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INDIA ENERGY SUBSIDY REVIEW

A biannual survey of energy subsidy policies

Highlights

- In fiscal year (FY) 2012-2013, the Indian Government spent INR962 billion (1.75 per cent of Indian GDP) compensating Oil Marketing Companies for retail under-recoveries accrued in this period. The Ministry of Petroleum and Natural Gas estimates that total under-recoveries could reach INR1.81 trillion in FY2013-2014, a year-on-year increase of 12 per cent from FY2012-2013.
- Since January 2013 the government has pursued a policy of incrementally increasing the retail price of diesel, with the stated aim of eliminating under-recoveries by mid-2014. Diesel prices rose 11 per cent between January and November 2013.
- Following the introduction of an initial cap on the consumption of subsidized LPG per household, the government has subsequently increased the quota twice. In mid-2013 the government began to implement a program of electronic payments for LPG subsidies in selected districts, however this was discontinued in early 2014 following legal challenges and extensive implementation problems.
- The reduction in PDS kerosene consumption has continued in 2013 as the government has retained its policy of progressively restricting supply.
- In June 2013, the government announced its intention to revise the domestic gas pricing formulae, with the potential to significantly affect input prices in key sectors and potentially increase related subsidy outlays.
- Despite increases in subsidized diesel pricing and limits on subsidized LPG consumption, currency depreciation and persistently strong international oil prices led to higher under-recoveries per unit for all subsidized fuels in the second half of 2013. As a result, total under-recoveries in FY 2013-14 are likely to equal or exceed those in 2012-13.

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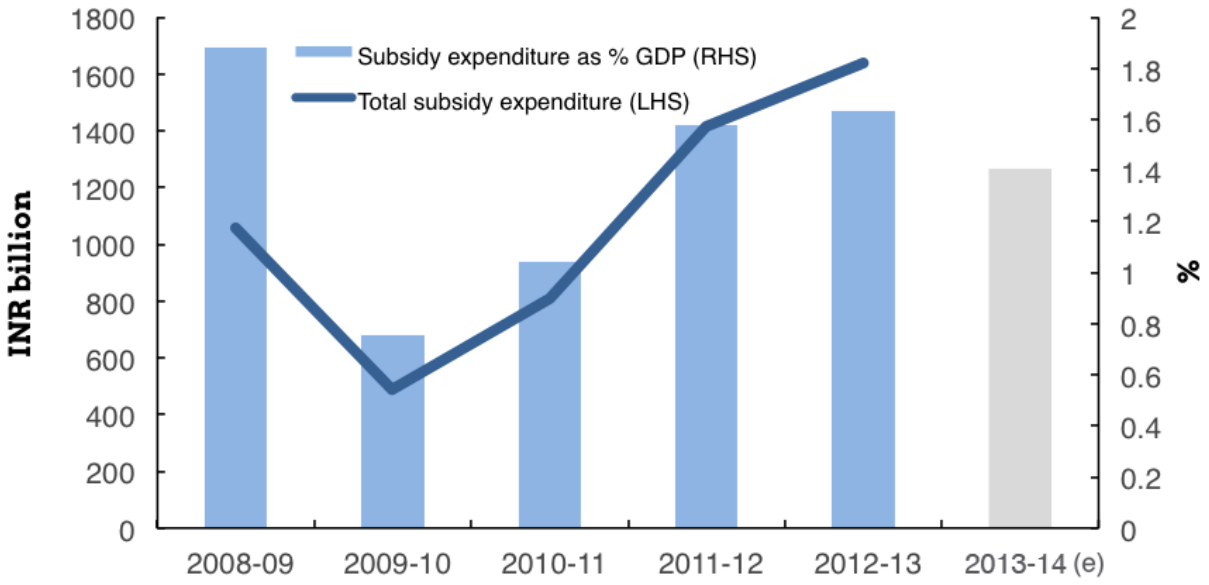
Introduction

India's fuel subsidies are a significant fiscal burden, costing on average 1.4 per cent of GDP since FY 2008 (see Figure 1). In FY 2012—2013, 13.7 per cent of India's budget expenditure[1] was allocated to fuel subsidy payments. Current fuel pricing policies encourage waste, undermine energy efficiency and increase domestic greenhouse gas emissions. They are also socially regressive, benefiting higher income groups disproportionately. For these reasons, India's fuel pricing policy merits attention.

This is the first edition of the *India Energy Subsidy Review*, a new biannual publication of the International Institute for Sustainable Development's (IISD) Global Subsidies Initiative (GSI). Part One of each edition outlines economic and policy developments affecting India's subsidized key fuel markets (diesel, liquefied petroleum gas, kerosene and natural gas), and analyses the dynamics of each market.

Part Two features analysis by guest authors on issues related to energy pricing policy. In this edition, two articles examine the impact of energy subsidy reforms on India's transport and agriculture sectors respectively. This edition of the review concludes with a commentary by Dr Kirit Parikh and Jyoti Parikh, distinguished practitioners in the field.

Figure 1 Total fuel subsidy expenditure vs. fuel subsidy expenditure as a % of GDP, FYs 2008-09—2011 through 2013—2014(e)



GDP is at Market Prices

Source: GDP for 2008 to 2013 at Market Prices from (Planning Commission, 2013a); Total Subsidy from (Ministry of Petroleum, 2013a)[2].

Part One: Recent trends in fossil-fuel pricing policy

(a) Summary of recent policy developments

Fuel subsidy policy in India has undergone significant change over the last year.

Diesel markets: The Government of India has pursued a policy of incremental monthly price increases since January 2013, with the stated aim of decontrolling diesel prices by mid-2014 (Jaiswal, 2013). So far, the government has largely met its commitment to increase diesel prices by INR 0.5 per month, with prices rising 12.63 per cent from INR 47.65 to INR 53.67 (USD 0.76 to USD 0.85)[3] between January and December 2013[4] (PPAC, 2013).

LPG markets: In September 2012, the government introduced a cap on the consumption of subsidized LPG cylinders, allowing households with an LPG connection to purchase a maximum of six cylinders per annum at subsidized rates. This quota was then increased to nine in January 2013, and recently further increased to 12 per household in January 2014. In May 2013 the government began to implement a program of electronic payments (Direct Benefit Transfer (or DBT)) for LPG subsidies in selected districts, however this was discontinued in January 2014 following legal challenges and extensive implementation problems. Beyond amendments to dealer fees, there has been no change in the pricing of subsidized LPG as part of the recent package of reforms.

Kerosene markets: The reduction in PDS kerosene consumption has continued in the past year as the government has retained its policy of progressively restricting supply. Prior to the collapse of the DBT program for LPG, the government had proposed the introduction of electronic payments for kerosene subsidies, however this was not adopted following concerns raised by several state governments (which are responsible for kerosene distribution within the Public Distribution System). As in LPG markets, there has been no change in the pricing of subsidized kerosene as part of the recent package of reforms.

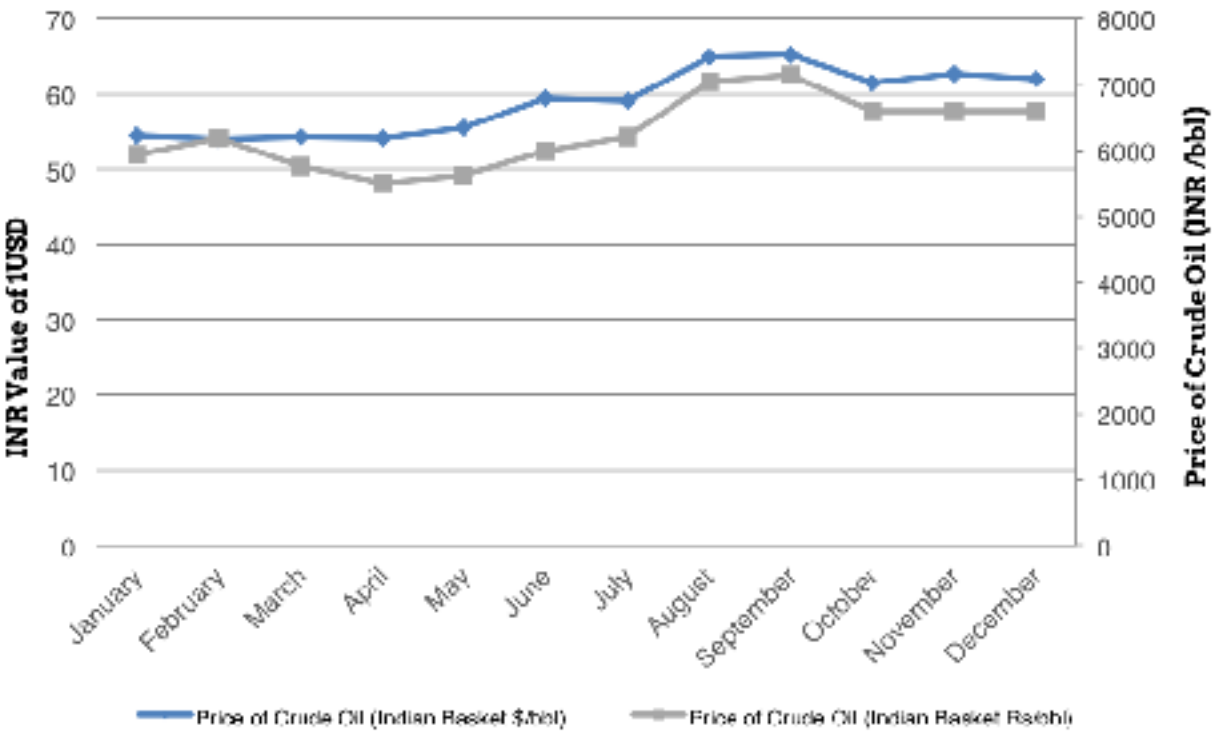
Natural gas markets: In June 2013 the government changed the domestic downstream gas pricing formula for five years, which may lead to a doubling of gas prices from April 2014. The new formula is the weighted average of imported gas prices and prices at three international gas trading points: Henry Hub (North America), National Balancing Point (United Kingdom) and the Japanese wellhead price. This price reform has been the subject of extensive domestic controversy, with several public actors alleging that it will generate substantial windfall profits for India's main privately-owned natural gas producer, Reliance Industries Ltd, and potentially increase total energy subsidy costs.

(b) Overview of current fuel subsidy expenditure

With international crude prices denominated in US dollars, the combination of higher oil prices and a weaker rupee increases the rupee-denominated gap between market-based cost prices and controlled retail prices. As a result, under-recoveries per litre have remained persistently high, even as Indian retail fuel prices have risen (for diesel, see Figure 8 and 7) and subsidy distribution has been restricted (in the case of LPG). For example, despite price appreciation of close to 10 per cent between April and September 2013 (see Figure 8), diesel under-recoveries per litre increased 126 per cent[5] . This trend has, however, reversed as the value of the rupee stabilized.

Nonetheless, under-recoveries for the three subsidized fuels have fallen for much of 2013 compared to 2012 (see Figure 3, 4). In FY 2012—2013, the Indian Government spent INR 1000 billion (USD 16 billion which is 1.75 per cent of GDP) compensating oil marketing companies (OMCs) for retail under-recoveries accrued in this period (see Figure 5). For FY 2013—2014, current budget estimates for Central Government expenditure on subsidy-related compensation to OMCs is INR 650 billion (USD 10.4 billion) (Ministry of Finance, 2013); The government has, however, already provided INR 80 billion (USD 12.8 billion) in the first quarter of FY 2013—2014 to partially compensate OMCs for under-recoveries (Hindu, 2013a). Total under-recoveries on diesel, LPG and kerosene amounted to INR 609 billion (USD 9.74) (PPAC, 2014) for the first half of FY 2013—2014, compared with INR 855 billion (USD 13.68 billion) in FY 2012—2013 (PIB, 2013a).

Figure 2: Indian basket crude – INR price, 2013



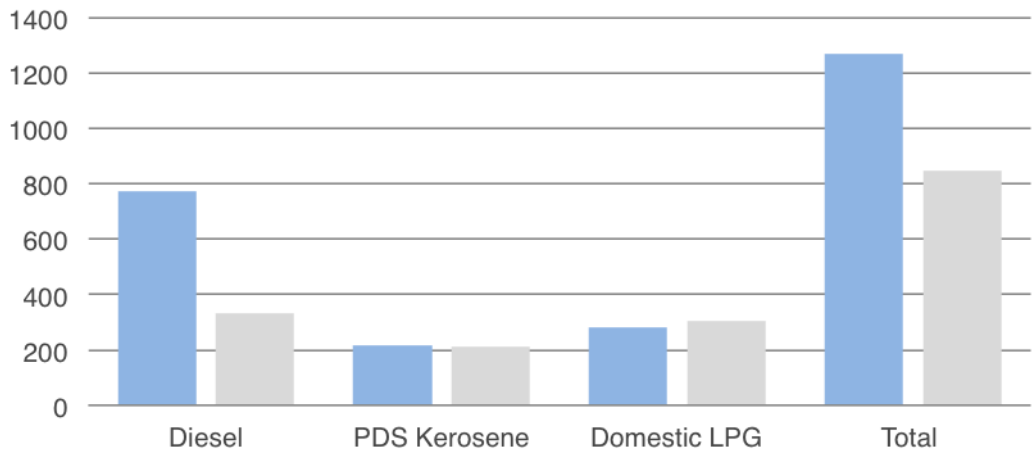
Source: Price of Crude Oil Basket (PPAC, 2013); Exchange Rate (Bank of England)

Figure 3: Under-recovery by fuel FY 2012-13 and 2013-14

Under Recovery in INR Billion	Jan - March		Apr - Jun		Jul - Sep	
Year	**2012**	**2013**	**2012**	**2013**	**2012**	**2013**
Diesel	244.6	182.46	290.42	105.54	236.69	46
PDS Kerosene	72.87	75.19	72.74	65.07	70.57	70
Domestic LPG	94.81	104.1	114.95	85.18	70.49	115.36
Total	412.28	361.75	478.11	255.79	377.75	231.33

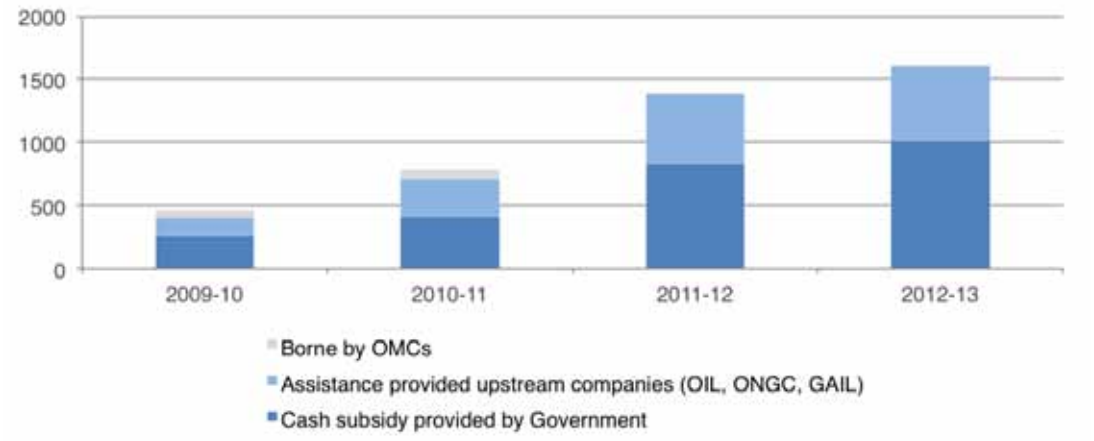
Source: (Press Information Bureau, 2014)

Figure 4: Under-recovery, total and by fuel, 2012—13 and 2013—14(e)



Source: (Press Information Bureau, 2014)

Figure 5: Under-recovery burden sharing (INR billion), 2009-10 – 2012-13

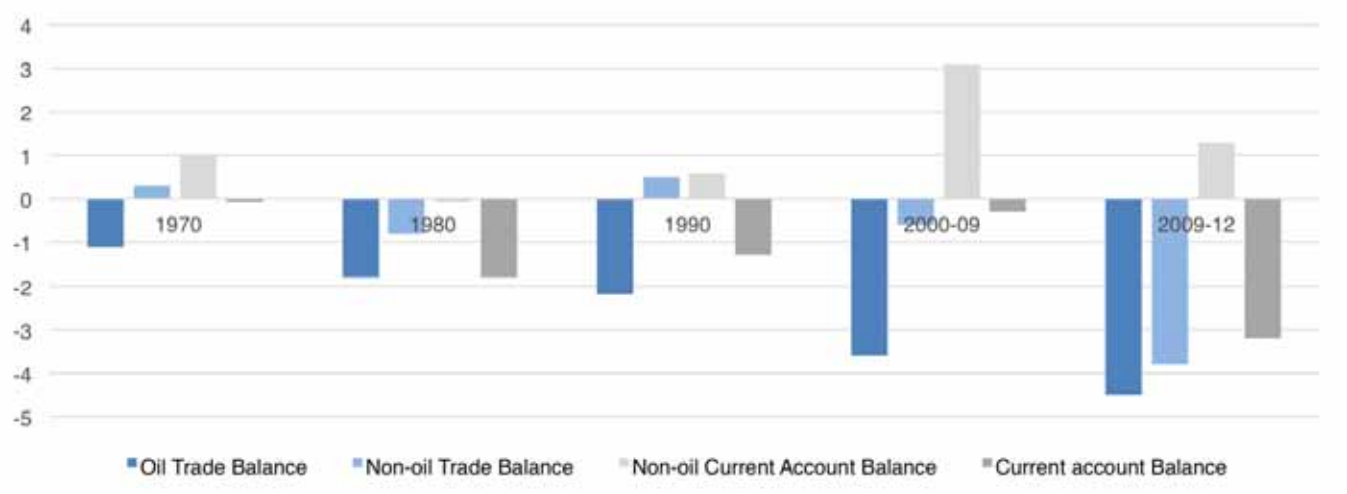


Source: (Ministry of Petroleum & Natural Gas, 2012) (Reuters, 2013)

BOX 1: Crude oil remains India's largest import, providing 80 per cent of domestic consumption (DNA, 2013). As international oil prices have risen and the US dollar value of the rupee has fallen, the cost of oil imports has increased significantly (see Figure 2). Demand for imported oil is relatively price-inelastic in the short-to-medium-term, so the depreciation of the rupee is unlikely to cause a decline in domestic demand; rather, the amount spent on oil imports is likely to continue to rise.

In recent years, India's current account deficit (CAD) has expanded rapidly, increasing by a nominal factor in excess of ten since 2007 (from US$8 billion to US$90 billion in FY 2012-2013) (Kumar, 2013). This has raised concerns about the re-emergence of the macroeconomic imbalance (the structural emergence of simultaneous budget and current account deficits) that precipitated India's 1991 economic crisis. As indicated in Figure 6, oil imports have contributed a significant and growing proportion of India's total CAD. More recently, there is some optimism surrounding India's CAD, as growing exports and declining imports narrowed it to 1.1 per cent of the GDP in the third quarter of FY 2013-2014 (Business Standard, 2014). Indian policy-makers stress that fuel subsidy reform is driven in part by a desire to temper the demand for crude oil imports.

Figure 6: Long-term composition of Indian CAD (% GDP)



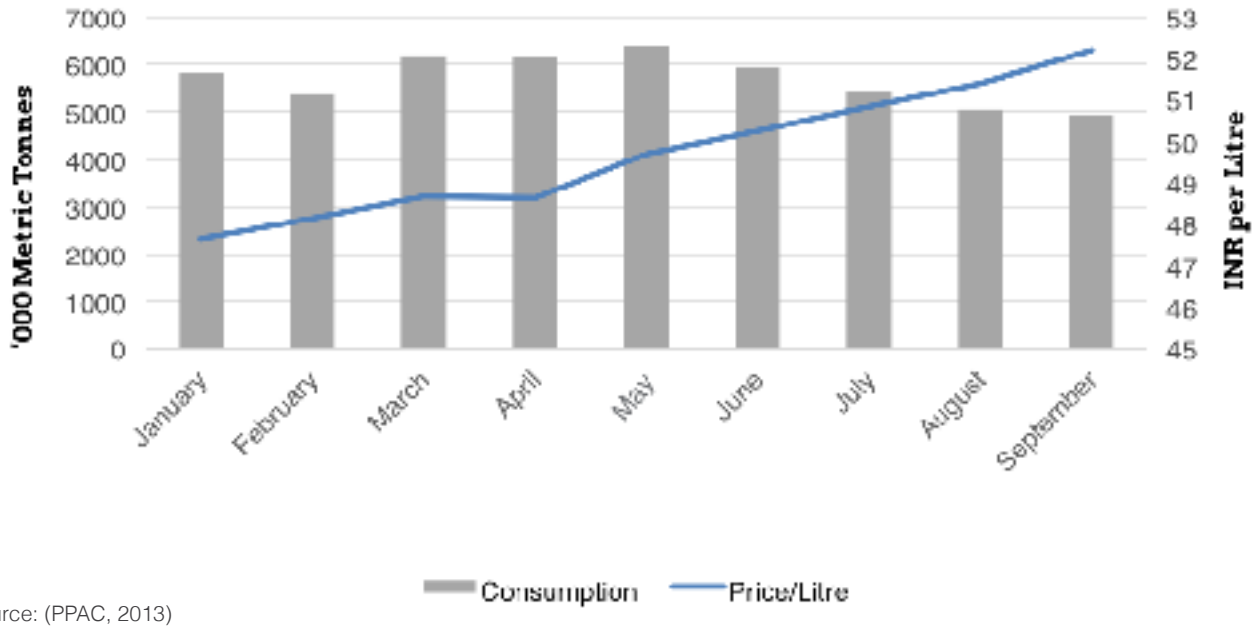
Source: (Fattouh, Sen, & Sen, 2013, p. 8)

(c) Diesel (HSD)

In January 2013, the Government of India committed to monthly increases in the subsidized price of diesel (Press Trust of India, 2013). As a result of this commitment, the price of diesel in New Delhi rose approximately 13 per cent between January and December 2013 (PIB, 2013). In January, the government also ended subsidies to bulk consumers of diesel (national defence, heavy industry, transport corporations, power generators, etc.).

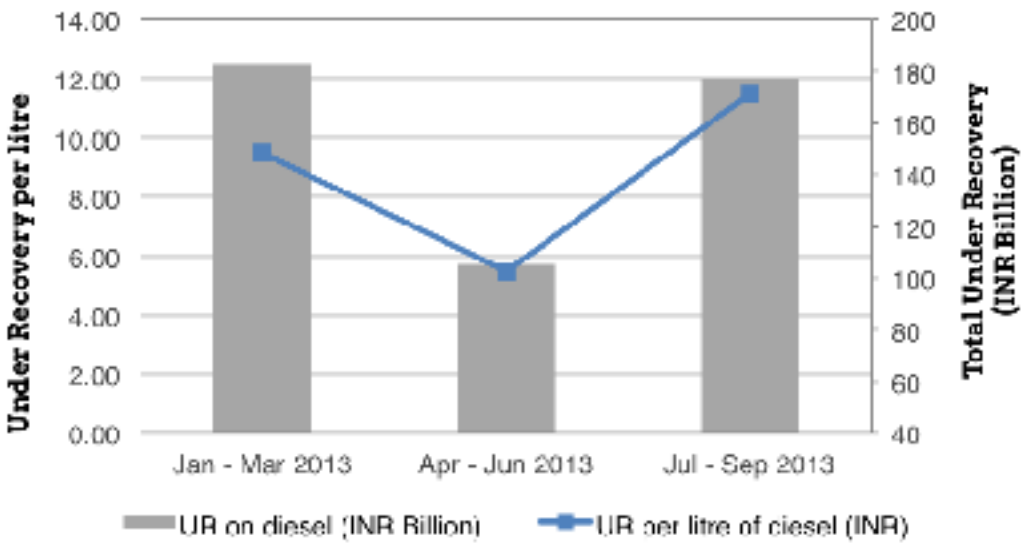
These reforms reduced the under-recovery per litre of diesel sold between February and May 2013 (see Figure 8). However, the appreciation in international crude prices and a historically weak rupee led to a quadrupling of diesel under-recoveries per litre between May and September, even as retail prices increased. Under-recoveries per litre are expected to stabilize following their peak in September 2013 as the value of the rupee strengthens (Reuters, 2014). India's OMCs reported total under-recoveries on diesel in the first half of FY 2013-14 of INR 282.6 billion (USD 4.52 billion) (Press Information Bureau, 2014).

Figure 7: Diesel prices (Delhi) vs. Monthly Consumption, 2013



Source: (PPAC, 2013)

Figure 8: Total monthly under-recovery for diesel vs. monthly under-recovery/litre



Source: (PPAC, 2013)

As shown in Figure 7, Indian consumption of diesel fell considerably in the second half of 2013. This is partly a consequence of seasonal factors, but also the result of higher prices, both for bulk and regular consumers. Bulk orders were particularly affected—with bulk diesel sales falling by 41 per cent between January and June 2013 as a result of decontrolled prices for industrial consumers (Jacob, 2013).

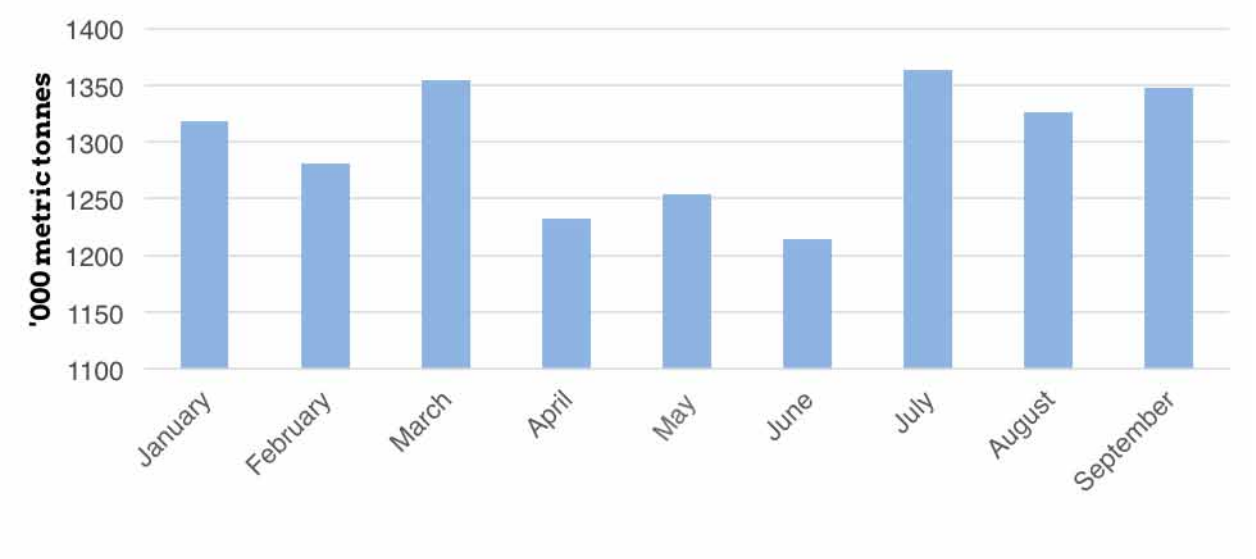
BOX 2: In October 2013, India's Expert Group on Pricing Methodology of Diesel, LPG and PDS Kerosene, chaired by Kirit Parikh, released its report on proposed changes to pricing methodology for refined products. Reflecting trade dynamics in Indian fuel markets, current refinery gate diesel prices are determined on the basis of trade parity pricing (80 per cent constituted by an import parity price and 20 per cent by an export parity price), while kerosene and LPG refinery gate prices are based on import parity pricing.

The government had proposed using export parity pricing (EPP) as the benchmark on which to base refinery gate prices, especially as India has in recent years become a growing exporter of refined products (chiefly through Reliance Industries' Jamnagar refinery, the largest refinery in the world). Perhaps more importantly, as export parity prices are lower than import parity, using the former would result in lower retail under-recoveries for OMCs, and reduce cash compensation requirements for the government. The expert group rejected the idea of EPP, arguing that, for diesel, it would not reduce under-recoveries (which are increasingly determined by currency and crude price dynamics) and that it would be an inappropriate benchmark for LPG and kerosene since demand for those products is met by domestic OMC supply, itself dependent on imports of crude oil.

(c) LPG

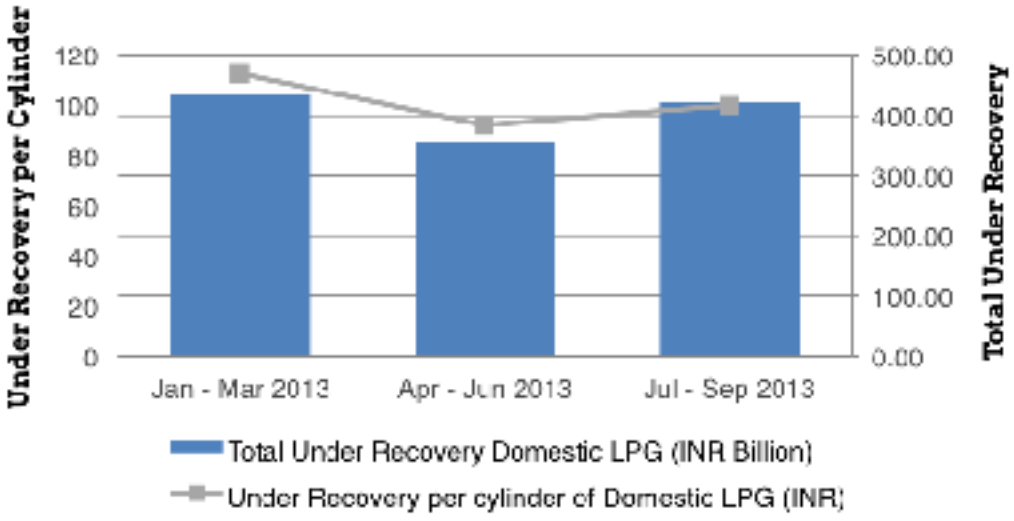
In September 2012 the government introduced a cap on the consumption of subsidized cylinders, allowing households with an LPG connection to purchase a maximum of six cylinders per annum at subsidized rates. Following political opposition, in January 2013 this quota was then increased to nine per household. In May 2013 the government began to implement a program of electronic payments (Direct Benefit Transfer (DBT)) for LPG subsidies in selected districts. Following legal challenges to the program's design and extensive implementation problems, the scheme was discontinued in late January 2014. In addition, the government announced an increase in the per household quota from nine to 12 per annum with effect from April 2014.

Figure 9: LPG Monthly Consumption, 2013



Source: (PPAC, 2013)

Figure 10: Total monthly under-recovery for LPG vs. monthly under-recovery per cylinder



Source: (PPAC, 2013)

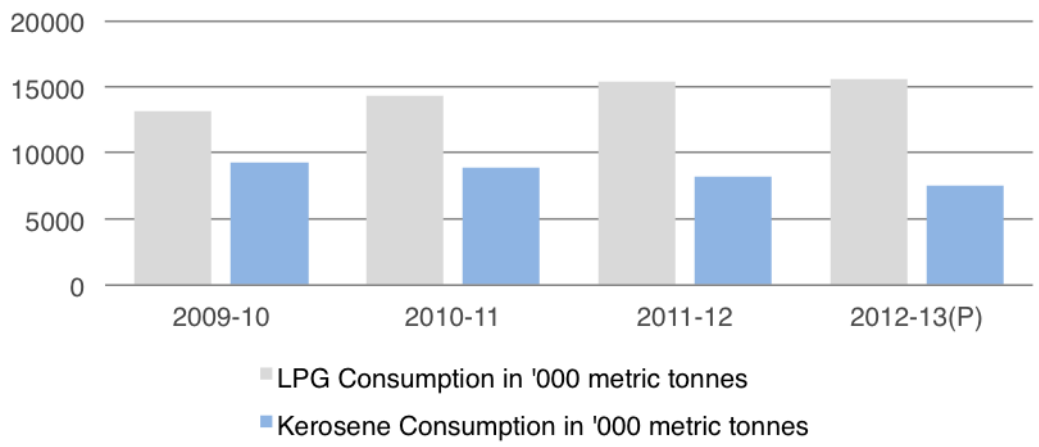
LPG demand has grown strongly year-on-year (see Figure 11) partly as the number of LPG connected households has risen (substantially at the expense of kerosene consumption), making the subsidy on this fuel an increasingly expensive budgetary item for the government. Nevertheless, between January and June 2013, total Indian LPG consumption fell 8 per cent (see Figure 9), most likely as a result of new limits on yearly consumption of subsidized LPG cylinders[6] . In the second half of the year total consumption rebounded strongly. LPG under-recoveries per cylinder fell 45 per cent between January and June 2013 (see Figure 10). In a similar pattern to that seen in diesel markets, as a result of strengthening international oil prices and a weak rupee, under-recoveries per cylinder increased between June and September from INR 335 to INR 470 (USD 5.36 to USD 7.52).

Kerosene (SKO)

Kerosene is used primarily as a source of lighting for rural households. The subsidy on kerosene is targeted and delivered through ration cards operating within the Public Distribution System (PDS) for poor households without a LPG connection. Subsidized PDS kerosene prices in India are currently among the lowest in the world. However, with the rapid expansion of LPG connectivity in India, total consumption of kerosene is in year-on-year decline (see Figure 11). As with other fuels, deteriorating terms of trade have led to an increase in kerosene under-recoveries per litre in the second half of 2013 (Figure 12). Nonetheless, falling kerosene consumption has led to a decline in total under-recoveries from PDS kerosene, and also as a proportion of total under-recoveries for all subsidised fuels.

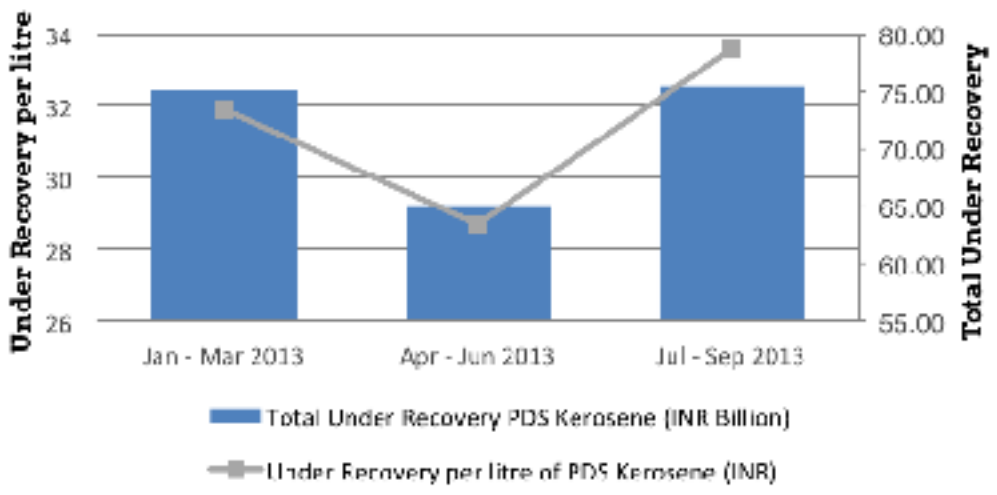
There have been several attempts to computerize PDS databases in order to control subsidy leakage and deter diesel adulteration, which has become a significant issue as diesel prices have risen (the price difference between diesel and kerosene has increased five-fold since 2002; see Figure 13). Cash transfers like those implemented under the DBT have been recommended for distributing kerosene subsidies; such a scheme has already been piloted in Alwar district in Rajasthan.

Figure 11: Kerosene vs. LPG Consumption, 2009-10 – 2012-13



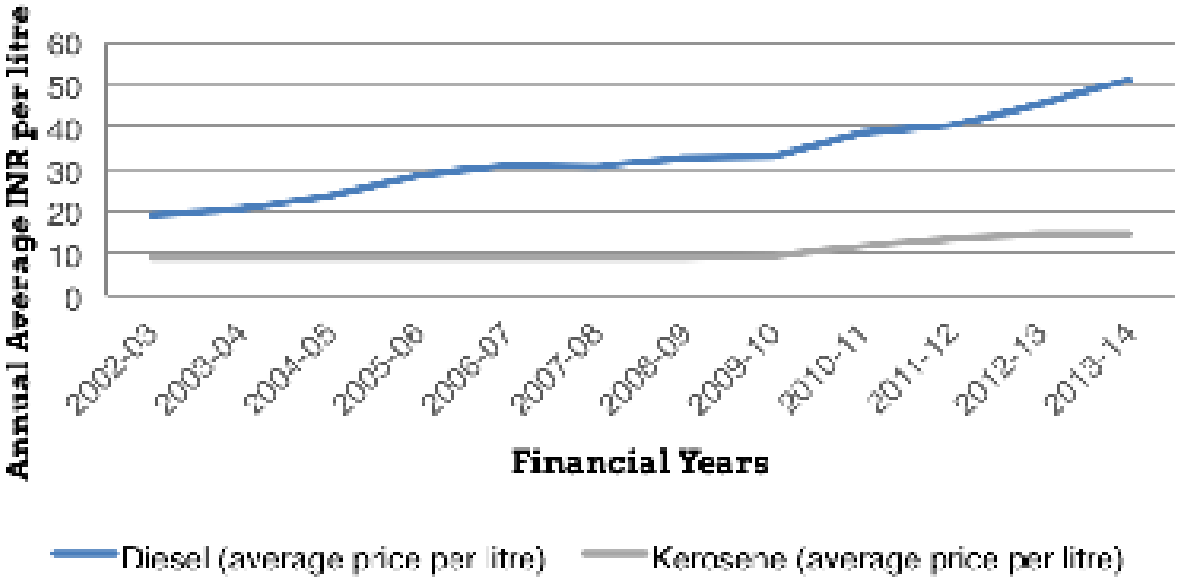
Source: (PPAC, 2013)

Figure 12: Quarterly under-recovery for kerosene (total and per litre)



Source: (PPAC, 2013)

Figure 13: Kerosene-diesel price differential



(d) Natural Gas

In late June 2013, the Government of India announced a significant revision to the formula used to determine prices for domestically produced natural gas. Analysts have suggested the new formula could lead to a doubling of gas prices, to USD 8.40/mmBtu, when introduced at the beginning of FY 2014-2015 (1 April, 2014). India's retail gas prices have not changed since 2007, when a benchmark deal was sealed with Reliance Industries that effectively capped domestic downstream prices at USD 4.20/mmBtu. The new pricing formula will only apply to contracts signed after April 2014 and will be in effect for five years. Reliance Industries will benefit from the new pricing formula under a bank guarantee scheme to ensure production targets are met. Reliance has been under-producing gas from the KGD6 block and there has been speculation that it did so to make windfall profits after April 2014 (IBNLive, 2013).

The formula is based on the recommendations of the 2013 Rangarajan Committee, which suggested that prices be determined by a weighted netback average of India-bound LNG contract prices and hub spot prices in the US, the UK and Japan. For both components of this formula, reference prices will be derived from 12-month rolling averages in each of the markets considered, and Indian prices will be revised every quarter based on changes in these underlying prices. Applying this revised formula at today's gas prices lead to a price of USD 7/mmBtu, less than the USD 8.20/mmBtu initially predicted and significantly less than the USD 15-16/mmBtu currently charged under international LNG contracts.

The shift in policy signified by this change in gas price determination reflects the government's desire to encourage investment in domestic natural gas production. Investment has stagnated under current pricing arrangements, and an increase would shore up weakening trade balances. (See Box 1 above, on India's CAD issues.) India currently meets about 25 per cent of its gas needs on international markets, paying significantly higher LNG contract prices for this proportion of its supply. Higher gas prices will also increase the Government of India's royalty revenues from domestic gas producers. Significantly increased prices under the new scheme will inevitably impose additional cost pressures on large gas users (in power generation, fertilizer production, petrochemicals etc.) and their customers. The government is considering the implementation of price subsidies for strategically important gas consumers, especially in power and fertilizer production.

Consumption of natural gas in India has been relatively stable during 2013. It will be interesting to examine the response of consumption and upstream gas investment to higher prices after April 2014.

(e) Recommendations

Based on the above analysis, the following recommendations are made for each fuel type:

Diesel

- The government should continue to raise diesel retail prices monthly, with the aim of achieving price liberalization by the end of 2014.
- This should be done by automatically applying a consistent and transparent pricing formula to retail prices each month, ideally by the OMCs as they retail the product.
- Diesel pricing formulae could include reference to changing international oil prices and rupee currency dynamics (or by reference to changes in under-recovery per unit of fuel over time). In times of weakening terms of trade and higher under-recoveries per unit, monthly price adjustments should be commensurately larger.

LPG

- The government should help increase access to LPG connections for poor rural consumers by improving financial inclusion and by gradually reducing the yearly quota of subsidized LPG cylinders per connection.
- Consider providing one-time grants for the purchase of existing LPG-efficient cooking equipment in order to temper strong growth in LPG demand, control under-recoveries and reduce household energy costs.
- Work with the private sector and gas Public Sector Undertakings to expand piped natural gas infrastructure in key urban centres.

PDS Kerosene

- Following the recommendations of the recent Expert Group on the Pricing of Petroleum Products, PDS kerosene prices should be tied to growth in agricultural GDP. While agricultural incomes have increased by over 60 per cent since 2002-2003 (Parikh, 2013), nominal kerosene prices have not changed significantly, meaning expenditure on kerosene has fallen as a proportion of rural household income, while total kerosene under-recoveries have expanded.
- Confirm estimated cost savings from piloted cash transfers systems for kerosene subsidies, and prioritize the expansion of such disbursement systems, on the model of a targeted DBT.
- LPG-for-kerosene programs should be prioritized and expanded, especially in rural regions, following the example of Delhi NCR as well as countries like Indonesia. The design of these programs should consider the limited ability to pay for the initial costs of LPG connections and cylinders of many poor rural households, offering one-time subsidies to ease the transition from kerosene to LPG.

Natural Gas

- Monitor the social and economic impact of higher natural gas prices (especially through higher power and fertilizer prices) and design targeted compensation mechanisms where necessary.

Notes

1 India's budget expenditure in 2011-12 was INR 13,043.65 billion (USD 208.69 billion) (Ministry of Finance, 2013) and Fossil Fuel Subsidy Expenditure was INR 1519.84 billion (USD 24.31 billion) (including fiscal subsidy and compensation given to OMCs by the Government). (Ministry of Petroleum, 2013a, pp. 62,64)

2 Total expenditure on fossil fuel subsidy is calculated as the sum of fiscal subsidy on LPG and PDS kerosene (those listed on the union budget of the national government) and under recoveries on diesel, LPG and PDS kerosene. Data for these figures has been sourced from PPAC (Ministry of Petroleum, 2013a)

3 Exchange Rate from www.xe.com on 26 January 2014, INR 1 = USD 0.016 used through this entire edition

4 Price of Diesel (INR per litre) in Delhi

5 Under-recovery on diesel in Sep 2013 was INR 14.5 per (USD 0.23) litre of diesel and in April 2013 was INR 6.42 (USD 0.1) per litre of diesel. (Press Information Bureau, 2014)

6 The Government had introduced a cap of six subsidised cylinders per year but revised it to nine cylinders from April 2013 (Economic Times, 2013)

Part Two: Guest analysis

The impacts of diesel price increases on India's trucking industry

Jyoti Parikh and Gayatri Khedkar, Integrated Research for Action and Development

Diesel constitutes 38 per cent of India's petroleum consumption, 65 per cent of it used in transportation (Anand, 2012). While a reduction in diesel under-recoveries will have significant fiscal and economic benefits for the economy as a whole, rising diesel prices will hurt industry and diesel-intensive sectors.

This brief summarizes the findings of a recent study by Integrated Research and Action for Development that explores the relative vulnerability of truck operators and the trucking industry to increases in diesel prices and elaborates on policy measures to improve the trucking industry's resilience to higher fuel prices. Two important questions addressed were:

1. What factors make the trucking industry vulnerable to diesel price increases?
2. What measures would reduce the vulnerability of the trucking industry to diesel price increases?

The study included consultations with the operators of small, medium and large trucking operations, as well as members of the All-India Motor Transport Congress, a leading Indian transport association.

Factors responsible for high diesel consumption and wastage

Poor quality roads: National highways constitute only 2 per cent of the total road network but carry 40 per cent of the traffic. Deloitte (2012) estimated that less than 10 per cent of India's total road network is of good quality. Many large stretches of national highways have only two lanes, reducing their capacity to handle large traffic loads, and India's poor road quality results in higher fuel consumption.

Waiting time at tollgates: Waiting at tollgates and check posts accounts for almost 50 per cent of delays on a long trip and wastes fuel worth between INR 100 and INR 150 billion (USD 1.6 to USD 2.4 billion). Tolls and sales tax account for approximately 15 per cent of trip expenses (TCIL, 2012).

Overloading: Overloading is possible only in the open-body trucks normally used by small operators. They often claim that low freight rates force them to overload their vehicles in order to maintain profit margins. They also claim that the profit gained through overloading more than compensates for the additional maintenance required on the truck. However, this view may be short-sighted, given the long-term wear on the trucks. Pressure to overload trucks can be attributed to the inability to change freight rates, low fuel efficiency, and on-road delays that push up costs and lower profit margins.

The effect of recent price increases on truckers

Truck operators find a sharp hike easier to pass on to customers (Hindu Business Line, 2013a). Freight rates are normally revised only once every two or three years but many operators said that their rates had not changed since 2009.

The main reasons cited for not being able to pass on the costs of higher fuel prices were:

- Stiff competition, resulting in price wars and under-pricing practices.
- Weak bargaining capacity and information asymmetries, which give brokers the upper hand in negotiations.
- The absence of long-term contracts with firms that allow rates to reflect changes in fuel costs. Most contracts are oral and informal. Where contracts are revised regularly, they involve a competitive bidding process each time. Truck operators have no guarantees that they will get the next contract with the same firm, and must underprice in order to win bids.

Measures that would make truck operators more resilient to higher diesel prices

Reduce waiting time at toll gates

TCIL and the Indian Institute of Management, Kolkata (IIM-C) (2012) found that toll delays are a major impediment to efficient trucking operations. Although the costs of delays are not significant for individual trips (INR 122.79/hour or USD 1.9/hour), the study estimates that the total annual cost of delay to the Indian economy is about INR 270 billion per year (USD 4.32 billion). The study estimates that the total cost of additional fuel consumption due to delays and reduced speeds is about INR 600 billion per year (USD 9.6 billion).

A study by the Working Group on Roads for the National Transport Development Policy Committee for the Ministry of Road Transport and Highways (Government of India, 2012) identified the following strategies to improve the efficiency of tollbooths:

- Broadcast real-time traffic information.
- Introduce electronic toll collection on all major highways and expressways.
- Initiate public transportation information systems in major cities.
- Introduce adaptive traffic signals, congestion charges and parking guidance.
- Install weigh-in-motion technology for goods-carriage vehicles on roads.
- Consider reducing toll rates after recovery of capital cost for publicly funded projects or after the expiry of concession periods for private investment projects.

Set up computerized exchange networks to link clients and trucker operators

There are information asymmetries in the trucking industry. Small operators lack information on consignments and depend on brokers as intermediaries. Information technology can bridge this gap in supply and demand and reduce the role of brokers in obtaining business and deciding freight rates. One such intervention is the Transport Exchange of India, a private initiative that acts as an electronic intermediary between shippers and transporters who register with the exchange (Sriraman, Venkatesh, Karne, & Mohite, 2006) The Transport Exchange maintains real-time data on truckers and customers online and co-ordinates them at a nominal charge. Registration is by telephone.

Improve fuel efficiency

The low fuel efficiency of most trucks (3–4 km/litre) increases the total cost per trip. The TCIL-IIM-C (2012) notes that, if mileage of vehicles were optimal, savings to the economy would be approximately INR 240 billion (USD 3.84 billion) per year. This is not, however, a simple matter. Fuel efficiency is low for various reasons, including poor-quality roads, delays at tollgates and lack of training for drivers on proper usage and maintenance of trucks. Lack of technology and manufacturing standards are also problems. For example, truck manufacturing companies only make the chassis of the vehicle. The body is built by unorganized road-side vendors, making it difficult to impose quality controls and standardization.

Encourage long-term provisions that allow for freight rate adjustments as fuel prices change

The contracts of most small operators of bulk haulage trucks do not provide for revision of freight rates if fuel costs rise. Larger companies normally have clauses in their contracts with large truck operators that provide for rate adjustments linked to fuel price increases. To give smaller operators access to such provisions, the government should make it mandatory to incorporate fuel-cost considerations into contracts that extend to more than six months.

Introduce training for truck operators and revise financing conditions

Little training is required to enter the trucking business and truck purchases can easily be financed through non-banking financial institutions like Shriram Transport Finance Limited (the current leaders in truck financing) and Tata Capital. Nationalized banks also lend to small operators (one to five vehicles) on a priority basis. The result is that trucks get financed whether or not they can generate enough revenue, decoupling risks from returns for financial institutions. There is an urgent need to assign prerequisites like a minimum asset base to access financing and minimum education and training in order to enter the trucking business. There should also be guidelines for financers to assess the revenue generation and loan repayment capacity of truck operators. These guidelines would help reduce the rate of interest for existing players and act as an effective entry barrier for new entrants.

Fix minimum freight rates

The transportation industry is very competitive, so under-pricing is common. A popular solution that emerged during consultations with truck operators, as well as with researchers at the Asian Institute for Transport Development, CIRT and truck operators' unions, is fixed minimum freight rates.

The government could regulate minimum freight rates, fixed on per-tonne and per-km bases. Freight rates are mostly a function of demand, given the excess supply of trucks, so fixing minimum rates could further reduce demand during periods of recession. Because of the diversity of goods carried, fixing one rate might be difficult and

ineffective, while fixing separate rates for various classes of goods could be cumbersome. Similarly, the quality of roads varies between states and between hilly areas and plains, so setting a minimum per-kilometre rate could have a negative impact on truckers with national permits. If fixed rates were higher than market prices, both supply and idle time would increase.

Despite these issues, truck operators have argued that issuing guidelines for fixing freight rates would likely reduce their vulnerability to increasing diesel prices and help maintain profit margins.

Set uniform diesel prices across states

Truck drivers operating on long routes are directed to fill tanks in the state where diesel is cheapest. For truckers from Delhi, diesel is cheaper in the adjoining state of Haryana, so most truckers fill with diesel there at the beginning of the trip. This requires a higher requirement for working capital at the beginning of the trip. If the diesel price is uniform across states, truck drivers can fill with diesel anywhere along their route. For example, a truck operating on the Delhi–Mumbai route can fill up once in Delhi for the outward journey and again at Mumbai, after receiving freight charges in there, for the return. In such cases, the requirement of working capital for one trip is significantly reduced and truck operators can operate more than one truck with the same working capital.

This is a difficult option, given, India's federal structure and could lead to new market distortions. While oil-marketing companies have a uniform base price for diesel in all states, state taxes on diesel differ and are an important revenue stream for state governments. Central government can only advise—not compel—states to raise or lower their taxes.

Recommendations

There are urgent fiscal and environmental reasons to phase out the subsidy on diesel fuel. The study concludes that the vulnerability of the trucking industry to diesel prices arises from the inherent structural and regulatory issues of the industry, which must be rectified. With fuel costs at around 56 per cent of total operating costs (TCIL, 2012) truck operators are vulnerable to increased diesel prices.

To give truck operators immediate relief from rising diesel prices, the study recommends:

- Reduce waiting time at tollgates.
- Incorporate flexibility into long-term contracts to adjust to changes in fuel costs.
- Fix minimum freight rates.

Recommendations for long-term structural changes in the trucking industry include:

- Set up computerized exchange networks for matching loads to trucks.
- Improve the fuel efficiency of the trucks.
- Introduce training for truck operators and examine truck financing.

Balancing state, utility and social needs in agricultural electricity supply

Ashwini K. Swain & Udai S. Mehta, Consumer Unity & Trust Society

Subsidized power for the agricultural sector is a key feature of the Indian electricity system. Since the late 1960s, in order to garner the support of farmers, state-level political parties have endorsed and provided agricultural electricity supply at a highly subsidized rate, sometimes free and mostly unmetered. These subsidies, largely an exercise in political patronage, are marketed as developmental policies to ensure food security and improve rural livelihood. Nevertheless, they have their roots in legitimate developmental concerns going back to India's Green Revolution of the 1960s and 1970s (Swain, 2006).

The high-intensity, high-productivity farming practices introduced during the Green Revolution were highly dependent on the availability of additional inputs, particularly irrigation water and chemical fertilizer. State governments saw a need to provide farmers with subsidized agricultural inputs. The agricultural electricity connections and consumption have now ballooned, and the costs to state utilities have become unsustainable (Swain, 2006).

The availability of cheap electricity promotes over-use of electricity and water in Indian agriculture (Planning Commission, 2006; Badiani and Jessoe, 2011), and contributes to India's groundwater and electricity crises. While agriculture consumes about one-fourth of India's electricity, its revenue contribution is as low as seven per cent, leaving state utilities in financial distress (PFC, 2013). Though part of the revenue gap is covered through cross-subsidization from industrial and commercial consumers, the remaining gap is a significant burden on state finances.

Current subsidized electricity policies encourage overuse of water, leading to soil degradation, soil nutrient imbalance and groundwater depletion, all of which have affected agricultural yield and income. Due to high demand and low paying capacity of the sector, the utilities inevitably prioritize high return consumers over the agricultural sector. Farmers must tolerate poor quality electrical service—limited hours of supply, inadequate voltage and frequent breakdowns—which has indirect costs including unavailability of water when it is needed for irrigation, the need for investment in backup arrangements, and frequent pump burnouts.

Subsidized electricity to farmers is moderately regressive, in that the benefits accrue more to wealthier farmers than their smaller counterparts. (Sant and Dixit, 1996; World Bank, 2001; Howes and Murgai, 2003).

Despite these drawbacks, subsidized electricity has enhanced food security and the livelihoods of the rural poor in India since the 1970s. Plans to reform agricultural electricity pricing should clearly reflect this, and recognize that the very poorest in Indian society also benefit from the current arrangement.

Reforming agricultural electricity subsidies: Getting the prices right

Given the importance of the rural poor as a political constituency in many states, reforming electricity pricing and supply has been extremely difficult for state governments for several decades. Nevertheless there have been a number of recent attempts at subsidy reform at the state level, concentrating relatively narrowly on market-based pricing of electricity and cost recovery for utilities. Here are two recent examples of this process, including some of the unintended consequences of reform:

Rationing the agricultural electricity supply in Gujarat

Rural load segregation reduces the agricultural load and improves rural electricity supply, by connecting non-agricultural and agricultural consumers by to separate feeds. About eight states have initiated rural load segregation schemes. Only in Gujarat has it been applied throughout the state and described as a success.

The scheme resulted in two significant improvements:

- Non-agricultural consumers received 24 hours of electrical supply for domestic use and for schools, hospitals, market places and village industries.
- Farmers received limited hours of high-quality electricity supply.

The scheme has benefited the utilities by reducing losses, thefts, and agricultural consumption. It has improved peak load management and revenue realization in proportion to consumption. The net financial gains, however, do not provide the return required on the large investments made in the scheme (World Bank, 2013). The state has, however, benefited from reduced subsidy burden. The rationing of electricity supply has capped the extraction of groundwater and contributed to groundwater conservation (Swain and Charnoz, 2012).

Although farmers appreciate the improvements in electricity quality, they are not unreservedly happy with the scheme, particularly the rationed supply. Farmers in the areas of central and southern Gujarat where water is abundant, who used to operate their pumps for 18-20 hours a day and sell water to small and marginal farmers, have lost income. However, water buyers are hardest hit as the groundwater markets have shrunk and water prices

have increased by 40-60 per cent. Access to irrigation for small and marginal farmers has declined, pushing many out of irrigated farming and a reasonable livelihood. (Swain and Charnoz, 2012).

Metering agricultural electricity in West Bengal

The removal of meters from agricultural connections was arguably the biggest blunder in the process of institutionalizing agricultural electricity subsidies. Reinstallation of meters to measure actual consumption is a prerequisite for reform. While few states have moved in this direction, West Bengal has been successful in metering agricultural connections.

While agricultural electricity subsidies are an insignificant part of the state budget and of the state fiscal deficit in West Bengal, these have been well covered through cross-subsidization. Nevertheless, utilities have blamed subsidies for their deteriorating finances. In response, the state has initiated mandatory metering of agricultural electricity connections. Beginning in 2007, the state began to install GSM cellular-based meters that record consumption by time of day. This enables the utility to charge the farmers on the basis of actual load and time of consumption. The goals are to better manage the agricultural load, reduce the agricultural subsidy, improve revenue realization and phase out cross-subsidization from industrial consumers (Swain and Charnoz, 2012).

A major outcome of the metering reforms in West Bengal has been a new incentive structure within the groundwater market. The new arrangement requires the pump owners to pay only for the amount of electricity consumed, so they are no longer forced to sell water. The water buyers have lost bargaining power, so the pump owners increased water price by between 30 and 50 per cent after the reforms, even though annual electricity bills have actually declined. This has helped the wealthier farmers by reducing their electricity bills and increasing their profit from selling water (Mukherji et al., 2010). At the same time, the water buyers have to face problems like advance payment and unavailability of water at desired times, which reduces the equity of access to water.

The implications for utilities have been mixed: While the utilities gain through reduced peak load and loss, they face a short-term reduction in revenue (Mukherji et al., 2009). In the long run, there might be significant transformation in the groundwater market, marked by an increase in pump ownership, as the cost of electricity comes down. While the reforms may improve efficiency, there will be short-term negative impacts on equity of irrigation water access, and no significant impact on electricity and water conservation.

A broader approach to reform: balancing state, utility and social needs

Subsidized electricity for agricultural users has been seen as an issue of economic inefficiencies affecting farmers, utilities and state governments. Consequently, the proposed solutions have focused on revising the price or improving pumping efficiency. However, agricultural electricity pricing is a multi-dimensional issue and is linked with groundwater scarcity, rural poverty and food insecurity. As seen in Gujarat and West Bengal—two apparent reform success stories—a narrow approach can have damaging impacts on the poorest and most vulnerable. While rationing and metering of agricultural electricity supply provide vital economic gains, these measures come with a cost for water buyers—poorer farmers who cannot afford to own irrigation pumps.

This calls for an embedded approach to agricultural electricity pricing reforms that considers the social, economic, political and environmental dimensions simultaneously. The major reform objectives in India are to improve resource (water and energy) use efficiency and improve cost realization within the agriculture sector. Raising electricity prices has not worked well as a stand-alone policy to achieve efficiencies in energy production and use while maintaining food security and livelihoods. What may work is a combination of electricity tariff rebalancing, better water management, and improved agricultural practices and policy. In this section, we make a number of suggestions towards a broader approach to the problem.

Improving irrigation management

While irrigation programs have been high on India's development agenda and have received sustained public funding, only one-third of India's irrigated lands have access to surface water. The remaining two-thirds must extract groundwater for irrigation, lowering water tables and relying heavily on electricity for pumping.

Expansion of surface irrigation systems emerges as an important part of the solution and a prerequisite to taming agricultural electricity and groundwater consumption. With good monsoon rainfall, water sources like Himalayan glaciers and a wide network of rivers, India has a huge untapped water potential. India must revitalize the existing network of canals to reduce dependence on groundwater, and thus on electricity.

On the other hand, over-extraction of groundwater and a lack of initiatives to recharge the water table have caused fast and continuous depletion of water tables. As the water table goes down, more powerful pumps that draw more electricity are needed. Sustained groundwater table recharge can have significant impact on agricultural electricity consumption. While India receives a good amount of rainfall that can recharge these tables, much of it is wasted or discharged to the sea. There is a need to promote innovative schemes to recharge them. While the farmers can do much, individually and as a community, through water harvesting and storage, the states need to promote awareness and encourage such initiatives.

Water management is a multi-level activity that involves various stakeholders. Development of surface irrigation has to be taken up by the state governments, water harvesting is a community or local activity, while increasing efficiency through modern technologies is a farm level initiative. At each level the state must play the role of facilitator and policy framework provider.

Modifying agricultural practices

Farmers can use water and electricity more efficiently by adopting some easy and inexpensive practices at farm level. Land levelling is a traditional practice that reduces the need for water, reduces the time needed for seeding, increases yield and reduces weeds. Similarly, mulching enhances the moisture retention capacity of land, reduces the need for water, reduces erosion, provides nutrients, suppresses weeds and increases fertility. Farmers should use crop residues, both field and process residues, as mulch, instead of burning them and further reducing soil moisture. Whether to avoid the extra labour or from a lack of awareness of their benefits, farmers seldom adopt these inexpensive and efficient practices. The state may take initiatives to reintroduce these practices in Indian agriculture through an incentive structure.

Crop diversification is another cost-effective way to improve agricultural resource efficiency. Indian farmers tend to grow specific crops and adopt new varieties only reluctantly. However, shifting from dominance of a single crop or variety to a rotation can be resource-efficient. It helps to improve soil health, balance soil nutrition and maintain a dynamic equilibrium in the agro-ecosystem. Farmers can also save water and electricity by farming less water-intensive crops or choosing less water-intensive variants of the same crop. Though India has developed less water-intensive variants of wheat and rice, adoption of these varieties is low. The state can facilitate adoption with pilot demonstrations, awareness campaigns, distribution of seeds and incentives, while supporting further research on new crop varieties.

Realigning wider agricultural policy

Governments can also facilitate crop and variety diversification by realigning food procurement policy. India's agricultural product procurement policy has been biased toward water intensive crops by ensuring a higher minimum support price, which means a better and more secure market price. Farmers have little incentive to plant less water- and electricity-intensive crops with similar returns. Resource-efficient planting can be promoted through price incentives.

Fertilizer subsidies also increase water and electricity consumption. Farmers believe that higher levels of chemical fertilizers will generate better yields. Fertilizer subsidies encourage farmers to use them more, resulting in higher demand for irrigation water. States may facilitate a transition from chemical fertilizers to organic manure by shifting the subsidy incentive.

Agricultural electricity pricing reforms could be useful, but only after taming water demand through the measures discussed above. Once the water and electricity demand have declined, higher tariffs would be affordable to farmers, which in turn would foster social acceptance. At the same time, electricity subsidies need to be redesigned with a focus on conservation. For instance, offering stronger price incentives (low tariffs) to low-consuming farmers and lower price incentives (high tariffs) to high-consuming farmers could be effective. We need to devise tools for targeted transfer of subsidies to needy farmers, including metering the electricity supplied to farmers.

The Last Word

Subsidies for petroleum products in India: Why and for whom?

Kirit Parikh and Jyoti Parikh, Integrated Research and Action for Development

Consumer prices of three critical petroleum products—diesel, LPG and kerosene—are currently set by government. These products constitute 50 per cent of the petroleum products consumed in India and their prices do not fully reflect the cost of supplying them. This results in losses for public sector oil marketing companies (OMCs). (Since the government does not reimburse private-sector OMCs, they do not sell these products). The OMC's losses, called "under-recoveries," are covered jointly by the government, OMCs and the public sector upstream companies, Oil and Natural Gas Corporation and Oil India Limited.

Fuel subsidies have an impact on the growth of inflation and Gross Domestic Product (GDP). A study carried out by IRADe (Parikh, Parikh, Ghosh, Panda, & Kaur, 2012) has shown that when subsidies increase, so does the fiscal deficit. This in turn increases the money supply, causing higher inflation. The Reserve Bank of India then raises interest rates, resulting in lower investment and lower GCP growth. While eliminating subsidies imposes short term pain, it results in considerable gains over time.

Subsidy policies are not necessarily pro-poor policies

Fuel subsidies are ostensibly distributed to protect poor consumers. Diesel subsidies, for example, are intended to keep transport costs in check, and keep essential items, such as food, affordable. However, a study by IRADe (Parikh, Parikh, Ghosh, Panda, & Kaur, 2012) showed that raising the price of diesel by 10 per cent would increase consumption expenditure by around 0.6 per cent for the poorest 10 per cent of the people in rural and urban areas. In contrast, a 4 per cent increase in the Wholesale Price Index due to inflation resulting from a fiscal deficit would put a much larger burden on the poor consumers.

Today, 27 per cent of diesel is consumed by diesel-powered vehicles (Parikh, 2013) many of which are sport utility vehicles (SUVs) owned by relatively affluent people. The difference between petrol and diesel prices implicitly provides a large subsidy to SUV owners, which was estimated (Parikh, 2012) at one time to be as high as INR 50,000 (USD 800) per year.

In FY 2012—2013, of the total subsidy for petroleum products of INR 1,610 billion (USD 25.76 billion), INR 396 billion (USD 6.3 billion or 25 per cent) was for LPG. The poorest 20 per cent of households received 1 per cent of this subsidy on LPG in rural areas and 8 per cent in urban areas. Subsidized LPG can be justified on the grounds of the necessity of clean cooking fuels for poor households who would otherwise cook with dirty bio-fuels like wood, agricultural waste and dung, which cause indoor air pollutions leading to respiratory diseases and eye infections. Indoor air pollution causes an estimated half a million premature deaths every year. However, by granting the LPG subsidy equally to all households, the policy also supports the purchase of LPG by wealthier households who could afford to pay market prices.

The subsidy to kerosene was INR 294 billion (USD 4.7) in FY 2012—2013. The kerosene subsidy for poor households without access to electricity was justified for lighting needs. However, it is estimated (National Council of Applied Economic Research, 2005) that 30 to 40 per cent of subsidized kerosene is diverted to black market, mainly to adulterate diesel (It is ironic that India invested INR 200 billion or USD 3.2 to upgrade refineries to produce cleaner diesel, which is then adulterated!)

Progress is being made, but more needs to be done

The government is concerned about subsidies on petroleum products and has taken measures to contain it. In late 2009 it set up an expert group to recommend "a viable and sustainable system of pricing petroleum products." In

February 2010 the group recommended that petrol and diesel prices should be market-based at both the refinery gate and at the retail level. It also recommended that the subsidy on LPG and kerosene be reduced until a system (based on a unique identification card) to deliver the subsidy to the poor is implemented (Ministry of Petroleum and Natural Gas, 2010). Petrol prices were deregulated in July 2010. As a result, the price of petrol has increased from INR 44.72/litre (USD 0.71/litre) in January 2010 in Delhi to around INR 75/litre (USD 1.2/litre) today. The price of diesel has been raised periodically: by INR 5/litre (USD 0.08/litre) in June 2010, INR 4/litre (USD 0.06/litre) in August 2012, and there have been 11 monthly increases of INR 0.45/litre (USD 0.007/litre) since January 2013. However, depreciation of the Indian rupee and the increase in world crude prices, has slowed the fall in diesel under-recoveries. They were INR 9/litre (USD 0.14/litre) in late 2013, compared to approximately INR 13/litre (USD 0.2/litre) in January 2010.

The price of kerosene, which was INR 9/litre (USD 0.14/litre) before the Parikh Committee report of 2010, is now INR 14.96/litre (USD 0.23/litre). The subsidy is INR 38/litre (USD 0.6). However, the amount of subsidized kerosene has come down as the national government reduces its rations to states. It was 7.4 million tonnes in 2012-13, compared to 9.1 million tonnes in 2009-10.

The price of LPG in Delhi, which was INR 350/14.2 kg cylinder (USD 5.6/cylinder) in January 2010, increased to INR 450/cylinder (USD 7.2/cylinder) in November 2013. The subsidy is still INR 500/cylinder (USD 8/cylinder). Pakistan charges consumers the equivalent of INR 996/cylinder (USD 15.9/cylinder) and Sri Lanka Indian INR 1274/cylinder (USD 20.38/cylinder). A limit of six cylinders per household per year was proposed but in response to political pressure it was raised to nine cylinders. While this has not significantly reduced household consumption, it has reduced diversion of subsidized LPG to other uses.

Despite all these measures, if the world crude price remains at USD 110/barrel, under-recoveries in 2013-14 will be around INR 1,400 billion (USD 22.4 billion) and around INR 1,600 billion (USD 25.6 billion) in 2014-15.

Subsidies, apart from large macro-economic impacts, discourage energy conservation and innovation in renewable energy, which can help reduce demand and pollution. While the India has taken many steps to control subsidies; it has still some distance to go. It needs to let diesel prices be market-determined, and provide a targeted cash subsidy to poor consumers of kerosene and LPG.

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