



India's Fuel Subsidies: Policy recommendations for reform

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1.0 Current Status: The Need for Subsidy Reform in Weakening Economic Conditions

In fiscal year 2010–2011, the Government of India spent INR43,904 crore² (US\$9.6 billion) subsidizing retail prices of diesel, kerosene, LPG and, to a lesser extent, gasoline (TERI, 2012b). In addition, oil companies incurred INR37,190 crore (US\$8.2 billion) worth of under-recoveries, of which INR30,297 crore (US\$6.6 billion) was provided by upstream national oil companies (see Box 1 for more details).

In 2011–12 total expenditure on subsidies (including for fertilizer and food) grew by 26.7 per cent (Government of India, 2012b). The Union Budget 2012–13 attributed the deterioration of India's fiscal balance in 2011–12, in large part, to this increase in subsidies (Government of India, 2012a) and stated that this level of growth in subsidy expenditure is not sustainable (Government of India, 2012b). The budget sets out the government's intention to maintain total subsidies to under 2 per cent of GDP in 2012–13 and reducing to under 1.75 per cent of GDP over the following three years, although food subsidies will continue to be fully provided for (Government of India, 2012a). Policy measures, such as better targeting of subsidies and improved transparency, are planned to reduce the total subsidy bill.

However, by late July 2012, it was reported that the government had already spent most of the US\$7.6 billion budget allocated for fuel subsidies in 2012–13 (Reuters, 2012), indicating that much stronger reforms are required for meeting the government's fiscal policy objectives.

¹ This policy brief is based on two reports prepared by the National Institute for Public Finance and Policy (NIPFP; authored by Mukesh Anand) and The Energy Resources Institute (TERI; authored by Kaushik Bandyopadhyay, Anomitra Chatterjee and Anmol Soni). In addition, the authors would like to thank peer reviewers Masami Kojima, Bhamy Shenoy, Udit Mathur, Ankur Garg, Tara Laan and Ivetta Gerasimchuk.

² A crore is a unit in the South Asian numbering system equal to ten million.





1.1 Benefits are Largely Understood but Progress Remains Slow

In 2010 a government committee led by Kirit Parikh recommended that much more substantial reforms were needed, including full deregulation of diesel prices, and periodic increases of domestic liquefied petroleum gasoline (LPG) and Public Distribution System (PDS) kerosene prices (Government of India, 2010). Reforming fuel subsidies would improve India's fiscal balance and create fiscal space for increased investment in physical and social infrastructure (Government of India, 2012b) or other development-related expenditures. It would also remove current market distortions (such as the growing number of private vehicles being manufactured to run on diesel) and incentivize energy efficiency and clean energy solutions, thereby reducing pollution levels. Removing fuel subsidies entirely would also remove opportunities for corruption and selling fuel on the black market.³

However, progress remains slow. There is a valid concern that raising diesel prices will have a significant impact on inflation and cascading effects throughout the economy, as well as sensitive sectors such as transport, agriculture and fisheries. Due to these concerns, the government has been hesitant to raise diesel prices (Daily News and Analysis, 2012). In addition, rising food prices in the first half of 2012, which could be exacerbated by India's shortage of rain this monsoon season, could make subsidy reform challenging both in terms of managing the indirect impacts for the poor and overcoming political and public opposition to reforms.

The Minister of Petroleum and Natural Gas recently (July 2012) announced that the government is considering capping the number of subsidized LPG cylinders per household (Daily News and Analysis, 2012). Capping the allocation of LPG cylinders may be a more politically feasible means for reducing subsidies than raising prices, but it comes with the challenges of monitoring and enforcing the caps.

The government has also established the Unique Identification Authority of India (UIDAI) to develop the infrastructure for delivering direct transfers in place of kerosene subsidies; however, progress in rolling out the system nation-wide remains slow. Some pilot studies are underway, but a national policy to design a cash transfer scheme has not yet been developed.

The International Institute for Sustainable Development, in collaboration with the National Institute for Public Finance and Policy and The Energy Resource Institute (TERI), have developed analysis on some of the key barriers to reform. This policy brief synthesizes the key findings and extends the policy recommendations of two reports:⁴

1. ***Diesel Pricing in India: Entangled in a Policy Maze (Anand, 2012)*** analyzes the inflationary impacts of increasing diesel prices on the economy and on key groups. It provides recommendations and actions on how pricing mechanisms and taxation could be changed.
2. ***Fossil-Fuel Subsidy Reform in India: Cash Transfers for PDS Kerosene and Domestic LPG (TERI, 2012a)*** provides recommendations for designing and implementing direct cash transfers in India.

³ For more information about the costs and benefits of subsidies, see TERI (2012b).

⁴ The two reports are available on IISD-GSI's website: www.iisd.org/gsi/fuel-subsidies-india



2.0 Key Findings and Recommendations for Reform

To make progress, the government needs to develop a roadmap that marks the way for comprehensive reforms of fuel pricing policies. The plan should be implemented in stages, so as to reduce price shocks to the economy and consumers. A communications plan that aims to raise awareness about costs and benefits of subsidies, and inform the public about how and when the reform plan will be implemented, can help overcome some of the political barriers to reform. Preparing the internal and external political ground by, for example, consulting with affected groups to negotiate mitigation or compensation measures, will build support for reform.

Table 1 summarizes the recommended actions, for the short (12 months), medium (1-3 years) and long terms (over 3 years). Many actions can be investigated and implemented over the short term. Preparation of these packages should start as soon as possible: being well prepared will enable the government to take opportunities for reform as they arise.

TABLE 1: REFORM OBJECTIVES AND RECOMMENDED ACTIONS OVER THE SHORT, MEDIUM AND LONG TERMS

POLICY	REFORM OBJECTIVES AND ACTIONS
Diesel prices	<i>Reform objective: Eliminate under-recovery</i>
	Short-term actions: Progressively decontrol diesel price by eliminating under-recovery over a period of around one year. This could be at a fixed rate of around INR1 per litre each month, or could vary with higher reductions in under-recovery when specific conditions are met (for example, decreasing international prices or decreasing inflation). Investigate further options to improve diesel price regulation: remove political influence from the application of the formula; consider whether the current trade policy price should be replaced by export parity price within the formula; discuss at the provincial level whether their ad valorem tax rates should be reduced or their spending increased in response to increased revenues as prices are reformed; start to consider whether the fiscal treatment of oil companies should be revised as prices are reformed; similarly, consider reforms to vehicle taxation; and reduce volatility by moving to specific taxation at the provincial level.
	Medium-term actions: Refine and implement options investigated over the short term. Discuss and set an appropriate tax rate for diesel
	Long-term action: Liberalize diesel pricing.
Manage the impacts of diesel price reform	<i>Reform objective: Support the elimination of under-recovery</i>
	Short-term actions: Develop a detailed plan to reduce inflationary impact with reference to the timing and phasing-in of price increases, ensuring the availability of key goods and consumer staples, and reducing simultaneous government expenditure on other programs as possible. Further investigate the impacts and potential mitigation measures for key groups affected by diesel price increases, and how subsidy savings could be redirected to them within the administrative system. Also investigate compensating poor members of the population for the indirect effects of price increases. Implement these measures if deemed necessary.
	Medium-term action: Further investigate and implement mitigation measures if deemed necessary
	Long-term action: Prepare structural mechanisms to reduce the impacts of subsidy reform; for example, energy-saving options and retraining the labour force that will be most affected by the reform (for example, freight transporters, farmers and fishermen).



Domestic LPG subsidy	Reform objective: Phase out LPG subsidies
	Short-term action: Small price increase for LPG cylinders in 2012
	Medium-term action: Infrastructure needed should be put in place so that a cap of eight LPG cylinders per household per year can be introduced in the calendar year 2013. Develop a roadmap for increasing LPG retail prices and phasing out subsidies (e.g., over a 3-5 year period).
	Long-term action: Implement complete phase-out of LPG subsidies. Provide direct support to lower-income households to transition to cleaner and more efficient cooking fuels.
PDS Kerosene	Reform objective: Replace kerosene subsidies with a direct, unconditional targeted cash transfer for low-income households
	Short-term action: Small price increase for PDS kerosene in 2012. Continue to implement and evaluate pilot projects in more states.
	Medium- to long-term action: Implement a phased transition from PDS kerosene to direct transfers for low-income households, rolling out on a state-by-state basis.
Cash transfers	Reform objective: Develop and implement an unconditional, targeted cash transfer scheme to support the reform of fuel subsidies (includes replacing kerosene subsidies, mitigating the indirect effects of diesel price increases, and supporting low-income households to transition to cleaner, more efficient fuels.)
	Short-term action: Evaluate existing pilot projects and undertake new pilot projects in states where the PDS is underperforming. Pilot studies should be used to test the design and implementation of a cash transfer scheme on different beneficiaries, including in rural/urban areas, poor/middle-income groups and connected/remote areas, and over a period of at least one year to test seasonal variations in fuel demand and price fluctuations within the economy. These programs should be led and administered by district-level authorities, in partnership with the banking sector and the National Informatics Centre (the government's Information and Communications Technology organization). Information and assessments of the pilot projects, including a cost-benefit analysis of the national roll-out of a cash transfer scheme, should be made publicly available.
	Medium- to longer-term action: Develop and implement the policy framework for a cash transfer including: <ul style="list-style-type: none"> ▪ Identification and targeting of beneficiaries: creating a unified database of below poverty level (BPL) and Antyodaya Anna Yojana (AAY) households; improving BPL survey methodology; considering inclusion of lower-middle-income groups in early stages to reduce political barriers to reform. ▪ Size and frequency of payments: determine size of payments, for example, redistributing 80 per cent of the kerosene subsidy and under-recovery to all BPL households could provide a direct transfer of INR200 per month; payments should be linked to inflation rates. ▪ Delivery mechanism: continue to increase financial inclusion; plan for regular and timely payments (payments in advance of fuel price increases will cushion negative impacts and help increase popularity of the reforms). ▪ Monitoring and evaluation plans: plan for rapid assessments at key stages of implementation; engage stakeholder participation (e.g., local authorities such as the Panchayati Raj Institutions); refine targeting and delivery mechanisms over time.



BOX 1: A SNAPSHOT OF INDIA'S FUEL SUBSIDIES⁵

Three “sensitive” petroleum products—high-speed diesel, domestic LPG and PDS kerosene—are sold at below-benchmark international prices leading to under-recoveries for the downstream oil marketing companies (OMCs). The under-recoveries have only been partly made up in the past by cash compensation from the government and burden-sharing by upstream national oil companies. India actively regulates the prices of the three products by setting the realized price.

FUEL	DESIRED PRICE*	REALIZED PRICE*	FISCAL SUBSIDY		UNDER-RECOVERY		TOTAL SUBSIDY PER FUEL	
			PER UNIT	TOTAL (INR CRORE)	PER UNIT	TOTAL (INR CRORE)	INR CRORE	US\$ MILLIONS
Diesel (per litre)	46.42	33.47	-	-	12.95	34,706	34,706	7,614
LPG (per 14.2 kg cylinder)	721.58	373.43	22.58	1,974	325.56	21,772	23,746	5,210
Kerosene (per litre)	42.31	12.99	0.82	931	28.50	19,484	20,415	4,479
Gasoline [†]	-	-	-	-	-	2,227	2,227	489
Total				2,905		78,189	81,094	17,792

* Prices as of January 16, 2012. “Desired price” is the sum of refinery gate prices, transport charges and marketing margins paid by OMCs. It is set by a published formula.⁶ “Realized price” is the price charged to dealers (depot price) by OMCs. Retail selling prices in each city are calculated by adding excise duty, wholesalers’ and retailers’ commission and value-added tax onto the “realized price.”

[†] The government “decontrolled” the prices of gasoline and diesel in 2010 to allow OMCs to regularly adjust retail prices, although it retained authority to approve price changes. Gasoline prices changed in line with the formula until December 2011, when the government froze gasoline retail prices in order to avoid pass-through of high international oil prices to final consumers, adding to the under-recoveries incurred by OMCs. The gasoline price was increased again in May 2012. Diesel price increases have been much more strongly constrained than gasoline in the period since 2010.

TABLE 3: BREAKDOWN OF WHO PAID FOR INDIA'S FUEL SUBSIDIES IN 2010-11

		TOTAL	
		INR CRORE	US\$ MILLIONS
Government:	fiscal subsidy	2,905	637
	under-recovery	41,000	8,995
	Total	43,905	9,632
Upstream oil companies: Under-recovery		30,297	6,647
Oil marketing companies: Under-recovery		6,893	1,512

⁵ For more information about India’s fuel subsidies, see TERI (2012b).

⁶ For the formulae and their latest values for fuels sold in Delhi, see: <http://ppac.org.in/writereaddata/Price%20Build%20up%20Sensitive%20Products.pdf>



3.0 Reforming Diesel Prices and Managing the Impacts⁷

3.1 How Pricing Mechanisms and Taxation Could be Reformed

The German Agency for International Cooperation (GIZ, 2011) distinguishes three methods of regulating prices, as shown in Table 4. Reform sees countries seeking to move forward between these steps and/or to improve the implementation of their current mechanisms. Additionally, countries may review and adjust their tax mechanisms, at the same time or independently. A further option is to ration or otherwise restrict access to subsidized products, such as the capping of LPG cylinders being proposed by the government.

TABLE 4: CATERGORIZING FUEL PRICE REGULATION

	DESCRIPTION	EXAMPLE
Ad hoc regulation	Unsystematic price changes over long intervals or constant prices over several years	Saudi Arabia, Bolivia, Qatar, Nigeria
Active regulation	Prices are regulated and reviewed based on predetermined criteria and/or formulae and often at regular intervals (weekly, monthly)	South Africa, PR China, Vietnam
Passive or no regulation	Regulation is limited to the level of taxes and framework conditions (e.g., fuel qualities)	Germany, USA

Source: GIZ (2011)

International experience⁸ shows that removing political influence is key to establishing a pricing mechanism that will fully pass through world price changes to final consumers. For example, China was not able to fully pass on price increases at all times during 2010 and 2011 and is far from being alone in this. India, after repeatedly failing to raise gasoline prices in late 2011 and early 2012, faced strong opposition when it raised the price of gasoline by INR7.50 per litre on May 24, 2012 (over 10 per cent of the then-existing consumer price) (*The Hindu*, 2012). This is a familiar refrain: freezing prices for a period will lead to the need for larger (and politically more difficult) increases at a later date.

The price of diesel in India is actively regulated, with the government retaining price control by advising oil marketing companies when they can change prices. The formula for diesel and its values for Delhi on July 1, 2012, are shown in Box 2.

⁷ This section draws heavily on the study by Anand (2012), taking as its starting point the conclusion. The analysis and recommendations now presented are informed by the Appendix of this policy brief, which details and reviews *international experience concerning pricing mechanisms, tax adjustment and managing impacts of price reform*.

⁸ See Appendix.



BOX 2: PRICE BUILD-UP OF DIESEL IN DELHI, 1 JULY 2012⁹

SR. NO.	ELEMENTS	UNIT	EFFECTIVE JULY 1, 2012
1	FOB Price at Arab Gulf of Gasoil (Diesel) BS III equivalent	\$/bbl	110.60
2	Add: Ocean Freight from AG to Indian Ports	\$/bbl	2.02
3	C&F (Cost & Freight) Price	\$/bbl	112.62
	OR	INR/Litre	39.42
4	Import Charges (Insurance/Ocean Loss/ LC Charge /Port Dues)	INR/Litre	0.37
5	Customs Duty @2.58% (2.50% + 3% Education cess)	INR/Litre	1.03
6	Import Parity Price (at 29.5° C) (Sum of 3 to 5)	INR/Litre	40.81
7	Export Parity Price (at 29.5° C)	INR/Litre	38.71
8	Trade Parity Price (80% of (6)+20% of (7))	INR/Litre	40.39
9	Refinery Transfer Price (RTP) for BS-III Diesel (Price Paid by the Oil Marketing Companies to Refineries)	INR/Litre	40.39
10	Add: Premium recovered for BS-IV Grade over BS-III	INR/Litre	0.04
11	Add : Inland Freight and Delivery Charges	INR/Litre	0.81
12	Add : Marketing Cost of OMCs	INR/Litre	0.67
13	Add : Marketing Margin of OMCs	INR/Litre	0.70
14	Total Desired Price (Sum of 9 to 13) -Before Excise Duty, VAT and Dealer Commission	INR/Litre	42.61
15	Less: Under-recovery to Oil Marketing Companies	INR/Litre	9.13
16	Price Charged to Dealers (Depot Price) (14-15) - Excluding Excise Duty & VAT	INR/Litre	33.48
17	Add : Specific Excise Duty @ INR2.06/Litre (INR2.00/Litre+ 3% Education cess)	INR/Litre	2.06
18	Add : Dealer Commission	INR/Litre	0.91
19	Add : VAT (including VAT on Dealer Commission) applicable for Delhi @ 12.50% and Air Ambience Charges @ INR250/KL	INR/Litre	4.84
20	Retail Selling Price at Delhi (Sum of 16 to 19)	INR/Litre	41.29

There is considerable debate as to the relationship between under-recoveries and losses by Indian OMCs, noting the detail of the pricing formulae and the complexities of apportioning costs in refining and downstream distribution. Under-recovery in the Indian diesel formula fluctuates largely as a function of the world price, and has generally been of the order of INR10 per litre over the past 12 months. There has been discussion on how international pricing is incorporated into the diesel pricing formula, for example Anand (2012, Section 5) questions whether using a price formula based on 80 per cent import parity price and 20 per cent export parity price is supportable given that India is a net exporter of diesel. Using export parity price within the formula would reduce under-recovery by around INR1.5/litre, around 15 per cent of its typical value over the past 12 months.

⁹ For the formulae and their latest values for fuels sold in Delhi, see: <http://ppac.org.in/writereaddata/Price%20Build%20up%20Sensitive%20Products.pdf>



The current differential between diesel and gasoline prices in India is around INR30/litre (see Table 5). Eliminating diesel under-recovery would reduce this difference to around INR20/litre. One option to further reduce the gap would be to increase diesel taxation, while at the same time reducing taxation on gasoline. Given the differences in gasoline and diesel consumption for transport (Anand, 2012, Section 2.1), a revenue-neutral solution to eliminating the gap would see diesel taxation increased by around INR5/litre and gasoline taxation reduced by INR15/litre. This calculation does not take account of who uses both products, what their ability is to pay taxes or how strong the move from diesel to gasoline would be or when it would occur. In the short term, transport systems are inelastic: it is the decision on the fuel type and engine size of new vehicle purchases that is critical. It also ignores the administrative complexities associated with increasing certain taxes while decreasing others across a combined federal and provincial system. Such coordination and harmonization could result in considerable implementation and political challenges, noting that raising taxes on diesel and reducing them on gasoline would affect both federal and provincial revenues and budgets.

TABLE 5: FEDERAL AND PROVINCIAL TAXES IN RETAIL SALES OF IMPORTANT PETROLEUM PRODUCTS (INR) AT DELHI

DESCRIPTION	DIESEL	MOTOR SPIRIT [GASOLINE]	KEROSENE	DOM. LPG
Units	Per litre	Per litre	Per litre	Per cylinder
Retail Selling Price (RSP)	40.91	71.16	14.83	399
Federal Tax				
(i) Customs Duty	1.14	0	0	0
(ii) Specific Excise Duty	2.06	14.78	0	0
Provincial Tax				
VAT (Sales Tax)	4.46	11.86	0.71	0
Effective Date	May 16, 2012	June 3, 2012	May 1, 2012	May 1, 2012
Under-recovery by OMCs	13.64		31.48	480.31
PERCENTAGES				
Total Tax / RSP	19	37	5	0
Total Tax / (RSP - Total Tax)	23	60	5	0
Federal Tax / Total Tax	42	55	0	
Provincial Tax / Total Tax	58	45	100	

Source: Anand (2012, Table 6)

Notes: Total Tax is sum of customs duty, specific excise duty, and value-added tax. Specific excise duty is the sum of basic central value-added tax (CENVAT) duty, special additional excise duty, and special additional duty. Value-added tax is equivalent to sales tax and is the only provincial tax. Under-recovery for diesel is different from that in Anand (2012, Table 5). Note the differing effective dates for the different products.

Eliminating under-recovery would not impact federal tax revenue—customs duty is included in a part of the calculation before under-recovery is calculated and excise duty is specific. But provincial tax, the major revenue from diesel, is *ad valorem* in nature and would increase. If we take the diesel price in Delhi on May 16, 2012, and eliminate under-recovery of INR13.64/litre, provincial tax would increase by INR1.70/litre (to INR6.36/litre, a 43 per cent increase). We could expect some decrease in diesel consumption due to the increased retail selling price, but this would not be sufficient to offset the extra tax income. If provinces wished to hold their tax revenues constant, they would need to reduce the sales tax rate. An alternative could be to use the extra revenue to fund programs, aimed at mitigating impacts of price increases, at transport infrastructure or more generally. Alternatively, provinces could reduce their taxation rate to reflect the higher fuel price.



Eliminating under-recovery would also have a significant impact on oil companies, notably the upstream national oil companies who are currently shouldering the majority of the non-government burden (TERI, 2012b, Table 8). In 2011–12, under-recovery on diesel was INR811.9 billion (Anand, 2012, Table 7). If under-recovery were eliminated, it could be argued that this money would allow the companies to be properly and fairly financed, or that there would be, at least to some extent, a windfall element and that the government should review fiscal and regulatory arrangements,¹⁰ with the aim of bringing payments currently made for under-recovery back into government budgets. The situation is a complex one, and the promotion of competition in oil marketing—as recommended by successive high-level committees reporting to the government and by the Planning Commission’s Integrated Energy Policy report—would be expected to reduce their profits below current (uncompetitive) levels (Planning Commission, 2005b).

Phasing out the current diesel subsidies will expose the Indian economy to oil price fluctuations in the world market to a greater extent. This is a challenge faced by many other countries, whose experiences can also serve as guidance for India. The use of variable taxes to partially control volatility, as currently used in Chile and from time to time in Brazil, is an interesting option. For diesel, variable taxes are in place only in federal custom duty (which raises just over INR1/litre) and for the provincial sales tax (which raises around INR4.5/litre in Delhi at present). For taxes to be used to smooth prices in any significant manner, it would therefore be necessary to use provincial taxation. This is worthy of consideration but would need the resolution of a number of potentially complex issues. It does not seem possible that it could be implemented in the short term, and there is not a strong case that it should be a precondition for subsidy reform.

In the longer term, the Indian government is considering a move to a general sales tax, whose benefits would include reducing the current cascading effects of taxation. Anand (2012, Executive Summary) notes how, “it is desirable to harmonize petroleum sector taxation with the proposed goods and services tax (GST) in the framework of a tax on value-added. This move would not only help widen the base of taxation, but also reduce the heavy reliance of both federal and provincial governments on petroleum sector taxes.” Reviewing and improving the tax system would yield a range of benefits for the Indian economy, but can be seen as a medium- to long-term measure. It is possible to proceed with diesel subsidy reform without changes to the tax system.

3.2 Recommendations

Short term:

- **Progressively decontrol diesel price by eliminating under-recovery** over a period of around one year. This could be at a fixed rate of around INR1/litre each month, or could vary with higher reductions in under-recovery when specific conditions are met (for example, decreasing international prices or decreasing inflation).
- **Investigate further options to improve diesel price regulation:** remove political influence from the application of the formula; consider whether the current trade policy price should be replaced by export parity price within the formula; discuss at the provincial level whether their *ad valorem* tax rates should be reduced or their spending increased in response to increased revenues as prices are reformed; start to consider whether the fiscal treatment of oil companies should be revised as prices are reformed; similarly consider reforms to vehicle taxation; reduce volatility by moving to specific taxation at the provincial level.

¹⁰ For example, the conditions around national upstream oil companies’ access to offshore oil and gas fields, which some claim are generous.



Medium term:

- Refine and implement options investigated over the short term
- Discuss and set an appropriate tax rate for diesel

Long term:

- Liberalize diesel pricing

3.3 Managing the Impacts of Reform

In July 2012 Prime Minister Singh described raising prices of diesel as “a very delicate issue” and stated that, “if you try to raise the prices of diesel, it has a cascading effect on the economy. We are trying to work out a solution where it impacts the economy in the least manner but also brings down the fiscal deficit.... It’s extremely difficult for us to absolutely decontrol diesel at the moment because it would impact the economy in a very, very serious manner.” He added that the government is looking at partial decontrol of diesel so that the impact on the people would be of “reduced magnitude” (Daily News and Analysis, 2012).

Anand (2012, Section 6.1) finds, perhaps surprisingly given how much the issue is discussed, that there is little empirical or modelling work to support the debate on the impacts of fuel price subsidy reform on inflation. Three available estimates, the first of which is for crude oil rather than diesel, are:

- The Reserve Bank of India report in 2011 on crude oil: “Empirical estimates show that every 10 per cent increase in global crude prices, if fully passed-through to domestic prices, could have a direct impact of 1 percentage point increase in overall wholesale price index (WPI) inflation and the total impact could be about 2 percentage points over time as input cost increases translate to higher output prices across sectors” (p. 641).
- Anand (2012, Section 6.1) applies the weight of diesel in the WPI and finds that a 10 per cent increase in diesel price would lead to a 0.47 per cent increase in the general price level. This is a first-order estimate: we would expect feedback mechanisms to lead to new equilibrium in the economy, with demands changing and goods, services and factors of production being substituted for each other. This could lead to a significantly different final inflationary figure than that obtained from the first-order estimates. For an increase in the diesel price of 25 per cent, the current value of the under-recovery, the first-order estimate would be for a price rise of 1.2 per cent.
- Cambridge Econometrics, using its E3MG model,¹¹ estimates that the removal of diesel subsidies to vehicles using diesel, would increase consumer prices in India by 0.7 per cent as a result of the additional freight costs and the direct cost of higher personal transport costs.

Granting subsidies contributes to the fiscal deficit, which in turn also causes inflation. The authors are not aware of studies estimating how large the inflationary impact caused by subsidies’ contribution to the fiscal deficit is, nor any work which compares the relative magnitude of the inflationary impact from maintaining subsidies to the inflationary impact from the price increases that subsidy reform will lead to. It is not even clear as to which impact is larger. India could consider monetary policy interventions such as currency appreciation to manage inflationary impacts, but the scale of the likely impact on inflation does not seem sufficient to justify these.

¹¹ See: www.camecon.com/AnalysisTraining/suite_economic_models/E3MG.aspx for model details.



Whatever the net inflationary impact, several measures to partially mitigate it are used widely internationally:

- Increasing prices at the time(s) of year when inflation is seasonally low, noting that opportunities to increase prices may arise quickly and it may not be possible to fully coincide with these.
- Phasing-in price increases, thus introducing smaller and slower impacts.
- Ensuring the availability and supply of key consumer goods and staples.
- Minimizing government expenditure from other programs at the time when subsidy reform is being implemented. Such programs include cash transfers or other schemes designed to reduce the impacts of subsidy reform.

Inflationary rates specific to groups can be much higher than the average rate to the whole economy. Table 6 summarizes first-order estimates of the increase in costs to specific groups, looking at five groups that were both large users of diesel and considered to be key sectors subject to potentially large inflationary impacts (Anand, 2012). In common with the estimates for the economy as a whole, the numerical estimates are first order. They do not assess how much of the cost increases could be passed onto end consumers of their goods and services (when applicable), nor the second-order inflationary impacts from price increases in other parts of the economy. It can be considered that second-order impacts would be significantly lower than first-order ones. It is also important to note that there are few reliable estimates available of potential inflationary impacts to the economy in general or to specific diesel consumer groups. Within this environment, perception of impacts can be at least as important as what actual impacts may be expected or finally experienced.

TABLE 6: IMPACT OF 25 PER CENT DIESEL PRICE INCREASE ON COSTS TO AFFECTED GROUPS

AFFECTED GROUP	IMPACT OF DIESEL PRICE RISE OF 25% ON COSTS (ELIMINATES OMC UNDER-RECOVERY)
Large public transport operators – road	+8% [State Road Transport Corporations (SRTCs), 7.1]
Goods/Freight transporters – road	+10% [7.2]
Rail transport (freight and passenger)	+2.5 to +3.5% [7.3]
Industry (fuel consumers)	+0.25% (median diesel input across industry) [7.4]
Agriculture	Costs of cultivation: Wheat +2.75%, Sugar cane +0.75% [7.5]

Source: Anand (2012); section numbers are indicated in square brackets.

Of the sectors highlighted in Table 6, two appear most worthy of consideration for compensation: public transport companies and goods/freight transporters by road. Given that public transport companies may have little or no control over increasing fares or reducing input costs (with both wages and numbers of employees outside their control), making direct payments to the public transport companies may be the simplest mitigation option. Making direct fiscal transfers to state road transport corporations (SRTCs) over a designated period may be a useful way to curb fears that diesel price increases would lead to fare increases or debt to SRTCs. Preparation of options and detailed design could be expected to take place within a time scale of months. International experience for business, which can be related to the Indian freight transport sector, shows that rations of fuels for a limited time to sensitive industries can reduce both opposition to reform and inflationary impacts, and can buy more time to allow solutions to raising prices or reducing costs to be developed. Reducing some of the “red tape” and bureaucratic hurdles to the movement of goods and freight is an intuitively attractive option but this, and other options, would need to be discussed and developed with the affected industry. A set of options could be developed within a few months, ideally



in consultation with stakeholders, including the operators. Policies and measures to increase the speed of goods and freight movement are indicated.

Impacts on rail transportation are relatively smaller, and the federal government has control over the fees that are charged for services. Impacts on industry are not considered significant enough to justify compensation. The initial calculations made by Anand (2012, Section 7) are that specific impacts on agricultural production are also relatively low, however this group is important politically and mitigation measures—for example direct payments, perhaps based on output—could be considered, as were made in Jordan to accompany their 2005–08 price increases. It would also be possible to consider access to lower-priced fuel for a transition period, but this would come with side effects, notably the increase of opportunities for corrupt activities.

Amongst other groups where inflationary impacts could be significant economically or politically, standby generation is an important category whose use is widespread across many sectors and consumer groups, and where diesel price increases will be fully passed through at the margin. Reducing diesel use from standby generators, including that used for irrigation, could be achieved by improving the scale and quality of supply from the electricity grid, but this would be a long-term and expensive option. It is highly unlikely that the removal of all diesel subsidies would generate sufficient revenue to supply electricity in the quantities that all demand it. A more general redistribution of subsidy savings could be considered, noting that the users of standby generators are highly varied, from irrigation pumping to telecom towers and to generators to wealthy and less wealthy households. Fisheries are largely analogous to agriculture, noting that some fishing operators rely heavily on diesel to fuel their vessels and that ice-making and other storage facilities tend to depend on electricity, often from standby generation. A more detailed consideration of the impacts and potential mitigation measures for small public transport operators by road is also indicated. The reform of subsidies will have a significant impact on the upstream oil companies and OMCs, which are currently making up under-recoveries: options are discussed in the previous section, and have the nature of fiscal reform rather than compensation. Compensation to private road users is not indicated unless it is decided that they could create a major barrier to reform.

The analysis has so far focused on those sectors likely to experience a significant direct impact from subsidy reform. But indirect impacts—notably from increased agriculture and transport costs leading to increased food prices—are known to have a higher impact on the poorest members of the population (see for example Bacon, Bhattacharya and Kojima, 2010). Helping the poor would be best achieved through a broader assistance program. If this were not narrowly focused on fuels, it would have the advantage that fuels would not carry the entire administrative burden of beneficiary identification and delivery of targeted assistance, making assistance more cost-effective. A workable redistributive mechanism is required, noting that any new system may take time to develop and implement. In the short term, ongoing government budgets, programs or projects could be boosted. Investment in public transport and transport infrastructure more generally always looks astute, and recent experience in Thailand is of interest (keeping the lowest class of public transport costs low, or even free). In the medium or longer term, a link into a possible cash transfer scheme, although more often talked about around kerosene and LPG price reform, is an option (discussed in more detail in the following sections).

The preceding paragraphs have highlighted possible compensation measures, but it is not clear that India must include any or all of these in a diesel subsidy reform package. Reasons against compensation include that fossil-fuel prices are volatile and on a general upward trend, and consumers should be exposed to these effects such that they can best choose how much to rely on diesel; someone has to pay for increased prices and for volatility, and it does not necessarily have to be government. The Indian government has allowed the gasoline price to rise significantly



since 2010 without granting compensation measures, and it can be argued that there is no compelling reason to treat diesel differently; however, the issue of inflation is not generally raised as strongly when gasoline price increases are discussed as when diesel prices are discussed.¹²

Government efforts to progress reform will rely to some extent on the case that government can make as to why reform is beneficial: this involves presenting a comparison of the “with subsidies” and “without subsidies” cases and their benefits and costs. If macro-economic reasons for reform are not enough to garner sufficient support for reform—and often they are not—then there will be a need to manage specific impacts to win political buy-in. International experience shows that the path to subsidy reform is often blocked by political barriers, even where the overall economic impact is not large, but where the vested interests are strong. International experience indicates that subsidies will re-emerge unless the underlying logic for them—be this protecting the poor, countering inflation, protecting domestic suppliers or any alternative—is dealt with, or unless prices are fully liberalized.

A reform plan with compensatory measures is likely to be politically more attractive than one without, perhaps significantly so. It should be seriously considered, and it is recommended that preparation should start as soon as possible. Experience shows that what comes out of the political process, internally within government and then externally, will differ from what is proposed at the beginning. The recommendation is made that the process followed in this policy brief—assess a wide range of impacts on groups; propose how these could be managed; consult around these; draw up plans—is followed.

3.4 Recommendations

Short term:

- **Develop a detailed plan to reduce inflationary impact** with reference to the timing and phasing-in of price increases, ensuring the availability of key goods and consumer staples, and reducing simultaneous government expenditure on other programs as possible.
- **Further investigate the impacts and potential mitigation measures for key groups** affected by diesel price increases and how subsidy savings could be redirected to them within the administrative system. Also, investigate compensating poor members of the population for indirect impacts of price increases. Implement these measures if deemed necessary.

Medium term:

- **Further investigate and implement mitigation measures** if deemed necessary.

Long term:

- **Prepare structural mechanisms to reduce the impacts of subsidy reform**, for example, energy-saving options and retraining the labour force that will be most affected by the reform (for example, freight transporters, farmers and fishermen).

¹² Noting the political protests made when India raised gasoline prices by INR7.50/litre in May 2012 (see earlier section of this policy brief).

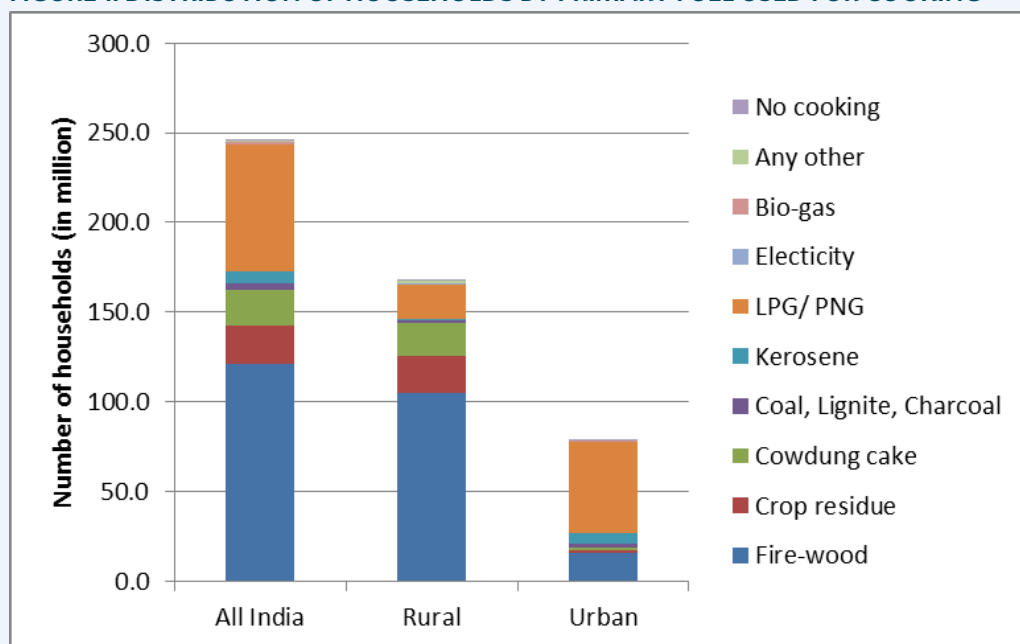


4.0 Reform Options for LPG and Kerosene Subsidies¹³

4.1 Overview of Domestic LPG Use and Subsidies

LPG and piped natural gas (PNG) are predominantly used in urban households for cooking, but penetration in rural areas remains low (see Figure 1). Firewood, crop residue and cow-dung cakes are, by far, the main sources of fuel used by rural households (over 50 per cent of all Indian households) for cooking.

FIGURE 1: DISTRIBUTION OF HOUSEHOLDS BY PRIMARY FUEL USED FOR COOKING



Source: Ministry of Home Affairs (2011)

Because the subsidy provided on LPG cylinders is universal to all households, urban households in upper income-classes that consume more LPG subsequently benefit more from the subsidy.

In addition, subsidies have also given rise to a number of malpractices in the LPG market. Many households, despite being required by law, have been reluctant to surrender their LPG cylinders when they receive connections to PNG, resulting in an increasing number of double connections as the PNG network expands. This leads to inefficient consumption and diversion of LPG cylinders, mostly for commercial use. To reduce the number of double connections, the oil marketing companies are launching LPG transparency portals (Government of India, 2012a) and have started blocking LPG connections for those households that have a PNG connection (Government of India, 2011b).

To reduce total LPG subsidies, the government is considering capping the number of subsidized LPG cylinders allocated per household. The volume of the per-household allocation is still being decided. The Ministry of Petroleum and Natural Gas (2011) proposed capping the allocation at seven 14.2 kg cylinders per household per year, whereas the Parliamentary Standing Committee on Petroleum and Natural Gas (2011) considered capping the allocation at four cylinders per year. Purchases over and above the allocation would be at market prices.

¹³ The following sections are based on the report by TERI (2012a).



4.2 Recommendations

Short term:

- **Increase prices of subsidized LPG cylinders.** The Expert Group chaired by Kirit Parikh recommended periodic price increases for domestic LPG (Government of India, 2010). The government could introduce a small price increase as an immediate action, while preparing to introduce a cap on subsidized LPG cylinders.

Medium term:

- **Cap LPG cylinders at eight per household per year as an interim measure.** Considering average monthly consumption of rural and urban households, TERI (2012a) finds that capping the allocation of cylinders at a more conservative eight per household per year would generate INR4,089 crore (US\$900 million) in annual subsidy savings, 17 per cent of the total LPG subsidy (including under-recoveries).
- **Develop and implement a roadmap to abolish LPG subsidies altogether.** Creating a dual-pricing system (whereby any purchase over and above the capped allocation will be at market prices) will also create new distortions and leakage within the distribution system. Two government committees headed by Chakravarthy Rangarajan (Government of India, 2006) and Kirit Parikh (Government of India, 2010) have recommended the government abolish subsidies for domestic LPG. To implement the recommendations, the government should develop a roadmap to gradually phase out LPG subsidies by raising prices in small increments over 3–5 years.

Long term:

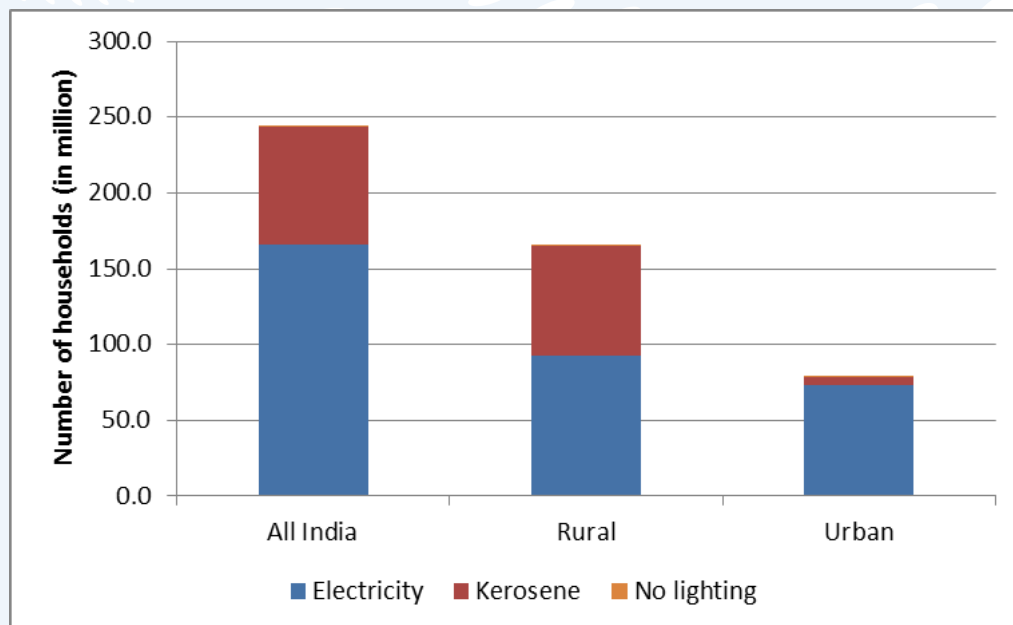
- **Through a cash transfer scheme, provide support for BPL households to transition to cleaner and more efficient fuels.** The government has a number of initiatives underway to set up small LPG distributorships in rural areas, with the aim of increasing coverage to 75 per cent of the population by 2015 (Ministry of Petroleum and Natural Gas, 2010). Removing LPG subsidies will undermine the government's plan to extend LPG consumption in rural areas unless adequate support is provided for the poor. However, the World Bank advises that advanced combustion stoves for solid biomass are likely to be a more feasible option than LPG as a cooking and heating fuel of choice in rural areas in low- and lower-middle-income countries in the foreseeable future (Kojima, 2011). A cash transfer scheme for low-income households that is not linked to fuel consumption would provide more targeted support for the poor while also supporting a range of options for transitioning towards cleaner and more efficient fuels.

4.3 Overview of PDS Kerosene Use and Subsidies

Kerosene is primarily used in rural households for lighting (see Figure 2). Subsidized kerosene provided through the public distribution system (PDS) is intended to be targeted to those households that are below the poverty line and have ration cards to prove their economic status. National Sample Survey Office data for 2004–05 showed that approximately 50 per cent of poor rural households did not have a BPL card and, in some states, such as Bihar and Jharkhand, the figure was as high as 80 per cent (Ministry of Statistics and Programme Implementation, 2007).



FIGURE 2: DISTRIBUTION OF HOUSEHOLDS BY PRIMARY FUEL USED FOR LIGHTING



Source: Ministry of Home Affairs (2011)

A large volume of subsidized kerosene sold through the PDS is illegally diverted and resold at higher prices or used to adulterate diesel and gasoline. The National Council for Applied Economic Research (2005) found that 18 per cent of PDS kerosene was diverted towards non-household use, more than 17 per cent was diverted towards the open market and a further 2.6 per cent was sold to households that did not hold BPL cards. Shenoy (2011) claims that the level of diversion could be worth as much as INR28,000 crore¹⁴ (US\$6.15 billion) per year. In addition, TERI (2012a) estimates that the adulteration of diesel may have cost state governments up to INR1,021 crore¹⁵ (US\$224 million) in foregone excise duties from diesel sales in 2005–06.

The Department of Food and Public Distribution (2011) has initiated reforms to the public distribution system with the aim of making it more transparent, efficient, effective and accountable using information technology. Among a number of state-level initiatives¹⁶ are two pilot projects to implement a direct transfer in place of subsidies—one in the city of Mysore in Karnataka for LPG consumers and one in the city of Alwar in Rajasthan for kerosene consumers. Initial findings from the Alwar pilot project indicate that the purchase of kerosene has significantly reduced since the pilot study began in December 2011, resulting in an estimated savings of 60 per cent (TERI, 2012a).

¹⁴ Based on a \$110 per barrel crude oil price.

¹⁵ Based on National Council for Applied Economic Research's findings that 18 per cent of PDS kerosene was diverted to non-household use, and assuming that the full 18 per cent was used to adulterate diesel.

¹⁶ See TERI (2012a, Section 1.3, Table 4)



4.4 Recommendations

Short term:

- **Small price increase for PDS kerosene in 2012** and the Expert Group chaired by Kirit Parikh recommended periodic price increases for PDS kerosene (Government of India, 2010), but these have not been raised since June 2011.

Medium to long term:

- **Develop a roadmap gradually replacing PDS kerosene with direct payments**, to be rolled-out on a state-by-state basis (discussed in more detail below).



5.0 *Cash Transfers to Support the Reform of Fuel Subsidies*

Direct transfers, such as those being piloted in Mysore and Alwar, could be a useful tool for supporting the reform of fuel subsidies in other states, and ultimately nationally. However, the success of direct cash transfers in meeting their objectives is contingent upon a number of design features and how they are implemented. TERI's (2012a) recommendations are based on lessons learned from India's experience with cash transfers and the experience of other countries.¹⁷

Identification and targeting

Identification of households living below the poverty line has been difficult under the PDS. In 2009 a government-appointed Expert Group developed a set of recommendations for improving the BPL census (Government of India, 2009). In 2011 the Ministry of Rural Development initiated the Socio Economic and Caste Census in rural areas for the 12th Five-Year Plan. The methodology was largely consistent with the recommendations of the Expert Group and the survey is underway in different stages across states (Ministry of Rural Development, 2011). A similar survey for urban households is being prepared by the Ministry of Housing and Urban Poverty Alleviation.

Whether to include middle-income groups as eligible recipients is also an important consideration in the design of a cash transfer scheme. Although some would argue that middle-class households are non-deserving recipients, they represent an important voting constituency and can be a strong group in opposition to subsidy reform. The Department for International Development (2011) notes that political acceptability is an important element to consider when choosing a targeting mechanism and the World Bank (Yemtsov, 2010) finds that compensating near-poor or middle-income groups has been a common practice in other countries' subsidy reform plans. Including the middle class as eligible recipients may reduce political opposition to subsidy reform, although it will also substantially increase the implementation costs of the program.

Size and frequency of transfer

Determining the size of payments in a cash transfer scheme may take into account several factors, including mitigating the negative impacts of the subsidy reforms, the amount of government expenditure saved by the reforms, potential effects on participation in labour markets or on inflation, poverty reduction and political feasibility. In Iran, for example, the government chose to redirect 50 per cent of the savings from the subsidy reforms to a cash transfer for households; whereas in Indonesia, the government chose to allocate a fixed amount to each eligible household (US\$10 per month), which cost the government approximately 25 per cent of the savings from subsidy reform (Association of Southeast Asian Nations, n.d.).

Taking the subsidy and under-recovery for kerosene and dividing the total cost to government (INR20,415 crore/US\$4.5 billion) by the current number of BPL households (65.28 million), Table 7 provides a rough calculation of the size of the transfer that could be available under three scenarios.¹⁸

¹⁷ The government provides cash transfers under the following two programs: the Janani Suraksha Yojana (for supporting maternal and post-natal health) and the Indira Gandhi National Old Age Pension Scheme. For more details on the lessons learned from these programs and international experience see TERI (2012a, Appendix).

¹⁸ Note that these calculations do not include the cost of establishing the administrative infrastructure.



TABLE 7: AMOUNT OF TRANSFER AVAILABLE PER YEAR AND PER MONTH UNDER THREE SCENARIOS

PERCENTAGE OF TOTAL SUBSIDY SAVINGS DISTRIBUTED AS CASH TRANSFER	TRANSFER AMOUNT AVAILABLE PER BPL HOUSEHOLD PER ANNUM	TRANSFER AMOUNT AVAILABLE PER BPL HOUSEHOLD PER MONTH
100%	INR3,131 (US\$68.70)	INR261 (US\$5.72)
80%	INR2,505 (US\$54.96)	INR209 (US\$4.58)
50%	INR1,566 (US\$34.35)	INR130 (US\$2.86)

Source: TERI (2012)

To put these numbers in context, in 2009–10 the poorest 10 per cent of India’s rural population had an average monthly per capita expenditure of INR453, while the average monthly expenditure of the poorest decile in the urban population was INR599 (NSSO, 2011).

Delivery mechanism

Cash transfers are typically delivered through post offices or bank accounts, sometimes necessitating the establishment of new bank accounts where financial inclusion is low. In India, smart cards with biometric information are being provided as part of the National Population Register and by the UIDAI. The UIDAI is developing a system where eligible beneficiaries can be verified using biometric data at the time of purchase. Upon verification, a cash payment can be directly credited to the beneficiary’s bank account. Under this system, a cash transfer for the reform of kerosene subsidies would be provided as a refund of the subsidy amount to eligible beneficiaries, with all end users paying full market price at the time of purchase.

Linking direct transfers to fuel purchase could incentivize distortions (for example purchasing more kerosene than is required for own consumption to receive higher cash payments and using the fuel to adulterate diesel or sell on the black market) unless a cap is placed on the amount of direct transfer per beneficiary. Implementing a cap would require strict enforcement, which could significantly increase administration costs of the scheme, particularly if it is extended to cover other PDS commodities, like food subsidies, in the future. Even if strictly enforced, corruption could still flourish.

An alternative would be to provide a fixed-amount cash transfer independently of fuel purchase but linked to inflation rates. A general cash transfer could be used to cover costs for a number objectives, including to mitigate the indirect effects of increasing diesel prices, to support low-income households transition to cleaner fuels (such as the government’s program to promote LPG) or even as an alternative to other PDS commodities like food subsidies. Such a program could minimize administrative costs and at the same time meet the most urgent needs of the poor without second-guessing how they should spend the extra income.

Financial inclusion remains a big challenge in India and requires innovative solutions. The Reserve Bank of India estimates that 40 per cent of the total population lacks access to the most basic financial services (Chakrabarty, 2011). In 2011 the government issued the *Strategy and Guidelines on Financial Inclusion*, which provides a detailed plan for extending banking services and increasing financial inclusion within India (Ministry of Finance, 2011). However there are a number of challenges facing the government’s plan, including limited uptake by the banking sector to set up regional rural banks because of the relatively high transaction costs of handling small accounts in rural and low-income areas. As a result, the government is looking at “branchless,” technology-based solutions such as business correspondents and mobile phone technology.



In the absence of bank accounts, post offices may provide an alternative mechanism for delivering cash payments. However this option needs to be explored in more detail at the state level to ensure that post offices can offer a reliable and convenient service for eligible beneficiaries.

Monitoring and evaluation

A monitoring and evaluation system can help identify and address malpractices and track whether the cash transfer scheme is meeting its objectives and reaching the intended beneficiaries. Surveys during and after the pilot studies will help assess the strengths and weaknesses of the programs being tested before they are rolled out more widely. Rapid assessments at key stages, such as after the first tranche of payments, and complaints procedures can quickly identify problems that can be addressed in subsequent phases of implementation. The lifetime of the cash transfer program also needs to be considered and exit options identified under which the transfers would diminish or stop altogether as the beneficiaries' economic status changes, program objectives are met or other factors necessitate a reconsideration of the system (Kapur, 2011).

In order to carry out evaluation, either an independent authority can be established, which can be costly, or existing agencies can be given monitoring and enforcement responsibilities for the program. For instance, in Indonesia, a research institute was engaged to undertake the rapid assessment of the cash payments and local authorities were given the responsibility of handling complaints (Beaton & Lontoh, 2010).

5.1 Recommendations

Short term:

- **More pilot studies in states where PDS is under-performing.** The National Council for Applied Economic Research (2005) study identified the states of Bihar, Chandigarh, Delhi, Jharkhand, Orissa and Punjab as having very high rates (over 50 per cent) of diversion of PDS kerosene. A similar assessment could help identify states in which a pilot study for a cash transfer system could be most beneficial. In addition, pilot studies should be used to test the design and implementation of a cash transfer scheme on different beneficiaries, including in rural/urban areas, poor/middle-income groups and connected/remote areas, and over a period of at least one year to test seasonal variations in fuel demand and price fluctuations within the economy. These programs should be led and administered by district-level authorities, in partnership with the banking sector and the National Informatics Centre (the government's information and communication technology organization). Information and assessments of the pilot projects, including a cost-benefit analysis of national roll-out of a cash transfer scheme, should be made publicly available.

Medium-to-long term:

- **Develop a more detailed cash transfer scheme to support low-income groups transition to higher energy prices.** The cash transfer should primarily support the reform of kerosene subsidies but could also be used to mitigate the indirect impacts of diesel price increases and support low-income households transition to cleaner and more efficient fuels. However, the cash transfer scheme should ideally be independent of fuel purchases and should include the following:



- **Identification and targeting:** A unified database of households in the BPL and AAY categories needs to be prepared on the basis of results from the socioeconomic surveys, and a new methodology should be put into practice that identifies beneficiaries of different state and centrally sponsored transfer schemes. However, the actual introduction of a cash transfer scheme is not contingent upon these. The government should consider including lower-middle-income groups in order to reduce political opposition to the reform plans, at least in the early stages of implementation. However, this will significantly increase the implementation costs of the program. If included, eligibility criteria can be gradually narrowed to exclude lower-middle-income groups in later payments, once the reforms have been implemented. Targeting is never perfect but can be refined over time; a common experience in other countries (Yemtsov, 2010).
- **Size and frequency:** A simple calculation shows that redistributing 80 per cent of the kerosene subsidy and under-recovery directly to all BPL households through a cash transfer would provide them with a supplementary income of around INR200 per month (although this simple estimate does not take into account the administrative costs of establishing and implementing a cash transfer program). The payments should also be designed or reviewed regularly to take into account inflation rates and volatility in fuel prices.
- **Delivery mechanism:** The government should continue to support innovative solutions to increase financial inclusion in India, including through “branchless” banking services. Implementation of the cash payments needs to be timely to mitigate the negative impacts on the poor. Making payments on a regular basis and in advance of the price increases will cushion the negative impacts and help increase the popularity of the reforms.
- **Monitoring and evaluation:** The reform plan should include rapid assessments at key stages. There is no need to create a new, independent authority to monitor implementation, as engaging Indian local authorities such as the Panchayati Raj Institutions would be an administratively cheaper option and would help to instill a sense of ownership in the cash transfer program.



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Appendix: Analysis of International Experience: Pricing Mechanisms, Tax Adjustment and Managing Impacts of Price Reform

A1 Pricing Mechanisms and Tax Adjustment

Passive or no regulation—price liberalization—is the ultimate goal, and has been shown to be the best mechanism for passing through international price rises onto domestic prices (Baig, Mati, Coady, & Ntamatungiro, 2007).^{19,20} Ad hoc regulation is much less successful in this regard, and the experience of Indonesia is instructive in showing how infrequent increases followed by periods of price freeze leads to the re-emergence of subsidies when world prices increase. Automatic Pricing Mechanisms are highly prevalent, and differ in their design and in whether the formulae calculated are always adhered to. South Africa's is widely respected in its application, if not always in the (high) prices it maintains. China's is still subject to political intervention; the pricing administrator, National Development and Reform Commission (NDRC), includes political, social and economic considerations explicitly when it considers if prices should be changed.

The desire of governments to intervene when, in their view, there is significant reason, represents a danger to the effectiveness of pricing mechanisms in passing through world price increases. Chile smoothes prices at the pump by using a varying tax (the SIPCO), where the 2-week average price is compared to a 5-month price average, with the tax rate raised if the short-term average is below the medium-term average raised and the tax rate reduced if the average is above. Tax revenue is designed to be predictable and neutral across any 5-month period. Brazil similarly combines pricing and variable taxation, an example being its November 1, 2011 policy to raise prices while offsetting an equal amount of taxation in order to reduce the build-up of fiscal losses which Petrobras, the national oil company, was experiencing. In Mozambique in 2008, the government exempted or reduced taxes on a variety of oil products in response to high world oil prices. This was a common response in developing countries: a 2009 study by the World Bank (Kojima, 2009) noted that a large majority of 49 countries reviewed had intervened against the full pass-through of world oil price rises into transport fuels for consumers. When oil prices were falling, China took this opportunity to increase taxation, simultaneously reviewing and rationalizing a number of tax schemes.

Experiences with rationing and dual pricing have tended to demonstrate significant secondary issues. In India, Anand (2012, Section 2.1, p. 18) summarizes thusly: "There is reason to believe that large quantities of SKO [special kerosene oil] are used to adulterate diesel (and diverted from its intended use). Shenoy (2010) refers to NCAER (2005), which estimated that, around 38 per cent of PDS kerosene was diverted to the black market and did not reach the intended recipients. ... With improvement in supply-tracking mechanism, it is likely that in recent years such diversion has also been brought under some check." Section A2 of this policy brief, reviewing how countries have attempted to manage inflationary impacts at the macro-economic level, notes that China held down prices for refined petroleum products at a time of high crude oil prices, which resulted in losses to state-owned refineries and to some independent refineries halting or reducing their production, leading to scarcity and hoarding in the market.

¹⁹A survey of 51 countries in 2007 showed that none of the 15 countries that had liberalized prices subsequently abandoned it in the period 2003–06. In contrast, the 28 countries surveyed that used ad hoc arrangements included several where prices had been frozen over long periods.

²⁰The examples analyzed do not include countries with liberalized prices. Their experiences in dealing with inflation would provide a useful indication for India as it contemplates the possible movement to liberalized prices.



TABLE A1 PRICING MECHANISMS AND TAX ADJUSTMENT

PRICING MECHANISMS					
	CHINA	INDONESIA	JORDAN	SOUTH AFRICA	TURKEY
Experience	NDRC, the administrator, considers price adjustments when three benchmark crudes move more than 4 per cent within 22 working days. NDRC includes political, social and economic considerations. International crude prices rose 70 per cent between January 2009 and October 2011, while fuel rose 50 per cent.	Prices for premium gasoline (RON 88) and diesel for non-industrial consumers set on an ad hoc basis. Major prices increases in 2005 and 2008 were not accompanied by a link to world prices and subsidy re-emerged as a significant issue as oil prices rose in 2010 and 2011.	Prices for petroleum products rose between 33 per cent and 76 per cent from 2005 to February 2008 (when most had reached international parity). Prices are set to a formula based on the international (Brent) crude. Administration is by a committee with representatives from three ministries and the state refinery company.	Government sets prices for all grades of petrol, diesel and illuminating paraffin using a pricing mechanism that is applied automatically and independently, free from government intervention for political, economic or social reasons.	An automated pricing mechanism was introduced in 1998 and allowed refineries to make a profit. In 2005, prices were fully liberalized across the sector and state refining and oil distribution companies were privatized. Distribution margins rose 60 per cent in the 20 months after liberalization.
Lesson(s)	<i>Governments often retain political influence over automatic pricing regulation.</i>	<i>If no link to world prices is made, subsidies will re-emerge when world prices rise.</i>	<i>Subsidies for transport fuels were eliminated progressively over a 3-year period.</i>	<i>Automated mechanism widely considered to have functioned well over the years.</i>	<i>Price liberalization is the best option to eliminate subsidies,²¹ but it requires oversight to be fully effective.</i>
Sources	Government of China (2008); Aizhu (2011)	Global Subsidies Initiative (forthcoming); Husna (2011)	Baig, Mati, Coady & Ntamatungiro (2007); Arze del Granado, Coady & Gillingham (2010); Ragab (2010)	Department of Energy (n.d.); Baig, Mati, Coady & Ntamatungiro (2007)	Oguz (2006); Baig, Mati, Coady & Ntamatungiro (2007)
TAX ADJUSTMENT					
	BRAZIL	CHILE	CHINA	MOZAMBIQUE	
Experience	The government stabilizes prices through influencing the federal oil company (Petrobras) and through regular adjustments to taxes. The government reduced taxes to offset an increased price for Petrobras on November 1, 2011. Fuel taxes are generally set at the state level and are important to their revenue.	The government manages price volatility of the deregulated system to final consumers by a variable tax (the SIPCO) paid by consumers. This remains revenue neutral over the medium term. The tax rate is calculated by comparing the 2-week average to the 5-month average.	In 2008 China took the opportunity to significantly increase taxes at a time of falling international crude prices, simultaneously increasing the consumption tax for oil products and abolishing several fees and charges for road use. In 2011 there was a move from volume-based to value-based taxation.	In 2008 the government reduced taxes in order to minimize the impact of rising international oil prices. It ceased charging value-added tax on diesel and kerosene and halved taxes for diesel used in agriculture, fishing, mining and oil-fired generators not connected to electricity grids.	
Lesson(s)	<i>Government can adjust taxes as part of pricing policy. Which branches of government revenues accrue to is important.</i>	<i>Variable taxation can be used to smooth prices. Averaging prices over a 5-month period has been a sustainable methodology.</i>	<i>Declining world prices offer an opportunity for reform. A review of taxation more widely can be incorporated at the same time.</i>	<i>Governments in developing countries face strong pressures to control consumer prices.²²</i>	
Sources	MarcoPress (2011); Fick (2011); Rapoza (2011); de Sainte Croix (2011); Villela & Barreix (2003)	Organisation for Economic Co-operation and Development (2011)	Government of China (2008); Business Monitor International (2009)	allAfrica (2008)	

²¹ A survey of 51 countries in 2007 showed that none of the 15 countries that had liberalized prices subsequently abandoned it in the period 2003-06. In contrast, the 28 countries surveyed that used ad hoc arrangements included several where prices had been frozen over long periods (Baig, Mati, Coady & Ntamatungiro, 2007).

²² See the review of experiences in 49 developing countries in 2008 (Kojima, 2009).



A2 Managing Impacts

Governments may seek to manage the impacts of price increases at several levels, from the macro-economy to highly specific customer groups. The international experience, summarized in Table A2, has been analyzed within two categories:

1. *Inflationary impacts*: How governments have managed inflation at the macro- level.
2. *Compensation*: How governments have managed inflation specific to certain groups or sectors of the economy.

Looking first at general *inflationary impacts*, we first note the very wide range of measures available to governments. When raising its energy prices several fold at the end of 2010, Iran's package of policies and measures included: appreciating the Rial (currency) and stockpiling consumer goods and public staples in order to ensure supply and act against possible hoarding. Similarly to Iran, in 2010 China held down prices of transport of certain bus, rail and airline services, effectively not allowing the (state-owned) operators to pass through the full increase of fuel inputs to their final prices. China also did not allow refineries to fully pass through their input cost (crude oil) increases to their final prices, which resulted in losses to state-owned refineries and to some independent refineries ceasing or reducing their production, leading to scarcity and hoarding in the market. Governments can intervene on final prices of other goods, but suppliers can face losses and/or supply can be reduced. Thailand made a much more specific anti-inflationary measure when prices increased in 2008, introducing free transport on non-air-conditioned buses and third class trains, which also coincided with its desire to help poor households.

If compensation is granted—particularly if this is in the form of cash—this can contribute to inflationary impacts. Conditional cash transfer programs in both Brazil and Mexico have each been underway for more than a decade and were phased in gradually and targeted (payments being linked to need within the household). In contrast, schemes that are implemented immediately and are more universal—for example, that of Iran around its 2010 subsidy reform—have a larger, and more immediate inflationary impact.

A common issue is (seasonal) timing. Indonesia is one of many countries that has implemented reform when inflationary pressures are lowest, avoiding making cash transfers during the Ramadan and year-end holiday periods. China took advantage of falling world oil prices in 2008 to increase taxation.

Compensation seeks to manage inflationary impacts specific to certain consumer groups. International experience shows that it is possible to reach out to almost any group, using a wide variety of measures. Experience also shows compensation being packaged with price increases for the full range of energy carriers: liquid transport fuels (diesel and gasoline), kerosene and LPG, and electricity. Indonesia's 2005 increases—of gasoline and diesel in March 2005 and of gasoline, diesel and kerosene in October 2005 (Beaton & Lontoh, 2010)—were packaged with large cash transfer schemes reaching approximately one third of all households, but also with social programs and specific support to certain industrial and agricultural activities. The specific measures included the removal of certain road and transport charges. Malaysian price increases in 2008 saw cash grants and payments related to catches for fishermen and rebates given to private vehicle owners, which set up to favour smaller vehicles. Governments can choose to compensate who they wish, typically balancing equity considerations—which groups are vulnerable and need support—with political considerations—which groups are perceived to be deserving of support, or which may strongly oppose subsidies.



Iran was very concerned as to the impacts of inflation on enterprises of its several-fold price increases in 2010. It systematically analyzed 12,000 enterprises, which led to the planning of compensation measures specifically designed for selected sectors and activities. These included direct financial assistance and reduced fuel prices (dual pricing) for a limited time, soft loans for energy saving technology adoption and reduced government fees and taxes.²³

Jordan included some novel measures in its package of measures worth 7 per cent of GDP, and which accompanied its energy price increases in 2005–08. These included bonuses to low-income government employees and a more widespread use of state enterprises and employment as a delivery mechanism. Jordan also increased food subsidies and promised to maintain electricity subsidies. It was backed up by a media and communications campaign, which increased the chances of implementation and sustainability of reform.

²³ It should be noted that the measures may not have all been subsequently implemented in full. Reviews of the operations of Iran's subsidy reform are still ongoing.



TABLE A2 MANAGING IMPACTS

INFLATIONARY IMPACTS					
	BRAZIL AND MEXICO	CHINA	INDONESIA	IRAN	THAILAND
Experience	Conditional cash transfer programs in Brazil and Mexico were phased in gradually over many years, with payments linked to individual needs within the household.	China's 2008 price increases were timed when oil prices were falling. In 2010, government held back prices of bus, rail and airline services. It did not pass through the full international fuel price increases in 2010 and 2011. Major losses to government-owned refineries resulted, and some independent refineries reduced production, leading to scarcity and hoarding.	The government was compelled to raise prices in 2005 after sustained increases in international oil prices made domestic fuel subsidies untenable. The government acted quickly but avoided increases at times of peak annual inflation: the Ramadan and year-end holiday seasons.	Iran increased its energy prices several-fold at the end of 2010. The government was very concerned about inflation and used a variety of economic and market measures including: appreciating the Rial; stockpiling consumer goods and distributing public staples; timing reform for the low inflation period (November–December).	The government introduced free transport on non-air conditioned buses and third class trains as part of measures to help poor households. These fare decreases helped dampen impacts.
Lesson(s)	<i>If compensation payments are made, targeting and phasing them in reduces the inflationary impact.</i>	<i>Governments can control inflation by intervening on final prices of goods and services, but suppliers can face losses and/or supply can be reduced.</i>	<i>Inflation varies seasonally and reform should be enacted in lower inflation periods where possible.</i>	<i>Government has a wide range of measures available. Their impact may not be enough to contain inflationary impact.</i>	<i>Governments can make very specific interventions to minimize inflationary impacts.</i>
Sources	TERI (2012a)	Government of China (2008); China Daily (2010); Invest in China (2010); Reuters (2011a); Bloomberg (2011)	Global Subsidies Initiative (forthcoming)	Guillaume, Zytek & Farzin (2011); Nasseri (2012); Najmeh (2012)	Fernquest (2011)
COMPENSATION					
	INDONESIA	IRAN	JORDAN	MALAYSIA	
Experience	Fuel price increases in 2005 and 2008 saw public compensation addressed mostly through cash transfers reaching 19 million households (approximately one third of the total). But social programs were also included, for example, support for health, education and infrastructure. Industrial and agricultural sectors were supported through value-added tax exemptions and increased farmer prices on some agricultural commodities and removal of certain road and transport charges.	Government concerns about the impacts of fuel price increases on businesses led to the systematic analysis of 12,000 enterprises. Compensation measures to selected sectors and activities included: direct financial assistance and reduced fuel prices to for a limited time; soft loans for energy-saving technology adoption; lines of credit; reduced government fees and taxes; and export awards.	A compensation package worth 7 per cent of the GDP was introduced over 2005–08. Measures included: bonuses to low-income government employees; cash transfers to non-government employees and pensioners; increased food subsidies and the retention of electricity subsidies; projects to combat unemployment and poverty. Subsidy removal was preceded by an extensive media campaign.	The government increased the fixed price of fuel in 2008 in response to record world prices. Cash grants were provided to fishermen and vessel owners to compensate in part for the fuel price increase. Rebates were also given to private vehicle owners, and favoured smaller vehicles.	
Lesson(s)	<i>It is possible to reach out to any sectors or consumer group through compensatory measures.</i>	<i>Potential impacts on business and agriculture are often significant government concerns. Specific mitigation measures can be designed and implemented.</i>	<i>State enterprises and employment offer a channel for compensation. Media and communications campaigns increase the chances of implementation and sustainability of reform.</i>	<i>Government can choose to compensate those it decides are important for equity or political reasons.</i>	
Sources	Beaton & Lontoh (2010); Global Subsidies Initiative (forthcoming)	Guillaume, Zytek & Farzin (2011)	Arze del Granado, Coady & Gillingham (2010); World Bank (2010)	Kojima (2009)	



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