



# Subsidies to Liquefied Petroleum Gas in India:

## An overview of recent reforms



### SUMMARY

- India continues to incur budgetary and non-budgetary expenditure of over INR40,000 crore per year subsidizing liquefied petroleum gas (LPG) consumption.
- The benefits of this subsidy accrue disproportionately to wealthy households in urban areas, with the majority of the population in the bottom two thirds of the income distribution scale currently receiving little or no direct benefit from LPG subsidies.
- The introduction of a household cylinder cap in September 2012 succeeded in limiting the growth of subsidy expenditure (despite deteriorating external conditions) and improving the social distribution of the subsidy among connected households.
- By twice raising the household cylinder cap, the government has effectively reversed most of the progress it had made in capping total LPG subsidies and curtailing their regressive social distribution.
- The Direct Benefit Transfer for LPG program does not decouple resource transfer from fuel consumption and should not be confused with a targeted cash transfer program.
- As currently structured, there is no case for the introduction of Direct Benefit Transfer for LPG on the grounds of equity, administrative efficiency or fiscal responsibility.

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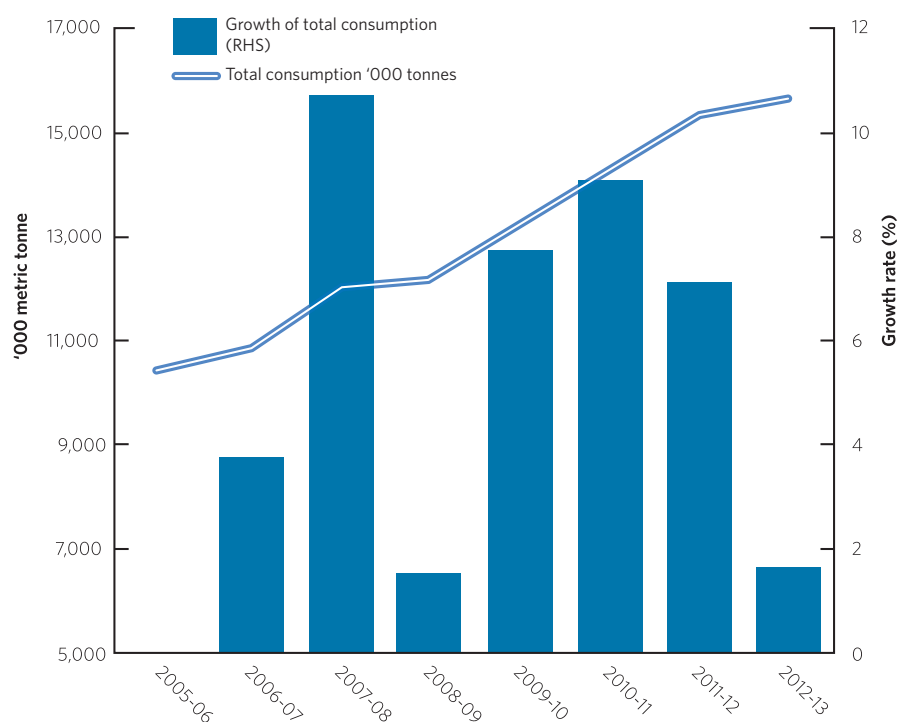
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The International Institute for  
Sustainable Development  
International Environment House 2,  
Chemin de Balexert, 5th Floor  
1219, Chatelaine, Geneva, Switzerland

Tel +41 22 917-8748  
Fax +41 22 917-8054  
Email [dvis-dunbar@iisd.org](mailto:dvis-dunbar@iisd.org)

## 1.0 Part One: Overview

**Liquefied petroleum gas (LPG) is a light distillate obtained from crude oil and the processing of natural gas.** In India, it is primarily used for residential cooking, with additional applications in the industrial sector and as a transport fuel. LPG consumption in India has more than doubled over the last decade, with a compound annual growth rate of 7.2 per cent in the five-year period (fiscal year [FY] 2007/08 to FY 2011/12) prior to the most recent reforms.



**Figure 1: Total consumption of LPG (2005/06-2012/13)**

Source: Petroleum Planning & Analysis Cell (2013a)

## 1.1 Sector Structure

**LPG in India is primarily marketed by the three main public sector oil marketing companies (OMCs)—Indian Oil Corporation Limited (IOCL), Bharat Petroleum Corporation Limited (BPCL) and Hindustan Petroleum Corporation Limited (HPCL).** For household use, LPG is largely supplied in 14.2 kg cylinders, and is sold at both domestic (subsidized) and commercial (non-subsidized) rates (with domestic sales accounting for around 80 per cent of consumption in FY 2012/13).<sup>1</sup>

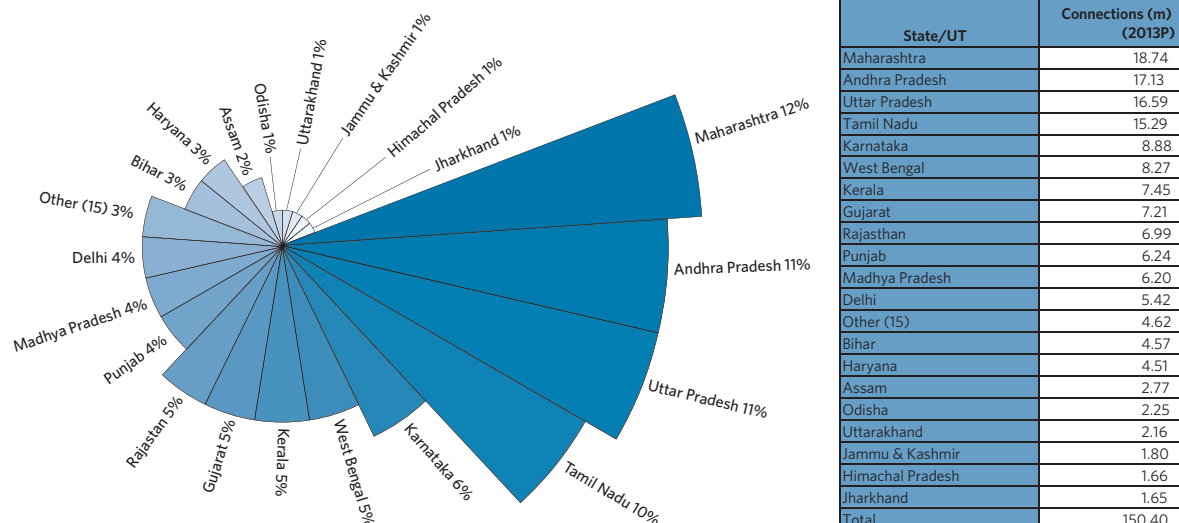
Direct purchase of LPG cylinders in the formal sector requires possession of a registered LPG connection at an LPG dealership. As of April 2013 the Ministry of Petroleum and Natural Gas (MoPNG) recorded a total of 12,610 LPG dealerships (up from 11,489 in 2012), with IOCL accounting for approximately half (6,467 dealerships, serving a total of 73.4 million domestic customers) and HPCL and BPCL accounting for a further 25 per cent each (3,194 dealerships serving 39.6 million customers, and 2,949 dealerships serving 37.4 million customers respectively).

<sup>1</sup> Domestic sales calculated from Petroleum Planning & Analysis Cell (PPAC) data on fixed (per unit) subsidy as of FY 2012/13 (see Figure 13 below). Household LPG is also supplied in 5 kg cylinders, and commercial LPG in 19 kg and 47.5 kg cylinders.

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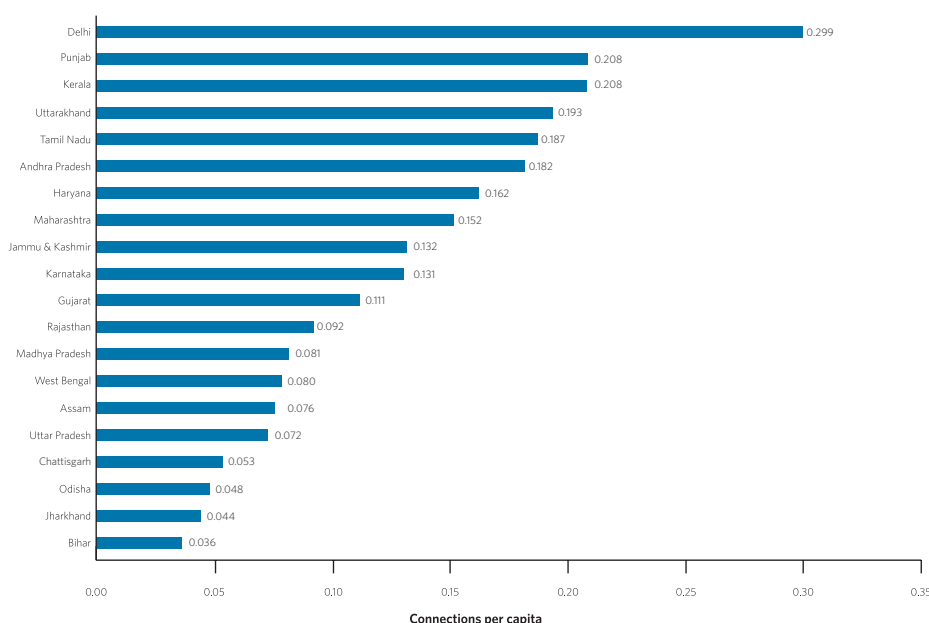
There is currently a wide disparity in the distribution of LPG connections between individual states and regions, and within them between urban and rural areas. Figure 2 outlines the aggregate number of LPG connections by state, with four states (Maharashtra, Andhra Pradesh, Uttar Pradesh and Tamil Nadu) accounting for over 40 per cent of total connections.



**Figure 2: Distribution of LPG connections by state (FY 2012/13P)**

Source: Petroleum Planning & Analysis Cell (2013b)

Figure 3 shows the state-wise distribution of connections calculated on a per capita basis, highlighting that within the 20 most populous states, the number of connections per capita differs by a factor of eight—from 29.9 per 100 in Delhi, to 3.6 per 100 in Bihar.



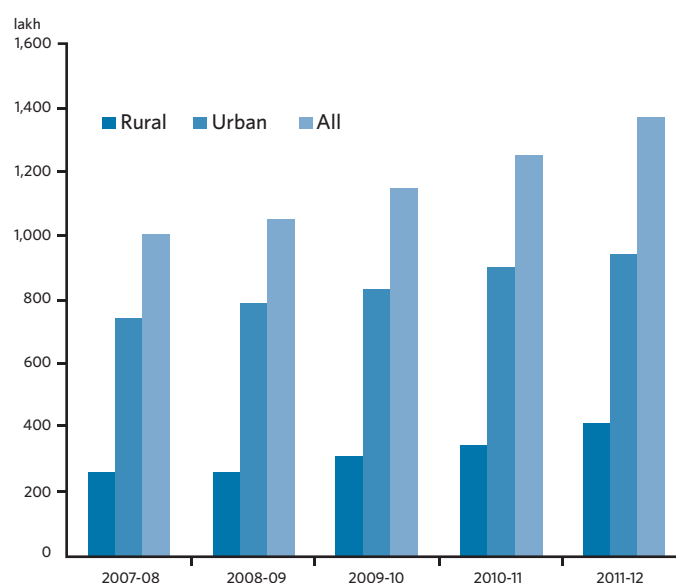
**Figure 3: LPG connections per capita by state (FY 2012/13P)<sup>2</sup>**

<sup>2</sup> Connection data from Petroleum Planning & Analysis Cell (2013b). State-wise population data from Census of India (2012), applying a 1.3 per cent growth rate for FY 2012/13 figures. Note that some smaller states and Union Territories (such as Chandigarh, Goa and Puducherry) have significantly higher per capita connection rates than Delhi.

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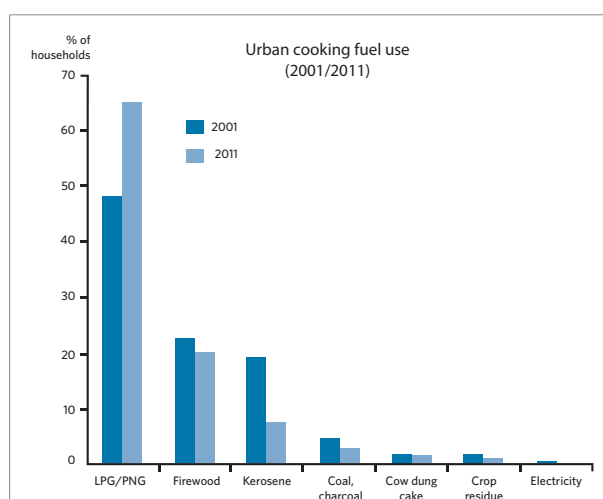
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In addition to the regional disparity, the existing LPG distribution infrastructure is also strongly weighted towards urban areas, with OMCs reporting urban enrolment to account for around 60 per cent of total connections in FY 2011/12 (Patra, 2012). Figure 4 provides total recorded urban and rural connections from FY 2008/09 to 2011/12.

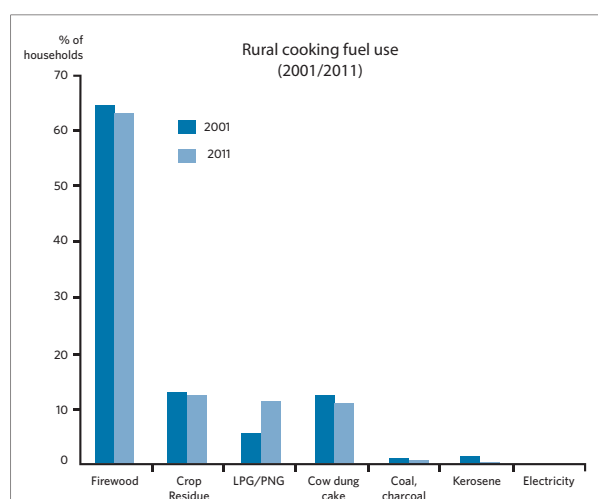


**Figure 4: LPG connections (urban/rural) (FY 2008/09-2011/12)**  
Source: MoPNG, reported in Patra (2012)

This picture is mirrored in household survey data, with substantially greater reported levels of consumption in urban areas. Figures 5 and 6 show reported primary cooking fuel for urban and rural households, with 65 per cent of urban households reporting LPG as their primary cooking fuel in 2011, against just 11.4 per cent of rural households.<sup>3</sup>



**Figure 5: Primary reported cooking fuel (urban) (2001/2011)**  
Source: Census of India (2002, 2012), reported in Patra (2012).

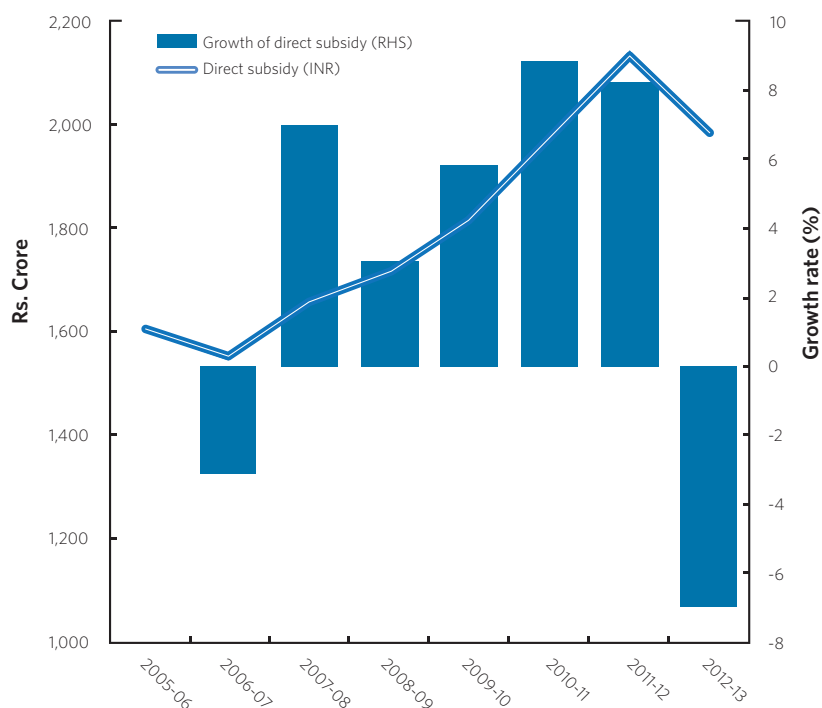


**Figure 6: Primary reported cooking fuel (rural) (2001/2011)**  
Source: Census of India (2002, 2012), reported in Patra (2012).

<sup>3</sup> Due to a combination of access and purchasing power constraints.

## 1.2 Subsidy Expenditure

**Retail prices of domestic LPG cylinders are currently subsidized through two mechanisms: direct subsidy and OMC under-recoveries.** Direct subsidies are those subsidies recorded as direct budgetary expenditures on a uniform basis. The direct subsidy is administered as a flat-rate subsidy (currently INR22.58) per domestic 14.2 kg cylinder and has remained unchanged on a unit basis since FY 2004/05. In FY 2012/13, direct subsidies amounted to INR1,989 crore (FY 2011/12: INR 2,137 crore), reflecting a reduction in the total consumption of subsidized LPG by volume.



Year	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Rs. (crore)	1,605	1,554	1,663	1,714	1,814	1,974	2,137	1,989
Rs. (bn)	16.1	15.5	16.6	17.1	18.1	19.7	21.4	19.9
USD (bn)	0.36	0.34	0.42	0.37	0.38	0.43	0.44	0.37
Growth (%)	n/a	-3.2	7.0	3.1	5.8	8.8	8.3	-6.9

**Figure 7: Total direct subsidy (2005/06–2012/13)**

Source: Petroleum Planning & Analysis Cell (2013c)

In addition to direct budgetary subsidies, the Government of India exercises control over LPG pricing and distribution through its controlling shares in the public sector OMCs, which are managed through the MoPNG.<sup>4</sup> The government regulates the price at which the OMCs can sell certain petroleum products—currently diesel, Public Distribution System (PDS) kerosene, and domestic LPG—leading to under-recoveries (the difference between the cost price incurred by the companies and the price realized upon sale to the final consumer).<sup>5</sup>

Subsequent to the realization of under-recoveries by the OMCs, the government then applies an ad hoc burden-sharing mechanism, distributing the total subsidy cost between the exchequer (through direct budgetary transfers to the companies, and, prior to 2009/10, through the issue of government-backed oil bonds), the OMCs, and the main upstream and midstream Public Sector Undertakings (PSUs). (PSUs)—primarily Oil and Natural Gas Corporation (ONGC), and to a lesser extent Oil India Limited (OIL) and Gas Authority of India Limited (GAIL).

<sup>4</sup> Key executive decisions on LPG subsidy policy are currently taken by the Cabinet Committee on Political Affairs—chaired by the prime minister and including the ministers of Finance, Home Affairs, Defence, Agriculture, Telecoms and Railways—and are not subject to formal parliamentary approval. See Reuters (2013).

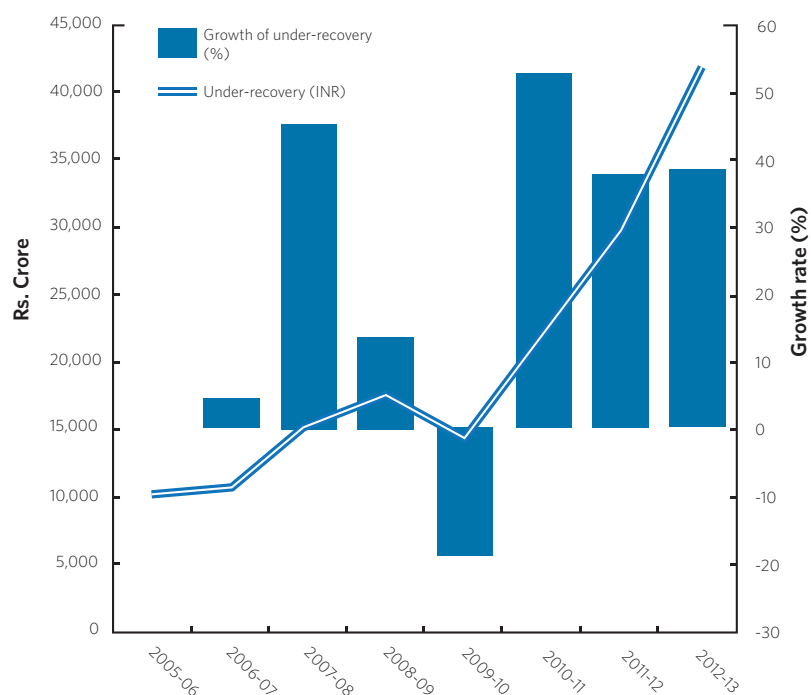
<sup>5</sup> Note that in addition to recorded under-recoveries, the OMCs also incur further uncompensated costs in relation to gas importation and corporate borrowing (due to delays in receipt of compensatory payments).

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Driven by a weakening domestic currency and consistently strong international oil prices, in FY 2012/13 OMC under-recoveries for domestic LPG amounted to INR39,558 crore—an increase of 32 per cent from INR29,997 crore in FY 2011/12. In FY 2012/13, LPG accounted for 25.8 per cent of total OMC product under-recoveries of INR161,029 crore (2011/12: INR138,541 crore).



Year	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Rs. (crore)	10,246	10,701	15,523	17,600	14,257	21,772	29,997	39,558
Rs. (bn)	102	107	155	176	143	218	300	396
USD (bn)	2.32	2.37	3.88	3.79	3.02	4.79	6.24	7.27
Growth (%)	n/a	4.4	45.1	13.4	-19.0	52.7	37.8	31.9

**Figure 8: Total under-recoveries (2005/06-2012/13)**

Source: Petroleum Planning & Analysis Cell (2013d)

### 1.3 Distribution and Targeting

**In line with the existing consumption pattern of LPG, the benefits of the current LPG subsidy system accrue disproportionately to certain states, and within those states primarily to urban areas.** Figure 9 outlines the estimated distribution of LPG subsidy by state for the most recent financial year (FY 2012/13)<sup>6</sup>, with consumers in five states (Maharashtra, Andhra Pradesh, Uttar Pradesh, Tamil Nadu and Karnataka) receiving approximately half of all subsidy transfers.

<sup>6</sup> Calculated on the basis of a uniform ratio of subsidized to unsubsidized consumption per state.

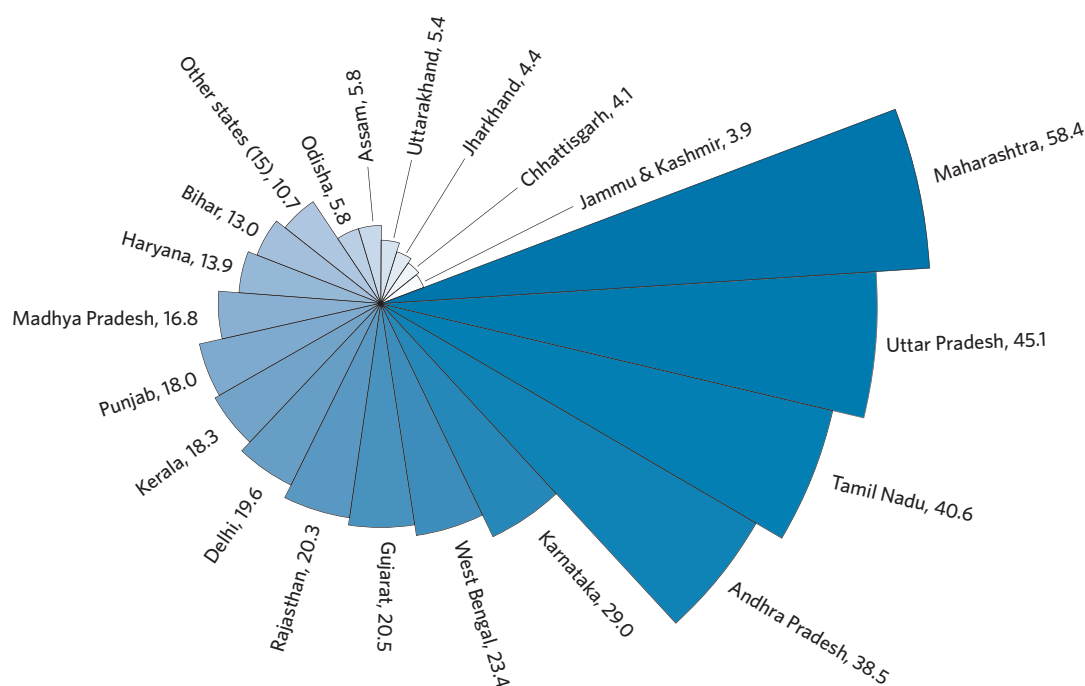


Figure 9: Distribution of total LPG subsidy by state (INR billion) (FY 2012-13P)<sup>7</sup>

Figure 10 shows the state-wise distribution of subsidies calculated on a per capita basis for the 20 most populous states, highlighting that the annual per capita subsidy transfer differs by a factor of eight between major states (from INR110 per person in Bihar to INR905 per person in Delhi).

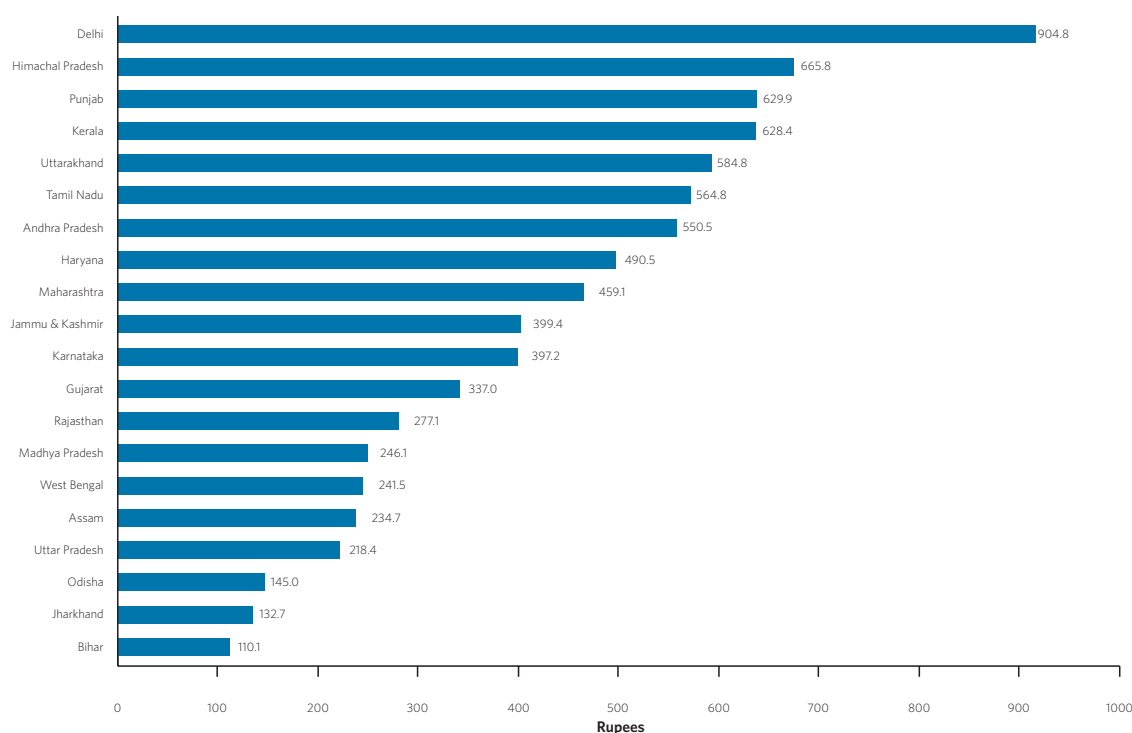


Figure 10: Per capita expenditure on LPG subsidy by state (INR) (FY 2012/13P)<sup>8</sup>

<sup>7</sup> Provisional FY 2012/13 state-wise LPG consumption data from Ministry of Petroleum and Natural Gas (2013). Subsidy data (under-recoveries plus direct fiscal subsidy) from Petroleum Planning & Analysis Cell (2013c, 2013d). State-wise calculation provided for 20 largest states by population.

<sup>8</sup> Calculated on the basis of a uniform ratio of subsidized to unsubsidized consumption per state. State-wise population data from Census of India (2012), applying 1.3 per cent growth rate for FY 2012/13 figures. Note that some smaller states and Union Territories (such as Chandigarh, Goa and Puducherry) have significantly higher per capita subsidy consumption rates than Delhi.

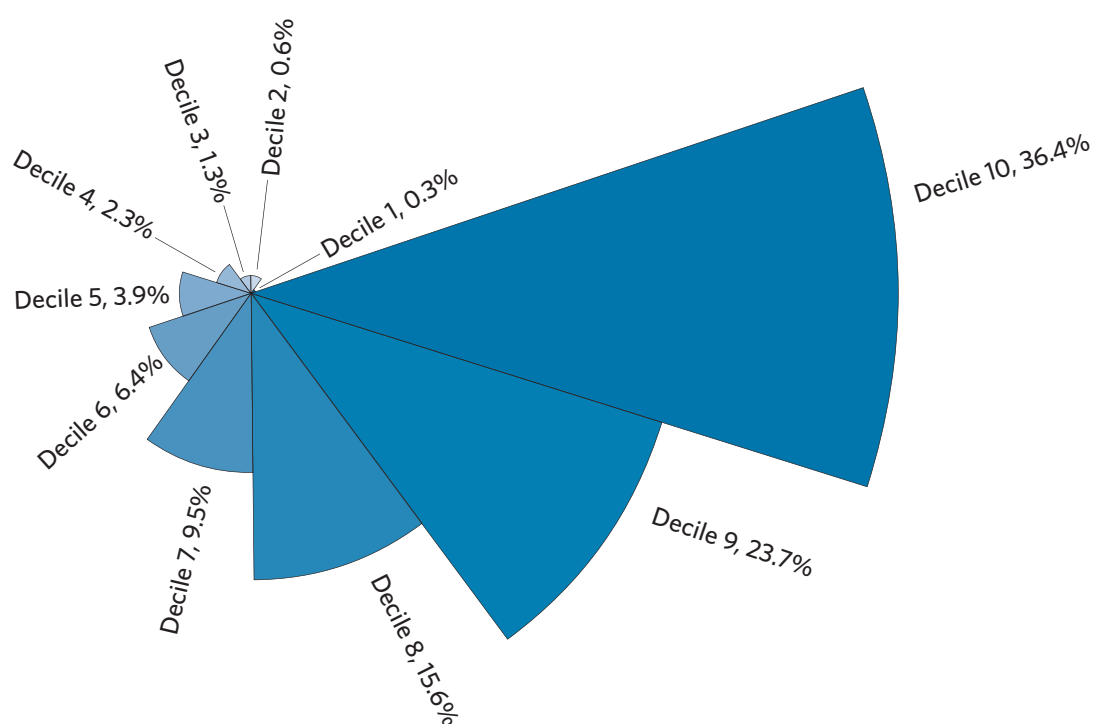
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In addition to the spatial disparities in LPG consumption and subsidy receipt, the benefits of the LPG subsidy accrue disproportionately to the higher income and consumption deciles of the population,<sup>9</sup> with the large majority of the population in the bottom two thirds of the income distribution scale currently receiving little or no direct benefit from LPG subsidy expenditure.

Recent analysis using consumption expenditure data from the National Sample Survey Office's (NSSO, 2012) 66th Round (see Figure 11 below) indicates that prior to the most recent reforms, the top 20 per cent of the population by consumption expenditure received over half (60 per cent) of the total direct subsidy, while the bottom half of the population received less than one tenth (8 per cent) of the total subsidy transfer. The figures for the bottom 20 per cent of the population (those most likely to be judged below the poverty line by the government's own methodology) are even more stark, suggesting that the poorest fifth of the population receives less than 1 per cent (0.8 per cent) of the total direct subsidy transfer.



**Figure 11: Social distribution of LPG subsidies, decile average per month (INR per capita) (2010/11)**  
Source: Anand et al. (2013)

## Part Two: Recent Reforms

### 2.1 Quota Cap

**On September 13, 2012 the central government announced a cap of six subsidized LPG cylinders per household,<sup>10</sup> with the stated intention of capping total subsidy expenditure on LPG.** On January 16, 2013, following sustained political pressure, the government then announced an increase in the annual cylinder quota per household from six to nine, with an increase in the allocation for the period to March 31, 2013 from three to five per household.

<sup>9</sup> See for example Lahoti, Goutam, & Suchitra (2012).

<sup>10</sup> With a pro-rata quota of three per household for the remainder of FY 2012/13.

On October 31, 2013, the government-appointed Expert Group formed under K. Parikh to advise on fuel pricing methodology recommended a reduction in the subsidized LPG quota from nine cylinders per household back to six.<sup>11</sup> Despite this, on January 2, 2014, Finance Minister P. Chidambaram announced that the government would consider a request from several state chief ministers to raise the quota of subsidized cylinders from nine to 12 per year (Press Trust of India, 2014a).<sup>12</sup> On January 17, Congress Vice-President Rahul Gandhi requested that the government increase the annual cylinder quota to 12 per household, with the Minister for Petroleum and Natural Gas<sup>13</sup> M. Veerappa Moily subsequently stating that a proposal to increase the quota would be presented to the Cabinet for approval (Press Trust of India, 2014b). On January 30, it was confirmed that the cylinder quota would be raised to 12 cylinders per household per year from April 1, 2014, with the allocation of two additional cylinders per household for the period to March 31 (Hindustan Times, 2014).

## 2.2 Connection Validation and De-Duplication

**Prior to the introduction of the per-household cylinder cap, the OMCs initiated a program of identifying and blocking duplicate domestic LPG connections and LPG connections registered to households with Piped Natural Gas (PNG) connections.** Beginning in May 2010, the OMCs had reportedly identified and blocked approximately 3.2 million irregular LPG connections by May 2012.<sup>14</sup>

Alongside the introduction of the cylinder quota, in September 2012 the Ministry of Petroleum and Natural Gas launched a further initiative to identify and block inactive and irregular LPG connections.<sup>15</sup> As with the earlier de-duplication program, the initial phase of connection validation consisted of internal verification within the individual OMCs, reportedly resulting in the blocking of at least 13.3 million unused and duplicate connections by mid-November 2012<sup>16</sup> (it is not clear if reported figures also include voluntary connection surrender due to possession of multiple LPG connections or parallel LPG and piped gas connections). In May 2013 it was then reported that the OMCs intended to launch a further validation exercise to identify duplicate connections across companies (Times of India, 2013a); however, the results of this second phase have yet to be publicly released.

## 2.3 Direct Benefit Transfer for LPG

**Direct Benefit Transfer (DBT) is an initiative of the central government to develop an electronic payment system for centrally funded social protection schemes, under the framework of a (nominally voluntary) national identify program (Unique Identification [UID] or Aadhaar).**<sup>17</sup> Initially based in the Planning Commission, and subsequently transferred to the Finance Ministry in July 2013 (Press Trust of India, 2014c), the scheme was established by executive order and currently has no formal legislative standing. Despite this, the program currently partially incorporates 28 existing minor social welfare schemes involving direct transfers to beneficiary bank accounts (mostly related to education, scholarships and pensions), and as of mid-October 2013 was reportedly operating in around 20 per cent (121) of the country's districts.<sup>18</sup>

<sup>11</sup> Alongside the institution of exclusion criteria for access, an immediate increase in the domestic (subsidized) cylinder price of INR250, and a gradual phase-out of balance of subsidy over 2 years (Government of India, 2013).

<sup>12</sup> This statement followed the announcement of an unprecedented INR220 per cylinder increase in the price of non-subsidized LPG the previous day.

<sup>13</sup> And currently acting Minister for Environment and Forests.

<sup>14</sup> Reportedly consisting of approximately 2.9 million duplicate connections, and 900,000 connections to households possessing PNG connections (Modi, 2012).

<sup>15</sup> In order to ensure effective application of the per-household cylinder cap. The initiative also included steps to improve cylinder delivery systems. For further details, see Mehdudia (2012) and Pathak (2012).

<sup>16</sup> The reported breakdown is as follows: 8 million "inactive" connections blocked; 1.3 million "same-address, same-name" connections blocked; 25.3 million "same address" connections identified (of which 4 million blocked). For further details see Mehdudia (2012). It is not clear if these blocked connections are in addition to the figures previously reported for May 2010 to May 2012.

<sup>17</sup> The Aadhaar program, launched in 2009, is designed to record the biometric details of all residents and allocate a UID number to each individual for use in a range of transactions with public and private entities.

<sup>18</sup> For further information see Planning Commission (2013).

Following repeated statements regarding the government's intention to extend the application of DBT to LPG subsidies, on April 5, 2013, the government announced the National Committee on DBT's decision to introduce direct transfer of LPG subsidy in 20 districts, effective May 15, 2013, with the stated objective of extending the system to all districts of the country by October 2013. Under the system proposed, households would order an LPG cylinder from their gas distributor, receive an amount equivalent to the current subsidy amount via electronic transfer to their bank account, then pay the full (unsubsidized) price for the cylinder in cash on delivery. Following a three-month switchover period, electronic transfer of the subsidy would be mandatory in all selected districts, and in order to be eligible for continued receipt of subsidy, the head of household would have to enrol in the Aadhaar program, obtain a UID number, submit their bank account and UID details to the relevant OMC (opening an account where they did not previously possess one) and link their bank account to their UID number.<sup>19</sup>

As currently designed, DBT for LPG simply represents a shift in the modality of subsidy payment—the scheme does not decouple receipt of subsidy from fuel consumption (subsidy receipt is contingent on purchase of LPG), nor does it apply any form of targeting in selecting beneficiaries (retaining the highly regressive distribution of the existing subsidy). In addition, the program introduces a series of unrecognized costs and inefficiencies into the system of subsidy disbursement (some intrinsic to the program's design and others a function of the mode of implementation); key among them being increased costs of administration and time costs for beneficiaries associated with confirming and collecting the subsidy.

### 2.3.1 Implementation

**On April 5, 2013 the central government announced that it intended to implement DBT for LPG in 20 districts effective May 15.** On April 23 it was reported that the MoPNG had informed the Standing Committee on Petroleum and Natural Gas that the lack of progress in matching Aadhaar numbers to beneficiary bank accounts could delay the launch (Mehdudia, 2013a). On May 9, the Cabinet Committee on Political Affairs formally approved the implementation of DBT for LPG in the selected pilot districts, and postponed the implementation date to June 1. Implementation of the program then began in 18 districts on June 1, with adoption in the remaining two districts temporarily postponed due to elections. On August 12, the MoPNG then announced that the scheme would be extended to a further 35 districts effective September 1, 2013, increasing the total number of participating districts to 55<sup>20</sup> (Mehdudia, 2013b). On September 2 it was announced that the scheme would be extended to an additional 235 districts in four further phases,<sup>21</sup> leading to a total projected coverage of 289 districts across 18 states.

On September 23, 2013, the Supreme Court of India, responding to a Public Interest Litigation (PIL) petition, stated in an interim order that the imposition of mandatory Aadhaar enrolment for receipt of subsidy had no legislative basis and should be halted. The Ministry of Petroleum and Natural Gas then filed an application on October 4 for modification of the directive to permit continued mandatory enrolment in Aadhaar in order to qualify for subsidy payments under the DBT scheme. On November 26, the Supreme Court ruled that its interim order of September 23 remained unmodified pending further deliberations, and Aadhaar could not be made mandatory for receipt of subsidy. Despite this judgement—and repeated assertions by senior members of the government that enrolment was “voluntary”—OMCs and their distributors in rollout districts reportedly continued to insist on provision of Aadhaar in apparent violation of the Supreme Court's directive (Ramakumar, 2014).

On January 30, 2014, following increasing public recognition of the extensive problems with the design and administration of the DBT scheme, and related lobbying to scale back or cancel the program within the ruling Congress Party, the Minister for Oil and Natural Gas announced the immediate suspension of the initiative pending formation of a committee to consider the issues raised (Mehdudia, 2014).

<sup>19</sup> A process referred to as “seeding.”

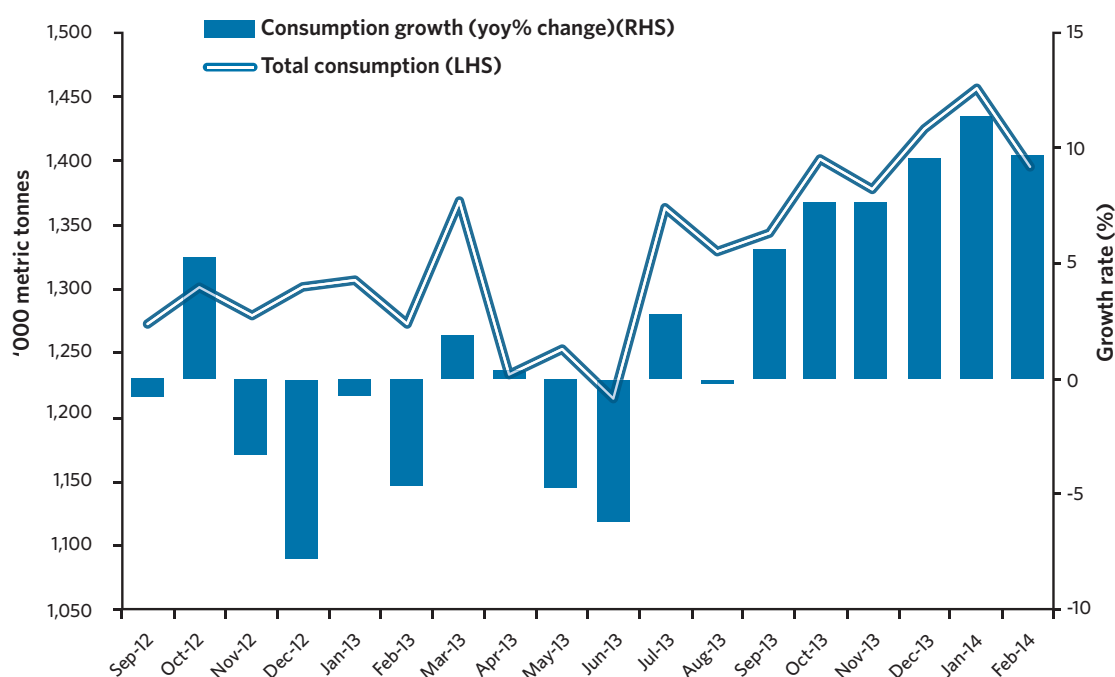
<sup>20</sup> The number of additional districts was later reduced to 34, leading to a total number of 54 districts in Phases I and II.

<sup>21</sup> For further details see Prime Minister's Office (2013).

## 3.0 Reform Impact

### 3.1 Consumption

**The introduction of the original six-cylinder household quota had a substantial and immediate impact on LPG consumption in the short term.** Figure 12 shows total LPG consumption and year-on-year growth rates for the period September 2012 to October 2013. Following the imposition of the household cap in October 2012, consumption registered four months of negative year-on-year growth (leading to a full-year increase in consumption in FY 2012/13 of 1.6 per cent, as against 7.1 per cent in FY2011/12). The small year-on-year increase then registered in March 2013 was likely driven primarily by the revision of the per-household quota from six to nine in January 2013, increasing the allocation for the remainder of the year from three to five and leading to increased uplift of subsidized cylinders prior to year-end.



**Figure 12: Total monthly consumption of LPG (September 2012–February 2014)**  
Sources: Petroleum Planning and Analysis Cell (2013a, 2014a)

The effect of the initial cylinder cap was likely compounded by the cancellation or suspension (prior to verification) of LPG connections by the OMCs, price increases for non-subsidized household, commercial and auto LPG products (as a result of pass-through of rising oil costs) and a generalized reduction in demand due to slowing rates of economic growth. Following the revision of the cylinder quota to nine per household from April 2013, year-on-year consumption growth rates remained negative for the first quarter of FY 2013/14 before returning to sustained positive growth from September 2013 onwards.<sup>22</sup> The introduction of DBT, while affecting short-run consumption at a local level in pilot districts, has had no significant effect on aggregate consumption in the period to date, with any localized impacts related primarily to supply disruptions and other administrative problems.

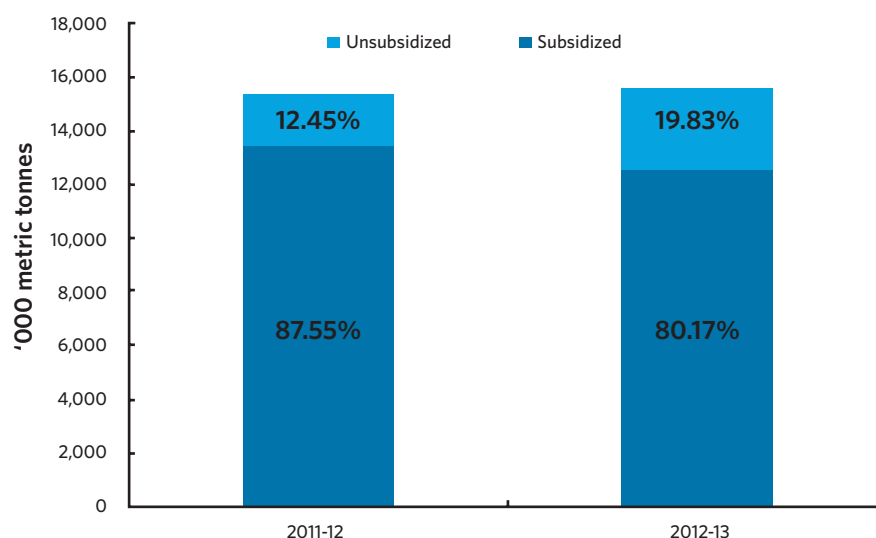
### 3.2 Subsidy Expenditure

**The reforms undertaken from September 2012 served to limit subsidy growth in the short term; however, they were insufficient to significantly reduce total subsidy expenditure on LPG, with the OMCs incurring under-recoveries of**

<sup>22</sup> This was due in part to the base effect, and also reportedly to the increase in the release of new connections. See Petroleum Planning & Analysis Cell (2014b).

**INR18,585 crore in the first half of FY 2013/14 (in line with the record subsidy outlay incurred in FY 2012/13).<sup>23</sup>**

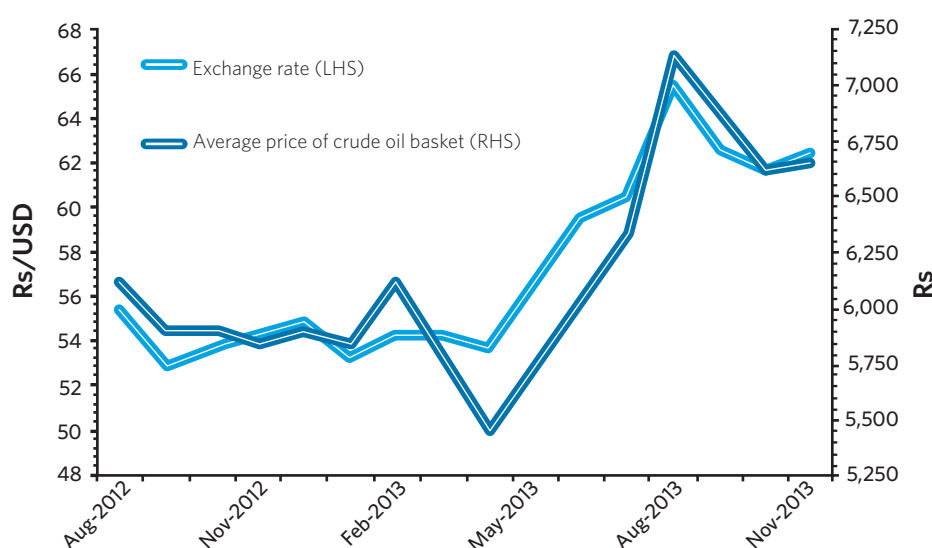
Although the volume of subsidized LPG consumption reduced in FY 2012/13 by approximately 10 per cent on a full-year basis (as outlined in Figure 13, and largely due to the effect of the cylinder cap in Q3 and Q4), the estimated average under-recovery per cylinder has increased substantially in the current financial year, reaching a record high of INR762.70 per cylinder in January 2014 (up from INR542.71 in December 2013).



**Figure 13: Consumption pattern of LPG (subsidized/unsubsidized) (FY 2011/12-2012/13)**

Source: Calculated from Petroleum Planning and Analysis Cell (2013a, 2013c).

The increase in under-recoveries per unit has been primarily driven by domestic currency depreciation against the U.S. dollar, in a context of persistently strong international oil prices (and a failure to allow any significant cost pass-through to subsidized prices). Figure 14 shows the status of the Indian rupee against the dollar, highlighting the sharp deterioration in the value of the rupee from mid-April 2013 onwards and the associated rise in the average price of the Indian crude oil basket.



**Figure 14: INR/USD and Indian crude oil basket (INR) (August 2012–November 2013)**

Source: Exchange rate data from Bank of England (n.d.). Data on crude oil basket from Petroleum Planning & Analysis Cell (2013e)

<sup>23</sup>In addition to the direct fiscal subsidy and other unrecognized costs.

Consistent with its lack of impact on total consumption, DBT had no significant effect on total subsidy expenditure. This lack of impact was not simply a function of its partial introduction; there is no evidence that above-quota consumption through duplicate connections—the primary issue that Aadhaar-linked DBT is claimed to address—accounts for any significant fraction of total subsidized LPG consumption, and the nature of the current entitlement mechanism (by household) and the OMC connection validation process makes Aadhaar irrelevant to their identification and verification.<sup>24</sup> The only mechanism by which DBT for LPG could be expected to measurably affect total subsidy expenditure is the disruption of access to within-quota consumption by connected households, with poorer households likely to be disproportionately affected. In addition, the implementation of DBT for LPG in its current form would introduce substantial additional—and to date largely unquantified—fixed and recurring costs that could potentially increase, rather than decrease, the total fiscal burden associated with LPG subsidies and their administration.<sup>25</sup>

### 3.3 Distribution and Targeting

**As outlined above, the large majority of the population in the bottom two thirds of the income distribution scale currently receive little or no direct benefit from LPG subsidy expenditure, and none of the principal reforms undertaken since September 2012 have directly addressed this basic distributive disparity.<sup>26</sup>**

Despite this, the relative propensity of wealthier households to consume a greater number of cylinders makes the application of a cap on consumption per connection a simple and effective transitional measure to curtail subsidy transfer to the upper deciles of the population, and generate fiscal space for more efficient social expenditure. The introduction of an initial annual quota of six cylinders per household in September 2012—reflecting the estimated average consumption per connected household, with a reported 83 per cent of households consuming six cylinders or less<sup>27</sup>—therefore represented a significant step towards limiting the regressive distribution of subsidy benefits. The subsequent expansion of the cap to nine cylinders in January 2013 reversed much of this progress, extending fully subsidized consumption to a reported 89 per cent of connected households. The further revision to 12 cylinders per household in January 2014 then marked an effective reversion to the previous subsidy regime, restoring fully subsidized consumption to an estimated 97 per cent of connected households (Ranjan & Singh, 2014).

The aggregate impacts of the recent reform measures to rationalize LPG connections and introduce DBT for LPG on subsidy distribution have been similarly limited. Due to a lack of publicly availability data, the distributional effects of the connection verification process initiated in conjunction with the cylinder cap are difficult to accurately estimate. Where it was implemented prior to cancellation, the net effect of DBT for LPG on the social distribution of subsidy benefits among connected households is likely to have been regressive, with both the design of the scheme and the form of its implementation placing disproportionate burdens on poorer beneficiaries.<sup>28</sup>

<sup>24</sup> In part because, prior to September 2012, there was little incentive to possess duplicate connections as consumption per connection was effectively uncapped. In addition, the possession of multiple connections is not necessarily an indicator of diversion or over-consumption against quota—there are several reasons why customers may legitimately wish to possess multiple connections or piped and cylinder connections at the same address, including multiple household occupancy, guaranteeing unbroken supply and avoiding dealer malpractice. See for example Times of India (2013b).

<sup>25</sup> Alongside imposing additional unrecognized costs on beneficiaries.

<sup>26</sup> Other previously announced measures have been undertaken at central and state levels.

<sup>27</sup> According to estimates reportedly provided in the MoPNG's proposal to the CCPA for revision of the cylinder cap in January. For further details, see Ranjan and Singh (2014). The exact period to which these estimates apply is unclear. Patra (2012) states that a nationwide survey of rural households undertaken by the OMCs in 2012 recorded an average consumption of seven cylinders.

<sup>28</sup> Both in relation to confirming eligibility and actually accessing the subsidy. In addition, the abortive introduction of DBT has diverted institutional capacity and resources from the task of reforming entitlements and extending energy access.

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Head Office

161 Portage Avenue East, 6th Floor, Winnipeg, Manitoba, Canada R3B 0Y4

Tel: +1 (204) 958-7700 | Fax: +1 (204) 958-7710 | Web site: [www.iisd.org](http://www.iisd.org)

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International Institute for Sustainable Development  
Global Subsidies Initiative  
International Environment House 2  
9 chemin de Ballexert, 1219 Châtelaine,  
Geneva, Switzerland

Tel: +41 22 917-8373  
Fax: +41 22 917-8054

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