An economic analysis of kerosene subsidy policy reform

Towards promoting sustainable LPG use in Kiribati
An Economic Analysis of Kerosene Subsidy Policy Reform:

Towards Promoting Sustainable LPG Use in Kiribati

Prepared by the Energy Programme, Economic Development Division
Secretariat of the Pacific Community
Suva, Fiji
2014
An economic analysis of kerosene subsidy policy reform: towards promoting sustainable LPG use in Kiribati / Prepared by the Energy Programme, Economic Development Division
Secretariat of the Pacific Community

2. Kerosene — Kiribati.

I. Title II. Secretariat of the Pacific Community

665. 538 309 9681

ISBN: 978-982-00-0870-0
CONTENTS

Executive summary .............................................................................................................................................................. 9
1. Understanding energy subsidies ........................................................................................................................................... 11
  1.1 What is a subsidy? ................................................................................................................................................ 11
  1.2 Energy subsidies .................................................................................................................................................... 11
2. Kerosene subsidisation in Kiribati ..................................................................................................................................... 14
  2.1 Kerosene subsidies in Kiribati .................................................................................................................................. 14
  2.2 Household kerosene subsidies ............................................................................................................................... 15
  2.3 Subsidies and the demand for kerosene .................................................................................................................. 15
  2.4 Government kerosene subsidy burden .................................................................................................................... 17
  2.5 Opportunity cost and negative externalities of kerosene subsidies ........................................................................ 19
3. Kerosene subsidies and the CFL strategy ........................................................................................................................... 20
  3.1 Reforming kerosene subsidies: towards promoting LPG use .................................................................................. 20
  3.2 LPG use .................................................................................................................................................................. 22
  3.2.1 Safe and efficient use of LPG ............................................................................................................................ 22
  3.3 Subsidy policy reform recommendations ................................................................................................................ 23
  3.4 Policy outcomes: household, government and national savings ............................................................................. 25
  3.5 Fiscal and other socio-economic implications ....................................................................................................... 27
4. Conclusion ........................................................................................................................................................................... 29
Bibliography ........................................................................................................................................................................ 30

LIST OF TABLES

Table 1: Average annual jet fuel/kerosene price, 2001–2013 .............................................................................................. 13
Table 2: Household kerosene subsidies, 2010–2013 ............................................................................................................. 15
Table 3: Average yearly retail price for household kerosene ............................................................................................. 16
Table 4: Kerosene vs. LPG cost ........................................................................................................................................ 21
Table 5: Running costs of LPG and kerosene use, with kerosene subsidies ........................................................................ 22
Table 6: Running costs of LPG and kerosene use, without kerosene subsidies ................................................................. 22
Table 7: Average household savings from the switch to LPG use ...................................................................................... 26
Table 8: Annual government savings from kerosene subsidy removal .............................................................................. 26

LIST OF FIGURES

Figure 1: Global jet fuel/kerosene price (USD/Barrel), October 2001–December 2013 ......................................................... 12
Figure 2: Household kerosene retail price, 2000–2013 ........................................................................................................ 16
Figure 3: Market for kerosene in Kiribati – price ceiling ................................................................................................. 17
Figure 4a: Residential kerosene in Kiribati (without price control) ..................................................................................... 18
Figure 4b: Residential kerosene in Kiribati (with price control) ......................................................................................... 18
Figure 5: Investment Recovery period for LPG use ........................................................................................................... 24
ACKNOWLEDGEMENTS

This paper was prepared by Uchenna Onuzo, Economist, Economic Development Division, Secretariat of the Pacific Community (SPC) with contributions, comments and feedback to the draft report from Energy Programme Staff.

The SPC Energy Programme wishes to thank the relevant stakeholders and actors that contributed towards developing this paper. We especially thank the Energy Planning Unit of the Ministry of Public Works Utilities (MPWU), Kiribati, for their inputs into the paper and the various consultations organised on behalf of the team. Many thanks to the Kiribati Oil Limited (KOIL) officials, Mr. Aree Redfern (the Chief Executive Officer) and Mr. Tiroa Antonio, who provided key information needed for this analysis, and kindly answered numerous queries on pricing. We are grateful to those consulted during the field visits for their valuable inputs and support to this project, in particular, the Kiribati Protestant Church (KPC) Communities in Kiribati for providing useful information on kerosene use in their communities.

Much gratitude is extended to professional colleagues for their valuable comments and feedback on the draft report.
ABBREVIATIONS

AUD  Australian Dollar
CFL  Cooking For Life
DPK  dual purpose kerosene
GoK  Government of Kiribati
IEA  International Energy Agency
KOIL Kiribati Oil Company Limited
KPC  Kiribati Protestant Church
LPG  liquefied petroleum gas
MFED Ministry of Finance and Economic Development
MPWU Ministry of Public Works and Utilities
OPEC Organisation of the Petroleum Exporting Countries
OECD Organisation for Economic Co-operation and Development
PICTs Pacific Island countries and territories
SE4ALL Sustainable Energy for All
SPC  Secretariat of the Pacific Community
WLPGA World LP Gas Association

Conversion of units
1 kg LPG = xx litres Kerosene

Exchange rate
USD 1.00 = AUD 1.08
EXECUTIVE SUMMARY

Energy subsidies feature prominently in national energy policies and poverty reduction strategies worldwide, and Kiribati is no exception. Kiribati has a long history of subsidising kerosene for household use in order to assist poor and remote communities to access and afford basic energy. This has largely contributed to the use of kerosene as one of the primary fuels for cooking and lighting. However, these substantial subsidies encourage the use of a fuel that is costly, inefficient, and has harmful health and environmental effects; these subsidies are also a huge burden on the government budget. The Cooking For Life (CFL) initiative aims to convert the primary cooking fuel of about 5310 households (or 50% of households) living in South Tarawa and Betio from kerosene to liquefied petroleum gas (LPG), a cleaner, cheaper and more environmentally friendly fuel, by 2015. Since the price of kerosene is controlled and heavily subsidised, and LPG is not, households are unlikely to switch from ‘cheap’ kerosene to the seemingly more expensive LPG without the appropriate incentive to do so. Kerosene subsidies could therefore undermine the use and expansion of cleaner sources of energy, such as LPG, that are more economically attractive and environmentally friendly.

The price of energy is usually paramount to households when they choose their energy source, making the price of LPG integral to the success of this conversion programme. Therefore, the price of LPG has to be at least as low as that of kerosene to be an attractive replacement. Based on the current pricing structures, this paper finds that LPG use is more cost-effective than kerosene use, due to LPG being a more efficient cooking fuel, as discussed in the Kiribati CFL Strategy Paper (MIPU 2014) and the cooking for life roadmap (WLPGA 2013). Even with the current kerosene consumption subsidies, LPG is cheaper to use as a cooking fuel. However, households are not likely to transition from kerosene to LPG for several reasons. Chief among them is that the prevailing kerosene subsidies, in addition to the high up-front costs associated with LPG, make LPG and its use appear more expensive than kerosene.

This paper therefore proposes the removal of subsidies from kerosene, to encourage households to switch to LPG use. The CFL programme, alongside the kerosene subsidy reform, will yield benefits at all levels of the economy. In the case of the subsidy removal, this paper estimates that households will save about AUD 13.20 a month (AUD 158.40 a year), and government subsidy savings will average about AUD 2 million a year. A similar subsidy removal strategy within a kerosene-to-LPG conversion programme was successfully implemented in Indonesia on a very large scale (involving over 50 million households) (Pertamina & WLPGA 2012). Evidence from this largely successful LPG conversion programme reveals that the Government of Indonesia gained gross subsidy savings in excess of USD 6.9 billion (and net savings of USD 5.5 billion, after conversion cost of USD 1.4 billion was

---

1 Biomass is also among the abundant sources of fuel that households have access to
2 The total budget of the government of Kiribati was about AUD 99 million in 2013 (est.)
3 All monetary amounts are expressed in Australian dollars (AUD), unless otherwise stated
accounted for), funds which can now be channelled into more productive areas of the economy (ibid.).

Examining energy subsidies within a broad development perspective reveals that the complete elimination of energy subsidies (in this case, for cooking fuel) may not be feasible or practical, given the large population of poor and remote communities in Kiribati that depend on affordable fuel to survive. According to a report (IEA, OPEC, OECD, WORLD BANK 2010: 24):

“studies show that the poor are often willing to pay for better-quality energy, but alternatives are frequently either unavailable or entail high access cost. The poor often have difficulty in gaining access to high-quality energy services and businesses may have limited incentives to serve them (e.g., due to low population densities, remote locations and low consumption rates relative to richer sections of society). Energy subsidies can play a useful redistributive role in such situations”.

Therefore, in the early stage of the CFL conversion programme, it may be necessary to subsidise LPG use in order to provide an incentive and enable families to afford the initial high start-up costs of LPG.

This policy paper supplements the CFL Strategy Paper by providing an economic analysis of the Kiribati household kerosene subsidy regime. It further analyses the proposed kerosene subsidy removal policy, alongside less feasible policy options, and makes policy recommendations. The paper concludes that as an integral part of the CFL strategy, the government of Kiribati, through the Kiribati Oil Company Limited (KOIL), should remove subsidies from kerosene. Doing this is not only key to the successful implementation of the CFL strategy, but will also yield huge household, government and national savings, in addition to the increased private sector investment and job creation benefits associated with the CFL strategy.
1. Understanding energy subsidies

1.1 What is a subsidy?

A subsidy is a form of financial support or monetary assistance that a government confers on individuals, an economic group within society, or a business enterprise in order to attain economic, social and environmental objectives and outcomes. Subsidies vary from direct government budgetary payments to producers and consumers in the form of grants or low-interest loans to tax exemptions, tax breaks or tax credits. Subsidies may also include the provision of income or price support by regulating the prices of goods and services in particular sectors of the economy – at below-market prices on behalf of consumers: at above-market rates on behalf of producers. Subsidies are often a popular income redistributive policy mechanism, and are also seen as a means to make goods and services affordable for poorer households. However, there are a number of issues associated with the use of subsidies including: market distortion; difficulty in targeting and measuring impact; and negative incentives, as in the case of the kerosene subsidy discussed shortly.

1.1 Energy subsidies

Energy is central to the functioning of the economy and is a catalyst for economic and social development and poverty reduction. It is an essential part of all economic activities. Lack of regular and affordable access to modern energy poses a major setback to economic development and to improving the standard of living for low-income communities. Governments and policymakers, including in Pacific Island countries and territories (PICTs) such as Fiji and Kiribati, often justify energy subsidies on the grounds that they assist in alleviating poverty (specifically energy poverty). Additionally, energy subsidies are one of the key means through which the government responds to market failures in the energy sector. A key assumption in a ‘free market’ economy (where price and quantity are determined freely by the interaction between demand and supply), is that all individuals have an equal opportunity to buy and sell. But this may not always be the case, due to a misallocation of resources in a pure market economy. As a result of poverty and inequality, lower-income groups may not be able to afford basic goods on the market. Therefore, they either purchase less than the optimal amount or, in the event of extreme poverty, do not purchase at all. Whenever such market failure exists, it can be argued that there is a role for the government to intervene to achieve a more optimal outcome, particularly in the case of public goods, or goods with positive externalities (such as energy, health and education).
One of the key ways the government intervenes in the market is through the provision of consumer subsidies, which, in effect, reduce the price of the good and increases the demand, thus allowing the poor and low-income groups to afford these very important goods. As a government response to market failures, subsidies enable poor and remote communities to access basic and/or modern and affordable energy for household use, including cooking, lighting, and heating, and small business use. Subsidies therefore act as an important policy and economic tool for tackling poverty and social exclusion and for reducing inequality. Given the critical role that energy plays in economic and social development, energy subsidy reform has to be analysed within the context of key priorities of poverty reduction, economic growth, affordability and safeguarding the environment.

Over the last decade, global energy prices have increased sharply, exacerbating the inability of low-income households to afford energy, and perhaps justifying the need for governments to provide subsidies in this regard. This increase in global energy prices, however, also means that governments will have to face higher costs for their operations and subsidy programmes. As Table 1 and Figure 1 show, the price of kerosene, which is often considered the fuel for the poor, has been on a similar upward trend.

**Figure 1: Global jet fuel/kerosene price (USD/Barrel), October 2001–December 2013**

Source: Secretariat of the Pacific Community (SPC) 2013

*Figure 1: Global jet fuel/kerosene price (USD/Barrel), October 2001–December 2013*
An economic analysis of kerosene subsidy policy reform | Towards promoting sustainable LPG use in Kiribati

Table 1: Average annual jet fuel/kerosene price, 2001–2013

<table>
<thead>
<tr>
<th>Year</th>
<th>Jet Fuel/ Kerosene (AUD/Barrel)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>30.59</td>
</tr>
<tr>
<td>2002</td>
<td>30.33</td>
</tr>
<tr>
<td>2003</td>
<td>35.53</td>
</tr>
<tr>
<td>2004</td>
<td>51.29</td>
</tr>
<tr>
<td>2005</td>
<td>87.05</td>
</tr>
<tr>
<td>2006</td>
<td>87.05</td>
</tr>
<tr>
<td>2007</td>
<td>93.71</td>
</tr>
<tr>
<td>2008</td>
<td>131.85</td>
</tr>
<tr>
<td>2009</td>
<td>75.75</td>
</tr>
<tr>
<td>2010</td>
<td>97.39</td>
</tr>
<tr>
<td>2011</td>
<td>135.77</td>
</tr>
<tr>
<td>2012</td>
<td>136.91</td>
</tr>
<tr>
<td>2013</td>
<td>132.68</td>
</tr>
</tbody>
</table>

Source: SPC 2013

Notwithstanding the increase in energy prices, like other subsidies aimed at protecting consumers, energy subsidies pose a high opportunity cost to the economy. Policymakers and citizens often do not recognise these opportunity costs. Firstly, subsidies exacerbate fiscal imbalances and divert funds away from priority public spending. Subsidy provision essentially means foregone revenue and/or expenditure, which perhaps could have been invested in more pressing areas of the economy. Secondly, subsidies (whether provided directly or through price controls) generally distort the market. By artificially setting the consumer price above or below the competitive market price, subsidies can create excess demand or supply, resulting in waste. Additionally, poorly targeted and implemented subsidies may result in subsidies not reaching the intended beneficiaries but, rather, being captured by higher-income households, distortion of market incentives and misallocation of resources. Generous energy subsidies, especially fuel subsidies, are often linked to illegal behaviour such as diversion and smuggling of fuel across country borders. This could lead to ‘intentional’ excess demand for the fuel locally, and the illegal sale or smuggling of the surplus fuel to unsubsidised sectors or neighbouring countries that do not offer similar subsidies. Such poor targeting and inefficient subsidies could be economically costly to taxpayers and, where applicable, pose greater damage to the environment through increased emissions and, ultimately, amount to a bigger financial burden on the government budget and society than anticipated.

Despite a nearly 60 percent fall in oil prices since mid-2014, and the resulting global dip in the price of kerosene, this fuel shock is unlikely to undermine the recommendations in this paper, as such shocks occur periodically. While it is difficult to know the future of kerosene pricing, based on past experience, prices are likely to return to normal in the foreseeable future.
2. Kerosene subsidisation in Kiribati

2.1 Kerosene subsidies in Kiribati

In Kiribati, kerosene is regarded as the fuel for the poor. As such, with 21.8% of the country’s population living below the poverty line, kerosene has long been highly subsidised by the government of Kiribati to make it affordable for household use. However, the surge in international energy prices over the last decade makes substantial subsidy provision a huge burden on the government budget of AUD 99 million (2013 est.).

Kiribati imports jet fuel, serving a dual purpose (dual purpose kerosene/JetA1 – for aviation and household cooking), and lighting kerosene. Jet fuel for household use is otherwise known as household/residential kerosene. The government of Kiribati provides subsidies only to household kerosene, while kerosene for aviation retails at the competitive market price and lacks any form of subsidy. When kerosene is imported, the Kiribati Oil Company Limited (KOIL), the government-owned oil company, separates household kerosene from aviation kerosene. Once separated, kerosene for aviation is subjected to import duties and freight levies, and is sold at the market price or higher to aviation users (the latter being an attempt to cross-subsidise the price of household kerosene).

On the other hand, household kerosene is exempt from import duties and other taxes, and KOIL sets the price of residential kerosene to the government-controlled wholesale price of AUD 0.85 per litre,4 which is well below the break-even price of AUD 1.25 (KOIL 2014). This results in a loss of about AUD 0.47 per litre, which is in turn the implicit subsidy. To offset this revenue loss, KOIL cross-subsidises the price of household kerosene with the price of aviation kerosene by charging a much higher price for aviation kerosene. Compared to the household kerosene wholesale price of $0.85 per litre, KOIL charges an average of AUD 1.82 per litre to airlines (Air Kiribati: AUD 1.25; Fiji Airways: AUD 1.80; other airlines: AUD 2.40) (KOIL 2014; MPWU 2014). These high aviation fuel costs contribute towards the very high flight prices to and from Kiribati, and potentially harm both the tourism and the aviation industry.

As a result of the subsidies enjoyed by household kerosene, which make kerosene very cheap in comparison to its cleaner substitutes (e.g. LPG, electricity), kerosene has remained the dominant form

---

4 And government-controlled retail price of $0.95
of cooking fuel for most households in South Tarawa and Betio. Currently, about 51% of households use kerosene as the primary cooking fuel compared to the 25% using LPG and electricity (2010 Census Report). As at 2010 no households used solar cookers, which are also cleaner; however, in 2013, a private investor imported 100 solar cookers (per comms, Mautaake Iannang).

2.2 Household kerosene subsidies

The price for household kerosene was first included under the schedule of the Kiribati Price Control Amendment 1981 and, to date, the price has been controlled. The latest Kiribati Statistics Book (2012) records an average margin or profit of only 10 cents per litre for retailers. The other subsidy, as discussed earlier, is from exemption on import duty tax. As Table 2 shows, kerosene subsidies over the years have been large, peaking at about AUD 1.10 million in 2010. These subsidies comprised between approximately 50% to 60% of the Ministry of Public Works and Utilities’ (MPWU) operating expenditure from 2010 to 2013, and between 1.5% and 2% of the government’s total annual budget. Within the same period, kerosene subsidies also ranged from 0.89% to about 1.12% of GDP.

Table 2: Household kerosene subsidies, 2010–2013

<table>
<thead>
<tr>
<th>Year</th>
<th>Proportion of DPK/ JetA1 for household use (litres)</th>
<th>Household kerosene subsidies (AUD)</th>
<th>As % of MPWU operating expenditure</th>
<th>As % of total annual budget</th>
<th>As % of GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>1,367,524</td>
<td>$855,730</td>
<td>-</td>
<td>1.77%</td>
<td>1.12%</td>
</tr>
<tr>
<td>2011</td>
<td>1,711,459</td>
<td>$746,140</td>
<td>49.59%</td>
<td>1.30%</td>
<td>0.98%</td>
</tr>
<tr>
<td>2012</td>
<td>1,492,280</td>
<td>$1,095,252</td>
<td>53.34%</td>
<td>1.18%</td>
<td>1.01%</td>
</tr>
<tr>
<td>2013</td>
<td>2,190,503</td>
<td>$899,332</td>
<td>57.42%</td>
<td>1.35%</td>
<td>0.89%</td>
</tr>
</tbody>
</table>

Note: Subsidy calculations are based on the kerosene import volumes, disaggregation by household vs. aviation use, and prices, provided by MPWU and KOIL. The actual subsidy amounts could vary if calculations are based on information provided by a different source.


With an increasingly large government budget deficit, estimated at 37% of recurrent government revenue in 2011 (GoK Budget 2011), these kerosene subsidies contribute to the economic burden and fiscal imbalance of Kiribati (through high government spending and loss of tax revenue due to exemption from import duties, freight levy and price control). This is unlikely to improve if subsidies on household kerosene remain just as high or are not revised downwards.

2.3 Subsidies and the demand for kerosene

Household kerosene consumption subsidies come in two forms: (1) through a direct government price control (price ceiling) with an implicit subsidy; and (2) through exemptions from import duty taxes and freight levies on transport to outer islands. Kerosene stoves are also exempt from duty, as is the case with LPG stoves. Since 2001, the government of Kiribati has had a binding price ceiling on household kerosene. The price ceiling includes both the control of the wholesale price that KOIL is able to charge, but also a control on retailers’ mark-up. As Table 3 and Figure 2 show, the retail price of household kerosene barely changed from 2001 to 2009 (varying from AUD 0.95 to AUD 1.00 per litre), except from 2006 to 2008, when the retail price increased above $1, peaking at $1.45 in 2008. This was due to the significant increase in global kerosene prices from 2006 to 2008, where the price rose from an average of $87.05 in 2005 to a $131.85 in 2008, and subsequently plunged to about $75.75 in 2009, as Table 1 shows. Although the global price of kerosene rose by over 75% from 2009 to 2013, the retail price of kerosene has not changed since 2009, but has remained fixed at AUD 0.95 (and the wholesale price at AUD 0.85) by the national government.

5 Price controls are a major tool used by governments to regulate the prices of goods and/or services. A price ceiling is the legal maximum price at which a good can be sold. Unlike a non-binding price ceiling where the equilibrium price already established by the free-market is below the price ceiling, and as a result, any price below the ceiling is feasible, a binding price ceiling occurs when the government price ceiling is below the equilibrium price, and supplier prices are not allowed to rise above the ceiling price.
An economic analysis of kerosene subsidy policy reform | Towards promoting sustainable LPG use in Kiribati

Figure 2: Household kerosene retail price, 2000–2013

Table 3: Average yearly retail price for household kerosene

<table>
<thead>
<tr>
<th>Year</th>
<th>Household kerosene price (average yearly retail price/litre, with subsidy)</th>
<th>Household kerosene price (average yearly retail price/litre, without subsidy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>$0.66</td>
<td>-</td>
</tr>
<tr>
<td>2001</td>
<td>$1.00</td>
<td>-</td>
</tr>
<tr>
<td>2002</td>
<td>$0.94</td>
<td>-</td>
</tr>
<tr>
<td>2003</td>
<td>$0.92</td>
<td>-</td>
</tr>
<tr>
<td>2004</td>
<td>$0.89</td>
<td>-</td>
</tr>
<tr>
<td>2005</td>
<td>$0.95</td>
<td>-</td>
</tr>
<tr>
<td>2006</td>
<td>$1.15</td>
<td>-</td>
</tr>
<tr>
<td>2007</td>
<td>$1.19</td>
<td>-</td>
</tr>
<tr>
<td>2008</td>
<td>$1.45</td>
<td>-</td>
</tr>
<tr>
<td>2009</td>
<td>$0.95</td>
<td>-</td>
</tr>
<tr>
<td>2010</td>
<td>$0.95</td>
<td>$1.58</td>
</tr>
<tr>
<td>2011</td>
<td>$0.95</td>
<td>$1.39</td>
</tr>
<tr>
<td>2012</td>
<td>$0.95</td>
<td>$1.68</td>
</tr>
<tr>
<td>2013</td>
<td>$0.95</td>
<td>$1.36</td>
</tr>
</tbody>
</table>
This price ceiling, which is a form of price control where the price of a good is set below the free-market equilibrium price, as Figure 3 illustrates, has implications on the market for kerosene. Because the price of the good is not allowed to respond to demand and supply forces in the market, the price control distorts the market prices. This distortion leads to excess demand – much higher energy consumption than would have been optimal in the absence of the price control and/or subsidy. This subsidy and price control can lead to inefficient consumption of kerosene, create household dependency on kerosene, and discourage kerosene users from shifting to cleaner sources of energy (that might be relatively more expensive). This excess demand also means that the government’s subsidy burden may be much higher than it ought to be. Both the price control and tax and duty exemptions, which constitute the total kerosene subsidy, are reflected in the final retail price paid by consumers. This controlled price constitutes about a third of the actual price. In addition to the price control and subsidy resulting in more than optimal demand for kerosene, given the adverse health and environmental effects of kerosene use, this excess demand created as a result of the cheaper price means that households and Kiribati as a whole are incurring even more adverse health and environmental problems from increased kerosene use.

*Implicit in the binding price ceiling are the subsidy, exemptions, and the limit on the mark-up that the retailers are allowed to charge.

Figure 3: Market for kerosene in Kiribati – price ceiling

While the government is aware of the fiscal cost associated with providing a subsidy, it also needs to know the full cost and extent of the subsidy programme (financial and externalities), and should take these into consideration when assessing the existing kerosene subsidy regime and this proposed conversion programme.

2.4 Government kerosene subsidy burden

Kerosene subsidies are provided indirectly and implicitly through the government-controlled wholesale and retail prices. As previously mentioned, KOIL sets the price of residential kerosene to the government regulated price, reflecting the implicit subsidy. Also, because kerosene subsidies encourage increased kerosene consumption, kerosene subsidies are quite expensive and place a heavy and growing demand on the government’s already constrained budget, as they lead to increased levels of kerosene subsidy payments in the face of rising kerosene prices.
Unlike an ‘automatic’ pricing mechanism, where price fluctuations are passed on to the consumer using a predetermined formula, in Kiribati, the existence of a binding price ceiling means that kerosene price fluctuations are not passed through to the consumer. Instead, the government bears all the cost of price fluctuations, which, in times of price increases, entails a subsidy increase to close the wider gap between the higher global price and the fixed price, as has been the major case for the last decade. As a result, demand does not change at all to reflect the higher global price.

Figures 4a and 4b illustrate the effects of a price control policy under the government subsidy regime. As Figure 4a illustrates, hypothetically, if the subsidy is fixed at $0.50/litre, in the absence of a controlled price, as the global price of kerosene increases, the subsidy remains constant at $0.50/litre, and households absorb some of the global/import price increase. In this case, as the global price per litre increases annually from $1.45 to $1.55 and $1.65, the household (subsidised) price per litre also increases annually from $0.95 to $1.05 and $1.15 respectively, reflecting the global price increase, but a stable subsidy. In turn, demand is likely to change perhaps slightly, depending on the elasticity of demand for kerosene.

On the other hand, as figure 4b demonstrates, because the government has a price ceiling, in order to keep the price fixed or close to $0.95/litre, the government provides increasingly higher subsidies annually to absorb the rising global/import price, while households do not bear any of the kerosene import price increase. In this case, as the global price increases annually from $1.45/litre to $1.55/litre and $1.65/litre, in order to keep the household price at $0.95/litre, the government’s subsidy burden increases annually from $0.50/litre to $0.60/litre and $0.70/litre respectively. Due to the price ceiling, households do not adjust their consumption of kerosene in line with the rising price, as would be the case if prices are allowed to freely adjust to the market situation. As such, households will continue

---

6 A “pricing mechanism” refers to the system by which the point-of-sale prices are set by the market through the interaction of demand and supply, the government, or a mix of the two.

7 In reality, the household price may not increase by the same amount as the global price increase. It is likely to be less, depending on a number of factors including the elasticity of demand and supply and the government’s subsidy policy.
to consume similar or perhaps even larger amounts of kerosene, resulting increased consumption above efficient levels. Therefore, as the global price of kerosene increases, the government subsidy expenditure on household kerosene also increases, at the expense of the government budget, which inadvertently, will bear the cost of the subsidy. This is generally unsustainable.

Since KOIL cross subsidizes household and aviation kerosene prices, any additional subsidy expenditure incurred as a result of an increase in kerosene import price will be partly offset by an increase in aviation kerosene price. With the aviation sector being largely private, price increases are mostly passed on to passengers. Any additional subsidy burden associated with increases in imported kerosene prices that is not offset by an increase in aviation kerosene price is likely borne by the government, perhaps through more exemptions, and further strains the already constrained government budget. Moreover, because of the subsidy and price control, the price of kerosene remains below the optimal level needed to fully capture the negative externalities of kerosene consumption on household health and environment.

Figure 4b closely depicts the situation in Kiribati. Over the last ten years, the Kiribati government, through KOIL, has provided subsidies as high as about 40% of the wholesale price (about AUD 0.47 subsidy on AUD 0.85/litre) and about 35% of the retail break-even price of kerosene (about AUD 0.50 subsidy on AUD 1.32/litre break-even price in 2013). These subsidies have amounted to an average of about AUD 1.3 million a year, and despite the decrease in the volume of kerosene imported over the years, the level of government spending on kerosene subsidies has remained quite high, mainly due to the increasing global oil prices. As at 2013, the total subsidy burden borne by the government from kerosene is about AUD 1.33 million (see Table 2).

2.5 Opportunity cost and negative externalities of kerosene subsidies

Kiribati is no exception when it comes to the huge opportunity costs associated with the provision of substantial subsidies, and these generous subsidies also aggravate the negative externalities typically associated with kerosene use. As with all subsidies, providing kerosene subsidies means that the government is diverting valuable and scarce resources away from more salient development needs in the country, such as the provision and expansion of education, healthcare, and employment opportunities. Even within the energy sector, such subsidies could be channelled towards improving lighting in outer islands, where access to electricity is limited or non-existent due to the distance from the national grid, by providing solar energy or loans and initial capital needed to start small lucrative businesses to replace solar batteries and other spare parts. Unlike the funds being channelled into kerosene subsidies, these alternative developmental investments are productive and sustainable and could encourage the private sector to invest in the energy market and provide employment opportunities.
3. Kerosene subsidies and the CFL strategy

3.1 Reforming kerosene subsidies: towards promoting LPG use

At a subsidised retail price of AUD 0.95 per litre, kerosene is the cheapest source of fuel for cooking. Kerosene is currently the second primary fuel used for cooking in South Tarawa and Betio, after biomass, and is used for lighting in all of the outer islands where electricity is not available. A key initiative of the CFL strategy is to convert the primary cooking fuel from kerosene to LPG in 5310 (50%) households by 2015: to promote LPG as the primary cooking fuel and eliminate the use of kerosene for cooking, due to its inefficiency and adverse health and environmental impacts. The CFL strategy also considers the promotion of an energy efficient biomass stove to households for cooking, and solar lighting kits in outer islands.

In this decade of Sustainable Energy for All (SE4ALL), while it is imperative to improve access to basic energy, it is also crucial to consider the climate change impacts of the fuel sources used both at the household and commercial level, as well as any negative externalities that might result from the use of such fuels. It is important to place these considerations within the wider developmental context, so that in attempting to increase access to energy, we do not provide citizens with cheap (affordable), yet harmful energy, that would undermine the very developmental goals we are trying to achieve. Essentially, while kerosene subsidies might help the poor and remote communities to access basic energy, due to the associated harmful health and environmental effects of kerosene use, the government is inadvertently subsidising a product that is causing harm to its citizens, which is quite counteractive, as it will have other cost implications for the government in terms of healthcare costs. This effectively undermines the effectiveness of the subsidisation programme.

As the CFL strategy paper indicates, the introduction of LPG as a household energy fuel replacement for kerosene currently sits as the most viable energy alternative to kerosene for the urban area inhabitants of South Tarawa and Betio, and probably Kiritimati Island in the Line Island Group. In rural areas, where kerosene is used for lighting, the CFL strategy will eliminate the use of kerosene through promotion of affordable solar LED lighting kits. At the moment, however, LPG is seen as
a highly unattractive alternative to kerosene, much less an attractive replacement, for a number of reasons. The three main reasons for this, which are discussed below in detail are: (1) LPG has a high initial capital cost, compared to kerosene; (2) the running costs of LPG are perceived to be higher than kerosene because of the subsidies provided to kerosene through its price control; (3) the convenience of buying kerosene and the accessibility of this fuel as compared to LPG.

Firstly, LPG appliances require a higher initial upfront cost – the cost of an LPG start-up package is higher than that of a kerosene start-up package. As Table 4 shows, the start-up cost for a two-burner kerosene starter kit, comprising only a stove, is about AUD 60 compared to the cost of an LPG starter kit of a two-burner LPG stove, consisting of a cylinder, stove, a tube and regulator, and amounting to about AUD 163.60. Since most families are already using kerosene stoves, at the moment, they only have to incur energy costs associated with the running of the kerosene stove. However, with the switch to LPG, households will have to procure new LPG stoves in addition to all the aforementioned accessories required as part of the starter kit.

Table 4: Kerosene vs. LPG cost

<table>
<thead>
<tr>
<th>Energy source</th>
<th>Starter-kit</th>
<th>Unit Cost (AUD)</th>
<th>Total cost (AUD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kerosene</td>
<td>Stove (2 burners)</td>
<td>60.00</td>
<td>60.00</td>
</tr>
<tr>
<td>LPG</td>
<td>1-burner LPG stove, including regulator and 1 metre hose</td>
<td>65.50</td>
<td>115.50</td>
</tr>
<tr>
<td></td>
<td>Deposit for 13kg MT gas cylinder *</td>
<td>50.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2-burner LPG stove,</td>
<td>113.60</td>
<td>163.60</td>
</tr>
<tr>
<td></td>
<td>Deposit for 13kg MT gas cylinder</td>
<td>50.00</td>
<td></td>
</tr>
</tbody>
</table>

Source: KOIL (2014), KOIL LPG presentation

* Customers do not have to buy personal gas cylinders. They need to pay only the cylinder deposit (essentially renting it), and once the gas bought into this initial cylinder is used up, the empty cylinder(s) is exchanged for a new full one(s).

Secondly, the cost of running an LPG stove is perceived to be much higher than that of a kerosene stove because, unlike kerosene, which is highly regulated, LPG is neither subsidised nor exempt from the aforementioned tariffs. LPG is not included under the freight levy fund9, and LPG imports have a duty rate of 35%, whereas household kerosene is tax exempt. However, as Tables 5 and 6 illustrate, the cost of running a kerosene stove is actually much higher than that of running an LPG stove, with or without the current kerosene subsidies. This is because, as the CFL Strategy paper demonstrates, LPG is a more efficient cooking fuel than kerosene; less LPG than kerosene is needed to cook the same dish. However, because the LPG price is not regulated, it appears more expensive than kerosene and hence unaffordable.

As Tables 5 and 6 illustrate, with the current kerosene subsidies, it costs a household an average of AUD 2.00 a day to run a kerosene stove compared to AUD 1.40 a day to run an LPG stove. And even without these kerosene subsidies, households would spend an average of AUD 2.90 a day on kerosene compared to AUD 1.40 a day on LPG.

---

9 The freight levy fund – a fund that allows for the freight cost of shipping goods to outer islands to be claimed back – was set up by the GoK to equalise prices between South Tarawa and the outer islands, to ensure that consumers on outer island do not pay more for their goods than those on South Tarawa. Essentially, imported goods covered under this fund are shipped free of charge. (Van Trease, 1993)
Table 5: Running costs of LPG and kerosene use, with kerosene subsidies

<table>
<thead>
<tr>
<th>Fuel</th>
<th>Purchase unit</th>
<th>Usage*</th>
<th>Unit cost, AUD</th>
<th>Total monthly cost, AUD</th>
<th>Average daily cost, AUD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kerosene</td>
<td>2 litres</td>
<td>1 day</td>
<td>0.95/ltr</td>
<td>60.00</td>
<td>2.00</td>
</tr>
<tr>
<td></td>
<td>60 litres</td>
<td>30 days</td>
<td>6.00/ltr</td>
<td>180.00</td>
<td>6.00</td>
</tr>
<tr>
<td>LPG</td>
<td>13kg</td>
<td>30 days</td>
<td>3.23/kg</td>
<td>41.99</td>
<td>1.40</td>
</tr>
</tbody>
</table>

*Based on a family of 7–10 people

**Source:** KOIL (2014), KOIL LPG presentation, Kiribati Protestant Church (KPC) Communities, Kiribati

Table 6: Running costs of LPG and kerosene use, without kerosene subsidies

<table>
<thead>
<tr>
<th>Fuel</th>
<th>Purchase unit</th>
<th>Usage*</th>
<th>Unit cost (AUD)</th>
<th>Total monthly cost (AUD)</th>
<th>Average daily cost (AUD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kerosene</td>
<td>2 litres</td>
<td>1 day</td>
<td>1.35/ltr</td>
<td>81.00</td>
<td>2.70</td>
</tr>
<tr>
<td></td>
<td>60 litres</td>
<td>30 days</td>
<td>8.10/ltr</td>
<td>243.00</td>
<td>8.10</td>
</tr>
<tr>
<td>LPG</td>
<td>13kg</td>
<td>30 days</td>
<td>3.23/kg</td>
<td>41.99</td>
<td>1.40</td>
</tr>
</tbody>
</table>

*Based on a family of 7–10 people

**Source:** KOIL (2014), KOIL LPG presentation, Kiribati Protestant Church (KPC) Communities, Kiribati

Thirdly, kerosene fuel is more convenient to access and transport in comparison to LPG. Kerosene can be purchased in a container of any size, even a small bottle, whereas LPG requires the transportation of heavy and bulky gas cylinders to and fro for refill. Kerosene can also be bought cheaply in small quantities, while refilling LPG cylinders requires a high upfront cost in fixed cylinder sizes. LPG costs in outer islands are also much higher compared to the main islands, due to freight costs. All of these issues make LPG appear more expensive and therefore very unattractive to households. Notwithstanding, although kerosene is easier to transport and more convenient to use, in the absence of any subsidies, the running costs of LPG are much less than those of kerosene, once the initial start-up costs have been covered.

3.2 LPG use

LPG is commonly used for cooking, lighting and central heating. It is a clean-burning, non-poisonous, sustainable and high performance fuel, stored and transported in containers as a liquid, but generally used as gas. LPG also shows lower greenhouse gas emissions than kerosene and electricity, on an energy-equivalent basis. As described in the CFL Strategy, LPG has several advantages, and is a preferred fuel source for cooking for several reasons. It is an economical fuel source that allows for efficient cooking. LPG burns very efficiently – it burns readily and gives off instant heat – with very low combustion emissions; it is clean – it does not create black smoke or messy soot, so cooking vessels can be cleaned easily. The flame is visible and its size is easily controllable, so users can cook with their desired heat or flame intensity. It is easy to store in an LPG cylinder. LPG can come in a variety of sizes to suit household, community and national cooking needs. Some of these sizes are: 4.5 kg, 11.3 kg, 12.7 kg, 14 kg, 50 kg, and Bulk.

3.2.1 Safe and efficient use of LPG

Aside from its lack of sustainable availability in the country and in the Pacific region, one of the key concerns associated with the use of LPG as a cooking fuel is safety. LPG is colourless; it is also odourless, but has an added stenching agent that gives off a distinctive smell to help detect leaks. Leaks are dangerous, as LPG can burn or explode when it mixes with air and comes in contact with an ignition...
source. It is imperative to ensure that LPG imported into Kiribati passes through rigorous testing to ensure quality standards are met. These standards include: purity of LPG content; consistency and accuracy of cylinder weight; safety measures against leakage; integrity of cylinders to withstand damage. LPG health and safety training should be provided to users before and during the course of this conversion programme.

3.3 Subsidy policy reform recommendations

Given the relative unattractiveness and perceived uncompetitiveness of LPG in comparison with kerosene, a successful transition from kerosene to LPG will require a change of the current subsidy regime and extensive public education and awareness to address the current perceptions of LPG.

This study recommends a three-part policy reform strategy:

1. kerosene subsidy removal;
2. public education on LPG benefits and accessibility; and
3. an LPG starter-kit subsidy.

(1) Kerosene subsidy removal

As part of its policy reform, this study recommends a complete, but gradual or phased removal of the subsidies from household kerosene: removal of the import duty and freight levy exemptions, and the kerosene price control. In the more immediate term, the government could consider removing tax and freight exemptions from new kerosene stoves.

By eliminating household kerosene subsidies, the selling price of kerosene will reflect the equilibrium retail market price of kerosene (its import price plus any other fees and mark-ups charged before it is sold to the consumer). This would create a level-playing field, where kerosene can equally compete with LPG in the energy market. Since LPG is actually cheaper than kerosene, in the absence of these subsidies, kerosene then becomes less competitive relative to LPG. Ideally, households will rationally gravitate towards the cheaper fuel and, in time, Kiribati would see a majority of its households using LPG rather than kerosene. However, a few key feasibility issues arise with this policy choice.

i. Firstly, and most importantly, kerosene subsidies in Kiribati were adopted for equity and affordability reasons. Thus, even if subsidies were completely removed from kerosene to make it less competitive relative to LPG, low-income households may not be able to afford the ‘cheaper’ LPG option due to the initial high start-up cost of LPG. These initial costs may cause people to switch to cheaper, but even more harmful energy sources, such as non-biodegradable plastics, which would be a very regressive outcome. The higher costs of kerosene would also increase the use of biomass or firewood, which is very scarce and not accessible in the urban areas.

ii. Secondly, a complete removal of subsidies may not be politically feasible (although beneficial policies should not necessarily be palatable). Subsidy removal in general is a very unpopular policy and, given Kiribati’s long-standing subsidy on household kerosene, these energy subsidies may be very entrenched in the household energy policy sphere, both politically and socially, making it even more difficult to attempt to completely eliminate subsidies from household fuel. Complete removal of kerosene subsidies could cause social unrest and strong opposition from kerosene stakeholders. Moreover, the current government would not want to remove subsidies if this means losing re-election, votes, or political support. However, in order for this conversion programme to be successful, there needs to be strong political will; the strategy and policy papers, as well as the in-country presentations provide a basis for the government to undertake this programme, based on the evidence and options presented. In addition, based on the options discussed, KOIL, with the support of the current sole private supplier of LPG, would need to support this programme by ensuring enough supply and availability of LPG to meet the current and potentially increasing demand.
As part of the process of eliminating kerosene subsidies, as a transitional measure, the GoK should further consider the introduction of a payment to low-income households to compensate for the loss of kerosene subsidies in the first year of the elimination of the kerosene subsidies. This payment could be funded by the amount previously used to subsidise kerosene subsidies. This strategy could help build support for the reform. It will also reduce the impact of the withdrawal of the subsidies and smooth the transition to LPG and give households time to switch from kerosene to LPG.

In line with the gradual removal of subsidies, the study also recommends a phased introduction of LPG in order to help build public support in the communities as well as the government’s capacity to implement these reforms. This phased approach to the introduction of LPG would also have a smaller impact on public finances in paying for the transitional measures, and will make it easier to ensure a smooth transition in slowly building up LPG supply through the private sector, rather than switching over to LPG en masse.

(2) Public education on LPG benefits

An integral part of this strategy is public education and awareness of the relative cost-effectiveness, and also the health and environmental benefits of LPG compared to kerosene. Given consumer purchasing habits, especially those of lower-income groups that tend to buy goods in smaller quantities for daily consumption due to the nature of their income stream, it is necessary to inform them of their relatively higher spending on kerosene, and also provide training in terms of budgeting and more efficient purchasing practices. Public education is imperative, both prior to and after the subsidy removal. Of particular importance is the need to provide safety training on LPG use. Low uptake and use of LPG is often due to fear of explosion. However, when the necessary health and safety measures are in place, LPG is generally a very safe fuel to use domestically. However, users have to be made aware of, and properly trained, on measures for the safe use of this fuel.

To ensure that subsidies are well targeted, and to reduce dependency on government subsidies, public education on LPG should also involve discussion on investment recovery in LPG. Based on the calculations in tables 5 and 6 reflected in Figure 5 below, existing kerosene users would expect to recover their initial investment in an LPG starter kit, and therefore start enjoying the benefits of conversion within about six and a half months of purchasing a 1 Burner LPG kit. Similarly, the recovery time for consumers purchasing 2 Burner LPG kits would be just over nine months.

Therefore, households that decide to purchase LPG starter kit without government assistance would expect to fully recover their investments within less than a year of converting from kerosene to LPG.

![Investment Recovery period for LPG use](image)
(3) LPG subsidies: starter-kit subsidy

Given that the high initial cost of purchasing an LPG starter kit is one of the hindering factors to households using LPG, as part of the strategy to encourage households to make the switch from kerosene to LPG, the government of Kiribati should consider providing subsidies for the purchase of LPG starter kits. This strategy could also involve providing a free initial gas cylinder as part of the subsidy for the starter kit, based on a feasibility assessment; this would reduce one of the hurdles to adopting LPG. In addition to this, the GoK could also provide customs duty and outer islands freight levy exemptions for LPG (in addition to the existing duty exemptions on LPG stoves), and could perhaps regulate the price of LPG.

Given the very limited use of kerosene on outer islands for cooking (kerosene is used predominantly for lighting on outer islands), it may be more appropriate for the GoK to perhaps consider subsidising the use of improved biomass stoves (IBS), given the availability of biomass compared to LPG or any other cooking fuel. However, as previously discussed; price controls and subsidies could be distortionary. Therefore, the price regulation and subsidies should be provided for the first few months or years of initial adoption/conversion (depending on how fast the full conversion is completed), and should be subject to review or removal after a specified period.

In conclusion, without the removal of kerosene subsidies and potentially, a transfer of some exemptions from kerosene to LPG, it is highly unlikely that household kerosene users will have any incentive to switch to LPG, as kerosene will remain more attractive, from both a price and a convenience perspective. The Customs Act 2005, which already allows for duty exemptions on LPG gas stoves, could be revised to include the suggested LPG appliance subsidies and LPG exemptions to give households an incentive to make the switch.

3.4 Policy outcomes: household, government and national savings

Conversion to LPG and the transfer of subsidies from kerosene to LPG will yield immense savings at all levels of the economy.

On a household level, as a result of the cheaper cooking fuel, households will benefit from energy cost savings. Based on the daily and monthly consumption levels outlined in section 3, this paper estimates monthly energy savings of AUD 18.00 resulting from the switch from kerosene to LPG. Based on this, households will save almost AUD 219.00 a year in running costs, which is about 22 per cent of their current cost of using kerosene (or running a kerosene stove), as Table 7 illustrates. Although this does not factor in the capital cost of the initial purchase of an LPG starter-kit, the first year savings from the switch to LPG would be sufficient to cover this one-time cost, and households would begin to capitalise on the full gains from the second year after conversion. Moreover, if the government subsidises the purchase of this starter-kit, households would have to invest even less in this initial package, and would start to see savings immediately. Within the business environment, the switch to LPG due to the effective implementation of the subsidy programme will generate higher demand for LPG stoves, cylinders and other LPG accessories. All of these will encourage the entry of new investors and thus, the creation of new jobs. The conversion programme will also lead to the use of a cleaner, cheaper, more efficient, and more environmentally-friendly fuel. This is in addition to the health benefits that will result from the use of LPG instead of kerosene.
Table 7: Average household savings from the switch to LPG use – running cost only

<table>
<thead>
<tr>
<th>Fuel</th>
<th>Average daily cost (AUD)</th>
<th>Average monthly cost (AUD)</th>
<th>Average yearly cost* (AUD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kerosene</td>
<td>2.00</td>
<td>60.00</td>
<td>730.00</td>
</tr>
<tr>
<td>LPG</td>
<td>1.40</td>
<td>42.00</td>
<td>511.00</td>
</tr>
<tr>
<td><strong>Average savings</strong></td>
<td><strong>0.60</strong></td>
<td><strong>18.00</strong></td>
<td><strong>219.00</strong></td>
</tr>
</tbody>
</table>

* 365 days in a year

The state will accrue the largest benefits from the subsidy programme. These benefits would primarily come from the subsidy savings as a result of the elimination of the price control and the implicit subsidy (which includes the various duty/levy exemptions). The government stands to gain gross subsidy savings of close to AUD 1 million. Some of these savings will likely be used to provide the requisite soft and hard infrastructure for the successful implementation of the project. This will include: initial capital outlay for the provision of LPG starter kits; marketing; information dissemination and training; and, most importantly, LPG infrastructure, including more service stations and refill centres, and loans, rebates and incentives to encourage private sector investment. The government stands to reap longer-term savings through a better-thriving aviation sector through more affordable flight prices; a more profitable KOIL; lower health expenditure related to kerosene smoke poisoning/inhalation and kerosene-related fires; and, ultimately, its residents using a cleaner, more efficient and environmentally friendly fuel. More awareness and public education to empower children and women on the health benefits of cleaner cooking fuels and efficient use of energy will also contribute to a more efficient economy.

In sum, as Table 8 illustrates, Kiribati as a country stands to gain total savings of almost AUD 1 million as a result of the successful conversion and subsidy transfer programme.

Table 8: Annual government savings from kerosene subsidy removal

<table>
<thead>
<tr>
<th>Fuel</th>
<th>Government spending on kerosene subsidies (AUD)</th>
<th>Average volume of household kerosene imported (2012–2013)</th>
<th>Average annual savings (AUD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kerosene</td>
<td>0.50/litre</td>
<td>1,994,583 litres</td>
<td>997,292</td>
</tr>
</tbody>
</table>

Figure 6 also shows some of the benefits that Kiribati stands to gain at all levels of the economy from both the conversion programme and the removal of the subsidies.

**Businesses**
- New investors and distributors
- New jobs

**Households**
- Energy cost savings (AUD 219.00 or 22% annually)
- Health and time savings

**Government**
- Gross subsidy savings (= AUD1.00 million annually)
- Health cost savings

Figure 6: Benefits to Kiribati of conversion from kerosene to LPG

---

10 Assuming that KOIL reduces the price of aviation fuel to reflect the elimination of household subsidies and household kerosene losses, and in turn, aviation companies reduce their flight prices to reflect the reduction in fuel costs.
3.5 Fiscal and other socio-economic implications

Whilst there will be significant subsidy cost savings, implementing this policy may require substantial government investment, depending on how much additional infrastructure is required, and the cost of marketing and educational activities related to the conversion programme. Involving the private sector in this strategy would help substantially reduce the level of government investment required. Moreover, the government could use the funds saved from subsidies to provide the necessary infrastructure.

According to the 2010 census, about 34% of all Kiribati homes use kerosene for lighting. This is a sizeable proportion of the population. The removal of kerosene subsidies could have adverse implications for the ability of these 34% of households to have basic lighting in their homes. As the CFL strategy paper proposes, this paper acknowledges the need for the CFL strategy to be implemented concurrently with a renewable energy lighting programme.

Clear and adequate information is critical to the success of this subsidy reform. The government needs to effectively communicate the various aspects of the policy reform to current kerosene users and other kerosene stakeholders, but also to the entire population. It needs to create awareness of the dangers associated with kerosene use, the reason for the transfer of subsidies and, most importantly, quantify and inform users about the monetary benefits that would accrue to households as a result of this subsidy reform. Providing adequate and timely information is key to preventing social unrest or strong opposition that are generally associated with subsidy reforms; asymmetric information would only exacerbate these issues.
An economic analysis of kerosene subsidy policy reform | Towards promoting sustainable LPG use in Kiribati
4. Conclusion

Kerosene is the major source of cooking fuel in Kiribati, and is highly subsidised for mainly equity and affordability reasons. While the subsidisation of kerosene is helping to address the issue of energy poverty, it is, however, encouraging the use of a fuel that has adverse health and environmental impacts. In order to promote the use of a cleaner, healthier and financially and environmentally sustainable fuel – LPG – in line with the SE4ALL goals and the CFL Strategy, this paper recommends the removal of kerosene subsidies. This paper also recommends that the Government of Kiribati provides exemptions to LPG as a means to encourage households to convert from kerosene to LPG and for the private sector or KOIL to invest in LPG infrastructure and provision. It would also be beneficial for the government to review the procurement price of both kerosene and LPG to ensure that the country is getting the best possible price.
An economic analysis of kerosene subsidy policy reform | Towards promoting sustainable LPG use in Kiribati

---

**Bibliography**


An economic analysis of kerosene subsidy policy reform | Towards promoting sustainable LPG use in Kiribati


Pertamina & WLPGA (2012). Indonesia & the WLPGA Kerosene to LP Gas Conversion Programme in Indonesia A Case Study of Domestic Energy, Jointly written by PT Pertamina (Persero), Indonesia & the WLPGA, France


Personal communication
Kiribati Oil Company Limited (KOIL) management, February 2014.