is from PDS or the black market. In the advent of no price subsidy, it would cost Rs 310 to Rs 350 per month to cook with kerosene and Rs 470 to use LPG. In such a case there would be a steeper reverse trend of consumption among the poor towards biomass fuel. Thus the concern of the

GOI to induce a fuel shift among the poor to mitigate the serious health problems would face a total fall through.

The subsidy structure
The subsidies were scheduled to come down significantly by the time of down stream petroleum sector deregulation in April 2002, but partly on account of the recent high international prices, the subsidy phase down has fallen behind schedule. In fiscal 2002-2003, these subsidies, which previously have been managed through cross subsidies from other petroleum products using the Oil Pool Account (OPA) were made explicit for the first time in the national budget. For LPG and kerosene, the Ministry of Finance (MoF) allocated Rs 45 billion. Due to rising international prices, the actual subsidy was much higher at more than Rs 100 billion, of which the government outflow was Rs 63 billion (Business Standard 2003a). The short fall was picked up by four state oil companies (Business Standard 2003b). The government has picked the explicit subsidy to Rs 81 billion for fiscal 2003-2004 (Business Standard 2003c).

The present price subsidies for kerosene and LPG continue to be fiscally unsustainable as illustrated by the need to virtually double the initially planned subsidy amount in fiscal 2002-03 and to increase by 60% the subsidy allocation for fiscal 2003-04. These subsidies bear large opportunity costs. The subsidy figure of Rs 63 billion for fiscal 2002-03 was of the same order of magnitude as the entire central government's spending on education. The subsidies appear seriously mistargeted. The price subsidy for LPG accrues disproportionately to the rich: three fourth of the subsidy went to urban households in 1999-2000, four fifths of whom were in the top half of the population by expenditure (Rajakutty et al). The kerosene subsidy appears to

---

16 In a gazette Notification in November 1997, the GOI set a timetable for the staged phased down of subsidies on kerosene and LPG
carry a large leakage: as much as half of the subsidised kerosene in 1999-2000 is estimated to have been diverted to the black market of other sectors most prominently in the automotive diesel sector at a cost to the central government of Rs 40 billion. The consumption of subsidised kerosene that reaches households is at least distributed more or less uniformly across income groups. It can thus be concluded that subsidies for either fuel is ineffective in promoting equitable access (Petroleum Economics Limited)

*Household energy use patterns*

In Rural areas biomass fuel use is prevalent across all income groups and remained virtually unchanged between 1993-94 and 1999-2000, with more than 90% of rural households using wood, dung or both. Mirroring the findings in other countries, wood consumption rises with increasing income among rural households so that increasing income alone would not necessarily help to reduce wood use for some time (NSS, 50th and 55th rounds). Close to 60% of all rural households were using cash – free wood in 1999-2000. In contrast, the use of LPG and kerosene as the primary cooking fuel was essentially non existent among rural households in 1999-2000; this applies across all income groups with the exception of the richest ten percent. In short, supply conditions in rural areas favour the use of biomass cooking because of its low labour costs and ready availability. This suggests that the effectiveness of fiscal instruments such as changing relative fuel prices or increasing income relative to fuel prices, in promoting a switch from traditional biomass to petroleum fuel in rural areas would have serious limitations.
From the above Diagram it is evident that firewood dominated as cooking fuel in the rural households, with dung coming a distant second. The use of LPG and Kerosene was small, even in 1999 - 2000. In urban areas over the same period, biomass use declined markedly and kerosene consumption also fell slightly largely in favour of LPG. In 1999-2000 one fifth of all urban households were still using biomass as the primary fuel. The percentage of urban households relying on cash free wood was a mere 7%. About one fifth of urban households on an average spent Rs 100 per month to purchase wood. One sixth of households used purchased wood as their primary cooking fuel. They paid on an average Rs 137 per month for wood, kerosene and LPG, compared to Rs 176 per month spent by those who used LPG as the primary cooking fuel. They were also on an average poorer than those who cooked with LPG. At the same time, there are families in the lower expenditure groups that cook primarily with LPG and families in the upper groups that
cook mainly with purchased. This illustrate the factors other than price and affordability, most prominently supply constrains, play an important role in household fuel choice. With continuing urbanisation and the increasing scarcity of biomass driving up the market price of fuel wood more and more urban households purchasing wood for cash are expected to opt for cleaner and more convenient fuel, provided there is an efficient and well functioning down stream petroleum market with competitive prices and no supply constrains.

Fig 5.4
Most rural households and many urban households use multiple energy sources for cooking and lighting. According to NSSO data, many households use modest quantities of kerosene for cooking, augmenting this kerosene with some use of biomass fuels. Other studies, in India and elsewhere, support the observation that traditional and modern fuels increasingly coexist in the household energy mix. The social benefits, such as health and time savings for women and children, of partial fuel switching — whereby wood continues to be used and only partially substituted by cleaner fuels — need to be better understood. Specifically, the health benefits of the smoke-free indoor environment that is achieved by total fuel switching from traditional biomass are likely to be compromised by partial fuel switching, but the exact effects of different combinations of fuel and stove technologies are hardly known. The benefit in terms of time savings, however, is broadly in line with the amount of biomass used, and accrues to women with even partial fuel switching. To the extent that partial fuels switch is the first step towards a complete one and may accelerate the process, efforts to promote the switch may be justifiable even though their immediate social benefits be limited.

Fig 5.5

Allocation of Kerosene to the States (Metric tonnes)

Source: Oil Co-ordination Committee
petroleum fuels (especially the urban middle and higher classes). Schemes such as instalment plans to cover the cylinder deposit fee have been tried in the past by private LPG marketers in urban India and have been helpful; they have however not lasted long, because private marketers cannot compete with the state oil companies selling heavily subsidised LPG.

Thus it can safely be concluded that as and when the subsidy phase-down takes place and the opening of the down stream petroleum market is in place allowing the private marketers to step in, the already pathetic condition of the poor, as is evident from the current situation, is further worsened. Yet market innovation is required, subsidy reduction is a necessity especially post 1990, but naturally with an eye on the poor, especially the rural poor. The World Bank essentially feels opposed to this idea wherein they quite vociferously argue for opening up of the rural petroleum market even when they are advocating for access to clean fuel by the poor.


*Integrated Energy Policy*

In August 2006, the Planning Commission of India came out with the 'Integrated Energy Policy'. For the first time the government is looking at the entire gamut of what constitutes the term Energy. For a long time energy was often synonymous with power or rather electricity and attention was, therefore, largely limited to this sector. As a result the other forms of energy were neglected. It is only in the last couple of years, with the rising pollution problems and health hazards that the government has realised the need for a focussed attention on all the sectors of the economy needing energy and how best to provide it.

The broad idea behind the energy policy is to meet the demand for energy across all sections, trans India, in a least cost technically efficient manner. In
other words, it aims at providing energy security to all. Meeting this vision would mean that the government explores all available options, not only conventional but non-conventional as well using the newest and most efficient forms of technology.

The Integrated Energy Policy examines the issues from the point of view of energy requirements and supply options, and attempts to address issues of energy security. The per capita level of energy consumption in India is half of that in China and one-third the world average. GDP per capita and energy consumption have a close correlation and, therefore, energy needs are likely to rise dramatically as the economy grows at 7-8 per cent a year.

The elasticity of total primary commercial energy consumption is around 0.82 for India, consistent with cross-country regression figures. In addressing energy policy issues, the report attempts to move away from the traditional approach of determining optimal supply strategy with quantitative targets.

The report takes a broader approach of recommending an enabling environment such that the relative economics of alternatives are left to the combination of technology and prices, and choices are left to the economic decision takers. As such, the document recommends broad policy alternatives, and has to be viewed against this context.

The commercial energy requirements have been estimated to the year 2031-32, assuming a population of 1,468 million at that time. At a seven per cent rate of growth, GDP would be over 5.5 times that of today and, at eight per cent growth, over seven times. The scenarios depict a four- to five-fold growth in energy consumption, with electricity requirements going up from 633 BkWhr to over 3,000 BkWhr, requiring a five to six-fold increase in installed generating capacity from 1,31,000 MW in 2003-2004.
This increase is expected to come from an increase in hydro from 75 BkWhr to 500 BkWhr, nuclear from 18 BkWhr to 441 BkWhr, with coal-based energy generation projected at 78 per cent of energy demand in 2031-32 and gas-based generation set to increase to 20 per cent from the current 12 per cent.

The estimates for domestic energy have been projected assuming that the pattern of fuel use for a particular monthly per capita consumption expenditure class remains the same as observed in the last NSS survey. The projections continue to show a heavy dependence on traditional fuels, such as firewood and dung cake, of around 62 per cent in 2031-32 (down from around 81 per cent currently).

The interesting numbers are that crude oil use is expected to increase from around 105 million tonnes in 2001 to a 264-324 MT in 2024-25; demand for natural gas is estimated to grow from 62 million metric standard cubic metres per day (MMSCMD) in 2001 to 195-225 MMSCMD in 2025, and demand for coal, from 473 Mte in 2006-07 to over 1,100 Mte in 2024-25.

The scenario summary — given a range of alternatives, including coal-dominant, forced hydro and forced nuclear scenarios — indicates that the fuel mix in 2031-32 could vary between 42 per cent and 65 per cent for coal, and go up to a maximum of 6 per cent for nuclear and 4 per cent for hydro. Oil would be in the 28-33 per cent range of the fuel mix, and natural gas between 7 per cent and 12 per cent.

There is emphasis on realisation of the full potential of hydro-energy and fast growth in nuclear energy. Hydro potential for India has been estimated at 1,50,000 MW, and the report recommends its realisation. Nuclear energy is recommended to grow times to meet over 6 per cent of primary energy requirements by 2031-32.
The real concerns in the study emerge in the supply side. Given that transportation fuels for aviation, ships and road transport are likely to depend heavily on petroleum products, and that the growth of urbanisation would increase LPG and kerosene use significantly, there is only limited flexibility in substitution of petroleum products.

The best estimates of domestic oil production in 2025 do not exceed 50 Mte; therefore, imports would have to increase from around 80 Mte of crude currently, to over 200 Mte in 2025. The world pumps around 87 million barrels of oil daily, and our total annual imports of crude are equivalent to around a week of global crude production, or less than two per cent of traded oil. Recent estimates, including testimonies accepted by the US House of Representatives from experts as late as December 2005, indicate that while global oil production is unlikely to peak for the next 20 years, the supply is likely to increase 25 per cent per day by 2015. The draft report envisages that, even in the low-growth scenario, Indian imports would have to double by 2015. This raises serious concerns about availability as well as prices.

This is true for natural gas as well. Global production is growing at around two per cent per annum, and there are no signals that this rate of growth would accelerate in the next decade. Yet the natural gas demand has been projected to double by 2015, and the availability of this fuel would be constrained.

The worries about coal, the base fuel of the report, are even more serious. Of the total global coal production of 4 billion tonnes per annum, coal trade is of the order of 700 million tonnes. The requirement of coal as per the projections increases from 415 million tonnes in 2004-2005 to 2700 million tonnes in 2031-32, that is, in volume terms, 68 per cent of global production and nearly four times the current volume of global trade.
Even in a scenario where there is full development of hydro and acceleration of nuclear generation, the demand for coal is 2,100 million tonnes per annum in 2031. Given extractable indigenous coal and lignite reserves of around 14,000 million tonnes, this represents around seven years domestic availability, nor is it likely that global production and trade would grow to an extent that a reasonable management of own resources could be supplemented by adequate imports.

The heavy reliance in the report on market mechanisms to arrive at an optimal policy mix do not seem to have adequately taken note of the above global supply side limitations. Further, there are already distortions in the fuel price market, in terms of inefficient, labour-intensive coal production, multiple prices for gas and regulated prices for petroleum products.

There are also historical factors that have resulted in industry, including steel plants, using cheaper gas — in fact, the political choice of the locus of the gas pipeline has resulted in the acceleration of a particular development along the pipeline. The report is silent about the costs of removing these distortions, and who would pay for them. The report is also silent about the investments needed to develop the massive infrastructure needed to develop the port and transport infrastructure to handle the massive imports, and whether they are to be added on to the fuel costs or to be treated as public goods. It would have been useful if the report had followed through on its premise of market management of fuel choices, had identified distortions and obstacles, and suggested solutions.

Finally, the suggestions for alternative approaches and technologies do not appear to be well argued. Efficiency of energy use in coal-fired power stations, automobiles, and in domestic use is indeed important, but it is difficult to see the steps that the report is suggesting beyond those that have been pursued all these years.
The enthusiasm about gas hydrates, hydrogen fuel, solar power and alternate energy sources has remained undiminished across many energy committee reports; and this document offers no illumination why future efforts in the country would be any different from the past. It would have been useful had the report examined why these have not taken off, and suggested changes in strategy, structures, institutions as well as approaches, from lab to use. As it stands, the reader has an apprehension that the experts are clutching at straws.

The report is an important one in that there has been an attempt to look holistically at different energy scenarios in the context of a 7-8 per cent GDP growth and has to be commended for its analysis. There are several limitations to the strategies suggested, and the worry is that it is less a policy document than one expressing wish and hope.

NATIONAL HEALTH POLICY

The previous national health policy (NHP) was adopted in 1983. Its main focus was the formulation of an integrated and comprehensive approach towards future development of health services, appropriately supported by medical education and research, with special emphasis on PHC and related support services. During the 7th five-year plan (FYP), there was considerable achievement in terms of establishment of a health infrastructure, especially in rural areas. The 8th FYP (1992-97) identified "human development" as its main focus, with health and population control listed as two of six priority objectives. It was emphasized that health facilities must reach the entire population by the end of the 8th plan. The plan also identified peoples' initiative and participation as a key element. With the enactment of the 73rd Constitutional Amendment Act (1992), Panchayati Raj Institutions (PRIs) were revitalized and a process of democratic decentralization ushered in, with
similar provisions made for urban local bodies, municipalities and nargapalikas.

Recognizing the importance of sustainable development, a national conservation strategy and a policy statement on environment and development were formulated in 1992 to bring environmental considerations into the developmental process. Linkages were drawn between poverty, population growth and the environment. The NHP identified nutrition as a problem needing urgent attention and in 1993 a national nutrition policy was formulated with long and short-term strategies.

The vertically structured family welfare programme needed to be replaced by a more democratic, decentralized alternative. In 1994 a draft National Population policy was submitted to parliament as well as a revised report in 1996. It advocated a holistic, multisectoral approach towards population stabilization, with no targets for specific contraceptive methods except for achieving a national average total fertility rate (TFR) of 2.1 by the year 2010. This has resulted in a radical shift in implementation from centrally fixed targets to a target-free dispensation through a decentralized, participatory approach. A Population and Social Development Commission was also established in support of the population policy.

India has accepted the recommendations of the ICPD (1994) and has also ratified various international conventions for securing equal rights for women. Following the World Summit on Survival, Protection and Development of Children in 1990, India formulated a Plan of Action for Children in 1992 with actions that directly and indirectly affect child health.

Despite the commitment to 'Health for All', enormous health problems still needed to be addressed. While overall mortality has declined considerably, living standards are still among the poorest in the world. The major constraints facing the health sector were lack of resources, lack of an integrated multisectoral approach, insufficient IEC support, poor
involvement of NGOs, inadequate laboratory services, a manually operated health management information system (HMIS), poor disease surveillance and response systems, and the heavy investments needed in dealing with noncommunicable diseases. The problems of gender disparity still showed themselves in various forms, as noticed by the declining female to male population ratio, social stereotyping, violence at the domestic and social level, and continuing open discrimination against the girl child, adolescent girls and women.

Thus the period after the last National Health Plan was announced in 1983 has seen major developments in India. There has been an increase in mortality through 'life-style' diseases—diabetes, cancer and cardiovascular diseases. The increase in life expectancy has increased the requirement for geriatric care. Similarly, the increasing burden of trauma cases is also a significant public health problem. The changed circumstances relating to the health sector of the country since 1983 have generated a situation in which the government has undertaken steps to formulate a new policy framework as the National Health Policy-2002.

The draft NHP-2001 attempts to set out a new policy framework for the accelerated achievement of Public health goals in the socio-economic circumstances currently prevailing in the country.

The immediate objective as put forward by the NHP, 2002, was to address the unmet needs of contraception, health infrastructure, and provide health service delivery to reproductive and child health care. The mid term goals concentrated on bringing down TFR. The long term goals are to achieve population stabilization by 2045. The NHP, 2002, lie all the previous policy formulations seems to be obsessed with family planning. To meet these objectives several smaller goals have been formulated like promoting delayed age of marriage among girls, contain the spread of AIDS, prevention and control of communicable diseases etc, other goals again thrust at population
reduction. To fulfill these goals and objectives the Government of India has come up with certain promotional and motivational measures, which, will provide different women's organizations and panchayats to receive benefits and awards if they are able to implement the various measures of population control. The only different and new aspect introduced in this Plan was the introduction of Health insurance for the below poverty line couple. This too have population control adage, whereby, only those couples are eligible who have two or less than two children. For the first time some mention has been made of the slums where crèches and childcare centres will be opened.

The 74th Constitutional Amendment Act has been roped in to provide support to the NHP 2002 to achieve the national Socio-demographic goals by 2010, whereby measures have been adopted to provide convergence of health care delivery at village levels, empowering women for improved health and nutritional care, child survival and health care and many more.

The UPA government came up with the national minimum needs programme in 2005 wit an aim at providing overall development to the economy in all sectors. This programme too, in its section of health and education did not provide any clear guidelines as to how to reduce the many problems plaguing the health of its citizens, instead it goes on to empower different institutional bodies to look into these matters. But it introduces the idea of health insurance for farmers for the first time. The programme also, invests in giving more legal power to the women through panchayats and other women bodies.

National Slum Policy, National Urban Housing and Habitat Policy, (NHHP), and Jawaharlal Nehru National Urban Renewal Mission, (JNNURM).

The Ministry of Urban Affairs and Employment have in 1999, brought out a National Slum Policy (draft) to tackle the slum issue at the national level. The National Housing Policy, 1988, could not achieve much though it aimed
at creating favourable conditions for the urban poor to own the squatted and
develop the structure on it. Moreover the document fails to provide an easy,
clear and specific implementation structure. It has come up with a feel good
all encompassing optimism. Since the draft slum policy is framed within the
74th CAA, maybe it was thought that the urban local bodies would be able to
do the required in terms of decision making, planning and intervention and
resource mobilisation. This makes the policy slightly unrealistic and
therefore it is doubtful whether many of the aspects outlined can ever be
operational. The policy mentions the role of private agencies to in the
provision of these amenities. But here too like in the rest of the document
there is a lack of monitoring precision, which can be seen from the falling
through of the ‘one million free housing scheme’ of the Maharashtra
government where private builders were involved.

NSSO's Survey in 2002 reveals that there are about 52,000 slums which hold
8 million urban households, representing 14% of the total urban population,
and only half the poor - the others live on the streets. About 65 per cent of the
slums were built on public land owned mostly by local bodies, state
governments, etc. Infrastructure facilities are atrocious: only 15% of these
households have drinking water, electricity and latrines in their premises.
Less than 25% of them have sanitation systems. The housing stock shortage
in India is around 20 million, of which 50% is urban: of this, 70% - 80% is in
the low-income segment. Adequacy of housing is directly linked to magnitude
of poverty. Poor lack housing in terms of tenure, structure and access to
services. As per Planning Commission (1999-2000) estimate, 23.6% of urban
population in India lives below poverty line. There is a strong correlation
between slum and poverty. As per Planning Commission estimation 67.1
million urban population in 1999-2000 lived below poverty line whereas the
population living in slums in 2001 has been estimated by TCPO at 61.8
million. Therefore, adequate access to shelter and habitat is also linked to
state of poverty. In quantitative terms, access to basic amenities in urban areas reflects 9% deficiency in drinking water, 26% in latrine and 23% in drainage (Census of India, 2001). However, the gap in qualitative terms could be much higher.

Urban land is all about a power play of money and the slum dwellers are the losers. However, the story needs to be understood against a larger tapestry of two other developments: one, the increasing urbanisation of India, with a projected 600 million residents by 2030; and two, the booming housing finance market, which has gone from a Rs 10,000 crore industry barely five years ago to one that is touching Rs 100,000 crores\textsuperscript{18}. Thus there is an increases slum demolition drive mainly in the cities of Bombay and Delhi where land prices increase in leaps and bounds and the housing finance companies do not service the low income market.

The NHHP was launched by the government in 2005, to address all these problems and takes note of shelter conditions, access to services and opportunities for income and employment generation with particular reference to poor. It also examines the importance of sustainable urban structure which is able to (i) absorb urban population with suitable access to shelter, services and employment opportunities and (ii) also able to serve as service centre to their vast hinterland.

The NHHP is seen as a follow up of the different public sector interventions and related developments which began with the Economic Liberalization Policy of 1991, National Housing Policy, 1994, National Housing & Habitat Policy, 1998 and follow up of 74th Constitution Amendment of 1992.

This policy takes note of Government’s special focus on shelter for all and development of related infrastructure with a particular reference to poor and

\textsuperscript{18} www.indiatogether.org

198
promotion of economic development, quality of life and safe environment. In this regard, Government of India has initiated JNNURM in 2006, (National Urban Renewal Mission) with the objective to accelerate the supply of land, shelter and infrastructure taking into account the requirements of economic development with a particular reference to balanced regional development, poverty alleviation and rapid economic development. The JNNURM with the annual outlay of approximately Rs.18350 crores in 2005-06 would support 63 cities (7 mega cities, 28 metro cities and 28 category 'C' cities) across the country in terms of investments into infrastructure gaps, taking the urban system from a non-conforming state to a conforming state with proper planning and all urban infrastructure in place – having roads, water, sanitation, sewerage, etc. after removing deficiencies\(^\text{19}\). The Mission's approach will be reform based with releases being made subject to specified reform agenda. It will encourage private sector participation with the Government providing viability gap funding through the Mission to such housing and urban infrastructure projects. In addition to these 63 cities, urban infrastructure and slums would also be addressed in the remaining Non-Mission cities through specific programmes/schemes which will also be reform based. The mission will focus attention on the integrated development of infrastructural services and provide basic services to the urban poor, which include security of land tenure at affordable prices and improved housing water supply and sanitation.

The NHHP and the JNNURM are the first of its kind to actively focus on the problems of the urban poor with much structured and decisive goals. All these three documents discussed in the previous paragraphs essentially concentrate upon housing and civic amenities and their improvements. Yet none of them concentrated upon the removing the cause of these several problems and that is mainly, a lack of awareness among the dwellers.

\(^{19}\) JNNURM, submission on Basic Services to the Urban Poor (BSUP), Ministry of Urban Employment and Poverty Alleviation, January 2006
Removing this will make it easier for the different policies to actually be implemented and their rewards would be certainly worthwhile. It is still early moments to find out about the reality pictures of the efficacy of the later two policies.

The NHP, 2002, on the other hand has already been implemented and leaves a lot to be desired. The country, today, is at the threshold of another transition which will see some changes in regimes of regulation, price control, quality assurance, rationality in practice and so on. The opening up of private health insurance will bring in new rules of the game, enabling providers to meet their own profit motives. While this may, to an extent, improve quality and accountability, it will be of little help to the poor and underserved who are unlikely to have access to this system. Worldwide experience shows that private insurance only pushes up costs and serves the interests of the 'haves'. If equity in access to basic health care must remain the goal, the state cannot abdicate its responsibility in the social sectors.

While a major reorganisation of the health sector will take its own time, certain positive changes are possible within the existing set up through macro policy initiatives.

The quality of care provided by hospitals and practitioners should be regulated by laying down minimum standards to be followed. A compulsory health insurance for the organised sector employees should be put in place (restructuring the existing ESIIs and merging them with the common national health care system where each employee enjoys equal rights and cover but contributes as per earning capacity).

There is an urgent need to strengthen, restructure and reorient public health services. The urban bias in medical care provision by the state needs to be corrected. The primary health centres (PHCs) and subcentres (SCs) need to be thoroughly reoriented to meet peoples’ needs of medical care and not be
obsessed with family planning alone. Facilities for medical care need to be substantially enhanced at the PHCs, both in terms of personnel and supplies. While supplies can be increased through larger budgetary allocations, it is difficult to get personnel to work in the public system. Since private individual practice remains the norm, it becomes necessary to involve such practitioners to join a public sponsored health care programme. Such a system needs to be evolved both in the rural and urban areas. This would mean a five-fold increase in primary care costs which would be partly financed from within the existing resources and the remaining from the organised sectors of the economy, including insurance and special health related taxes. Of course, this would entail substantial restructuring, including stronger regulations and control and a mechanism for regular audit of the system's functioning. This is the only way of guaranteeing universal access to health care and achieving 'health for all'.

Such restructuring would not disturb the autonomy of the individual practitioner or the private hospitals except that it would strive to eliminate irrational and unnecessary practices, demand some relocation of practitioners, standardise and rationalise costs and incomes, eliminate quackery and demand accountability from the providers. The ministry of health at the Centre has shown some interest in these areas and is promoting processes geared in this direction.20

The public health sector must be made efficient, cost-effective and socially accountable. The response to the malaise of the public health services should not be to 'privatise'. We already have a large, exploitative and unsustainable private health sector. What makes the private health sector 'popular' in usage is its better access (irrespective of quality), a personalised interface, 20The central ministry of health has appointed panels of experts to look into quality of care, systems for accreditation etc. and this is a positive beginning towards development of minimum standards for quality care.
availability at convenience, and its non-bureaucratic nature. The public health services by contrast are bureaucratic, with poor access, especially in rural areas, have inconvenient timings, are generally impersonal, often don't have requisite supplies like drugs, and are plagued corruption.

There is substantial scope for improvement of public health services with better planning, reallocation of existing resources as well as pumping in additional resources — especially for non-salary expenditures, reducing wastage and improving efficiency by better management practices and separation of primary, secondary and tertiary care through setting up of referral systems, improving working conditions of employees and so on.

One good way of enhancing the value, efficiency and effectiveness of the existing system using available resources is to ensure that all medical graduates who pass out of public medical schools (80% of all graduates every year) serve in the public system for say at least five years with out which they should be denied the licence to practice as well as admission for postgraduate studies. After all the state spends about Rs 1,000,000 per medical graduate!21 This measure, if enacted by law, will itself make available 14,000 doctors of modern medicine every year for the public health care system.

Further, public health services must be made accountable to the local communities they serve. The community must perform both the role of social audit as well as take responsibility for ensuring that the system works properly for the benefit of patients. As regards the private health sector, as mentioned above, there is an urgent need to regulate it, implement minimum standards of care, standardise charges, frame policies for location and distribution and so on. All these are feasible proposals which could be undertaken irrespective of the structural changes suggested in the preceding paragraphs.

---

21 This has been estimated from the Maharashtra government's ministry of health budget from the sub-head on teaching hospitals. It is the net cost to the government to train a medical graduate for five years at current prices.
While the public sector is funded through tax revenues the private sector relies on fee-for-services. There is a growing trend of thought favouring at least partial user-charges or fee-for-services for public health services. This trend must be countered as in the given socio-economic conditions such a policy would hit the majority hard. The WHO has been firm about nations spending 5% of GDP on health care. In India the state doesn’t spend even 1% (Pegged at 0.9%)

5.5 Recommendations
For health policy planning
The first effort, therefore, must be to get the state to commit a much larger share for the health sector from existing resources. Additional revenues specifically for health budgets may be collected on the lines of a profession tax in some states which funds employment programmes; levies and cesses for health could be collected by local bodies; employers in the organised sector must be made to contribute for health care services; those with a capacity to pay like organised sector employees, the middle and rich peasantry (so far completely untaxed), and other self-employed, must do so through insurance and other pre-payment programmes.

In a vast and varied country like India no single system can work. What we need is a combination of social insurance for the poor (premia paid by the state), employment related insurance for the organised sector employees, voluntary insurance for other categories who can afford to pay, and tax and related revenues. Further, payments at the point of provision of care must be eliminated as they are usually unfavourable to patients. Payments must be made to providers by a monopoly buyer/s of health services who can also command certain standard practices and maintain a minimum quality of care; payments could be made in a variety of ways such as capitation or fixed charges for a standard regimen of services, and fee-for-service as per standardised rates.

The above changes, though feasible, are not going to be easy to achieve. The government does not view health care as a major political concern and hence
does not see the need for any drastic reforms in the health sector. The private health sector is happy with the government’s unconcern about the manner in which it operates. Yet there is hope because pressures are building up from below. The Consumer Protection Act delivered the first shock to the private health sector thereby forcing a realisation that they cannot ride roughshod over their clients. The government too needs to be administered such shock therapy; this may be just round the corner.

For energy policy planning
There remains a need for a longer-term strategy to ensure a more sustainable supply of energy to urban poor areas as the rural poor continue to migrate to the cities. To date there has been very limited development in this field, and there are few mature, viable sustainable energy technologies readily available, in particular for cooking. To achieve a sustainable energy supply in urban areas, innovations need to be investigated, and the most effective ones then scaled up. LPG and cleaner biomass fuels will in the long run be just a transition towards full sustainability in a proper planned manner.

Some mitigating options that could be explored and which have not been mentioned in the IEP are that energy needs to be put at the heart of poverty reduction strategies and it should be made a part of the five year plans; that the government needs to provide options in the form of soft loans or subsidies or grants or even free distribution of connections (stoves and burners) to the urban poor to facilitate the shift to clean household fuel; the government if unable to shoulder the responsibility of making fuel accessible to the poor, they should rope in private partner and make it mandatory for them to shoulder some social responsibilities; another option could be to rope in the poor themselves and make them responsible stakeholders in the switch recommended.