AfDB
Chief Economist Complex
March 2012

CONTENT

1 Context 1
2 Impact of Energy Subsidies on the Budget 2
3 Benefits of Energy Subsidies to the Poor 3
4 Conclusions and Recommendations 5

Reforming Energy Subsidies in Egypt

Vincent Castel[1]

1 Context

Energy subsidies in Egypt have existed for a long time and have been formally justified as a means of ensuring affordable energy services to lower income households. However, the sustainability of these subsidies has been questioned in the recent years due to the limitations on the domestic production of oil and gas, the sharp jump in the cost of energy supply, and the government's expanding budget deficit. Due to these concerns, the Government launched an energy subsidy reform program in 2004. The program encompassed a sharp increase in the price of gasoline and diesel oil, and a gradual increase in the price of electricity at the rate of 5% per annum that took effect from 2005 to 2008[2]. Also in 2008 the Government increased substantially the price of natural gas and electricity to energy intensive industries. The subsidy reform program had been prepared with the objective of reaching full cost recovery by 2014[3]. However, the program was suspended in 2009 due to concerns relating to the global economic downturn. The program needs to be reexamined before implementation by the new government. The reexamination would need to based on a comprehensive review of the past pricing reforms and design of a new reform agenda most suitable to the present political and economic circumstances.

The purpose of this brief is to provide a high level review of the impact of energy subsidies on Egypt's public budget. The brief is organized as follows: Section II examines the impact of subsidies on Egypt's budget; Section III reviews the benefits of subsidies to the poor; and Section IV provides recommendations for the preparation of the subsidy reform program.

Mthuli Ncube
Chief Economist
and Vice President
(ECON)
m.ncube@afdb.org
+216 7110 2062

Janvier Liste
Acting Vice President
(ORVP)
k.litse@afdb.org
+216 7110 2047

Jacob Kolster
Director
(ORNA)
j.kolster@afdb.org
+216 7110 2065

[1] The brief was produced by Vincent Castel (Principal Program Coordinator – Regional Department North I - ORNA) and received inputs and comments from Khaled El-Askari (Energy expert, ONEC-EGFO), Nadège Yameogo (Senior Research Economist, Research Department – EDRE) and Richard Schiere (Assistant to the Chief Economist, Economic Complex).

[2] Price of gasoline was increased in 2004 from LE 1 to LE 1.4 per liter and of diesel from LE 0.4 per liter to LE 0.6 per liter. Further increases in fuel prices took place until 2008 when price of fuel oil reached LE 1,000/tonne in 2008 compared with LE 180/tonne in 2004. Electricity tariffs were increased by 8 percent in 2004 followed by increases of 5 percent p.a. in subsequent years; the last adjustment was made in October 2008; there was no adjustment in 2009 in lieu of high inflation and the potential economic slowdown. Presently the average electricity tariff is about US cents 3.5/kWh compared with US 2.2 /kWh in 2004. Industrial consumers have been subject to sharper tariff adjustments and now pay up to cents 6.3/kWh for medium voltage. Price of natural gas was increased in 2007 for energy intensive industries from US$1.25/mmbtu to US$3/mmbtu.

[3] The original plan had been to phase out subsidies for electricity and gasoline by 2014, with only LPG continuing to receive substantial subsidy. The cost recovery benchmarks were based on the financial (rather than economic) costs and therefore would not have resulted in complete removal of subsidies.

2 Impact of Energy Subsidies on the Budget

Energy subsidies represent a substantial drain on Egypt's budget. Although energy subsidies are not reported clearly and accurately[4], the official statistics show that petroleum subsidies increased from 40 billion of Egyptian Pounds (LE) (equivalent to about US$ 7.2 billion) in 2005/2006 fiscal year (FY) to LE 68 billion (equivalent to US$ 11.9 billion) in the 2009/2010 FY. The above estimate of energy subsidies significantly understates the real economic cost of subsidies, since it records only financial subsidies. If energy subsidies are calculated on the basis of full economic cost[5] the resulting number will be as high as LE 140 billion – equivalent to 11.9 % of GDP.

As shown in Table 1, more than half of energy subsidies are attributable to petroleum products, while one-third is accounted for by electricity and about 15% by natural gas. Energy subsidies amount to about 73% of all subsidies and approximately 21% of the country's budget. In addition to the high budgetary cost associated with the energy subsidies, artificially low energy prices result in an excessive energy consumption that has resulted in Egypt's switch from oil exporting to an oil importing country while also limiting the country's ability to export natural gas. The switch has made the economic cost of energy more tangible. Indeed this tangibility and transparency of energy prices have brought to the forefront the need to reduce energy subsidies in many developing countries most of which have launched aggressive energy subsidy reform programs between 2005 and 2010 in response to the sharp increase in the international oil prices (World Bank 2010b). Finally, it is important to note that subsidized energy prices distort technological choices within and outside the energy sector, impose negative effects on the local and global environment due to over-consumption of energy products, and jeopardize the ongoing efforts to liberalize the energy sector and to attract private sector investment. However, adjustment of energy prices would need to be based on a well-designed schedule. The most important considerations in a schedule of price adjustment are: (i) the share of subsidy to each product; (ii) the risk of (distortive or inefficient) substitution among the fuels; and (iii) the social, political and practical challenges associated with the price increase of each energy product. The Government should also consider the option of introducing automatic price adjustment mechanisms for certain energy products in order to provide comfort for private sector to invest in the energy sector. Energy pricing strategy is indeed intertwined with wider government policies aimed at energy market liberalisation, restructuring and reform.

[4] Energy subsidies were not recorded in the budget until 2005. Since then the Government's budget reports subsidies given to the Egyptian General Petroleum Corporation (EGPC) that keeps prices of oil and gas below the price that the Government pays to the foreign partners involved in the production of oil and gas in Egypt. This is a partial measure since it does not cover electricity and since it is calculated on the basis of benchmarks which do not necessarily reflect the cost of energy supply.

[5] Economic cost of energy subsidies is measured by using the price-gap approach. It identifies the gap between the actual price charged and the reference price for each energy product. The reference price for oil products is the international price adjusted for transportation costs. The reference price for electricity is based on the full cost of supply. The reference price for natural gas is somewhat more complex because it is partially tradable but there is no generally applicable international price. In the case of Egypt the economic price of gas is calculated based on comparison of netback values of LNG and pipeline exports (Razavi 2009).

Table 1 Approximate Amount of Egypt's Energy Subsidies in FY 2009/2010

	Price (Average)	Financial Cost	Economic Cost	Subsidy (Financial)	Subsidy (Economic)
Electricity	LE/MWh	LE/MWh	LE/MWh	LE million	LE million
Industry	140-250	430-450	530-560	6,300	10,640
Agriculture	130-150	435-460	555-590	935	1,760
Commercial	240-300	435-460	555-590	720	1,450
Residential	157	480-520	575-625	10,350	16,650
Government	150-250	435-460	555-590	735	1,550
Other	100-350	440-520	530-625	2,880	4,800
Total				21,920	36,850
Natural Gas	LE/CM	LE/CM	LE/CM	LE million	LE million
Power	0.25	0.45	0.55-0.85	5,860	13,360
Industry	0.3-0.60	0.45	0.60-0.90	1,150	2,820
Residential	0.25	0.50	0.65-0.95	754	1,315
Other	0.25-0.5	0.50	0.65-0.95	2,250	4,880
Total				10,014	22,375
Petroleum	LE/ton	LE/ton	LE/ton	LE million	LE million
LPG	225	1,840	4,350	9,650	19,750
Gasoline	1,750	2,430	5,280	5,625	16,680
Kerosene	1320	2,430	5,280	830	1,530
Gas Oil	1320	2,210	4,920	12,870	26,775
Fuel Oil	995	1,975	2,980	6,750	16,380
Total				35,725	81,115
Memo items					

Fiscal year	2003	2004	2005	2006	2007	2008	2009	2010
GDP (LE billion)	417	485	536	618	730	847	1008	1181
Budget (LE billion)	127	145	161	207	212	241	340	319
Subsidies (LE billion)	21	25	30	69	52	64	133	93
Energy subsidies in 2010 (financial) = 21% of budget = 73% of total subsidies Energy subsidies in 2010 (economic) =11.9% of GDP								

Source: ESMAP (2009); World Bank (2010a); World Bank (2010b); IMF (2011); Sherif and Elsobki (2010); Abouleinein et. al (2009), Khattab (2007); Razavi (2009).

3 Benefits of Energy Subsidies to the Poor

Energy subsidies are often intended to support the poor but in practice benefit the rich because the higher income part of the population consume more of the energy products that are (directly or indirectly) subsidized by the government. In Egypt the rationale for energy subsidies has always been to ensure affordable energy services to lower income households and to assist certain industries to compete internationally and to attract foreign direct investment. The latter aspect has been considered unnecessary in the recent years as the Government has increased the price of energy products to energy intensive industries. Thus the main purpose of subsidies is to help the lower income part of the population but in practice the benefits are enjoyed mostly by the relatively well-off portion of the population. The analysis of Egypt's household surveys[6] indicate that the top 40% of the population enjoy about 60% of the energy subsidies while the bottom 40% receive about 25% of these subsidies. These differences are more drastic in the urban sector where the top 40% of the population receive about 75% of energy subsidy benefits, and more than 90% of gasoline subsidies (ESMAP 2009).

The skewed distribution of the benefits of providing energy subsidies is not a surprise. The international evidence demonstrates that untargeted subsides favor the higher income households since the rich, by definition, account for a relatively high proportion of total income and consumption. In Egypt, like many other developing countries, the low income households do not own vehicles, air conditioning units, large living spaces, etc., and therefore do not consume as much of the energy as the higher income households. The only exception seems to be kerosene and LPG which (according to the household surveys) are consumed more by the poor and near-poor particularly in the rural areas.

Although the existing untargeted energy subsidies benefit the rich disproportionately, removal of these subsidies will have significant adverse impact on the poor. Thus, the subsidy reform agenda should encompass, among other considerations, a well designed social protection component. The simulations of energy subsidy removal in Egypt (Abouleinein et al. 2009; and ESMAP 2009) show that the elimination of energy subsidies, without any offsetting policy actions, would reduce the GDP growth rate and the household welfare at all levels of income distribution. Although the welfare loss is imposed on the entire population the poor and near-poor are most vulnerable because energy expenses account for a larger portion of their income. The simulation exercises also indicate that if a compensatory system is used to transfer part of the savings from subsidy removal to the poorest two quintiles of the income distribution, the welfare of these households could increase above what it would have been in the presence of energy subsidies, generating an improvement in the measure of income distribution. Thus, there is a general agreement that the reform of Egypt's energy subsidies (if properly implemented) would benefit the poor while also helping efficiency of resource allocation within the economy and also within the public budget.

The design of a social protection component that would accompany the energy subsidy reform has been studied extensively internationally and specifically for Egypt. It is agreed that a portion of the savings from energy subsidies should be transferred to the poor but questions remain about the amount, the mechanism, and the period of transfer. Although there is no scientific basis for deriving answers to these questions there is substantial international experience from various developing countries that provide guidance for Egypt. The question about the amount of transfer relates to the broader issue of how the government should allocate the savings from the removal of energy subsidies. Usually a major portion of these savings has to be used to reduce the government budget deficit. But still one-third to one-half of the savings is often used to compensate the vulnerable parts of the population (and sometimes vulnerable industries). The same range has been debated in the case of Egypt.

[6] Household expenditure surveys are used to examine the pattern of expenditure on different forms of energy by household income level. The findings provide evidence on where energy subsides are likely to benefit the poor most and where they tend to provide most benefit to the rich.
[7] It is estimated (ESMAP 2009) that the lowest quintile includes households that are below the poverty line, whereas the households in the second quintile are only just above the poverty line and are thus susceptible to falling into poverty as a result of energy (and other) price increases.

The compensatory mechanism usually consists of unconditional cash transfer, conditional cash transfer, efficiency improvement, support for social (health, education, etc.) projects, and establishment of broader social safety nets. While in some countries the governments have tried to address all these needs through an all encompassing social protection program, the most tangible result is often associated with direct (unconditional) cash transfer to the targeted households. This is particularly helpful when the government needs to demonstrate tangibility and transparency. In the case of Egypt, the bottom 40% to 50% of the population is considered as appropriate target for compensation[7]. The minimum level of compensation is normally determined so that the targeted households are not worse off than they were before the removal of energy subsidies. Application of this principle would result in compensation amounts that would vary according to the income category (and perhaps geographic and other characteristics.) In practice, however, the policymakers often have to choose a simple fixed per-household (or per person) amount of compensation in order to make manageable the administration process.

In regard to the period of compensation the international experience has varied from very short (one or several cash transfers) to permanent compensation (a fixed amount which would decline overtime in real terms due to inflation). However, the prevalent view is that compensation should be transitory to help the vulnerable groups to deal with the direct and indirect effects of energy subsidy removal during the implementation of the subsidy reform program.

4 Conclusions and Recommendations

Energy subsidies are known to: (a) result in inefficient use of energy resources and distortion in related technologies; (b) impose a heavy burden on the government budget and jeopardize fiscal sustainability; and (c) benefit the rich who consume the major share of the subsidized energy. Therefore the interest in subsidy reform relates to efficiency, equity and fiscal impacts of such a reform which at the same time poses a formidable challenge due to political, economic and social considerations.

Energy subsidy reform is timely for Egypt because the country is no longer the plentiful oil and gas producer while also facing an unsustainable fiscal deficit. Egypt has made a rather aggressive attempt in the past to reform energy subsidies. However, it needs to revisit the design of the program in light of the present economic and political realities. This would need to be based on a comprehensive analysis and consultation. The subsidy reform program should be formulated with the following considerations:

Energy Price Adjustment Path. The removal of energy subsidies would require a careful selection of energy products, the benchmarking of the magnitude of price increase and the speed of price adjustment. Although the inflationary, growth and equity impacts should be examined in detail, Egypt should focus on the energy products that impose the heaviest economic cost and consumed mostly by higher income households with the intention of implementing a program that would adjust the corresponding prices in a period of about five years. International experience indicates that reform programs that span beyond such a length usually lose their focus somewhere in the process.

Further research is needed to adjust subsidies. Since the goal is to redirect subsidies towards lower income households, it is important that the government undertake research to get a better idea of the consumption behavior of households according to their income. In this regard, such research would allow for example to know which energy products are inferior goods (demand decreases when household income increases), those which are luxury goods (demand increases as income rises) and those which are necessary goods (demand increases less than proportionately than income). With this information, the government could decide for example to selectively phase out certain subsidies such as those which benefits more to luxury goods while maintaining those for inferior goods. For necessary goods, subsidies should be targeted so as to ensure that they benefit the poor.

Allocation of Savings from Subsidy Removal. The international experience indicates that the savings from subsidy reform is often wasted if they are not explicitly and effectively managed. Normally these savings are allocated to two distinct purposes. First, part of the savings could be used to compensate the poor (and the near poor) for the direct and indirect impacts of energy price hikes. Second, the remainder of these savings would go to finance the budget deficit and to increase expenditure on high priority projects/activities. Within a five-year implementation plan the subsidy reform program in Egypt is likely to

yield approximately LE 10 to LE 15 billion/year of savings. The government would need to provide an explicit and transparent account of how it plans to use this saving. The allocation process should take a systematic form which can be easily demonstrated to the public. In other words, the subsidy reduction process should be taken as an opportunity to promote a strategic approach to allocate government expenditures; and to improve pro-poor spending.

Protecting the Vulnerable Groups. The experience in other developing countries indicates that the government should launch a program of transitional relief for the lower (and perhaps) middle income population at the same time that it reduces energy subsidies. The Government of Egypt should probably allocate some 3o% to 40% of the savings from subsidy reform to the compensation of the vulnerable groups. This would yield an amount of LE 3 to 5 billion/year that could be sufficient to compensate the households in the two bottom quintiles for the removal of subsidies. It should be also noted that there is a significant risk that the targeted groups may not be selected correctly or the subsidy transfer may suffer from various forms of leakages. In order to minimize such risks the Government should use a systematic and transparent process to reach the lower income households. The normal practice is to identify the eligible households through proxy means testing (PMT)[8]. Egypt has had some experience with using PMT in connection with its broader safety-net system. The country also implemented a smart-card system which can facilitate the implementation of the subsidy reform compensation mechanism.

The Communication Strategy. The experience in other countries has shown that effective communication is a make-or-break aspect of any energy subsidy reform program. The government should design a well formulated communication strategy that would be launched in a calculated and systematic manner. The communication with public should start at least 6 months prior to the first price hike. At its initial stage it should concentrate on various well focused messages to explain the existing situation, e.g., the international price trends, the amount of subsidies, the distribution of subsidies, the deprived potential projects, etc. The next phase, still prior to the first price hike, should focus on how the government plans to protect the vulnerable groups, and how to use the savings from subsidy reduction to fund highest priority projects. Finally the communication process should continue through the implementation phase. Preparation of the communication initiative involves two major steps: (i) establishing a set of networks for communicating the relevant messages to the public; and (ii) a process of consultation that includes a sequence of events. The Government should establish a special purpose ministerial committee that collectively takes charge of various consequences of subsidy reform. It should also establish a network of media and civil society that would help in conveying sensitive messages. The consultation process should include the media and civil society networks as well as the parliament, local communities, etc.

[8] Cash transfers should be given to households or individuals with incomes below a pre-established threshold, where incomes are determined through tax forms, workplace and other administrative records. This is normally possible in industrialized nations but not in developing countries where income information is inadequate, and often underestimated due to a variety of factors. In such cases an alternative method should be used to identify the poor households. One such method is PMT which attempts to identify low income categories based on welfare characteristics such as living space, appliance ownership, etc which are normally extracted from Household Budget Surveys. The cash transfer (or other compensations) is then made to the households or individuals falling below a selected PMT threshold.

References

Abouleinein, Soheir, Heba El-Laithy and Hanaa Kheir-El-Din 2009. — The Impact of Phasing Out Subsidies of Petroleum Energy Products in Egypt.|| ECES – Egyptian Center for Economic Studies, Working Paper No. 145, Cairo, Egypt.

Energy Sector Management Assistance Program (ESMAP 2009), Arab Republic of Egypt: Energy Pricing Strategy, Washington, May 2009.

International Monetary Fund (IMF 2011), World Economic Outlook (WEO): Slowing Growth, Rising Risks, IMF, Washington DC, September 2011.

Khattab, Abdallah, The Impact of Reducing Energy Subsidies on Energy Intensive Industries in Egypt, The Egyptian Center for Economic Studies, May 2007.

Razavi, H. (2009). Natural Gas Pricing in the Countries of the Middle East and North Africa. The Energy Journal, Volume 30, No. 3.

Sherif, Y. and M.S. Elsobki (2010), Competitiveness of Egypt's Energy Sector, Prepared for Egyptian National Competitiveness Council, Cairo, April 2010.

World Bank (2010a), Implementing Energy Subsidy Reforms: Evidence from Case Studies, Washington, September 2010.

World Bank (2010b), Subsidies in the Energy Sector: Measurement, Impact and Design, Background Paper for World Bank Group Energy Strategy, April 2010.

© AfDB 2012 - Design, ERCU/YAL