

MicroSave India Focus Note#127

Behavioural Biases Affecting Buying Behaviour of Kerosene Consumers for Alternate Fuels

Aishwarya Singh, Alekh Sanghera and Ritesh Rautela
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Kerosene is a distillate petroleum product that serves as a primary source of fuel for [lighting and cooking amongst a large proportion of rural households](#). Subsidised kerosene is distributed to eligible consumers through a network of government-appointed Fair Price Shops (FPSs). According to the Economic Survey (2014–15), this Public Distribution System (PDS) for kerosene is [prone to both leakages and black marketing](#). Furthermore, kerosene has an adverse impact on the health of users and others living nearby. As a result, the Government of India is considering replacing [kerosene with Direct Benefit Transfer \(DBT\) of cash into consumers' bank accounts](#). Under the proposed DBT model, consumers will receive a lump sum credited in their bank account, equivalent to the value of kerosene subsidy currently paid by the Government.¹ In addition to reducing leakages, the government expects that DBT may encourage consumers to shift from kerosene to cleaner [alternate fuels \(AF\)](#), such as solar energy and electricity (or battery-operated lights), for both lighting and cooking.²

MicroSave conducted a [dipstick study](#) in four districts (in four states) with PDS consumers. The research found that even if DBTs are paid, the majority of consumers would continue using kerosene. As a follow-up to this study, we conducted exploratory research³ to understand the 'enabling factors' that might induce consumers to buy and use alternate fuels in the event of DBT. The research specifically looked at: "What will make kerosene consumers use DBT to buy alternate fuel(s)?"

We looked at why and how consumers buy kerosene for lighting only, as kerosene is rarely used for cooking. ([According to a recent survey by National Sample Survey Organisation \(NSSO\), only 1 per cent of rural households use kerosene for cooking.](#)) It should, however, be noted that many of the remaining 99% of consumers use kerosene to ignite other cooking fuel(s), such as dung-cakes and wood.

The research was conducted using the [behavioural economics and 'user-centred research' approach](#) of MicroSave's [Market Insights for Innovation and Design \(MI4ID\)](#) toolkit. This note discusses our research findings.

From the research, we understand that:

1. Kerosene consumers⁴ who have used one or the other alternate fuel(s) (often, occasionally, and parsimoniously), will use an alternate fuel depending upon its affordability and availability in the market.
2. Kerosene consumers who have never used any type of alternate fuel might use alternate fuels – but this primarily depends on whether anyone else in their village is using these alternates, and their experience with them.

Based on this, we looked at kerosene consumers as prospective users and non-users of AFs. We categorised them as under.

Particulars	Used AF at least once	Never used an AF
Aware of AF	User	Non-User 2
Not aware of AF	Does not exist	Non-User 1

Based on the above categorisation, we examined the buying behaviour for three types of consumers:

1. **Non-User 1:** A non-user 1 does not have any experience of using AFs. Further, nobody in his/her village has an experience of using AFs.
2. **Non-User 2:** A non-user 2 does not have any experience of using AFs. However, he/she is aware of at least one type of AF, as other consumers in his/her village use some AFs.
3. **User:** A user has some experience of using at least one type of AF. Further, the user does not use AFs regularly and still prefers to buy kerosene.

All three types of consumers use the kerosene they receive from FPSs within 10 to 15 days. They thus have an unmet requirement/demand for kerosene or other fuel for the remaining days of the month. Different consumers meet this shortfall in different ways, largely based on their experience of using alternate and traditional fuels. These are analysed below.

¹ The kerosene subsidy as announced by GOI for FY 2015-16 is INR 12 per litre

² Alternate fuels (AF), known as non-conventional fuels, are any materials or substances that can be used as fuels, other than conventional fuels, such as fossil fuels (petroleum (oil), coal, and natural gas). Some examples of AF are solar products, LED (battery operated), LPG, biogas, etc.

³ The research was conducted in Lucknow, Unnao & Barabanki districts of UP.

⁴ A total of 52 respondents were covered. Out of these 27% neither used any type of AF, nor are they aware of the same; 35% never used any AF but they are aware of at least one type of AF, and 38% have experience of using at least one type of AF.

Buying behaviour in absence of kerosene availability at FPS

1. Non-User 1

Non-user 1 typically prefers to buy kerosene from the black market. If kerosene is not available on the black market, he/she buys diesel to meet the demand.

- Non-user 1 is not aware of the existence and availability of AFs, because no one in his/her village or vicinity uses any AF. Non-user 1 thus never explores or wants to look for AF options. As a result, he/she continues with his existing behaviour (maintains his *status quo*) purchasing kerosene from the black market or diesel.

2. Non-User 2

Non-user 2 also prefers to buy kerosene from the black market. If kerosene is not available, he/she buys diesel to meet the monthly shortfall. However, factors affecting the buying behaviour of non-user 2 are different from those for non-user 1.

- Since non-user 2 is in the habit of using kerosene for lighting, he displays inertia or *status quo* with respect to using kerosene. He/she does not want to change to other sources as long as he/she can access kerosene.
- Information regarding AFs is not easily available. While they know that some people use AFs, non-user 2 typically does not make efforts to find out more. Lack of information thus deters most non-users 2 to switch to an AF.
- A few non-users 2 do enquire about AFs. The information they receive leads them to believe that AFs are expensive. This happens because: (1) They see a select group of (typically better-off) people using AFs. Thus non-user 2 follows the *stereotype* that only the economically well-off people in his/her village use AFs. (2) They do not receive adequate, accurate and authentic information about AFs, especially with regard to price and government subsidies (which are only available for micro grids (for a village) and home lighting systems but not on individual solar lanterns. The current price of AFs serve as a deterrent (as highlighted in Table 1).

3. User

'User' is observed to use AFs occasionally and/or parsimoniously. He/she also supplements to meet fuel needs by purchasing kerosene from FPS or market. Hence, user is consuming a combination of traditional fuels and AFs to meet his/her monthly requirement.

- 'User' prefers to buy the cheapest fuel(s). Although users are well aware of detrimental effects of using kerosene and diesel, the low price of traditional fuel(s) is more salient than the health benefits associated with AFs. The cost of kerosene/diesel acts as an *anchor* reference point, which is used to assess the price of any AFs, which then appear an expensive option.

- While buying fuel(s), user tends to look at its price and *discounts* the long term benefits (of health) associated with AFs. The user's *present bias* for meeting his/her lighting needs at lower cost appears to outweigh the benefits of AFs; even though AFs may be available at a cost equivalent to user's *annual expenditure* on traditional fuel(s). Table 1 provides indicative prices of all fuel sources/options available in the market for this consumer segment.

Table 1: Price of available fuels in the market

Fuel Source	Price (INR)	Price (USD)
Kerosene from FPS (3 litres)	48	0.71
Kerosene from black market (3 litres)	120	1.76
Diesel (3 litres)	150	2.20
LED bulb with battery	>=400	>=5.88
Solar lantern	>=750	>=11.02

- User's habit of using kerosene for lighting is deep rooted, and since it is mostly seen as economical (affordable) and also easily available in the market, a complete shift to AFs is not easy for the consumers.
- Solar products and LED, though available in the market, are often of poor quality and make. Users often face challenges⁵ to get them repaired.

Conclusion

The study indicates that, contrary to initial expectations and hopes, a DBT of kerosene subsidies might not necessarily lead to a shift to the use of AFs by kerosene consumers if rolled out in its current form. Given that *solar lanterns typically last for two years*, an economically rational choice would be to choose these for lighting. However, it is clear that behavioural factors will make persuading poor households to convert to AFs more complicated than anticipated.

If the Government wants kerosene consumers to shift to AFs in the event of DBT, we must find answers to these questions:

- How can the availability of AFs be improved in the nearby markets?
- How can AFs be made more affordable?
- How can both the core product and the after-sales services of AFs be made more reliable?
- How can information on the affordability and accessibility of AFs be conveyed to all?

These design challenges, if addressed, may lead to an increased usage of AFs among the current kerosene users. These challenges need to be explored further to create different prototypes for testing.

⁵ Servicing issues act as hassle factors leading to less reliance on such products.