

PGI Discussion: Subsidizing Ethanol Technology, Not Fuel. Selected Case Studies of LPG Subsidies in Various Countries

Public good elements provide justification for public support at the initial phase. Gaia advocates subsidizing investments in stoves or distilleries rather than in the fuel. We've provided selected case studies with lessons learned for Haiti.

The great benefit of ethanol as a household fuel is that it can be produced at a price which is competitive with currently available fuels in Haiti. Current pricing models show the price of ethanol to be comparable with charcoal and less than kerosene. Once it is produced on a large scale, ethanol could be sold for half the price of charcoal. As such, the daily purchase of fuel would not require a subsidy. In fact, it is recommended to subsidize the initial technology purchases, such as distilleries or stoves, rather than the daily running cost of fuel. To implement an ethanol fuel project on a large scale, it is recommended that the ethanol not reach the market at a subsidized price. This protects consumers from potential shocks to the market if the government should choose to repeal the subsidy. As a result, a more sustainable fuel market is created, commercially based on supply and demand.

In the proposed Haiti initiative, subsidies could have a positive effect on the uptake of the use of stoves and fuel in the household market if they are applied to initial one-time purchases. In this case, subsidies could be provided to microdistillery technology. Such units could enter the country or be produced locally. A uniform distillery design will produce ethanol more efficiently, therefore dropping the production cost of the ethanol. Small- to medium-size units could help create a distributed ethanol production network. These units could be versatile depending on where they are placed. For example, ethanol can be produced easily in peri-urban areas and the distillery units could be purchased by small farmers' cooperatives. This gives the organization flexibility in using ethanol at production cost for their cooperative members and selling the remaining ethanol with profit to neighboring communities. When ethanol is produced close to the market, it shortens the supply chain, which is ultimately observed in the most affordable price-per-liter of ethanol to the end-user.

Since the cost of alternative energies over woodfuels has been a major barrier in preventing large-scale uptake of cleaner fuels, many countries have utilized forms of subsidies to promote alternative technology. PGI has reviewed the

challenges faced and lessons learned from other countries over the last 60 years to guide the way forward in Haiti. The underlying message in these experiences is that when promoting a fuel such as kerosene or LPG, whose price is tied to the international market, the removal of fuel subsidies ultimately hurts low-income families and the nation, through balance of trade.

Experience of LPG Subsidies in Brazil: From 1950 to 2001, the Brazilian federal government regulated the final price of LPG to consumers. In 2001, the LPG fuel subsidies were removed, which corrected the price distortion but dramatically doubled the price of fuel for consumers. When the true international fuel price was transferred to the consumer, the price of a 13 kg bottle of LPG increased by 20%. In order to regulate the LPG subsidy, the Government created excessive standards and procedures of the distribution system, which discouraged both investments and competition.¹ Subsidizing the fuel caused other problems, and studies found that subsidized fuel was being used for other purposes, such as heating swimming pools and saunas or used in vehicles. This represents a loss for the government, which had spent around \$100 million USD annually to subsidize the fuel. It is estimated that the Brazilian government spent approximately \$8.235 billion between 1973 and 2011 on LPG subsidies. Additionally, studies found that nearly half the energy produced in an LPG stove was wasted, heating air and stove parts, but not the food. Once the subsidy had ended, many users reverted to using their traditional wood and charcoal stoves.¹

Experience of LPG Subsidies in Senegal: In the 1970s, Senegal began a butanisation program to promote the use of LPG as a cooking fuel in the home. In the beginning, the costs of the stoves and the tariffs were waived of import duties; however the program did not take off, initially because the government failed to promote LPG on a large scale. In a second try to penetrate the market, Senegal moved to a direct fuel subsidy.² The success of the program in Senegal can be attributed to the discounts offered when families could purchase fuel in smaller quantities (2,75kg or 6 kg). Annual domestic consumption of LPG rose from 3.000 tons in 1974 to 100.000 tons in 2000, almost all of which was sold in the smallest cylinders for household consumption. In 1998, the government began reducing the subsidy by 20% until 2002, when it was completely eliminated. At present, LPG prices are affordable for many homes since the private sector has taken over the fuel supply and competition controls the price. LPG is now the primary cooking fuel in 71% of urban households.²

¹ Lucon, Coelho, & Goldemberg. "LPG in Brazil: lessons and challenges". *Energy for Sustainable Development*. Volume VIII No. 3. Sept 2004.

² Schlag, Nicolai & Zuzarte, Fiona. "Market Barriers to Clean Cooking Fuels in Sub-Saharan Africa: A Review of Literature". *Working Paper*. Stockholm Environment Institute (SEI). April 2008. Page 11.

Experience of Kerosene Subsidies in Nigeria: A study in Nigeria showed that when the government removed fuel subsidies, the national poverty level increased. The report also highlights that how government policy deals with subsidies and the removal of subsidies greatly matters to the lowest income brackets. The report also highlights how subsidy removal can have a disproportionate effect on urban vs. rural households.³

Experience of Kerosene Subsidies in Africa: Over the last decade, there has been much written on petroleum product subsidies as international prices of oil experienced both high and low points, thus providing valuable lessons for developing countries. The rebound of international petroleum product prices (for example, those of LPG and kerosene) has a direct effect on how government policies affect subsidies. Oftentimes, these countries do not have an exit strategy from public debt, and high spikes in oil prices can cause government fuel subsidies to become grossly unaffordable. In regard to weighing the benefits of subsidizing fuel, it is interesting to note that one IMF report showed that in Africa 45% of all kerosene subsidies accrue to the top two income quintiles. As international fuel prices are on the rise, it is prudent to measure the success in fuel subsidies in reaching the “bottom of the pyramid.” Additionally, the international community has recently targeted the reform of fossil fuel subsidies as part of a larger effort to confront global climate change.⁴ As seen in the Kenya example, governments can play an effective role in subsidies, without inflating the prices of the fuel. In Kenya, the Government removed only the taxes from kerosene, which rendered the fuel close enough to the price of charcoal to offer a competitive alternative. Many consumers in urban areas switched to kerosene, which by 2008 was used in 56% of all urban homes. The price of LPG is heavily weighted with taxes and distribution charges, which can account for 60% of the total fuel price, as experienced in Tanzania.²

³ Nwafor, Manson; Ogujiuba, Kannayo; Asogwa, Robert. “Does Subsidy Removal Hurt the Poor?” *International Development Research Centre (IDRC)*. Feb 2006.

⁴ Coady, David; Gillingham, Robert; Ossowski, Rolando; Piotrowski, John; Tareq, Shamsuddin; and Tyson, Justin. “Petroleum Product Subsidies: Costly, Inequitable, and Rising”. *Staff Position Note*. International Monetary Fund (IMF). Feb 2010.