CHAPTER 4

# Reforming Energy Subsidies: Lessons from Experience

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## OVERVIEW

This chapter provides insights from country case studies to identify ingredients for successful subsidy reform. The country case studies include both successful and unsuccessful subsidy reform episodes over the past two decades across a broad range of countries and different energy products. A total of 22 country case studies were undertaken, covering 28 major reform episodes (Table 4.1). The 22 case studies are presented in detail in Chapters 5 through 9.

The case studies involve episodes in which governments attempted to reduce the fiscal burden of subsidies by raising energy prices to households and firms or improving the efficiency of state-owned enterprises in the energy sector. They contain cases where governments attempted to reduce pretax subsidies but also where governments sought to restore energy taxation to levels that had prevailed prior to increases in international energy prices and to levels needed to eliminate posttax subsidies.[1]

The studies include cases where countries successfully implemented reforms that led to a permanent and sustained reduction of subsidies (success); those that achieved a reduction of subsidies for at least a year but where subsidies have re-emerged or remain a policy issue (partial success); and subsidy reforms that failed, with price increases or efforts to improve efficiency in the energy sector being rolled back soon after the reform began (unsuccessful). Out of the 28 reform episodes, 12 were classified as a success, 11 as a partial success—often because of reversals or incomplete implementation—and five as unsuccessful.

The selection of countries for study was designed to ensure coverage of different regions of the world and a mix of reform outcomes. The selection also reflects the availability of data and of previously documented evidence on country-specific reforms. The larger number of studies on fuel subsidies reflects the wider availability of data and past studies of these reforms. Out of the 22 case studies, 14 address

[1]For instance, as a result of subsidy reforms over the late 1980s and the 1990s, Turkey has eliminated subsidies on a posttax basis.

**TABLE 4.1**

Summary of Country Energy Subsidy Reform Episodes

| Region/ Country | Energy product | Reform episode | Reform outcome | Reform impact | IMF-supported program during the reform episode | Conditionality on energy subsidy reform |
|---|---|---|---|---|---|---|
| **CEE-CIS** | | | | | | |
| Turkey | Fuel | 1998 | Successful | SOEs turned from net loss to net profitability | Yes | Yes |
| Armenia | Electricity | Mid-1990s | Successful | Electricity sector financial deficit declined from22 percent of GDP in 1994 to zero after 2004 | Yes | Yes |
| Turkey | Electricity | 1980s | Successful | Generated additional revenues for maintenance | Yes | Yes |
| Poland | Coal | 1990–1998 | Unsuccessful | n.a. | Yes | Yes |
| | Coal | 1998 | Successful | The industry became financially viable and achieved substantial reduction in government transfer | No | |
| **Emerging and Developing Asia** | | | | | | |
| Indonesia | Fuel | 1997 | Unsuccessful | n.a. | Yes | Yes |
| | Fuel | 2003 | Unsuccessful | n.a. | No | |
| | Fuel | 2005 | Partially successful | Subsidies declined from 3.5 percent of GDP in 2005 to 1.9 percent in 2006 | No | |
| | Fuel | 2008 | Partially successful | Subsidies declined from 2.8 percent of GDP in 2008 to 0.8 percent in 2009 | No | |
| Philippines | Fuel | 1996 | Successful | More than 0.1 percent of GDP | Yes | Yes |
| Philippines | Electricity | 2001 | Successful | Subsidies declined from 1.5 percent of GDP in 2004 to zero in 2006 | No | |
| **LAC** | | | | | | |
| Brazil | Fuel | Early 1990s–2001 | Successful | From 0.8 percent of GDP in subsidies in mid-1990s to revenue generating since 2002 | Yes | Yes |

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|---|---|---|---|---|---|---|
| Chile | Fuel | Early 1990s | Successful | n.a. | No | |
| Peru | Fuel | 2010 | Partially successful | 0.1 percent of GDP | No | |
| Brazil | Electricity | 1993–2003 | Successful | 0.7 percent of GDP | Yes | Yes |
| Mexico | Electricity | 1999/2001/2002 | Unsuccessful | n.a. | Yes | No |
| **MENA** | | | | | | |
| Iran | Fuel | 2010 | Partially successful | Growth in the consumption of petroleum products initially stabilized | No | |
| Mauritania | Fuel | 2008 | Unsuccessful | n.a. | Yes | No |
| | Fuel | 2011 | Partially successful | Subsidies declined from 2 percent of GDP in 2011 to close to zero in 2012 | Yes | Yes |
| Yemen | Fuel | 2005 | Partially successful | Subsidies declined from 8.7 percent of GDP in 2005 to 8.1 percent in 2006 | No | |
| | Fuel | 2010 | Partially successful | Subsidies declined from 8.2 percent of GDP in 2010 to 7.4 percent in 2011 | Yes | Yes |
| **Sub-Saharan Africa** | | | | | | |
| Ghana | Fuel | 2005 | Partially successful | 50 percent price increase on average | No | |
| Namibia | Fuel | 1997 | Partially successful | More than 0.1 percent of GDP | No | |
| Niger | Fuel | 2011 | Partially successful | 0.9 percent of GDP | No | |
| Nigeria | Fuel | 2011–12 | Partially successful | Subsidies declined from 4.7 percent of GDP in 2011 to 3.6 percent in 2012 | No | |
| South Africa | Fuel | 1950s | Successful | Successfully avoided subsidies and secured supply | No | |
| Kenya | Electricity | Mid-1990s | Successful | Subsidies declined from 1.5 percent of GDP in 2001 to zero in 2008 | Yes | Yes |
| Uganda | Electricity | 1999 | Successful | 2.1 percent of GDP | Yes | Yes |

Source: IMF staff.
Note: CEE-CIS = Central and Eastern Europe and Commonwealth of Independent States; LAC = Latin America and the Caribbean; MENA = Middle East and North Africa; n.a.= not applicable; SOEs = state-owned enterprises.

fuel subsidy reform, seven address electricity sector reform, and one addresses coal sector reform. The studies cover seven countries from sub-Saharan Africa, two countries in emerging and developing Asia, three countries in the Middle East and North Africa, four countries in Latin America and the Caribbean, and three countries in Central and Eastern Europe and the Commonwealth of Independent States (CIS). In 14 of the 28 episodes, an IMF-supported program was in place, and in all but two the program contained conditionality on energy subsidy reform.

The findings from the country studies identified in Table 4.1 are complemented with the insights from additional country studies conducted previously by the IMF and others, including Gupta and others (2000); Coady and others (2006); IMF (2008a); Coady and others (2010); Global Subsidies Initiative (2010); UNEP and IEA (2002); UNEP (2008); World Bank (2010b); Arze del Granado, Coady, and Gillingham (2012); and Vagliasindi (2013).[2] They also draw on lessons from technical assistance reports on energy subsidies undertaken by the Fiscal Affairs Department of the IMF.[3]

## BARRIERS TO REFORM

Country reform experiences suggest a number of barriers to successful subsidy reform. Although there is no single recipe for success, addressing these barriers, which vary from country to country, can increase the likelihood of reforms achieving their objectives and help avoid policy reversals.

### Lack of Information Regarding Subsidies

The full fiscal cost of energy subsidies—including both producer and consumer subsidies—is rarely reflected in the budget. This is especially the case for oil exporters, because the subsidies provided by low energy prices are often implicit, that is, not explicitly recorded in the budget.[4] Populations are also often unaware of how domestic energy prices compare with international market prices, the consequences of low energy prices for both the budget and economic efficiency, and the benefit distribution of energy subsidies. As a result, the public is unable to make a connection between subsidies, constraints on expanding high-priority public spending, and the adverse effects of subsidies on economic growth and poverty reduction. This is especially important for oil exporters, where subsidies are very large.

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[2]The case studies do not disentangle the effects of subsidy reform on macroeconomic variables, such as inflation and the real exchange rate. This would require isolating these effects over the period in which subsidy reforms were implemented, which on average was five years.

[3]Over the past five years, there were 19 technical assistance missions to member countries addressing the issue of energy subsidy reform. About one-third of these missions were to sub-Saharan Africa and another third were to the MENA region.

[4]Gupta and others (2004) estimate implicit subsidies in oil exporters at 3.5 percent of GDP, on average, in 1999.

Out of the 28 reform episodes, 17 indicate that lack of information was a barrier to reform, including fuel subsidy reforms in Ghana, Mexico, Nigeria, the Philippines, Uganda, and Yemen. Yemen's experience is instructive, in that the public accepted a large adjustment in fuel prices when it had been made aware of the need for reforms and of their benefits, but when reforms were introduced without an effective public information strategy, especially during political crises, popular protests forced at least a partial reversal of the adjustments.

Lack of adequate communication to the public was a barrier in electricity subsidy reforms in Mexico and Uganda. In Mexico, the failure of reform efforts in 1999 stemmed from a variety of challenges, but given the public's generally negative attitude toward privatization and its limited awareness of the problems in the electricity sector, the government's failure to roll out a comprehensive communications program was a major contributor.

Most countries that successfully reformed energy subsidies undertook an evaluation of the magnitude of energy subsidies prior to implementing subsidy reforms. Public discussions based on such studies were an important component of the information campaigns in fuel subsidy reforms in Ghana, Namibia, and the Philippines. The Philippines' success in fuel price reform in the 1990s benefited from an exceptionally well-designed communication strategy, which focused on consensus building. Initially, the political environment was not conducive to the proposed reform, which lacked support from the majority party in both legislative chambers, but the administration quickly launched a nationwide road show to inform the public of the problems of oil price subsidies. It also set up a coordination body between the executive and congress and used it to forge a political consensus.

## Lack of Confidence in the Government

Even where the public recognizes the magnitude and shortcomings of energy subsidies, it often has little confidence that the government will use savings from subsidy reform wisely. This is especially true in countries with a history of widespread corruption, lack of transparency in the conduct of public policy, and perceived inefficiencies in public spending. The middle class may fiercely resist the removal of these subsidies because they are viewed as one of the few concrete benefits they receive from the state. This is especially the case for oil exporters that have ample fiscal resources yet lack the administrative capacity to implement cash transfer programs.

Lack of credibility was seen as an important factor behind the less successful fuel subsidy reforms in Indonesia in 2003 and Nigeria in 2011. Indonesia's 2003 effort to automatically link movements in domestic fuel product prices to international prices failed in part because it was poorly communicated to a public that already distrusted its government. Protesters there believed that powerful interest groups would benefit, and the public was generally opposed on the grounds that political corruption and inefficiency would undermine reform. In addition, many of the announced compensation programs did not materialize. As a result, the government rolled back most of that year's reform.

## Concerns over Harmful Impact on the Poor

Although most of the benefits from energy subsidies are captured by higher-income groups, as noted earlier, energy price increases can still have a substantial adverse impact on the real incomes of the poor, both through higher energy costs of cooking, heating, lighting, and personal transport and through higher prices for other goods and services, including food. This is an important consideration for countries that do not have a well-functioning social safety net capable of effectively protecting the poor from the adverse impact of higher energy prices. In 20 reform episodes, subsidy reform was accompanied by specific measures to mitigate the impact of price increases on the poor. In seven episodes, price increases were initially concentrated on products that were less important for poor household budgets.

## Concerns over General Economic Impact

Other concerns include a potential adverse impact on inflation and on international competitiveness, as well as on the volatility of domestic energy prices. Increases in energy prices will have short-term effects on inflation, which may give rise to expectations of further increases in prices and wages unless appropriate macroeconomic policies are in place (Box 3.2). This may especially be a concern for countries that have difficulty in anchoring inflation expectations. Higher energy prices may also lead to concerns about the international competitiveness of energy-intensive sectors. In addition, countries are hesitant to liberalize energy prices in order to avoid high volatility in domestic prices arising from international price developments.

In Armenia, the impact of electricity price increases on inflation was mitigated by the implementation of macroeconomic stabilization measures. In Iran and Nigeria, fuel subsidy reform was accompanied by specific measures intended to mitigate the impact of price increases on energy-intensive sectors. In its reform beginning in 2011, the Nigerian government promised to use savings from the reduction in fuel subsidies to put in place programs to stimulate the economy, including through critical infrastructure projects in the power, roads, transportation, water, and downstream petroleum sectors.

## Opposition from Interest Groups

Opposition may arise from specific interest groups benefiting from the status quo. Politically vocal groups that benefit from subsidies can be powerful and well organized and can block reforms. For example, in some countries, the urban middle class and the industrial sector (which also benefits from subsidies) can be obstacles to reform. Conversely, those benefiting from reform are often dispersed and less organized. Reform strategies therefore need to address the concerns of the losers.

An important stumbling block to reform in many countries is often state-owned enterprises (SOEs) in the energy sector, which can resist efforts to strengthen governance and performance. In Mexico, the electricity sector is dominated by

the government-owned Comisión Federal de Electricidad, which even after deregulation of power generation in 1992 still accounts for three-quarters of total generation capacity and monopolizes transmission and distribution. Moreover, this dominance of the public sector is mandated by constitutional provisions.

Strong opposition from labor unions can also contribute to the failure of reforms. This was true in Mexico as well as in Poland. In Poland, initial mining sector reforms were unsuccessful because they did not provide adequate support for miners, the people most directly and negatively affected by the reforms, who had a strong lobby. Mitigating measures designed in cooperation with the unions and included in subsequent reform plans broke the resistance of the miners to the restructuring. The experience demonstrated that unions have an important role in the reform process. This is especially likely to be true for reforms affecting any industry that is both a dominant employer within the economy and one whose employees have very specialized skills of limited use outside the industry.

### Weak Macroeconomic Conditions

Public resistance to subsidy reform is lower when economic growth is relatively high and inflation is low—although subsidy reform cannot always be postponed and is often required as part of efforts to constrain inflation and stimulate growth. Rising household incomes can help households better afford the increases in energy prices entailed by subsidy reform. In Peru, the implementation of subsidy reforms in early 2010 during a period of stable prices and strong economic growth helped make the reform more politically palatable. In Turkey, reforms of the electricity sector coincided with a period of economic growth and improving standards of living, which assured the public that reforms were moving the country in the right direction.

High inflation is also an obstacle to reform. When inflation is high, frequent large changes in controlled prices are needed to avoid the emergence of fuel subsidies. In Brazil, high rates of inflation and currency depreciation during the 1990s made containing the fiscal costs of subsidies a difficult challenge. To avoid the emergence of subsidies in Brazil, frequent price increases were necessary. This succeeded for other fuels but failed in the case of diesel, whose price increases did not keep pace with exchange-rate depreciation, leading to an upward spike in diesel subsidies.

## DESIGNING A SUBSIDY REFORM STRATEGY

Many countries have incorporated specific measures into their subsidy reform strategies to overcome the above barriers. Our review of country reform experiences suggests that the following key elements can increase the likelihood of successful subsidy reform: (1) a comprehensive reform plan; (2) a far-reaching communications strategy, aided by improvements in transparency; (3) appropriately phased energy price increases, which can be sequenced differently across energy products; (4) improvement in the efficiency of SOEs to reduce producer

subsidies; (5) targeted mitigating measures to protect the poor; and (6) depoliticization of energy pricing to avoid the recurrence of subsidies. Each of these elements is discussed in turn below in more detail.

## The Reform Plan Should Be Comprehensive

Most of the successful reforms were well planned and based on a clear reform strategy. In Iran, the 2010 fuel subsidy reform incorporated clear objectives, compensating measures, and a timetable for reform, preceded by an extensive public relations campaign. The public information campaign emphasized that the main objective of the reform was to replace price subsidies with cash transfers to reduce incentives for excessive energy consumption and smuggling. Bank accounts were opened for most citizens prior to the reform, and compensating cash transfers were deposited into these accounts preceding the implementation of price increases.

In Namibia, the authorities undertook comprehensive planning, including broad consultation with civil society and a well-crafted plan that involved the introduction of a fuel price adjustment mechanism and a targeted subsidy for those living in remote areas. A clear medium-term reform strategy backed by careful planning was also a major factor behind the successful electricity price liberalization reforms in the Philippines and Turkey. By contrast, the lack of effective planning contributed to less successful outcomes in some countries (fuel subsidy reform in Indonesia in 1998 and only partial success in Nigeria in 2011). A good reform plan often requires extensive time to prepare, as it did in Iran.

A comprehensive reform plan requires (1) establishing clear long-term objectives, (2) assessing the likely impact of reforms, and (3) consulting with stakeholders.

### *Clear Long-Term Objectives*

Subsidy reforms are more likely to be successful and durable if they are embedded within a broader reform agenda. In particular, reforms should incorporate both a sustainable approach to energy pricing and a plan to improve the efficiency of energy consumption and supply.

In the Philippines and Turkey, full price liberalization and structural reform of the energy sector, for both fuel and electricity, were articulated as the ultimate goals of reform. This contributed to the eventual success of reform because the public and governments were able to focus on and adhere to long-term goals, without being distracted by setbacks at intermediate stages.

This comprehensive strategy is especially important for electricity reforms. There is a strong inverse correlation between the size of electricity subsidies and the quality of service, reflecting the dampening effect of subsidies on investment. Yet the public is often unwilling to pay higher prices in the absence of quality improvements. Reforms in this sector should not only seek to improve access and service quality but also tackle operational inefficiencies (such as high distribution losses and inadequate bill collection and metering). The need to accompany tariff

increases with service improvements can constrain the speed of reform, because improving services often requires up-front investment.

Electricity subsidy reforms in Armenia, Brazil, and Kenya were successful because they were part of a broader package intended to address supply problems. In Armenia, electricity tariff reforms were complemented by institutional reforms, paving the way for private-sector participation, which in turn brought gains in efficiency. Losses in the power supply system declined from 30 percent to 10 percent in 11 years' time.

### *Assessment of Likely Reform Impact*

Designing a comprehensive subsidy reform strategy requires information on the likely impact of reforms on various stakeholders and the identification of measures to mitigate adverse impacts. This involves assessing the fiscal and macroeconomic effects of subsidies and identifying the winners and losers from reform. In Ghana, in 2005, the government commissioned an independent poverty and social impact analysis to assess the winners and losers from fuel subsidies and subsidy removal. This was an important foundation for persuasively communicating the necessity for reform and for designing policies to reduce the impact of higher fuel prices on the poor. In Nigeria, by contrast, the National Assembly did not support the removal of the gasoline subsidy in 2011, claiming a lack of firm data underpinning the size and incidence of subsidies.

### *Consultation with Stakeholders*

Stakeholders should be invited to participate in the formulation of the subsidy reform strategy. This stakeholder approach has proven successful in a number of countries (Graham, 1998; Gupta and others, 2000). In Kenya, electricity tariff increases faced significant difficulties early in the reform process. These were overcome after intense negotiations with stakeholders, particularly with large consumers, and efforts to communicate the objectives and benefits of the reform.

In Namibia, the National Energy Council, chaired by the Minister of Mines and Energy, established a National Deregulation Task Force to examine fuel price deregulation through a consultative process. The task force recommended keeping targeted subsidies to remote areas, deregulating prices gradually, and enhancing transparency in the handling of government fuel tax revenues. Price smoothing, complemented by mitigating measures such as pump price subsidies for rural fuel stations, were key to the reform's eventual success over the following decade. Similarly, in Niger, the authorities established the Comité du Différé to discuss the best way to approach the fuel subsidy reforms and their subsequent consultation with all relevant stakeholders.

By contrast, in Indonesia, consultation with stakeholders had been inadequate in the run-up to the failed 2003 fuel subsidy reform. The widespread and sometimes violent opposition to that reform, as mentioned earlier, was partly motivated by the belief that the reform favored powerful interest groups. The partial success of Indonesia's 2005 reform, as well as the reduced intensity of protests against it,

has been credited by some to the government's decision to compensate poor households for the increase in their living costs by establishing welfare programs.

## Political and Public Support Require a Communications Strategy and Transparency

### *Key Messages*

A far-reaching communications campaign can help generate broad political and public support and should be undertaken throughout the reform process. A review of subsidy reform experiences found that the likelihood of success almost tripled with strong public support and proactive public communications (IMF, 2011b). The information campaign should explain the magnitude of energy subsidies and their implications for other parts of the budget. The benefits of removing subsidies, including on a posttax basis, should be underscored, in particular the scope for using part of the budgetary savings or additional revenues to finance high-priority spending on education, health, infrastructure, and social protection.

Information campaigns have underpinned the success of a number of countries, including fuel subsidy reforms in Ghana, Iran, Namibia, and the Philippines and electricity subsidy reforms in Armenia and Uganda.

In the Philippines, as discussed earlier, the public communication campaign began at an early stage and included a nationwide road show to inform the public of the problems of petroleum price subsidies. In Namibia, a white paper on energy policy formed the basis of an effective public communications campaign. In Uganda, the government effectively communicated the cost of the electricity subsidy and its incidence to the public. The Ugandan government argued that it lacked the resources to continue subsidizing electricity for the relatively rich elite. Because 88 percent of the population lacked any access to electricity, the limited protests in Kampala over rate increases gained little sympathy. A large portion of the media as well were persuaded by the government's facts and editorialized that raising the tariffs would be a pro-poor measure.

### *Transparency*

Ensuring transparency is a key component of a successful communications strategy. Useful information to be disseminated includes

1. the magnitude of subsidies and how they are funded, including in oil-exporting countries where subsidies are provided implicitly and not shown in the budget or recorded as tax expenditures. To the extent that subsidies are off budget, they could be reported as a memorandum item in budget documents. Data on subsidies should also cover producer subsidies, which may necessitate better reporting of the accounts of SOEs in the energy sector and reporting on SOEs in budget documents;
2. the distribution of subsidy benefits across income groups;
3. changes in subsidy spending over time; and
4. the potential environmental and health benefits from subsidy reform.

Prior to its successful subsidy reform, Niger started to record fuel subsidies explicitly in the budget. Making such information public allows for an independent assessment of the costs and benefits of subsidy policies. It is particularly important for determining whether subsidies are the most effective way to achieve desired outcomes, such as social protection for the poor. Subsidy expenditures should be compared with spending on priority areas and planned increases in these outlays as a consequence of the enlarged fiscal space from subsidy reform. Governments should also disclose as much information as possible about how prices are formulated and the factors behind planned price increases. Both Ghana and South Africa regularly publish such details for petroleum products on their government Web sites and in the national media.

## Price Increases Need to Be Appropriately Phased and Sequenced

Phasing in price increases and sequencing them differently across energy products may be desirable. The appropriate phasing in and sequencing of price increases will depend on a range of factors, including the magnitude of the price increases required to eliminate subsidies, the fiscal position, the political and social context in which reforms are being undertaken, and the time needed to develop an effective communications strategy and social safety nets. In the case studies, successful and partially successful subsidy reforms required, on average, about five years.

### *Pace and Timing of Price Increases*

Too sharp an increase in energy prices can generate intense opposition to reforms, as happened with fuel subsidy reforms in Mauritania in 2008 and Nigeria in 2012. A phased approach to reforms permits both households and enterprises time to adjust and permits the country time to build credibility by showing that subsidy savings are being put to good use. As noted earlier, it also helps reduce the impact of subsidy reform on inflation and creates room for governments to establish supporting social safety nets.

The case studies show that 17 out of the 23 reform episodes that were successful or partially successful involved a phased reduction of subsidies. In Namibia, subsidies were removed steadily according to a three-year reform plan. In Brazil, the government pursued a step-by-step approach to reforming petroleum subsidies during the 1990s in order to minimize opposition from key interest groups. Despite initial sharp increases in prices, gradual adjustment of fuel prices was a key design feature of the reforms introduced in Iran, where the plan was to eliminate petroleum subsidies over a five-year period. A gradual approach was also adopted by Kenya (electricity), where the authorities were able to progressively gain support for broader reform by delivering improved services.

The timing of energy price increases should also be considered carefully. For example, coordinating increases in electricity tariffs with the expansion of capacity, as in Uganda, could help win broad acceptance. Tariff increases that coincide

with price increases for other socially sensitive products, such as food and fuels, may meet strong resistance.

### *Sequencing of Reform*

Price increases can also be sequenced differently across energy products. For example, petroleum price increases can initially be larger for products that are consumed more by higher-income groups and by industry, such as gasoline and jet kerosene. As the safety net is strengthened, subsequent rounds of reform can include larger increases in prices for fuel products that are more important in the budgets of poor households, and part of the budgetary savings can be used to finance targeted transfers to poor households. For electricity, tariff increases can initially focus on large residential users and commercial users. Out of the 28 reform episodes, seven reforms sequenced price increases in this way.

In Brazil, for instance, petroleum product reforms started by liberalizing prices for products used primarily by industry, followed by a more extensive liberalization of gasoline prices and, finally, of diesel prices. Reforms in Peru initially focused on lifting the subsidy of high-octane gasoline, which is used by luxury cars, allowing international price changes to be fully passed on to domestic prices. A year later, in 2012, the subsidy of regular gasoline was also removed. Peru's reform has been successful in reducing the fiscal cost of the subsidy without provoking widespread opposition. At the same time, it never touched the most politically sensitive products, diesel and liquid petroleum gas (LPG), which also represent the largest share of subsidy spending.

### *Challenges Created by Gradual Reform*

First, a slower pace of reform reduces budgetary savings in the short term. There is thus a trade-off between the objectives of achieving budgetary savings and softening the impact of reforms on households. Second, sequencing of reforms can severely distort consumption patterns. For example, there is a limit to how low kerosene prices can be maintained without serious disruption of energy markets when other petroleum product prices are raised. These problems include the redirection of kerosene and LPG from households to the transport sector and cross-border smuggling. Turkey had to curtail LPG subsidies more rapidly than planned because of a sharp increase in LPG consumption as a result of the conversion of vehicles to LPG. Third, a gradual reform runs the risk that opposition may build up over time.

To address these concerns, gradual reforms must be accompanied by the government's long-term commitment to follow through on planned price increases, possibly over several successive administrations. This challenge can be overcome by building up a broad support base for reforms. For example, Turkey started toward a more liberalized regime for energy pricing, including fuel and electricity, in the late 1980s and early 1990s and continued implementing the plan under subsequent administrations. Effective planning and communication promoted broad consensus on the need for petroleum and electricity sector reforms in the Philippines and enabled the government to successfully implement its reform strategy gradually.

## The Efficiency of SOEs Needs to Be Improved

Improving the efficiency of SOEs can reduce the fiscal burden of the energy sector. Energy producers often receive substantial budgetary resources—in terms of both current and capital transfers—to compensate for inefficiencies in production and revenue collection. Improvements in efficiency can strengthen the financial position of these enterprises and reduce the need for such transfers. Country experiences suggest the importance of strengthening SOE governance, improving demand management and revenue collection, and better exploiting scale economies to improve enterprise efficiency.

### *Governance*

Governance of SOEs can be strengthened by improving the reporting of information on operations and costs. This can help identify system inefficiencies (e.g., overstaffing) and vulnerabilities (e.g., major loss points and bottlenecks in energy flows). Countries that have adopted information systems include Kenya, Uganda, and Zambia. Consistent with the Code of Good Practices on Fiscal Transparency, all extrabudgetary activity of the central government, including that undertaken by SOEs, should be reported in budget documents (see also IMF, 2012a).

A second step is to set performance targets and incentives on the basis of this information. In Cape Verde, the electricity company is allowed to keep resources from overperformance on its targets, which can then be used for investment. Introducing competition, including from the private sector, can strengthen performance. This option will be more viable for countries with larger markets, where there is scope to "unbundle" activities in both the petroleum and electricity sectors. Notwithstanding these limitations, the private sector's role in the electricity sector is growing in many emerging and low-income countries. Many of these countries have permitted competition among private generation companies, and some of them have invited the private sector to manage electricity distribution, primarily to address operational inefficiencies.

### *Demand Management*

Improved demand management (by charging higher prices during peak periods) has proven effective in shifting demand to periods where marginal costs of provision are lower (Antmann, 2009). Utilities in sub-Saharan Africa have had programs to provide free compact fluorescent bulbs, which have helped reduce demand and costs in Cape Verde, Ethiopia, Malawi, Uganda, and Rwanda. Revenue-enhancing measures include improved collection and metering. These efforts can start with large customers and then gradually extend to medium-size and smaller ones.

### *Regional Integration*

Efficiency can be improved by exploiting regional trade in electricity (Foster and Briceño-Garmendia, 2010). For instance, Mali and Burkina Faso have been able to expand domestic supply and household access through integration into the regional market.

## Well-Targeted Measures Are Needed to Mitigate Impact on the Poor

Well-targeted measures to mitigate the impact of energy price increases on the poor are critical for building public support for subsidy reforms. The first step in this regard is to assess the capacity to expand existing (or implement new) social programs in the short term. Implementing or expanding targeted programs immediately prior to price reforms can help demonstrate the government's commitment to protecting the poor. Untargeted cash transfers to compensate the population following a subsidy reform could be limited to the amount consumed by the poorest. This can generate fiscal savings, because poor households typically consume substantially lower quantities of energy than the rich.

Further fiscal savings would be generated by targeted cash transfers to compensate only lower-income groups. In some oil-exporting countries, where subsidies are often seen as a form of wealth sharing, uniform per capita transfers can be both more efficient and more equitable than untargeted energy subsidies. However, wealth sharing may be better achieved through targeted and productive public spending aimed at building physical and human capital. The degree to which compensation should be targeted is a strategic decision that involves tradeoffs between fiscal savings, capacity to target, and the need to achieve broad acceptance of the reform. Out of the 28 reform episodes, 18 relied on targeted mitigating measures, including expansion of public works, education, and health programs in poor areas.

### *Targeted Cash Transfers*

Targeted cash transfers or near-cash transfers (vouchers) are the preferred approach to compensation. Cash transfers give beneficiaries the flexibility to purchase the level and type of energy that best suits their needs and at a time and place of their choosing. They also remove the need for governments to be directly involved in the distribution of subsidized energy to households, which is often extremely costly and prone to abuse (Grosh and others, 2008). Targeted cash transfers were used to protect poor households in nine out of the 28 reform episodes.

Indonesia's unconditional cash transfer program, which covered 35 percent of the population, was an important component of its successful strategy in overcoming social and political opposition to fuel subsidy reforms. Its experience also suggests that such programs need good preparation and monitoring in order to effectively assist the poor.

In Armenia, the government accompanied its electricity subsidy reforms with a series of social safety net reforms. These included a targeted cash transfer program, the Poverty Family Benefit, which has helped beneficiaries maintain real consumption in the face of higher electricity bills. The benefit's design has also helped increase the collection rate and improved energy efficiency, because it is withdrawn from households that overconsume or do not pay their electricity bills. It initially covered 25 percent of households in the country, but coverage gradu-

ally declined to 18 percent (as of 2010) as eligibility criteria were tightened, a measure that allowed the average benefit payment to rise by 40 percent in real terms while maintaining the program's overall cost at around 1 percent of GDP.

In addition, two one-off cash transfers were made to low-income households in 1999–2000 to help them cope with higher electricity prices. Beneficiaries included eligible households under the Poverty Family Benefit program and other households considered to have difficulties paying their bills.

The recent expansion of conditional cash transfer programs throughout emerging and low-income economies, with eligibility for benefits linked to household investments in the education and health status of family members, has greatly increased the capacity of these economies to protect poor households from price and other shocks while simultaneously addressing the root causes of persistent poverty (Fiszbein and Schady, 2009; Garcia and Moore, 2012).

### *Other Programs*

When cash transfers are not feasible, other programs can be expanded while administrative capacity is developed. They should focus on existing programs that can be expanded quickly, possibly with some improvements in targeting effectiveness, such as school meals, public works, reductions in education and health user fees, subsidized mass urban transport, and subsidies for consumption of water and electricity below a specified threshold. This approach was used in 15 of the reform episodes, sometimes in conjunction with targeted cash transfers.

In the context of fuel subsidy reforms, targeted social spending programs were expanded to protect lower-income households from fuel price increases in Gabon, Ghana, Niger, Nigeria, and Mozambique. In Ghana, measures included the elimination of fees for state-run primary and secondary schools, a price ceiling on public-transport fares, increases in the minimum wage, purchases of additional public-transport buses, and funding for health care in poor areas. Ghana also increased its investment in electrification in rural areas. The Philippines maintained college scholarships for low-income students and subsidized loans to enable engines used in public transportation to be converted to less costly LPG; it also maintained electricity subsidies for indigent families (World Bank, 2008).

In the context of electricity reforms, lower electricity lifeline tariffs were kept fixed while increases were concentrated on higher-consuming households in Armenia, Brazil, Kenya, and Uganda. In Kenya, a lifeline tariff was established for households that consume less than 50 kWh per month, a threshold commonly used in Africa as a subsistence-level benchmark. The lifeline tariff is estimated to be affordable to 99 percent of Kenyan households. Kenya also subsidized connection costs in place of electricity price subsidies, which helped expand coverage to poor households and those in remote and rural areas. Its rural electrification program to date has more than tripled the number of rural connections, and it has assisted households with connections by creating a revolving fund for deferred-connection fee payments and commercial bank loans for connection fees.

### *Affordable Alternative Energy*

Providing an affordable alternative energy source can mitigate the impact of subsidy reform on low-income groups. A key objective of subsidies in many countries is to provide an affordable source of energy to low-income households. Subsidy reform can therefore often be more acceptable if it is accompanied by complementary measures that support this objective. Such measures were included in five reform episodes.

In Indonesia and Yemen, subsidy reform was facilitated by the government's efforts to help households convert from the use of kerosene for cooking to the use of low-cost LPG. In addition to being lower in cost, LPG produces lower levels pollution and $CO_2$ emissions. In Indonesia, LPG stoves and small LPG cylinders have been distributed free of charge.

### *Social Measures for SOEs Undergoing Restructuring*

Subsidy reform involving SOE restructuring requires temporary sector-specific social measures to support employees and enterprises. In the short term, SOE restructuring may involve laying off part of the workforce or require increased investment in energy-saving technologies. Policies that mitigate the impact on workers and promote restructuring can increase support for subsidy reform. In the case of coal sector reform in Poland, unemployed miners had access to social assistance and job training.

In the context of fuel subsidy reform, the Iranian government undertook extensive consultation with enterprises to understand the challenges they faced if energy prices increased substantially. This led to a program targeted to agriculture and energy-intensive sectors hard hit by price increases, which included direct assistance and access to subsidized fuel. Such measures should be temporary, with a clearly specified life span, and should be communicated to the public to demonstrate the government's commitment to reforms.

## Energy Pricing Should Be Depoliticized

Successful and durable reforms require a depoliticized mechanism for setting energy prices. Many countries have successfully implemented reforms only to see subsidies reappear when international oil prices increase. Out of 28 reform episodes, 11 were classified as partially successful because subsidies later reemerged. In Ghana, the 2005 reform eliminated fuel subsidies, but when oil prices soared in 2007 and 2008, the government abandoned its policy of linking domestic to international prices and automatic adjustment was temporarily suspended. In Indonesia, in spite of increasing international prices, subsidy reform reduced fuel subsidies from 3.5 percent of GDP in 2005 to 2 percent of GDP in 2006. However, unwillingness to fully pass through continued increases in international prices resulted in fuel subsidies escalating again to 2.8 percent of GDP in 2008.

### *Automatic Pricing Mechanisms*

Automatic pricing mechanisms can help reduce the chances of reform reversal. Establishing an automatic pricing formula for fuel products can help distance the government from energy pricing and make it clearer that domestic price changes reflect changes in international prices that are outside the control of the government. Reliance on a formula can reassure the public that price increases would not lead to windfall profits for suppliers. South Africa has successfully implemented an automatic pricing mechanism for fuel products for over five decades. The mechanism's primary purpose there was to encourage private sector participation in the energy sector and secure an adequate supply of petroleum products despite the impact of sanctions on fuel supply during the apartheid era. Providing prices at least equal to import parity proved to be critical in incentivizing international firms to invest and maintain their activities in South Africa even during the anti-apartheid embargo.

The Philippines and Turkey successfully implemented such a mechanism during their transition to liberalized fuel pricing. Turkey launched its automatic pricing mechanism in 1998, setting a ceiling on the prices of almost all oil products based on international petroleum prices and the exchange rate. Initially, refineries and importers could set their own prices within this formula, although distribution companies and retailers could not. A full liberalization of fuel prices came into effect in 2005. In all three countries—South Africa, the Philippines, and Turkey—detailed information on the pricing mechanism and its implementation was disseminated to the public on government Web sites and through other media.

The adoption of such a mechanism is not a panacea for achieving a sustained reform of energy subsidies. A number of countries have abandoned these mechanisms shortly after adopting them, partly because of an unwillingness to pass sharp international price increases through to consumers. Gabon suspended its mechanism in August 2002 as international oil prices started to increase. Ghana adopted an automatic mechanism in February 2001 but suspended it before the end of the year. It reintroduced the mechanism in January 2003, only to suspend it again in June 2003. More recently, newly adopted pricing mechanisms have been suspended in other sub-Saharan African countries, including The Gambia, Sierra Leone, and Togo. The sustainability of these mechanisms can be enhanced if they are packaged and communicated as part of broader structural reforms, including expansion of targeted social safety net and social spending programs. Using price smoothing rules can also help to avoid large price increases.

### *Importance of Independent Bodies*

Responsibility for implementing the automatic mechanism can be given to an independent body. Technical decisions on pricing can be delegated to an independent institution to ensure that subsidy reform proceeds as planned. The institution can also have the responsibility for implementing the automatic mechanism once subsidies are eliminated. A number of countries that successfully reformed subsidies for petroleum products (including South Africa and Turkey) and electricity

(including Armenia, Kenya, the Philippines, and Turkey) gave responsibility for reforming and regulating energy prices to an independent agency.

In Turkey, the long process of market privatization in the petroleum industry had begun in 1990, but the full liberalization of prices was not achieved until 2005. Regulation of the petroleum product market was achieved with the passage in 2003 of the Petroleum Market Law, which transferred regulatory authority from the government to the Energy Market Regulatory Authority, an independent agency that was already regulating the electricity and natural gas markets. In addition to helping institutionalize the market economy, the Petroleum Market Law put Turkey in compliance with European Union (EU) legislation and other international obligations.

### *Adoption of a Smoothing Rule*

A smoothing rule can be incorporated into the automatic pricing mechanism to avoid sharp increases in domestic prices (Coady and others, 2012). Countries often abandon automatic pricing mechanisms when international prices increase sharply. In China, for example, a key barrier to the adoption of an automatic pricing mechanism has been concern about the political and social consequences of fully passing through such sharp price increases. Some countries, including Chile, Colombia, Malawi, Nigeria, Peru, Thailand, and Vietnam, have used smoothing rules to address this problem.

Smoothing mechanisms can also help contain inflationary expectations if supported by appropriate macroeconomic policies. They can help dampen the effects of international price and exchange rate volatility. Several sub-Saharan countries, including The Gambia, Sierra Leone, and Togo, are considering the use of smoothing rules. With a smoothing mechanism, periods of sharp increases in international prices would only gradually be transmitted to domestic prices. For instance, energy price changes could be limited to a maximum of, say, 5 percent of the current consumer price in any given month.

To protect the budget over the medium term, smoothing must be applied both to price increases (when subsidies increase or taxes fall) and to price decreases (when subsidies decrease or taxes increase). How much smoothing the government chooses to implement will depend on its preference between lower price and higher fiscal volatility. Peru adopted a smoothing rule in 2004 whereby international price changes were fully passed through to domestic prices as long as the latter fell within a fixed price band. When prices fell outside this price band, the cost (if above) or benefit (if below) was absorbed by the budget. Since 2010, the band price limits have been updated to reflect trends in international prices, with adjustments limited to 5 percent. Although stabilization funds have also been used to smooth price increases, experience with such funds has been mixed, with funds exhausting their reserves during periods of sharp increases in international prices or incurring large contingent liabilities for the budget (Chile, Namibia, Peru, the Philippines, Thailand).

### *Role of the Government in a Liberalized Regime*

Over the longer term, subsidy reforms for petroleum products should aim to fully liberalize pricing. More liberalized regimes—where prices are determined by private sector suppliers and move freely with international prices—tend to be more robust to the reintroduction of subsidies than automatic pricing mechanisms (Baig and others, 2007). Under a liberalized regime, the role of the government is to ensure that fuel markets are competitive and that there is free entry and exit from the sector. A well-functioning social safety net should be in place before countries liberalize to ensure that low-income groups can be protected from future price increases and thus avoid public pressure to reintroduce subsidies. Successful implementation of an automatic pricing mechanism can facilitate the transition to a liberalized pricing regime by getting the public used to frequent changes in domestic energy prices. It can also build up private suppliers' confidence that the government will not return to subsidized pricing. This approach was used in the Philippines, which adopted an automatic pricing mechanism in 1996 as part of its transition to a liberalized supply and pricing regime in 1998.

### *Continuing Role for Price Regulation in the Power Sector in Small Countries*

In the electricity sector, the small size of the market in some countries limits the scope for competition and price liberalization. In many emerging and low-income economies, the electricity market is small. Under these circumstances, the market may not support many firms of a size sufficient to reap economies of scale and produce at the lowest possible cost. In such cases, price regulation will be needed, and competition alone will not be the best approach to reforming the sector (Besant-Jones, 2006). Prices should be determined by an autonomous agency and set at a level that is sufficient to avoid subsidies and ensure an adequate return to investment under efficient operations. Enhancing the progressivity of tariff structures by imposing higher tariff rates for larger consumers can also reduce subsidy expenditures while protecting the poor. For instance, there is scope to make tariff structures more progressive in many African countries. Greater emphasis could also be given to subsidizing connections rather than the consumption of electricity.