



# International Experiences With LPG Subsidy Reform

GSi REPORT



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### International Experiences With LPG Subsidy Reform: Options for Indonesia

January 2016

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## Executive Summary

With diesel and gasoline reforms implemented in early 2015, the Government of Indonesia is now turning its focus toward liquefied petroleum gas (LPG) subsidies.

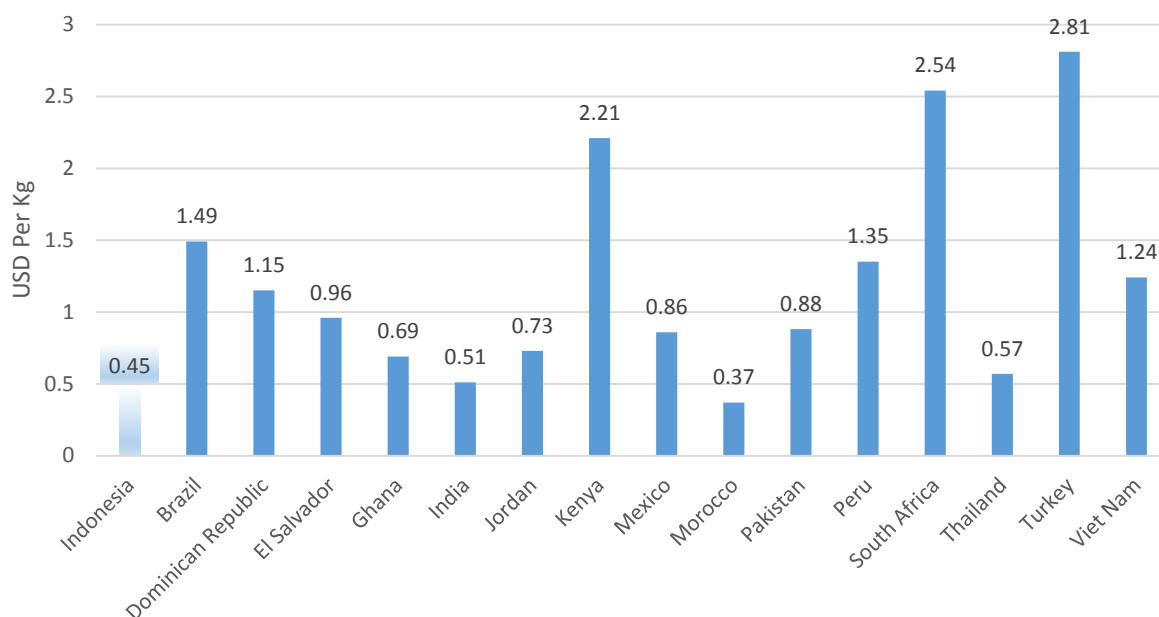
LPG subsidies in Indonesia today, as with other fossil fuel subsidies, are regressive in nature. Anyone can buy low-cost 3-kg LPG cylinders, so a larger share of benefits tends to be captured by higher-income households, who have more buying power. However, effectively designed and targeted LPG subsidies could significantly improve the performance of LPG subsidies, making them an effective policy tool for the promotion of clean cooking among low-income households.

This transition is similar to many other countries, where the close links between LPG subsidies and energy access have seen reform policies centre on better targeting of assistance, to ensure that low-income households can continue to access modern, clean forms of energy once LPG prices increase.

This report investigates international experience and best practice on how to reform LPG subsidies, with a focus on countries' efforts to ensure that energy access is not compromised by higher LPG prices.

### HOW DO INDONESIA'S LPG PRICES COMPARE WITH OTHER COUNTRIES?

While many countries subsidize LPG consumption, LPG retail prices in Indonesia are relatively lower compared to other countries, both regionally and internationally.



**Figure ES1. End-User Prices of LPG in July 2012**

*Source: Author diagram based on price data from Kojima (2013).*

### HOW IS LPG PRICED INTERNATIONALLY?

LPG pricing policies across the world generally correlate to fuel pricing principles for other petroleum products, such as diesel and gasoline. These can roughly be divided into four main categories as illustrated below.

**Table ES1. Overview of Different LPG Pricing Systems**

	MECHANISM	ADVANTAGES	POTENTIAL CHALLENGES
Deregulated	Deregulation, with antitrust regulations.	Minimizes market distortions; no subsidies; price signals drive fuel efficiency; competition can drive down costs and prices.	Requires competitive downstream sector or may result in high consumer prices; oil price volatility is immediately transmitted.
Automatic Adjustment	Price adjustments linked to world prices made at regular pre-defined intervals, based on world prices averaged over a certain period or based on pre-defined triggers.	<ol style="list-style-type: none"> <li>1. Frequent adjustments track world prices well and limit scope for mounting subsidies.</li> <li>2. Adjustments based on world prices averaged over 1 month or longer make prices more stable.</li> <li>3. Adjustments based on a pre-defined trigger offer price stability within the price band.</li> <li>4. Adjustments limited to stay within a pre-defined price band.</li> </ol>	<ol style="list-style-type: none"> <li>1. Frequent adjustments transmit world price volatility quickly to the domestic market.</li> <li>2. Prices based on world averages may create mounting, interim subsidies if world and domestic prices move in opposite directions.</li> <li>3. If the trigger is relatively large, significant price adjustments could be made in order to avoid subsidies.</li> <li>4. Can lead to large subsidies unless price bands are frequently adjusted.</li> </ol>
	Pre-determined price increases at regular intervals to bring domestic prices up to market levels.	<ol style="list-style-type: none"> <li>5. Predictable price increases, avoiding sudden spikes and collapses.</li> </ol>	<ol style="list-style-type: none"> <li>5. Requires political will to continue to raise prices, particularly if world prices are falling. Domestic price increases need to be larger than world price changes to close subsidy gap.</li> </ol>
Stabilization Mechanisms	Fund saves revenue if domestic prices are higher than world levels; revenues are used to keep domestic prices low when world prices are high. Can be ongoing, or temporary with an initial transfer.	Prices are smoothed. In theory, self-financing. If temporary, can help deal with large price shocks while limiting the period of artificially low prices.	Seldom if ever self-financing because a period of under-recoveries can last a long time, creating serious cash flow problems. If temporary, can be pressured to continue indefinitely, potentially resulting in losses.
Ad Hoc	Ad hoc: No clear rules; prices may be frozen for months or years at a time for one or more fuels.	Stable prices between changes.	Adjustments tend to be large, delayed and unpredictable; can create costly subsidies; pricing highly politicized.

Source: Adapted from Kojima, 2011; 2013.

## Best Practice When Reforming LPG Subsidies

International literature and analysis of case studies of fossil fuel subsidy reform, including LPG, indicate that subsidy reform should follow three main principles; improving and depoliticizing pricing mechanisms to gradually move toward market pricing; making sure that the impacts of reform, particularly on vulnerable groups, are well understood and can be managed with targeted policies; and building support for reform through consultations and communications.

### 1. Getting Prices Right

Ideally, LPG should be sold at market prices. Most countries, however, can't just get there overnight. In the interim, they're likely to transition toward market prices through gradual price increases that take place through a pricing formula. Even once the pricing formula has brought prices up to market levels, it may need to remain the dominant pricing system until political decision makers agree that market pricing is viable, and adequate investments are made to stimulate a competitive and well-enforced market.



In addition, in many countries LPG may be the best option for households to access clean cooking fuel. In order to ensure that higher-priced LPG doesn't harm low-income households, it may necessary to set up a pricing regime that allows low-income households to continue purchasing LPG with subsidies, either built into the cost of LPG that they purchase or reimbursed to them after buying LPG.

## 2. Targeting LPG Subsidies to Low-Income Consumers

International experience also recognizes that LPG subsidy reforms need to be accompanied by measures to protect poor and vulnerable households from negative impacts. This is primarily a challenge around targeting subsidy recipients. Many countries have relevant experience in this regard, holding important lessons for Indonesia when designing LPG reform.

**Table ES2. Targeting efforts by other countries**

El Salvador	<p>El Salvador replaced a price subsidy with an income transfer that identified beneficiaries based on electricity consumption. The subsidy was initially delivered via a barcode on electricity bills, but was later replaced with a new payment system that paid subsidies directly to LPG vendors when beneficiaries purchased LPG at the same time as providing ID and entering a personal identification number in a special, program-specific mobile phone. The phones were distributed to LPG vendors, who were also given special training in their use. The use of mobile phone technology allows information about all transactions to be collected in real time in a central database, improving the program's enforceability. In 2015, the government reported that the new program provided benefits to around 74 per cent of households.</p>
India	<p>The Indian government has introduced a variety of caps on the volume of subsidized LPG that registered households are allowed to purchase. Caps were initially set at a reasonable limit for a low-income household's annual consumption, though they have since increased to levels that would meet most household needs at all income levels.</p> <p>The Direct Benefits Transfer for LPG (DBTL) is a new mechanism for subsidizing LPG. Rather than subsidizing the costs of LPG at the point of purchase, the system requires consumers to purchase LPG at market prices. Households with a registered LPG connection are then subsequently compensated by a payment into their bank accounts equivalent to the value of the previous subsidy. The motivation for the DBTL was to cut down on corruption and leakages: by linking payments to individual bank accounts, it could cut down on consumption by businesses (who are ineligible) and falsely registered beneficiaries. The system does not restrict access based on any eligibility criteria other than having a bank account, which is required to receive payment.</p> <p>The "Give it Up!" Campaign is a central-government-led program to encourage wealthier households to voluntarily stop purchasing subsidized LPG. The campaign has a website (<a href="http://www.givitup.in">www.givitup.in</a>) with strong backing from the Prime Minister and testimonial videos from individuals who have given up subsidized LPG. The campaign aims to influence 10 million households and lists individuals who have opted out of the LPG subsidy on a "scroll of honour."</p>
Mexico	<p>In Mexico, LPG prices have been gradually increased without any targeted social welfare mechanisms to mitigate impacts on the vulnerable. This likely reflects the fact that Mexico has—over the course of the past 18 years—developed a comprehensive social safety net system, including its large-scale Oportunidades cash transfer program, which has a specific component intended to help households meet their energy needs.</p>
Peru	<p>To improve energy access, the Peruvian government in 2012 created the Fondo de Inclusión Social Energético (FISE). Under the FISE scheme, recipient households receive a monthly voucher worth 16 soles (roughly USD 5.70) providing financial support for the first LPG refill every month. The voucher is provided to recipients via a numeric code on their electricity bill that can be redeemed via their own mobile phones. Subsidy recipients can redeem their subsidy allowance for up to two months, and the LPG must be purchased through an "authorized LPG agent"—a distribution network that has expanded since the inception of the program. The FISE eligibility criteria include average monthly electricity consumption, household income, house construction etc. In 2014, the number of FISE recipients was estimated at more than 3.5 million people (almost 710,000 households), and its rollout has been accompanied by a comprehensive communications campaign targeting intended beneficiaries.</p>
Thailand	<p>In 2012, the government announced a policy to provide subsidized LPG only to low-income households and small businesses. Households are eligible for benefits if they have a power connection of no more than 5 amperes and they consume less than 90 kWh of electricity on average per month. Consumption is limited to 18 kg every three months. Beneficiaries must connect their phone to the system by sending an SMS message providing a code allocated to them upon registration and a six-digit code identifying the vendor from which they will purchase LPG. If the details are correct, they receive a reply providing them with a six-digit code. Upon purchasing LPG, beneficiaries must text the same number, including a code for the brand of gas they are purchasing and a code for the size of LPG cylinder. They receive in return messages confirming the size of cylinder, the sum of the subsidy they are receiving and the remaining amount of subsidized LPG they may purchase. Subsidized LPG can only be bought from participating stores. The system has not been successful, with only 400,000 beneficiaries registered out of an estimated eligible population of eight million eligible buyers. This has been attributed to problems in surveying beneficiaries, fears among businesses that inclusion will be linked to taxation and perceptions that the registration and purchase system is too burdensome and inflexible.</p>



### 3. Raising Awareness and Building Support

Finally, in many countries, communication has played an integral part in determining the successes or failures of reform.

The role of communication is often seen as twofold, including both a more internal, consultative side and an external, communicative side. The consultative part is often focusing on gathering input from stakeholders in order for the government to properly understand key concerns and in turn address them properly. On the external side, a proper communications strategy is important to enable the government to build support for reform by explaining the reasons behind and the benefits to be gained for the population. Here, India's "Give It Up!" campaign is notable for its efforts to establish at a high-profile level the ethical principle that better-off individuals should not be consuming subsidized LPG. This sort of public-facing activity could be sequenced to take place in anticipation of subsequent targeting of LPG subsidies. In addition, a well-designed communications strategy around LPG reform should aim to inform people about mitigation measures that the government intends to put in place instead of subsidies, including information about targeting, entitlements and processes for receiving the subsidy. This will in turn support the government in its efforts to reduce risks of exclusion as reform is implemented.

The relationship between communication and the specific design and delivery of LPG subsidy reform is an intimate one. Analysis of public opinion surveys on LPG price increases in El Salvador found that there were three key significant variables that were correlated with support for policy change: a high level of awareness; existing support for the ruling political party; and whether the new, targeted subsidy system had been delivered effectively. The first of these variables—being well-informed—was only helpful at the moment the policy change was implemented. The second was significant throughout. The third—the perception that the new, alternative system had been delivered effectively—was increasingly significant in explaining the major shift in public opinion from 70 per cent disapproval in January 2011 to 68 per cent approval a year later. This implies that one of the most important tools for building support is a well-prepared, well-tested policy that demonstrably delivers upon its promises.



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## 1.0 Introduction

Indonesia's new government has strongly signalled its intention to reform fossil fuel subsidies. With diesel and gasoline reforms implemented in early 2015, the government of Indonesia is now turning its focus toward liquefied petroleum gas (LPG) subsidies.

Reforming LPG subsidies is a different challenge than reforming those for diesel and gasoline. While LPG subsidies are as regressive as other fossil fuel subsidies, effectively designed and targeted LPG subsidies can powerfully promote access to clean cooking for low-income energy consumers. Households that no longer receive LPG subsidies may respond by returning to traditional biomass cooking fuels, which cause indoor air pollution and serious respiratory health problems. As a result, higher energy prices are expected to have larger impacts on the poor.

In many countries, the focus of LPG reforms is therefore on better targeting of assistance, to ensure that low-income households can access modern, clean forms of energy.

In support of Indonesia's reform efforts, the Global Subsidies Initiative (GSI) has completed this briefing note, collecting the most recent international experience on LPG subsidy reforms. It seeks to synthesize knowledge to date and to identify specific lessons that might apply to Indonesia.

The paper first sets out an overview of the role of LPG in Indonesia and then turns its focus toward LPG internationally, synthesizing experience and best practice and drawing in relevant case studies from five countries around the world.

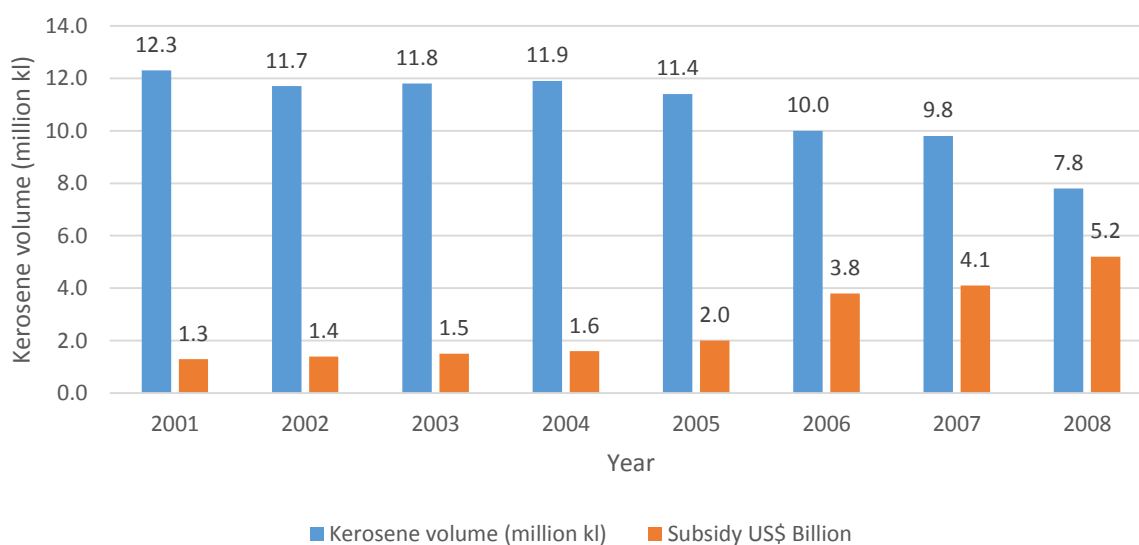
### 1.1 LPG IN INDONESIA

In 2007, the Indonesian government launched the "Conversion Program from Kerosene to LPG" (hereafter the "Zero Kero Program") to promote the use of LPG in Indonesian households. It is a large-scale fuel substitution program that has completely altered household energy consumption across Indonesia. For more information about the Zero Kero Program, see Annex 1.

Up until the introduction of the Zero Kero Program 2007, kerosene served as the primary cooking fuel for Indonesian households alongside firewood. In 2004, kerosene was being used by 48 of 52 million households (PT Pertamina & WLPGA, 2013). As with other fossil fuels in Indonesia, however, kerosene was heavily subsidized, representing a significant fiscal burden to the government.

In 2006, just prior to the introduction of the Zero Kero Program, kerosene subsidies totalled USD 3.8 billion (see Figure 1), equalling 57 per cent of Indonesia's total expenditure on fuel subsidies (PT Pertamina & WLPGA, 2013).





**Figure 1. Subsidized Kerosene - Volume and Cost 2001 - 2008**

Source: PT Pertamina & WLPGA, 2013.

The Zero Kero Program has made a significant impact on the use of energy in Indonesian households, particularly for cooking. The share of LPG in household consumption has increased from 1.9 per cent in 2005 to 13.5 per cent in 2013, while the share of kerosene has dropped considerably from 18 per cent in 2005 to 1.8 per cent in 2013. Biomass still accounts for around 70 per cent of total household energy consumption (Ministry of Energy and Mineral Resources, 2014).

The increase of LPG consumption in recent years has also led to higher LPG subsidy expenditure. This has prompted the government to consider reforming the current LPG subsidy system, in which 3-kg LPG cylinders are universally subsidized.

One complexity of LPG subsidies, however, is that they can be seen as performing two possible functions: first, as a supplement to the income of the poor; and second, as an incentive to use clean, modern energy sources. Most previous subsidy reforms in Indonesia have been for gasoline and diesel subsidies, typically viewed as only providing an income supplement to households, and, indeed, one that is highly regressive. For LPG subsidies, it is not clear for what share of the population the government wishes to incentivize the use of clean energy sources. Giving the large population of “near poor” in Indonesia, this may include a larger share of households than typically targeted through historical social assistance measures.

Historically, energy subsidies in Indonesia have been linked to social welfare since the introduction of subsidies in the 1960s, when the government opted to provide broad-based energy subsidies in place of more sophisticated and integrated social welfare mechanisms. Nevertheless, in recent decades, Indonesia has improved its social welfare systems significantly, allowing the government to reform fossil fuel subsidies and better target subsidies to low-income households. LPG subsidy reform is likely to draw on these social welfare mechanisms that have been established to provide targeted assistance to those most in need. The “Unified Database” is expected to play a particularly important role in terms of targeting subsidy recipients. Recently introduced welfare programs such as the Social Protection Card and the Family Welfare Program from 2014 are relying on the Unified Database for both targeting and distribution (“TNP2K Facilitates,” 2015).

In the lead-up to LPG reforms, there are many important questions for the Indonesian government to consider including: How to increase prices to non-subsidized LPG? How to target subsidies to key beneficiaries? What share of the population should still receive LPG subsidies? How to communicate reform plans? How to phase in reform?



To answer some of these questions, it will be useful for the Indonesian government to learn how other countries have prepared for and implemented LPG reform.

This paper aims to provide this knowledge by summarizing best reform practice from international literature and concrete reform efforts from other countries. First, however, the paper sets out to briefly describe the current LPG subsidy system in Indonesia before turning to the role of LPG internationally, including reform experiences.

## 1.2 LPG SUBSIDIES IN INDONESIA TODAY

LPG in Indonesia can be purchased by households in 3-kg and 12-kg cylinders. Subsidies are universally provided to

3-kg canisters, allowing all households to use them at a fixed, below-market price. This is intended to support energy access for low-income households.

The total cost of subsidized 3-kg LPG continues to increase year-on-year, reaching 2.76 per cent of all government expenditure in 2014 (see Table 1). Prices of 3-kg LPG have not changed since 2009, when they were increased from IDR 4,500<sup>1</sup> (USD 0.31) per kg to IDR 5,000 (USD 0.35) per kg (see Table 2).

In practice, 12 kg canisters have also been sold at subsidized levels, with PT Pertamina reporting losses totalling IDR 21.8 trillion (USD 1.5 billion) between 2008 and 2013. In order to reduce losses, PT Pertamina adopted a cost-recovery scheme with regular price increases to LPG 12-kg canisters starting from September 2014 (GSI, 2015b). This has led to a series of price adjustments recently both upwards and downwards (see Table 3). Indonesia's total LPG subsidy expenditure presented below would be slightly higher if PT Pertamina's under-recoveries are included.

**Table 1. 3-kg LPG Subsidies in Indonesia 2010–2014**

	2010	2011	2012	2013	2014
LPG Subsidy in IDR trillion	14.85 (USD 1.63 billion)	22.59 (USD 2.48 billion)	32.85 (USD 3.61 billion)	30.98 (USD 3.40 billion)	48.97 (USD 3.91 billion)
LPG Subsidy / GDP	0.23%	0.30%	0.40%	0.34%	0.49%
LPG Subsidy / State Expenditure	1.43%	1.74%	2.20%	1.88%	2.76%

Note: State expenditure includes transfer to regions. Converted into US dollars using average annual exchange rates from [www.oanda.com](http://www.oanda.com);

Source: Government of Indonesia, Audited State Budget 2015.

**Table 2. 3-kg LPG Prices in Indonesia 2009–2015 (prices per kg)**

	2009	2010	2011	2012	2013	2014	2015
3-kg LPG	4,500 (USD 0.31)	5,000 (USD 0.35)	5,000 (USD 0.35)	5,000 (USD 0.35)	5,000 (USD 0.35)	5,000 (USD 0.35)	5,000 (USD 0.35)

<sup>1</sup> The exchange rate being used throughout the paper is IDR 1 = USD 0.00007. Unless stated otherwise.

**Table 3. 12-kg LPG Prices in Indonesia 2009–2015 (prices per kg)**

	2009-2013	Jan 2014	Sep 2014	Jan 2015	Jan 2015	March 2015	Apr 2015	Sep 2015
12-kg LPG	5,850 (USD 0.40)	6,850 (USD 0.47)	9,525 (USD 0.66)	11,167 (USD 0.78)	10,750 (USD 0.75)	11,167 (USD 0.78)	11,833 (USD 0.82)	11,275 (USD 0.78)

Source: GSI, 2015a; GSI, 2015b; "Lowering LPG 12 kg price," 2015; PT Pertamina, 2015.

### 1.2.1 LPG Subsidy Structure

The 3-kg LPG subsidy in Indonesia is calculated as the difference between the fixed government retail price and the "Reference Price," representing the cost of supply.

#### Box 1. LPG Reference Price (per kilo)

Contract Price (CP) Aramco + USD 68.64/MT + 1.88% CP Aramco + IDR 1,750/kg

- Contract Price Aramco: Saudi Aramco LPG spot price.
- Freight costs: USD 68.64/MT.
- Custom duties: 1.88% of the Contract Price Aramco.
- Handling, transportation and other operational costs: IDR 1,750/kg (USD 0.12)

Source: Ministry of Energy and Mineral Resources Decree No. 2047 K/12/MEM/2013, 2013.

#### Box 2. LPG Subsidy Formula

Retail Price – Reference Price

Source: Ministry of Finance Regulation No. 64/PMK.02/2012.

Regional governments in Indonesia are authorized to regulate the retail price of subsidized LPG within their respective regions to accommodate additional costs for transportation. As a consequence, the price of subsidized LPG varies across regions. For example, 3-kg LPG in Jakarta in 2015 is set at IDR 5,000 (USD 0.35) per kilogram; however, for the Thousand Islands' district of Jakarta (a collection of 105 small islands in the Java Sea), a 3-kg LPG canister is priced between IDR18,500–19,000 (USD 1.29–1.33), primarily due to additional transport costs (Governor of DKI Jakarta Regulation No. 4/2015). PT Pertamina is the sole distributor of subsidized LPG in Indonesia.

### 1.2.2 Who Benefits From LPG Subsidies?

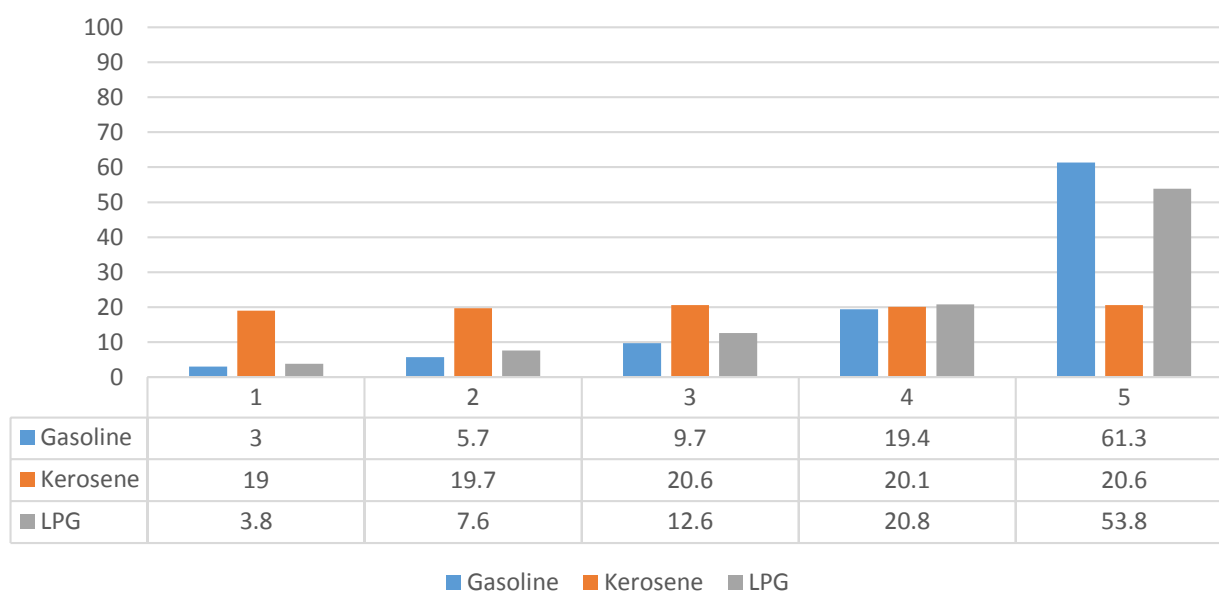
The provision of universal energy subsidies, including for LPG, is widely recognized to disproportionately benefit wealthier households. This is due both to the fact that LPG penetration often is weak in poorer, more rural areas as well as that wealthier households simply consume more energy than poorer households. In fact, international experience shows that only about 8 per cent of all energy subsidies reach the lowest income quintile and that LPG subsidies are even more regressive than average, with only 4 per cent reaching the lowest income quintile and over 50 per cent leaking to the highest income quintile (Granado, Coady, & Gillingham, 2012).

This study did not identify any recent estimations for the distribution of LPG subsidies in Indonesia. It can be assumed that the subsidies are regressive because of their universality: wealthier households can more easily access and better afford to buy higher quantities of low-cost LPG and thereby benefit



disproportionately. The larger the price gap between 3-kg and 12-kg LPG, the greater the incentive is for richer households to switch to 3-kg LPG consumption. 3-kg LPG consumption has been found to increase when the price of 12-kg LPG is adjusted upwards, reaffirming the notion that higher-income groups benefit from the subsidy scheme (“Pertamina increases supply,” 2014). The fact that 12-kg LPG has also often been sold below the true cost of supply only serves to exacerbate the regressive distribution of Indonesia’s LPG subsidies.

Granado, Coady, & Gillingham (2012) compared the distributional effects of various energy subsidies, including LPG. Their study found that, on average, only 3.8 per cent of LPG subsidies reach the lowest income group. Figure 2 below shows average figures calculated from 20 country case studies, including Indonesia, and clearly demonstrates the regressive distribution of LPG subsidies.



**Figure 2. Distribution of Direct Subsidy Benefits by Consumption Quintile (%)**

*Source: Adapted from Granado, Coady, & Gillingham, 2012.*

In 2014, Indonesia’s expenditure on LPG subsidies equalled IDR 48.97 trillion (USD 3.42 billion). Applying the average estimations from Figure 2 above to an Indonesian context means that only IDR 1.8 trillion (USD 0.12 billion) of total LPG subsidies were reaching the lowest income group, and only IDR 11.4 trillion (USD 0.79 billion) reaching the bottom two quintiles. In contrast, IDR 42.7 trillion (USD 2.98 billion) was captured by the wealthiest three income groups, underlining the regressive nature of universal subsidy policies.



## 2.0 International Experience With LPG Subsidy Reform

### 2.1 THE ROLE OF LPG INTERNATIONALLY

In recent years, the need for providing clean, modern energy for poor and vulnerable households has been increasingly recognized by policy-makers and researchers around the world. The challenge is enormous. In 2014, more than three billion people were estimated to lack access to modern cooking fuels, primarily in Africa and South Asia. These “energy poor” rely primarily on traditional, solid fuels such as firewood and charcoal for cooking (ENERGIA, 2014).

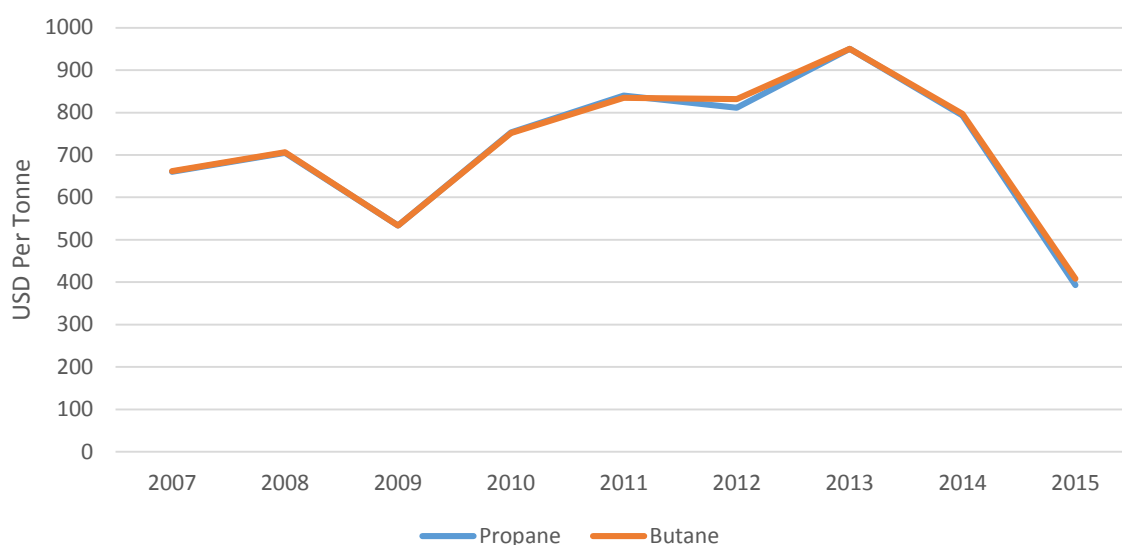
To eradicate energy poverty by 2030, LPG is considered to be of paramount importance. LPG is widely recognized as a “transitional fuel”, suitable for reducing energy poverty by providing affordable, clean and efficient cooking energy to people in developing countries around the world (ENERGIA, 2014).

Many countries promote LPG to replace kerosene and traditional fuels because it is more efficient and healthier to use for cooking and heating—up to five times more efficient compared to traditional fuels such as firewood and charcoal. Promoting household consumption of LPG also brings substantial benefits in terms of indoor air pollution and public health. It is well-documented that households that have switched to LPG from traditional fuels score higher on a large range of health indicators (ENERGIA, 2014; PT Pertamina & WLPGA, 2013). In fact, international studies suggest that indoor air pollution globally is responsible for more than four million deaths annually, primarily in Africa and South Asia (ENERGIA, 2014). Moreover, the use of LPG also allows households to significantly reduce the time spent collecting fuels and cooking, particularly for women, allowing them to spend it on other productive purposes, whether this be contributing to the household economy by seeking employment or improving their education (IRADe, 2014).

LPG has some distinctive features that make it suitable to promote as a fuel for cooking. This is due to the fact that, despite biogas being the only renewable option, the cost of efficient biogas digesters is substantially higher than LPG stoves. Moreover, biogas production also depends on availability of dung from animals, representing a natural barrier for some households. Similarly, while natural gas is cheaper compared to LPG in terms of energy per unit, the provision of natural gas to households requires the development of natural gas transmission and distribution infrastructure, which is very capital-intensive and takes time to construct. This provides a significant barrier for the provision of natural gas in many developing countries, leaving LPG as the most viable option for promoting access to modern cooking fuels (Kojima, 2011).

### 2.2 LPG PRICES

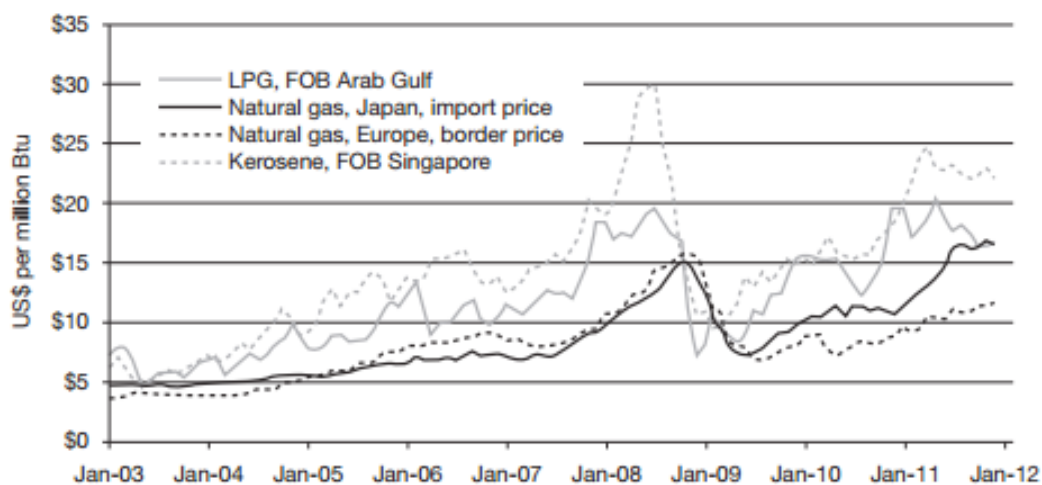
Even though LPG is a by-product of both oil refining and natural gas production, LPG prices mostly track international crude oil prices. This is due to the fact that LPG products—even when derived from natural gas—mostly compete with oil products (US Energy Information Administration, 2015). In line with international energy prices, LPG prices increased significantly from 2001 to 2011 and average Saudi Aramco prices were below USD 300 per tonne until 2004. See nominal prices from 2007 to 2015 below in Figure 3.



**Figure 3. Average Saudi Aramco (LPG) Prices from 2007 to 2015**

Source: Gas Energy Australia, 2015.

While global LPG prices are slightly higher per unit of energy than natural gas, they are still lower than the price of kerosene per unit of energy. Between January 2003 and January 2012, LPG prices were below the prices of kerosene in 94 out of 108 months. See Figure 4.



**Figure 4. Evolution of Monthly Prices for LPG, Natural Gas, and Kerosene per British Thermal Unit (Btu) from 2003 to 2012**

Source: Kojima, 2011.

### 2.2.1 How Do LPG prices in Indonesia Compare With Other Countries?

LPG retail prices vary significantly across countries. As with other petroleum products, LPG “pricing is highly country-specific and contingent upon a number of factors, including the energy system, politics and social welfare capacity” of a country (Beaton, Toft, & Lontoh, 2015).

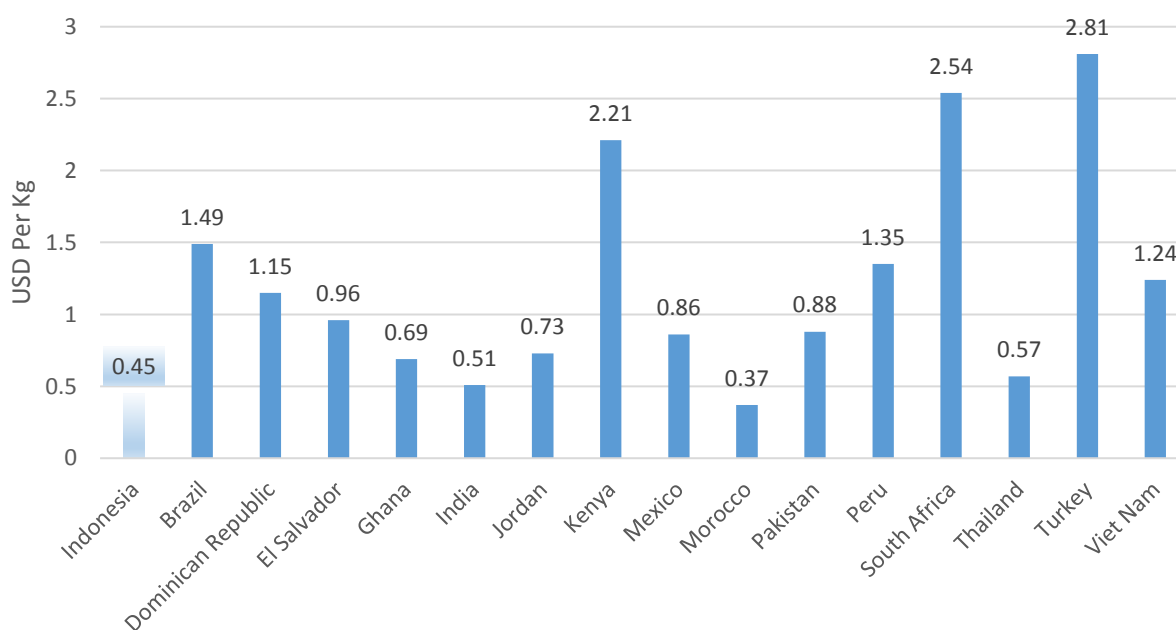
While many countries subsidize LPG consumption, LPG prices in Indonesia are generally lower than in comparable countries, indicating that Indonesia’s LPG subsidies may be overly generous.



A comprehensive World Bank study across 65 developing countries (including Indonesia) found that in spite of markedly low international LPG prices in July 2012, 40 per cent of countries still did not pass through international prices to consumers and “half had pass-through coefficients smaller than 75 per cent,” underlining the level of subsidization in many countries (Kojima, 2013a, p.8). The study also found that, LPG retail prices in July 2012 averaged at USD 1.17/kg across the sample countries, with the lowest price recorded at USD 0.37/kg in Morocco. By comparison, in Indonesia the price of subsidized LPG stood at USD 0.45/kg (Kojima, 2013a).

LPG subsidies are most prevalent in lower-middle-income group countries, with median retail prices across 22 sample countries of USD 0.80/kg. In low-income group countries, median LPG prices averaged USD 1.77/kg (10 sample countries) and in upper-middle-income group countries, median prices are USD 1.04/kg (18 sample countries) (Kojima, 2013b).

To further compare Indonesia’s LPG prices to countries in its region, Kojima (2013b) finds LPG retail prices in East Asia and the Pacific to average USD 1.20 across eight sample countries.



**Figure 5. End User Prices of LPG in July 2012**

*Source: Author diagram based on price data from Kojima (2013).*

## 2.2.2 Pricing Policies for LPG

As the variation in retail prices described above suggests, countries implement a variety of pricing policies to adjust LPG consumer prices.

As Indonesia moves forward with its LPG reform plans, it will be important to consider the design of a pricing mechanism that will help determine LPG prices going forward.

The country has previously experienced significant political intervention in the determination of non-subsidized LPG prices. In early 2014, the government intervened to partially reverse PT Pertamina’s decision to raise the price of 12-kg LPG, for example. The price increase was at that time the first since 2009 and was implemented by PT Pertamina as a means to cover its mounting losses from LPG sales (GSI, 2015c). This underlines the importance of designing a well-functioning pricing system that may allow the government (or another regulatory body) to adjust prices according to fluctuations in international prices.



There are many issues to consider when designing a fuel pricing mechanism. Broadly speaking, however, LPG pricing policies correlate to fuel pricing principles for other petroleum products, such as diesel and gasoline, and can be roughly divided into five categories:

**Table 4. Overview of Different LPG Pricing Systems**

	MECHANISM	ADVANTAGES	POTENTIAL CHALLENGES
Deregulated	Deregulation, with antitrust regulations.	Minimizes market distortions; no subsidies; price signals drive fuel efficiency; competition can drive down costs and prices.	Requires competitive downstream sector or may result in high consumer prices; oil price volatility is immediately transmitted.
Automatic Adjustment	Price adjustments linked to world prices made at regular pre-defined intervals, based on world prices averaged over a certain period or based on pre-defined triggers.	<ol style="list-style-type: none"> <li>1. Frequent adjustments track world prices well and limit scope for mounting subsidies.</li> <li>2. Adjustments based on world prices averaged over 1 month or longer make prices more stable.</li> <li>3. Adjustments based on a pre-defined trigger offer price stability within the price band.</li> <li>4. Adjustments limited to stay within a pre-defined price band.</li> </ol>	<ol style="list-style-type: none"> <li>1. Frequent adjustments transmit world price volatility quickly to the domestic market.</li> <li>2. Prices based on world averages may create mounting, interim subsidies if world and domestic prices move in opposite directions.</li> <li>3. If the trigger is relatively large, significant price adjustments could be made in order to avoid subsidies.</li> <li>4. Can lead to large subsidies unless price bands are frequently adjusted.</li> </ol>
	Pre-determined price increases at regular intervals to bring domestic prices up to market levels.	<ol style="list-style-type: none"> <li>5. Predictable price increases, avoiding sudden spikes and collapses.</li> </ol>	<ol style="list-style-type: none"> <li>5. Requires political will to continue to raise prices, particularly if world prices are falling. Domestic price increases need to be larger than world price changes to close subsidy gap.</li> </ol>
Stabilization Mechanisms	Fund saves revenue if domestic prices are higher than world levels; revenues are used to keep domestic prices low when world prices are high. Can be ongoing, or temporary with an initial transfer.	Prices are smoothed. In theory, self-financing. If temporary, can help deal with large price shocks while limiting the period of artificially low prices.	Seldom if ever self-financing because a period of under-recoveries can last a long time, creating serious cash flow problems. If temporary, can be pressured to continue indefinitely, potentially resulting in losses.
Ad Hoc	Ad hoc: No clear rules; prices may be frozen for months or years at a time for one or more fuels.	Stable prices between changes.	Adjustments tend to be large, delayed and unpredictable; can create costly subsidies; pricing highly politicized.

Source: Adapted from Kojima (2013).

### 2.3 WHAT DETERMINES HOUSEHOLD COOKING BEHAVIOUR?

Due to the important role of LPG in terms of increasing access to modern cooking fuel throughout Indonesia (as well as in fiscal terms), it is important that planning for LPG reform account for the factors that influence household cooking behaviour. Why are households using LPG, and why do they switch from one cooking fuel to another? The answers are important, not only to continue to increase access to LPG for low-income households who are currently relying on traditional fuels, but also to understand how reform can be implemented without negative impacts on those low-income households already using LPG.





Generally speaking, studies from Indonesia and abroad show that there are two key factors for determining what type of cooking fuel households are using: affordability and accessibility.

Affordability of cooking fuel is found to be a decisive factor both in terms of the price of fuel as a percentage of household income as well as in comparison to energy alternatives—including traditional fuels—that can often be collected for free in the nearby surroundings. Among other things, this means that changes to household income or the relative cost of fuels can have a large influence on household cooking behaviour.

Several international studies also reaffirm that LPG consumption is closely related to household income level. Bacon, Bhattacharya, and Kojima (2010) found that higher-income households in Indonesia consumed significantly more LPG than lower-income households (it should be noted, though, that the study builds on data prior to the introduction of the LPG Program). Similarly, in 2011, a comprehensive World Bank study (Kojima, 2011), drawing on national survey data from a range of developing countries, showed that LPG consumption was highest among households in the top three quintiles. In 51 out of 62 survey countries, LPG consumption rose in parallel to household income level. Similarly, the study found that the use of biomass was higher among low-income households, particularly in rural areas where distribution of LPG was generally less widespread compared to urban areas (Kojima, 2011).

In 2009, a large household study in Central Java and DIYogyakarta found that 30 per cent of the respondents had switched cooking fuels in response to increasing energy prices. Likewise, more than 25 per cent of the respondents reported to be looking for cheaper cooking fuel alternatives.

In terms of accessibility, 23 per cent of the respondents said they had recently switched to cooking fuels that were easier to obtain, indicating that the distance to LPG retailers plays a role in determining whether households use LPG (PT Pertamina & WLPGA, 2013).

Nevertheless, while affordability and accessibility are important factors in determining household cooking behaviour, they are not the only factors.

Many households are not aware of the harmful effects of cooking with traditional fuels and therefore see the trade-off between fuels as merely a matter of cost. For example, only 2 per cent of the respondents in the household survey from Central Jakarta and DIYogyakarta stated that their main motivation for switching cooking fuel was to start using a cleaner energy alternative. Misperceptions about the relative price of LPG compared to other fuels (including the time spent for collecting biomass) have been found to divert poorer and less educated households away from using LPG for cooking (ENERGIA, 2014).

Misunderstandings about the safety of LPG are also known to have discouraged some households from switching to LPG. This has to do in part with a lack of understanding of how to use LPG equipment, but also due to “illegal manufacturing and distribution practices, and unsafe environmental conditions” (Budya & Arofat, 2011). Indonesia has experienced a relatively low number of accidents as part of its LPG program, but some of them have been highly publicized, with a negative effect on public opinion toward LPG.

In conclusion, the results from a six-country regression analysis conducted by Kojima, Bacon, and Zhou (2011) should also be briefly outlined. The analysis looks into factors influencing household use of LPG and serves to substantiate the findings above.

Although the study builds on 2005 data for Indonesia, the analysis finds household income and LPG prices to be the two most important factors in order for Indonesian households to select LPG as well as for the level of consumption. The study also finds that “the higher the level of education attained by household members, the more likely the household was to select LPG” (Kojima, 2011, p.2). In



this regard, it is worth noting that the education of female household members is found to be more significant compared to male household members, underlining the role of gender in terms of expanding LPG access.

Finally, the study concludes that the relative price of kerosene compared to LPG may “adversely” affect household selection of LPG—it also found that the size of households has a negative effect on their selection of LPG (Kojima, Bacon, & Zhou, 2011).

## 2.4 CASE STUDIES

In order to further substantiate international experience and best practice with LPG reform, GSI has analyzed concrete LPG reform efforts from five countries across the world. These are outlined in the section below.

### 2.4.1 El Salvador

#### 2.4.1.1 El Salvador’s LPG Subsidies

LPG in El Salvador is sold in 10-, 20-, 25- and 35-pound cylinders (equivalent to 4.5 kg, 9 kg, 11 kg and 16 kg, respectively) and used by around 70 per cent of households, with the 25-pound cylinder the most common volume of consumption (Calvo-Gonzalez, Cunha, & Trezzi, 2015).

Up until April 2011, the government set a price ceiling that was available for all consumers. Before the introduction of reforms, this was set at USD 5.10 per 25-pound cylinder, which was estimated to be around USD 8 below the market price. This created significant subsidies, growing from 0.3 per cent of GDP in 2004 to 0.6 per cent of GDP in 2012 (see Table 6 and Table 7).

**Table 6. Price Ceilings for 25-pound cylinder LPG in El Salvador**

	1996 – APRIL 2008	APRIL 2008 – APRIL 2011	APRIL 2011 +
25-pound cylinder price ceiling	USD 4.15	USD 5.10	No ceiling

Source: Calvo-Gonzalez, Cunha, & Trezzi, 2015.

**Table 7. Expenditure on LPG subsidies, 2004-2012**

	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>IDB data</b>									
Expenditure (USD million)	46.2	55.6	94.5	104.3	136.8	83.4	--	--	--
% GDP	0.3	0.3	0.5	0.5	0.6	0.4	--	--	--
<b>World Bank data</b>									
% GDP	--	--	--	0.54	0.53	0.36	0.47	0.58	0.58

Source: Author diagram, adapted from IDB, 2010; World Bank, 2014.

#### 2.4.1.2 Strategies El Salvador Has Pursued to Reform its LPG subsidies

El Salvador’s key objective was to reduce the cost of the LPG subsidy and to prevent leakage and smuggling as a result of below-market prices. It used the following strategies:

- **Replacing a price subsidy with an income transfer.** In April 2011, LPG price ceilings were removed: the price of a 25-pound cylinder increased from USD 5.10 to USD 13.60. At the same time, the government introduced an income transfer of USD 8.50 per month for households who consumed less than 200 kWh of electricity per month. Transfers were made at banks upon



presentation of a barcode printed on electricity bills, and beneficiaries could request that the sum be subtracted from their electricity bills or be given to them in cash (Calvo-Gonzalez, Cunha, & Trezzi, 2015). The system was designed so that owners of more than one property would only be eligible once, and that households without an electricity connection could register at a government office in order to receive an eligibility card (Calvo-Gonzalez, Cunha, & Trezzi, 2015). This was intended to improve targeting on three fronts: richer households would not benefit from the subsidy; the fixed monthly payment would only support the use of one cylinder per month, acting as an incentive against excessive consumption; and the targeting system would cut off supplies for smuggling and other forms of illegal resale. In addition, the transfer would be available for all households—unlike the subsidy, which had only benefited households that consume LPG—making it more progressive. In practice, the 200 kWh cut-off excluded only 6 per cent of households, although survey research estimated that the limit on consumption may have had a large impact on targeting, as 70 per cent of those consuming more than one cylinder per month were found to have an above-average income (Calvo-Gonzalez, Cunha, & Trezzi, 2015).

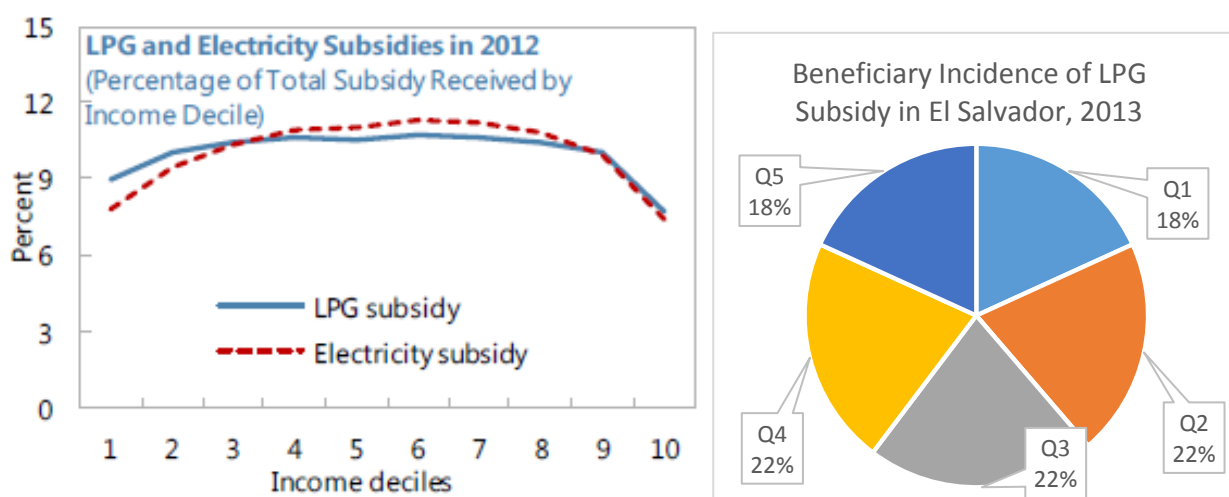
- Shifting to a new payment system, based on mobile transfers to vendors upon beneficiary provision of ID and entry of a 3-digit PIN.** In 2013–2014, the government began to pilot and transition to a new system for providing LPG subsidies. Fourteen “customer care centres” were established to help identify vendors for subsidized gas, register beneficiaries and deal with complaints (Ministerio de Economía, 2015). Vendors were provided with a basic model of phone and with training on how it could be used to be reimbursed for sales of subsidized LPG. As of mid-2015, the government reports that the centres have provided over 13,000 phones (Ministerio de Economía, 2015). At the same time, household heads were required to register as beneficiaries of the program, using their single identity document (*documento único de identidad*, DUI), an ID card including photo, fingerprint and biometric data (Beneke, Lustig, & Oliva, 2015). Once registered, consumers were provided with a personal identification number (PIN). Upon purchasing LPG from a designated vendor, they are required to enter their PIN code into the vendor’s mobile phone (Ministerio de Economía, n.d.). This is sent to a central database that is able to validate in real time if the consumer is eligible. If so, a confirmation message is sent, the government transfers a subsidy to the vendor’s e-wallet and beneficiaries are able to buy LPG at a fixed below-market price. Vendors are given a separate card that allows them to withdraw cash from their e-wallet at designated financial institutions (Ministerio de Economía, 2015). The subsidy paid to vendors is allowed to vary with the market price of LPG, such that the difference paid by beneficiaries is fixed. In 2015, the price for beneficiaries has been set at USD 4.90 per 25-pound cylinder, requiring a subsidy ranging from USD 3.37 to USD 4.60 (Ministerio de Economía, 2015). Due to the use of mobile technology, the government is able to monitor LPG sales through an online system that records information about individual transactions, including the point of sale and records of previous transactions by each beneficiary. As previously, it is still only possible to purchase one cylinder of LPG per month (Beneke, Lustig, & Oliva, 2015). As of January 2014, the system was adapted slightly, so that beneficiaries had to present a card called the Solidarity Card (*Tarjeta Solidaria*) instead of their DUI (Beneke, Lustig, & Oliva, 2015). The new system is universally available and reported to provide benefits to around 74 per cent of households (Ministerio de Economía, 2015).

### 2.4.1.3 Lessons Learned

A number of lessons were learned in El Salvador that go beyond policy design, including some of the political reactions to the government’s reforms.



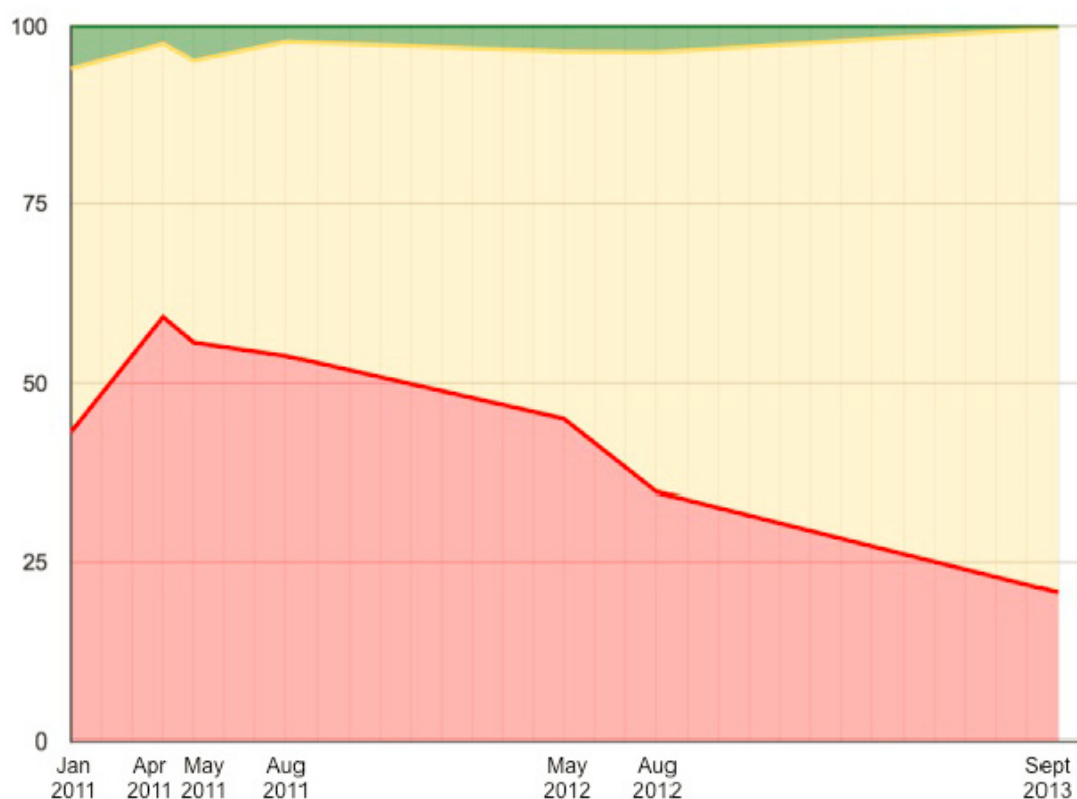
- An appropriate targeting system is required if the reform is intended to help cut costs by concentrating benefits on only low-income households.** Both the 2011 and the 2013 reforms in El Salvador continued to provide LPG subsidies to the majority of the population. According to IMF data (see Figure 6), the 2011 reform left fairly even shares of subsidies being captured by the second to ninth quintiles in 2012. In 2013, costs remained at around 0.6 per cent of GDP (Di Bella, et al., 2015). According to the Ministry of the Economy, the next wave of reforms in 2013 appears to have led to a reduction in benefits being captured by high-income households (receiving only around 10 per cent of benefits), but middle-income households continued to capture over 40 per cent of benefits (Ministerio de Economía, n.d.). This may reflect political considerations; for example, in 2011 it is reported that the cut-off for household eligibility was originally planned to be 99 kWh (Calvo-Gonzalez, Cunha, & Trezzi, 2015). It may also reflect a policy decision that not only the lowest-income households require assistance to ensure access to clean cooking fuels.



**Figure 6. Share of Benefits Received Across Income Groups in El Salvador, 2012–2013**

Source: IMF, 2015a; World Bank, 2014.

- Strategies may be required to overcome the political unpopularity of reforms.** Calvo-Gonzalez et al. (2015) conducted a comprehensive analysis of the political response to the 2011 reforms, which were initially highly unpopular. A nationally representative public opinion survey in January 2011 found that 70 per cent of the population were opposed and a number of prominent figures questioned the policy change, including the influential Archbishop of San Salvador. Over time, however, popularity improved significantly, with 68 per cent of the population in favour after a year and a half. Calvo-Gonzalez et al. (2015) found three significant variables in determining public opinion: how “well-informed” people considered themselves to be (only significant immediately after the first price increase); whether they reported the subsidy to have been delivered effectively (significant at all points in time and of gradually increasing importance in determining attitudes); and whether they were supporters of the government (significant at all points in time). In January 2011, for example, it was found that being well-informed, having faith in the delivery system and being a prior supporter of the government would increase the likelihood of support for the reform by 75 per cent. An analysis of posts on social media by UN Global Pulse (2015) found a similar general trend of attitudes away from negative, although finding a much larger “neutral” sentiment toward the new policy than “positive” (see Figure 7).



**Figure 7. Social Media Attitudes to El Salvador's 2011 LPG Subsidy Reforms**

Source: UN Global Pulse, 2015. Green is positive; yellow, neutral; and red, negative.

- A gradual approach to targeting may be necessary. Reflecting on the relatively broad targeting of the subsidy following the 2011 reforms, the World Bank (2014) recommended that El Salvador consider gradually excluding the top two quintiles from subsidy eligibility.

## 2.4.2 India

### 2.4.2.1 India's LPG subsidies

LPG in India is sold in 14-kg and 5-kg cylinders. Only 14-kg cylinders are subsidized throughout the country and 5-kg cylinders only in selected rural locations. Until recent reforms in 2014 and 2015, the subsidies were provided via a combination of direct payments and requiring oil marketing companies (OMCs) to sell 14-kg cylinder LPG at a loss, so-called “under-recoveries”. These two forms of support combined have seen LPG subsidies increase from USD 2.7 billion in financial year 2005/06 to USD 7.6 billion in financial year 2012–2013 (see Table 8), around 0.4 per cent of GDP.

LPG subsidies in India are universal, i.e., all citizens are eligible to purchase below-cost LPG if they have what is referred to as a “connection” (that is, they have registered with a distributor, which requires payment of a fee in return for inclusion on a registry and the provision of a pipe, regulator and stove). A program exists that allows poor households to register without paying the fee. The system has been criticized because its universality provides benefits to wealthier households, and problems with distribution (lack of LPG distribution in some rural areas, distributors demanding bribes in order to register poor households) have skewed the benefits in favour of richer, urban households.



According to government estimates, around 156 million of India's roughly 250 million households (~60 per cent of households) are registered to purchase subsidized LPG (Petroleum Planning & Analysis Cell [PPAC], 2015). The other fuels that are predominantly used to meeting cooking needs are biomass or dung cakes (in combination with kerosene as an ignition fluid), and, for a small share of households, kerosene stoves. The International Energy Agency estimates that 66 per cent of the Indian population still relies on biomass to meet their cooking needs (IEA, 2014). India's 2011 census indicates that around 65 per cent of urban households use LPG as their primary cooking fuel, while only around 5 per cent of rural households do the same (GSI, 2014).

**Table 8. Direct Expenditure on LPG Subsidies in India**

	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
<b>Direct expenditure</b>								
INR (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	0.4	0.44	0.37
Growth (%)		-3.2	7.0	3.1	5.8	8.8	8.3	-6.9
<b>Under-recoveries</b>								
INR (bn)	102	107	155	176	143	218	300	396
USD (bn)	2.32	2.37	3.88	3.79	3.02	4.8	6.24	7.27
Growth (%)	n/a	4.4	45.1	13.4	-19.0	52.7	37.8	31.9
<b>Total subsidies</b>								
USD (bn)	2.7	2.7	4.3	4.2	3.4	5.2	6.7	7.6

Source: GSI, 2014.

#### 2.4.2.2 Strategies India Has Pursued to Reform its LPG subsidies

The major motivation for the reform of LPG subsidies in India has been to reduce divergence and leakage, thereby reducing costs. The government has adopted the following strategies in order to reduce LPG subsidies:

- **Capping subsidized LPG consumption:** The Indian government has introduced a variety of caps on the volume of LPG that registered households are allowed to purchase. The rationale behind these moves has been to set consumption at a reasonable limit for a household's annual consumption and to thereby reduce costs. The system is administrated through the distributors who provide LPG to registered households. The cap was initially set at six cylinders in September 2012; then increased to nine cylinders in January 2013; and finally 12 cylinders in April 2014 (GSI, 2014). Changes in the cap have been due to political pressure to increase the limit on consumption. The moves have been criticized, as the purchase of 12 14-kg cylinders is believed to cover the annual consumption of the great majority of households in India, therefore limiting the ability of the policy to reduce excess consumption.
- **The Direct Benefits Transfer for LPG (DBTL).** The DBTL is a new mechanism for subsidizing LPG. Rather than subsidizing the costs of LPG at the point of purchase, the system requires consumers to purchase LPG at market prices. Households with a registered LPG connection are then subsequently compensated by a payment into their bank accounts equivalent to the value of the previous subsidy. Payments are supposed to be made within a few days of purchase. Citizens can prove their identify when purchasing using their "ration" cards, used as proof of identify for a wide variety of social services, or the newer Aadhar biometric identification card. The motivation for the DBTL was to cut down on corruption and leakages: by linking payments to individual bank accounts, it can cut down on commercial consumption.



The system does not restrict access based on any eligibility criteria other than having a bank account, which is required to receive payment. The government claims the policy has been successful, saving around USD 2 billion (Clarke, Sharma, & Vis-Dunbar, 2015), although it is likely that this number is inflated due to the interacting impacts of low world oil prices in late 2014 and throughout 2015. Anecdotal reports suggest that some poor households have struggled to access the new system due to problems in linking connections to bank accounts, problems in establishing connections with local distributors who demand a fee for the service, and a lack of financial inclusion and distant banking facilities, although a recent drive to expand financial inclusion in India is believed to have helped mitigate some of these problems. The availability of two possible proofs of identify—older ration cards and newer Aadhar cards—reflects a Supreme Court decision that the government may not require households to have Aadhar cards in order to receive social welfare assistance, due to fact that many households have not yet transitioned to the new system.

- **The “Give it Up!” Campaign.** The “Give it Up!” Campaign is a central-government-led program to encourage wealthier households to voluntarily stop purchasing subsidized LPG (see Image 1). The campaign has a website ([www.givitup.in](http://www.givitup.in)) with strong backing from the Prime Minister and testimonial videos from individuals who have given up subsidized LPG. The campaign aims to influence 10 million households and lists individuals who have opted out of the LPG subsidy on a “scroll of honour.” Major institutions have also made pledges on behalf of their employees. As of September 2015, the Indian Oil Corporation Limited (IOCL) reported 1,184,009 such individuals (IOCL, n.d.); the Bharat Petroleum Corporation Limited (BPCL) 965,491 (BPCL, n.d.); and the Hindustan Petroleum Corporation Limited (HPCL) 916,897. Assuming no double counting, this amounts to 3,066,397 individuals.

GIVING IT UP TAKES 5 CLICKS

- Log on to [www.givitup.in](http://www.givitup.in)
- Click on the link of your LPG provider — HP, Bharat Gas or Indane
- Get your LPG ID — a 17-digit number which can be found by entering your consumer number and distributor name
- Enter your LPG ID
- Click Submit

GIVING IT UP: IN GOOD COMPANY

▶ Tata Group <b>5.81L</b> employees	▶ Kotak Mahindra Bank <b>18,500</b>
▶ Aditya Birla Group <b>1.2L</b>	▶ Mahindra Group <b>18,000</b>
▶ Vedanta Group <b>88,000</b>	▶ Adani Group <b>10,400</b>
▶ Reliance Industries <b>60,000</b>	▶ JSW Group <b>10,000</b>
▶ Future Group <b>35,000</b>	▶ Biocon <b>7,000</b>

To be part of the #GiveItUp campaign, write to the distributor or apply on <http://www.givitup.in>

**IMAGE 1: The Give It Up! Campaign**

Source: Pandey, 2015; Narayan, 2015.

### 2.4.2.3 Lessons Learned

- Capping LPG consumption can be an effective way to prevent inefficient consumption of low-cost LPG. In order to be effective, it is necessary to be able to track the LPG purchases of individuals and to set the cap at a level that allows for average annual consumption of the targeted group of beneficiaries.



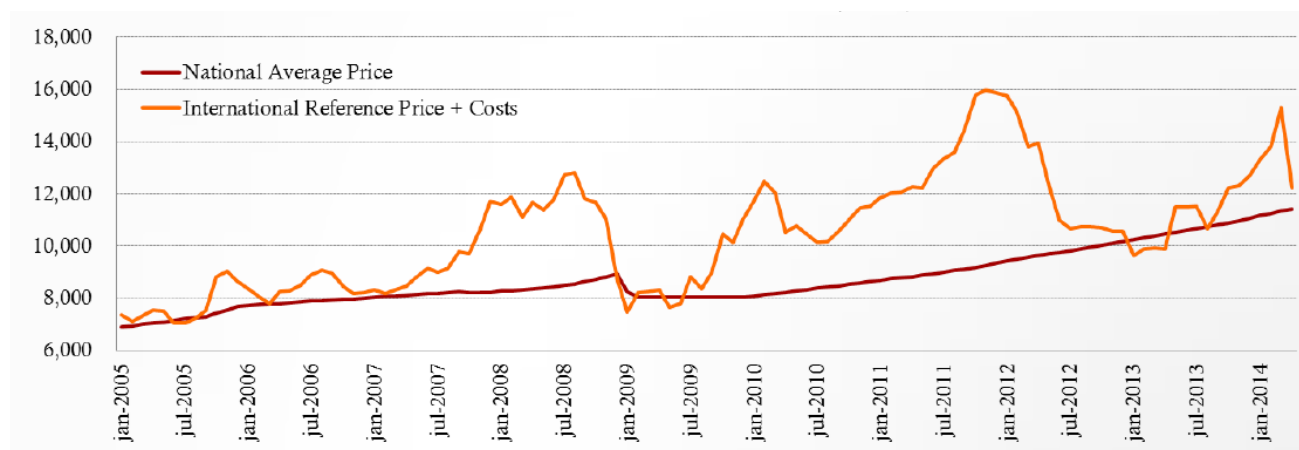
- Providing multiple means of registry and delivery of benefits can reduce risk of exclusion. In India, it was necessary to allow households to register for benefits in two ways: using either older “ration” cards or newer Aadhar cards. It is possible that challenges may remain with the way that the DBTL delivers benefits, since some households may not have bank accounts or may be unable to access banking facilities within reasonable time or costs.
- Public campaigns can play an effective role in encouraging wealthier households to forgo subsidized LPG. Although it is not the strategy in India, such a campaign may be a helpful preparatory exercise before the mandatory restriction of LPG subsidies to only low-income households, as it establishes as an ethical principle the idea that the subsidy is intended to benefit the poor and that wealthier households are benefiting unfairly.

## 2.4.3 Mexico

### 2.4.3.1 Mexico's LPG Subsidies

LPG in Mexico is sold in large 20-kg and 30-kg cylinders or supplied through large, stationary tanks (Secretaría de Energía, 2008). According to 2008 household expenditure survey data (Kojima, Bacon, & Zhou, 2011), around 80 per cent of households identified LPG as their primary cooking fuel. Fewer rural households (54 per cent) consumed LPG as a primary cooking fuel than urban households (87 per cent). On average, households consume 29 kg of LPG per month, costing 5.6 per cent of rural household expenditure and 4.4 per cent of urban household expenditure.

Until recently, Mexico has subsidized LPG by setting a maximum price each month, typically below the actual costs of importing LPG from the international market (see Figure 8). The costs of this have been absorbed by the state-owned energy company Pemex without compensation (Secretaría de Hacienda y Crédito Público, 2014).



**Figure 8. LPG Prices (USD/tonne), Mexican National Price and an International Reference**

Source: Secretaría de Hacienda y Crédito Público, 2014.

**Table 9. LPG Subsidies in Mexico, 2010–2014**

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
MXN bn	4.7	5.1	10.3	26.2	6.7	24.2	40	20.9	4.8	4.8
USD bn	0.4	0.5	0.9	2.4	0.5	1.9	3.2	1.6	0.4	0.36
% GDP	0.0%	0.1%	0.1%	0.2%	0.1%	0.2%	0.3%	0.1%	0.0%	0.0%

Source: OECD, 2015. Converted into US dollars using average annual exchange rates from [www.oanda.com](http://www.oanda.com); percentage GDP calculated by the authors, based on World Development Indicators.





### 2.4.3.2 Strategies Mexico Has Pursued to Reform Its LPG subsidies

The major motivation behind reforms in Mexico has been to try to cut inefficient fiscal expenditure. The government has adopted the following strategies in order to reduce LPG subsidies:

- Gradual price increases. Since 2010, the Mexican government has introduced annual average increases in LPG retail prices of about 7 to 8 per cent (Secretaría de Hacienda y Crédito Público, 2014). Although this has not eliminated the subsidy during high prices, it has reduced average subsidy expenditure and effectively eliminated subsidies during the current period of low international crude prices. It should be noted that the approach has largely been successful because of the recent collapse in world oil prices and that subsidies may risk coming back if international prices start increasing at a higher pace than domestic retail prices.
- Development of alternative social welfare infrastructure. In Mexico, the inefficiency of the LPG subsidy as a social welfare mechanism has not been a principle motivation for reform. This is likely because Mexico has—over the course of the past 18 years—developed a comprehensive social safety net system. A pillar of this is its conditional cash transfer system Oportunidades, which covers 5.5 million households through distribution centres and debit cards and contains a subcomponent related to energy, Oportunidades Energeticas (Niño-Zarazúa, 2010; Visa, n.d.). Arguably, these more efficient social assistance policies have made it relatively less important to develop targeted LPG subsidies. Oportunidades provides low-income households with cash transfers linked to accessing health and education. Payments are made to female heads of household (Niño-Zarazúa, 2010). Oportunidades Energeticas is a MXN 60 (USD 4.60) per month supplement to this, intended to help vulnerable households afford energy-related expenses. In 2010 more than 5 million people were enrolled in Oportunidades (Vagliasindi, 2013). The program has an efficient monitoring system that allows rapid follow-up of non-compliance (Fernald, Gertler, & Neufel, 2008). The benefit is reduced for the period for which there was non-compliance and the reduction is reflected in the next payment (Fiszbein & Schady, 2010).

### 2.4.3.3 Lessons Learned

- Gradual price increases can ease the impact of reforms. Mexico's experiences with consistent, gradual price increases show that this approach is possible, despite the potential political resistance to regular price changes.
- In some countries, it may not be necessary to provide LPG subsidies to assist the poor if existing social assistance capacity is sufficient to assist low-income households. In Mexico, the government's reform plan has simply been to remove LPG subsidies. This may reflect the country's extensive social assistance capacity. It may also reflect the fact that LPG is already the primary cooking fuel among all quintiles, so there is less concern related to the need to encourage a shift toward modern cooking fuels.

## 2.4.4 Peru

### 2.4.4.1 Peru's LPG Subsidies

In response to rising international oil prices Peru started subsidizing fossil fuel consumption, including LPG, in 2004.

The government established the Fuel Price Stabilization Fund (FPSF) as a vehicle to limit the pass-through of international price hikes to domestic markets.

The FPSF was essentially introduced as a commodity subsidy scheme with upper and lower price bands for domestic energy prices.



The universality of the FPSF led to mounting fuel subsidies, peaking in 2008 when annual subsidy expenditure totalled 1.4 per cent of GDP (Vagliasindi, 2013). In 2011 LPG subsidies amounted to 0.15 per cent of GDP with the FPSF disbursing USD 261 million to support LPG consumption. The subsidy scheme was later found to be highly regressive and disproportionately favouring the wealthiest 20 per cent of the population which led to a series of attempts to increase fuel prices. Since 2012, LPG for household consumption and diesel have been the only fuels to remain under the subsidy scheme (Coady et. al, 2013). The price band for LPG is set at 1.5 per cent based on the export parity price and is updated on a bi-monthly basis (APEC Peer Review Team, 2015).

#### 2.4.4.2 Strategies Peru has pursued to reform its LPG subsidies

- **Better Targeting of LPG Subsidies.** A 2007 census found that 37 per cent of the Peruvian population lacked access to modern fuels, including for cooking, and that 60 per cent live in rural areas (APEC Peer Review Team, 2015). This led to the creation in 2012 of the Fondo de Inclusión Social Energético (FISE) to increase access to modern cooking fuels, notably LPG, across Peru (Sustainable Energy For All, 2013).

The FISE is a cross-subsidy scheme that brings in all its revenue through a surcharge on other energy consumption, including of electricity and hydrocarbons. The FISE eligibility criteria include:

- o Average monthly electricity consumption
- o Household income
- o Registration in the National Registry of Identification and Civil Status
- o Precarious house construction
- o One beneficiary allowed per family

Under the FISE scheme, recipient households receive a monthly voucher worth 16 soles (roughly USD 5.70) providing financial support for the first LPG refill every month. For eligible families who do not already have an LPG cook stove, the FISE will provide a two-burner stove, hose and a 10-kg LPG canister (APEC Peer Review Team, 2015).

The voucher is provided via a numeric code on the electricity bill that can be redeemed via mobile phone. Subsidy recipients can redeem their subsidy allowance for up to two months and the LPG must be purchased through an “authorized LPG agent”—a distribution network that has expanded since the inception of the program. Nevertheless, there are still challenges around providing LPG subsidies to consumers without access to electricity.

In 2014, the number of FISE recipient was estimated at more than 3.5 million people (almost 710,000 households) and its rollout has been accompanied by a comprehensive communications campaign targeting intended beneficiaries. The FISE was recently characterized as efficient in the Peruvian APEC Peer Review of fossil fuel subsidies (APEC Peer Review Team, 2015).

- **The Juntos Conditional Cash Transfer (Juntos CCT) program.** In 2005, Juntos CCT program was established to support vulnerable households across Peru. While initially not directly linked to energy reforms, expansions of the program have since been seen to coincide with increases in energy prices.

The Juntos CCT supports vulnerable families across Peru by providing a direct lump sum payment to eligible families. Eligibility depends on a range of household criteria with the overall aim to improve access to education and health services. Thus, monthly allowances under the Juntos CCT are contingent on a number of factors, including the requirement that small children attend regular health checks and primary school children attend at least 85 per cent of the school



year. Further, pregnant and breastfeeding women are required to attend prenatal and post-natal checks (Perova & Vakis, 2009).

The Juntos CCT program was notably expanded when fuel prices rose in 2008. The number of eligible recipients rose to cover 8.9 per cent of the population and in 2010 expenditure equalled 0.14 per cent of GDP (Paes-Sousa, Regalia, & Stampini). In 2014 the Juntos CCT assisted more than 833,000 families throughout Peru, totalling around USD 290 million in assistance (Ojeda, 2015).

#### 2.4.4.3 Lessons Learned:

- LPG consumer price fluctuations can be smoothed via a pricing mechanism with a low price band and can be used to gradually increase consumer prices. This may also potentially reduce subsidy expenditure, depending on international LPG prices. However, a pricing mechanism with a very low price band will not be likely to keep subsidies at bay during longer periods of increasing international energy prices.
- Well-designed voucher systems can help target and lower total LPG subsidy expenditure by cross-subsidizing other fossil fuels. Targeting may be based on household electricity consumption or other income indicators such as type of house construction, school enrolment etc.

### 2.4.5 Thailand

#### 2.4.5.1 Thailand's LPG Subsidies

LPG in Thailand is sold in 4-, 7-, 11.5-, 13.5-, 15- and 48-kg cylinders (Kumar, Salam, & Shrestha, 2013). Until early 2015, Thailand sold subsidized LPG at different prices for low-income households, cooking, automotive transport, petrochemical users and other industrial users. Since 2011, the prices for industry were set at around free market prices but not allowed to rise above a fixed ceiling without government approval (Leangcharoen, Thampanishvong, & Laan, 2013). In 2013, 32 per cent of LPG sold was for cooking, 24 per cent for transport sector and 44 per cent by the petrochemical industry and other industrial users (Platts, 2013).

The relative prices of LPG have varied significantly over time, as illustrated in Table 10, which shows pricing from August 2012 to January 2015. This is because the subsidies are conferred through a complicated mixture of policies, including a cap on the ex-refinery price of domestically produced LPG, capped retail prices and transfers of revenues from the “oil fund,” a stabilization mechanism designed to tax petroleum products when world oil prices are low and to subsidize them when prices are high—although in practice it has struggled to recover its costs (Leangcharoen, Thampanishvong, & Laan, 2013). Price variation also reflects attempts to reform LPG subsidies. Subsidy costs are estimated to have ranged from 0.2 to 0.6 per cent of GDP between 2005 and 2012 (see Table 11).

**Table 10. LPG Prices in Thailand, August 2012 to January 2015 (THB and USD)**

	AUGUST, 2012 <sup>1</sup>	AUGUST, 2013	AUGUST, 2014	JANUARY, 2015
Low-income households	--	--	18.13 (USD 0.56)	18.13 (USD 0.54)
Cooking	18.13 (USD 0.58)	18.13 (USD 0.59)	22.63 (USD 0.69)	24.16 (USD 0.72)
Automotive	21.13 (USD 0.68)	21.38 (USD 0.69)	21.38 (USD 0.65)	24.16 (USD 0.72)
Industry	29.56 (USD 0.95)	30.13 (USD 0.98)	30.07 (USD 0.92)	24.16 (USD 0.72)
Petrochemical <sup>2</sup>	n.d.	n.d.	20.00 - 24.93 (USD 0.61-0.77)	n.d.

Source: Energy Policy & Planning Office (EPPO), n.d.; Nikomborirak, 2014. All currency conversions based on average annual rates from [www.oanda.com](http://www.oanda.com). Notation “--” indicates “not applicable”, “n.d.” indicates “no data.” Notes: 1. Reported prices are from the earliest day of each month for which government data exists. 2. EPPO does not list prices for the petrochemicals sector but according to Nikomborirak (2014), there are only two petrochemical companies in Thailand. One, the stated-owned energy company PTT, is supposed to pay THB 24.93 per kg but is reported to pay as little as THB 20 per kg. The other, SCG, is not thought to have access to subsidized LPG, instead purchasing naphtha at THB 27 per kg. News reports indicate that as of 2015, LPG for petrochemical users is priced at the same level as other uses (Platts, 2015).

**Table 11. LPG Subsidies in Thailand, 2005–2012**

	2005	2006	2007	2008	2009	2010	2011	2012
THB bn	17.5	25.5	29.6	55.8	21.8	44.1	60.0	68.0
USD bn	0.4	0.7	0.9	1.7	0.6	1.4	2.0	2.2
% GDP	0.2%	0.3%	0.4%	0.6%	0.2%	0.4%	0.6%	0.6%

Source: ADB, 2015; percentage GDP calculated by the authors based on World Development Indicators.

#### 2.4.5.2 Strategies Thailand Has Pursued to Reform Its LPG subsidies

The major motivations behind reforms in Thailand have been to improve efficiency and energy security, to cut wasteful expenditure and to eliminate the considerable distortions and illegal resale of LPG resulting from the differential price structure. The government has adopted the following strategies in order to reduce LPG subsidies:

- **Gradual price increases.** The Thai government has generally attempted to reform LPG subsidies by gradually reducing prices for different categories of fuels. Due to the political sensitivity of changing LPG prices, a number of different plans to reduce subsidies in this way have been announced over the past several years, with variable degrees of implementation.
  - o In 2011, the government began to gradually increase the price of LPG for automotive and industrial uses, holding prices for households constant (IMF, 2015b). It aimed to increase the price of automotive LPG by THB 0.75 per kg every month to a total price hike of THB 9 per kg by 2012 (Kojima, 2011), though in practice this was not realized.
  - o In November 2012, the Ministry of Energy set out a plan to gradually increase LPG prices for households, automotive users and industry, while providing low-cost LPG to a new category called “low-income” users (see “Targeting subsidies”, below) (Platts, 2012). This plan aimed to increase household LPG by THB 0.5 per kg every month until reaching THB 36 per kg (USD 1.17 per kg); automotive LPG by THB 1.2 per kg every month, also until reaching THB 36 per kg; and industry LPG by THB 0.5 per kg until end-December 2013 (Platts, 2012). The plan was significantly delayed due to the time required to prepare a system for providing LPG to low-income users (Hussain, 2013).
  - o In November 2013, the government launched a program to increase the price of cooking gas by THB 0.5 per kg per month until reaching the same level as the transport sector; at this point, the prices of both cooking and transport LPG would be increased gradually until reaching THB 24.82 in October 2014 (Pawewun & Arunmas, 2013). Price increases did take place but by August 2014 household LPG prices had in fact exceeded the price of automotive LPG.
  - o From October 2014, the government began to increase retail prices of household and automotive LPG on a monthly basis (“Update 1,” 2015). This culminated in December 2014, with a decision to end subsidies for LPG, collapsing the differential pricing regime and increasing the retail price to THB 24.16 for all sectors, not including a 7 per cent value-added tax (Praiwan, 2014; IMF, 2015b). This was implemented in February 2015. Under the new scheme, the price of LPG in Thailand is supposed to be adjusted every three months based on three reference prices: the price of natural gas produced from the Gulf of Thailand, gas from refineries, and imported gas (PTT, 2015). Low-cost LPG continues to be provided to low-income groups.



Despite the government having achieved its goal to “end” LPG subsidies in 2015, it should be noted that the price of LPG in 2015 is only marginally higher for households and the automotive sector than in previous years, while industry is now paying significantly less for LPG than in previous years (see Table 10). The largest factor in closing the subsidy gap has been the significant decline in international crude oil prices since mid-2014.

- **Targeting subsidized LPG to low-income households and small businesses.** In 2012, the government announced its intention to develop a system to provide subsidized LPG only to low-income households and small businesses. Part of the logic behind including small businesses was to ensure that the costs of living for the poor would not rise. Since its inception, the policy has provided LPG at a fixed price of THB 18.13 per kg (IMF, 2015b).

Households are eligible for benefits if they have a power connection of no more than 5 amperes and they consume less than 90 kWh of electricity on average per month (EPPO, 2015). Their consumption is limited to 18kg every three months (“Ministry to help,” 2015). The types of eligible small businesses are “shops, hawkers and street food vendors.” They must have a sales area no larger than 50 square metres and use 15-kg cylinders of LPG or smaller. Their consumption is limited to 150 kg per month (EPPO, 2015).

Eligible households with electricity connections were identified from the databases of Thailand’s electricity authorities. They were not automatically registered; instead, it is necessary for them to register for the scheme using their electricity bills via a telephone number, Provincial Energy Offices or the Energy Service Center in Bangkok (Promlerd, 2015; “Ministry to help,” 2015; Ministry of Energy, n.d.). Households with no electricity and eligible small businesses were identified by a survey costing THB 50 million (USD 1.6 million) carried out by Rajabhat Suandusit University (EPPO, 2015; Sripokangkul, 2014). The survey is reported to have collected information including GPS coordinates, citizens’ ID, shop photos, shop name, the type of food sold, the size of LPG cylinder purchased and the amount of LPG consumed per month (Sripokangkul, 2014). Following the survey, businesses were provided with codes allowing them to register for subsidized LPG (Sripokangkul, 2014). Households or businesses missed from the initial survey are allowed to register at municipal offices or with the local government (Ministry of Energy, n.d.).

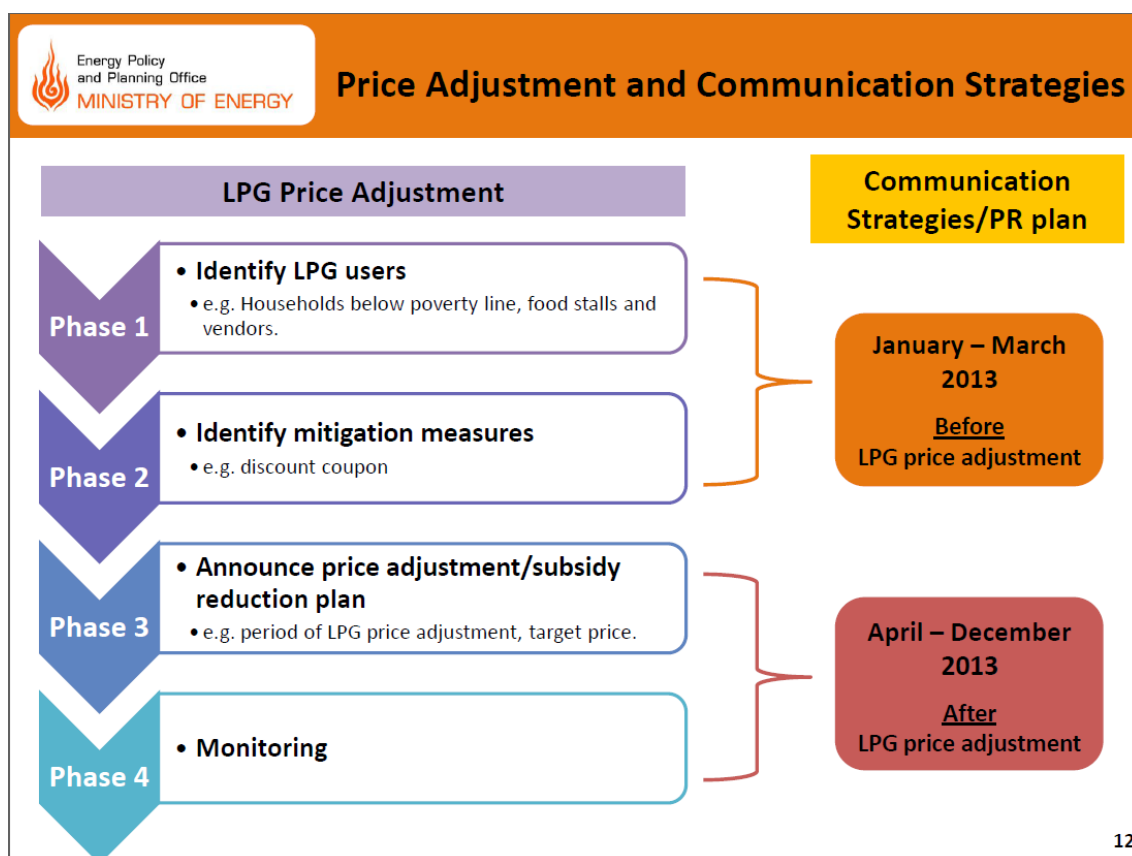
Mobile phone technology is used to enable access to subsidized LPG, the details of which are set out on the Ministry of Energy’s website “LPG4u” (Ministry of Energy, n.d.). Beneficiaries must connect their phone to the system by sending an SMS message providing a code allocated to them upon registration and a six-digit code identifying the vendor from which they will purchase LPG. If the details are correct, they receive a reply providing them with a six-digit code. Upon purchasing LPG, beneficiaries must text the same number, including a code for the brand of gas they are purchasing and a code for the size of LPG cylinder. They receive in return messages confirming the size of cylinder, the sum of the subsidy they are receiving and the remaining amount of subsidized LPG they may purchase. Subsidized LPG can only be bought from participating stores.

The scheme has not been successful. In May 2014, the government estimated that there are around 8 million eligible buyers of subsidized LPG, made up of 7.7 million low-income households and 274,000 shops, hawkers and street vendors (EPPO, 2015). But reports from February 2014 indicate that only 160,000 consumers had registered, with the majority of these being small businesses (“LPG price hike,” 2014). As of January 2015, reports estimate that only 400,000 beneficiaries are registered, with most of these being food vendors (Praiwan, 2015). It is not clear why more households have not registered for the scheme. In the case of small



businesses, it has been estimated that some fear that registration would result in them being subject to tax (Suvansombut, 2013; Promlerd, 2015). Sripokangkul (2014) argues that a number of problems took place with the survey: many potential beneficiaries forgot their ID numbers and did not trust the surveyors (again, fearing it to be linked to taxation); while the universities did not conduct the survey to a high standard. In addition, the amount of information required for registration via mobile phone or online has been considered too burdensome and inflexible.

- **Public communications strategies.** In order to support gradual price rises and the introduction of targeted LPG subsidies, the government developed a two-stage public relations plan aligned with different stages in its own planning process (see Figure 9). This involved activities before and after price adjustments, including interviews with Ministry of Energy officials, seminars, public hearings, leaflets, posters, TV media, print media, radio media and online news (Tabmanie, 2013). In addition, the LPG4u website and an LPG Hotline were created (EPPO, 2015).



**Figure 9. Phases in Thailand’s LPG Price Adjustment and Associated Communications**  
 Source: Tabmanie, 2013.



### 2.4.5.3 Lessons Learned

- **Differential LPG pricing is not a good idea.** The structure of Thailand's LPG market—different LPG prices for different categories of consumer—has been a barrier to reform. Rather than splitting opposition to reform, it appears to have concentrated it from the consumer groups in question. It has also created significant economic distortions, with LPG from the lowest-cost group being illegally resold to the higher-cost groups.
- **Low oil prices do not equal reform.** A number of reports state that Thailand has ended its LPG subsidies—but in fact, LPG retail prices are now only slightly above their previous levels for households and automotive users, and significantly lower for industry. Challenges may yet arise in the future when world oil prices rise again.
- **Targeting of LPG subsidies requires adequate preparation and a system that is not too complicated.** Insufficient evidence exists to determine why Thailand's attempt to target LPG subsidies to low-income households and small businesses has not been successful. Some analysis, however, indicates that at least two problems exist: first, the surveying to identify beneficiaries was not successful; and second, the information and processes required to register and purchase LPG were considered to be burdensome. Despite the significant efforts to raise awareness about the policy, it is also possible that more communication efforts could have yielded greater results.



### 3.0 LPG Subsidy Reform – Options for Indonesia

Broadly speaking, international literature and analysis of case studies of fossil fuel subsidy reform, including LPG, indicates that subsidy reform should follow three main principles; improving and depoliticizing pricing mechanisms to gradually move toward market pricing; building support for reform through consultations and communications; and making sure that the impacts of reform, particularly on vulnerable groups, are well understood and can be managed with complementary policies (Beaton, Gerasimchuk, Laan, Lang, Vis-Dunbar, & Wooders, 2013).

For LPG reform in particular, it should be added that there are good reasons for reform to include measures that ensure the continued affordability and accessibility of LPG for low-income households. This is further explored in Section 3.1.2 on “Ensuring affordable LPG access for low-income consumers.” LPG prices for wealthier households and commercial users should ideally proceed toward market determination.

In the section below, key principles of subsidy reform will be elaborated via identified best practice from international literature and key findings from the case studies analyzed above.

#### 3.1 GETTING THE PRICES RIGHT

International literature generally suggests that LPG should ideally be sold at the marginal cost of supply. Widely recognizing the need for energy prices to reflect market signals, Di Bella, et al. (2015, pp. 31–32) argue that “[s]uccessful and durable energy subsidy reforms should aim to depoliticize price setting” and “[p]ricing policy should reflect market signals so as to convey the appropriate incentives to economic agents.”

This is echoed by Beaton et al. (2013, p. 22), concluding that the price of fuel should ideally be equal to “the marginal cost of energy supply” reflecting both international prices, production, distribution etc. Kojima (2013) further notes that a deregulated and market-based energy system is the single most efficient way to ensure a stable, secure and cost-effective supply of energy.

In terms of getting LPG prices right, GSI has collaborated with the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) to conduct a number of international dialogues with fuel price regulators from a range of countries. The dialogues have resulted in a set of best practices across four dimensions of fuel pricing as highlighted in Figure 10.

DIMENSION	GOOD PRACTICE
1. <b>Subsidies:</b> The degree to which subsidies reduce the retail price of fuel for consumers.	<ul style="list-style-type: none"> <li>Prices cover production and distribution costs.</li> <li>Fuel taxes exist to help cover transport infrastructure, pay for environmental costs of fuel and raise revenue.</li> </ul>
2. <b>Pass-through:</b> The degree to which international price change is “passed through” into prices domestically.	<ul style="list-style-type: none"> <li>Domestic prices are adjusted to reflect international fuel market costs, inflation and exchange rate fluctuations.</li> <li>Prices are adjusted to avoid large subsidy burdens.</li> </ul>
3. <b>Transparency:</b> The degree to which the composition and regulation of energy prices is open and transparent.	<ul style="list-style-type: none"> <li>Information is available on: prices, price sub-components, who sets prices and by what rules; and on government monitoring and enforcement of price rules.</li> <li>Information is accessible, understandable and accountable.</li> </ul>
4. <b>Enforcement:</b> The degree to which government ensures that pricing rules are followed in reality.	<ul style="list-style-type: none"> <li>Clear, consistent and enforced rules on handling non-compliance.</li> <li>Mechanisms exist to report, investigate and respond to allegations of non-compliance.</li> </ul>

**Figure 10. Good Fuel Pricing Practice**

Source: Beaton, Christensen, & Lontoh, 2015.





Most analysts recommend that price reforms be implemented gradually, avoiding large, overnight spikes in domestic energy prices. A gradual approach also provides households, industries and other relevant actors more time to prepare and adapt to higher energy prices. Likewise, it allows the government to evaluate the impacts from reform on an ongoing basis, allowing it to adjust supporting measures accordingly (Di Bella et al., 2015).

Other countries (including Mexico and Thailand) have taken a gradual approach to increasing LPG prices. Mexico increased LPG prices annually by 7 to 8 per cent since 2010, which was a significant factor in reducing its subsidy expenditure. Likewise, Thailand effectively increased LPG prices on a regular basis from October 2014. In conjunction with low international oil prices, this led to the official removal of LPG subsidies in December 2014, although in reality current LPG retail prices are only slightly higher than before reform. Despite these seeming successes, both strategies were highly dependent on the collapse of international oil prices. Without this, subsidies would likely still exist, a fact that emphasizes the need to take into account the existing price gap between subsidized and actual prices when designing a reform strategy based on gradual price increases.

It should be underlined, though, that the transition to a new pricing system is often a challenging political process that needs to be properly prepared, planned and implemented.

As Indonesia transitions away from universal LPG subsidies, there are likely to be two primary consumer groups who will be an integral part of the reform process. First, those consumers who are no longer eligible to receive LPG subsidies after reforms and will gradually experience increasing LPG prices. Second, those consumers who are still eligible to purchase LPG at below-market prices, but will now receive the subsidy through the new targeting system which will be an inevitable part of Indonesia's reform process.

For the first group, the government can essentially choose between a variety of different pricing systems to gradually increase the retail price of LPG, including automatic price adjustments, ad hoc price adjustments or a diminishing fixed subsidy per unit. For the second group, the main challenge is essentially around targeting of subsidies (see next section).

Finally, in the context of Indonesia, it should also be noted that Indonesia is constrained to some degree by previous rulings by the Constitutional Court, indicating that the government need to retain decision making control over energy prices. This implies that the government of Indonesia may want to focus on designing a pricing system that does allow for political intervention, but where it generally doesn't happen due to a clear distance between pricing and government decision making.

### **3.2 ENSURING AFFORDABLE LPG ACCESS FOR LOW-INCOME CONSUMERS:**

International experience also recognizes that subsidy reforms needs to be accompanied by measures to protect poor and vulnerable households from negative impacts. In spite of the fact that low-income households often benefit relatively less from subsidy policies compared to wealthier households, they are still more vulnerable to the impacts of higher energy prices. In addition, as noted by Coady et al. (2006), if the burden from higher energy prices as a share of household income is larger for low-income households, subsidy reform itself might be regressive if not accompanied by supporting measures. This is one of the big paradoxes of subsidy reform and underlines some of the political challenges of transitioning toward market pricing.

For LPG subsidies, which are often closely related to energy access and energy poverty, the challenge is particularly important in order to ensure that adverse impacts are avoided. A key feature of many LPG reforms is therefore targeted mitigation measures that ensure the continued access to LPG for low-income households.



For the purpose of this paper, mitigation measures will be roughly divided into two overall kinds of policies:

- General income support to poor and vulnerable households
- Supporting access to LPG for low-income households

### **3.2.1 General Income Support to Poor and Vulnerable Households**

The first set of policies covers most broad-based expansions of social welfare mechanisms in connection to reform, aiming to support the general income of vulnerable households as LPG prices increase. Measures includes the full range of social mitigation measures that Indonesia has developed in recent decades—the government would be able to draw from a wide array of options, from unconditional cash transfers to expansion of existing social welfare programs.

A common characteristic for such measures is that they would not be directly linked to LPG consumption, and therefore not guarantee that households continue to use LPG post-reform, but merely provide broad-based income support to eligible households.

In this regard, it should be noted that Mexico, where LPG subsidies have been gradually reformed via regular price increases, decided not to replace LPG subsidies by specific compensation measures such as conditional cash transfers or vouchers. Instead reform efforts have relied on existing social welfare mechanisms to mitigate impacts for eligible households, including an existing income support to low-income households to help cover energy needs.

In other countries as well, subsidy reforms have been accompanied by expansions of existing social welfare mechanism, but often alongside additional measures to directly support the continued access to LPG (see below).

### **3.2.2 Supporting Access to LPG for Low-Income Households**

Taking into account the importance of LPG in regards to promoting and expanding energy access, many LPG reform processes include mitigation measures directly linked to continued access to LPG for targeted households. This is fundamentally a challenge around recipient targeting, and many countries have relevant experience in this regard, holding important lessons for Indonesia when designing LPG reform.

In Thailand, a key feature of LPG reform has been the development of a system that allows LPG subsidies to be targeted directly to low-income households. Households are targeted via the databases of Thailand's electricity authorities, with eligibility based on monthly average consumption. Consumers without an electricity connection have been identified via a large survey carried out in cooperation with a domestic university. LPG beneficiaries must register via their mobile phone by sending an SMS to a central database which then confirms eligibility to the vendor who is allowed to sell subsidized LPG to the consumer. However, despite being ambitious in its design, the system has not been successful in terms of getting beneficiaries to register. The process has been considered too burdensome by many, underlining the need to keep subsidy targeting systems simple.

In Peru the government targets subsidy recipients not only via average electricity consumption, but also via household income, house construction and other criteria which helps to significantly reduce risks around exclusion. The subsidy is provided via LPG vouchers designed as a numeric code on the electricity bill which can be redeemed via mobile phones for up to two months. While there are still unresolved issues in terms of expanding the system to consumers without access to electricity, the system is generally considered to be well-functioning and efficient in reaching intended subsidy beneficiaries.



While the reform efforts of Thailand and Peru strive to target low-income households directly, it should be noted that some countries decide to take a more general approach to targeting LPG subsidy policies by simply capping the allowance of subsidized LPG per household. Experience from El Salvador and India shows, however, that this approach is less successful in terms of targeting poor households only (depending to some extent on the volume of the cap) as well as in bringing total subsidy expenditure down. In El Salvador, for example, even after consecutive reform efforts, 74 per cent of the population still receive LPG subsidies. In India, critics argue that the current cap of 12 14-kg LPG cylinders covers the full yearly consumption of the vast majority of households and therefore is not effective in terms of targeting low-income households.

Further on the provision of LPG subsidies in India, the government has decided not to provide the subsidy at the point of purchase, but instead compensate households subsequently via a monetary transfer to their bank account. As a means to reduce risks of exclusion, Indian households can register for LPG subsidies via several social benefit cards. The scheme is closely connected to India's effort to expand financial inclusion, as households need to have a bank account (and also a registered LPG connection) to receive the subsidy that is provided via bank transfer.

In El Salvador LPG retailers have been provided with a mobile phone that is connected to a central database that is updated in real time. LPG consumers register for the subsidy via their single identity document and enter an individual password into the retailer's mobile phone to check for eligibility. The vendor then receives confirmation from the central database and can sell LPG at a fixed below-market price to the consumer. The retailer is subsidized directly by the government via designated financial institutions.

### 3.2.3 Lowering LPG Consumer Costs Without Subsidies

The mitigation measures above focus primarily on social mitigation measures that can accompany reform. However, focusing specifically on LPG and how to promote energy access, Kojima (2011) points to additional efforts that might help governments mitigate the impacts from price increases by lowering the cost of LPG for consumers—without providing subsidies.

Focusing particularly on how to improve market functions, Kojima notes that in some countries, popular consumer complaints have centred on short selling of LPG canisters where distributors or retailers sell only partly filled canisters to consumers. Avoiding such issues by improving regulatory functions may help to lower the cost of supplying LPG and therefore also the retail price.

Likewise, Kojima suggests that in cases where demurrage costs are high due to port congestion, governments should consider investing in additional port capacity to lower the cost of supply.

Finally, she suggests exploiting economies of scale through bulk and joint purchasing practices as well as developing hospitality arrangements where LPG companies can swap access to storage capacity in one part of the country in return for providing storage capacity in other parts of the country. This increases market flexibility and efficiency, and LPG companies may avoid duplicating large infrastructure investments. It will also lower the barrier to entry to better allow third-party access and increased competition (Kojima, 2011).

## 3.3 RAISING AWARENESS AND BUILDING SUPPORT

A third element that is acknowledged as a key component of any subsidy reform is communications. In many countries, communications has played an integral part in determining the success or failure of reform.



The role of communications is often seen as twofold, including both a more internal, consultative side and an external communicative side.

The consultative part is often focusing on gathering input from stakeholders in order for the government to properly understand key concerns and in turn address them properly.

On the external side, a proper communications strategy is important to enable the government to build support for reform by explaining the reasons behind and the benefits to be gained for the population (Beaton, et al., 2013). A well-designed communications strategy around LPG reform should also aim to inform people about mitigation measures that the government intends to put in place instead of subsidies, including information about targeting, entitlements, processes for receiving the subsidy etc. This will in turn support the government in its efforts to reduce risks of exclusion as reform is implemented.

Further to this, experience from El Salvador suggests that there are three statistically significant variables in determining public opinion on LPG reform; level of information around reform; efficient delivery of the new subsidy; and previous support of the government. This indicates that there are some areas around LPG reform that deserve particular attention when designing a communications plan in order to improve public perception.

In conclusion, it should also be noted that communications may be utilized as a reform policy of its own. This is best illustrated by the “Give it Up Campaign,” in India which is essentially a wide-ranging communications campaign, encouraging wealthier households to voluntarily stop purchasing subsidized LPG. The program enjoys broad public support from influential persons and companies across India and aims to influence 10 million individuals which would result in a substantial reduction of total subsidy expenditure.

This form of voluntary subsidy reform should further be highlighted as a low-risk reform opportunity that simultaneously can support the government in building an overall narrative around the need for reform.



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## ANNEX 1 - LPG in Indonesia

### 3.1.3.1 The LPG Program

With the introduction of the LPG program in 2007, Indonesia embarked on an ambitious fuel substitution scheme, designed to substitute household consumption of subsidized kerosene with subsidized LPG. The program is one of the largest cooking fuel promotion programs in the world (GSI, 2015a)

While the LPG program is made up of a number of different components, the key features are (PT Pertamina and WLPGA, 2013):

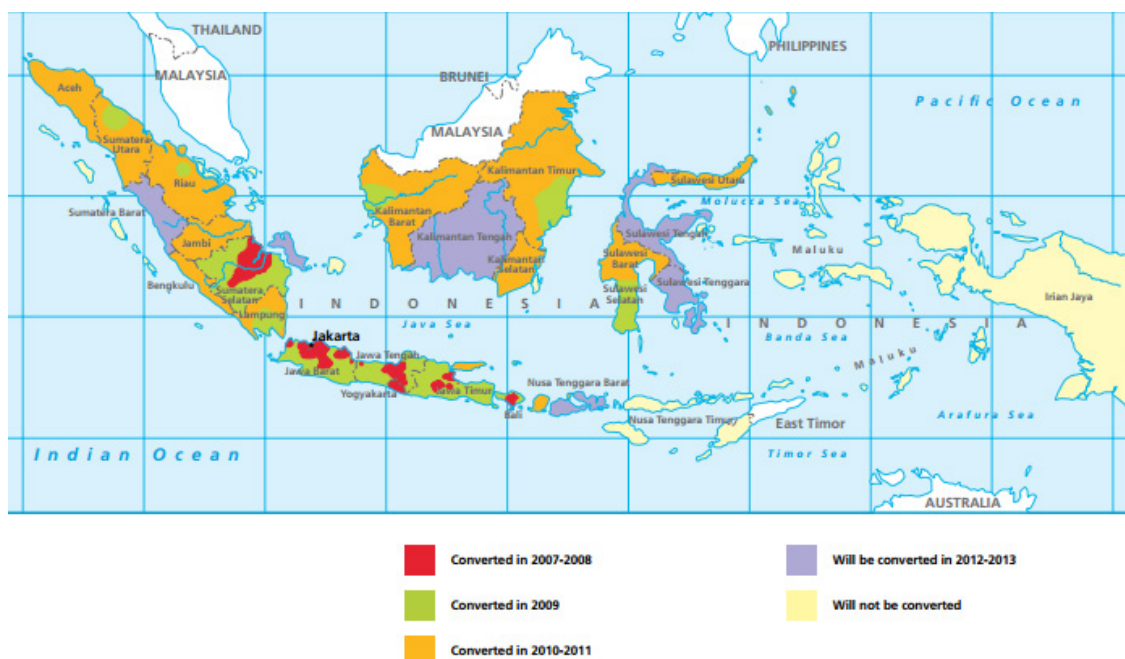
- Distribution of free LPG starter kits, including a 3-kg LPG gas canister, a gas stove and other necessary accessories.
- Development of LPG supply, distribution and retail infrastructure.
- A gradual withdrawal of subsidized kerosene in areas converted to LPG.
- Intensive public communications campaigns, as well as education about the LPG program and safety measures.
- Close cooperation between municipalities, government and PT Pertamina.

### 3.1.3.2 Geographical Coverage

The LPG program initially aimed to convert 42 million households by 2012, but has since been expanded. In 2014, Indonesia had successfully converted around 58 million households to LPG. The total number of Indonesian households was estimated at around 63 million in 2012 (Ministry of Energy and Mineral Resources, 2007; BPS, 2015).

Compared to kerosene (which can be sold in small containers and is easier to manage and use for the consumer), LPG is more dependent on well-developed storage, filling and distribution capacities, as well as the ability of consumers to use it safely (see also Section 11) (PT Pertamina & WLPGA, 2013). Thus, the program was initially rolled out in Jakarta and other urban areas where the necessary LPG infrastructure was sufficiently developed.

Developing LPG infrastructure has been a key part of the program from its outset and initially led to some regions being completely excluded due to “technical reasons” (PT Pertamina & WLPGA, 2013). This has later been partly reverted, but only for some urban areas in more remote regions in Indonesia’s eastern archipelago such as East Nusa Tenggara and Maluku as well as Papua (expected to be included in LPG program in 2016 and 2017 respectively) (Bisnis, 2015). Figure 11 shows the geographical expansion of the LPG program.



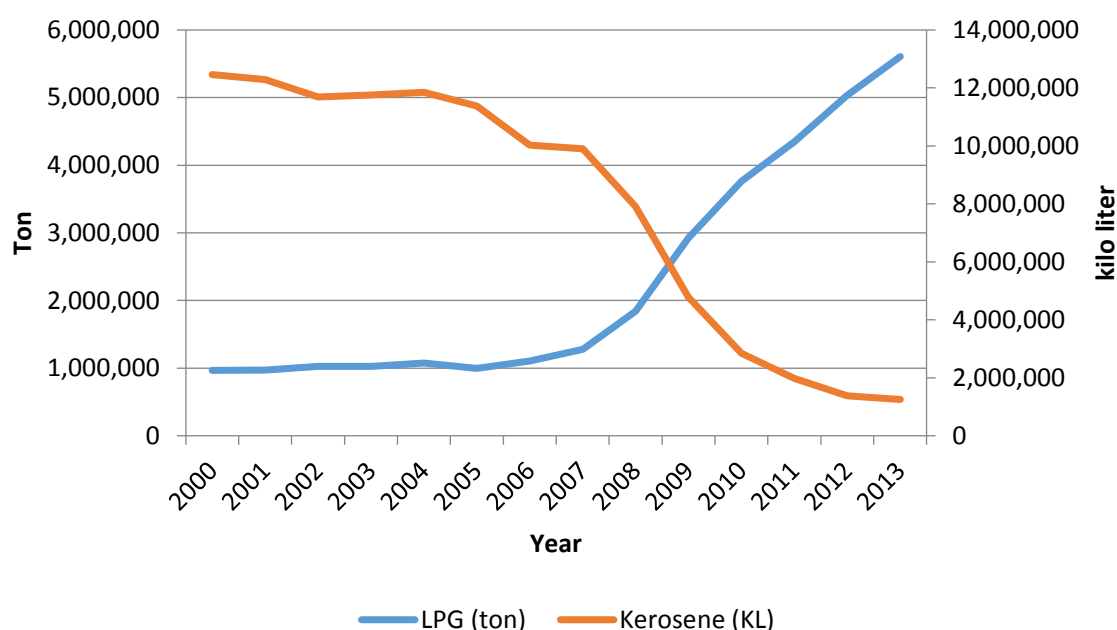
**Figure 11. Geographical Expansion of Indonesia's LPG Program**

Source: PT Pertamina & WLPGA, 2013.

### 3.1.3.3 Fiscal Benefits

In line with its political objectives, the LPG program not only reduced Indonesia's kerosene subsidies, but also lowered the total amount of government expenditure to kerosene and LPG subsidies combined (Budya & Arofat, 2011).

As shown in Figure 12, kerosene consumption shrank from 10 million kiloliters in 2006 to 1.26 million kiloliters in 2013. In the same period, LPG consumption rose from 1.1 tonnes to 5.6 tonnes in 2013.



**Figure 12. Kerosene versus LPG consumption**

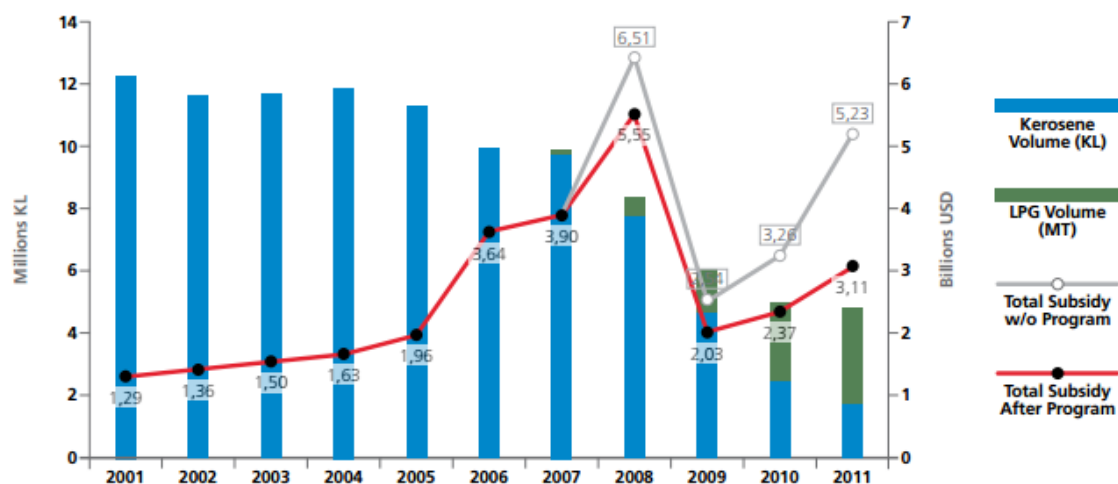
Note: LPG figure is taken from LPG sales; kerosene figure is taken from kerosene sales.

Source: Ministry of Energy and Mineral Resources, 2014.



As expected, LPG subsidies have increased along with the expansion of the LPG program and estimations show that in 2011 total subsidies for kerosene and LPG were around USD 2 billion lower than they would have been without the LPG program (PT Pertamina & WLPGA, 2013).

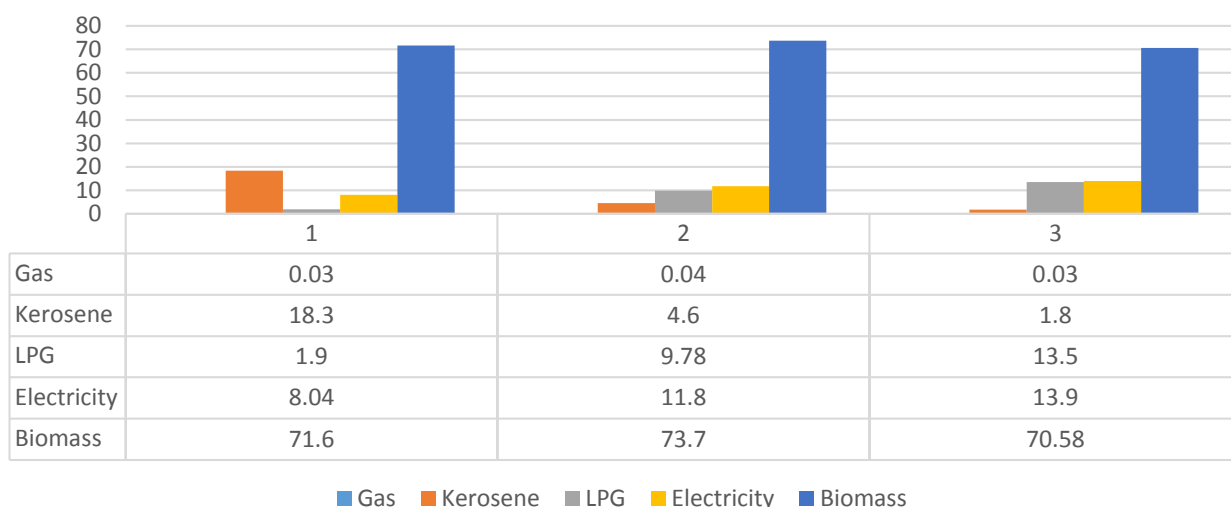
The overall subsidy savings from the LPG program are primarily due to the fact that LPG is a more efficient fuel for cooking than kerosene and thus cheaper to subsidize—i.e., the government needs to provide a relatively lower amount of subsidy per unit of energy produced. By 2011 the government had provided 8.3 million tonnes of LPG to replace the withdrawal of 23.4 million kiloliters of kerosene (World Bank, 2013).



**Figure 13. Subsidized Kerosene and LPG from 2001 to 2011**

Source: PT Pertamina & WLPGA, 2013.

The LPG program has made a significant impact on the use of energy in Indonesian households, particularly for cooking. Figure 14 shows that the share of LPG in household consumption has increased from 1.9 per cent in 2005 to 13.5 per cent in 2013. Similarly, the share of kerosene has dropped considerably from 18 per cent in 2005 to 1.8 per cent in 2013. Biomass still accounts for around 70 per cent of total household energy consumption



**Figure 14. Share of Energy Consumption in Indonesian Households (based on Energy Units)**

Source: Ministry of Energy and Mineral Resources, 2014.



### 3.1.3.4 Energy Access

The LPG program has been successful in transitioning millions of households from kerosene to LPG. Likewise, there is good reason to believe that LPG subsidies have played an important role in encouraging the use of cleaner cooking fuels across Indonesian households. Nevertheless, Indonesia still faces a huge challenge in terms of providing clean energy access for all.

Today, traditional biomass fuels, including firewood for cooking, remain a key part of household energy consumption in Indonesia. In 2014, 24 million households were still relying on biomass (almost exclusively firewood) for cooking. This is around 38 per cent of Indonesia's households and roughly the same number as in 2005, prior to the introduction of the LPG program (World Bank, 2013). Likewise in 2014, biomass accounted for 70 per cent of households' total energy consumption, down only slightly from 72 per cent in 2007 (Ministry of Energy and Mineral Resources, 2014).

It should also be noted that most households, including higher-income groups, use a mix of different energy types for cooking, including in many cases both LPG and traditional fuels.



## ANNEX 2 - THE ROLE OF SUBSIDIES IN POVERTY REDUCTION

Indonesia has achieved significant progress in poverty reduction, although many challenges remain. Many people are still living close to the poverty line, the so-called “near poor.” This means that even smaller economic shocks may have large effects on the number of officially poor people—it is estimated that in any given year, thousands of people become poor or escape poverty respectively (World Bank, 2012). Energy subsidies and their reform have been a part of this story from its outset.

From the late 1960s, Indonesia started providing universal subsidies to both energy products as well as other commodities (World Bank, 2012). Given Indonesia’s significant oil resources and its lack of alternative social welfare and targeting mechanisms, universal subsidies were affordable, easy to administrate and a tangible form of assistance from the government to the Indonesian people, including the poor.

By the end of the 1990s, things had changed. The Asian Financial Crisis in 1997 resulted in a massive shock to GDP and a resulting spike in poverty levels (Perdana, 2014). At this time, the government lacked tools to target assistance to those in need. In addition, Indonesia’s oil resources were dwindling and government finances needed to be tightened. One of the conditions for an emergency IMF loan was the removal of fuel subsidies.

In 1998, Indonesia therefore established a range of social welfare programs aimed at mitigating the impacts of the Asian Financial Crisis. Most notable were the rice subsidy program Raskin and the health insurance program Jamkesmas, both of which are still in place in 2015. In 2007, it launched a conditional cash transfer, the Program Keluarga Harapan (PKH), targeting the poorest 7 to 10 per cent of the population based on conditions such as regular health clinic visits and school attendance for school-aged children (Perdana, 2014). In 2008, the government introduced the “Bantuan Siswa Miskin” (BSM), a cash transfer system, subsidizing poor families with children enrolled in elementary, junior secondary school and high school.

Indonesia’s social welfare programs have frequently been utilized to mitigate impacts from rising energy prices. In the past, decade, short- and long-term social compensation measures have accompanied energy price increases in 2005, 2008, 2013 and 2014. This includes expansions of the social programs listed above as well as the provision of unconditional cash transfers.

Although the programs are in theory complimentary and a significant number of families should be enrolled in multiple programs, this is not always the case, as the various programs use different targeting methods and approaches for implementation. The government has in recent years tried to improve its targeting of poor households by developing a single registry of households for targeting its major social assistance policies, known as the Unified Database. This database was introduced in 2011 and comprises more than 96 million individuals throughout Indonesia, equivalent to the poorest 40 per cent of the Indonesian population (Bah, Mardiananingsih, & Wijaya, 2014).

Recently introduced welfare programs such as the Social Protection Card and the Family Welfare Program from 2014 rely on the Unified Database for targeting and distribution (TNP2K, 2015). While the Unified Database represents a significant improvement in Indonesia’s social targeting capacity, it also poses challenges around errors of inclusion and exclusion, as more and more benefits are being structured around one central database.

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