

A CITIZENS' GUIDE TO ENERGY SUBSIDIES IN THAILAND



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Introduction

Affordable energy is critical to the provision of fundamental goods and services such as lighting, cooking and transport. Energy is also necessary for more complex goods and services, from the refrigeration of vaccines and food to the supply of reliable electricity for manufacturing. Improving energy access is therefore an important strategy for promoting economic development. This thinking usually underlies any decision to subsidize energy.

Thailand has a long history of controlling prices for economically or socially important energy products. The decision to stabilize and subsidize prices for fuel and electricity has made these products more affordable for consumers and reduced the impact of changes in world energy prices. However, it has also presented new challenges, including rising costs to government, losses for government-owned enterprises, increased energy consumption and illegal use—i.e., smuggling and misappropriation—of subsidized fuels. In recognition of these downsides to energy subsidies, successive Thai governments have gradually removed many price controls. In recent years, declining domestic production of energy, growing energy demand and volatile international fuel prices have focused the minds of government and the public on the remaining fuel subsidies in the Thai economy.

The government has plans to bring most fuel and electricity prices to a level where retail prices reflect the cost of supply. The consequences for the Thai people will depend on if, how, and when these plans are implemented. Once subsidies are in place, they can be notoriously difficult to remove. The public will typically want to be assured that benefits of subsidies—such as energy access for the poor—will be achieved through other means if subsidies are withdrawn.

Citizens have a vital stake in this debate, but, as in many countries, there is all too often little solid information on the exact costs and benefits of subsidies. When information is available, it can be scattered across many sources and relate to different fuels, time periods or sectors of the economy. How can busy citizens, making their living and raising families, hope to keep track of what is going on? In large part, the task must fall to civil society groups and journalists, the intended audience of this guide.

The following pages gather the best available information on the costs and benefits of energy subsidies. The first part of this guide provides an overview of energy use in Thailand, and the second explains how various types of energy are subsidized. The third part looks at who benefits from subsidies and how. The fourth part identifies the likely impacts of reform. The fifth and final part summarizes lessons learned from other countries.

1

A SNAPSHOT OF ENERGY PRODUCTION AND CONSUMPTION IN THAILAND



1. A Snapshot of Energy Production and Consumption in Thailand

In order to understand energy subsidies in Thailand, it is useful to have a sense of the country's energy resources and needs. What energy is produced? What energy is consumed?

1.1 Production and Trade

Thailand produces several fossil fuels: coal, crude oil and natural gas. Natural gas is Thailand's most abundant domestic energy resource, with 1,306 billion cubic feet produced in 2011, ranking Thailand 24th in world gas production (Energy Information Administration, 2013). Domestic production supplies about 75 per cent of Thailand's natural gas needs, with the remainder imported.

Domestically produced coal is mostly lignite, which is primarily used for electricity generation. In 2011, 21 million tonnes of coal and lignite were produced (Thai Ministry of Energy, 2012a). Anthracite and bituminous coal are imported for use by electricity generators and industry.

Around 20 per cent of Thailand's crude oil needs (150,000 barrels per day) are produced domestically with the remainder imported. Oil is refined domestically to produce petroleum products (gasoline, diesel, kerosene, aviation fuel and fuel oil). Thailand is a net exporter of petroleum products, with net exports of around 160,000 barrels per day in 2012 (Energy Policy and Planning Office, 2013a).

The country's reserves of oil and natural gas are limited. The estimated reserves-to-production ratio is 3.5 years in the case of oil and 12.5 years in the case of natural gas. Reserves of lignite are larger, with a reserves-to-production ratio of 58 years (BP, 2012)¹

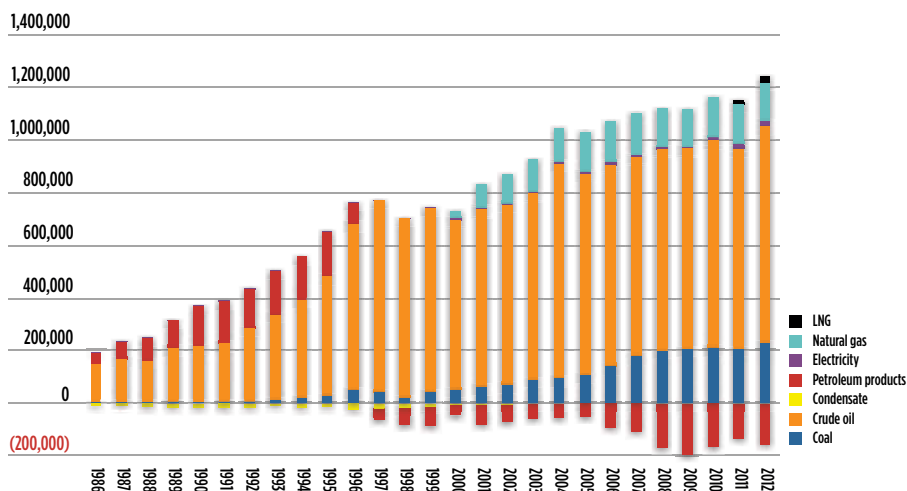
Ethanol and biodiesel have been used as biofuels in Thailand since the early 2000s. Ethanol is primarily derived from sugarcane and cassava. Biodiesel is solely produced from palm oil (U.S. Department of Agriculture [USDA], 2012). The use of traditional energy sources from biomass such as fuel wood, charcoal and rice husk is quite high given Thailand's status as an upper-middle income country. Traditional sources accounted for around 20 per cent of total domestic production of primary energy (Thai Ministry of Energy, 2012a). In the residential sector, biomass accounted for 60 per cent of the total final energy consumption in 2005, with a total of more than 11 million tonnes of biomass consumed (Asian Institute of Technology, 2010).

¹ The reserves-to-production ratio refers to the amount of time that known reserves will last at forecast consumption levels.



Thailand is a net energy importer, with over 60 per cent of energy consumption coming from imported sources (Energy Policy and Planning Office, 2013a). Although there has been continuous discovery of oil and gas in Thailand, domestic demand for energy has also grown steadily since the early 1980s (with the exception of the period following the 1997 and 2008 financial crises). As a result, there has been little overall change in Thailand's import dependency (Asian Institute of Technology, 2010) (See Figure 1). Together with a rapidly escalating world oil price during the past decade years, this increase in consumption pushed Thailand's net energy imports to 1,221 billion² Thai baht (THB) in 2011 or 11 per cent of GDP (Energy Policy and Planning Office, n.d.a).

Figure 1 » Net Import of Commercial Primary Energy (Barrels per day), 1986 to 2011



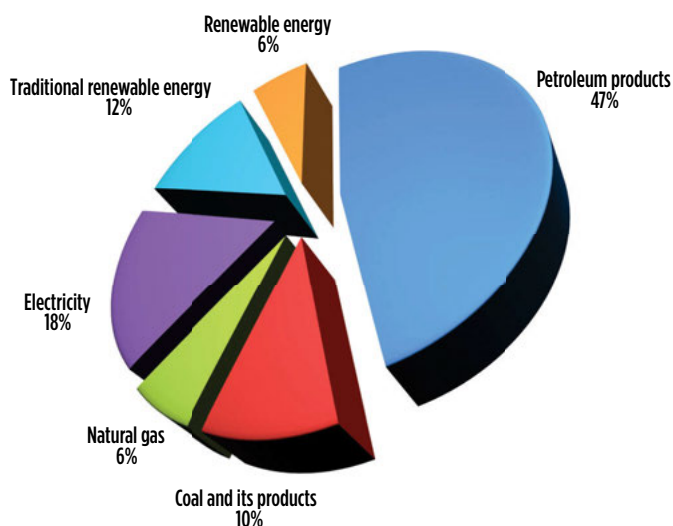
Source: Energy Policy and Planning Office, 2013a.

² The exchange rates used in this report are: 1 US\$ in 2010 = THB 31.727, in 2011 = THB 30.4944 and in 2012 = THB 31.0848 (Bank of Thailand, 2013).

1.2 Consumption

Petroleum products comprise the largest share of total consumption in Thailand (Figure 2). Given that the large majority of petroleum is imported, Thailand is highly exposed to changes in price in international markets.

Figure 2 » Shares of Final Energy Consumption, 2011

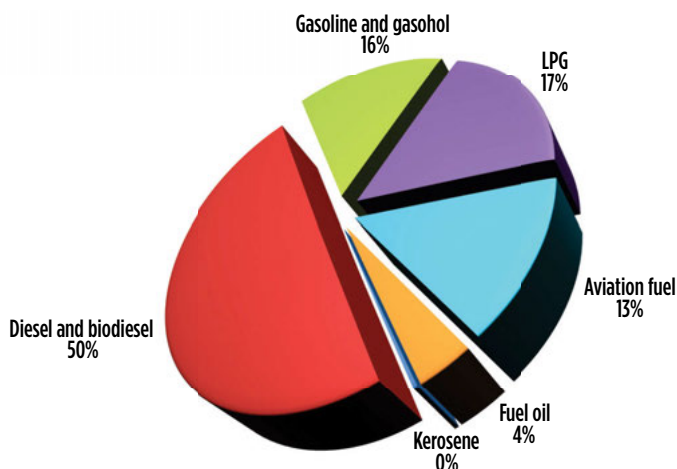


Source: Thai Ministry of Energy, 2012a.

Note: Renewable energy includes geothermal, solar cell and wind power. Traditional renewable energy includes fuel wood, charcoal, rice husk, bagasse, sawdust and agricultural waste.

Diesel is the most widely used petroleum product in Thailand, followed by LPG, gasoline and aviation fuel (Figure 3). Fuel oil and kerosene comprise less than 5 per cent of total consumption. Diesel is an important input in the transport and agricultural sectors, which account for over 40 per cent of final energy consumption. LPG is used in industry, transport and residential sectors, as well as small businesses such as street vendors. Gasoline is mostly used in the transport sector.

Figure 3 » Share of Petroleum Product Consumption, 2011



Source: Thai Ministry of Energy, 2012a.

Two-thirds of Thailand's electricity is produced from natural gas (67 per cent) with the remainder produced from coal and lignite (19.5 per cent), hydroelectricity generation (4.9 per cent), fuel oil (0.8 per cent), diesel (0.02 per cent), and others (1.4 per cent). Around 6 per cent of Thailand's electricity is imported. The rate of electrification is high, with almost universal electricity coverage (Table 1).

Table 1 » Electricity Access, Transmission and Distribution

Urban Population access to electricity	100%
Rural Population access to electricity	99.8%
Distribution and transmission losses	8%
National Grid Coverage	99%
Reliability of electricity service	Occasional brownouts

Source: Ruangrong, 2012.



2

AN OVERVIEW OF THAILAND'S ENERGY SUBSIDIES



2. An Overview of Thailand's Energy Subsidies

2.1 What Is an Energy Subsidy?

The definition of subsidies is often contentious because it affects the scope of policies included and, in some cases, disciplines imposed on the use of those policies. The only internationally agreed definitions are those of the UN Statistics Division, which is used to construct national accounts, and of the World Trade Organization (WTO) Agreement on Subsidies and Countervailing Measures, supported by 158 countries, which is used for regulating subsidies that affect trade.

The WTO definition is the more comprehensive of the two and can be summed up as follows: a subsidy is a financial contribution by a government, or agent of a government, that confers a benefit on its recipients. This means that the word “subsidy” is much broader than just a direct payment made from the government budget to an economic actor; it also includes any other mechanism by which a government can confer a financial benefit, such as tax exemptions, providing goods or services at below-market rates, purchasing goods and services at above-market rates and providing income or price support with regulation.

In the context of fossil fuels, subsidies are often split into two non-exclusive categories: those that reduce the price of consuming energy, called *consumer subsidies*, and those that support the domestic production of fossil fuels, called *producer subsidies*. Subsidies come in many different forms but the types of fossil-fuel consumer subsidies that are most commonly observed are:

- Expenditure in the government budget to keep fuel prices low.
- Government-set prices below cost of supply or purchase on the world market.
- Grants such as fuel allowances for farmers and fishermen.
- Provision of goods such as free or discounted LPG cylinders.
- Tax breaks for commercial or industrial users.

Subsidies do not reduce the cost of energy: they just change the proportion paid by consumers or producers, and move the rest of the costs onto other parts of the population. Someone still pays, but through taxes, higher prices, reduced government revenue or expenditure on other priorities or lack of investment in energy infrastructure. Indeed—the inefficiency of subsidies can actually increase the overall cost burden on society.

2.2 Why Subsidize Energy?

Policy-makers often justify energy subsidies with the argument that they contribute to economic growth, poverty reduction and security of supply (IEA, OPEC, OECD & the World Bank, 2010). However, subsidies are rarely the most efficient tool for promoting these objectives. In reality, the main motivation behind energy subsidies is typically political. Subsidies are a very tangible way for governments to show that they are supporting their people. This is particularly important in countries that lack the administrative capacity to offer social and economic support through other policy mechanisms.

Since partial deregulation of the energy market in Thailand in 1991, subsidies were initially used to reduce price peaks for gasoline and diesel during times of high oil prices. Since the mid-2000s, subsidies have become more widely used to encourage the use of domestically produced resources such as natural gas and biofuels and to reduce the price of socially important fuels such as LPG for cooking and diesel for transport and agriculture.

2.3 Consumer Energy Subsidies in Thailand

In Thailand, consumer subsidies exist for five energy products: LPG, natural gas for vehicles (NGV), diesel, electricity and biofuel blends.

In the case of LPG, the government sets an ex-refinery price that is below the cost of production or acquisition on the world market. It then pays the difference to the LPG refiner or importer. NGV retail prices are also set below the cost of production. NGV is produced and distributed solely by PTT Public Company Limited (the majority government-owned petroleum company) and the government does not reimburse PTT for losses incurred by selling NGV below cost.

The government has aimed to keep the retail price of diesel below THB 30 per litre since December 2010. This has been achieved through subsidies from the oil fund (see below) and reductions in excise tax, municipal tax and levies.

Electricity is subsidized through the provision of free or half-price electricity to low-consuming households (assumed to be underprivileged). Electricity tariffs to other consumers may also be below the costs incurred by the state-owned Electricity Generating Authority of Thailand (EGAT), the sole distributor of electricity in Thailand. The government can require EGAT to carry losses when retail prices are not sufficient to cover the cost of inputs such as fuel and electricity purchased from other providers. The main inputs to Thailand's electricity generation—natural gas and lignite—may also be provided at below-market rates.³

Ethanol blended with gasoline with a concentration of 20 per cent (E20) or 85 per cent (E85) ethanol is cross-subsidized through the Oil Fund, in addition to enjoying lower taxes. Biodiesel blending is compulsory for all diesel sold in Thailand, providing subsidy through mandatory consumption.

Table 2 below summarizes the major fuel and electricity subsidies in Thailand, providing estimates of total subsidies where possible. The estimate of total subsidies is a minimum figure, given that many subsidies are not quantified. The following sections of the guide explain in detail how each fuel is subsidized and estimate subsidies for 2012 (unless otherwise stated). But first a brief history of Thailand's oil fund is provided and the country's path from highly regulated fuel prices in the late 1970s to the partially deregulated system in place now.

³ Contracts between energy suppliers and electricity generators were not publicly available, and therefore a full analysis of subsidies to electricity generation is not included in this guide.



Table 2 » Thai Subsidies for Fuel and Electricity in 2012, Including Estimates Where Available (n/a = not available)

Energy type	Subsidy type	Borne by	Estimate (THB million)
LPG	Direct subsidy and under-recoveries	Oil fund and oil companies	57,317
NGV	Under-recoveries	PTT	12,820*
	Excise tax exemption	National budget	n/a
	Municipality tax exemption	Municipalities budgets	n/a
	Taxi conversion from LPG to NGV	PTT	n/a
	Low interest loans	PTT	n/a
	NGV credit card	PTT	n/a
	Investment in NGV infrastructure	PTT	n/a
Diesel	Excise tax exemption	National budget	108,231
	Green Fuel for fishing vessels	PTT	n/a
Electricity	Free and half price electricity to poor	Cross-subsidized by other electricity consumers	7,550
	Regulated base tariff and fuel charge	EGAT	9,000
Ethanol blends >20%	Oil fund subsidy	Oil fund	n/a
	Reduced taxes and levies	Oil fund and national government	n/a
Biodiesel	Mandatory consumption	Fuel blenders and consumers	n/a
	Excise tax exemption	National budget	0.87
Total			194,918

* Subsidy estimates relate to 2012 except PTT losses from NGV sales, which relate to 2011.

Sources: See sections of this guide relating to each fuel.

2.3.1 Brief History of the Oil Fund and Fuel Pricing in Thailand

During the 1970's, approximately 90 per cent of Thailand's commercial primary energy⁴ needs were imported, mostly in the form of petroleum products (Amranand, 2008). In response to the 1973 oil shock, Thailand established an oil fund to shield the domestic economy from volatility in international prices. Established in 1979, the oil fund is a monetary reserve designed to collect its revenues from levies on petroleum products during times of low or average international prices. When prices surge, the fund is used to subsidize prices and hence reduce price peaks for consumers.

Retail prices were fixed by the government from 1979 to 1990. In 1991, the government took advantage of the opportunity created by the fall in global oil prices after the end of Iraq–Kuwait war to deregulate the fuel markets.⁵ The rationale was to improve the efficiency and reliability in the supply of fuels by:

- Increasing competition in the domestic oil market.
- Abolishing import controls
- Increasing refining capacity by allowing existing refineries to expand and giving permits for new refineries to enter the market.
- Improving determination of ex-refinery and import prices to more accurately reflect world prices.
- Improving the tax and retail price structure of petroleum products.
- Reducing regulatory barriers for the establishment of new petrol stations (Energy Policy and Planning Office, 1995).

The objective of deregulation was not, however, to allow full pass-through of international prices to the domestic market. The Thai government has frequently intervened in fuel prices through the oil fund and by setting ex-refinery or retail prices. Over the years, the oil fund has been used to: (1) reduce price spikes; (2) cross-subsidize fuels for economically or politically important groups; (3) encourage greater use of domestically produced energy resources; and (4) fund energy-efficiency programs.

The Committee on Energy Policy Administration (CEPA), chaired by the Energy Minister, is responsible for managing the oil fund and determining oil fund levies. The decision to impose a levy or subsidize a fuel via the oil fund can be done by this committee. Resolutions approved by CEPA would be reported to the National Energy Policy Council (NEPC), which is chaired by the prime minister and has overarching responsibility for energy policy.

⁴ Commercial energy excludes traditional fuels such as fuel wood, charcoal and rice husk.

⁵ Petroleum products are commodities and do not require economic regulation. Natural gas and electricity have elements of natural monopoly in the supply infrastructure and there is always economic regulation, although to varying degrees.

In determining levies, the CEPA takes into account factors such as global oil prices and the level of monetary reserves in the fund. The petroleum products that have most often faced oil fund levies are gasoline (ULG91 and ULG95), gasoline with 10 per cent ethanol, kerosene and fuel oil. Oil fund levies are adjusted weekly. Gasoline has not been subsidized by the oil fund since 2004. In recent years the fund has been used to cross-subsidize LPG, NGV and gasohol, and to reduce price peaks for diesel. Table 3 provides the annual *average* oil fund levies, which may mask significant fluctuations within each year.

Table 3 » Annual Average Oil Fund Tax Levels Levied on Petroleum Products (THB per litre)

	Gasoline		Gasohol			ULG91 E10	Kerosene	Diesel		Fuel Oil	LPG cooking (THB/kg)
	ULG95	ULG91	E10	ULG95 E20	E85			HSD 0.035%\$	LSD		
1996	0.11	0.11					0.03		0.12	0.03	-0.64
1997	0.08	0.08					0.06		0.04	0.03	-1.89
1998	0.16	0.16					0.10		0.13	0.06	0.40
1999	0.09	0.09					0.10		0.08	0.06	-2.94
2000	0.34	0.22					0.10		0.11	0.06	-7.31
2001	0.50	0.30					0.10		0.50	0.06	-5.55
2002	0.50	0.30	0.27			0.27	0.10		0.50	0.06	-2.45
2003	0.49	0.30	0.27			0.27	0.10		0.50	0.06	-3.05
2004	-0.34	-0.59	0.24			0.27	0.10		-2.27	0.06	-2.55
2005	1.28	1.03	0.13			0.16	0.10	-0.92	-1.02	0.06	-2.54
2006	2.70	2.50	0.84			0.84	0.10	1.47	1.47	0.06	-1.93
2007	3.67	3.37	0.85			0.62	0.10	1.39	1.39	0.06	-1.02
2008	3.78	3.31	0.77	-0.21		0.28	0.10	0.40	0.31	0.06	0.30
2009	6.94	5.31	1.78	-0.80	-7.88	1.17	0.10	0.78	1.20	0.06	0.22
2010	7.50	6.65	2.74	-0.41	-10.93	1.43	0.10	0.66	1.20	0.06	0.61
2011	4.90	4.38	1.87	-1.80	-13.50	-0.40	0.10	-0.60	1.20	0.06	1.14
2012	5.23	4.73	2.03	-1.30	-12.40	-0.16	0.10	0.69	1.20	0.06	0.89*

* Different oil fund levies were applied to LPG for different sectors in 2012. The average levy for industry was THB 10.55 per kilogram and for automotive use THB 3.34.

Source: Energy Policy and Planning Office, 2013b.

In theory, the oil fund is revenue neutral. In practice, the fund has required injections of government funds during periods of prolonged high prices. In 2003, subsidies were provided for gasoline and diesel as a result of high oil prices arising from the war in Iraq. The subsidies cost the government up to THB 389 million. In 2004, gasoline and diesel were subsidized again. Gasoline subsidies were lifted in October 2004, but diesel continued to be subsidized well into 2005. The oil fund became depleted and required government transfers of THB 92 billion (Global Subsidies Initiative, 2012b).

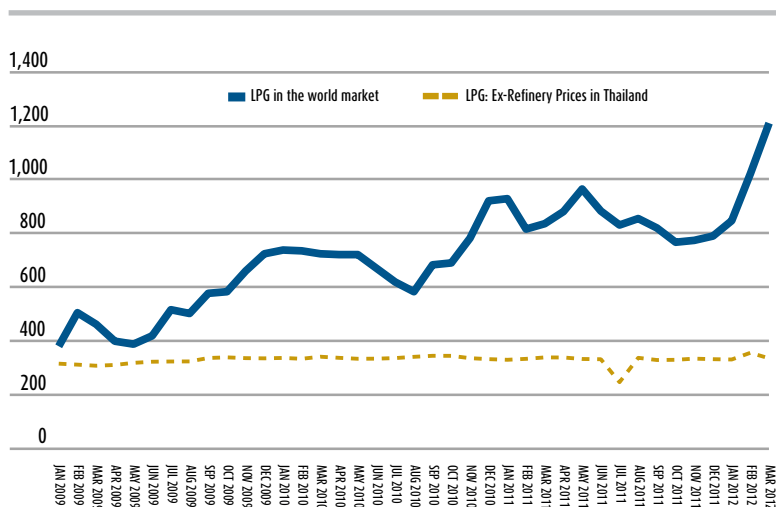
Despite a deficit in the oil fund of THB 22 billion at the end of September 2011 (Table 4), the government temporarily suspended oil fund levies on gasoline and diesel from September to December 2011 to ease cost-of-living pressures (Energy Policy and Planning Office, 2013b). The administrators of the oil fund, the Energy Fund Administration Institute (EFAI), borrowed THB 10 billion in October 2011 and another THB 20 billion in March 2012 to fund the deficit (C. Puankosoon, Acting Director General of the Energy Fund Administration Institute, personal communication, 2012). As of February 3, 2013, the oil fund balance was in debt THB 15 billion, an amount that was increasing at a rate of THB 33 million per day ("Diesel levy cut," 2013). The EFAI intends to repay the borrowed funds from oil fund levies (C. Puankosoon, personal communication, 2012).

Table 4 » Contributions to the Oil Fund, Subsidies From the Oil Fund and Net Contribution, Fiscal Year Ending in September (THB million)

	Inflows into Oil Fund (Contributions)	Outflows from Oil Fund (Subsidies)	Net Contribution
2005	16,224	64,772	-48,548
2006	42,032	8,296	33,735
2007	50,923	6,181	44,743
2008	21,657	5,929	15,728
2009	35,270	19,887	15,383
2010	37,654	31,303	6,351
2011	39,958	62,099	-22,141

Source: Energy Fund Administration Institute and Office of the Auditor General, 2012.

Figure 4 » Prices of LPG in the World Market and Ex-refinery Prices of LPG in Thailand, US\$ per metric tonne



Note: The LPG world price is taken to be the Saudi Aramco Contract prices, a major international price benchmark impacting LPG markets in the Far East.

Source: V. Kiatfuengfu, (Petroleum Business Group), personal communication, 2012.

The cost of LPG produced domestically is also above the government-determined ex-refinery price. Thailand produces LPG from refineries (manufactured during the refining of petroleum) and from gas separation plants or GSPs (extracted from petroleum or natural gas streams as they emerge from the ground). The gap between the cost to acquire LPG and the sale price delivers a subsidy to LPG consumers (Table 5).

Table 5 » LPG Subsidies 2012

Source of LPG	LPG production for subsidized markets (million tonnes)	Benchmark price (production or import cost) (US\$ per tonne)	Subsidy rate (THB per kg)	Subsidies (THB billion)
Refineries	1.00	779	13.85	13.86
Import	1.68	1024	21.48	36.02
Gas separation plant	2.04	450	3.64	7.43
Total				57.32

Sources: Refineries and imports: volumes and annual subsidies rates sourced from the Petroleum and Petrochemical Policy Bureau, Petroleum Business Group, EPPD. GSP volumes were estimated based on EPPD data on LPG consumption by subsidized sectors (Energy Policy and Planning Office, 2013c). GSP subsidies based on a cost of production of US\$450 per tonne in January 2012 (Energy Policy and Planning Office, n.d.b). Caution is needed because the GSP subsidy rate is not an annual average. Benchmark prices for refineries and imports calculated from EPPD subsidy and production data.

The oil fund has not provided a per litre subsidy for LPG since 2007 (with the exception of two months in 2008). However, the oil fund has continued to fund the LPG subsidy, reaching THB 47.21 billion in 2012 (Tabmanie, 2013). These funds are used to partially compensate producers and importers for losses incurred from the capped LPG ex-refinery price (Energy Policy and Planning Office, n.d.b). PTT reported receiving THB 11.66 billion from the oil fund in 2011, which included compensation for all eligible activities including local manufacture of oil and LPG products, NGV and price stabilization for imported oil.

The retail price of LPG for all users was constant at THB 18.13 from March 2008 until July 2011. To stem mounting subsidies, the government decided in 2011 to raise the price of LPG for industrial and automotive users. The price for industry was to increase by THB 3 per kilogram per quarter starting in July 2011 until the price reached 30.13 per kilogram (achieved in March 2012). Increases above THB 30.13 per kg would require the approval of the National Energy Policy Council, chaired by the Prime Minister (Kojima M., 2013).

The price for automotive LPG was to increase by THB 0.75 per kilogram per month starting in January 2012. Between January 2012 and January 2013, the price of automotive LPG was raised seven times. On only three of those occasions were the full THB 0.75 added to the price (Energy Policy and Planning Office, 2013d). The LPG price increases are primarily achieved through higher oil fund levies (see Table 6). The retail price of LPG for cooking continues to be capped at THB 18.13 per kg.

Table 6 » Price Structure of LPG, THB per kg (as of February 19, 2013)

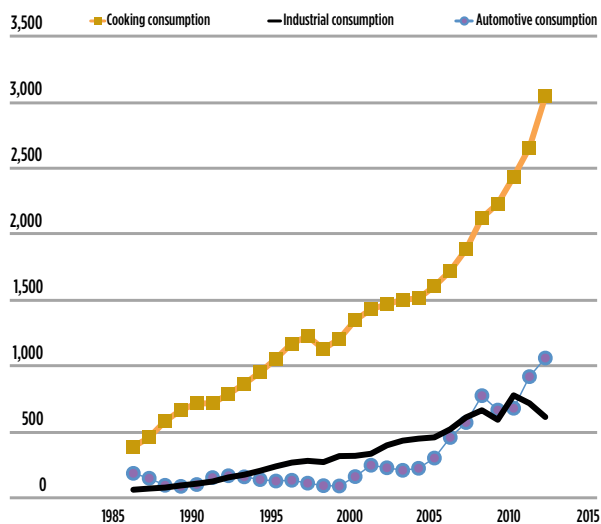
	Cooking	Automobile	Industry
Ex-refinery	10.051	10.051	10.051
Tax	2.17	2.17	2.17
Municipality tax	0.217	0.217	0.217
Oil fund	1.2483	4.2857	12.4683
Conservation fund	0	0	0
VAT on wholesale price	0.958	0.958	0.958
Marketing margin	3.2566	3.2566	3.2566
VAT on retail	0.228	0.4406	1.0134
Retail	18.13	21.38	30.13

Source: Energy Policy and Planning Office, 2013e.

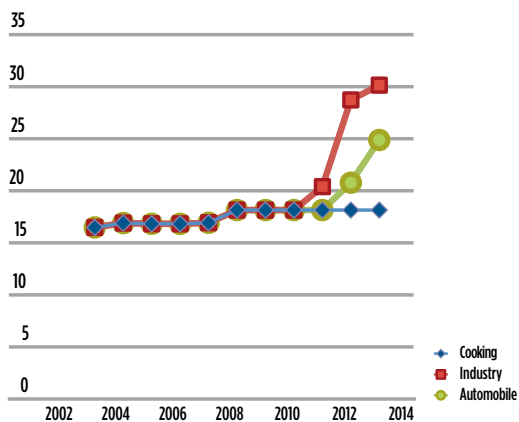
2.3.2.1 Fuel Smuggling and Illegal Use

The disparity in the price between subsidized and non-subsidized LPG provides an incentive for fuel smuggling and misappropriation. In Thailand, illegal activities take place in two forms. Cheap LPG for cooking appears to be used illegally by the industrial sector. Figure 5 shows a notable decrease in LPG consumption in the industry sector following price increases (Figure 6), while consumption of LPG for cooking rose rapidly over the same time (Figure 5).

Figure 5 » LPG Consumption Volumes (Thousands of Tonnes) by Sector

Figure 6 »
Retail Price of LPG by
Sector (THB per kg),
2003 to March 2013

Source: Energy Policy and
Planning Office, 2013d.



The Thai Ministry of Energy has prohibited industries from using more than 20 LPG cylinders with a capacity of 48 kilograms each per year, or no more than 1000 kilograms. If this limit is exceeded, the industries must pay the higher rates. The LPG service stations and bottling plants are prohibited from selling cooking LPG to industries. Any industry representative who fails to comply with the order will be punished with a prison sentence of up to 10 years or a fine of up to THB 100,000, or both (Energy Policy and Planning Office, 2011).

In November 2012, an LPG service station in North Pattaya was shut down and its owners arrested after being accused of selling LPG for vehicles that was intended for domestic use (“DSI & Police,” 2012). The LPG was allegedly purchased from their supplier who invoiced them at the lower domestic usage price. The owners of the station accept they have been purchasing the cheaper domestic LPG for the last five years.

The second kind of illegal action is when subsidized LPG from Thailand is smuggled to neighbouring countries. Table 7 shows the comparisons of retail price for LPG in some South East Asian countries. The volume and value of smuggled LPG were not available.

Table 7 » Retail LPG Price Comparisons in Southeast Asia

Country	Price (THB/kg)
Thailand	
cooking	18.13
automotive	21.38
industry	30.13
Malaysia	20
Vietnam	37
Myanmar	34
Laos	49
Cambodia	45

Sources: Suthep Liumsirijareern, Director General of the Energy Policy and Planning Office, personal communication, January 2012; “LPG vehicles exceed 1 million,” 2013.

2.3.2.2 Government Plans to Reform LPG Subsidies

The Energy Policy and Planning Office (EPP0) has indicated that prices for LPG for households and transport sectors will rise to THB 24.82 in April 2013 (Tabmanie, 2013). This new price reflects the cost of production for LPG from gas separation plants but is still lower than LPG purchased on the international market, which is around THB 36 per kilogram. A government study found that if the price of LPG rises by THB 6 per kilogram, each household would pay THB 20 more each month. For food vendors, the cost would rise by THB 0.35 per dish ("After delays," 2013).

The Committee on Energy Policy Administration indicated that assistance would be provided to street vendors and poor households (identified as those using less than 90 kilowatt hours of electricity per month) (Pusayanawin, 2012b). The committee approved the use of THB 50 million from the oil fund to develop a database of street vendors, of which there are about 500,000. Approximately nine million eligible households (Tabmanie, 2013) would be subsidized at a rate of 6 kilograms per household per month via a system of planned credit cards, while street vendors would receive help not exceeding 150 kilograms per month per shop (Pusayanawin, 2012b).

2.3.3 Natural Gas for Vehicles (NGV)

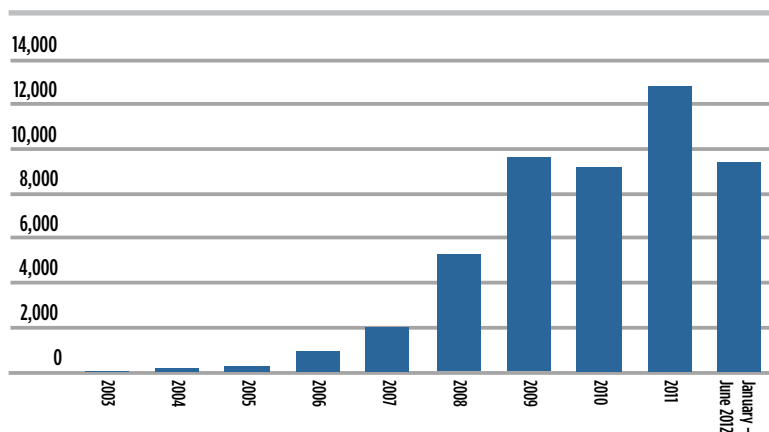
The Thai government provides a range of subsidies to encourage the use of NGV. When NGV was first introduced in 2002, Thailand was self-sufficient in natural gas and NGV was considered a promising alternative to imported oil for the transport sector. NGV has been promoted and financially supported in a variety of ways, discussed below.

2.3.3.1 Control of Retail Prices

The primary subsidy is through control of retail prices. The NGV price gradually rose from THB 7.67 per kilogram in 2002 to THB 8.5 per kilogram in 2005. The price was then frozen until January 2012. During this time, retail prices were consistently lower than the cost of production, resulting in mounting losses for PTT, the sole distributor of NGV (Figure 7).



Figure 7 » Losses for PTT From its NGV Business During 2002–2012 (THB million)



Source: C. Suwanaporn, Executive Vice President Energy Economics and Policy, personal communication with K. Thampanishvong, 2012.

In the face of a dramatic escalation in world oil prices, in early 2008 the government decided to accelerate the adoption of NGV with the aim of increasing NGV consumption by the end of 2012, increasing the number of vehicles capable of running on NGV to 240,000, raising the number of heavy-duty vehicles (trucks and buses) using NGV to 88,000 and increasing the number of NGV gas stations to 725 nationwide (“More cheap NGV loans,” 2008). In the first phase of the financing program in 2006, THB 7 billion was set aside for soft loans to transport companies for retrofitting engines. An additional THB 2 billion of soft loans was provided in 2008 (“More cheap NGV loans,” 2008).

From March 2010, the government paid compensation from the oil fund to PTT of THB 2 per kg as well as exempting NGV from excise and municipal tax. In September 2011 the government decided to gradually increase the retail price of NGV by THB 0.50 per kg each month for 12 months, starting in January 2012. Between January and April 2012, the oil fund subsidy was removed and the retail price of NGV increased from THB 8.50 per kg to THB 10.50 per kg. But prices were frozen at THB 10.50 per kg in May 2012, with the government cancelling the planned increases for the remainder of the year.⁶

⁶ Resolution of the 141st meeting of the National Energy Policy Committee (2/2555) on May 14, 2012

Between May 2010 and January 2012, the total subsidy allocated from the oil fund to NGV was THB 8.6 billion (Table 8). As of December 2012, the government still had outstanding compensation payable to PTT of THB 6 billion (PTT, 2013a). At present, no price compensation is provided to the NGV retailers. The retailers need to bear their own losses from having to sell the NGV at the price of THB 10.50 per kg.

Table 8 » Oil Fund Subsidy for NGV (THB billion)

	2010	2011	2012	Total
Subsidies	3.070	4.674	0.882	8.626

Source: Tabmanie, 2013.

In addition to a capped retail price, NGV also benefits from its exemption from excise and municipal taxes and a low rate of VAT (Table 9). The total subsidy therefore includes PTT's negative marketing margin and tax exemptions.

Table 9 » Price Structure of NGV, as of 2012

Price structure	THB per kilogram
Ex-refinery price, comprising:	13.95
Pool price (weighted average price of natural gas from the Thai Gulf, Myanmar and imported LNG)	
Supply margin	
Pipeline tariff	
Operating cost (capital expenditure operating expenditure of NGV service stations and equipment plus transport costs)	
Tax (excise tax and municipality tax)	0.00
Marketing margin	-4.01
Value Added Tax (VAT)	0.56
Retail Price of NGV	10.50

Source: V. Kiatfuengfu, (Petroleum Business Group), personal communication, 2012.

2.3.3.2 Tax Measures to Support Vehicles That Run on NGV

Several tax exemptions are available for vehicles and components that are capable of using NGV, including (Board of Investment, 2012):

- Reduced import duty for NGV refueling facilities to 1 per cent.
- Reduced import duty for NGV tanks from 17 per cent to 10 per cent.
- Reduced import duty on NGV control system parts and components from 35 per cent to 10 per cent.
- Reduced excise tax (from 30 per cent to 20 per cent) for passenger cars and minibuses with engines not over 3000 cubic centimeters.
- Reduced excise tax (from 30 per cent to 22 per cent) for NGV conversion kits—concluded in December 2011.
- Reduction of 50 per cent of the road tax for dedicated NGV vehicles and 25 per cent for bi-fuel or dual-fuel vehicles (PTT, n.d.).

2.3.3.3 Low-Interest Loans

The government also provided low interest loans of 0.5 per cent per annum for the conversion of passenger buses in the Bangkok area to NGV. The loans were provided from a revolving line of credit of US\$112 million (PTT, n.d.).

2.3.3.4 NGV Distribution and Retail Infrastructure

PTT has made significant investments in NGV retail infrastructure, with cumulative investment between 2003 and 2011 of over THB 25 billion. As of April 9, 2013, there were 471 NGV service stations, most of them owned by PTT (PTT, 2013b), supplying over 300,000 NGV vehicles. The NGV ex-refinery price includes a component for capital and operating expenses of NGV service stations. While expenses of establishing and running these service stations may be covered, NGV is sold at a loss. The investment in NGV infrastructure results in losses for PTT but confers a benefit to NGV consumers, and therefore can be considered a subsidy.

2.3.3.5 Conversion of Taxis from LPG to NGV

The government has encouraged taxi operators to switch from LPG to NGV. In 2011 the government announced that the Energy Ministry would provide natural gas cylinders and conversion equipment free-of-charge, and coordinate garages to carry out conversions, using the oil fund ("Thai incentives may double," 2011). Certified garages would be paid THB 5,000 per installation. The government intended to save some THB 474 million per month in oil fund subsidies to LPG by converting 30,000 taxis.

2.3.3.6 Discounted NGV Through the Energy Credit Card Scheme

To lessen the impact of the fuel price increase for licensed NGV public vehicles and drivers, the Thai Ministry of Energy introduced an NGV energy credit card, implemented through PTT. During Phase 1, launched in December 2011, eligible recipients were issued a purchasing card and a credit card (Thai Government, 2012). The purchasing card entitled the owner to a discount of THB 0.50 to THB 2 per kilograms of NGV (depending on the time of purchase). The monthly purchase of discounted NGV is capped at THB 9,000 per month. The energy credit card provides an interest-free line of credit of THB 3,000 per month to purchase NGV. At the end of each month, the cardholders can deposit money into their accounts or pay through Krung Thai Bank counters.

As a result of the first phase of implementation, there were at approximately 23,000 holders of NGV energy credit cards, and the cumulative spending balance through the scheme was over THB 38 million (Thai Ministry of Energy, 2012b).

Phase 2, launched in August 2012, entitles cardholders to a discount of THB 2 per kilogram of NGV with the credit period extended from 30 days to 45 days. Cardholders can also pay through more channels, such as 7-Eleven stores. In addition, the energy credit card was extended to drivers of motorcycle taxis with a credit line of THB 3,000 per month. To improve convenience, Phase 2 also introduced an all-in-one card, through which cardholders are entitled to receive a discount on their purchase and use it as a credit card. As administrators of the scheme, PTT is assumed to absorb the costs along with other losses associated with supplying NGV, but this has not been confirmed by this study.

2.3.3.7 Government Plans to Reform Subsidies for NGV

Thai Energy Minister Arak Cholthanont is reported as saying in August 2012 that the price of NGV will be held at THB 10.50 per kilogram until a study is completed on the price structure of NGV and impacts on consumers ("NGV prices," 2012). The Energy Research Institute at Chulalongkorn University is conducting the study, which is expected to assist the government set an NGV price that reflects the cost of supply (Thongrung, 2012).

2.3.4 Diesel

The main types of diesel used in Thailand are high-speed diesel with 0.05 per cent sulphur content (HSD 0.035%S) and low speed diesel (LSD). Biodiesel blending of 2 per cent to 5 per cent has been mandatory for diesel sold in Thailand as of May 2011 (USDA, 2011).

Two successive Thai national governments have capped the retail price of HSD diesel in the Bangkok metropolitan region below THB 30 per litre. The policy first emerged in December 2010 when the public and industry expressed concerns after the diesel price rose above THB 30 per litre ("Bus operators mull fare hike," 2010). The administration of Prime Minister Abhisit Vejjajiva initially applied a subsidy from the oil fund to reduce diesel prices.

The oil fund became depleted and in April 2011 a decision was taken to temporarily reduce the diesel excise tax from THB 5.30 per litre to THB 0.005 per litre. The VAT of THB 0.40 was also removed, leading to a total tax exemption of THB 5.70 per litre. Since that time, the excise tax exemption has been repeatedly extended and an oil fund levy or subsidy has been applied to maintain the price close to THB 30 per litre.

The cost of the excise tax exemption was over THB 100 billion in foregone revenue in 2012 alone (Table 10). A policy to reduce excise tax reduces the price paid by consumers and hence is classified as a subsidy.

Table 10 » Foregone Revenue Due to Reduction in Excise Tax (THB billion)

	2005	2006	2008	2009	2011	2012
Diesel	10.74	4.77	10.99	2.74	74.97	108.23

Source: Excise Tax Department, 2013.

A tax reduction is distorting if taxes remain unchanged (or are higher) on other fuels. Diesel benefits from multiple tax and levy reductions compared with gasoline, which distorts the market in favour of diesel despite having a similar ex-refinery price (Table 11). The policy also creates a major hole in the government's budget compared with a scenario where the policy is not implemented.

Capping the price at THB 30 per litre has also reduced margins for fuel retailers. PTT reported in late 2012 that the diesel marketing margin for that year will likely settle at an average of THB 1 per litre, lower than the THB 1.50 retailers expect to gain. PTT said that retailers were losing a total of around THB 30 million per day and that the marketing margin for gasoline (THB 3.2 for 95R and THB 2.5 for 91R on 27 February 2013) was not sufficient to compensate for this loss, given the relatively low amounts of gasoline sold compared with diesel (“Oil dealers,” 2012).

Table 11 » Price Structure of Gasoline and Diesel Showing Differences in Tax Rates, as of February 27, 2013 (THB per litre)

Unit: THB/litre	Gasoline (ULG 91R)	Diesel (HSD 0.035%S)	Tax reductions for diesel compared with gasoline
Ex-refinery price	25.20	25.49	
Excise tax	7.00	0.01	7.00
Municipality tax	0.70	0.00	0.70
Oil fund levy	7.70	0.30	7.40
Conservation fund levy	0.25	0.25	0.00
VAT on wholesale price	2.86	1.82	1.04
VAT on retail price	0.18	0.14	0.04
Retail	46.45	29.99	
(Total tax reductions for diesel compared with gasoline)			16.175

Source: Energy Policy and Planning Office, 2013e and author's calculations.

While the Government of Thailand provides some tax breaks for diesel, other countries in the region provide even larger subsidies (Table 12). In late 2010, the price of diesel in Malaysia was US\$ 0.59 per litre, only US\$0.08 higher than the price of crude oil on the world market. Table 12 provides a comparison of retail diesel prices in November 2010 when the crude oil price was US\$ 81 per barrel or US\$ 0.51 per litre.

The consequence of this price difference is rampant smuggling involving large fishing vessels bringing fuel illegally from Malaysia (“Excise Dept to stem,” 2010). PTT responded by launching a Green Fuel project to provide green-dyed, tax-free diesel to fishing boats. Fishing boats using the green fuel were required to be fitted with a tracking device to monitor their location.

Between May 2012 and February 2013, the Customs Department had arrested nine ships smuggling diesel from Malaysia, seizing over 460,000 litres of diesel worth THB 12 million. The Customs Department has also arrested 700 smugglers and confiscated 500,000 litres of diesel in the first ten months of this fiscal year (“Excise Dept: Green Oil project suppresses diesel smuggling,” 2010).

Table 12 » Retail Price of Diesel in 2010

Country	Price (US\$/litre)
Malaysia	59
Vietnam	77
Myanmar	80
United States*	84
Thailand	95
Laos	97
Cambodia	98
Singapore	104

* Notes: The fuel prices in the United States are average cost-covering retail prices including industry margins, taxes and levies. This fuel price may be considered as the international benchmark for a minimum non-subsidized fuel price (noting that the U.S. market is large, competitive and efficient).

Source: Deutsche Gesellschaft Für Internationale Zusammenarbeit [GIZ], 2012.

2.3.4.1 Government Plans to Reform Subsidies for Diesel

In April 2011, the cabinet approved a lowering of the excise tax for diesel from THB 5.31 to THB 0.005 per litre effective from April 21 to September 30, 2011. This excise cut has since been repeatedly extended and is in effect today—no plans have been announced to end its extension.

2.3.5 Biofuels

The government encourages consumption of ethanol and biodiesel as a means of diversifying the fuel supply and promoting domestically produced energy products. Excise tax reductions apply to both biodiesel and ethanol blends (Table 13).

Table 13 » Foregone Revenue Due to Reduction in Excise Tax for Biofuels (THB million)

	2008	2009	2011	2012
Gasohol (E10)	4,738	1,402	–	–
Gasohol (E20)	62.34	21.28	–	–
Biodiesel	4,223	834	49.09	0.87
Total	9,024	2,257	49.09	0.87

Note: Data for 2010 not available

Source: Excise Tax Department, 2013.

A blend of 10 per cent ethanol with either octane 91 (commonly called gasohol) or 95 gasoline (E10) has been available to Thai consumers since 2002. Blends of 20 per cent and 85 per cent ethanol (E20 and E85) were introduced in 2008. High-ethanol blends are primarily subsidized through the oil fund, with larger subsidies provided for the higher concentrations of ethanol. Tax reductions also apply.

Over the past five years, ethanol has required more subsidization rather than less. The total reduction in taxes and levies for gasohol 91 (ULG 91 with 10 per cent ethanol) was around THB 2 per litre in 2007 (Table 14). In 2013, the overall reduction rose to THB 8 per litre, implying a total tax and levy reduction of THB 80 per litre of ethanol consumed, or over three times the ex-refinery price of ULG 91R. The subsidy is even larger when the energy value of each fuel is taken into account given that ethanol has an energy content about 65 per cent that of gasoline.

Table 14 » Tax and Levy Reductions on Gasohol 91, 2007 to 2013 (THB per litre)

	Taxes	Levies	Tax or levy reductions on Gasohol 91R	Tax or levy reductions per litre of ethanol blended
February 2007				
ULG 91R	5.70	3.33		
Gasohol 91	5.20	1.56	2.27	22.70
February 2013				
ULG 91R	10.99	7.95		
Gasohol 91	9.67	1.25	8.02	80.18

Notes: Taxes are excise, municipality and VAT. Levies are for the oil fund and conservation fund.

Source: Author's calculations based on data from Energy Policy and Planning Office, 2013e, following similar calculations by Kojima, 2013.

A blend of 5 per cent biodiesel and diesel (B5) was available for voluntary consumption from 2005 to April 2011, with a price discount from the oil fund and tax reductions to encourage consumption. In February 2008 the government adopted a mandatory blending policy for B2 (2 per cent biodiesel blended with 98 per cent high-speed diesel) (USDA, 2010). Oil fund subsidies and tax breaks continued for B5 biodiesel, which resulted in retail prices lower than those for HSD with 2 per cent biodiesel.

The government adjusts the mandatory biodiesel-blending requirement depending on the supply and stocks of palm oil, which varies with the season and harvest yield. The concentration has generally varied from B2 to B3 since mandatory blending was first adopted. In June 2011, the government announced that the blending requirement would be lifted from B3 to B4 for three months during the peak of the harvest season (USDA, 2011). During 2012, mandatory biodiesel blending was between 3 and 5 per cent (PTT, 2013a).

In May 2011, all price and tax subsidies were removed for B5, leading to its withdrawal from the market (USDA, 2011). Biodiesel is now subsidized solely through the mandatory blending policy. Fuel producers must buy biodiesel to meet the mandated biodiesel content even if the price significantly higher than diesel. This provides a significant subsidy to biodiesel producers, who are guaranteed a market regardless of price.

The Thai Ministry of Energy determines the biodiesel reference price based on the cost of biodiesel production from palm oil products. The reference price has been consistently higher than the ex-refinery price for high speed diesel since compulsory blending first began. On February 28, 2013, for example, the biodiesel reference price was THB 28, while the HSD ex-refinery price was THB 25 (Energy Policy and Planning Office, 2013e). A much wider gap existed in April 2011, when B5 was removed from the market, and mandatory blending of biodiesel with HSD 0.035% was the only form of biodiesel subsidy. At that time, the biodiesel reference price was around THB 38 per litre, and the ex-refinery price for diesel was around THB 27 per litre.

2.3.6 Electricity

Thailand provides free electricity to poor consumers. A temporary electricity tariff reduction for the poor has been in place since 2008 but became permanent in July 2011, when the Energy Regulatory Commission (ERC) decided to provide free electricity to residential consumers using less than 90 kilowatt hours (kWh) per month (Pusayanawin, 2012a). In 2011, 8.8 million electricity users benefited from the scheme. Eligibility for the scheme was reduced in 2012 to those consuming less than 50 kWh per month (Ruangrong, 2012). Subsidies for this scheme are estimated in Table 15. Note that these estimates assume that all customers consume the maximum allowable units per month.

Table 15 » Estimated Cost of Thailand's Policy to Provide Free Electricity to Small Consumers

	Residential rate (THB per kWh)	Units per month (kWh)	Number of recipients	Subsidy per person (THB)	Total subsidy (THB)	Subsidy per year (THB million)
2011	3.4286	90	8,789,544	309	2,712	32,547
2012	3.4286	50	3,670,000	171	629	7,550

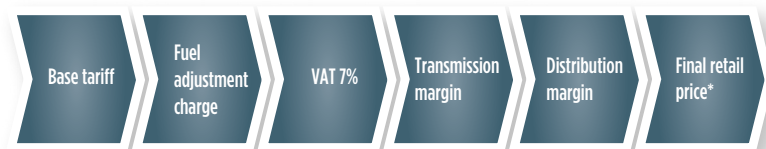
Note: Calculations assume that all customers consume the maximum allowable units per month.

Source: Calculations by authors based on data from Pusayanawin, 2012a and Ruangrong, 2012.

In addition, a lower tariff rate is levied on households using fewer than 150 kWh a month (THB 2.7628, compared to THB 3.7362 for those consuming 151–400 kWh and THB 3.9361 for those consuming more than 400 kWh). The scheme has wide scope to reach the poor given near-universal access to electricity in Thailand. The subsidy is administered by EGAT, which transfers the cost to electricity consumers in the industrial sector (Electricity Generating Authority of Thailand, 2012).

The tariff for other users is primarily comprised of the base tariff and the fuel adjustment charge (Figure 8). The base tariff includes the infrastructure and investment costs for utilities in developing power plants, transmission lines, distribution lines and foreseeable energy costs with certain assumptions pertaining to fuel prices, inflation rates and exchange rates. It is reviewed every three to five years. The fuel tariff is adjusted every four months to reflect changes in the costs of fuel and purchased power that are outside of the utilities' control. The fuel tariff also includes a component for cross-subsidizing renewable electricity generation.

Figure 8 » Price Structure of Foundation Electricity Tariff in Thailand



* Retail prices vary depending on consumer segment.

Source: Adapted from Ruangrong, 2012.

Adjustment of the fuel tariff is not automatically aligned with changes in fuel and purchased electricity prices. EGAT applies to the Energy Regulatory Commission (ERC) for a change in the fuel tariff that reflects its costs. The ERC then uses its discretion to grant an increase or decrease, taking into account EGAT's costs as well as other economic factors. The ERC estimated in March 2012 that EGAT would need to absorb THB 9 billion in costs for 2012 due to the fuel tariff being lower than the actual costs of fuel and purchased electricity (Ruangrong, 2012). This may actually underestimate the amount absorbed by EGAT in 2012, as a press report in September indicated that EGAT would have to absorb THB 10.5 billion for the September to December period alone, in addition to the THB 14 billion carried over from the previous four-month period (Pusayanawin, 2012a). Tariffs as of December 2012 are provided in Table 16.

Table 16 » Electricity Tariffs in the September to December 2012 Period

Consumer Category	Previous tariff* (THB per kWh)	New fuel tariff (THB per kWh)	New tariff* 2.3.6.1.1 (THB per kWh)	Increase (%)
Residential	3.3799	0.4800	3.8599	4.89
Small General Services	3.7269	0.4800	4.2069	4.47
Medium General Services	3.3272	0.4800	3.8072	4.96
Large General Services	2.9833	0.4800	3.4633	5.48
Specific Business	3.0501	0.4800	3.5301	5.37
Non-profit Organization	3.1747	0.4800	3.6547	5.18
Agricultural Pumping	2.7935	0.4800	3.2735	5.82
Temporary Power Customer	6.2902	0.4800	6.7702	2.73
Average	3.2387	0.4800	3.7187	5.09

* Average tariffs provided for each sector

Source: Ruangrong, 2012.

Power generators may also benefit from purchasing inputs such as natural gas and lignite at below-market prices. However, this is difficult to assess because prices of fuel purchased by generators are not readily available in the public domain. EGAT owns and operates the Mae Moh lignite mine, one of Thailand's largest lignite mines, which provides coal to its dedicated power station located at the mine site (Electricity Generating Authority of Thailand, n.d.). Pricing information is difficult to access when vertical integration exists.

A comprehensive assessment of Thailand's subsidies to electricity consumers was beyond the scope of this study. The International Energy Agency estimated Thailand's electricity subsidies at US\$5.67 billion (THB 173 billion) in 2011 (International Energy Agency, 2012).

2.3.6.2 Government Plans to Reform Electricity Subsidies

The ERC plans to gradually increase the fuel tariff by THB 0.655 per kWh in each four-month period until December 2013 in order to remove the burden on EGAT and ensure that the electricity tariff reflects the cost of supply (Ruangrong, 2012). The increase, if implemented as planned, will gradually remove the subsidy burden on EGAT due to under-recoveries of fuel and purchased electricity costs. However, subsidies may re-emerge if the fuel charge is not automatically passed through to consumers in the future.

3

ARE ENERGY SUBSIDIES GOOD FOR THAI CITIZENS?



3. Are Energy Subsidies Good for Thai citizens?

Whether or not energy subsidies are good for Thai people requires weighing a host of costs and benefits. In the following pages, we look at how energy subsidies benefit different economic classes, impact economic growth and affect environmental sustainability over the short and long terms.

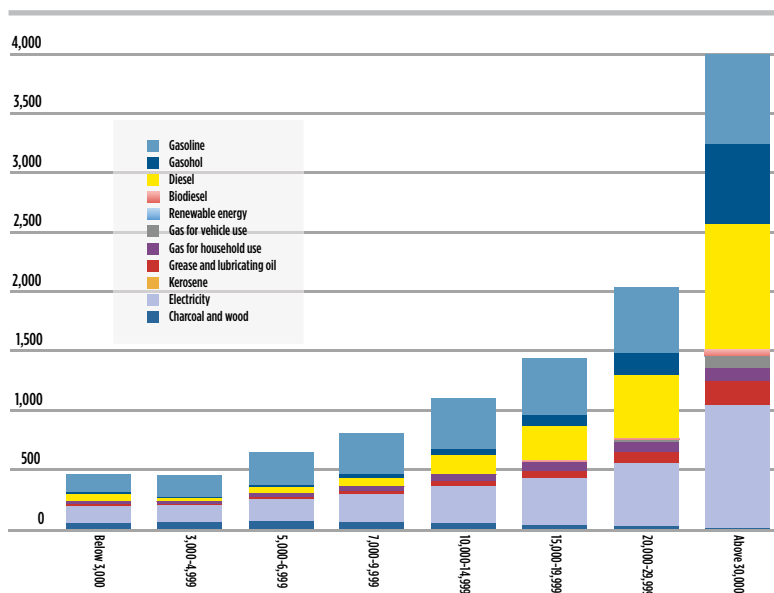
3.1 Who Benefits from Energy Subsidies?

In Thailand, subsidies to diesel, LPG and NGV are “universal,” in the sense that no attempt has been made to target the subsidy at poor or vulnerable groups. As a result, the benefits flow disproportionately to those who consume more fuel, and who tend to be higher income earners. This is certainly true in Thailand. Figure 9 shows the level of average monthly household energy expenditure across the income groups. Upper income groups are the largest users for all subsidized fuels included in the household survey: diesel, gas for vehicles, gas for household use, biodiesel and electricity.

The IEA found that Thailand’s subsidies to LPG and diesel benefited the poor the least, with only 5 per cent to 6 per cent going to the lowest income group (the poorest 20 per cent). Approximately 9 per cent to 10 per cent of electricity and natural gas subsidies reached the lowest income group (International Energy Agency, 2012).



Figure 9 » Average Monthly Household Energy Expenditure Across Income Groups, 2009 (THB per month)



Source: National Statistics Office, n.d.

While the poor may only be receiving a small share of fuel and electricity subsidies, the price reductions are likely to be important in ensuring that energy remains affordable to them. Many Thais consider fuel subsidies to be a valuable welfare mechanism. They also provide a way for ordinary Thais to benefit from the country's production of domestic energy resources such as crude oil, natural gas and lignite.

Raising the cost of different fuels will affect the economy in different ways. Cheap diesel primarily provides benefits by reducing the costs of personal transport and of energy-consuming economic sectors like agriculture and fisheries. Even where people do not own vehicles, it still provides indirect benefits by reducing the cost of public transport like buses. Cheap diesel can also provide indirect benefits by reducing the cost of goods that require transportation, such as food. Controlled prices for NGV and automotive LPG decrease costs for minibuses, taxis and tuk-tuks (three-wheeled motorcycle taxis). This creates economic opportunities by enabling more travel and sustaining jobs for drivers.

The majority of benefits, however, are likely to accrue to the better off, who can afford to purchase these fuels at quantity. Subsidized fuel may also “leak” to be used for unintended purposes (in the case of cooking LPG, being used illegally in the automotive or industrial sectors). Indeed, some benefits are not even enjoyed by Thais: LPG is smuggled across Thailand’s borders and sold for a profit in neighbouring countries.

Electricity subsidies are more targeted than fuel subsidies. The greatest price support is provided to people who consume the least electricity—the poorest consumers. This form of subsidization works well in Thailand given high rates of access to electricity, including in rural areas. The cost of the subsidy is placed on industrial consumers of electricity, which increases their costs and reduces their competitiveness.

The net benefits of energy subsidies must also take into account the opportunity costs of subsidization: money spent on making energy cheap cannot be spent on other priorities. This is a far more complex consideration, but one consumer’s gain comes at a loss to others. Additionally, low energy prices cause inefficient economic allocation, reducing the size of the economy.

3.2 What About Economic Development?

Subsidies are often established to promote economic activity by increasing production and consumption. Consumers, for example, may benefit from gaining access to goods or services that would otherwise be out of reach. Businesses benefit from subsidies that reduce the costs of their productive activities.



But there are also costs to using energy subsidies to promote economic activity. At a macroeconomic level, energy subsidies impose a fiscal strain on the government (in the case of LPG subsidies and foregone revenue for diesel excise) and financial strains on publicly owned companies such as PTT and EGAT (in the case of NGV and electricity subsidies).

Lower prices due to subsidies contribute to increased consumer demand, depleting the country's energy resources and increasing the reliance on imports. The LPG subsidy illustrates this point well. When Thailand began subsidizing LPG, the country was self-sufficient in LPG. When prices for petroleum products surged from 2004 onwards, the LPG ex-refinery price remained at US\$333 per tonne. The relatively cheap price of LPG led to a sustained surge in LPG demand. Demand outstripped supply and imports were needed. This exacerbated the subsidy cost for the government given that international market prices needed to be paid for LPG to be sold at a loss domestically.

Energy subsidies also undermine private and public investment in the energy sector. Private retailers are unlikely to invest in NGV refuelling stations, for example, when prices are regulated at below-cost rates. The limited number of NGV service stations is restricting the expansion of NGV in Thailand ("CNG development plan being reviewed," 2012).

3.3 What About the Environment?

The impact of energy subsidies on the environment is complex, and results from the impacts that subsidies have on energy choices and consumption levels.

There are instances where energy subsidies could create environmental benefits. Poor households in some regions still rely on firewood for fuel. Subsidizing LPG permits greater access of LPG by poor households, which helps curb deforestation and potentially offsets the emissions from fuel combustion (United Nations Environmental Programme [UNEP], 2008; International Energy Agency [IEA], Organization of the Petroleum Exporting Countries [OPEC], Organisation for Economic Co-operation and Development [OECD], & World Bank, 2010). LPG burns more cleanly than wood and can therefore reduce serious respiratory illnesses associated with the burning of biomass, particularly indoors.

Burning natural gas produces less atmospheric pollutants than other fossil fuels. Therefore, subsidies given to natural gas will decrease air pollution, particularly in the case of electricity generation when the alternative is lignite. Tax theory indicates that it is more efficient to tax dirty fuels than to subsidize clean fuels. But in terms of environmental effects, the price difference between natural gas and its alternatives (such as coal and diesel) determines which fuel will be chosen. Ideally, pricing of fuels should reflect externalities such as air pollution.

Oil product subsidies incentivize the consumption of fuel and, in doing so, increase fossil-fuel-related greenhouse gas emissions and local air pollution. The IEA estimates that phasing out consumption subsidies for fossil fuels between 2011 and 2020 would cut global carbon dioxide (CO₂) emissions by 5.8 per cent compared with a business-as-usual scenario (IEA, 2010). The OECD estimates that emissions reductions could be as high as 10 per cent by 2050 if the same subsidies for fossil fuel consumption are removed by 2020 (IEA, OPEC, OECD & the World Bank, 2010).

More than 80 per cent of electricity generated in Thailand in 2011 was from fossil fuels. Any wasteful consumption of electricity thus puts undue pressure on fossil fuel supplies and increases emissions. The provision of subsidized electricity for agricultural pumping may lead to the overuse of water, which has been demonstrated to be the case in India (Global Subsidies Initiative, 2012a).



4

**WHAT COULD
BE EXPECTED
FROM ENERGY
SUBSIDY REFORM
IN THAILAND?**



4. What Could Be Expected From Energy Subsidy Reform in Thailand?

The impact of subsidy reform will vary depending on its nature. Sudden price changes tend to have the greatest impact on vulnerable consumer groups. Price hikes will also translate into higher input costs for businesses, affecting their profits and sales. Due to the indirect impact on other goods and services, energy subsidy reform will affect the inflation rate.

In a review of 20 countries in Africa, Asia, the Middle East and Latin America, researchers estimated that an increase of US\$0.25 per litre in fuel prices would decrease real household incomes by about 5.9 per cent (Arze del Granado, Coady, & Gillingham, 2010). However, owing to differences in economic status, changes in fuel prices are likely to affect the poor and the rich differently. Any changes in prices would have a greater impact on the budgets of the poor. It is therefore critical that any step towards reforming subsidies be coupled with adequate measures to mitigate the impacts on poor households.

Reform will also result in a revenue boost for government that can be used to reduce the negative impacts of reforms on consumers and businesses, redirecting savings to social welfare programs and other economic activities. There are strong arguments to be made that reform would result in positive economic outcomes, particularly by removing distortions in the energy market. The forces of supply and demand determine the most efficient allocation of resources. When governments intervene to reduce prices, energy is more likely to be used wastefully and there may be underinvestment in energy infrastructure due to poor returns.

If fiscal savings are used for the benefit of consumers and businesses, net social impacts should be positive, by achieving better socioeconomic outcomes than the subsidy regime. Such interventions must be well designed and administered, however, to avoid the mis-targeting of benefits or the loss of funds to corruption.

Figure 10 »
Expected Key Outcomes
and Impacts of the
Removal of Fuel and
Electricity Subsidies in
Thailand

HIGHER ENERGY PRICES	<ul style="list-style-type: none"> • Increase costs for households, business and industry • Inflationary impacts • Encourage energy efficiency • Encourage greater private sector investment in energy sector
DECREASE CONSUMPTION	<ul style="list-style-type: none"> • Decrease congestion, energy imports and exhaustion of domestic resources • Improve energy security
CHANGE AIR POLLUTION	<ul style="list-style-type: none"> • Decrease pollution if users reduce consumption • Increase pollution if users switch to dirtier fuels
INCREASE GOVERNMENT REVENUE	<ul style="list-style-type: none"> • Fund programs that directly assist the underprivileged • Finance projects that reduce costs for transport and stimulate economy e.g., transport infrastructure
STOP WASTAGE	<ul style="list-style-type: none"> • Remove subsidies to the largest consumers of energy—the wealthy • Remove opportunities and incentives for illegal use and smuggling of subsidized fuel
BOOST OIL FUND	<ul style="list-style-type: none"> • Remove large debt • Allow oil fund to smooth price peaks rather than subsidize

5

**WHAT CAN
INTERNATIONAL
EXPERIENCE TELL US
ABOUT ENERGY
SUBSIDY REFORM?**



5. What Can International Experience Tell Us About Energy Subsidy Reform?

A review of 65 developing countries found that most of these countries control and subsidize fuel prices, although the extent of subsidization varied widely (Kojima, 2013).⁷ This does not mean that the majority of governments consider fuel subsidies to be good policy. On the contrary, nearly all governments recognize that universal subsidies for energy are regressive and inefficient (Kojima 2013). This is apparent by observing repeated attempts by governments around the world to raise prices and to reduce or remove controls.

National efforts to reform subsidies in recent years have had mixed results. Volatile and record-high oil prices have made reforms more urgent but also more difficult. Fuel subsidies soared each time international oil prices peaked during 2004 to 2012. In many cases, subsidies became unsustainable and governments were forced to attempt some level of reform. At the same time, high energy prices created pressure to maintain subsidies in order to control inflation and improve energy affordability for the poor and competitiveness of fuel-intensive industries.

A common pattern has been for countries to begin subsidy reforms but freeze or reverse price increases when international prices rose substantially. Countries that deregulated the fuels market years ago, like Thailand, have continued to intervene in pricing. Countries that linked domestic with international prices later froze prices for months or years at a time, leading to huge subsidy burdens.

In observing country experiences with the reform of fuel subsidies, it becomes apparent that there are no perfect case studies or model approaches. Even if “best practice” examples were available, they could not be applied to other countries. Each country’s circumstances are unique, and there is no one-size-fits-all strategy for fossil-fuel subsidy reform. However, there are a set of planning stages that are generic, along with many common issues, challenges and potential solutions.

⁷ We recommend the reader consult the paper by Kojima (2013) for a thorough analysis of recent developments in pricing policies in 65 developing countries and further case study information. The paper includes an appendix with information for each country on oil export status in 2010, current refining status, pricing and tax policy and strategy, and fuel supply conditions. Country information is also available at https://energypedia.info/wiki/International_Fuel_Prices.



Governments have developed a great deal of good practice in preparing for fossil-fuel subsidy reform. The aim of this section is to summarize and share this experience.⁸ Countries appear to have the best chance for successful reform if they establish a comprehensive plan that:

- Gets the prices right: change pricing systems for fossil fuels.
- Manages impacts: estimate effects of reform and mitigate unwanted impacts.
- Builds support: internal organization and external consultation and communication.

5.1 Getting the Prices Right

Ad hoc pricing—where the government sets prices without reference to the cost of supply—is a common practice that leads to large subsidy bills. Increasing prices while maintaining an ad hoc system is not an effective means of eliminating subsidies. Subsidies can re-emerge when international prices rise.

Observing country experiences, it is apparent that the long-term elimination of subsidies requires:

1. Transition to market-based prices for fuels (deregulated prices); electricity and natural gas prices that reflect the costs of supply, including production, transmission and distribution and the maintenance and renewal of infrastructure; and
2. Creating and enforcing a competitive and efficient energy market.

An overnight change to market-based prices may be difficult to implement. An alternative would be to transition through one or more intermediate pricing policies intended to smooth price fluctuations. This helps households and businesses get used to price volatility. It also helps dissociate price changes from government decision making. Generally speaking, a formula-based automatic pricing mechanism seems to be a useful bridge towards market-based pricing. It allows for an immediate transition to full transparency and a controlled transition towards no subsidies and domestic prices that fully reflect international price fluctuations.

Ideally, a pricing mechanism should involve no subsidies, fully and automatically reflect international price fluctuations, be fully transparent and be well enforced.

⁸ This section has been drawn from the IISD–GSI publication *A Guidebook to Fossil-Fuel Subsidy Reform for Policy-Makers in Southeast Asia* (Global Subsidies Initiative, in press). The guidebook provides detailed analysis of the principles outlined in this section and further case studies.

Table 17 » Examples of International Experience With Pricing Mechanisms for Fuels

Indonesia	South Africa	Turkey	Chile
Ad hoc pricing Prices for premium gasoline (RON 88) and diesel for non-industrial consumers set on an ad hoc basis. Major price increases in 2005 and 2008 were not accompanied by a link to world prices and subsidies re-emerged as a significant issue as oil prices rose in 2010 and 2011.	Automatic price setting The government sets prices for all grades of petrol, diesel and illuminating paraffin once per month using a pricing mechanism that is applied automatically and independently, free from government intervention for political, economic or social reasons.	Liberalization An automated pricing mechanism was introduced in 1998 and allowed refineries to make a profit. In 2005, prices were fully liberalized across the sector and state refining and oil distribution companies were privatized. Distribution margins rose 60 per cent in the 20 months after liberalization.	Variable taxation to smooth prices The government manages price volatility of the deregulated system to final consumers by a variable tax (the SIPCO) paid by consumers. This remains revenue neutral over the medium term. The tax rate is calculated by comparing the two-week average to the five-month average.
Key messages If no link to world prices is made, subsidies will re-emerge when world prices rise.	Automated mechanism widely considered to have functioned well over the years.	Price liberalization is the best option to eliminate subsidies, but it requires oversight to be fully effective.	Variable taxation can be used to smooth prices. Averaging prices over a five-month period has been a sustainable methodology.
Sources (Global Subsidies Initiative, 2012b); (Husna, 2011)	(Department of Energy, n.d.); (Baig, Mati, Coady, & Ntamatungiro, 2007)	(Oguz, 2006); (Baig, Mati, Coady, & Ntamatungiro, 2007)	(OECD, 2011)

Policies that can reduce prices without using subsidies are those that focus on the creation of competitive markets with a level playing field. Other avenues for reducing energy costs might include: improved efficiency of distribution channels; incentivizing the exploration and exploitation of new, non-exportable energy sources; reducing wasteful energy consumption; the installation of efficient and competitive energy-producing capacity within national borders; and better enforcement of anti-collusion rules.

5.2 Managing Impacts

The first step in managing the effects of higher prices is to estimate the likely impacts. This allows unwanted consequences to be identified and mitigation measures designed. It is important to estimate both direct and indirect impacts, as indirect impacts are often large. Indirect effects include the flow-on effects of higher energy prices such as on public transport prices and inflation.

Where governments have resources, time and good data, the Global Subsidies Initiative (GSI) recommends a comprehensive assessment, including a full macroeconomic analysis that estimates flow on effects throughout the economy. Where resources, time and data are limited, it is good practice to conduct a Poverty and Social Impact Assessment and review literature on past and projected reforms. Involving stakeholders in estimating impacts and choosing mitigation measures ensures that reform plans draw on their knowledge and respond to their concerns. It also raises awareness and creates stakeholder buy-in.

Mitigation measures fall into three broad categories: how reform is implemented, responses to impacts and efforts to counteract price rises (Figure 11). Some forms of assistance will need to be short-term only, phased out following an initial price shock. Others might provide a permanent alternative to subsidization and be ongoing.

Figure 11 » Types of Mitigation Measures for Fossil-Fuel Subsidy Reform


Organizing and effectively implementing compensation measures can be complicated. Key factors to effectiveness are: good targeting (identifying the groups and individuals for inclusion), strong oversight and good support from administrative bodies and local communities. Compensation measures can also be vulnerable to inefficiencies and corruption, so transparency and accountability mechanisms are essential.

Table 18 » Examples of International Experience with Mitigation Measures

Indonesia	Iran	Jordan
Cash transfers and social spending	Measures to control inflation	Cash transfers and social spending
Fuel price increases in 2005 and 2008 saw public compensation addressed through cash transfers (reaching 19 million households) and social programs (support for health, education and infrastructure). Industrial and agricultural sectors were supported through value-added tax exemptions and increased farmer prices for some agricultural commodities and removal of certain road and transport charges.	Iran increased its energy prices several-fold at the end of 2010. To control inflation, the government: appreciated the Rial; stockpiled consumer goods and distributed public staples; and timed reform for the low-inflation period (November–December). Despite these measures, inflation rose from around 12 per cent before the reforms to 18 per cent three months after the reforms. This was partly because the government delivered cash compensation to almost all Iranians and at levels that exceeded the savings from subsidy reform.	A compensation package worth 7 per cent of GDP was introduced from 2005 to 2008. Measures included: bonuses to low-income government employees; cash transfers to non-governmental employees and pensioners; increased food subsidies and the retention of electricity subsidies; projects to combat unemployment and poverty. Subsidy removal was preceded by an extensive media campaign.
Sources: (Beaton & Lontoh, 2010)	(Guillaume, Zyttek, & Farzin, 2011); (Hassanzadeh, 2012)	(Arze del Granado, Coady, & Gillingham, 2010); (World Bank, 2010)

5.3 Building Support

Building support is about creating the political space that makes reform possible. This requires effective internal consultation within the government, consultation with stakeholders and the public, and communication about the need for change and the reform plan.

Subsidy reform can have far-reaching impacts and therefore requires a “whole-of-government” approach. A wide range of government portfolios, authorities and jurisdictions will hold information relevant to reform and have a legitimate interest in the process. Involving these bodies from the outset will increase the strength of the reform strategy and ensure the government speaks with one voice, despite the possibility of divergent views internally. Internal coordination is a vital first step.

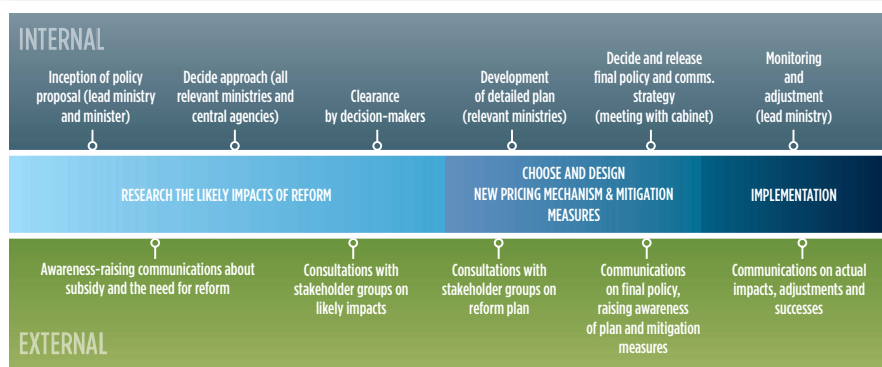
Good communicators listen before talking. Effective reform plans are founded on an understanding of how stakeholders perceive reform and the options for change. This can be achieved through consultation that engages with and responds to stakeholders directly, including public inquiries, road shows, discussion groups and workshops. Though resource-intensive, direct consultation helps build the legitimacy of reform plans and ensures they are grounded in current, relevant information. Tools such as survey research and web-based forums are also effective.

Where resources are low or political sensitivity is high, governments can gauge stakeholder views by reviewing existing literature on fuel and subsidy reform as well as local media reports that reflect stakeholder views and concerns. Interviews with energy experts and stakeholder representatives can yield a great deal of useful information with minimal investment of time and resources.

Measures to build support will be most effective if they are integrated throughout the reform process. This means that internal organization, consultation and communication are not something that happens at the “end” of planning (see Figure 12 below).



Figure 12 » Model Policy Cycle Showing Strategic Points for Internal and External Support Building



Source: Global Subsidies Initiative, in press.

Good communications focus on simple and varied messages, targeted at specific stakeholder groups. Messages can be framed in different ways: problems or opportunities? “Problems” focus on the negative impacts that subsidies have. “Opportunities” focus on the benefits of reform. Once mitigation measures have been designed, it should be possible to show clearly and convincingly that subsidy reform is in the interest of the majority and will not harm the poor and vulnerable.

Messages drawn from country case studies are summarized in Table 19 below. Communications can use media that best reach the desired audiences. This might include political announcements, radio, television, newspapers, leaflets, debates and websites. Some governments have used “no-subsidy” days and published subsidy costs at retailers and on energy bills. The key messages and media avenues of the Thai Ministry of Energy’s campaign regarding LPG subsidy reform are outlined below.

Table 19 » Problems and Opportunities: Communications Messages About the Reform of Energy Subsidies

Function	Raise awareness of subsidy problems	Neutralize opposition	Raise awareness of gains from reform	Raise awareness of reform plans
Example focus of messages	Costs, inefficiencies, comparison with other countries, impacts on the poor and the environment.	Identifying smuggling and corruption, countering misconceptions.	Savings, target aid to the poor, more social spending, better standard of living.	Explaining reforms and mitigation, showing relevance to stakeholder needs, noting successes.

Table 20 » Thailand's Ministry of Energy's Communication Plan Targeting Households and Street Vendors Regarding LPG Price Increases

Timing	Before Adjustment Jan–Mar 2013	After Adjustment Mar–Dec 2013
Objective	Create a better understanding about the need to adjust and raise LPG price. Inform and explain mitigation measures.	Create awareness about efficient use of LPG in order to decrease the growing consumption.
Avenue:	1. Interviews: Thai Ministry of Energy executives and experts 2. Seminars and public hearings 3. Traditional and new media: Leaflets Posters TV Print media Radio Online news	1. Interviews: Thai Ministry of Energy executives The outcome of LPG price adjustment 2. Traditional and new media: Leaflets TV Print media Radio Online news

Source: Tabmanie, 2013.

5.4 Conclusion

Despite significant reforms to deregulate parts of its fuels market, Thailand still had fuel and electricity subsidies totalling approximately THB 195 billion in 2012. This is likely to significantly underestimate subsidies, as it only includes publicly available subsidy estimates by the government or PTT and subsidies that could be readily estimated from available data.

Fuel and electricity subsidies are clearly benefiting some consumers, including the poor who rely on LPG for cooking and free electricity. However, evidence also shows that the wealthy are the greatest users of all types of subsidized fuels. Subsidizing fuel for the wealthy leads to overconsumption, congestion and a waste of government resources. In the case of diesel, subsidies increase air pollution. Subsidies to LPG and NGV are likely to reduce air pollution compared to a scenario where consumers switch to more polluting forms of energy. However, a more economically efficient approach would be to tax dirty fuels rather than subsidize clean fuels.

Thailand has limited oil and natural gas resources. Subsidized prices accelerate depletion and increase imports of fuel, putting strain on the budget of the government and energy companies. Foregone tax for diesel, NGV and gasohol represents lost revenue to government, as do losses for PTT as a majority publicly owned company. Lower revenue means less funding available for social programs, infrastructure spending and other worthy priorities for government expenditure. Such avenues can be more effective at helping the poor and stimulating the economy than energy subsidies.

The government of Thailand has clear intentions to reduce remaining subsidies for fuel by targeting subsidies to key recipients and by gradually raising prices for other consumers. The innovative fuel credit card schemes provide a positive step towards targeting subsidies while assisting the poor, but incentives for illegal use will remain as long as there is a price differential between subsidized users and non-subsidized users.

Reductions in taxes and levies on diesel are arguably the area most urgently in need of reform. They create a distortion in the fuels market and encourage over-consumption of a fuel that causes urban air pollution. The cost to the government budget of foregone revenue is over THB 100 billion per year.

As Thailand gradually increases prices for subsidized fuels such as LPG and NGV, putting in new pricing mechanisms linking domestic and international prices will ensure that subsidies do not re-emerge when international prices rise above capped local prices.

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The International Institute for Sustainable Development's Global Subsidies Initiative

The International Institute for Sustainable Development (IISD) launched the Global Subsidies Initiative (GSI) in December 2005 to put a spotlight on subsidies – transfers of public money to private interests – and how they undermine efforts to put the world economy on a path toward sustainable development.

Subsidies are powerful instruments. They can play a legitimate role in securing public goods that would otherwise remain beyond reach. But they can also be easily subverted. The interests of lobbyists and the electoral ambitions of officeholders can hijack public policy. Therefore, the GSI starts from the premise that full transparency and public accountability for the stated aims of public expenditure must be the cornerstones of any subsidy program.

But the case for scrutiny goes further. Even when subsidies are legitimate instruments of public policy, their efficacy – their fitness for purpose – must still be demonstrated. All too often, the unintended and unforeseen consequences of poorly designed subsidies overwhelm the benefits claimed for these programs. Meanwhile, the citizens who foot the bills remain in the dark.

When subsidies are the principal cause of the perpetuation of a fundamentally unfair trading system, and lie at the root of serious environmental degradation, the questions have to be asked: Is this how taxpayers want their money spent? And should they, through their taxes, support such counterproductive outcomes? Eliminating harmful subsidies would free up scarce funds to support more worthy causes. The GSI's challenge to those who advocate creating or maintaining particular subsidies is that they should be able to demonstrate that the subsidies are environmentally, socially and economically sustainable – and that they do not undermine the development chances of some of the poorest producers in the world.

To encourage this, the GSI, in cooperation with a growing international network of research and media partners, seeks to lay bare just what good or harm public subsidies are doing; to encourage public debate and awareness of the options that are available; and to help provide policy-makers with the tools they need to secure sustainable outcomes for our societies and our planet.

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The GSI is an initiative of the International Institute for Sustainable Development (IISD). Established in 1990, the IISD is a Canadian-based not-for-profit organization with a diverse team of more than 150 people located in more than 30 countries. The GSI is headquartered in Geneva, Switzerland and works with partners located around the world. Its principal funders have included the governments of Denmark, the Netherlands, New Zealand, Norway, Sweden and the United Kingdom. The William and Flora Hewlett Foundation have also contributed to funding GSI research and communications activities.

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