

**TRANSITIONAL POLICIES TO ASSIST THE POOR  
WHILE PHASING OUT INEFFICIENT FOSSIL FUEL SUBSIDIES  
THAT ENCOURAGE WASTEFUL CONSUMPTION**

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to G20 Finance Ministers and Central Bank Governors*

*with input from:*

*International Monetary Fund (IMF), International Energy Agency (IEA), International Energy Forum (IEF), Organisation for Economic Co-operation and Development (OECD), OPEC Fund for International Development (OFID), Organisation of Petroleum Exporting Countries (OPEC) \**

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## EXECUTIVE SUMMARY

This paper was prepared for the G20 by the World Bank with extensive input from the International Monetary Fund (IMF), the International Energy Agency (IEA), the International Energy Forum (IEF), the Organisation for Economic Co-operation and Development (OECD), the Organisation of Petroleum Exporting Countries (OPEC), and the OPEC Fund for International Development (OFID). It discusses some of the options available to countries that choose to phase out inefficient fossil fuel subsidies (FFS) while continuing to ensure access to essential energy services for the most vulnerable. The paper draws on a broad body of research to provide a snapshot of relevant policies and approaches to policy reform.

As a mechanism for redistributing income in favor of the poor, untargeted fossil fuel subsidies (FFS)<sup>1</sup> are widely considered to be economically inefficient. They benefit the poor only in proportion to their consumption of the good subsidized. Given that the non-poor typically utilize more of the fuels covered, the effects of these subsidies tend to be regressive. Even so, price increases from the removal of FFS are likely to adversely affect lower-income households who are already struggling to meet basic needs. The consumption and income opportunities of the poor are reduced by an increase in the price of fuels (direct effects) or fuel-intensive goods (indirect effects). Inflation linked to a rise in the price of transporting goods and of public transport is likely to play the greatest role in affecting lower-income households. In addition, to the extent that higher fuel prices cause consumers to shift back to traditional biomass (such as wood, charcoal, dung, and agricultural residues), the elimination of FFS may have broader health, environmental and social impacts on households and communities.

Two broad types of transitional policy approaches are available to countries seeking to undertake FFS reforms while supporting the provision of basic energy services for the poor:<sup>2</sup>

- Improving the poverty targeting of existing subsidies
- Introducing or strengthening other forms of support for the livelihoods of the poor – in cash or in-kind

The first of these approaches focuses on: (i) limiting the number of goods subsidized to those used primarily by the poor; (ii) limiting the quantities subsidized, generally with reference to the minimum necessary to cover basic needs; and/or (iii) limiting the number of beneficiaries, by targeting eligibility for the subsidy. An advantage of such measures, particularly the first two, is that they rely on existing systems, though they might involve some additional investment, for example, in setting up institutions to screen beneficiaries for eligibility. They can therefore play a useful role as stop-gap measures while longer-term solutions are put in place. Some subsidies, such as those for public transport, may be largely self-targeting, as lower-income people are more likely to rely on it than are wealthier groups.

A clear disadvantage of this approach, except when it is adopted for networked utilities, is that marked differences in prices for relatively similar products may create perverse incentives or

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<sup>1</sup> The terms of reference for this study make it clear that the focus is on *voluntary* and *transitional* policies to phase out *inefficient* fossil fuel subsidies *that encourage wasteful consumption of energy*. These important qualifications (in italics) are central to the paper. Still, for reasons of succinctness and readability in the text, we refer to FFS without the additional qualifications.

<sup>2</sup> A third possibility would involve removing the existing subsidies without providing any compensation to the poor. This strategy is not discussed as concerns for the poor underpinned the request made in the G20's St. Petersburg declaration meeting for this paper.

diversion from the intended uses. For example, protracted lower prices of kerosene—a fuel on which large shares of poor people depend for cooking and lighting—than those for diesel fuel might provide incentives for adulteration. Similarly, seeking to protect the poor by subsidizing small cylinders of liquefied petroleum gas (LPG) on the grounds that the poor can buy only small quantities at a time, can provide an incentive for richer customers to switch from large to small cylinders.

The second broad approach—eliminating FFS while supporting the livelihoods of the poor—revolves around the provision of cash or in-kind transfers (i.e. the provision of goods or services to target groups, as opposed to cash) to cushion the impacts of higher fossil fuel prices. In the literature, cash transfers have generally been found to be superior to subsidies, both in theory, as they do not constrain the choices of beneficiaries, and in practice, as they avoid the problems of distributing subsidized physical commodities, particularly liquid fuels. However, the implementation of cash transfers raises concerns on the amount of time and human and institutional capacity that may be needed for their effective implementation. Further, care is required in developing appropriate institutional arrangements to prevent fraud and corruption. As more countries modernize their social assistance systems (including low-income countries), many of the basic elements needed to make a system of cash transfers work, such as a comprehensive registry of beneficiaries, are already being put in place. Furthermore, there are examples of large-scale cash transfer programs being introduced in difficult contexts, such as highly diverse and decentralized Indonesia, over a short time span (say, six months). The Indonesian case also shows how strengthening social protection programs can facilitate the timely delivery of transitional measures. In addition, information technology, advances in biometric identification, and other new technologies offer the promise of simplifying the setup of effective cash transfer programs.

Countries have experimented with various sorts of in-kind transfers to support the livelihoods of the poor. Countries have shown considerable innovation in identifying and transferring non-energy goods and services that weigh heavily on the budgets of the poor, while exposing them to fuel price increases. One example is the lowering or abolition of user fees for items such as health and education through different channels in Ghana in 2005 and in Indonesia at several points over the past decade (2005, 2008, 2013). Another is the development of mechanisms aimed at helping households better manage their demand for energy, for example through the distribution of energy-saving light bulbs.

Independent of the individual measures undertaken—and often countries have adopted different measures at different times—the literature highlights some important choices in the design of transitional policies:

- *Existing vs. new programs.* To avoid fragmentation and the duplication of administrative costs, countries ideally should rely on existing mechanisms (either large-scale social assistance programs or other targeted benefits) rather than create new programs.
- *Choice of target group.* Countries have chosen to define the target group in different ways, ranging from the currently poor (identified either directly or indirectly) to those who would be poor after a price increase to the “energy poor” (which in a European context is defined in relation to total energy expenditure).<sup>3</sup>
- *Amount of compensation.* This is a difficult choice—and one that is typically driven by fiscal considerations. Even though countries might want to set the level of compensation high enough to insulate the poor fully from the direct and indirect impact of the price increases,

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<sup>3</sup> In low-income countries, by contrast, fuel or energy poverty is generally defined in terms of access to modern and sustainable energy sources.

public spending constraints weigh heavily, particularly when putting in place permanent measures.

- *Duration of benefit.* Countries may opt for temporary measures to ease poor households' adjustment to higher prices, or they may want to invest in measures that will offer permanent support to poor households as part of their social protection systems. Countries have often introduced both types of measures, as they might require different time horizons of implementation. Complementary measures, such as supporting income generation in poor communities can help ensure that long-term support is less needed.
- *Timing and sequencing of support and reform.* As with other reforms, starting conditions matter in designing optimal timing and sequencing. On balance, where very large price increases are necessary to reform subsidies, gradual increases in prices have been more common than non-gradual increases. This allows for feedback on the implementation of transitional measures to be collected and for any necessary improvements to be put in place. Whether a gradual or a non-gradual approach is followed, prospects for success are heavily influenced by the quality of planning and communication of the transitional measures adopted.
- *Communication strategy.* A critical ingredient in FFS reform, any communication strategy has to start from an assessment of public perceptions, including on existing programs that could be used as transitional measures; the availability of clear information on the determinants of pricing and the planned use of resources which can be saved through the reforms, especially on the transitional measures planned; consultation with a wide range of stakeholders; the development of clear messages to help the public understand the benefits of the reform and the specific transitional policies put in place; and the use of a variety of media to reach different audiences. It also has to provide for effective coordination of government stakeholders around a common set of messages.

Looking across a diverse array of country experiences, this paper considers country-level factors that contribute to the feasibility and success of each type of transitional policy:

- Countries differ in the degree to which reforms can be grounded in a detailed assessment of vulnerabilities and policy options, since this depends on having the *data and tools* necessary to support evidence-based policy design.
- The nature and effectiveness of *existing social protection programs* and local implementation capacity determine the extent to which transitional policies can rely on existing systems. The effective coverage of the programs used to deliver compensation, and the perceived transparency and fairness of the programs are important factors in determining their effectiveness.
- The need and type of compensation is shaped by the *consumption patterns of the poor*, and by the extent to which the poor are able to manage their demand or secure access to alternative energy sources.
- *Sectoral factors* have an important bearing on the design of transitional policies. For example, cutting inefficiencies in the sector might reduce subsidies while reducing the need to raise prices. Technical factors, such as the type and quality of metering, may affect the ability to implement specific measures. Improving the quality and reliability of services and enhancing financial transparency and accountability of fuel and electricity companies may make even poor people (and those in middle class) willing to pay more and to accept subsidy reform.

- *Institutional factors* beyond the specifics of the energy sector play a key role. Coordination among stakeholders may be particularly important if different ministries are responsible for fossil fuel pricing and for the design and financing of transitional measures. Other institutional factors include political capacity, the credibility of the reforms and mitigation measures, and the baseline level of public buy-in of reforms.
- *Global and domestic trends* can contribute to or hinder the success of the reforms. Though the evidence is mixed, in many cases it seems that crisis situations spur reforms. However, it may be difficult for countries to implement transitional policies under crisis conditions unless some of the basic infrastructure (such as targeting mechanisms and coordinating agencies) has been put in place beforehand.
- *External support* can play an important role in addressing the constraints countries face in identifying, designing, and implementing transitional measures, particularly by bringing in technical knowledge derived from global experience. As an example, to address these needs, a specialized, donor-funded facility hosted by the World Bank provides flexible and multi-sectoral technical assistance tailored to countries' specific needs.

Given the diversity of country-specific situations, there are no universal solutions, but we can derive some policy-relevant principles and guidance.

The evidence reviewed in this paper suggests that carefully designed transitional measures, particularly targeted cash transfers, can support the consumption of basic energy services by the poor while strengthening existing social protection systems. When an existing cash transfer program with appropriate coverage is not readily available, governments can draw on other policy options. Increasing social service provision or introducing offsetting measures in the tax system or in the pricing of public services can help the poor. Finally, countries may choose to retain targeted support to the poor while withdrawing subsidies from higher-income groups. However, given the shortcomings of targeted measures with respect to liquid fuels (which are easy to divert to ineligible consumers), it seems preferable to resort to such measures only on a temporary basis, while developing more robust longer-term solutions.

While policy design needs to be grounded in the specific country context, a wealth of global experience suggests that effective transitional measures—carefully planned, building on existing systems, and appropriately communicated across internal stakeholders and the public—can be implemented in all countries, irrespective of income level and institutional capacity.



## INTRODUCTION

After its 2009 Pittsburgh summit, the G20 agreed “to rationalise and phase out inefficient fossil fuel subsidies (FFS) that encourage wasteful consumption over the medium term, while providing targeted support for the poorest.”<sup>4</sup> At that time, the G20 asked the International Energy Agency (IEA), the Organisation for Economic Co-operation and Development (OECD), the Organisation of Petroleum Exporting Countries (OPEC), and the World Bank to “provide an analysis of the scope of energy subsidies and suggestions for the implementation of this G20 country initiative.”<sup>5</sup> Since then, several studies have addressed various aspects of energy subsidies—among them: preliminary estimates of their magnitude; a discussion of data gaps and challenges in measurement; a discussion of the socioeconomic, environmental, and sectoral impacts of phasing out fossil fuels; and a set of case studies illustrating ways to phase in reform.<sup>6</sup>

This research, along with many other independent studies, provides consistent evidence that fossil fuel subsidies (FFS) produce a number of undesirable effects. They tend to absorb large quantities of resources,<sup>7</sup> distort energy markets, provide incentives for the overconsumption of energy, burden public financial balances, and crowd out public resources that could be channelled into more productive, and socially beneficial, spending.<sup>8</sup> At the same time, it has been consistently highlighted that the poor and vulnerable face special challenges in accessing essential energy services as their countries rationalize and phase out inefficient FFS.

In light of this context, leaders at the G20 meeting in St. Petersburg in 2013 made the following request:

Recognising the importance of providing those in need with essential energy services, we ask Finance Ministers to consider, in conjunction with the relevant international institutions, policy options for designing transitional policies including strengthening social safety nets to ensure access for the most vulnerable.

This paper aims to respond to that request by surveying the principal findings emerging from the literature in order to highlight a variety of measures that together form a “toolkit” available to policy makers. The paper relies heavily on existing reviews produced by different international organizations (e.g., Komives et al. 2007; IEA 2011; Arze del Granado 2012; OECD 2012; Clements et al. 2013; GSI 2013; Vagliasindi 2013). These references and others are briefly discussed in Annex 1. This paper is not meant to be a comprehensive resource.

A few comments will help clarify the scope of this work. As stated in the terms of reference

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<sup>4</sup> Fossil fuels include oil (crude oil and refined products), natural gas, peat, and coal. We include electricity and heat supply because they can be produced with fossil fuels.

<sup>5</sup> Leaders’ Statement from the G20 Pittsburgh Summit, 24–25 September 2009 (Preamble and paras. 24, 29, and 30).

<sup>6</sup> Joint report on fossil fuel subsidies prepared by the IEA, OECD, OPEC, and World Bank, presented to the G20 Toronto Summit in June 2010; “The Scope of Fossil fuel subsidies in 2009 and a Roadmap for Phasing out Fossil fuel subsidies: An IEA, OECD and World Bank report,” prepared for the November 2010 G20 summit meeting in Seoul; “An update of the G20 Pittsburgh and Toronto Commitments,” a joint report by the IEA, OECD, OPEC, OECD, and World Bank, prepared for the G20 Cannes Summit; and “Recent Developments in Fuel Pricing and Fiscal Implications,” prepared by the IMF in 2012 for the G20 Energy and Commodity Markets Working Group.

<sup>7</sup> While there is no doubt that the resources absorbed by FFS are large, significant differences remain in the various stakeholders’ estimates of their exact size. See GSI (2010a); Clements et al. (2013); IEA (2013); OECD (2013). IEA et al. (2014) provides a summary overview of the main methodological differences.

<sup>8</sup> There are other areas characterized by large subsidies resulting in large distortionary effects, but those are beyond the scope of this paper.

This paper aims to bring together learnings from examples of inefficient fossil fuel subsidies reform, providing policy makers with voluntary transitional policy options that they could use to support reforms that phase out and rationalise inefficient fossil fuel subsidies. [...] This paper will outline possible policy options that countries can consider if they choose to implement these transitional policies, and analyse the strengths, weaknesses and trade-offs of the various options and potential costs or risks associated with them with reference to the large body of evidence which draws on agreed case studies from around the world. If a country's experience is to be used as a case study, that particular country will provide approval for the case study's inclusion. Measures to increase the energy efficiency of poor and vulnerable households, broader poverty alleviation measures (e.g., including conditional cash transfers) that address the causes of persistent poverty, and issues related to how governments can alter their energy policies in general will not be considered in this paper. However, if appropriate, the World Bank Group may draw upon previous examples of successful broader reforms where there is a relevance to energy access or its use.

The terms of reference make it clear that the focus of this paper is on *voluntary* and *transitional* policies to phase out *inefficient* fossil fuel subsidies *that encourage wasteful consumption of energy*. These important qualifications are central to the paper and will be implicit in what follows for reasons of succinctness and simplicity. Similarly, we will focus on cases in which the reform or removal of FFS results in higher prices and calls for transitional policies.<sup>9</sup>

As the policy measures discussed are *voluntary*, the paper does not address the issue of whether countries should embark on FFS reform or adopt the transitional measures discussed here. The core topic of this piece is rather the design and implementation of transitional measures. Our starting point is, therefore, that countries that have decided to reform their FFS have several options for protecting access to energy services by the poor. To the extent that we present background information on the debate for and against FFS, it is to provide the reader with an overview of the effects that transitional measures ought to address. Detailed discussions on this debate are outside the scope of this paper, and, to a certain extent, have already been presented in previous reports to the G20.<sup>10</sup> Note also that when considering their policy choices, policy makers may wish to undertake one or more of the activities discussed here, even if they decide not to proceed with either the reform of FFS or the implementation of transitional measures.<sup>11</sup>

The terms of reference for the paper imply that, while “transitional policies” could refer to a whole range of reforms aimed at rationalizing FFS, the policies to be addressed are those aimed at minimizing the social costs of FFS reform and particularly those affecting poor households (as opposed to firms). While the removal of FFS can raise concerns over a possible acceleration of inflation, policies aimed at keeping inflation under control are beyond the scope of this paper, despite inflation's potential to impede the implementation of reforms and to alter incentives. The impact of inflation on the poor is, however, discussed briefly as a second-order effect to be addressed by transitional policies.<sup>12</sup>

Importantly, our focus excludes interventions aimed solely at increasing access to modern energy services to previously underserved segments of the population. While this is a policy objective of key importance to improve the livelihoods of the poor—as shown by the current inclusion of the bulk of

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<sup>9</sup> Where technical and nontechnical losses are very large, it may be possible to reduce subsidies without adjusting prices for final users. Kojima (2013a) presents the case of Nigeria.

<sup>10</sup> See sources quoted in footnote 4.

<sup>11</sup> Such as conducting a thorough analysis of the distributional impacts of FFS removal, and putting in place a structured communication strategy, including consultations with different stakeholders, informing the broad public about the size and distribution of the subsidies, and providing a timetable of the increases in prices to be expected.

<sup>12</sup> In addition, note that to the extent that FFS offer incentives for the illegal diversion of fossil fuels, the removal of FFS will also result in an increase in the prices of the goods and services produced through this illegal diversion. The compensation of such costs is not meant to be covered by the policies discussed in this paper.

the Sustainable Energy for All (SE4ALL) goals in the Open Working Group's draft development goals for 2015 and beyond—such policies are long-term and not transitional, and they do not necessarily relate to the reform of FFS. From a technical point of view, they also tend to involve different policy tools and actions from those used in response to the social costs of FFS reform. Furthermore, extensive work in this area has already been conducted. (For an overview of the related issues addressed by SE4ALL, see its Web site at <http://www.se4all.org/>.)

A discussion of the sustainability of reforms aimed at the removal of FFS is also beyond the scope of this paper. We will refer therefore to examples of interesting or innovative transitional measures, whether or not they proved successful, provided that the shortcomings of the reform cannot be ascribed to the design of the transitional measures.

As discussed further, countries identify those in need in a variety of ways. They may be a subset of the poor (e.g., poor households that qualify for existing social assistance programs). They may be those households that would have trouble paying for fuel or electricity following the removal of subsidies. They may be households with a low income and high needs for energy. Or they may be households living within an income band from the poverty line. Unless otherwise specified, we will refer to all of these groups as “the poor.”

In this paper we try to differentiate, to the extent possible, between different types of fossil fuel—as conditions can vary dramatically in the markets for the various fuels. We generally use the word “prices,” with “tariff” used only when discussing regulated electricity, gas, or district heating.

Finally, transitional measures are crucial elements of a comprehensive plan for rationalizing and phasing out FFS. Other elements of the plan include increasing awareness of the extent of subsidies among consumers and producers; broader structural reforms to improve the efficiency of the sector; a comprehensive communication strategy keyed to the timing of subsidy removal and of the implementation of compensatory measures; and consultations with potential losers from the reform (OECD 2012; Clements et al. 2013; GSI 2013). A full discussion of such comprehensive plans exceeds the scope of this paper, though these elements are referred to inasmuch as they are relevant to the success of transitional measures. In particular, we refer to the role that transitional policies can play in making reforms socially acceptable and how the effectiveness of such policies can be strengthened by a good communication strategy. Efforts to improve energy efficiency—which, by improving households' ability to manage demand, can be important transitional measures—are excluded from the scope of this paper by its terms of reference.

The paper is organized as follows. The rationale for focusing on transitional measures is reviewed in the next section. Ensuing sections discuss the main tools available to policy makers, the key features of those tools, and how different country circumstances may shape the choice among them. The main messages of the paper, particularly the strengths, weaknesses, and trade-offs of the various options and the potential costs or risks associated with them, are summarized in the last section.

## THE RATIONALE FOR FOCUSING ON TRANSITIONAL MEASURES

This section provides some background on FFS, particularly the findings that their removal is likely to cause hardship for low-income households, even if they are not the main beneficiaries of FFS. This section maps various effects on households of removing the subsidies. This evidence provides the rationale for adopting transitional policies to accompany FFS reform, and identifies key elements that the design of transitional policies should address.

As a means of redistributing income to the poor, FFS are generally inefficient, yet their removal is likely to affect lower-income households negatively, both directly and indirectly. Planning reforms so that they include carefully designed transitional policies is therefore essential to alleviate these negative impacts and to enhance the social sustainability of the reforms. This section first offers a brief review of the debate over FFS as a way of supporting poor people's access to energy services. It goes on to discuss the various effects that FFS reform may have on the poor. It is not an exhaustive overview of these amply debated issues, but rather highlights key issues to be addressed by the design and implementation of transitional measures.

### **The debate over FFS as a tool to support the poor**

Various arguments have been made in favor of FFS. The welfare argument sometimes made is that FFS make energy affordable for lower-income groups. Some observers also see FFS as a means of facilitating access to improved household energy sources (as opposed to traditional biomass), particularly in rural areas where unsubsidized prices can become prohibitively high, or facilitating the shift from more-polluting to less-polluting fuels, such as from solid fuels or kerosene burned in wick stoves to LPG (liquefied petroleum gas) or natural gas, or shielding the economy as a whole from volatile energy prices.

All of these points are hotly contested, as critics focus on FFS' ability to achieve these objectives, as well as on FFS' side effects.

Critiques of the power of FFS to expand access to higher-quality energy sources focus on the differences between official (subsidized) prices and the prices that end consumers actually pay, which can be markedly higher (as with kerosene in Nigeria and in Indonesia, and with LPG prices in Egypt). Rationing and shortages often accompany subsidies, sometimes precipitating violent protests. Ghana's market in automotive LPG offers an example of how subsidies led to such acute shortages that consumers sought to have the subsidy removed (Kojima 2013a: 18). In the case of networked utilities such as electricity, power outages traceable to lack of investment may lead richer households to rely on private backup generators, leaving poorer households either cut off from electricity or forced to rely on more expensive alternatives (such as buying power from private generators). Also, the ability of FFS to shift consumption toward cleaner fuels is debatable. For example, in Turkey in 1999 the government forwent value-added and other consumption taxes to encourage LPG use. The exemption was short-lived, however, and led to the unexpected diversion of LPG from cooking to use in retrofitted passenger cars (IEA 2002; OECD 2014a). The evidence on interventions of this kind is inconclusive, however, as various factors appear to affect behavioral shifts, and it is difficult to ascribe successful shifts to low prices alone.<sup>13</sup> Finally, critiques of using FFS to shield households

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<sup>13</sup> LPG schemes designed to promote large-scale adoption have been enacted, for example, in Brazil, Indonesia, Mexico, Morocco, and Senegal. Such policies have led to widespread use of LPG in urban areas, but rural uptake of LPG has varied

from volatile prices center on the costs that these measures end up imposing on the economy (Kojima 2013b; see also box 1).

On top of these debates, there is ample evidence that FFS are generally regressive—that is, they benefit poorer households relatively less than they do richer ones. The IEA (2011) estimated that in 2010 only 8 percent of subsidies reached the bottom quintile of the population.<sup>14</sup> Table 1 provides some estimates by fuel type and distinguishing between direct benefits from the subsidy (those derived through the direct use of the fuel subsidized) and of indirect ones (derived from the consumption of goods produced and transported in reliance on that fuel, and from the use of collective transport services).<sup>15</sup> As the table shows, the bottom 20 percent of the population, ranked by quintiles of total household consumption per capita, on average receive about 7 percent of the overall benefit, whereas the top two quintiles receive proportionally more benefits than their share of the population. The top quintile alone receives on average almost 43 percent of the benefit of the subsidy by virtue of consuming more of the subsidized fuels than the rest of the population. A similar pattern holds when looking at the total impact broken down for direct and indirect effects.

**Table 1. Distribution of subsidy benefits by consumption quintile (in percent)**

	Consumption quintiles					All households
	1	2	3	4	5	
Total impact	7.2	11.4	16.2	22.5	42.8	100
Total direct impact	7.1	10.7	14.0	19.9	47.6	100
Gasoline	3.0	5.7	9.7	19.4	61.3	100
Kerosene	19.0	19.7	20.6	20.1	20.6	100
LPG	3.8	7.6	12.6	20.8	53.8	100
Indirect impact	7.3	11.7	16.3	22.6	42.0	100

*Source:* Arze del Granado et al. (2012) and authors' computations based on country reviews.

The table also shows the differences between different kinds of subsidized fuels. As shown in annex 2, those patterns are robust, even though the specific estimates vary by country and method used. General subsidies on gasoline are particularly regressive (the top quintile receives more than 20 times the benefit received by the bottom quintile), as private transport by car tends to be affordable only for the better-off. The results for LPG appear only marginally less regressive, with quintiles 2–4 appropriating even more of the benefit than in the case of gasoline. In the case of kerosene, the benefits appear to be almost uniform, with each group getting about as much as their weight in the population. Even the poorest quintile—the group most likely to rely on kerosene for cooking and lighting—benefits in proportion to its share in the population.

Detailed country evidence, however, shows a more nuanced picture of kerosene subsidies and their effect on the poor. A detailed study for Maharashtra, India (Rao 2012) found that kerosene subsidies were “regressive and of minimal financial value to poor rural households,” partly because quotas are based on cooking needs, whereas rural households use kerosene only for lightning and cook with biomass. In urban areas the pattern was found to be progressive, as kerosene subsidies provided

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by country (Kojima 2011; Kojima 2013a; and ESMAP 2003; see also Andadari et al. 2014 on Indonesia). Further, there is evidence that even in highly subsidized areas, such as rural India, not only the poor but also the better-off continue using traditional biomass, pointing to factors other than price influencing the choice of energy sources.

<sup>14</sup> Based on a sample of 11 countries: Angola, Bangladesh, China, India, Indonesia, Pakistan, Philippines, South Africa, Sri Lanka, Thailand, and Vietnam.

<sup>15</sup> These estimates have been obtained assuming constant demand—that is, they are not adjusted for the price or the cross-price elasticity of demand.

“benefits of up to 5 to 10 [percent] of household expenditure among poorer households which lack affordable access to LPG and biomass” (Rao 2012: 35). Overall, the study also found extremely high amounts of leakage, with only 26 percent of the total subsidy reaching households, making these subsidies appear to be highly regressive.

### Impacts of higher prices on households

Although FSS are generally not efficient tools for protecting the poor from high energy prices, their removal would likely affect low-income groups that are already struggling to cover their basic needs.<sup>16</sup> The hardship that rising fossil fuel prices may impose on lower-income households in most cases would appear to have a relatively limited effect on the incidence of poverty.<sup>17</sup> The impacts on the depth and severity of poverty, however, are likely to be much more pronounced. And given the difficulties poor people already face in meeting their basic needs, cutting further into their budgets can have serious negative consequences.

If not compensated for, higher energy prices affect livelihoods, particularly of the poor, through their impact on general inflation, and through direct effects on households and businesses, especially energy-intensive industries.<sup>18</sup> For households—the focus of this paper—two main channels of impacts can be identified, relating respectively to consumption patterns and income streams. Both consumption and income can be affected *directly* by higher prices for energy, or *indirectly* through other price changes triggered by the changes in energy prices. These indirect effects, though harder to quantify than direct effects, can be significant. For example, Arze del Granado et al. (2010) estimated that more than half of the potential impact of the rise in fossil fuel subsidies between 2003 and mid-2008, if higher prices had been fully passed through, would have come through indirect effects.<sup>19</sup> In addition, other indirect effects can be identified, including increased exposure to fuel price volatility and the health and environmental impacts linked to a shift back to biomass.<sup>20</sup> This category of indirect effects has not typically been addressed by transitional policies, although concerns over these effects can be reflected in policy design through the introduction of complementary measures.

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<sup>16</sup> In countries characterized by declining shares of expenditure on modern energy across quintiles—such as most of the countries of Eastern Europe and Central Asia (Ruggeri Laderchi et al. 2013)—the impact of FFS removal will be regressive. In general, however, it is hard to generalize this finding, given the different patterns of energy spending observed in different contexts (see evidence in Bacon et al. 2010).

<sup>17</sup> For example, in Indonesia, it has been estimated that the population that would enter poverty following a reduction in fuel subsidies would increase by 0.4 percentage points (Dartanto 2013). Impacts of about 5 percentage points have been estimated for Egypt (World Bank 2005; Soheir et al. 2009), but arguably these represent the very top of the distribution of effects, since FFS there were both very high and pervasive. While estimates vary significantly with the methodology used, the studies quoted appear to cover the spectrum of poverty impacts typically found in empirical analyses.

<sup>18</sup> For example, using a computable general equilibrium model, Burniaux et al. (2011) show that a coordinated subsidy removal could reduce the competitiveness of energy-intensive industries in certain economies (especially in Indonesia, Nigeria, Venezuela, and the Middle East), which in turn would reduce employment in that sector to the extent that labor is not a good substitute for energy inputs. Note, however, that this drop in competitiveness would be accompanied by higher incomes resulting from increased fossil fuel exports. In addition, EU experience suggests that reliable energy supply and a productive labor force, wider access to markets, and so on, are significant drivers of industrial competitiveness—so that an emphasis on fuel prices might only prove reductive.

<sup>19</sup> Some transitional measures (cash transfers) can exacerbate the inflationary impact of FFS removal (see, for example, Clements et al. 2013). Note that the finding on the magnitude of indirect effects in Arze del Granado et al. (2010) is likely to be significantly over-stated due to the use of input-output analysis which is based on fixed coefficients (i.e. there is scope for substitution).

<sup>20</sup> Recent evidence on the shift from fuels to biomass has been provided, for example, by the recent policy pilots in India, involving switching from in-kind to cash benefits for LPG and kerosene. Because of the specific design of those measures, household facing poor banking facilities and other barriers to accessing the benefit dramatically reduced their consumption of fuels (GSI 2012a).

Table 2 summarizes the relative vulnerability of different groups of people to the various effects of removing FFS. The table is no more than illustrative, as it makes some important simplifications. In each country, actual impacts will depend on consumption patterns, the extent to which consumers can adjust their consumption when prices change,<sup>21</sup> and the distribution and type of income-generating activities, particularly those in which the poor tend to engage.<sup>22</sup> Despite these qualifications, significant differences between rural and urban areas are to be expected in low-income countries, as rural areas are not only typically poorer but also less likely to be connected to grid electricity. In addition, table 2 makes the simplifying assumption that consumers pay official prices before the subsidy removal. In fact, as discussed below, it is not uncommon for consumer subsidies to result in shortages and for households to pay higher unofficial prices.<sup>23</sup>

Faced with the significant pressures on their budgets described in table 2, poorer households adopt a variety of coping strategies. According to a series of recent studies in low and middle-income countries in Eastern Europe and Central Asia conducted by the World Bank (World Bank forthcoming), those strategies include trying to limit energy demand (for example, heating smaller areas in their house or not heating during the day; living with extended family during the winter; not using some household appliances; going to bed early to save on electricity); substituting cheaper (and often inferior) energy sources, such as wood or cheaper types of coal; and cutting other parts of the family budget (limiting the number of meals; paying energy bills and medicines as soon as pensions are paid and getting by for the rest of the month; limiting social interaction to avoid customary expenditure on small gifts). Many of these coping strategies have undesirable long-term effects in a variety of ways, such as on health (indoor pollution, uncomfortable temperatures), the environment (greater reliance on biomass, deforestation), and social inclusion (greater isolation of vulnerable households).

Given this broad variety of effects and the disruption they represent for the livelihoods of the poor, countries have sought to ensure that poor households can retain access to basic energy services during FFS reform and be fully compensated for the indirect effects of the reform. They have done so in a variety of ways. In the next section, we will present the most common solutions adopted, highlighting their relative pros and cons. We refer to this broad set of experiences as a toolkit, because it offers countries that wish to engage in similar reforms a spectrum of interventions to consider. Depending on the fuels concerned and on country circumstances, a given intervention may prove more or less effective.

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<sup>21</sup> Available estimates of the price elasticity of demand vary substantially by type of fuel and with the level of income per capita in a country. A recent review (Dahl 2012) reports estimates of between  $-0.11$  and  $-0.33$  for gasoline, and of between  $-0.13$  and  $-0.38$  for diesel. The price elasticity for gasoline appears to be higher in richer countries. The income elasticity of demand for fuels is much larger in magnitude than the price elasticity. Vagliasindi (2012) reports that and that long-run elasticities are significantly higher than short-run elasticities. Zhang (2011) estimates the price elasticity of demand for electricity by different groups and finds that demand from poorer households is significantly more inelastic than that from richer households.

<sup>22</sup> In addition, the table does not capture complexities such as policies that may lower the price of LPG relative to kerosene for the very poor.

<sup>23</sup> Similarly, in the case of networked utilities, subsidies often result in insufficient investment in the sector by the utility, which over time loses the ability to provide services of appropriate quality. Improvements in service quality (for example, reductions in blackouts) following removal of subsidies are not captured in the table.

**Table 2. Direct and indirect effects on households of increases in the price of a previously subsidized energy source**

Direct effects	Indirect effects
<p>Direct effects impact users of the previously subsidized energy source, which costs more following reform.</p> <p><b>Consumption</b></p> <p>All households with access to the energy source will be affected.</p> <p>Impacts will vary depending on the share of household resources spent on the energy source and the price elasticity of demand (which in turn depends partly on the potential for substitution, other price elasticities, the degree of nonessential consumption, and so on).</p> <p><i>In the case of liquid fuels:</i></p> <ul style="list-style-type: none"> <li>• Rural households, in particular the rural poor, would be affected by kerosene price increases, as kerosene is often used for lighting and cooking.</li> <li>• Urban households that have cars would be affected by higher gasoline and diesel prices. This effect may be especially relevant for poor families in higher-income countries, especially those with weak public transportation systems.</li> </ul> <p><i>In the case of networked utilities (electricity, gas, district heating):</i></p> <ul style="list-style-type: none"> <li>• Qualitative and quantitative sources suggest that lower-income households have more inelastic demand.</li> <li>• One would typically expect the urban poor, who might be more dependent on networked energy or on energy sources procured on the market rather than self-collected, to be particularly vulnerable. Some forms of housing (such as apartment buildings) may be harder to retrofit to alternative energy sources, thus limiting substitution options.</li> <li>• Rural households are typically not connected to natural gas and are less likely to consume LPG as the primary fuel for cooking and heating; in low-income countries they are also less likely to be connected to electricity. Even in middle-income and rich countries, rural households are more likely to use traditional biomass for cooking and heating, particularly if they can get it by self-collection.</li> </ul> <p><b>Income</b></p> <p>All households that use the energy source for income-generating activities will be affected. For those engaged in commercial activities, the extent of the impact depends critically on how much of the additional input cost they can pass through to final consumers.</p> <p>Groups that have been found to be particularly vulnerable include fisherfolk (who depend on diesel fuel), farmers (who use diesel pumps for irrigation), and small and medium enterprises.</p>	<p>Indirect effects touch all households in the economy through (i) increases in costs of goods and services that depend on the energy source for which the price rises, and (ii) increases in the costs of other energy sources through substitution, generalized inflation, and lower employment in energy-intensive activities.</p> <p><b>Consumption</b></p> <p>Strong indirect effects are to be expected for higher prices of <i>transport fuels</i>, particularly diesel (used by trucks).</p> <p>Effects will vary depending on the consumption baskets of poor households, on the price elasticity of demand for different goods, and on the distance between production and consumption centers.</p> <p>In principle, one would expect the urban poor, who are most dependent for their basic needs on goods transported from somewhere else and on public transportation for personal transport to be most vulnerable to these effects, but this cannot be ascertained <i>a priori</i>. There is evidence, for example, that oil prices significantly affect food prices (maize) in subnational markets, with areas furthest from the coast (and less urbanized) being the most affected.</p> <p>Indirect effects are likely to be minor for LPG, which is largely used for household consumption, and for kerosene (jet fuel, which is its main use, is typically not subsidized, while the rest is mostly used by households).</p> <p><b>Income</b></p> <p>All households involved in productive activities are likely to be affected by increases in input costs stemming from rising energy prices (e.g., higher costs to transport inputs, higher costs of energy-intensive inputs).</p> <p>In some sectors, indirect effects can be particularly strong. For example, agricultural households are likely to be more affected by rising fertilizer costs linked to the increase of specific feedstocks such as natural gas. Poorer farmers who are less likely to adopt modern technology may still be affected by substitution effects between energy sources. For example, owing to higher prices of fossil fuels, the biomass that is used for fertilizer in traditional agriculture and as an energy source may become scarcer and more expensive.</p> <p><b>Other</b></p> <p>Higher fuel prices can result in broader impacts on the livelihoods of poor people and their communities.</p> <p>Examples include the health, environmental and social impacts of greater reliance on traditional biomass (often with a strong gender dimension in the burden of collecting it).</p>



## **ADDRESSING THE SOCIAL IMPACT OF REFORMING FOSSIL FUEL SUBSIDIES**

This section examines the main strategies that countries have used to cushion the impact of higher energy prices on the poor. These are grouped into two broad categories: (i) improving the poverty targeting of existing subsidies; and (ii) introducing or strengthening other forms of support for the livelihoods of the poor – in cash or in-kind. These strategies may be put in place as alternatives or in sequence, rationalizing existing measures as a first step toward removal as more forward-looking investments are made to support the livelihoods of the poor. When setting up transitional measures for the removal of subsidies on liquid fuels, care should be taken to minimize incentives for adulteration and smuggling, as measures involving “targeted” subsidies for liquid fuels have often been found to have unintended consequences.

International experience shows that several distinct paths have been followed to support access to essential energy services for the poor while phasing out or rationalizing FFS. This section considers these from the perspective of how they can be used to cushion the impact of higher energy prices on the poor.<sup>24</sup>

Countries appear to have followed two main types of transitional policies. The first focuses on improving the targeting of existing subsidies, at least temporarily, while reforming or removing subsidies for the rest of the population. The second introduces or strengthens measures to support the livelihoods of the poor while subsidies are being removed.<sup>25</sup> Note that there is also a third option, which involves proceeding with the reforms without providing any compensation for the poor (though other groups may be protected), or without doing so explicitly. This last approach is not discussed further, as it overlooks the desire to protect access to basic energy services for the poor, which spurred the request for this paper made following the G20 summit in St. Petersburg.

Before proceeding to a discussion of the two remaining types of transitional policies, several general points are worth making about our typology. First, even if the two types of policies are presented as alternatives, they are not necessarily equivalent or mutually exclusive. By improving the targeting of existing subsidies, countries can ensure that the poor continue to receive basic energy services as much as they did before, but they cannot insulate them from the indirect effects of higher prices following the FFS reform, which, as discussed, can be significant. The most efficient way of pursuing that objective, and indeed the one that is most commonly used, is cash transfers—that is, by supporting poor people’s income. Second, countries have often chosen to pursue more than one of the identified strategies or to pursue different options at different times.<sup>26</sup> Third, these different policies have been implemented in a variety of policy contexts, and by very different actors, such as energy utilities or social assistance systems. It is not possible to identify, therefore, a given set of measures as a universal solution, or as a pre-packaged solution that will fit all contexts.

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<sup>24</sup> This is, of course, only one of multiple possible taxonomies, which could focus, for example, on the types of instruments used (cash versus in-kind transfers), or the type of fuel for which each strategy is most suitable, or the time horizon over which a given strategy can be implemented.

<sup>25</sup> We use the term “supporting the livelihoods of the poor,” as opposed to “supporting their consumption of energy services,” to emphasize that these measures can be used to cushion the impact of reform on the poor (and indeed on other groups) and that there are indirect effects of subsidy removal.

<sup>26</sup> For example, the Philippines in 1998 introduced various programs including electricity subsidies for poor (“indigent”) families, and college scholarships for low-income students as part of its response to the food and fuel crisis; later (2004–05) when electricity tariffs increased significantly as part of long-running electricity-sector reforms, both lifeline tariffs and subsidies targeted at particular geographic communities were introduced (Clements et al. 2013).

Finally, as part of their transitional policies, countries might want to shield the poor from the impact of greater volatility in fuel prices. As already mentioned, tools to stabilize prices for households have often resulted in high fiscal costs (box 1). If used in the context of FFS reform these tools would open the possibility of reintroducing subsidies. In addition, because the poor often spend very small shares of their budget on fuels,<sup>27</sup> they are likely to be most affected by the indirect effects of fuel price volatility on key items such as food rather than the volatility of fuel costs *per se*. In such contexts, the interests of the poor are better served by policies, such as cash transfers, that can protect their incomes against adverse price fluctuations rather than by efforts to stabilize specific prices.

### **Box 1. Recent policy efforts to reduce exposure to volatility in fossil fuel prices**

Countries have put in place a variety of mechanisms to reduce their exposure to fossil fuel price volatility. Those mechanisms have ranged from adjusting domestic prices based on a link to world prices and domestic costs to setting up stabilization funds or to making ad hoc and unpredictable adjustments. The overall assessment of these experiences, supported also by detailed simulation, is that the most effective smoothing strategies are the also most expensive ones. Furthermore, even solutions such as oil funds, which should be self-sustaining, in practice have proven not to be, as international prices are either not reverting to the mean or are doing so over very long spans of time, requiring substantial subsidization in the interim.

Peru, Colombia, and Nigeria provide examples of stabilization funds that required extensive budget transfers. The Peruvian fund was set up for a transitory period of 120 days when the energy sector was deregulated but continued operations beyond this initial horizon. Budgetary transfers to the fund between its inception and the end of 2011 totalled US\$2.5 billion. The fund in Colombia began operating in 2008 with an initial deposit of about US\$170 million. By the end of 2011, its deficit had grown to US\$1.2 billion. In Nigeria, a fund was set up in January 2006 to stabilize domestic fuel prices. Despite its self-sustaining design, the fuel subsidy financed by the fund (and ultimately by the government budget) increased six-fold between 2006 and 2011, exceeding US\$11 billion in 2011.

Chile's fund aimed at small and medium enterprises appears to have been self-sustaining, though in recent years the degree of smoothing has been small, if any. It operates through a variable component that is subtracted from or added to the base component of a specific fuel tax. The fund does not cover large diesel consumers such as power plants and mining companies.

*Sources:* Based on Kojima 2013a, 2013b. Verbatim quotes are not identified.

### **Improving the targeting of existing subsidies**

Countries can attempt to improve the targeting of existing subsidies, possibly as a step toward removing them entirely. A helpful classification of ways to do so focuses on limiting (i) the number of goods subsidized, (ii) the quantities subsidized, and (iii) the number of beneficiaries (Clements et al. 2013). The implementation of these measures can be designed so as to ensure that the poor continue to access the subsidies, at least temporarily, as discussed below. The advantages of such measures, particularly the first two, is that they rely on existing systems, though they might involve some additional investment in, for example, introducing ration cards or setting up institutions to screen beneficiaries for eligibility. In some cases, such as maintaining subsidies for public transport, there might be an element of self-targeting, as lower-income people are more likely to rely on the subsidized transport than are wealthier groups.

<sup>27</sup> This excludes countries where heating costs are high.

Maintaining subsidies for a limited class of beneficiaries can be particularly problematic in the case of liquid fossil fuels, given that the policy does not eliminate (and may even increase) incentives for adulteration, smuggling, and associated criminal activities. Furthermore, to the extent that a policy requires dealing directly with commodities rather than with cash, it may involve higher requirements in terms of administration and monitoring.

### *Limiting the number of goods subsidized*

Removing subsidies from fuels that are consumed mainly by wealthier segments of the population leaves a smaller and better targeted set of subsidies in place. Such an approach is typically adopted as part of a phased removal of FFS wherein subsidies on gasoline, which is typically used by richer households, are eliminated first, followed by subsidies on diesel, which is typically used by businesses, and finally by subsidies on kerosene, which is used by poor people for lighting and cooking. Examples of this approach include India (which started decontrolling gasoline prices and is now working on diesel), Niger (which in 2011 significantly reduced its subsidy for gasoline), and Peru (where subsidies were removed on high-octane gasoline used in luxury cars first, and then from regular gasoline and LPG for industrial consumption; subsidies remain for diesel—used mostly for public transport—and LPG for household consumption).<sup>28</sup>

While in theory this approach can improve the targeting of the subsidy and reduce its fiscal costs, it can result in undesirable effects (Bacon and Kojima 2006). Delays in reducing the subsidy on diesel to avoid indirect effects on trucking costs (which hit the rural poor hardest) end up benefiting mostly middle- and high-income groups, who consume more of everything. Furthermore, if a large price difference between gasoline and diesel is maintained for a long time, as in India, there are incentives for the entire vehicle fleet to switch to diesel, with all the attendant noise and pollution.<sup>29</sup> Similarly a larger subsidy for kerosene than for diesel, intended to protect a basic consumption item for the poor, provides incentives to adulterate diesel by mixing it with kerosene.

### *Limiting the quantities subsidized*

This second type of intervention allows each beneficiary a maximum amount of subsidized fossil fuels, for example through a ration card.<sup>30</sup> By creating a multi-price structure, such measures can smooth the impact on households from subsidy removal at the cost of providing incentives for diversion.<sup>31</sup> An example of this approach is India's LPG subsidy which has been in place since 2002, but revised in 2012 to limit the amount of cylinders per beneficiary (Government of India 2011; GSI 2014). Starting in 2012, each household could receive an annual quota of six subsidized LPG cylinders, but in response to pressure the government has raised the quota in rapid succession to nine and then to twelve (GSI 2014). Limiting subsidies to cylinders of a smaller size is another measure often adopted to limit the extent of LPG subsidies while ensuring that affordable supplies continue reaching the poor. Such a scheme has operated, for example, in the Dominican Republic in the early 2000s until the 2008 reform, in El Salvador in the mid-2000s, and in Egypt today. This approach has often led businesses to substitute small cylinders for larger, industrial-sized ones and car owners to modify their vehicles to run on LPG using multiple small-sized cylinders.

<sup>28</sup> All these examples are discussed at length in Clements et al. (2013).

<sup>29</sup> In India, for example, one can find motorbikes running on diesel, which is uncommon in the rest of the world.

<sup>30</sup> Ration cards are not exclusive to this particular sub-category of policies. The large kerosene subsidy, mentioned in the previous paragraph in relation to the incentives for diversion provided by protracted differences over time between different liquid fuel sources, is administered through a ration card.

<sup>31</sup> These strategies can also give rise to a secondary market in rations, as those who do not need their full allocations can sell them at a profit.

Limiting the quantities subsidized is a very common strategy in the case of networked utilities, and thus extends well beyond the context of FFS reform. For example, in the Philippines, South Africa, Thailand, and Vietnam, among other countries, low-income households can consume up to 50 kilowatt-hours (kWh) of electricity per month for free. By providing a limited amount of electric power at an affordable price, so-called lifeline electricity tariffs can be very effective at giving low-income households access to basic energy services, though at the substantial cost of providing household connections and appropriate metering devices.<sup>32</sup> When applied in a universal fashion, lifeline tariffs tend to be supported by the middle classes. Their ease of administration and the incentives they can provide for energy efficiency if designed properly (with a marked discontinuity across consumption blocks) are other reasons why these measures are widespread despite being less efficient than the most common social assistance interventions (Komives et al. 2007).

While most examples of lifeline tariffs have been introduced outside a reform context to support energy affordability for poorer households, their ease of implementation through the utilities that provide the services has occasionally led to their adoption as transitional measures. For example, Romania adopted a hybrid tariff system while undertaking energy sector reforms ahead of its accession to the European Union. Under such a system, households could choose between a lifeline tariff (with a heavily discounted first block, and significantly higher tariffs for subsequent blocks) and a constant marginal tariff structure. By electing the lifeline tariff, owing to the high penalty on exceeding the minimum consumption, most poor households ended up restraining their energy consumption (Mulas-Granados et al. 2008). Similarly, the Philippines introduced lifeline tariffs (as well as other geographic subsidies as part of its energy sector reform (Clements et al. 2013). A crucial design feature of this tariff structure is the size of the subsidized block, which, if set too high, ends up covering (most of) the electricity needs of the non-poor.

### ***Limiting the number of beneficiaries***

The third type of intervention limits the number of beneficiaries receiving pre-existing benefits, typically targeting poorer groups. Examples include Brazil's former gas-voucher scheme, which involved direct targeting of beneficiaries through a means test;<sup>33</sup> Chile's compensation of 5 million poor households and 1.6 million households whose electricity consumption was less than 150 kWh/month in 2005; and Indonesia's power subsidies for poor households, first introduced in 2008, under which households using up to 90 kWh/month (reduced to 50 kWh in November 2011) received free electricity (Kojima 2013a). Examples of measures targeting poorer groups indirectly are those involving the removal of subsidies (that is, raising prices) for large customers, for example through volume-differentiated tariffs, where only small users can benefit from lifeline tariffs (Vagliasindi 2012). In Ghana, for example, volume-differentiated tariffs apply for the first two blocks of electricity consumption, with those consuming above the first two blocks facing higher tariffs on all units of consumption. Similarly Mauritania removed fuel subsidies for bulk users in 2011 before moving on to tackling subsidies for households successfully (Clements et al. 2013).

Limiting the number of beneficiaries is very appealing because it can rely on existing institutional arrangements while adding a targeting component. However, it is not free of potential pitfalls. The general points made about liquid fuels apply also to these measures, thereby limiting the circumstances under which this approach is suited. One study using data from India (NCAER 2005)

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<sup>32</sup> In the case of electricity, lifeline tariffs can also be designed around different features than the level of consumption, such as the connected load and other characteristics (single vs. triple phase).

<sup>33</sup> The gas-voucher scheme was a temporary solution, as in 2003 its benefits were rolled into a large-scale conditional cash transfer under the Bolsa Familia program.

suggested that 38 percent of the kerosene distributed through the public distribution system was diverted to uses other than those for which it was intended. In addition, pressures to erode the targeted element of the scheme are not uncommon. For example, Brazil in 2002 attempted to shelter from electricity price increases those living in areas with high needs for cooling, but the progressive expansion of the category hollowed out the reform (Clements et al. 2013). When implementing these types of measures, particularly if they are very narrowly targeted, it is important to monitor over time that the targeting criteria remain relevant so that poor households continue to benefit from the scheme. Finally, while the fiscal benefits of these measures emerge from their targeting, political economy consideration might suggest against targeting very narrowly these measures.

## **Introducing or strengthening support for the livelihoods of the poor**

A second set of transitional policy options focuses on supporting the livelihoods of the poor while removing subsidies. Under this heading we consider a broad spectrum of measures, aimed either at mitigating the impact of the shocks or at providing compensation. Broadly speaking, the first may be associated with transfers in-kind and the second with cash transfers. These are discussed in turn below.

### ***In-kind transfers***

In the context of FFS reform, a variety of in-kind transfers have been used to cushion the impacts of reform on the poorest, despite a number of theoretical objections to their efficiency. Such measures either provide energy directly to households (or lower households' energy costs) or cushion the impact of a price increase by easing other pressures on households' budgets.

By their very nature, in-kind transfers raise several concerns, ranging from the paternalism of direct provision<sup>34</sup> to the logistical difficulties of in-kind provision (heightened in the case of liquid fuels by concerns over diversion, smuggling, corruption, and fraud).<sup>35</sup> However, as transfers in-kind have co-existed with FFS in many countries as ways to make energy more affordable for poorer households, they offer a readily available policy solution that may be scaled up or better targeted as FFS are removed.<sup>36</sup>

Some examples of transfers in-kind that directly provide energy to households or lower the costs of that energy include the following:

### ***In-kind transfers of fossil fuels***

These transfers can take different forms, ranging from “the creation of targeted distribution channels (for LPG to poor customers, or targeted rebates for specific groups) to using fee waivers for transport of social services to help vulnerable groups pay their bills”<sup>37</sup> (Yemtsov forthcoming). In some

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<sup>34</sup> Economic theory suggests that in-kind transfers are less efficient than cash transfers, as they distort household choices. Nevertheless, policy makers and even the public may approve of such “distortions,” as they limit the freedom of recipients to divert the subsidy to different and possibly less acceptable uses.

<sup>35</sup> The challenges of delivering services such as education and health as part of the transitional measures should not be underestimated, as doing so may require a significant effort to set up an appropriate network of delivery outlets, if those are not already available, particularly in poorer and more isolated areas.

<sup>36</sup> In addition, in very poor contexts where mechanisms for the delivery of other compensatory measures are not in place, physically distributing goods might end up being the only feasible solution even if technological developments are reducing the number of situations in which this is truly the case.

<sup>37</sup> Measures to invest in energy efficiency of households are also part of this list, but have been explicitly excluded by the terms of reference of this study.

countries programs distribute fuels to targeted groups, particularly during heating season, or provide discounts for specific groups. Examples include a municipal program that distributes wood at the beginning of the heating season in Croatia, and the distribution of free coal in Turkey. Malaysia in 2006 launched a smart card program to provide transfers to public-transport vehicles and fishing boats (Vagliasindi 2013).

### *Subsidies for electrification*

Subsidies designed to broaden access to electricity have often been linked specifically to the removal of broader subsidies on electricity as part of an effort to rebalance sectoral priorities.<sup>38</sup> This was the case, for example, in Kenya and Uganda (Clements et al. 2013; Vagliasindi 2013). By design these interventions were geographically targeted on poorer areas. Such measures are a major pillar of a global transition to a more efficient, sustainable, and equitable provision of energy. Several initiatives, particularly the Sustainable Energy for All initiative (SE4ALL 2014), recognize the centrality of this mandate.

However, even in a narrow reform context, measures to promote electrification can play an important role. For example, from a political economy or communication perspective, the effort may be designed to show that the government is committed to finding more effective ways of improving the livelihoods of the poor as an alternative to FFS.

### *Other energy-related, in-kind subsidies*

Countries have also adopted a variety of other energy-related in-kind transfers to cushion against the removal of FFS. These measures are not generally intended to compensate directly for the increase in the price of a fossil fuel from which a subsidy has been removed. The example of Ghana in 2005 is worth mentioning, as it sought to compensate households for repeated increases in fossil fuel prices through a large-scale distribution of compact fluorescent light bulbs, among other measures.<sup>39</sup> The intent was clearly to ease pressure on household budgets by lowering electricity bills (Clements et al. 2013). In addition, programs that allow households to smooth their payments for networked utilities over the year (in countries characterized by high seasonality) could be considered as schemes that allow free access to a no-interest payment scheme.

### *Other in-kind benefits*

In several reform experiences, countries have chosen to adopt transfers in-kind not directly related to energy to cushion the direct and indirect impacts of higher energy prices. These include, for example, compensatory tax measures on goods that are intensively consumed by the poor (such as repeal or reduction of value-added taxes on food). Jordan, after a reform that began in 2008, implemented tax exemptions for 13 basic foodstuffs aimed at low-income groups (Vagliasindi 2013), while Kenya, in May 2011, removed taxes on maize and wheat (in addition to eliminating all taxes on kerosene) (Kojima 2013a). Because lowering the value-added tax can be a controversial and politically sensitive policy action, one hard to confine to a specific stretch of time, measures that depend on it may be especially problematic. Other taxes, such as import taxes, may be easier to modify.<sup>40</sup> In Malaysia,

<sup>38</sup> Electrification is of course broadly subsidized well outside the context of FFS removal—for example, through efforts to extend the electrical grid or make household connections more affordable.

<sup>39</sup> More generally, by helping households manage their demand, interventions related to energy efficiency can help households cope with higher energy prices. These are not discussed in this paper, as they were excluded from its purview under the terms of reference.

<sup>40</sup> Vietnam, for example, constantly adjusts import taxes on petroleum products.

after large increases occurred in gasoline and diesel prices in 2008, annual road taxes were lowered (Vagliasindi 2013).

In some cases, by targeting non-energy items that weigh heavily in the budgets of the poor (food, basic education, and health), governments have been able to provide compensation to the poor while maintaining incentives to cut energy consumption. While such initiatives usually are pursued as general poverty-reduction measures unconnected to FFS reform (they can have strong merits in their own right), on occasion they have been specifically pursued in the context of FFS reform.

Two widely documented examples of this strategy are the reforms in Ghana in 2005 and those in Indonesia in 2005, 2008 and 2013. In Ghana, increases in the price of transport fuels (Clements et al. 2013) were accompanied by programs to eliminate school fees for primary and lower secondary school and by a program to improve public transport. In Indonesia (2005 and 2008), four targeted programs softened the impact of higher energy prices. These programs, which are very different from one another in terms of their intended beneficiaries and design, provide subsidized rice, free health care, cash assistance to poor students, and a conditional cash transfer aimed at very poor households with pregnant women or children of school age (Perdana 2014). Over time these programs have become increasingly more sophisticated, thanks to a large investment in creating a unified registry of potential beneficiaries combined with proxy means testing. Building on these efforts, the compensation was delivered through a targeted cash transfer program in 2013.

As far as targeting is concerned, the measures adopted in Ghana were of a universal nature, though arguably they were self-targeted, as richer households tend to rely on private rather than public sources for those goods and services. By contrast, Indonesia sought in 2005 and 2008 to cover as many different poor groups as possible by using several different programs.

An important element of the Indonesian experience is that the authorities were able to reallocate resources from FFS to these programs, which had already been put in place as part of the nation's response to the East Asian crisis of 1997–98.

### *Cash transfers*

Cash transfers are increasingly seen as the most useful tool in policy makers' toolkit of transitional policies.<sup>41</sup> The extensive evidence reviewed by Komives et al. (2007) suggests that, in practice, cash transfers have been more progressive than other programs adopted to support access to energy services by the poor (and more generally to support the livelihoods of the poor).<sup>42</sup> In addition, cash

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<sup>41</sup> Cash transfers are also explicitly singled out in the terms of reference for this paper. The performance of large and well researched flagship cash transfer programs in Brazil (Bolsa Familia) and Mexico (Oportunidades) help explain this special mention. Both programs are estimated to cover 4/5 of the two bottom quintiles (80 and 83%, respectively) and concentrate the majority of resources on those same groups (an estimated 83 and 68% of their benefits, respectively) (ASPIRE, based on 2009 data for Brazil and 2010 for Mexico).

<sup>42</sup> From an economic point of view, cash transfers are more efficient than in-kind transfers because they do not alter relative prices of goods. As mentioned earlier, however, in the perception of politicians and the public, not constraining the choices of recipients of assistance is usually a drawback, as the funds transferred can be spent not on energy but on other (and often not socially acceptable) forms of consumption. In recent focus group discussions in Croatia, for example, concerns were expressed that the recipients of energy-related cash transfers might end up buying alcohol rather than paying their energy bills. Available evidence on the use of cash transfers by recipients does not support this view; for example, Standing (2013) found no evidence of increased expenditure on tobacco or alcohol by basic grant recipients. A more serious concern is spending on merit goods, in this case clean energy. Given complete freedom to choose, a household may not consider the incremental cost of using LPG or an alternative cleaner source of energy for cooking worthwhile and continue to use cheaper but more-polluting fuels for cooking and heating, with attendant harm to the health not only of the household members but also of their neighbors through indoor and outdoor air pollution created by the dirtier fuels.

transfers are the most effective way to compensate households for both direct and indirect effects of FFS removal (and the only way for large indirect effects).<sup>43</sup>

Cash transfers are conceptually simple. In the context of FFS removal, households receive cash (or more commonly bank deposits, personalized checks, or postal money orders) that can be used for any purpose and not confined to purchasing energy. The amount is set at a level that compensates them at least partially for the price increase and its indirect effects, or that covers their energy bills (up to a specified maximum amount of consumption). “[C]riteria for program eligibility must be established, cash must be provided only to those whose eligibility can be verified, and their eligibility must be periodically reconfirmed (Tabor 2002: 11).” As is discussed in more detail below, countries have found a variety of ways to target their programs, from sophisticated scoring based on household characteristics (Chile) to community targeting and even targeting by village elders (Mali).

Concerns about cash transfers tend to focus on three factors. First, as they involve the handling of large amounts of cash, the risks of error, fraud, and corruption need to be taken seriously. These risks can be minimized through appropriate action at all levels of government around four blocks of activities—prevention, detection, deterrence, and measurement. But the risks rise with more complex eligibility designs (Van Stolk et al. 2010). Second, the same complex eligibility criteria, accompanied by concerns over limiting leakage (and outright fraud) and efforts to screen “deserving” beneficiaries from “nondeserving” ones, may result in high costs of administration and complex requirements for potential claimants.<sup>44</sup> Third, targeting errors (of inclusion or exclusion) can be significant,<sup>45</sup> whether direct or proxy targeting is used. All these challenges, while serious, can be addressed by grounding the design of targeting and implementation mechanisms in careful analysis, and by monitoring and evaluating performance to improve it over time.

Modern technology—computerization, ATMs, mobile money, smart cards, and biometric identifiers—has the potential to simplify greatly the technical and administrative burdens of administering such programs (which involve a network of outlets such as welfare offices or local government agencies to distribute transfers) and of qualifying for and receiving them (by providing proof of identity, eligibility, and typically residency). An interesting example of the use of modern technology is the 2014 pilot in India of a cash transfer scheme to deliver LPG subsidies. The scheme exploited the unique biometric identifier (*aadhaar*) which had been introduced as part of social assistance reform. The LPG program was not targeted but conditional on buying LPG cylinders. It required people to obtain their *aadhaar*, link it to a bank account, and receive on their bank account a refund for part of the cost of an LPG cylinder (the subsidy). While put on hold pending review of the pilot, the programme represents an effort to adopt sophisticated technology in energy subsidy administration, particularly to avoid errors and fraud and thereby reduce the cost of energy subsidy

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<sup>43</sup> A further benefit of cash transfers is that, once they have been set up, they can be adjusted to the circumstances. Singapore, for example, introduced in its 2014 budget one off special payments to help lower and middle income households with their costs of living pressures. Such payments are additional to the regularly scheduled ones.

<sup>44</sup> High personal costs of application (in terms of fees to obtain the different pieces of documentation, time, stigma, or poor service on the part of the welfare officers) can become implicit barriers to accessing the benefits, particularly for the poorest and most vulnerable groups that the programs should seek to serve (World Bank forthcoming).

<sup>45</sup> Often targeting design involves a clear trade-off between these two types of errors. The willingness to trade off the coverage of the intended beneficiaries in terms of effort to prevent leakage to unintended beneficiaries is a political choice that is likely to vary by country and the specific circumstances considered.



disbursal.<sup>46</sup> A government report on how the scheme could be improved is currently under consideration (GSI 2014).<sup>47</sup>

In rolling out this type of program, creating accurate and systematic information on potential beneficiaries in comprehensive registries remains a major requirement, though one that many countries are increasingly managing to perform. Of course, the technical requirements rise with the sophistication of the targeting mechanism, and introducing appropriate controls on different streams of income or type of assets is likely to add the most complexity. In addition, this type of program may require complementary investment in deepening financial inclusion (that is, access to banking services). In the case of rural India, for example, replacing in-kind subsidies with the *aadhaar*-based program had the effect of making the subsidies more regressive because many potential beneficiaries of the latter were not bank users (Sharma 2014).

One of the key implications of the care required in the setup and delivery of cash transfer programs is that such programs, particularly targeted ones, can take a long time to implement.<sup>48</sup> In a rather extreme recent example, Iran took five years to set up a program to administer almost universal cash transfers to compensate households for higher fuel prices, which among other things involved opening bank accounts for every beneficiary household, including in remote areas that were underserved by banks.<sup>49</sup> The long period of preparation may have been driven mostly by the internal dynamics of the reform, with significant revisions in the plans occurring during implementation (Tabatabai 2012). In contrast, in 2005 Indonesia took six months to deploy a program that covered the poorest 20 of the population in 2005, despite the country's complex geography and governance issues.<sup>50</sup>

Given the requirements of putting cash transfers in place, choosing to set up such programs should be seen as an opportunity for creating or strengthening systems and institutions that eventually could form part of a well-functioning social protection system. The converse is also true: having systems in place that can be deployed easily is clearly an advantage for countries that wish to use cash transfers as transitional measures during FFS reform as shown by an increasing number of experiences.<sup>51</sup>

In addition to these programs, which are typically administered and linked to the social protection system, countries have also sought to cushion the impact of FFS removal through other cash transfers

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<sup>46</sup> Proposal for other social sector programs based on the use of the link between *aadhaar* numbers with bank accounts are also under consideration.

<sup>47</sup> Available evidence suggests that there have been a number of difficulties with administration including beneficiaries not being in possession of *aadhaar* cards in some states and requirements that names on the *aadhaar* match LPG connection names (GSI 2014).

<sup>48</sup> Once the administrative systems are in place, cash transfers are likely to be cheaper to run than in-kind transfer programs for commodities (Grosch 1994) such as fuels (in-kind transfers for networked utilities are easier to run as by definition they depend on a system that transport and distributes the goods already).

<sup>49</sup> Using direct deposit as a way of transferring funds used to be common in rich countries, but thanks to automatic teller machines (ATMs) they have spread further afield. Already in the 1990s the social pension program in South Africa could reach rural beneficiaries with access to ATMs (Case and Deaton 1996).

<sup>50</sup> The system had large errors of exclusion, which subsequent interventions tried to address and which the government decided to tackle through a single registry and a unified targeting system (World Bank 2012).

<sup>51</sup> Chile, for example, built on its long experience with targeted cash transfers for low-income households, relying on a well-established targeting mechanism. In May 2005, the government announced a subsidy of 16,000 pesos (US\$28) for five million low-income households to offset the direct and indirect impacts of rising fuel prices. Additionally, US\$16 million was distributed to 1.4 million low-income households whose electricity consumption did not exceed 150 kW a month (ESMAP 2006). In Armenia in 1999, the government chose to provide a top-up of a large-scale family benefit program, covering about 30 percent of the population (Vagliasindi 2013). It also provided cash transfers to an additional 9 percent of the population who, by virtue of being very close to the eligibility threshold for the family benefit, were likely to face difficulties coping with higher energy costs. In a more recent example of this type of measure, in Moldova a seasonal heating allowance has been added to the social assistance program of last resort for individuals who are within 150 percent of the eligibility threshold for the program.

aimed at moderating indirect effects, such as those on public transport costs. In Niger, for example, a temporary program was put in place to provide transfers to bus operators to limit the pass-through of fuel price increases to public transportation charges. And China has for years had measures targeted to specific groups, including taxi drivers, to compensate them for the impact of higher fuel prices (Kojima 2013a).

## KEY ISSUES IN THE DESIGN OF TRANSITIONAL MEASURES

This section examines various design options that are common to all transitional measures, discussing their pros and cons. The main aspects discussed are the choice of whether to devise a new program or to expand existing programs; the choice of the target group and how to define it; the amount of the compensation to be offered and whether to seek to insulate recipients fully from the direct and indirect impact of price increases resulting from removal of FFS; the choice between temporary and permanent programs, given the opportunity that FFS reform offers for strengthening existing social protection systems; the time horizon for implementing measures and their proper sequencing; and the design of communication campaigns. The discussion highlights how different choices may be appropriate in different country contexts. No fixed recipe can be given for the design of such measures.

The measures in the policy makers' toolbox vary in their design features and in the time frame over which they can be implemented. This section provides an overview of different design features, while the next highlights factors that might make different policy tools more or less appropriate in a given country. An important message that the two sections convey is that the appropriate solution depends on the conditions prevailing in a country. In addition, politics, public perceptions, and the effectiveness of the communication strategy play important roles in determining what an appropriate solution might be in any given case.<sup>52</sup>

### **Whether to devise a new program or expand an existing one**

Governments can choose to provide compensation for the reform of FFS under specific energy- or fuel-related programs or as part of broader, multi-purpose programs, usually ones that already exist. Concerns over program fragmentation and the duplication of administrative costs leads to the recommendation that, in general, using multi-purpose programs may be more cost effective.<sup>53</sup> The choice is often limited by the types of programs already available, because trying to set up a new program while introducing FFS reform may prove too onerous.<sup>54</sup> Moreover, integrated programs provide eligible households greater incentives to apply than do separate programs, though they also have the unintended shortcoming of making it more costly for beneficiaries to graduate from the scheme.

Countries seem to face this choice in different ways. Where large-scale cash transfer programs already exist, adding an energy component to it (or rolling existing energy programs into the same vehicle used to deliver the cash transfer) appears relatively straightforward, since existing welfare officers, for example, will already be familiar with the targeting mechanism. Often a common targeting mechanism is adopted, with different eligibility thresholds applying to different items in the transfer. In Moldova, for example, the eligibility threshold for the heating benefit is 150 percent of the one used for social assistance of last resort. If, as in Indonesia in 2005, no large-scale cash transfer

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<sup>52</sup> For example, in early 2014 in Indonesia, the government was considering relying on an in-kind transfer (an educational benefit) rather than a cash transfer program to counteract the perception that the cash transfer might be designed to obtain voters' favor ahead of elections. (See, <http://www.thejakartapost.com/news/2013/05/13/sby-meets-with-house-leaders-fuel-subsidy.html>; and <http://www.thejakartapost.com/news/2013/06/04/govt-stresses-no-political-motive-behind-direct-cash-assistance-plan.html>.)

<sup>53</sup> Integration in a multi-purpose program can involve many different aspects, including consolidating responsibility for oversight and management, fraud investigation, and processing of applications.

<sup>54</sup> Depending on the circumstances, in addition to focusing on measures to cushion the impact of higher energy prices on the poor, countries might want to consider introducing measures to address the environmental impacts of higher fuel prices, such as those due to households switching towards biomass consumption.

program is available for use, compensation can rely on a number of different programs. In Indonesia the compensation for FFS removal was added to four different programs, each with a different intended beneficiary pool. Relying on many different programs ensures that many different segments of the poor population can be reached and compensated.

### Choosing the target group

The G20 St. Petersburg communiqué identifies “the most vulnerable” as the groups whose access to energy services needs to be preserved through appropriate transitional policies. Before reviewing some of the options adopted by different countries, it is worth noting that there are administrative, political, and institutional costs in setting up targeted compensatory transfers, which explains why “perfectly” targeted compensatory transfers do not exist (box 2).

#### **Box 2. Main issues in targeting programs**

Concentrating resources on the poor or vulnerable can increase the welfare impacts that can be achieved within a given budget and help produce a given impact at the lowest cost. The theoretical gains from targeting appear to be large. For example, if all the benefits provided by a transfer program were targeted to the poorest quintile of the population rather than uniformly distributed across the whole population, the budget savings (or the difference in impact for a fixed budget) could be five to one. In practice, the full theoretical gain is not realized, because targeting is never completely accurate and because improving targeting has costs—administrative costs borne by the program, transaction and social costs borne by program applicants, incentive costs that may affect the overall benefit to society, and political costs that may affect support for the program. The magnitude of targeting errors and costs will differ according to the setting and the types of targeting methods used and must be assessed carefully in any policy proposal. Experience shows that reasonable targeting can be achieved without incurring unacceptably high administrative, private, or incentive costs.

Some methods of targeting are commonly associated with specific types of programs—for example, self-selection and commodity price subsidies. However, several different methods can often be used in combination for a particular type of program. For instance, cash and food transfers can be targeted by means tests, proxy means tests, nutritional status or risk factors, geographic area, demographic characteristics, or self-selection. For a single program to use a number of methods is common and usually yields better targeting than a single method. Means tests and proxy means tests have the highest costs but tend to produce the lowest errors of inclusion and are often good investments. Self-selection based on wages and geographic targeting are also powerful and proven targeting tools, though geographic targeting does not work well in urban areas.

The details and quality of implementation have a significant effect on targeting. Targeting systems should be dynamic, allowing new or newly poor households to access the program and making it possible to move them out once they are no longer eligible for benefits. The inputs to good targeting include adequate staffing; well-defined rules of the game; clearly assigned and sensible institutional roles; and adequate information systems, material inputs, monitoring, and evaluation. Systems also need time and effort to develop.

A good household targeting system may be complex to develop but can be used for many programs, not only for direct transfers in cash or in-kind, but for entry into programs that provide free or subsidized health care, schooling, training, housing, utilities, and the like. The shared overhead is efficient and can lead to a more coherent overall social policy.

*Source:* Based on Grosh et al. 2008: 85–86. Verbatim quotes are not identified.

While recent developments in data collection, modelling, experimentation, and even technology have made it easier to institute targeted price subsidies for networked energy sources (electricity, natural

gas, and district heating), they are much less relevant for liquid fuels (gasoline, diesel, kerosene, and LPG). As discussed above, this has to do with the nature of the fuels rather than the targeting process itself. Finally, if the existence of a targeted compensation mechanism is not widely publicized and if the criteria for eligibility are opaque, leave room for discretion on the part of those to whom the application is made, or require a significant amount of paperwork to qualify, then the effective coverage of a program will be much more limited than the intended target group. Communicating clearly about the nature of the transitional policies adopted, particularly the eligibility criteria for targeted programs, is therefore an essential element of the messages to be communicated in a transparent way to the public.

Different countries define and then identify “the most vulnerable groups” in different ways. Obvious examples include those earning low incomes or the poor, assessed either directly or through a proxy.<sup>55</sup> Examples of direct definitions of target groups focusing on need include those who are poor or who would become poor following the price increase (Indonesia); and social assistance recipients and possibly those with incomes within a band from the eligibility threshold (as in the United States,<sup>56</sup> Romania, and Moldova). One example of proxy indicators of need is residence in a particular area of the country—as Namibia used when removing subsidies on transport fuels, which would have particularly affected inhabitants of more remote areas (Clements et al. 2013); as in Georgia’s winter heating scheme for those living in Tbilisi; and as in the geographically targeted schemes in Colombia and Argentina. Another is membership in a particular subgroup of consumers—as Malaysia used when restricting benefits only to public transport drivers (Vagliasindi 2013). When no single program is used, each comes with its own eligibility criteria, with an implicit or explicit understanding that the program will cover a significant part of the “most vulnerable.” In the case of the Philippines, the multiple beneficiary groups identified during the oil-product reforms included households defined as indigent to qualify for the energy benefit, and as low-income to qualify for the educational benefit.

European legislation uses definitions that focus on fuel poverty, typically interpreted in terms of energy consumption (box 3). The concept has been popular also in Eastern Europe and Central Asia, especially in the first years of transition. Concepts of fuel poverty, when proxied by some measure of “burden”, are likely to be difficult to implement, as they require accurate and verifiable indications of household income levels and information on energy bills.<sup>57</sup> In addition, these measures risk resulting in a regressive benefit design, with middle-class users—who can afford to consume relatively more energy—being the main beneficiaries.

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<sup>55</sup> Categorical variables, such as “single parent” or “unemployed,” are commonly used proxy. While such measures can be powerful targeting mechanism as mentioned in box 2, the suitability of any given category varies by context and should be carefully monitored. In contexts characterized by high informality, for example, targeting “the unemployed” might provide incentives for those working in the informal sector to register as unemployed, potentially lowering the effectiveness of the targeting mechanism chosen.

<sup>56</sup> The example of the United States is particularly interesting because a double criterion is adopted in the context of programs such as the Low Income Home Energy Assistance Program, which considers both absolute and relative poverty. Federal law limits eligibility to households with incomes not exceeding 150 percent of the poverty level, or 60 percent of median income. In addition, there are specific state-level thresholds.

<sup>57</sup> In addition to problems with the implementation of these targeted mechanisms, programs designed around concepts of “burden” or “fuel poverty” risk providing incentives for wasteful consumption on the part of those who qualify. Many of the programs that included some measure of burden were implemented in the post-socialist economies of Eastern Europe, such as Lithuania, to help households on fixed incomes (particularly pensioners) meet rising energy prices. In general, the lack of metering made it impossible for residents to manage energy consumption in their newly privatized homes (Mulas-Granados et al. 2008).

### **Box 3. Fuel poverty and measurement in the European Union and the United Kingdom**

Fuel poverty generally describes the inability of households to afford basic standards of heat, power, and light. While widespread in low-income countries, in middle- and high-income countries fuel poverty tends to affect low-income groups disproportionately, in particular retirees, those who are unemployed or underemployed, and those dependent on benefits. Poor heating and insulation standards and high energy prices also contribute to fuel poverty. With fuel prices rising over the last decade, pressure to tackle fuel poverty has been growing in Europe, with the European Union calling on member states in 2009 to “develop national action plans or other appropriate plans to tackle energy poverty” (EC 2009: 61).

The definition of fuel poverty determines the scale of the problem and guides policy formulation. Various indicators have been proposed to measure fuel poverty—including the inability to pay energy bills, cold and damp living conditions, disconnection from the energy supply, debts owed to energy suppliers, and health impacts. Based on various indicators, the literature presents estimates of between 50 and 125 million people in the European Union as being fuel poor. The concerns captured by these indicators have been reflected at the EU level in directives regarding energy markets, energy efficiency, building performance, consumer protection, and health.

Detailed analysis of EU member states yielded the finding that regional inequalities are significant, owing to differences in housing stock, socioeconomic factors, and climate. Significant differences were also found across countries in the way issues related to fuel poverty are reflected in national policies. The United Kingdom is the EU member state where the concept of fuel poverty appears to be most prominent. The UK 2001 fuel poverty strategy provided a measurable standard: Households were defined as fuel poor if 10 percent or more of their income was spent on fuel use, including heating the home to an adequate standard of warmth. Although this definition provided a metric to track progress, critics argued that the 10 percent cut-off failed to treat fuel poverty as distinct from poverty and did not result in well-targeted policy. The Hills Review, commissioned in 2011, proposed a new definition of “low income with high costs,” under which households would be classified as fuel poor if they had both a low income and high energy costs. The definition proposed—now adopted by the government for use in England—is still based on modelled energy requirements rather than actual spending. Unlike the original 10 percent indicator, it is not unduly sensitive to the effect of energy prices.

Under the Hills Review, the low-income threshold is defined as 60 percent of the median income with an adjustment for energy spending. The high energy cost threshold is set at the median equalized fuel cost for all households. Aside from the way it responds to factors that drive fuel poverty, the major advantages of this definition are that it captures both the extent and the depth of fuel poverty in England, and its treatment of incomes. Nevertheless, critics contend that the new definition is complex and non-transparent and may exclude low-income households in smaller homes with poor energy efficiency. The Hills Review has been influential in sparking the debate on measurement of fuel poverty in the United Kingdom and abroad.

*Sources:* EC 2009; EPEE 2009; Hills 2011; Liddell et al. 2012; Moore 2011, 2012. Verbatim quotes are not identified.

Beyond the specific measures of need used to define “vulnerable groups,” many compensatory programs focus on a broader group than those considered as poor to ensure broad-based support for the programs, as well as to protect other segments of the population from the full effect of price increases. For example Jordan’s 2012 reforms targeted the bottom 70 percent of the population, and in both the Dominican Republic (2008) and Indonesia (2012), the threshold for eligibility for the targeted cash transfers was more inclusive than that used to target pre-existing conditional cash transfer programs.

## Determining the amount of compensation

The extent to which poor households should be compensated for price increases caused by FFS reform is a crucial element of the design of any program. Compensation should encompass direct and indirect effects to avoid hardship for poor household. Yet, fully insulating program recipients from the price increase would neutralize their exposure to the new price signal, possibly providing incentives for overconsumption. A standard recommendation that seeks to balance these different concerns, as well as fiscal ones, is to limit compensation to the amount consumed by the poorest (and target compensation to them only) (Yemtsov forthcoming). It is not clear, however, whether one would obtain sufficient political support for such a measure. Further, depending on the specific country circumstances, there might be significant variation among the poorest in terms of their consumption patterns, and it is not clear that the amount consumed by the poorest (who might live in remote and underserved areas) might be sufficient to address the impact on other vulnerable segments of the population.

In practice, countries have adopted very different approaches to determine the amount of compensation, often focusing on the fiscal envelope rather than on requirements to compensate given targeted groups (for example, it may be decided that a specific share of the savings from FFS will be allocated to the bottom 20 percent of the population). A rather common design is to compensate selected groups for the increase in prices below a given level of consumption. In the cases of Indonesia and Chile, mentioned above, the approach has been one of time-bound compensation to offset increases in fuel prices or electricity tariffs. In the case of networked utilities this approach has been implemented in different ways, but a monthly lump-sum payment appears to be more efficient and manageable than the alternative based on some household-specific norm.<sup>58</sup>

For programs that are not explicitly designed to be temporary, indexing plays a key role in determining its generosity over time, and fiscal considerations may pose trade-offs vis-à-vis the ability of providing effective protection to the poor over time. Often the value of the cash transfer is indexed to changes in the general price level or living costs (particularly of the poor), or to the minimum wage. To address the volatility in fuel markets that is brought about by FFS reform, choosing a price index heavily weighted toward energy might be recommended (Clements et al. 2013).

## Deciding how long the benefit should last

The choice of the time horizon over which to provide compensation is typically determined by the relative weight given to two different considerations. On the one hand, in the context of a transition to lower subsidies, one would want to provide support only on a temporary basis to facilitate households' adjustment to the new price level.<sup>59</sup> On the other, one would want to ensure that all poor households remain able to afford basic energy services, investing in longer-term programs to

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<sup>58</sup> Norms included, for example, some measure of overall "burden" for the household (the difference between the maximum share that a household would be expected to spend on the minimum level of consumption and its effective expenditure). Latvia and the Slovak Republic adopted this feature in the programs they set up before their EU accession (Mulas-Granados et al. 2008). These types of programs appear challenging to implement, given the difficulties of ascertaining income levels to obtain indicators of burden, for example, in contexts of high informality or the complexities of creating systems that would allow different systems—such as the utility billing system and the welfare system—to communicate.

<sup>59</sup> The decision to set up a temporary scheme can be explicit or implicit. Allowing the value of benefits to drop over time by not indexing them fully is one way of setting up a scheme without fixing an explicit time frame for its demise, even though it might oblige the government to provide benefits for a long time. As an example, the benefits provided in the Dominican Republic in 2008 continue to be provided, even though they were not fully indexed for inflation.

guarantee access to energy services for poor households well beyond the reform period (either on a continuous or a seasonal basis, depending on need).

Both solutions have possible shortfalls. While there is no systematic evidence on households' ability to adapt to higher prices, there is quantitative evidence of low price elasticity of demand (see, for example, Zhang 2011). In addition, qualitative evidence often documents how, faced with multiple competing needs, poor households' energy consumption may already be heavily constrained. This suggests that temporary measures only postpone the strain on poor households' budgets. At the same time, providing support for longer time horizons may cause the programs to become engrained, well beyond their possible useful lifespan. Longer-term compensation, however, can be complemented by programs that offer households broader access to sustainable energy sources than those traditionally available (thereby avoiding the risk of a damaging return to mass consumption of traditional biomass), or programs aimed at income generation in poor communities.<sup>60</sup> Such complementary programs would help poor people graduate from long-term compensation. For longer-term protection to be effective, it is important that eligibility criteria be updated to remain relevant to the evolution of consumption patterns and to the characteristics of the poor.

Fiscal considerations clearly play a role in the choice between temporary and permanent measures, but they do not need to imply that offering longer-term compensation is unsustainable. Considering the large scale of resources often devoted to FFS, it is often possible to replace universal FFS with targeted subsidies, while saving significant resources and still being able to invest in measures that improve households' ability to manage demand and be more resilient to higher prices (such as through basic energy efficiency measures).

In practice the choice between temporary and permanent measures is not a stark "either/or," particularly as temporary and permanent measures may require different time horizons for their rollout. One-off measures that do not create entitlements can be very helpful stopgaps while measures requiring a longer-term investment in institutional capacity are put in place. Armenia is an example. There, one-off payments were introduced in 1999–2000 to compensate for electricity price increases; coupons for low-income households to obtain discounts for natural gas were introduced in 2011. These measures were additional to an energy-related top-up to the targeted social-assistance-of-last-resort program. Similarly in Chile in 2005–06, temporary transfers were provided in addition to long-term social safety nets. In other countries (Mexico, Brazil), temporary schemes were eventually converted into long-term cash transfer programs. Mauritania, which introduced temporary transfers in 2011, is currently in the process of converting its temporary program to a long-term one (Clements et al. 2013). Note that introducing some temporary measures, either on their own or as part of a larger package of transitional measures, may be expedient if policy reversals are likely, and if direct transfers would pose an unacceptable burden on the budget in the event that fossil fuel subsidies were reinstated.<sup>61</sup>

## Sequencing support and reform

The pace and time horizon for implementing subsidy reforms and the sequencing of those reforms are key components of the implementation of any policy. The importance of these issues will vary

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<sup>60</sup> As mentioned earlier, programs that encourage substitution toward alternative energy sources appear to have had a mixed performance, despite some notable good examples.

<sup>61</sup> Bolivia is a case in point. The Government introduced a cash transfer program as a compensation for FFS reform, but could not discontinue it when FFS reform was reversed, leaving the budget worse off than it was before. This unfortunate outcome can be ascribed to the lack of a communication strategy explaining to the public the introduction of the cash transfer as a compensation measure for FFS reform.



depending on the specific fossil fuel considered and the specific country context, as discussed in the next section. Nevertheless, reviews of recent experiences offer three broad insights.

First, where very large price increases are needed for reducing subsidies, a gradual phase-in of reforms according to a clear timetable is, on balance, the preferable solution.<sup>62</sup> This allows households and firms to adjust to the reforms to the extent that they can, for example by investing in energy-efficient appliances or insulation to reduce electricity costs, or by choosing for more fuel-efficient vehicles when replacing older ones. A gradual phase-in also offers an opportunity to establish an appropriate consultative and feedback process to inform the design of the reforms, the implementation of transitional policies, and the communication campaign.

Gradual phase-ins are not free of drawbacks. For example, in the case of liquid fuels a clear timetable can lead to hoarding and shortages before each price increase, but such costs appear to be less damaging than the alternative. Depending on the way the reforms are legislated, gradual increases may result in higher risks of reversal, for example if every price adjustment is legislated by Parliament. The impact of slower pacing on inflation is also not clear. Whereas some suggest that it may help contain it (Clements et al. 2013), there is a risk that the expectation of inflation may become ingrained in the population (Yemtsov forthcoming).

The “shock therapy” of a sudden removal of FFS may seem preferable if the political space for reform is limited (for example, if there is a significant risk that an upcoming election will result in the overturning of the reforms). However, it would be risky to attempt such a shock therapy unless all the elements for effective transitional policies are already in place. Indeed, the successful examples of non-gradual reforms (Ghana, Indonesia, Mauritania and Nigeria<sup>63</sup>) that have been discussed in the literature (Clements et al. 2013; Vagliasindi 2013) have all been accompanied by transitional measures.<sup>64</sup> Considering these examples suggests that even nongradual approaches require planning, consultation, and consensus building with different stakeholders. And nongradual approaches appear very vulnerable to policy reversals (Nigeria’s gasoline subsidy removal in January 2012 was partially rolled back).

A second broad-brush finding emerging from recent experiences of FFS is that signalling an early commitment to compensating vulnerable groups can buy significant public goodwill, particularly if there is low trust between consumers and utilities or policy makers. This aspect, which is entwined with communication about the reforms (as discussed below), requires having in place all logistical and institutional elements to roll out transitional measures before the first price increase takes place.

A final general point is that the best way to set up transitional measures for FFS reform, particularly when the time horizon for implementation is limited, is to build on whatever is presently available. Doing so makes it possible to address sooner rather than later the fiscal consequences of FFS while also strengthening available programs, even if only temporarily. Meanwhile, stronger long-term

<sup>62</sup> Gradual approaches appear in general to have good chances of succeeding. For example, of the 23 case studies documented by Clements et al. (2013), 17 that were successful or partially successful included a phased reduction of subsidies. Nevertheless, gradualism can be costly if progress in reducing the subsidies is slow. Mexico is an example of a very gradual approach. During the last eight years, domestic fuel prices have been lower than their international references. A policy of gradual monthly increases to domestic fuel prices has been pursued, and by September 2013 the gap between domestic and U.S. prices of regular gasoline had closed. Regular gasoline prices, however, still remain lower than other international references and under the average of a sample of 30 countries.

<sup>63</sup> In February 2005, Ghana raised petroleum prices by 50 percent. In March and October 2005, Indonesia in aggregate raised gasoline prices by 149 percent, diesel prices by 161 percent, and kerosene prices by 186 percent. In January 2011, Mauritania increased diesel prices by 20 percent. In January 2012 Nigeria increased gasoline prices by 112 percent, but the increase was scaled back to 49 percent after intense protests.

<sup>64</sup> Clements et al. (2013) discusses how the lack of political credibility of the comprehensive transitional measures designed in Nigeria contributed to the partial policy reversal.

solutions, ideally centered on multi-purpose programs administered through an effective social protection system, can be put in place. The measures to be considered on a temporary basis include relying and possibly extending the coverage of existing transfer programs, even if they are not particularly well targeted,<sup>65</sup> and/or pursuing policies to rationalize existing subsidies. More specifically, temporary measures that can be considered while seeking to establish stronger solutions in the long-term include:

- In the case of networked utilities, countries may introduce or improve the targeting capacity of lifeline schemes.<sup>66</sup> An important consideration is resisting the political pressure to expand the size of the lifeline block. Where metering and overall connectivity are a problem, investments should be made in addressing them. The possibility of adopting geographically targeted measures or other proxies to cushion the impacts on existing low-income customers needs to be explored, though geographical targeting may miss pockets of poverty in richer areas and is therefore unlikely to be effective in urban areas. Also, poor collection rates and illegal connections to the grid are most common in poor residential areas, where geographical targeting may be ineffective.
- In the case of liquid fuels, rationalization strategies can offer a temporary solution, despite all the limitations that have already been discussed. Given the risks that transport fuel poses, however, there is a need for close monitoring of fuel consumption. Since smuggling and adulteration are not directly monitorable, signs of unexpected increases in the consumption of the subsidized fuel should prompt corrective actions. Gradually reducing the subsidy is a first-best option. Other options include stepping up security measures in the case of smuggling and raising awareness of the potential future cost of adulteration, such as shortened engine life.

## Communicating

International experience has shown that communication is critical to the success of major economic reforms in general and of energy subsidy reforms in particular (World Bank and GSI 2014). Regardless of how well the transitional measures for subsidy removal are planned, if an effective communication program is not implemented before, during, and after those measures go into effect, it is very difficult to earn the public's trust and foster understanding of the political decisions that underpin the reform. Explaining the need for change and the compensating measures to be undertaken before the changes are introduced reduces uncertainty and can strengthen the case for reform (Vagliasindi 2013). In an effective communication strategy, the public is not presented with reform as a goal in itself; instead, the reform is conveyed as a means to achieving lasting economic and social objectives. A well-researched communication program with informational, attitudinal, and behavioral objectives is key to enhancing the effectiveness of mitigation measures. Standard practice is to articulate a communication campaign around six key areas:

- *An assessment of the public's knowledge, attitudes, and perceptions of the energy sector generally and of energy subsidies and existing social programs which could be used to compensate households specifically.* There is a need to understand the perceptions and awareness of the process of subsidy reform before designing a communication strategy and key messages. The analysis of public opinion does not need to be expensive or particularly

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<sup>65</sup> To the extent that such programs are not well targeted and leak benefits to the non-poor, such a strategy may offer the advantage of reducing potential opposition to the program.

<sup>66</sup> Note that in countries where coverage is not universal or near-universal these measures may not be relevant for the poor.

lengthy. Focus groups, surveys, and interviews can be conducted relatively quickly to create a reliable stakeholder mapping and inform the communication plan.

- *A message-development program that answers the consumers' question "What's in it for me?" in clear, compelling ways, based on country-specific public opinion research.* If the reforms are not well-defined and explained by the government, they will probably be defined by another group with a different agenda. Clarity and consistency in messaging is a prerequisite for a successful communication strategy. Research has shown that it is essential for the information campaign to communicate to consumers that what they pay is only a part of the full cost of the energy service (Vagliasindi 2013). As those who receive subsidized energy are often not even aware that the government subsidizes their consumption, a critical message to convey to the public is the connection between poor service delivery and flawed subsidy programs. Further, how resources are going to be reallocated to compensate vulnerable customers also needs to be communicated. In addition to clarifying facts for the public, a communication program should design messages that resonate with audiences on an emotional level.

#### **Box 4. The communications strategy followed in Ghana**

In Ghana in 2004 the government launched a poverty and social impact assessment (PSIA) for fuel. Guided by a steering committee of stakeholders from ministries, academia, and the national oil company, the PSIA was completed in less than a year. By the time the government announced the 50 percent price increase, in February 2005, it was able to use the PSIA findings to make its case to the public for liberalizing fuel prices. The government of Ghana used budgetary savings to expand the existing rural electrification scheme. This was a prominent component of the expenditure package introduced simultaneously with fuel-price increases. The incidence of the benefits from these expenditures was found to be strongly progressive. The mitigation measures, transparent and easily monitored by society, included an immediate elimination of fees at government-run primary and junior secondary schools and a program to improve public transport. Extra funds were made available to an existing program, the Community Health Compound Scheme, to enhance primary health care in the poorest areas (Bacon et al. 2006). The minister of finance launched a public relations campaign via broadcast media to explain the need for the price increases and to announce measures to mitigate their impacts. In November 2007, prices were increased again by 35 percent. The success of this example is partly due to the fact that the communication campaign answered the critical "What's in it for me?" question *before* the public had been influenced by other sources of information. Overall, Ghana's strategy is an example of tailoring communication to the poor. The regressiveness of the subsidy was researched and presented to the public in an easily accessible manner; mitigation policies (health, education, energy access) were targeted to the poor and communicated via radio broadcast (GSI 2013).

*Source:* Coady et al. 2006.

- *Assessing the available and popular channels for reaching audiences through the mass media and through interpersonal connections.* Regarding the channels of communication, a variety of popular means to reach different audiences should be used, including TV and radio, earned media coverage in the national press, billboards, speeches by major government figures, debates in parliament, and direct two-way interaction whenever possible. Substantive events are much more effective than superficial slogans. In each country context, source credibility—both of the spokesperson and the channels used—is fundamental. Special attention should be paid to the public perception of the spokesperson explaining the reform. Media training may be needed regularly during the communication efforts and, whenever possible, on-camera media training to assess the effect of the key messages should be

conducted with a small audience before implementing a large-scale communication campaign.

- *A program of outreach and consistent messaging that leverages opportunities to reach large groups of people, identifies and invests in credible sources for sharing information with the public, and establishes open feedback loops to assess continually the effectiveness of the communications plan.* International experience demonstrates that one of the major weaknesses in government communication is a lack of coordination. The resulting mixed messages create unnecessary confusion and erode the public's confidence in the government's ability to manage reforms effectively (World Bank 2014). Consistency is as critical in the implementation of a communication strategy as it is in the messaging itself. As with any campaign, a communication strategy needs a dedicated manager to maintain the focus on results, stay abreast of public and political shifts that require dynamic messaging, and monitor progress. The communication strategy should be assessed according to an agreed set of informational, attitudinal, and behavioral metrics. It is generally more effective to have one government organization responsible for implementing a communication strategy, not several sharing accountability. In addition, the transparency of pricing is an important consideration for an organization tasked with the communication strategy.
- *Engagement with stakeholders.* In addition to awareness-raising and outreach, face-to-face consultations with specific stakeholder groups are beneficial in raising awareness and establishing trust in the process. Meaningful two-way dialogue allows citizens to have their questions answered and interact with decision-makers directly. It is important to organize consultations in ways that promote candour and allow participants sufficient time to review and digest the information being shared for consultation.
- *A broad dialogue of interagency communication that begins well in advance of the implementation of reform.* As comprehensive reform is a multi-sectoral task, close coordination between internal agencies is necessary (for a broader discussion, see the discussion of institutional factors in the next section). It is critical that internal communication begin before implementation. A dialogue that starts at the beginning of the process to raise awareness of the need for change and continues afterward to ensure a consistent interface with external stakeholders and to finalize policies is more likely to build and retain broad support (GSI 2013).

Because local context is essential to creating compelling messages, communication strategies require a tailored approach.<sup>67</sup> Industry principles should be applied, but tailoring the message to reflect country specifics will make the difference between an effective communication strategy and a *pro forma* exercise in mass-media messaging. It is therefore often suggested that governments engage professional communicators in the planning and implementation of in-country communication strategies.<sup>68</sup>

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<sup>67</sup> As an example of a very context-specific strategy, in Jordan the Prime Minister held numerous meetings with key stakeholders, including tribal leaders, as well as appealing to the public through radio and television.

<sup>68</sup> For detailed guidance on internal and external communication, see GSI (2013: chapter 4).

## **FACTORS AFFECTING COUNTRIES' ABILITY TO IMPLEMENT TRANSITIONAL MEASURES**

This section identifies country-level factors that contribute to the feasibility and success of different types of transitional policies. These include the ability to ground reforms in a detailed assessment of vulnerabilities and policy options, which requires the availability of appropriate data and tools; household factors, in particular the consumption patterns of the poor and their price elasticity of demand; the robustness of existing social protection programs and capacities; sectoral factors related to energy, such as the efficiency of supply, technical and institutional capacity, and perceptions of the quality of service by customers; institutional factors, such as the extent of coordination among stakeholders and the political credibility of plans to mitigate the effects of removing FFS; global and domestic macro trends, with mixed evidence on how “good times” and periods of crisis influence the feasibility of reform and the need for transitional measures; and, finally, the extent of support available, particularly technical assistance for identifying, designing, and implementing transitional measures, such as the support available through a new facility hosted by the World Bank.

The policy toolkit available to countries to ensure access to basic energy services during FFS reform discussed in the previous sections is a broad one, yet the options effectively available to countries at any given time depend on their specific context. This context can of course change as the FFS reforms progress, so countries may choose to adopt different transitional measures at different times. This section reviews briefly some of the key factors that shape the country context and the choice of policy tools available.

### **The ability to ground reforms in a detailed assessment of vulnerabilities**

Designing and tailoring interventions to guarantee access to basic energy services to vulnerable groups requires data and tools to identify who is currently benefiting from the subsidies, and who will be affected directly or indirectly by their removal. For example:

- *To calculate the incidence of existing subsidies* the basic requirements are: (a) a recent nationally representative household survey with detailed information on different sources of energy spending,<sup>69</sup> household incomes, or expenditure sources (or as an alternative household characteristics and assets); (b) expenditure on other goods and services that may be indirectly affected by higher energy prices; (c) information on the tariff structure and prices of all energy sources and on cost-recovery levels. Arrears in payments, if pervasive and not recorded in the household surveys (Lampietti et al. 2006), and multiple connections can, however, significantly break the correlation between consumption and expenditures, requiring therefore alternative approaches, such as calculations of affordability for “representative” consumers.
- *To calculate the distributional impacts of subsidies removal* the information above is sufficient to calculate direct effects (subject to the limitations already noted); partial estimates of indirect effects on the income of specific groups such as households very reliant on one

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<sup>69</sup> Distributional analysis of beneficiaries of energy subsidies is typically conducted extrapolating energy consumption from energy-spending data, using existing prices. The more details in the survey—for example long recall periods for buying of wood or coal or other fuels that are often paid in bulk; details on unpaid bills and possible interest accruing on them; details on whether electricity or natural-gas consumption is metered—the more such an estimate is reliable. In the case of networked utilities, some interesting ways of limiting the extent of extrapolation in the analysis have involved the rapid scanning of bills as part of the household survey fieldwork (e.g., rapid assessment of the impacts of the financial crisis in the early 2000s in Argentina and Uruguay), or the merging of billing data with household-survey data (Lampietti et al. 2006).

particular source for their livelihoods can also be calculated if the household survey also contains specific information on those activities and the quantities of inputs used; estimates of the indirect effects on consumption can be obtained either by focusing on the main items likely to be affected (say, by transport costs increases), or with tools such as an input-output matrix, which would allow an estimate of the inflation impacts of FFS removal.<sup>70</sup>

- *To design compensatory measures*, in addition to the above information, details are needed on household members characteristics, the type of direct transfers households have access to, and their access to and expenditures on different types of public services (e.g., health clinic, schools).

Lacking such data and tools (as it is often the case in low-income countries) it is not possible to design complex compensation measures, and even relying on apparently “obvious” proxies for targeting might result in less reliable outcomes than one would expect. Qualitative research can play an important role in helping understand poor households’ energy mix and the drivers of their choices between different sources, including seasonal factors related to energy prices and needs which are hard to gauge with standard household surveys.

## Household factors

The extent to which different groups, and therefore particularly the poor, will be affected by FFS removal depends on their consumption patterns. A clear understanding of what shapes these patterns and how they would change after FFS removal is needed to ensure that effective compensation or alternatives can be provided.

- *Consumption patterns of the poor*. The poor are going to be all the more exposed to possible price shocks when FFS are removed the more they consume (directly or indirectly) of the energy sources whose prices are going to be affected. The fuels they rely upon the most implicitly dictate the best policy options that could help them maintain access to basic energy services after the increase. Given the difficulties of regulating prices or administering transfers in-kind for liquid fuels, if they rely on kerosene—as it is typical in lower-income countries—a cash transfer might be the first-best solution, provided that administrative costs are not disproportionate or prohibitive.<sup>71</sup> If, as is the case in many countries in Eastern Europe and Central Asia, the poor, especially in urban areas, rely on networked utility for their heating needs, a broader set of measures can be considered, as also lifeline tariffs could play a role.
- *The price elasticity of demand of the poor*. An important aspect of poor families’ consumption patterns is by how much they can reduce their consumption when the prices of the energy sources they use go up.<sup>72</sup> Specific government interventions that increase the availability of substitution options or allow households to manage their demand better can contribute to

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<sup>70</sup> Input-output matrices, by relying on fixed coefficients (i.e., no substitution), are likely to overestimate significantly the indirect effects of higher energy prices. Computable general equilibrium models can obviate some of those problems and provide even the possibilities of simulating alternative compensation strategies (see, e.g., Siddig 2014), but are not immune from limitations, including the need for detailed information (e.g., demand elasticities) which often are not available for low-income countries. These methodologies have been extensively discussed in the 2010 report by the IEA, OECD, and World Bank.

<sup>71</sup> In poor countries with limited infrastructure and financial access, if the poor use kerosene only for lighting the costs of administering such a program might be prohibitive with respect to the amount of compensation required (possibly very little, as consumption is likely to be about 2–5 liters a month).

<sup>72</sup> Subject of course to the good being available—when the FFS provides encouragement for diversion, this might not be the case (e.g., kerosene in Nigeria).

limiting the need for compensation policies. For example, programs such as the one which in Armenia helped low-income households install dual-rate electricity meters<sup>73</sup> would have contributed to reducing the burden of compensation.

### **The strength of existing social protection programs and capacities**

As discussed in the previous sections, some of the policy tools available to ensure continuous access to basic energy services for the poor require significant investments in putting in place the hardware and software of an effective targeted program. As a result, the type of policy response that can be put in place in the short run is affected by a number of factors, including:

- *The nature and effectiveness of existing programs.* Where effective and well-targeted transfer programs already exist or are being created, there are opportunities for adding FFS-related top-ups. This was the case, for example, in Indonesia (multiple programs) and Brazil (one program).
- *Implementation capacity.* There is evidence that even in low-income settings large and complex safety net programs can be run through government systems, without setting up parallel structures (Wiseman et al. 2010). Yet this requires a pragmatic focus on delivering on the basic goals of the program. Clear plans to build implementation capacity over time, continuous monitoring of key indicators (e.g., timeliness of payments) and significant resources (including to roll-out computerized systems with appropriate backstopping for technical problems) are needed to deliver on more sophisticated outcomes.
- *Effective coverage of existing social protection programs.* For countries choosing to top-up existing transfer programs, a key concern is the effective coverage of existing programs, where effective coverage refers not just to the intended target group, but to those who effectively apply and are covered.<sup>74</sup> Note that even in countries that had or introduced successful targeted cash transfer programs, such as was the case of Armenia, initially a large share of the poor was not covered by compensatory measures. Low effective coverage might be by design or it might be one of the initial shortcomings of the program that needs addressing, but it is important for decision makers to be aware of the size of the under-coverage when assessing the opportunity to implement different measures.

### **Sectoral factors**

The specific types of FFS in a country and more generally the status of the energy sector might call for different types of interventions during FFS reform. A number of disparate characteristics could have a bearing on the choice of the transitional measure to be adopted, including for example:

- *The efficiency of supply.* If FFS originate in a context of gross inefficiencies on the production side, such as substantial commercial losses for networked utilities, it may even be possible to

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<sup>73</sup> These meters allow the application of different rates for day and night, thereby allowing households to shift consumption to off-peak hours to benefit from lower rates.

<sup>74</sup> Many targeted programs have eligibility thresholds determined on the basis of criteria (including the available fiscal envelope) that might be different from those used to set the poverty line and measure poverty incidence. In addition, too complicated or onerous eligibility criteria, lack of appropriate information, and excessive discretion in applying eligibility criteria are all reasons why effective coverage might differ from the intended coverage. Finally, perceptions on the transparency and fairness of the system might be important limits to its effectiveness, by implicitly discouraging intended beneficiaries to apply.

reduce subsidies markedly without price increases for consumers, although those previously benefiting from the commercial losses would be paying much more.

- *Technical and institutional capacity in the sector.* Factors such as the ability to implement differentiated tariffs, including availability of smart meters for networked utilities, can play a role in ruling out some of the policy tools discussed in the previous sections. As multiple pricing for the same liquid fuel is a challenging measure to implement (given opportunities for reselling) an assessment of the technical and institutional capacity in the sector is needed before deciding to follow such a path.
- *Quality of service.* Often customers, including the poorest, are willing to pay for better service for electricity if it means an improvement in the reliability or coverage of the service (for example, rural areas in Tajikistan, see Swinkels 2014). Perceptions on the quality of service (for networked utilities), or on the way prices are set, or concerns for governance in the sector or in the way bills are collected (World Bank 2014 forthcoming) can also significantly increase resistance to the reforms, and therefore the need to compensate at least the most vulnerable groups in society.

### **Institutional factors**

Beyond the specifics of the energy sector, there are broader institutional features, concerning all parties involved in the reform process, which will affect the need for, the type of and ultimately the success of different transitional measures. Examples of these different factors include:

- *Coordination among stakeholders.* As a comprehensive FFS reform, including the implementation of transitional measures, is essentially a multi-sectoral task, close coordination between stakeholders is needed (Vagliasindi 2013). Such coordination is ideally needed at all levels, from high-level agreement on priorities (for example, extension of service provision) to technical collaboration to enable information systems to communicate with each other. Consider for example that typically fossil fuel or networked utility prices are set by actors in the energy sector, while compensation measures are run by social affairs ministries. The need for coordination is even higher when introducing transitional measures that span more than one sector, involving for example changes in the delivery of health and education. Both the Dominican Republic and Indonesia are good examples of coordination as they set up social cabinets to implement social protection strategies, under the office of the vice president. In both cases, new conditional cash transfer programs were being rolled out, which required expansions in the supply of health and education services, and having these units led to effective coordination between the ministries of social assistance, health, education, and public works.
- *Political capital and the credibility of plans for mitigation measures.* Who pushes for FFS reforms and how credible the mitigation strategy to be implemented is are essential elements for the success of the reform, and particularly of its transitional measures. While the political capital invested in the reforms can be taken as given, a good communication strategy can make a major contribution in affecting the perceived transparency and fairness of the measures adopted to mitigate the impacts of FFS removal.
- *Public buy-in for the reforms.* In particular circumstances, such as when there is a common goal or aspiration that is widely shared by the public and aligned with FFS reform, the reforms themselves might be seen as a necessary price to pay to get closer to the goal. As such, the need for transitional measures might be muted or even non-existent. The desire to get closer to EU accession seems to have played this role in the energy sector reform in



Turkey and in Croatia, where energy prices were raised significantly without any major compensatory mechanism.

## Global and domestic macro trends

Existing discussions of FFS reform experiences often stress the role that global and domestic macroeconomic trends played in facilitating or exacerbating the difficulties of FFS reform and the need for mitigation measures. The readings of the evidence do not provide general guidance on when circumstances for reform are more or less favorable, but it is important to underscore that they might contribute to amplifying other underlying factors of support or discontent.

- *International prices.* Times of low international prices tend to facilitate FFS reforms, such as was the case in for China in January 2009, and for Turkey in the 1990s when it reformed the electricity sector. Reforms introduced in “good times” might however be at higher risk of reversal when prices start rising.
- *Growth performance.* Similarly, periods of growth and improved living conditions might help in implementing reforms and reduce the need for compensation. This was the case, for example, of Armenia, which introduced power-sector reforms after a period of hyperinflation, and of some of the central-European countries in advance of their accession to the European Union, during which they experienced rapid increases in prices paid for urban transport, district heat, and electricity that “were not socially contested since they took place in countries where real wages and income per capita had simultaneously increased” (Mulas-Granados et al. 2008: 29). By contrast, times of crisis might prompt some countries to freeze or backtrack on their reforms (for example, Mexico froze the price of gasoline in 2009). The literature, however, often emphasizes how given reforms were undertaken during times of crisis, when hard choices could not be delayed. For these crises to become opportunities to implement long delayed reforms, however, it is important that contingency measures are put in place during good times (such as the establishment of coordinating agencies and the setting up of targeting mechanisms), so that reforms can be more easily rolled out when the political circumstances allow for them to take place.

## External support

External support can play a major role in addressing many of the constraints that countries face in identifying, designing, and implementing transitional measures. A number of international organizations have developed dedicated technical assistance teams that can help countries address different aspects of FFS reform. As an example, the IMF and the World Bank have played significant support roles in the design of transitional measures in countries around the world. While these two international organizations have often been able to provide funding to support the design and implementation of these measures, it is arguably their role as technical “knowledge brokers” that has made the greatest difference. This has involved collecting data and providing technical assistance in their analysis, often building on cross-country experience to identify alternatives for the design and implementation of local solutions.

Recognizing the important role that knowledge can play, donors have recently endowed a new Energy Subsidy Reform and Delivery Technical Assistance Facility, hosted by the Energy Sector Management Assistance program (ESMAP) of the World Bank. This multi-year initiative supports countries as they design and implement subsidy reform programs, and involves close collaboration with key stakeholders such as government ministries, think tanks, and civil society organizations

(ESMAP 2014). The defining features of this facility are that it offers financing for multi-sectoral analysis of issues related to FFS reform, including the analysis of the poverty, social, fiscal, macroeconomic, political economy, and climate change aspects of subsidy reform; and that the engagement through World Bank teams is flexible and tailored to the specific country circumstances, recognizing that no one-size-fits-all solutions can be found in this area. Of particular relevance for the design of transitional measures are the possibility of the facility financing; assessments of distributional impacts of subsidies at the household level; support for policy dialogue, consultations, communications strategies, and consensus building; improvements in the targeting and delivery of subsidies, including through technology-enhanced approaches; and the support for the design and implementation of integrated FFS approaches, including energy pricing frameworks, transition plans, energy efficiency and renewable energy solutions, and suitable social protection and other mitigation mechanisms. The facility also supports knowledge exchange, encouraging peer learning on both diagnostics and solutions among client countries and at the international level, in collaboration with other organizations that produce important analysis and research on subsidy reforms, such as the IMF, OECD, the Global Subsidies Initiative (GSI), and the IEA.

## **CONCLUSIONS: THE RELATIVE COSTS AND BENEFITS OF VARIOUS MEASURES**

In this paper we have argued that transitional measures to protect the livelihoods of the poor from rising energy prices need to be part of a reform process that is economically and socially sustainable. A review of available international evidence highlights a variety of transitional strategies. As has been noted, it is not possible to identify universal solutions that will apply to all contexts and to the reform of all types of FFS. This paper has therefore presented a range of options and design principles that can support policy making. Ultimately, any policy or measure has to be grounded in the analysis of local circumstances. Countries interested in FFS reforms may then choose the policy or set of policies that best suit their circumstances. Of course, all approaches have their pros and cons, and they are not equivalent in terms of efficiency, cost, and likely impact.

A number of key conclusions are particularly noteworthy:

*Cash transfers emerge as a strong candidate for compensating poor households for the direct and indirect impacts of FFS removal.* But their implementation requires the presence of basic delivery infrastructure, which in turn requires time and investment in identifying appropriate targeting mechanisms, the channels for delivery of assistance, appropriate communication about eligibility criteria, and so on. The most critical factors, however, may be the political will to introduce new programs, if they do not exist yet, or to modify existing transfer programs, as well as the capacity to do so. As more countries around the globe build the basic infrastructure for an efficient and modern social protection system (for example, investing in universal registries), these constraints are likely to become less binding over time.

*When an existing cash transfer program with appropriate coverage is not readily available, or when circumstances do not allow for its expansion or establishment, countries can alleviate pressure on the livelihoods of the poor through other means.* Examples of the latter include increased social services or offsetting measures in the tax system or in the pricing of public services. For these measures to be effective, institutional coordination is fundamental at all levels, from high-level agreement on priorities (for example, extension of service provision) to technical collaboration to enable information systems to communicate with each other.

*Countries may choose to target their subsidies to ensure that poor people continue to have access to them while withdrawing them from other income groups.* Efforts to rationalize subsidy programs may prove easier than designing new programs, even if they require the development of effective targeting mechanisms. Independently of the FFS considered, policies that maintain FFS, even for the poor, have some clear shortfalls, notably in limiting incentives to use fossil fuels efficiently and in “leaking” benefits to the non-poor. Further, experience shows that providing exceptions to the reduction of subsidies may work against efforts for broad reform. Subsidy programs involving liquid fuels are susceptible to a host of additional problems, linked notably to diversion of the subsidy to other (often illegal) uses. To the extent that countries choose to rely on these tools at least temporarily, efforts should be made to monitor and clamp down on these adverse effects, which ultimately may increase the cost of what may seem initially to be the simplest option.

In addition to these general findings about the instruments in the toolkit, this paper has highlighted some strong evidence that several aspects of the design and implementation of transitional policies are likely to be needed for their successful rollout. These include:

- *Time and planning.* Where subsidy reduction requires very large price increases, on balance, a gradual approach marked by predictable price increases appears to carry greater chances of success than sudden price increases. Time helps poor households adapt to higher prices. Whether prices are increased gradually or suddenly, however, time is needed to plan and implement appropriate compensation mechanisms and to devise appropriate communication strategies and feedback mechanisms which can improve implementation over time. Planning is also required to ensure the necessary coordination of various parts of government involved in the reform and the compensatory measures.
- *Avoiding duplication.* FFS reform is often associated with crises, but it can just as easily be seen as an opportunity to put in place systems that will benefit a country's inclusive development well beyond the FFS reform. While this paper has presented a set of options, each with its pros and cons, the fact remains that building on what exists and avoiding duplication (for example, by setting up new programs that are completely independent of existing ones) are likely to maximize the long-term benefits of the transitional policies adopted during FFS reform.
- *Communication and trust.* In recent years there have been protests and even violent riots sparked by FFS reform. Explaining the rationale for reform (and offering information on the scale of the resources absorbed by the FFS), describing the compensatory mechanisms to be put in place as part of the reform, and building or restoring a relationship of trust with consumers are essential if the reforms are to be given and retain credibility.

Finally, further analysis and data are needed in almost all cases. The effectiveness of any transitional policy will depend in large part on an accurate assessment of the costs and benefits of reform and of the direct and indirect effects that various measures will have on different segments of the population. That assessment should identify specific sources of vulnerability that may worsen the impact of price increases on specific groups (or to the contrary, that might help to cushion them). Recognizing the important role that FFS play in their budgets, countries may wish to invest in regular monitoring of their costs and benefits, regardless of whether they are presently interested in reforming them. Investments in data and analytical tools made before reforms are rolled out are likely to pay off significantly when those reforms are eventually tackled.

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## ANNEX 1: ADDITIONAL REFERENCES

Throughout the paper we discussed the available policy options for addressing the social impacts of fuel subsidy reform, key issues in designing transitional measures, and country ability to implement these measures. While we provide some general recommendation for targeting subsidies and design of programs to provide support, we acknowledge that there is no one-size-fits-all, cookbook solution applicable to all countries.

However, much knowledge can be shared through country experience. Here, we provide references to four major publications that include case studies of countries that have undertaken reform. In each publication, the following outline is generally followed on a country-by-country basis: Context, Reform, Mitigating Measures and Performance, and Lessons Learned. Readers looking for more information from the section on “Addressing the social impact of reforming fossil fuel subsidies” of this paper may focus on Reform; those further interested in the section on “Key issues in the design of transitional measures” can focus on Mitigating Measures and Performance; those seeking further discussion on “Factors affecting countries’ ability to implement transitional measures” can focus on Lessons Learned. Below are the publications:

**Table A.1. Sources for country case studies of subsidy reform**

Author	Publication	Country coverage
Clements et al. (2013)	Case Studies on Energy Subsidy Reform: Lessons and Implications	Armenia, Brazil, Chile, Ghana, Indonesia, Iran, Kenya, Mauritania, Mexico, Namibia, Niger, Nigeria, Peru, Philippines, Poland, South Africa, Turkey, Uganda, Yemen
Sdravlevich et al. (2014)	Subsidy Reform in the Middle East and North Africa: Recent Progress and Challenges Ahead	Egypt, Jordan, Mauritania, Morocco, Sudan, Tunisia, Yemen
Vagliasindi (2013)	Implementing Energy Subsidy Reforms: Evidence from Developing Countries	Argentina, Armenia, Azerbaijan, Chile, Dominican Republic, Egypt, Ghana, India, Indonesia, Iran, Jordan, Malaysia, Mexico, Moldova, Morocco, Nigeria, Pakistan, Peru, Turkey, Yemen
GSI (2010–2014)	Case studies: Lessons Learned from Attempts to Reform Fossil fuel subsidies	APEC economies, Brazil, France, Ghana, North Sudan, Malaysia, India, Indonesia, Iran, Poland, Senegal

In addition to these above case studies, the following sources may be of interest to readers interested in learning more about implementing specific reforms:

- GSI’s page on Supporting Country Reform Efforts (GSI 2012–2014) can provide support to national governments reducing fuel subsidies.
- IEA’s Online Database (IEA 2014) increases the availability and transparency of energy subsidy data.
- IMF’s study on Energy Subsidy Reform in Sub-Saharan Africa (IMF 2013), with guidance, data, and case studies for reform in the region.
- OECD’s Economic Surveys (OECD 2014b) and Environmental Performance Reviews (OECD 2014c) typically include sections on fuel subsidy reform to assess country progress and provide targeted advice for reforms.

- OECD is also hosting a 2014 Green Growth and Sustainable Development Forum (OECD headquarters, Paris, France, 13-14 November 2014), on the topic "Addressing the social implications of green growth". The impact of green growth policies on households and effective government policy to cushion distributional effects on poorest households will be considered based on experience with energy sector reform to date, including fossil fuel subsidy reform.
- The World Bank's ESMAP supports countries as they design and implement subsidy reform programs, and involves close collaboration with key stakeholders such as government ministries, think tanks and civil society organizations (ESMAP 2014).
- The 2010 International Organization report on "Analysis of the Scope of Energy Subsidies and Suggestions for the G-20 Initiative" and its subsequent update in 2011, titled "An update of the G20 Pittsburgh and Toronto Commitments", has been the first analysis on the subject in the G20 initiative and contains a variety of aspects that are not covered in this paper.

Regarding the methodologies to examine household use, impacts on the poor, and assessment of social programs, more information can be found:

- Arze del Granado et al. (2012) includes a section on Methodology (Section 3) which examine household-level data.
- GSI (2010b) reviews the modelling and empirical techniques used to analyse the effects of energy subsidy reform.
- GSI (2012b) examines the effectiveness of existing social programs for fuel subsidy reform in India, including using the technique of rapid assessments.
- OECD's (forthcoming) study on the "Social implications of green growth strategies from the perspective of energy sector reform" aims to shed light on existing knowledge and insights on distributional consequences of energy and environmental reform, including fossil fuel subsidy reform, with a focus on micro simulation models.

## ANNEX 2: COUNTRY-LEVEL ESTIMATES OF THE INCIDENCE OF VARIOUS TYPES OF FOSSIL FUEL SUBSIDIES

Estimates of the incidence of FFS vary according to the context, the range of fuels studied, and the method adopted (particularly the assumptions on the responsiveness of demand to changes in the prices of different fuels, and cross-substitutions). Overall patterns appear to be consistent, however, as shown in Table A.2, which presents findings from selected studies. In particular, subsidies for kerosene appear more progressive than for other fuels.

**Table A.2. Selected findings on benefit incidence of FFS**

Fuel Studied	Country	Share of benefits of bottom quintile (unless otherwise specified), percent	Share of benefits of top quintile (unless otherwise specified), percent
<i>Kerosene</i>	Gabon	21	24
	Ghana	18	17
		<i>39 (bottom 40)</i>	<i>61 (top 60)</i>
	Indonesia	10	26
		9	26
	Iran	10-11	28-29
	Jordan	19	15
	Mali	18	19
		<i>35 (bottom 40)</i>	<i>65 (top 60)</i>
	Sri Lanka	<i>39 (bottom 40)</i>	<i>61 (top 60)</i>
Yemen	27	14	
<i>Gasoline</i>	Egypt	1	86
	Indonesia	1	68
		2	59
	Iran	3-8	41-60
	Jordan	8	50
	Lebanon	5	38
	Mali	7	59
	Tunisia	1	67
<i>Diesel</i>	Egypt	1	71
	Indonesia	5	57
		1	86
	Jordan	4	46
	Mali	6	71
	Mauritania	1	77
	Morocco	7	42
	Tunisia	2	59
	Yemen	2	56
<i>LPG</i>	Egypt	15	25
	Jordan	18	23

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	Morocco	13	30
	Tunisia	15	22
	Yemen	12	29
<i>Oil products</i>	Mali	11	44
<i>Transport fuel</i>	Gabon	1	81
<i>Butane cooking gas</i>	Gabon	6	40
	Bolivia	15 ( <i>bottom 40</i> )	85 ( <i>top 60</i> )
	Ghana	29 ( <i>bottom 40</i> )	71 ( <i>top 60</i> )
<i>All fuels</i>	Jordan	23 ( <i>bottom 40</i> )	77 ( <i>top 60</i> )
	Mali	23 ( <i>bottom 40</i> )	77 ( <i>top 60</i> )
	Sri Lanka	27 ( <i>bottom 40</i> )	73 ( <i>top 60</i> )

*Sources:* Agustina et al. 2008; Coady and Newhouse 2006; Coady et al. 2006; Dartanto 2013; El Said and Leigh 2006; Kpodar and Djiofack 2010; Sdravovich et al. 2014; World Bank 2003, 2013.

*Note:* For Coady et al. 2006, only the estimated direct shares of benefits are included in the table; indirect shares are not.