

THE GLOBAL SUBSIDIES INITIATIVE

UNTOLD BILLIONS:

FOSSIL-FUEL SUBSIDIES, THEIR IMPACTS
AND THE PATH TO REFORM

4

Strategies for Reforming Fossil-Fuel Subsidies: Practical lessons from Ghana, France and Senegal



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Strategies for Reforming Fossil-Fuel Subsidies: Practical lessons from Ghana, France and Senegal

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For the Global Subsidies Initiative (GSI) of the International Institute for Sustainable Development (IISD), Geneva, Switzerland.

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LIST OF ACRONYMS

APEC	Asia-Pacific Economic Cooperation
ASCM	WTO Agreement on Subsidies and Countervailing Measures
CCT	conditional cash transfer
CdF	Charbonnages de France
CFA franc	Central African franc
CO ₂	carbon dioxide
ECSC	European Coal and Steel Community
ESMAP	Energy Sector Management Assistance Program
G-20	Group of Twenty countries
GDP	gross domestic product
GHG	greenhouse gas
GSI	Global Subsidies Initiative
IEA	International Energy Agency
IISD	International Institute for Sustainable Development
IMF	International Monetary Fund
LDC	least-developed country
LPG	liquefied petroleum gas
NDC	National Democratic Congress
NPA	National Petroleum Authority
ODA	official development assistance
OECD	Organisation for Economic Co-operation and Development
PSIA	Poverty and Social Impact Analysis
SOFIREM	Société Financière pour favoriser l'Industrialisation des Régions Minières
SWOT	strengths, weaknesses, opportunities, threats
TOR	Tema Oil Refinery
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
WTO	World Trade Organization

EXECUTIVE SUMMARY

This report analyzes the experiences of countries that have undertaken reform of their fossil-fuel subsidies and establishes what lessons can be learned. It focuses in particular on France, Ghana and Senegal, as well as drawing from case studies of other countriesⁱ and previous work that examines the reform of energy subsidies and price subsidies.

The study finds that, once in place, fossil-fuel subsidies are extremely difficult to remove. There is no single formula for success, and country circumstances and changing global conditions must be taken into account. However, strategies can be identified that contribute to successful reform and respond to individual country circumstances. There are six important strategies that appear to improve the chances of lasting change:

1. **Research:** Early research to quantify the subsidy, assess how its costs and benefits are distributed and to estimate the likely effects of its removal (both direct and indirect) help in the drawing up of a comprehensive strategy for reform. In some cases, the findings may be perceived as having added legitimacy if the research is conducted by independent institutions or international organizations. This is also an opportunity to identify stakeholders and take into account their concerns about reform.
2. **Establishing reform objectives and parameters:** Fossil-fuel subsidies might be reformed for many reasons, including climate change mitigation, increasing energy efficiency or security, reducing expenditure or complying with international agreements such as WTO obligations. The clear articulation of objectives helps focus the reform strategy on the highest priorities for de-subsidization and facilitates the development of appropriate support policies.
3. **Building a coherent reform policy:** A coherent reform policy is ideally designed with support from a broad range of stakeholders. It establishes a timeframe for implementation, includes complementary policies that offset any undesired secondary impacts (such as welfare support for the poor, programs to help industries restructure or longer-term strategies to diversify the national energy supply), develops a communications strategy to assure stakeholders that their interests are being respected, and creates mechanisms to ensure transparency regarding subsidies and the reform process.
4. **Implementation:** Reform is not easy and may require several attempts. Implementation may sometimes be postponed, or successful reforms reversed, due to dramatic changes in world fuel prices.
5. **Monitoring, evaluation and adjustment:** The best policies are those that can be adapted in light of new information (Walker, Rahman and Cave, 2001). This requires a continual assessment of the underlying objectives of the policy as circumstances change. By maintaining a focus on desired outcomes, policies are more likely to be adapted in ways that support their original purpose.
6. **Going forward:** The major challenge following successful reform is preventing back-sliding. By making pricing decisions the function of an independent body and by automatically linking domestic and international prices, governments can reduce the pressure to become enmeshed in fuel-price issues in the future. However, any reform strategy will only be as robust as the political will to uphold it.

ⁱ This paper takes into account findings from four companion case studies developed under IISD's Trade and Climate Change initiative, which observe fossil-fuel subsidy reform in Brazil (de Oliveira, forthcoming), India (Shenoy, 2010), Indonesia (Lontoh et al., forthcoming) and Poland (Suwala, 2010).

1. INTRODUCTION

1.1 Background and purpose of paper

Many countries have attempted to reform their fossil-fuel subsidies, with varying degrees of success.¹ The motivations behind these reforms can include a desire to reduce fiscal expenditure, improve energy efficiency or to reduce air urban pollution and greenhouse gas (GHG) emissions.² However, if poorly planned and executed, the removal of subsidies can cause adverse economic, social or environmental repercussions as a result of higher energy prices.³ Governments that implement subsidy reform badly will pay a high political price. Successful subsidy reform requires the permanent removal of subsidies, while reducing the short-term impacts of de-subsidization.

Each country contemplating subsidy reform faces different challenges, depending on the nature of the subsidy to be reformed, its role in the economy and national circumstances. This paper analyzes the experiences of three countries that have undertaken reform of their fossil-fuel subsidies: Ghana, France and Senegal. These countries do not necessarily provide examples of best-practice—indeed, reform is still incomplete in both Ghana and Senegal—but useful lessons can be drawn from their experiences nonetheless. The paper also draws from case studies of other countries⁴ and previous work examining lessons learned from reform of energy subsidies (UNEP, 2003) and price subsidies (Gupta et al., 2000). The paper finds that, despite important differences, there are elements of each reform strategy that are consistent across different types of subsidies, fuels and countries. Policy measures can also be identified that appear to be effective in responding to individual country circumstances.

Practical lessons from previous reform efforts are particularly relevant given a renewed international interest in phasing out fossil-fuel subsidies. In September 2009 the leaders of the Group of Twenty (G-20) countries committed to phase out inefficient fossil-fuel subsidies over the medium term to improve energy efficiency and security, boost investment in clean energy sources and address climate change. This commitment was echoed by the leaders of Asia-Pacific Economic Cooperation (APEC) in November 2009, which added 11 new countries to the group committing to the phase-out. Implementation of these commitments will require countries to develop effective reform strategies.

Of course, a less structured path to reform is always possible. Some governments simply “seize the day” when an opportunity to reform arises, such as when falling prices present an opportunity to remove assistance. However, such reforms are unlikely to result in permanent change unless policies are put in place to prevent backsliding as decision-makers come under political pressure for renewed subsidization. High oil prices in 2007 and 2008 saw many countries that had deregulated their petroleum markets, such as Ghana, reverse these policies (Kojima, 2009). Lasting reform requires ongoing political commitment as well as effective policies.

¹ A subsidy is defined here as any government policy that lowers end-user prices or transfers cash to producers, reduces their cost of operations, bears risk or increases their returns. Fossil fuels refer to peat, coal (including lignite, sub-bituminous coal, bituminous coal and anthracite), petroleum and natural gas (International Energy Agency, n.d.). Consumer subsidies for fossil fuels typically stimulate fuel consumption by industry or the public. Producer subsidies promote domestic exploration, extraction or refining. See Section 3.1 for further discussion.

² A full analysis of the impacts of fossil-fuel subsidies may be found in Ellis (2010) and of their political economy in Victor (2009). These papers are part of the GSI series “*Untold billions: fossil-fuel subsidies, their impacts and the path to reform*” that can be accessed at <http://www.globalsubsidies.org>.

³ Removing fossil-fuel subsidies can cause environmental problems when the price of relatively low-emission fuels, such as natural gas or liquefied petroleum gas, rise sufficiently to cause consumers to switch to cheaper but relatively high-emission fuels, such as coal or biomass. Increased use of biomass can also contribute to deforestation.

⁴ This paper has four companion case studies developed under IISD’s Trade and Climate Change initiative. The studies observe fossil-fuel subsidy reform in Brazil (de Oliveira, forthcoming), India (Shenoy, 2010), Indonesia (Lontoh et al., forthcoming) and Poland (Suwala, 2010). Lessons learned from these country studies have been taken into account and incorporated in the discussion section of this paper where relevant.

1.2 Outline of the paper

The first section of the paper contains three country studies outlining the lessons learned from the reform of consumer or producer subsidies for fossil fuels. The first case study describes the repeated attempts by the Ghanaian government to reform the country's consumer subsidies to gasoline. The most recent concerted effort at reform took place in 2005, providing time to assess many of its outcomes.

The second case outlines the reform of the French coal sector, which started in the 1960s and officially ended in 2004 with the closing of the last mine. Taking over 40 years and involving billions of euros in structural-adjustment funding, the reform strategy is not an example that could be followed by many other countries. However, some principles employed in the strategy—such as the gradual approach to reform and the measures to reduce impacts on employment and energy supply—provide helpful insights regarding the removal of a producer subsidy.

The third case study describes Senegal's repeated efforts to reduce its subsidy for liquefied petroleum gas (LPG). Initially introduced to encourage a transition from environmentally damaging charcoal to cleaner LPG, the government has found it difficult to remove the subsidy without political backlash and without disadvantaging the poor.

A flow chart maps the observed strategies employed to assist the phase-out of subsidies. These are explained in the subsequent sections.

2. CASE STUDIES

2.1 Ghana: if at first you don't deregulate, try, try again

In February 2001, the Ghanaian government attempted to liberalize its fuel prices as part of an International Monetary Fund (IMF) Poverty Reduction and Growth Facility Program. Ex-refinery petroleum prices were raised by 91 per cent, followed in June by the introduction of an automatic price-setting mechanism. This was designed to ensure full-cost recovery for Ghana's already heavily indebted Tema Oil Refinery (TOR). The effect on the poor was cushioned by cross-subsidization of kerosene and LPG, fuels used typically by the poor for cooking and lighting. But by the end of 2002, in the face of rising world oil prices, the supposedly-automatic pricing mechanism had fallen entirely into disuse and TOR's debt had continued to increase, equal to 7 per cent of Ghana's GDP (Government of Ghana, 2003).

In January 2003, the government tried again. Once more, sceptics found their fears fulfilled as fuel prices rose by 90 per cent (Bacon and Kojima, 2006). Real incomes fell on average by 8.5 per cent (IMF, 2006). And although the government continued their cross-subsidization, the poor were the hardest hit: the bottom quintile of the population saw average drops in real income of 9 per cent (IMF, 2006).

Unsurprisingly, there was widespread popular opposition to the repeated price rises. Despite committing themselves to automatic implementation of the pricing mechanism, the government had suspended it by the end of June 2003, "pending an examination of continuing losses by the Tema Oil Refinery... and the public utilities" (Government of Ghana, 2003). They maintained this policy throughout 2004, citing fear of social and political instability in the run-up to elections. As the year drew on, the gap between international and domestic prices continued to widen (IMF, 2004).

Due to unexpected increases in international oil prices, Ghana had spent roughly 2.2 per cent of its GDP subsidizing fuel throughout 2004 (IMF, 2006). This exceeded the budget of the Ghanaian Ministry of Health (Amoatey, 2006). On top of this, Ghana had continued to support its national refinery, the Tema Oil Refinery, lending it an additional 1 per cent of GDP to finance its operations (Bacon and Kojima, 2006).

The situation was clearly unsustainable. By February 2005, the government was ready to make a third attempt to deregulate the market. In doing so, it implemented several strategies to improve the chances of success: preliminary research, a communications campaign, mechanisms that were intended to reduce political interference in fuel prices, and policies to assist the poor.

The government commissioned an independent poverty and social impact assessment (PSIA) to assess the winners and losers from subsidies and subsidy removal. It revealed that Ghana's rich received the greatest benefits from subsidies and quantified how and to what extent the poor would be affected by future deregulation (Bacon and Kojima, 2006). This was an important foundation for persuasively communicating the necessity for reform and for designing policies to reduce impacts of higher fuel prices on the poor.

The Ghanaian communications campaign began on 3 February 2005 with then-President John Kufuor's State of the Nation address to Parliament. Announcing upcoming decisions on reform, Kufuor stressed his government's commitment to the new policies, saying that "with goodwill and sound management, whatever problems will be encountered within the short term will be surmounted, and the economy will be the healthier for this policy" (Ghana Web, 2005). Moreover, the money previously spent on fuel subsidies would be reallocated to social priorities. The same message was communicated by Kwadwo Baah-Wiredu, then-Minister of Finance in a radio broadcast: \$25.5 million U.S. would be redirected to help the needy (All Africa, 2005). Advertisements were taken out in national papers comparing Ghanaian prices with its West African neighbours,

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and interviews were held with government and trade-union officials (All Africa, 2005). The findings of the PSIA, easily accessible, provided the government with an independent confirmation that its policy was in the best interests of the citizens of Ghana.

The government used a pricing formula again, this time to be administered by a new National Petroleum Authority (NPA). The intention was to separate the government from the politically sensitive process of setting prices, and to make it more difficult for future governments to intervene in fuel pricing (IMF, 2006). The reasoning behind the pricing formula was made transparent through publication of the components of the price of gasoline at the pump (Amoatey, 2006):

- 53 per cent was the cost of purchasing and processing raw crude;
- 10 per cent was Excise Duty;
- 8 per cent represented the dealer's and marketer's profit margins;
- 8 per cent went to the Debt Refinery Levy, to pay the Tema Oil Refinery's debt;
- 7 per cent went to the Road Fund Levy, to pay for road maintenance;
- 6 per cent went to the Cross-subsidy Levy to maintain cheaper prices for kerosene, LPG and several other fuels;
- 5 per cent went to the Deregulation Mitigating Levy, to minimize the impact of increased prices on the poor;
- 2 per cent went to the Unified Petroleum Fund, which helps distribute petroleum fuels to rural areas; and
- 1 per cent went to pay for Ghana's six-week emergency reserve petroleum supply.

Of these, the Deregulation Mitigating Levy and the Unified Petroleum Fund were new contributions, intended to demonstrate the government's commitment to reduce the effects on the nation's poor.

The government took several steps to financially assist the the poor to compensate for higher energy prices resulting from de-subsidization: it eliminated fees for state-run primary and secondary schools; increased the number of public-transport buses; put a price ceiling on public-transport fares; channelled extra funds into a health-care scheme for poor areas; raised the daily minimum wage from \$1.24 to \$1.50 U.S.; and started programs to help spread electrification to rural areas and purchase essential equipment for workers (Coady et al., 2006; Ghana Web, 2005; IMF, 2006). It also continued its previous policy of cross-subsidizing kerosene and LPG.⁵

The policies remained in place for several years. However, when oil prices soared in 2007 and 2008, Ghana abandoned its policy of tracking domestic with international prices and froze its price ceilings between May and November 2008 (Kojima, 2009). During this time, the government continued to subsidize fuel, cross-subsidizing other fuels with revenues from taxes on gasoline, and even supplemented the cross-subsidies with additional funds.⁶ The intervention in fuel prices contributed to a high fiscal deficit for the Ghanaian government in 2008 (Allum, 2009).

⁵ Cross-subsidization refers to the practice of using profits generated from one product or service to support another provided by the same operating entity (OECD, 2002). In Ghana's case, The government taxes automotive gasoline at a higher rate than other fuels in order to use these profits to reduce the prices of gas oil (diesel), kerosene, LPG, premix (a type of gasoline for fishing boats), marine diesel and residential fuel oil.

⁶ The National Petroleum Authority Web site (<http://www.npa.gov.gh/petroleum-prices/>) provides the price build-up for fuel in Ghana by month, including the amount of cross-subsidy. Drawing on these figures and the consumption levels of each fuel type (also provided on the NPA Web site), it is apparent that the government is providing a net fuel subsidy.

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Despite the decline in world prices after July 2008, energy prices became a campaign issue during the 2008 elections in Ghana. The then-opposition party, the National Democratic Congress (NDC), promised to reduce fuel prices if it came to power. In early 2009, having won the election, the NDC fulfilled its election promise by reducing fuel taxes. By March 2009 fuel prices in Ghana were more than 45 per cent below corresponding fuel prices in neighbouring countries, leading to a dramatic increase in fuel consumption and smuggling out of the country (The Chronicle, 2009).

Partially as a result of selling fuel at subsidized prices, the accumulated debt of the Tema Oil Refinery continued to increase and the refinery was forced to suspend operations in February 2009 (Reuters Africa, 2009). By October 2009, its debt had reached around \$660 million U.S., the majority of which was owed to the Ghana Commercial Bank (Reuters Africa, 2009). The government appointed the Pan-African bank, Ecobank, to arrange a \$600 million U.S. credit facility to refinance half of the debt owed to Ghana Commercial Bank and use the other \$300 million U.S. to strengthen the refinery's balance sheet. TOR resumed operations in October 2009 (Reuters Africa, 2009). The government has continued its cross-subsidization policy.

Discussion

The government's 2005 reform policies were successful by several measures. Communication and compensation strategies improved public acceptance of the price increases: the street protests associated with the 2003 reforms were not repeated in 2005 (All Africa, 2005). After an initial rise of 50 per cent, gasoline prices were raised several times during the remainder of the year in response to higher world prices. Quarterly price adjustments were replaced by monthly price adjustments in 2006 to better link domestic with international prices (Coady et al., 2006), although one unforeseen consequence of regular price changes was that suppliers hoarded fuel in advance of a price rise, causing temporary shortages.

That Ghana chose to continue its cross-subsidization of kerosene and LPG was a critical flaw in its reform strategy. Subsidizing liquid fuels can lead to misappropriation, as non-target groups access the fuel and mix it with transport fuels for their vehicles. In Ghana this became common practice when the price of subsidized kerosene fell significantly below that of diesel, creating shortages of kerosene.

Most problematic was the government's lack of commitment and political support to maintain the reform it had introduced. The National Petroleum Authority is evidently not independent in any meaningful sense given the government's intervention in fuel prices in 2008. The fuel-pricing structure continues to be reported publicly but can no longer be considered transparent because of the arbitrary levels of cross-subsidization and additional unspecified supplementary subsidies. A 2009 IMF report noted that the government intends to address the cost of energy subsidies with bi-weekly price adjustments for petroleum pricing, which are designed to ensure cost recovery for the oil refinery and bulk importers (IMF, 2009a). However, such adjustments are unlikely to be effective if cross-subsidies are subsequently applied that result in a net cost to government.

BOX 1: ELEMENTS OF THE 2005 REFORMS OF PETROLEUM SUBSIDIES IN GHANA:

- Research was conducted to identify those most likely to be impacted by reform.
- A communications strategy was employed to increase popular support.
- Semi-independent and transparent institutions were established to manage fuel pricing.
- Domestic prices were linked with international prices.
- Policies were implemented to reduce impacts on the poor.

Lessons learned:

The policies employed to ease the removal of subsidies were only partially and temporarily successful. The price-setting regime proved to be only as robust as the political will behind it, demonstrating that governments will be tempted to intervene in fuel pricing for political reasons. A completely independent pricing board is difficult to achieve. Governments can always override the regulator's decisions and laws can be changed. Automatic linking of domestic and international prices, without subsequent cross-subsidization, is necessary to prevent ongoing politicization of fuel prices.

2.2 French coal: the prolonged decline of an inefficient industry

Following the end of World War II, French coal mines were nationalized and managed by the state authority Charbonnages de France (CdF) because of the key role that coal was expected to play in the reconstruction of the French economy. CdF's first objective was set in April 1946 by the passing of the Monnet Plan: by 1950 France was expecting to produce 65 million tonnes of coal a year from domestic mines and from the mines in the Ruhr and Saar areas of Germany over which France had assumed control (Charbonage de France, n.d.). To achieve this goal, the whole sector was heavily subsidized: mining sites were mechanized with help from the state, the status of miners was greatly enhanced in order to attract workers to the industry (e.g., through higher salaries and benefits in kind)⁷ and product prices were controlled. By 1957, CdF was employing 350 000 people. But its golden age did not last long. That same year, the Saar and Ruhr were re-unified with Germany, and French stocks of unsold coal rose to almost 8 million tonnes. The government's objective shifted to reducing production.

France's decision to gradually reduce government intervention in the sector was a multi-faceted one. It can partly be attributed to the 1951 formation of the European Coal and Steel Community (ECSC), from which the European Union would eventually emerge. The creation of a common market for coal and steel was intended to prevent further conflict among European nations, but it also meant that trade between members had to be fair, allowing no "discriminatory measures or practices, subsidies, aids granted by States or special charges imposed by States and restrictive practices" (Europa, 2005). In fact, significant government assistance was still permissible for the retraining of workers released from service, and for research, hence the continued magnitude of the French and German coal sector subsidies (European Commission, 2007). Nonetheless, the ECSC, later followed by the European Social Fund and the European Regional Development Fund, helped drive the continuing trend towards deregulation.

⁷ In 1946, a decree regarding miners' status was passed. For more information see Statut du Mineur (1946).

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The process started in the 1960s with the Jeanneney Plan. Coal production targets were to be reduced from 59 million to 53 million tonnes by 1965 and a decree was passed anticipating the closing of several mines in the near future. In 1967, CdF set up the Société Financière pour favoriser l'Industrialisation des Régions Minières (SOFIREM), a special fund created to promote investment in the mining regions, retrain workers and encourage entrepreneurship, and support the establishment of new businesses, industrial zones and entities responsible for local economic development.

The Bettencourt Plan in 1968 decided production should be further reduced to 25 million tonnes by 1975. Despite large-scale strike action and some policy vacillation in response to the energy crisis of the 1970s, a number of pits were closed during that decade.

The decline in French coal production led to worries about excessive energy dependency—between 1973 and 1974, the six countries in the European Coal and Steel Community were importing two-thirds of their primary energy needs, compared with only 15 per cent in 1953 (Federation Nationale de l'Energie et des Mines, n.d.). As mining prices rose and France became more dependent on imports, a decision was taken to invest massively in nuclear energy, commencing in the 1950s (Vie Publique France, 2004).⁸ France's energy sources changed significantly as national coal was gradually replaced by nuclear energy, hydroelectric power, petroleum products and natural gas.⁹

French coal reserves became more and more exhausted. Remaining deposits were increasingly costly to mine. Following the liberalization of prices in 1978, the government had to provide more and more support to keep French coal competitive with imports. By 1982, the average price of a tonne of French coal was 665 francs, compared with only 420 francs for an imported tonne (Nodin, n.d.).

In 1994, the Pacte charbonnier agreed on a schedule for the closure of all remaining mines. The Pacte also supplemented the work of SOFIREM and its subsidiaries by establishing generous incentives for workers to leave the industry. Upon reaching 45 years of age, workers with at least 25 years of service became eligible for “conge” (leave), during which they would receive 80 per cent of their final working salary until retirement (Marie-Claire, 2005).

Between 1971 and 2000, the state spent around 35 billion EUR on restructuring the coal sector and CdF accumulated 5.5 billion EUR of debt to which could be added 7.7 billion EUR of “special agreements” for its staff, such as free housing and transportation (Philippon, 2004). The last mine, La Houve in Lorraine, was closed in 2004 (Charbonage de France, n.d.). In total, it took over 40 years for CdF to extricate the government from the mining sector. Over that time period, SOFIREM helped create 98 000 jobs and, since 2007 alone, it has provided more than 8 million EUR in unsecured loans backed by its own equity capital (SOFIREM, 2008).

Today, the national agency for guaranteeing the rights of miners, the Agence Nationale pour la Garantie des Droits des Mineurs, continues to offer social support to over 200 000 people. Its activities require state support of around 700 million EUR a year, an amount that will decline over time as former miners age and die. More recently, government assistance in the coal sector has extended to protection of the environment. The reclamation of mining sites is now considered a priority, involving the rehabilitation of landscapes, the treatment of polluted groundwater, and improved security around abandoned mine sites. The health of former miners has also received increased attention.

⁸ The entire non-military costs of the French nuclear power program from 1970 to 2000 was about 1.5–1.6 trillion 1998-equivalent French francs—some 230 billion EUR, or \$330 billion U.S., based on 2008 exchange rates (Grubler, 2009). The extent of subsidization is unclear, as France has adopted subsidies that attempt to make the new plants appear financially viable and has not published enough information to facilitate calculation of the level of public support (Subsidy Watch, 2009).

⁹ By 2000, nuclear energy was providing 78 per cent of France's electricity needs, hydroelectric generation 11 per cent and coal only 4 per cent (IEA, n.d.).

Discussion

A gradual approach to subsidy reform can minimize social unrest, but France's experience with its coal industry shows that slow change can create its own problems. In this case, the reform process lasted as long as the normal working life of those who had just entered the workforce when the first downsizing plan was announced. This situation is not unique to France. In Poland, for example, reform of the coal-mining sector also took many years and required billions of euros in assistance to affected workers (Suwala, 2010).

Coal was still a crucial source of energy at the start of the reform and therefore a dialogue was created from the outset among the government (through national, regional and local representations), the European Commission, CdF and trade unions in order to minimize the impact on sectors directly or indirectly concerned. Most of the reforms resulted from these consultations. The 1994 consultations, which resulted in the Pacte charbonnier, are one example of such beneficial dialogue.

While compensation can help displaced workers as they search for new employment, the French example suggests that the principle can be taken too far. Assistance to working-age employees should provide them with skills and new employment opportunities, but be limited in time. Otherwise, payments run the risk of becoming long-term burdens on state finances. Such considerable expenditure may have been tolerated in France because it provided a form of regional assistance to depressed coal-mining communities.

The diversification and substitution of energy sources is, in theory, a logical policy to pursue while reforming coal subsidies. However, there will be little economic advantage if this involves merely shifting subsidies from coal to nuclear power.

BOX 2: ELEMENTS OF THE REFORM OF COAL SUBSIDIES IN FRANCE:

- Those likely to be negatively affected by reform were identified early in the process.
- The overarching concern of those implementing reform was to minimize adverse economic impacts on workers and their local communities.
- A long-term, gradual approach was taken that enabled the miners and the economy to adapt.
- In parallel, the government encouraged the diversification of energy sources so as to replace declining domestic coal supplies with other domestically produced electricity sources.

Lessons learned:

French deregulation of its coal sector is not an example of best-practice, as it required over 40 years to complete and billions of euros from the French government to underwrite structural adjustment. Only wealthy countries like France can afford to pay such large subsidies over a long period to support the workforce of a single industry. However, the case study provides an illustration of good principles for reforming producer subsidies.

2.3 Subsidies for LPG in Senegal: successful but not sustainable

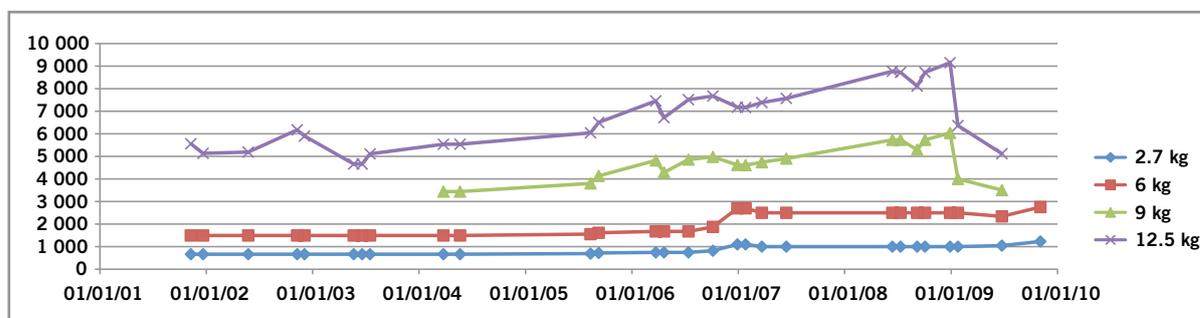
In the past decades, Senegal has engaged in multiple reforms of its energy policies and subsidization programs. In the 1970s, its goal was to decrease deforestation by substituting part of the charcoal consumed, especially in urban areas, with LPG (Sokona and Deme, 2004).¹⁰ To implement this change, the Senegalese government subsidized LPG through exemptions of customs duties on cooking equipment designed to operate on LPG.

By 1988, the government considered that too few consumers had switched away from charcoal and it began subsidizing the LPG fuel itself (Fall et al., 2008). Prices were set by the government for four sizes of gas cylinders: 2.7 kilograms, 6 kilograms, 9 kilograms and 12.5 kilograms. Only the two smaller gas bottles were directly subsidized. The price structure for the subsidized LPG cylinders comprises the price on importation, a base tax, port fees, the subsidy, a wholesaler margin, a distributor margin and a value-added tax.

The LPG subsidy became a growing fiscal burden and, by the late 1990s, the IMF recommended that it be removed (Sokona and Deme, 2004). A law was adopted in March 1998 that called for gradually reducing LPG subsidies in annual increments of 20 per cent, beginning on 1 July 1998, in accordance with IMF guidelines. However, government plans to phase out subsidies by 2002 were put on hold due to negotiations within the West African Economic Union over harmonization of economic policies. Price controls continued, with the government switching between taxing and subsidizing the 2.7 kg and 6 kg LPG cylinders to keep end-user prices constant, sometimes for years at a time (Figure 1).

Changes in exchange rates and international LPG prices caused the cost of the subsidy component of the price structure to vary, whereas general price inflation only increased subsidies (Figure 2). In 2005 and 2006, the cost of subsidizing the consumption of LPG was, respectively, 0.2 per cent and 1.4 per cent of GDP.

FIGURE 1: END-USER PRICES FOR SUBSIDIZED AND NON-SUBSIDIZED LPG GAS CYLINDERS IN SENEGAL (CFA FRANCS), 2001 TO 2010

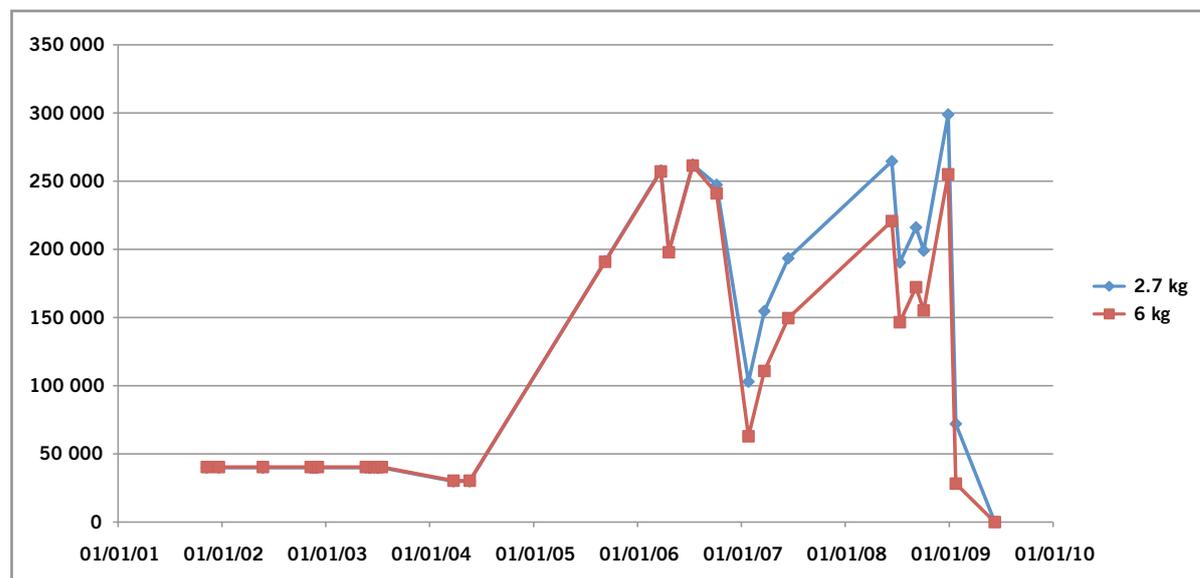


Notes: 2.7 kg and 6 kg cylinders are subsidized. 9 kg and 12.5 kg cylinders are not.

Source: Authors' graph based on data collected from Government of Senegal (various years).

¹⁰ LPG can include mixes that are primarily butane or propane, or more commonly, a mixture of both in roughly equal proportions. LPG is the term used in this paper, although previous studies have referred to butane. These terms can be used interchangeably in Senegal, where LPG is comprised primarily of butane.

FIGURE 2: SUBSIDY-COST (CFA FRANCS) PER TONNE FOR 2.7 KG AND 6 KG LPG CYLINDERS FROM 2001 TO 2009, AS REPORTED BY THE SENEGALESE GOVERNMENT



Source: Authors' graph based on data collected from the Government of Senegal (various years).

The subsidy program—in addition to a policy that allowed charcoal policies to rise—resulted in the widespread adoption of LPG stoves. A 2004 survey of 300 households found that LPG was used by more than 85 per cent of households in all income quintiles in rural, peri-urban and urban areas (Prasad, 2006).¹¹ Sokona and Deme (2004) found that nearly 85 per cent of the population in the capital, Dakar, had adopted LPG stoves but the take-up was lower (66 per cent) in the other main urban areas. In other towns, LPG remained a back-up fuel to charcoal and wood.

According to estimates provided by the Ministry of Energy, the growth in LPG use resulted in the avoided consumption of about 70 000 tonnes of wood -fuel and 90 000 tonnes of charcoal annually. This is equivalent to 700 000 m³ of wood per year, which represented a decrease of 15 per cent in the rate of deforestation (Sokona and Deme, 2004).

Evidence emerged that subsidies were benefiting wealthier citizens more than poor ones. The government had assumed that wealthier households would favour the larger (but unsubsidized) 12.5 kilogram bottle. Instead, they used the subsidized bottles while poorer households, particularly in rural areas, were unable to afford LPG and continued to use wood and charcoal. In 2008, the IMF found that the 40 poorest per cent of the population gained only 19 per cent of the total improvement in welfare from the LPG subsidy, while the richest 40 per cent gained 61 per cent (IMF, 2008).

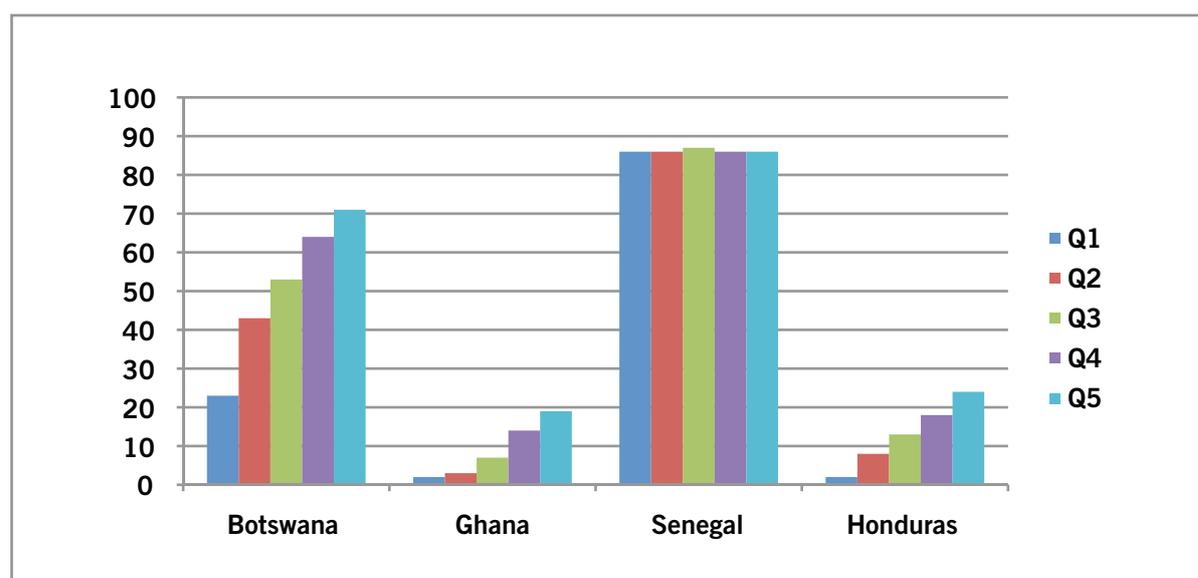
The IMF study found that Senegal's tax exemption for kerosene was benefiting the poor more than the LPG subsidy. Poorer households, particularly those in rural areas, were continuing to use charcoal and firewood for cooking but used kerosene for lighting. Smuggling of subsidized LPG from Senegal into neighbouring counties also led to leakage of the benefits of the subsidy to unintended recipients (Diouf, 2009).

¹¹ The results show that households used the fuel, not the extent of consumption relative to other fuels. LPG was one of nine fuels reported to be used by households in Senegal. While 85 per cent of households used LPG, 93 per cent also used charcoal and 54 per cent used firewood, among other energy sources.

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The government made repeated commitments to remove the subsidy and in June 2009 stated in a Letter of Intent to the IMF that the subsidy would be eliminated by the end of that month (Sow, 2009). Since then, prices for the 2.7 and 6 kilogram LPG bottles have risen and the government claims that these price changes are in line with its commitment to remove the subsidy. The government-reported subsidy level has also dropped to zero (Figure 2). However, media reports indicate that the official prices for these bottles remain significantly below their true market price (Diouf, 2009; African Manager, 2009).

FIGURE 3: USE OF LPG IN SENEGAL AND THREE OTHER COUNTRIES, ACROSS FIVE INCOME QUINTILES



Notes:

1. Q1 is the lowest income quintile and Q5 the highest. The data were obtained from 2004–05 household surveys of energy use in urban, peri-urban and rural households.
2. The results show only that households responded that they used the fuel, not the extent of consumption relative to other fuels.

Source: (Prasad, 2006)

Discussion

LPG subsidies have been in place in Senegal for over 30 years, helping to create new patterns of energy consumption. LPG stoves are cleaner and more convenient for cooking than charcoal stoves. The LPG subsidy program, which created strong incentives to switch from charcoal to LPG, yielded large environmental benefits—reduced household pollution and reduced pressure on forests—and therefore met its initial objectives, at least in urban areas.

And yet the policy also led to an unsustainable fiscal burden, disproportionate benefits for the relatively rich and fuel smuggling. On the other hand, removal of the subsidy risks an increase in the use of charcoal and firewood by some households. The government has attempted to reform the subsidy for over a decade and has made little headway. These are not the outcomes of a successful policy.

What could Senegal do better in the future?

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Transition policies: The Senegalese government put few policies in place to ease the transition away from subsidies. The packages of measures used by Ghana and France are not evident in Senegal: i.e., research to identify those most-likely to be negatively impacted by de-subsidization, information campaigns about the benefits of reform, cash transfers to the poor, and greater independence and transparency of fuel prices. Such measures could improve the chance of successful reform in the future.

Disincentives to revert to charcoal and firewood: The government's initial policy objective was to encourage a transition away from charcoal. Disincentives for the use of charcoal and wood, rather than fuel subsidies, would be a more direct way to address this goal. Earlier in the program to encourage LPG use, the government reduced charcoal production quotas and increased wood-cutting licence fees (Sokona and Deme, 2004). The effectiveness of these policies is not known, although the IMF finding of continued widespread use of charcoal and firewood for cooking suggests that further measures may be required to prevent deforestation. A program to promote the use of sustainably harvested wood fuel is reported to have helped to reduce the effect of LPG de-subsidization on deforestation (The World Bank, 2007). In addition, "green charcoal" made from agricultural waste is being tested in Senegal and offers a cheap alternative to charcoal from forests (All Africa, 2009).

Alternative measures to assist the poor: The 2008 IMF study that found that Senegal's tax exemption for kerosene was benefiting the poor more than the LPG subsidy and considered the option of shifting subsidies from LPG to kerosene in rural areas (IMF, 2008). However, as illustrated by Ghana's experience, subsidized kerosene is often used to adulterate diesel and therefore is easily diverted to non-intended uses and recipients.

Following the recommendations of the IMF's Poverty and Social Impact Analysis (PSIA), the government requested technical expertise from the World Bank to assess the feasibility of a program of conditional cash transfers (CCTs) to the poorest households. Their estimates showed that CCTs would be more cost effective in reaching the poor than the current tax exemption on kerosene and the LPG subsidy. The IMF has estimated that if a CCT were to target the poorest 10 per cent of the population, 58 cents of each dollar spent would reach people in the poorest quintile of the population compared with only 22 cents from the excise tax exemption for kerosene and only 6 cents for the LPG gas subsidy (IMF, 2008). A gradual rollout of the CCT would facilitate monitoring and controlling of the fiscal cost and the effectiveness of targeting. Existing structures such as retirement homes, hospitals and schools could be used to distribute transfers, via payments made through banks, post offices or private companies.

There is no guarantee that households would spend the cash transfers on "clean" fuels. Policies to discourage the use of wood and charcoal would be required in conjunction with a CCT program.

BOX 3: ELEMENTS OF THE REFORM OF LPG SUBSIDIES IN SENEGAL:

- A phased reduction of the subsidy in annual increments of 20 per cent was started in 1998 but suspended in 2002. These reductions were undermined by increasing global LPG prices, exchange rate variations and inflation, resulting in continuing high subsidies.
- Programs were created to discourage the use of charcoal and wood fuel.

Lessons learned:

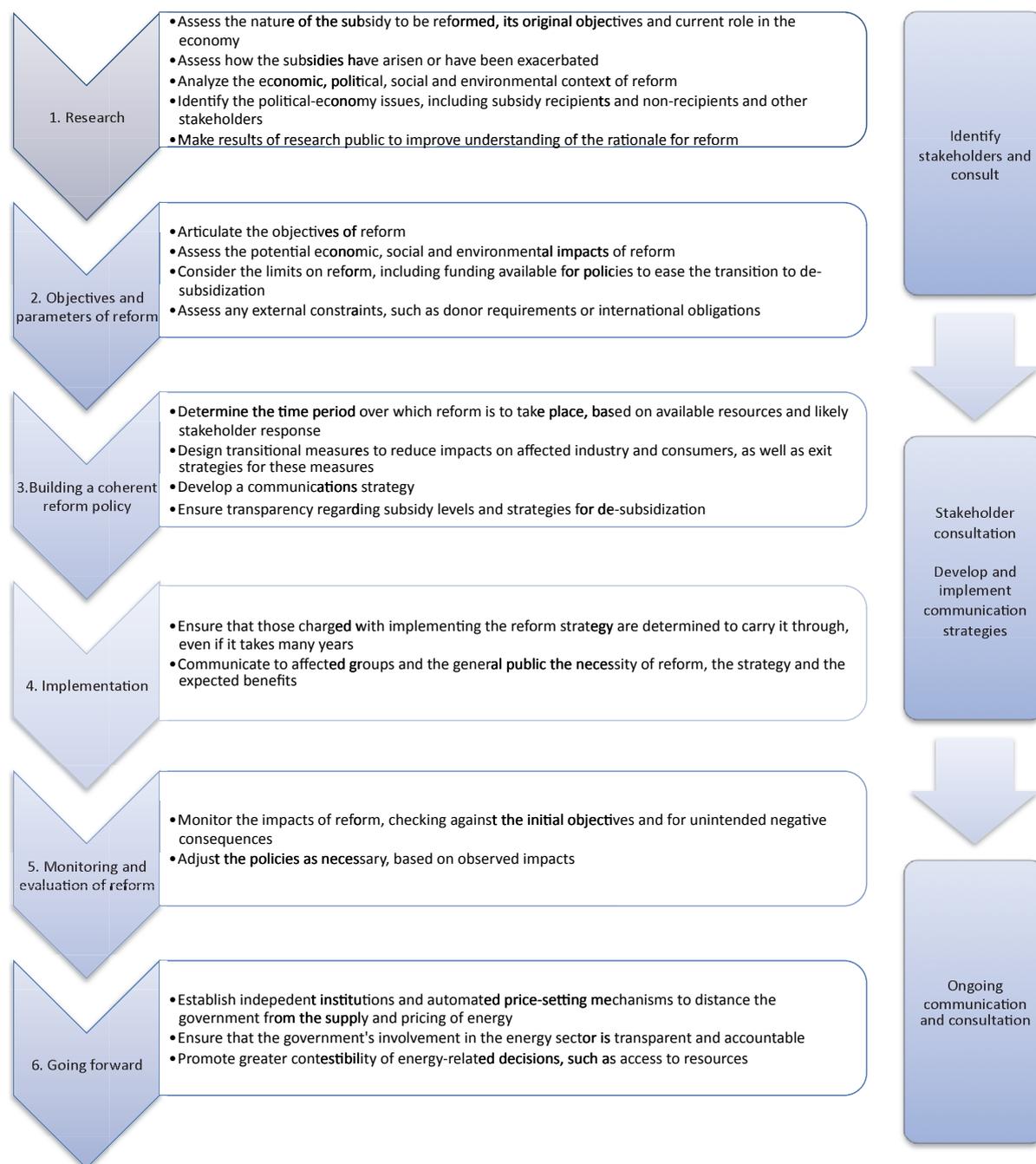
Research is required to identify the populations most likely to revert to charcoal use or to be otherwise disadvantaged by subsidy reform. These groups could be targeted through cash transfers that allow recipients to buy cleaner fuels when they are available or spend the funds on other priorities, such as food, health or education. Disincentives for the use of charcoal and wood fuel would be needed in conjunction with a cash transfer program to decrease the potential switch of householders back to charcoal and biomass fuels. Disincentives would be a more direct way to reduce deforestation from these activities rather than through subsidizing LPG or kerosene.

Success would be assisted by developing a reform strategy based on the research findings of the IMF's 2008 study, which identified recipients and non-recipients of the fuel subsidies and alternatives to assist target groups.

3. STRATEGIES FOR REFORM

Analyzing the above case studies and other examples of the removal of fossil-fuel subsidies suggests several important elements that appear to improve the chance of successful subsidy reform. These have been broadly grouped into six categories, which are set out in Figure 4. The key features of each stage of reform are also outlined, which are then described in detail in the following text.

FIGURE 4: ELEMENTS OF SUCCESSFUL STRATEGIES FOR REFORMING FOSSIL-FUEL SUBSIDIES



3.1 Throughout the reform process

3.1.1 Communication and stakeholder strategies

Clear communication with stakeholders and the public appears to be a key element of an effective reform strategy. If stakeholders participate in the decision-making process from the beginning, opposition to subsidy reform can be addressed early and taken into account in designing policies to ease the transition. Public awareness campaigns help citizens to understand why reform is necessary and how their money can be redirected to other services, or returned to them in the form of lower taxes. In addition, some promotion of the benefits of reform can be necessary to counteract campaigns by lobbyists that publicize the negative impact of reform on jobs, affected communities or financial services to the poor.

In the case of Ghana's 2005 reforms, a clear communication strategy highlighting the positive results of subsidy reform and the negative consequences of inaction played a major role in muting protests. The involvement of the President in announcing the reforms signalled a high-level commitment, particularly because his government had recently won a national election and hence enjoyed a high level of legitimacy. There was also a clear message that funds previously devoted to subsidies would be spent on social priorities (Ghana Web, 2005). A campaign followed the announcement, including radio broadcasts, interviews and advertisements in national newspapers. The research findings supporting the decision to reform were made public. As a result, price increases in 2005 were met with only minor protests.

3.1.2 Transparency

Information regarding fossil-fuel subsidies is often hidden, as support can be provided by multiple jurisdictions, departments and in many different forms. Even when presented in fiscal accounts, they can be difficult to isolate (IMF, 2008).

Protocols to improve transparency in subsidy policy help reform efforts by increasing accountability in public expenditure and allowing better monitoring of the subsidy over time, its recipients, and the identification of political and economic relationships (see Laan, 2010, for a discussion of the role of transparency in reform of fossil-fuel subsidies). Public information also allows for an independent assessment of the costs and benefits of a subsidy policy, particularly in order to answer the question of whether there are more cost-effective ways of achieving the desired outcomes. Useful information would include: i) total subsidy funding; ii) the distribution of the benefits across society; iii) the application of the subsidies over time; and iv) estimates of total government support by sector and by individual recipients (De Moor, 2001).

Following deregulation, price fluctuations can be difficult for consumers to understand. They expect to be sheltered from rising oil prices but demand to benefit immediately from falling prices, leading to calls to bring back price controls. Governments can increase acceptance of fuel-price fluctuations, including any differences between domestic and international prices, by disclosing as much information as possible about how the prices are formed (Kojima, 2009). Such information can include the components of fuel prices (such as refining margins, taxes and distribution cost, as Ghana provided to its citizens), rates of stock turnover (particularly for small markets where slow turnover could lead to a delay in the transmission of international to domestic prices), historical price data and comparisons with other countries.

3.2 Stages of reform

3.2.1 Research

The subsidy and its role in the economy need to be well understood. Early research to quantify the subsidy, to assess how its costs and benefits are distributed throughout society, and to estimate the likely direct and indirect effects of its removal will assist the likelihood of successful reform (Coady et al., 2006). The information facilitates the development of a comprehensive approach to dismantling the subsidy, cushioning adverse impacts of its removal and taking into account the concerns of stakeholders.

An analysis of the subsidy's initial objectives, and whether those objectives have been met, can help predict the potential impacts of its removal. In Senegal, for example, the initial purpose of subsidizing LPG was to encourage households to stop using charcoal as a cooking fuel, which was contributing to deforestation. Reform efforts could be assisted by research to determine the extent to which an increase in LPG prices would lead to a switch to charcoal and wood fuel, and in which communities. Research has found that households rarely switch completely between fuels and often use multiple fuel types depending on availability or their energy needs (for example, whether for space heating or cooking—even different types of cooking) (UNDP and ESMAP, 2003). Household income is not necessarily the main factor in determining fuel choices (Masera, 2000). Country-specific research would be useful to determine the likely outcome of higher LPG prices on Senegalese fuel usage and to identify the factors that contribute to charcoal use.

In Ghana, research prior to the 2005 reforms found that the relatively wealthy were benefiting more than the poor from the fuel subsidy. Communicating this result helped to build support for reform among the poor and enabled the government to include measures to assist the poor in its reform strategy.

The magnitude of the subsidy (in absolute numbers or as a percentage of GDP) and the size of the industry (number of jobs, value of infrastructure, capital and revenue) will be important in determining the impact and speed of reform. The greater the level of support, the greater the shock to the sector on its removal. A government is likely to be best-placed to undertake the necessary research, as it has the greatest access to information on expenditure, policy-development rationale and stakeholders. On the other hand, the involvement of other actors may help confer legitimacy to the results. In the case of Ghana, research was outsourced to an independent institute to decouple it from government influence. The World Bank and the IMF have provided technical assistance to developing countries, including Senegal, and carry out *ex ante* poverty and social impact analysis to map out hypothetical impacts of a subsidy reform on the population and the environment (Singh and Hope, 1995). In addition, the involvement of international institutions, or becoming a party to an international agreement, can enable a national government to deflect political responsibility onto another entity in a helpful way.

3.2.2 Reform objectives and parameters

3.2.2.1 Goals

A clear articulation of objectives will help focus the reform strategy on the highest priorities for de-subsidization and facilitate the development of appropriate support policies. Objectives for reform could include domestic considerations such as reduced fiscal expenditure or obligations under international agreements such as the WTO. Objectives can be short- or long-term. A short-term goal might be the reduction of fiscal expenditure, while the long-term goal might be increased energy efficiency.

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The stated objectives of G-20 leaders in eliminating inefficient fossil-fuel subsidies were improving energy efficiency and security, boosting investment in clean energy sources and addressing climate change (G-20 Leaders, 2009). A reform strategy for G-20 governments would therefore need to target the fossil-fuel subsidies that have the most impact on their policy goals. For example, subsidies that reduce the price of fuels to end-users would be expected to boost consumption, thus increasing CO₂ emissions (depending on the type of fossil fuel) and reducing energy efficiency. Subsidies that facilitate the continued use of the most carbon-intensive fuels would be particularly relevant for climate change and reducing the competitiveness of renewable energy. These subsidies would be a high priority for reform. Subsidies for research and development, such as those supporting the development of “clean-coal” technologies, appear to be a lower priority for analysis as their impact on these policy objectives is mixed.

In addition to domestic considerations, governments face international obligations and constraints that can dictate the timing and nature of subsidy reform. The WTO Agreement on Subsidies and Countervailing Measures (ASCM) prohibits two types of subsidies: export subsidies; and those contingent upon the use of domestically produced over imported goods. All other “specific subsidies,” which benefit only particular companies or industries, are allowed but actionable. In other words, if adverse effects on the interests of a WTO member can be demonstrated, the affected country can take one of several actions, either by applying a countervailing duty or by seeking remedies through the WTO’s Dispute Settlement Body. Some WTO subsidy cases have led to the obligation to reform, although none of these cases have related to fossil-fuel subsidies so far.

Countries acceding to the WTO have come under pressure to reduce energy subsidies that could affect the cost of production and therefore exports. For example, some of Russia’s negotiating partners view state controls over energy prices as a trade-distorting subsidy and have urged Russia to reform its energy sector (Yudaeva, 2003). Russia argues that its energy prices are lower than in the world market because they reflect Russia’s comparative advantage in energy. Russia refuses to tie WTO accession to reform of its energy policy.

While most governments must comply with WTO obligations or risk responses from other member economies, some developing countries also need to observe donor guidelines. Least-developed countries (LDCs), for example, rely heavily on external sources of funds, particularly official development assistance (ODA). Among LDCs, the average share of ODA disbursements as a share of GDP was about 8 per cent in 2006 (UNCTAD, 2008). Multilateral lending institutions, other international organizations and aid providers can therefore be influential in the implementation of fossil-fuel subsidy reforms through the provision of advice or by assigning conditions to the provision of assistance.

The constraints and obligations imposed on a country from its international commitments can provide useful insulation from domestic lobbying. When part of an international agreement, it may be easier to defend deregulation in the face of domestic criticisms. In addition to WTO and donor obligations, such agreements include bilateral or regional trade agreements. The G-20 and APEC commitments to phase-out subsidies provide such an opportunity.

3.2.3 Building a coherent reform strategy

3.2.3.1 Timeframe

Reform strategies can be differentiated by the duration of implementation and the level of compensation available (Orden et al., 1999). Reform can be gradual and without compensation,¹² at a pace sufficiently fast to yield benefits but slow enough to avoid resistance. Gradual reform can also involve compensation, where, typically, the old policy is terminated and replaced with a series of cash payments, as was done in France for the coal-mining sector. Rapid reform terminates a policy completely without a phase-out period, either associated with a compensation payment or not (Cox, 2007).

The longer a subsidy has been in place, the more difficult it will be to remove and the longer the likely timeframe required for reform. Subsidies have a tendency to become perceived as entitlements and any attempt to reduce them can be politically hazardous (Steenblik, 2007). In India, a slow process of “reform by stealth” of the power sector in the 1990s included tolerance of enterprises that evaded laws, rather than the more politically difficult path of attempting to change the relevant regulations. Some state governments “conveniently ignored... firms that established their own (sometimes illegal) captive power stations to avoid the poor quality and expensive power from the state-dominated electric system” (Tongia, 2007). Such practices were an important step towards liberalization, as they undermined the monopoly of the inefficient and under-capitalized state-owned utilities while facilitating the development of new power generation capacity.

If the reform process is lengthy, recipients have more time to adjust to the new policy settings. However, there will also be greater opportunity for those with vested interests to find ways to prevent or delay change.

There are evidently opportune moments to deregulate quickly. Falling oil prices in the second half of 2008 provided an opportunity for several governments to undertake price-subsidy reforms. In December 2008, China introduced a new pricing mechanism that adjusts the benchmark retail prices of oil products against the international crude price (China View, 2009), although it later announced that it would intervene to set prices when international prices exceeded \$80 U.S. per barrel (Kojima, 2009). Vietnam introduced market-based pricing in September 2008 and Ethiopia eliminated subsidies in October 2008 (Kojima, 2009).

An economic crisis can also provide a chance for governments to institute fast-paced reform measures for subsidies that are contributing to the difficulties faced by the country (Drazen and Grilli, 1993). High energy prices in 2007 and early 2008 led to many consumer fuel subsidies becoming fiscally crippling for governments. Many governments were forced to raise prices, despite political backlash.

There are contexts in which speedy reform can be unwise. In July 2005, petroleum price rises in Yemen incited widespread social disorder in which 22 people died and many others were injured. However, “violent reactions to subsidy reform are the exception rather than the norm, and often are not triggered by the reform alone” (Coady et al., 2006). If such circumstances can be predicted, it may be best to advance by a long-term policy of “death by a thousand cuts” (Pearce, 2000)¹³ rather than introduce new support measures that can create new entitlements. If these measures have a firm phase-out period, however, they can assist the transition without becoming entrenched. Senegal introduced short-term subsidies on staple fuel and food commodities in 2008 in the face of international price increases, but these were removed six months later and did not become viewed as entitlements.

¹² Reductions in subsidies must be reductions in real spending. The example of Senegal shows that reducing the subsidy rate by 20 per cent year-on-year when fuel prices or inflation are rising could undermine the goal to improve the government's bottom line.

¹³ “Death by a thousand cuts” is an expression that refers to a major change, which might be seen as negative, that happens slowly in many unnoticed increments and is therefore not perceived as objectionable.

3.2.3.2 Policies to reduce the impacts of reform

Whether reform takes place over a short or long period of time, measures to reduce any negative effects of reform will make changes more palatable. A government's leeway to manoeuvre will be determined in part by its wealth. A country with a higher GDP can generally afford to provide greater assistance to industry and consumers, diversify its supply of energy and invest more funds in information campaigns to build public and stakeholder support (De Moor, 2001). However, few countries have France's wealth or inclination to invest billions of dollars over several decades in order to reform a set of subsidies.

The example of Ghana's 2005 reform strategy demonstrates that the capacity of a country to execute flanking measures is not necessarily proportional to GDP, particularly if the revenue gained from de-subsidizing is committed to targeted social measures. The Ghanaian government established a "Deregulation Mitigating Levy" to pay for its announced assistance measures as a transparent way to show taxpayers that the subsidy funding was being re-allocated prudently to assist the poor. Public support can be increased once citizens realize that public spending is effective and not being misappropriated or directed to favoured sectors of the community (Collier, 2008).

Temporary assistance measures need to be carefully designed to ensure they reach the intended recipients. Research indicates that support for the poor is best transferred through a social welfare net, rather than through cross-subsidization. "A well-designed transfer program can avoid distorting economic decisions, while both ensuring extensive coverage of poor households and minimizing leakage to higher income groups" (De Moor, 2001).

Conditional cash transfers (CCTs) have been found to be a more cost-effective way of assisting the poor than energy subsidies (IMF, 2008). These programs provide money to poor families on the condition that the family demonstrates a commitment to using the funding to improve the family's welfare, such as spending on health or education. The governance systems required to implement the system are minimal. Funds can be distributed to eligible families via schools or other local public offices. Such programs have been used successfully in Brazil, Mexico and Colombia and, as noted earlier, could be feasible in Senegal.

In countries where the poor are located in geographically discreet areas, targeting can be achieved by subsidizing access to a fixed network (i.e., electricity, natural gas, district heat). By funding the installation of infrastructure, governments can deliver services to communities without becoming involved in subsidizing energy prices, which can become an ongoing and unpredictable funding commitment.

Finding a means to identify target groups reduces the risk that subsidies will dissipate, be misspent or reach unintended recipients. In India, for example, the use of a coupon system to determine eligibility for subsidized kerosene helped target the subsidy to those most in need (Shenoy, 2009). However, the coupon system was abandoned for political reasons and up to 40 per cent of subsidized kerosene continues to be diverted to the black market. In this circumstance, direct cash payments or the free provision of social services would be more direct ways to assist the poor.

Sporadic measures cannot indefinitely replace more comprehensive governance systems. Short-term measures tend to be administratively difficult to design and implement, because they are situation-specific. Sophisticated safety-net measures, such as social-assistance systems or a progressive income tax regime, require investment in long-term structural reforms.

3.2.3.3 Encouraging energy diversity or substitution

The example of France's coal-subsidy reforms demonstrates that diversifying energy supplies can reduce the impact of reform on consumers and other industries. If a country relies primarily on one specific type of fossil fuel, policy change that affects its supply or price is likely to have repercussions throughout the economy. This could result in higher electricity or transport prices, feeding inflationary pressures, or making energy unaffordable for some segments of the population. Such impacts need to be determined through research and economic modelling before implementing reform.

The development of substitute forms of energy is likely to ease reform. While coal may be the cheapest energy source, wealthy countries can also generate electricity from nuclear, geothermal, solar, wind power or biomass energy sources. Countries with suitable hydrological resources can develop hydroelectric power. And countries with natural gas resources might choose to use natural gas for electricity generation before importing coal. For others, coal is likely to remain the only financially viable option for electricity generation in the near future.

Few economically competitive alternatives currently exist for petroleum transport fuels and therefore any subsidy reform that raises prices is likely to be transmitted directly to higher costs to consumers, without the ameliorating affects of substitution (although increased energy efficiency can help reduce overall costs to consumers). Affordable non-fossil-fuel alternatives to kerosene for lighting do exist in some countries. Morocco has had success using solar power in rural electrification schemes, although these were assisted by one-time payments from the government to supply the necessary capital (UNDP, n.d.). Grameen Shakti, a company in Bangladesh, uses micro-credit financing to supply poor communities with solar power and biogas (Grameen Shakti, 2009).

3.2.3.4 Building a reform strategy – SWOT analysis

Table 2, which is based on a SWOT analysis (strengths, weaknesses, opportunities and threats), summarizes the various situations that face governments subsidizing fossil fuels and suggests strategic responses to these challenges. The strengths and weaknesses refer to the areas in which governments might or might not have capacity or resources. The opportunities are the circumstances auspicious to reform, while threats refer to those situations that could de-rail reform.

Potential response strategies are drawn from the case studies reviewed for this paper and the broader literature on fossil-fuel subsidy reform. The analysis is not intended to be comprehensive but to summarize the key elements of building a reform strategy discussed in this paper. Greater complexity would inevitably follow with more detailed assessment of country circumstances and reform options.

TABLE 1: SITUATIONS FACING GOVERNMENTS SUBSIDIZING FOSSIL-FUELS AND THEIR STRATEGIC RESPONSES

Circumstances	Strategies for reform
Strengths and weaknesses in capacity	Potential response actions
Extent of knowledge about the subsidy, including of: <ul style="list-style-type: none"> • extent of subsidy expenditure or forgone revenue • information about recipients, i.e., who they are and the proportion of subsidies going to rich and poor • the likely effect of subsidy removal on target groups and the economy as a whole 	Conduct independent research to: <ul style="list-style-type: none"> • quantify the support by gathering available data from all relevant government jurisdictions; initiate data collection where necessary • assess the distribution of subsidies, e.g., through household surveys and estimating leakage to non-target groups • estimate impacts through economic modelling of subsidy removal on consumption, energy prices and inflation
Understanding about the need for reform among: <ul style="list-style-type: none"> • government ministers and agencies • recipient groups • the general public 	Build support for reform by: <ul style="list-style-type: none"> • enlisting support from the executive and finance ministers • engaging in stakeholder consultation from an early stage • communicating in public fora (newspapers, radio, television)
Having a diverse energy supply or potential for energy substitution	Consider whether other forms of energy are available for substitution or, if energy substitution is not feasible, consider energy-efficiency measures to reduce impact on energy expenditure
A welfare system to facilitate: <ul style="list-style-type: none"> • accurate targeting of poor households • effective transfer of welfare 	Put in place transfer mechanisms to help the poor cope with higher energy prices: <ul style="list-style-type: none"> • cash transfers via local government authority services (schools, postal offices) • geographically targeted discount energy services to poor neighbourhoods such as district heating or electricity
Available funding for assistance programs to ease the transition to subsidy removal	If additional funding is not available, use revenue gained from de-subsidization to fund welfare programs: <ul style="list-style-type: none"> • make explicit to subsidy recipients and the public that savings or revenues will be directed to assist those most in need
Strong governance structures for effective law enforcement	Increase transparency regarding revenue and expenditure to expose any corrupt practices

TABLE 1: SITUATIONS FACING GOVERNMENTS SUBSIDIZING FOSSIL-FUELS AND THEIR STRATEGIC RESPONSES (Continued)

Circumstances	Strategies for reform
<p>Threats to reform</p> <p>Unpopularity, specifically from:</p> <ul style="list-style-type: none"> • the public • vested interests • those losing employment • the poor • corrupt politicians and their supporters 	<p>Potential response actions</p> <p>Communicate the benefits of reform to the public and develop targeted assistance measures to help those most affected by reform, specifically:</p> <ul style="list-style-type: none"> • communicate the costs of the subsidy and benefits of reform • develop short-term compensation measures in consultation with subsidy recipients to ease the transition to subsidy removal • welfare payments to retrenched workers and retraining and relocation programs • communicate that there are better ways to assist the poor and these will be pursued • increase transparency and public understanding of the subsidy and its distribution to broaden support for reform
<p>Changing circumstances:</p> <ul style="list-style-type: none"> • volatile prices, exchange-rate fluctuations or inflation (increasing the cost of subsidies before total elimination takes place) 	<p>Adjust the pace of reform and price-setting mechanisms:</p> <ul style="list-style-type: none"> • rapid pace to reform can reduce the risk of subsidy reduction being eroded • institute automatic linking of domestic and international prices or independent price-setting mechanisms, without further government intervention such as cross-subsidization
<p>Subsequent governments might undo reform</p>	<p>Distance the government from price-setting by:</p> <ul style="list-style-type: none"> • increasing understanding among decision-makers and the public about why the government is not intervening to reduce fuel prices • introduce independent and automatic price-setting mechanisms
<p>Opportunities to reform</p> <p>Falling or rising fossil-fuel prices</p>	<p>Potential response actions</p> <p>Take advantage of favourable circumstances to institute lasting reform. Ensure “threats to reform” are also addressed to prevent backsliding</p>
<p>In a position of political strength</p>	<p>Take advantage of political capital to implement reform quickly. As above, ensure “threats to reform” are addressed</p>

3.2.4 Implementation

Effective implementation of the reform strategy is obviously crucial. Several attempts might be required, depending on the opposition to reform and international conditions. As we have seen, Ghana and Senegal have tried repeatedly to reduce their fuel subsidies and France's reforms required implementation over a long period.

Implementation of reform is sometimes postponed, or reforms reversed, in the face of dramatic changes in world fuel prices. During record-high oil prices in 2007 and early 2008, many governments that had deregulated fuel prices or adopted automatic price-adjustment mechanisms froze and subsidized retail prices, while others that had announced reform postponed implementation (Kojima, 2009). Colombia and Vietnam were among this group, although Vietnam went on to remove subsidies later. Jordan removed subsidies in February 2008 and did not intervene despite record-high oil prices towards the middle of the year. Jordan did, however, maintain LPG and food price subsidies that year (IMF, 2009). Indonesia's experience (Box 4) demonstrates that a long phase-out of fossil-fuel subsidies can be politically difficult to implement, particularly when fossil-fuel prices fluctuate dramatically and no clear long-term reform strategy is in place.

BOX 4: INDONESIA'S REPEATED ATTEMPTS TO IMPLEMENT REFORM

The Government of Indonesia has on a number of occasions increased the price of subsidized fuels and reduced the number of consuming sectors able to purchase subsidized fuels (IEA, 2008). Fuel-price adjustments in 2005 saw the introduction of market prices for industry and an average 126 per cent hike in subsidized fuel prices for other sectors (The World Bank, 2007). Presidential Decree No. 55/2005 stated that the remaining domestic fuel subsidies would be phased out but no schedule was provided. Price adjustments were necessary again in May 2008 due to a sharp rise in world oil prices. Despite reforms to allow domestic prices to be adjusted in line with international prices, Indonesia's subsidized fuel prices were among the cheapest in Asia and approximately 30 per cent of the world price in 2008 (IEA, 2008). Subsidized fuels can still legally be used for transport, households, certain types of fishing boats and public service facilities.

In September 2009, the government announced that Presidential Decree No. 55/2005 would be revised to adjust subsidized fuel prices, eligibility criteria, delivery points and quotas in order to better target subsidies to those most in need (Antara News, 2009). However, strong political opposition continues to hold back implementation of Indonesia's reform strategies. Later that month, the *Jakarta Post* reported that total spending on fuel subsidies in 2010 would increase to Rp 68.73 trillion (\$7 billion U.S.), equal to 7.2 per cent of the state budget, due to rising oil prices and increased subsidies for the state power generation company (GSI, 2009).

3.2.5 Monitoring and adjustment

Reviewing progress and outcomes of a reform on an ongoing basis is necessary for assessing whether measures have been effective, checking whether there have been unintended consequences, and adapting policies over time.

The best policies are those that can be adapted in light of new information (Walker et al., 2001). This approach recommends a continual assessment of the underlying objectives of the policy as circumstances change. By maintaining a focus on desired outcomes, policies are more likely to be adapted in ways that support their original purpose.

Monitoring the distribution of subsidies for kerosene and LPG has revealed that these subsidies are subject to significant leakage, mistargeting or both. The IMF observed in Senegal that the poor do not favour LPG but the poor do use kerosene for lighting (IMF, 2008). From these results of monitoring the subsidy, it might be tempting to adjust the policy to subsidize kerosene rather than LPG in order to better assist the poor.

However, other studies that monitored kerosene subsidies have found that no effective subsidy mechanism for kerosene exists (UNDP and ESMAP, 2003). Subsidized kerosene is frequently used to adulterate diesel and in these circumstances it is diverted from the intended recipients (the poor), and instead benefits the relatively wealthy that own kerosene dealerships and service stations. UNDP and ESMAP used two sets of data to calculate the leakage of subsidized kerosene to non-target households: the total amount of subsidized kerosene allocated for household consumption; and the sum of the amounts consumed by households belonging to different income groups (calculated from household survey data). In the case of India, this leakage was as much as 50 per cent, making the kerosene subsidy regressive overall once leakage was factored in.

Temporary assistance policies—particularly those involving financial support—also require careful monitoring in order to ensure that the assistance is reaching the target groups and that support does not continue for so long that it becomes entrenched. Groups can become dependent on the new support measure, making it difficult to end. The likelihood of such an outcome can be minimized through the early establishment of time boundaries and maximum levels of support for subsidy programs (De Moor, 2001). And it requires commitment on the part of policy-makers to ensure that the sunset clauses are enforced.

3.2.6 Going forward: preventing backsliding

Governments will always be called upon by the public to intervene when fuel prices are high. By making pricing decisions the function of an independent body, they can reduce the pressure to become enmeshed in fuel-price issues in the future.

The Ghanaian National Petroleum Authority was established to monitor implementation of its new pricing mechanism in 2005. The authority is composed of representatives from government, oil-marketing companies, trade unions, and non-governmental organizations such as the association of Ghana Industries, as well as various experts (Coady et al. 2006). Its mission is to “regulate, oversee and monitor the Petroleum Downstream Industry to ensure efficiency, growth and stakeholder satisfaction” (National Petroleum Authority, n.d.). However, the Authority is evidently not independent in any meaningful sense given the government’s intervention in fuel prices in 2008. The Authority sets the prices according to prescribed pricing formula. It is not clear how this formula is reviewed and revised from time to time. In addition, the Authority manages the United Petroleum Price Fund that equalizes the freight costs of different marketers. This appears to be a complex exercise involving many transactions. Thus an elaborate structure has been created that lends itself manipulation. Only when the price fixing is simple and transparent, without involving subjective assessments and cross subsidies, will it transparently demonstrate independence from government influence.

4. CONCLUSION

The case studies of reform and literature reviewed in this paper demonstrate that, once in place, fossil-fuel subsidies are extremely difficult to remove. As the example of Ghana demonstrates, a reform strategy will only be as robust as the political will to carry it through and uphold it. The Senegalese government appears to have the will for reform but could potentially benefit from a more systematic and comprehensive set of policies to support de-subsidization. France's position was somewhat unique in that it employed worthy principles for reform—a gradual phase-out of subsidies, assistance for affected workers and energy substitution—but implemented these in such a way as to generate a new set of entrenched and highly expensive forms of government support.

There is no single formula for success, and country circumstances and changing global conditions must be taken into account in developing a reform program. However, strategies can be identified that contribute to successful reform and respond to individual country circumstances. Designing and properly implementing an appropriate strategy will improve the chance of successful reform. Countries without a comprehensive strategy, such as Indonesia and Senegal, flounder in their efforts to eliminate fossil fuel subsidies. There is clearly a need for any reform strategy to include effective mechanisms to prevent backsliding, such as independent regulation of fuel prices, automatic price-setting mechanisms, and education of decision-makers and the public about the problems with government intervention in fuel pricing.

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THE GLOBAL SUBSIDIES INITIATIVE (GSI) OF THE INTERNATIONAL INSTITUTE FOR SUSTAINABLE DEVELOPMENT (IISD)

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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