GREEN GROWTH
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Overcoming Obstacles to Green Fiscal Reform

GGKP Research Committee on Fiscal Instruments

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Summary

Green fiscal reforms (GFRs) include a number of tax and pricing instruments that can raise revenues while furthering goals, such as mitigating climate change, protecting water resources and reducing traffic congestion. Such reforms have attracted increasing attention in recent years and have been driven by various factors, including the need for fiscal consolidation in some countries (e.g. Ireland, Italy and Portugal) and the growing appreciation of the financial burden of certain measures (e.g. fossil-fuel subsidies in India and Indonesia).

Despite numerous calls for action, GFR efforts to date remain limited in terms of their scope, scale and effectiveness. They are often **constrained by obstacles,** including concerns about the economic and social impacts of GFRs. While such concerns are important and merit attention, they should not be used as an excuse to avoid or halt GFR as they can be addressed through careful design and implementation. This paper examines how obstacles to GFR can be overcome through targeted mitigation measures for vulnerable groups, careful use of revenues raised, and complementary strategies and tools. It draws on lessons learned from GFR experiences in both developed and developing countries across different sectors.

The paper highlights the importance of **identifying potential impacts of GFR,** including the range of costs and benefits, winners and losers, and intended and unintended effects across different spheres. This can inform the effective design and implementation of the reform and help build support for it. In certain cases, **mitigation or compensation measures** may be required to alleviate the impacts of GFR and help overcome obstacles to progress. Such measures should be carefully designed and monitored in line with smart, good governance principles to ensure that they are effective, send the right signals and contribute to the overall objectives of the reform. Other strategies and tools, such as complementary policies, communication, engagement, monitoring and review processes, and cooperation between countries on GFR efforts, can also help overcome certain obstacles to reform.

Despite good intentions and due processes, GFR efforts sometimes fail or decisions are reversed in the face of political or social pressures. Recent examples include GFR in Australia, Bolivia and Nigeria. These cases highlight the political economy of GFR and the importance of building **broad support and political capital** that transcends party-political lines and short-term electoral timelines. Thus, as with other types of political reforms, a lasting GFR also depends on government credibility and links to wider **structural and good governance** challenges, including the need for transparency and stakeholder engagement.

Preparation and careful planning are critical to GFR. There is a need to adopt a comprehensive, integrated and consultative approach to reform which reflects good governance principles and sets clear objectives and a timeline. GFR requires widespread political commitment and public support over time, taking into account the broader context and contributing to wider policy objectives. There is also a need to adopt a **pragmatic approach**, allowing for deviations from certain theoretical ideals (e.g. avoiding exemptions) as a politically expedient way of making progress. Such provisions should be tolerated provided they are well-designed with adequate safeguards in place.

The **current context is particularly favourable for undertaking GFR**. The recent steep decline in global oil prices has provided a conducive environment to launch carbon-pricing mechanisms and reform fossil-fuel subsidies. Other avenues for progress include fiscal consolidation challenges that many countries are facing and the need to respond to agreed regional/ international commitments. Some countries, such as India, Indonesia, Ireland, Italy and Portugal, are already seizing these windows of opportunity. Others should be encouraged to follow their lead, drawing on lessons from

experiences with GFR from across the globe. Such efforts should be based on a comprehensive reform strategy with a clear timeline and seek broad political and public support to ensure their success.

Contents

1. Introduction

1.1 What is green fiscal reform?

Environmental or green fiscal reform (GFR) is defined by the Organisation for Economic Co-operation and Development (OECD) and World Bank as a "range of taxation and pricing measures that can raise fiscal revenues while furthering environmental goals" (OECD, 2005; World Bank, 2005). GFR includes individual instruments and measures, such as environmental taxes, charges and levies, auctioning permits to pollute or exploit a resource, deposit-refund schemes and fines for environmentally damaging activities. It also encompasses broader packages of fiscal reform, such as environmental tax reform (ETR) and the reform of environmentally harmful subsidies (EHS). GFR can be applied in a number of sectors (e.g. energy and transport), thematic areas (e.g. climate change and natural resources, such as water, fisheries and forestry), product categories, and to other challenges (e.g. waste, biodiversity conservation, pollution and congestion).

Experience with GFRs has grown over the past two decades and has attracted increasing attention in recent years. This renewed interest is driven by a range of environmental, economic and social considerations as well as a growing appreciation of the limitations of more traditional "command and control" approaches. While GFR can help address a number of environmental challenges, such as climate change and biodiversity protection, the push for fiscal consolidation and the growing recognition of the financial burden of some measures (e.g. fossil fuel subsidies in many developing countries) have been important drivers of efforts, particularly in recent years. In some cases, efforts have been motivated by concerns of energy, resource and food security or in support of wider policy objectives, such as boosting employment or reducing poverty.

Box 1. Selected commitments on GFR adopted at the regional and international level

- **Group of 20 (G20) and Asia Pacific Economic Cooperation (APEC) forum** commitments to rationalize and phase out inefficient fossil fuel subsidies over the medium term.
- **Rio+20** outcome document reiterates commitments to address trade distorting subsidies and harmful subsidies in the fisheries and fossil-fuel sectors. This is reflected in the **Sustainable Development Goals (SDGs)**, in particular SDG12 includes a target to rationalize inefficient fossil fuel subsidies and SDG 14 includes a target to prohibit/eliminate fisheries subsidies which contribute to overcapacity, overfishing, illegal, unreported and unregulated fishing by 2020.
- **Convention on Biological Diversity (CBD),** specifically the Aichi Biodiversity Target 3, which seeks to eliminate, phase out or reform "incentives, including subsidies, harmful to biodiversity" by 2020, and Target 20, which seeks to mobilize additional resources from all sources to implement the Strategic Plan for Biodiversity 2011-2020. In 2014, Parties to the CBD also adopted further milestones for the implementation of Target 3. **European Union (EU)** commitment to phase out EHS by 2020, taking into account the impact on people in need as reiterated in the Roadmap for a Resource Efficient Europe.

Source: Building on Oosterhuis and ten Brink (2014).

GFR related commitments have been adopted at different levels, from the local level (e.g. charges on congestion, municipal waste collection, water) to the subnational (e.g. in British Columbia in Canada and California in the United States) and national (e.g. in a number of countries in Africa and Asia, and many countries in Europe) levels. Commitments have also been adopted among regional and major groups (e.g. APEC and G20) and in several international fora (e.g. CBD and the Rio+20 Conference). For more information, see Box 1.

1.2 The many benefits of green fiscal reform

The multiple benefits from GFR and its potential role in supporting a range of policy objectives from fiscal consolidation to energy security, climate mitigation and poverty reduction is well-documented (see for example: OECD, 2005, 2010; World Bank, 2005; De Mooij, Keen, & Parry, 2012). For example, this includes:

- ***Financial benefits:*** These benefits include budget savings and associated macroeconomic stability, and the mobilization of revenues for other priorities. These types of benefits are particularly pertinent in the current climate and are driving a recent upsurge in interest in GFR. The package adopted by the Government of Ireland in response to the 2007-2008 financial and economic crisis, for example, included several environmental taxes and charges, such as a carbon tax, a domestic water pricing system, revisions to the vehicle registration tax and the annual motor tax, and a land site-value tax (Withana et al., 2013). By helping to address specific social or environmental challenges, GFR can also reduce the need for future public spending (e.g. on healthcare).

- ***Economic benefits:*** These benefits derive from revised price signals (i.e. internalizing externalities) that help address "technological lock-in" and catalyse innovation in efficient technologies (the Porter hypothesis[1]) as firms and consumers seek new, cleaner solutions in response to the pricing of pollution (OECD, 2010). For example, the carbon tax introduced in British Columbia in 2008 supported a surge in green investment and innovation in the province (see Box 4). GFR can also allow a reduction in growth-distorting taxes, e.g. on labour or corporate income, thus helping to stimulate growth and employment (the "double dividend" hypothesis[2]).

- ***Social benefits:*** These benefits include health improvements from a reduction in polluting emissions, among others. For example, the differential tax treatment of leaded and unleaded petrol in Thailand led to an improvement in air quality and a decline in levels of lead in the blood among the population (see Box 2). Other benefits include potential employment creation and securing the availability of public goods and natural resources for future generations. The latter are a particularly important equity and ethical consideration, as well as an economic concern.

- ***Environmental benefits:*** These benefits represent incentives for more efficient resource use. They lead to a reduction in harmful emissions and environmental impacts. For example, the IMF estimates that reforming taxes on coal, natural gas, gasoline and diesel so that prices reflect environmental damage and other side-effects could reduce global CO_2 emissions by 23 per cent and deaths from outdoor air pollution caused by fossil fuel combustion by 63 per cent, while raising revenues of 2.6 per cent of GDP globally (Parry, Heine, Li, & Lis, 2014).

- ***Poverty reduction benefits***. Opponents often argue that GFR has a negative impact on the poor, but such concerns can be addressed through design (see sections 2.3 and 3.2). Moreover, GFR can have poverty-reduction benefits by mobilizing funds for pro-poor investments (e.g. in education and health), addressing problems that affect the livelihoods

[1] For a review of empirical studies see: Ambec, Cohen, Elgie, and Lanoie (2011).

[2] The extent and prevalence of this "double dividend" is intensely debated, see for example: Fullerton and Metcalf, (1997).; Schob (2003).

of the poor (e.g. unsustainable use of natural resources) and improving access to water and electricity services (OECD, 2005).

The benefits of GFR depend on several factors, including design and implementation factors, which depend on available resources, institutional and administrative capacities, exemptions, mitigation measures and the use of revenues. Impacts of GFR are also closely related to other policies and measures in place, such as information tools, regulatory standards and infrastructure investment, among others, as well as external factors, such as the state of the economy, energy prices and technological developments (Withana, ten Brink, Illes, Nanni, & Watkins,, 2014). The credibility and durability of GFR often depends on long-term, cross-party political commitments and broad public support of the process.

Box 2. Phasing out leaded petrol in Thailand

Concerns about the harmful effects of lead pollution on public health and the environment led the Government of Thailand to launch a programme to phase out the use of leaded petrol in 1991. This was a complex undertaking with effects impacting numerous sectors and groups. However, the government managed to successfully implement an ambitious reform package that achieved its objectives in four and a half years.

An important part of the package of measures adopted by the government was fiscal incentives to encourage a switch to less harmful substitutes. Differential tax rates were applied on unleaded and leaded petrol such that the retail price of unleaded petrol was set at Thai baht 0.3 ($0.012[3]) per litre less than that of leaded petrol. This fiscal incentive was complemented by a regulation requiring all cars sold in the country from September 1993 to have a catalytic converter and the adoption of emission standards for new vehicles from 1995 based on European Union (EU) standards.

The government adopted a collaborative approach to the phase out which involved key stakeholders, including government agencies, automobile companies, oil companies and the general public. The government also provided strong and clear leadership throughout the process, setting clear target dates and providing continual monitoring and follow-up evaluation.

The package of measures adopted by the government led to a 50 per cent increase in the market share of unleaded petrol and allowed for the eventual phase out of leaded petrol in January 1996. The reform led to an improvement in air quality in the country and a decline in the levels of lead in blood among the public, thus contributing significantly to the improved health of the Thai population.

Sources: Sayeg (1998); ; GIZ (2013).

GFR is increasingly recognized as an ***important part of the policy mix***, providing a useful complement (or in some cases a substitute) to more traditional regulatory and other instruments. When carefully designed and implemented, GFRs (and market-based instruments more widely) can be cost-efficient and effective instruments that shift the cost of pollution to the polluter, reduce compliance costs and generate revenues (UNEP, 2004).

The ***current context*** is particularly favourable for undertaking GFR. The case for such reforms, particularly in the area of carbon and energy, is increasingly being made by various actors, including

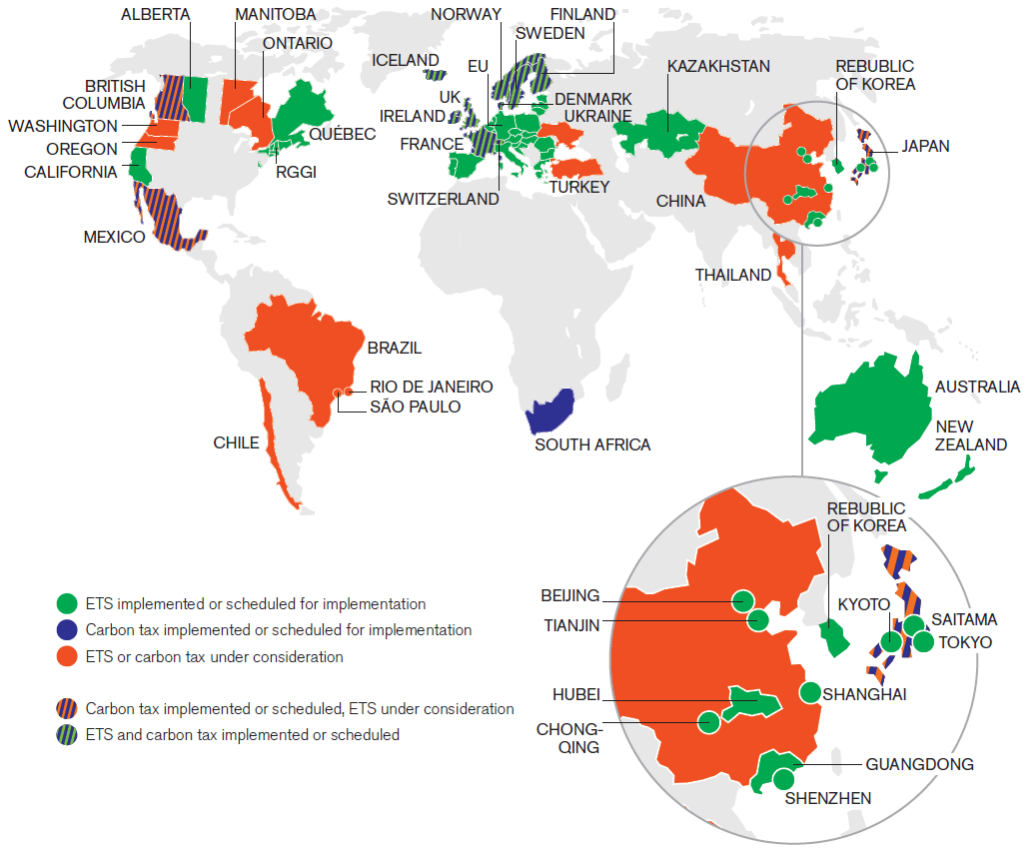
[3] All amounts are in United States dollars unless otherwise specified.

the IMF (Clements et al., 2013; Parry et al., 2014). The recent steep decline in oil prices – which fell by more than 50 per cent between June 2014 and January 2015 for example (BBC, 2015) – provides a conducive environment to launch carbon pricing mechanisms (Summers, 2015) and reform fossil fuel subsidies. Current low prices can help cushion the impact of a price increase from the introduction of a tax or liberalization of energy prices. Some countries are already taking advantage of this opportunity. Indonesia is a case in point (see Box 11). Other countries should be encouraged to follow suit. Such efforts should be based on a comprehensive strategy and seek to secure broad political and public support to ensure they are not reversed when times change (e.g. when oil prices start to rise).

1.3 Obstacles to GFR

Despite efforts to date, the use and application of GFR remains limited. For example, a recent World Bank report concludes that current carbon pricing instruments cover around 12 per cent of annual global GHG emissions (see Figure 1), thus approximately 88 per cent of GHGs remain unpriced (World Bank & Ecofys, 2014).

Figure 1. Overview of existing, emerging and proposed carbon pricing mechanisms



Source: World Bank & Ecofys (2014).

In addition, carbon prices in many countries are set at levels that do not reflect environmental and/ or social costs, such as air pollution and traffic congestion, and are less than what is needed to achieve long-term climate targets. Thus, much of the 12 per cent of GHG emissions that are covered by a carbon pricing instrument are underpriced (with some exceptions, such as Sweden). Furthermore, many carbon pricing schemes are neither well targeted nor comprehensive or consistent in their coverage of different fossil-fuel products and users (Parry et al., 2014). In a number of cases, the design/ implementation of instruments has limited their effectiveness and led

to marginal changes in incentives in the economy. There are however exceptions, such as the NOx tax in Sweden (see Box 8) and CO_2 tax in British Columbia (see Box 4), among others.

In addition, environmentally harmful and/ or ineffective subsidies remain significant in several sectors, such as fisheries, agriculture and energy. In the fisheries sector, 60 per cent of subsidies provided have been identified as harmful (UNEP, 2011). In the agriculture sector, price and trade distorting measures accounted for 51 per cent of total support to farmers in OECD countries in 2011-2013 (OECD, 2014). In the energy sector, fossil-fuel subsidies accounted for $550 billion in 2013 (IEA, 2014) and are estimated to be much higher – $1.9 trillion in 2011 according to an analysis by the IMF (Clements et al., 2013) – when negative externalities from energy consumption are taken into account.

Further progress on GFR is often held back by various obstacles, which reflect the numerous political challenges of reform. Obstacles include (OECD, 2005a; Withana et al., 2012):

- ***Strength of special interests and rent-seeking behaviour*** among groups that benefit from the status quo. While GFR has the potential to generate multiple benefits, it can also lead to negative impacts on specific vested interest groups that have strong lobbying power and influence. In some cases, a culture of entitlement may exists which has become entrenched over time and is hard to break, leading to resistance or inertia to change.

- ***A lack of political will*** as policymakers are often reluctant to undertake (unilateral) GFR, unless forced to do so by an economic or environmental crisis, or in response to external pressures. This reluctance is often linked to concerns of the perceived impacts of GFR on the competitiveness of specific sectors (e.g. energy-intensive industry) and/ or social impacts in particular on income distribution and vulnerable households.

- ***Lack of transparency, information and awareness*** of the actual costs, beneficiaries and impacts of the status quo (i.e. lack of effectiveness, unintended beneficiaries). In some cases, beneficiaries invoke mantras to gain popular and political support for the status quo – for example, the mantra that subsidized energy prices are needed to protect the poor, even though evidence suggests that such mechanisms tend to benefit the rich more (see Box 5). In some cases, GFR has been hindered by limited data and analysis at the country level, including on the impacts of GFR and implementation options. Recent analytical contributions provide useful insights in certain areas. For example, the Global Subsidies Initiative (GSI) has analyzed options for fossil-fuel subsidy reform in a number of developing countries (IISD, 2014) while studies by Hogg et al. (2014, 2015) examine the potential for GFR in EU member States.

- ***Administrative, institutional and technological constraints*** that restrict or limit the ability to undertake GFR. For example the administrative capacity of the government, including financial, human and technical resources, may hinder or prevent reform (UNEP/CBD/WGRI, 2014). Technological constraints, such as a lack of available substitutes or infrastructure barriers (e.g. a limited public transport system) can also constrain action. Institutional rigidities or traditions may restrict the scope for GFR. Finance or tax departments may, for example, view GFR as a peripheral issue (of primary concern to their environmental counterparts) and may thus overlook its potential to contribute to wider objectives. In some cases, obstacles reflect wider governance challenges, including a lack of trust, limited government credibility or capacities.

As noted above, a key obstacle to GFR is the lack of political will, which often reflects concerns about perceived economic and social impacts of GFR, in particular on vulnerable firms/ sectors and

households. Such impacts are highly sensitive at the political level and relate to (and compound) a number of the other obstacles listed above, such as lack of information and awareness, and strength of vested interests. Such political concerns have often contributed to stalling or slowing GFR efforts in a number of countries. However, as the analysis in this paper shows, while these concerns are important and merit attention, they should not be used as an excuse to avoid or halt GFR as they can be addressed through careful design and implementation of the reform process. Where relevant, appropriate measures to mitigate these impacts should be identified along with the impact of GFR on vulnerable groups and potential winners and losers.

1.4 Overview of the paper

This scoping paper has been commissioned by the Fiscal Instruments Research Committee of the Green Growth Knowledge Platform (GGKP) to examine how to overcome obstacles to GFR through the targeted use of mitigation measures for vulnerable firms or sectors and low-income households, careful use of revenues, complementary strategies and tools. The paper draws on lessons from experiences with GFR in developed and developing countries, including examples of good practice, partial successes and some unsuccessful efforts. These cases help elaborate some of the issues discussed in the paper and provide insights for others considering GFR. The paper is based on a literature review, comments from experts and members of the Fiscal Instruments Research Committee, as well as feedback from participants at the Third Annual GGKP Conference.

The paper focuses on environmental tax and subsidy reform across different sectors and areas. It is important to keep in mind that specific GFR approaches, instruments and interventions may be more appropriate for different countries, sectors and issues depending on the country context, priorities, institutions and capacities. The OECD (2005) for example notes that: 1) ***natural resource pricing measures*** (e.g. forestry and fisheries fees and taxes) can play an important role in resource-rich countries; 2) ***reforming product subsidies and taxes*** (e.g. on energy) are applicable in most countries and in the case of fuel subsidies they are particularly applicable in energy producing countries; 3) ***cost recovery measures*** (e.g. charges on energy and water) are applicable in most countries; and 4) ***pollution charges*** (e.g. on air) are particularly relevant for rapidly industrializing, middle-income countries that face problems with industrial pollution and have the administrative capacity to implement such instruments. The nature and characteristics of the economy may lead to a preference for certain approaches. Countries with a large informal sector and/ or problems with personal income tax evasion or avoidance, for example, may prefer to use of product taxes (e.g. fuel taxes) to meet fiscal objectives. Different types of interventions will also have different outcomes in terms of effects on the environment, the economy and government budgets, among others.

The paper does not take a sector-specific or issue-specific approach; rather it seeks to provide general insights on how to overcome obstacles to GFR that are applicable across a number of sectors and areas, keeping in mind the need for tailored approaches to GFR, which depend on national circumstances, interests and priorities. For an analysis of sector-specific and issue-specific approaches to GFR in the energy and fossil fuel sectors see De Mooij et al. (2012), Clements et al. (2013), GSI (2010), Beaton et al. (2013) and UNEP (2008). For analysis of GFR approaches in the forestry sector see Scholl (2005); and in other sectors that are particularly relevant to developing countries, such as water, fisheries, forestry and energy see OECD (2005) and World Bank (2005). This paper examines cases of both individual GFR instruments and more comprehensive reform packages. It seeks to provide input to GFR discussions and processes at different levels. At the international level, for example, the paper complements a 2014 decision by Parties to the CBD calling on countries to share lessons in overcoming obstacles when implementing policies to address incentives, including subsidies, harmful to biodiversity (UNEP/CBD/COP, 2014).

The remaining sections of the paper are structured as follows:

- ***Chapter 2*** provides a brief overview on approaches to identify impacts of GFR, potential impacts of GFR on vulnerable groups and options to mitigate these impacts.

- ***Chapter 3*** focuses on compensation measures to alleviate adverse impacts of GFR on vulnerable firms or sectors and households. It also discusses the use of revenues from GFR and concludes with good governance principles for designing compensation measures.

- ***Chapter 4*** sets out other strategies, tools and approaches for promoting GFR, including design considerations, communication and engagement strategies, complementary policies, monitoring and review processes and windows of opportunity.

- ***Chapter 5*** provides overall conclusions and recommendations on how to overcome obstacles to GFR and support the transition to a green economy.

2. Impacts of GFR and potential mitigation options

This chapter provides a brief overview of the numerous impacts of GFR, in particular on vulnerable firms, sectors and households. It also sets out some of the tools that can be used to help identify such impacts and different types of mitigation options which can be considered. The latter are further elaborated in Chapter 3.

2.1 Impacts of GFR and how they can be identified

While the overall objectives of GFR are to generate positive gains for the economy, environment and society, the process may lead to unwanted negative impacts in some sectors (e.g. trade-exposed and energy-intensive sectors), groups (e.g. low-income households and pensioners) and macroeconomic indicators (e.g. GDP, inflation and trade balance). Although GFR may be targeted on a specific issue, it could have impacts across different sectors and groups. A key obstacle to GFR often relates to the feared/ perceived economic and social impacts of the reform. Thus, a critical step in the process is to understand and clarify the impacts (both positive and negative) of GFR across different groups, potential trade-offs between different options and the wider context of reform.

GFR tends to create winners and losers both within and between different sectors and groups through various transmission channels (World Bank, 2005). An important transmission channel is direct and indirect price effects which depend on demand and income elasticities, consumption patterns, etc. Other transmission channels include inter alia effects on employment, terms of trade, access to goods and services, the overall tax burden in the economy and substitution effects (OECD, 2005).

The impacts of GFR are closely related to:

- ***Design*** (point of application of the instrument, the breadth of coverage, level);
- ***Implementation*** (evolution over time, exemptions granted, associated conditionalities);
- ***Use of revenues raised*** (including recycling mechanisms employed);
- ***Other policies and instruments in place*** (policy mix);
- ***External factors and conditions*** that drive change;
- ***Political commitment and public support*** of the process.

Impacts vary over time, thus perceived winners and losers may change in the short-term, medium-term and long-term. For example, while energy taxes may lead to higher input prices for certain firms in the short-term, higher prices should in principle incentivize investment in energy efficient technologies, which could lead to cost savings in the long-term. Similarly while higher water charges

may have negative impacts on certain households, revenues from such charges could lead to improved service provision and an expanded network, which could increase access to water among the wider population and generate benefits to health and sanitation in the long-term.

Identifying the likely impacts of GFR is a critical step in the reform process. This means setting out the full range of costs and benefits, identifying winners and losers, and specifying intended/ unintended effects across economic, social and environmental spheres so as to highlight both positive and negative impacts and potential trade-offs (OECD, 2007). Identifying impacts can inform the effective design and implementation of the process, including mitigation measures where necessary. It can also help build support among affected groups by highlighting the impact of the status quo (i.e. lack of effectiveness, unintended beneficiaries and distributional impacts) and the pros and cons of reform.

There are different tools and approaches that can be used to identify the impacts of GFR (see Beaton et al.,2013; Clements et al., 2013; van Beers & van den Berg, 2014). These tools/ approaches encompass both quantitative and qualitative approaches and include:

- **Quantitative approaches**, such as simple analysis of available economic databases, e.g. social accounting matrices (SAMs), income expenditure surveys and analyses of household consumption and input-out (I-O) data, and dynamic models which estimate feedback effects, such as computable general equilibrium (CGE) models and sector-specific models for energy, transport or agriculture;

- **Qualitative approaches,** such as a literature review and stakeholder consultations through workshops, surveys and interviews to assess the views of affected groups.

A comprehensive approach to identifying impacts of GFR requires a mix of quantitative and qualitative approaches to capture the full range of potential direct and indirect impacts (Beaton et al., 2013). For example, stakeholder consultations could help identify impacts on certain groups, such as the potential for tax evasion or illicit activities that may be difficult to identify through quantitative methods alone. Certain tools can provide particular insights on specific aspects and help build a case for reform. For example, SAM can be a powerful tool to assess distributional impacts across income percentiles, helping to debunk myths on the prospective losers of subsidy reforms (see Box 5 on the distributional impacts of fossil fuel subsidies). Such assessments should be timely in order to influence policy decisions; sufficiently broad to cover social, political, institutional and economic issues; and participatory to promote ownership and increase the prospects that the results are used to influence the design of the reform (Hayes, 2005, cited in Coady & Newhouse, 2006).

In certain cases, one may choose to focus on the most significant impacts of the GFR (in terms of overall effects), setting aside or only providing a cursory assessment of more minor impacts. Such a targeted assessment (or selective communication of results) can help distil key messages to policymakers in a comprehensible way and ensure a focus on the most important elements of the process. In some cases resource constraints, administrative capacity and/ or a lack of data or the timing of the reform may restrict the use of certain tools (e.g. complex economic models). Ghana, for example, adopted a simple, non-resource intensive approach to researching the impacts of its 2005 fossil fuel subsidy reforms based on household survey data and input-output data (see Box 3 for a more detailed discussion on methodologies for measuring impacts of GFR; also see: Metcalf, 2015).

Box 3. The 2005 fuel subsidy reform in Ghana

In 2005 the Government of Ghana undertook a comprehensive campaign to build broad support for fossil fuel subsidy reform, following earlier unsuccessful attempts. The reform strategy was informed by a poverty and social impact assessment (PSIA) which identified consumption profiles, estimated price changes and impacts on consumption costs from the reform and examined three potential mitigation options. The PSIA estimated impacts of price changes on household income based on input-output data, distinguishing between direct and indirect impacts across different income groups. It found that rich households disproportionately benefited from the subsidies, whereas their removal would lead to an increase in consumption costs of the poor.

The findings of the PSIA were made public and were crucial in demonstrating the true costs of subsidies and how subsidies were an inefficient measure for addressing poverty objectives. The findings were used to inform a widespread public relations campaign, which included a series of workshops, public forums and extensive use of media channels, including public addresses by the president and the finance minister to communicate the need for reform and how revenues generated would partly be used for social priorities. This helped improve understanding and build public support for the process.

A package of mitigation measures was introduced to mitigate impacts of the reform on vulnerable groups. This included in-kind transfers, such as the elimination of fees for state-run primary and secondary schools, an increase in the number of public transport buses, a price ceiling on public transport fares, increased funding for health care in poor areas, an increase in the daily minimum wage, investment in rural electrification, and continued cross-subsidization of kerosene and LPG. In addition, the government adopted a pricing mechanism that linked domestic oil prices to international prices; the mechanism was overseen by an independent body – the National Petroleum Agency (NPA). The transfers, equivalent to approximately 0.35 per cent of GDP, were financed by a special mitigation levy included in the pricing formula. This contrasts with government spending on fossil fuel subsidies prior to the reform, which in 2004 accounted for 2.2 per cent of GDP.

The Ghanaian case is an example of partial fossil-fuel subsidy reform as the pricing formula was periodically abandoned due to political considerations, for example in 2008 due to escalating oil prices and in the run-up to the 2009 national election. This highlights the importance of strong political will and broad public support for GFR, which can be supported through careful design and implementation of the process, and the use of revenues and complementary strategies (see sections 3 and 4).

Sources: Coady and Newhouse (2006), GIZ (2013), Beaton et al. (2013), Laan, Beaton, and Presta (2010), IMF (2013), Coady et al. (2006); OECD (2005).

2.2 Potential impacts of GFR on vulnerable firms or sectors

The economic impacts of GFR, including on vulnerable firms or sectors, are of particular concern to governments and are often used as an obstacle to reform. Countries adopt different approaches to defining what they consider a vulnerable firm or sector. In several cases it includes a limited number of economic actors, which are often intensive users of the resource or product targeted by the GFR (e.g. energy intensive firms), or economic actors that operate in sectors that are open to international competition (e.g. trade-exposed sectors, such as manufacturing). For example, in Germany exemptions from the energy tax apply to companies that belong to specific statistical classifications (Withana et al., 2013), and in Denmark special tax provisions from the CO_2 tax are granted to specifically designed production processes (Speck & Jilkova, 2009). Other options to identify vulnerable economic groups could be to use the indicator of energy or resource input as a percentage of turnover, or the scale and timeline of expected job losses in a particular sector.

The perceived effect of GFR on the international competitive position of affected firms or sectors is often used to block or stall progress on GFR or to undermine the effectiveness and ambition of GFR efforts. For example, competitiveness impacts have been a concern across a number of European countries that have introduced carbon and/ or energy taxes, such as Denmark, Finland and Sweden (Withana et al., 2013). These concerns have been a key reason for granting exemptions in particular to energy-intensive industry (see Box 7 on the Netherlands where energy-intensive industries are exempt from taxes on energy and fuel, or subject to low rates).

GFR can also impact firms, sectors and services that are not exposed to international trade impacts but may nonetheless be adversely affected by reforms. Small-scale farmers, for example, may be affected by higher irrigation abstraction charges, which could undermine the profitability of certain crops and have implications on their livelihoods. And small businesses may be affected by higher pollution charges and may have limited financial resources for investing in abatement activities. GFR can also have impacts on the informal sector. This could significantly impact certain activities in specific countries (e.g. smuggling of low priced fuels across borders or the sale of untaxed fuels to sectors of the economy where higher taxes apply). These wider impacts, which in some cases may be difficult to identify or quantify, should be kept in mind when considering impacts of GFR.

A key issue to clarify is the ***scale and nature of the actual impacts of reform***. Available literature on concerns about the negative impacts of environmental regulation (including GFR) on competitiveness, exports, trade flows and relocation of companies does not reveal statistically significant or robust evidence to support the claim.[4] Rather, available evidence seems to suggest that well-designed environmental policies (including GFR) can benefit the environment without having a harmful impact on the economy. The impact of GFR on vulnerable firms or sectors depends on various factors, including:

- ***Design*** of the reform process (e.g. point of application, potential to pass through costs, exemptions and associated conditionalities, and wider package of measures introduced).

- ***Use of revenues*** generated from the reform (e.g. recycled to affected sector/group, used as part of a wider tax shift, earmarked to specific purposes, allocated to the general budget.

- ***External factors***, such as wages, education/ skill of workforce, infrastructure, regulatory and fiscal framework, access to natural resources, trade barriers, exchange rate variations (Ekins & Speck, 2012), all of which affect the competitive position of a firm or sector.

- ***Firm-specific factors,*** which may differ between different players within a given sector (e.g. a new tax will burden efficient and well-managed firms less than those that are inefficient or poorly managed). A recent OECD cross-country study found that increasing the stringency of environmental policy (defined as the explicit/ implicit policy-induced price of environmental externalities) leads to an overall improvement in production efficiency, with the largest gains among the most advanced industries/ firms and negative effects probable among less productive firms (Albrizio, Botta, Koźluk, & Zipperer, 2014).

- ***Timeframes*** (it is useful to distinguish between impacts in the short-term and the long-term). GFR may affect a firm's profitability in the short-term, while catalyzing innovation, which in turn helps improve profit margins in the long-term (see Box 4 on British Columbia).

[4] See for example: Albrizio et al. (2014); Jaffe, Peterse, Portney, and Stavins et al. (1995); Smarzynska and Wei (2001); Sijm et al. (2004) ; Oikonomou, Paerl, and Worell (2006); OECD (1996) ; Ekins and. Speck (2012)

In addition, one can ***assess the impacts of GFR at different levels***, such as the national, sector or firm levels (Smith, 2003) because impacts can vary across different levels. For example, it is possible to have benefits from GFR for a particular sector, but losses for individual firms, as well as gains at a national level but losses at a sector level.

Box 4. Benefits of the carbon tax in British Columbia, Canada

A carbon tax was introduced in British Columbia (BC), Canada, in July 2008. It is one of the broadest and most comprehensive carbon taxes in the world, applying a uniform unit price on GHG emissions from the combustion of all fossil fuels in the province, plus peat and used tires when used to produce heat or energy, although the actual tax rate applied is more modest than some countries, such as Norway, Sweden and Switzerland (World Bank & Ecofys, 2014). When the tax was introduced, a rate of CAD10 per ton of CO_2 equivalent was applied, with a schedule of four annual increases of CAD5 per ton to reach CAD30 per ton of CO_2 equivalent in July 2012. The tax rate has been frozen since 2012 and some exemptions are granted, including for greenhouses and farmers (World Bank & Ecofys, 2014). The tax is designed to be revenue neutral, and revenues are used to decrease taxes on corporate and personal income, and to provide tax credits and benefits for vulnerable groups. However in practice, the tax has been revenue-negative as tax cuts and credits have exceeded the generated revenue (Withana et al.,2013).

In terms of its effects, a 2012 assessment of the tax (Sustainable Prosperity, 2012) found that BC's petroleum fuel consumption per person dropped by 15.1 per cent from 2008-2011 and declined by 16.4 per cent more than the rest of Canada, while the province's per capita GHG emissions declined by 9.9 per cent between 2008-2010. This outpaced reductions in the rest of the country by more than 5 per cent. BC has attracted green investment and green technologies at twice the Canadian average and accounted for 20 per cent of all Canadian Leadership in Energy & Environmental Design (LEED) gold building registrations since 2007. The province also saw a 48 per cent increase in clean technology industry sales from 2008-2010 (British Columbia Ministry of the Environment, 2012). Furthermore, as a result of corresponding tax cuts, BC now has among the lowest income tax rates in Canada and general corporate income tax rates among G7 nations (British Columbia Ministry of Finance, 2013).

Although it is not possible to definitively conclude that these changes have been a direct result of the carbon tax, or indeed of other climate policies in the province, the divergence in average behaviour and indicators across many of the fuels and sectors covered by the tax "does suggest that the carbon tax may be starting to provide the broad structural incentive in the economy that was intended" (British Columbia Ministry of the Environment, 2012). For further discussion, see Metcalf (2015) and Harrison (2013).

From a theoretical economic-efficiency viewpoint, there may not be a case for protecting specific economic groups, in particular individual firms, as one could argue that those firms that are not able to compete when prices reflect true costs and they should go out of business. From a political-economic point of view, such a blunt approach may not be realistic or acceptable. Thus, a more nuanced approach is required (e.g. using targeted and time-limited compensation measures to facilitate the transition in affected sectors) (see section 3.1). At the same time, GFR should be seen in the wider context of national transformation and structural change with the creation of new industries, sectors and competitive advantages that can replace pre-existing ones (which is, essentially, Joseph Schumpeter's concept of "creative destruction"). Although such transformations have short-term costs (e.g. job losses and factory closures), they also have benefits (e.g. cost reductions, jobs in new industries, and the efficient allocation and use of scarce resources).

Numerous examples exist of such shifts in the transport and telecommunications sectors (Cox & Alm, 2008). This process needs to be carefully managed through swift reallocations of capital, including labour, and the minimization of barriers to entry to ensure potential efficiency gains lead to overall economic growth (Albrizio et al., 2014).

2.3 Potential impacts of GFR on vulnerable households

The social impacts of GFR, including on income distribution and vulnerable households, are very politically sensitive and are a much debated issue. Countries adopt different approaches to defining vulnerable social groups. In a number of cases, it is defined in relation to household income levels with low-income households (e.g. in relation to income deciles, a measure of poverty such as the poverty line or a share of median income in the economy) considered to be entitled to some form of compensation (Bruvoll & Vennemo, 2014). Countries may also define vulnerable groups as those that are currently poor, those that could be poor after the GFR or those that are considered poor in relation to a benchmark, such as total energy expenditure or access to modern energy sources (World Bank, 2014). In some cases, households with a certain status are identified as a priority (e.g. pensioners, rural households and single parent households).

The perceived or feared effect of GFR on such vulnerable groups is often used to block or stall progress and/or to undermine the effectiveness and ambition of GFR efforts. For example, proponents of reduced VAT rates on basic necessities, such as energy, food and water, argue that they are needed to protect the poor, even though evidence suggests that such subsidies tend to benefit the rich more and are an inefficient mechanism to support the poor (see Box 5, and: Oosterhuis & Bachus, 2014). The distributional effects of a particular measure can be a useful guiding principle for GFR. Communicating the distributional effects of such instruments, including any disproportionate benefits enjoyed by an elite or small group, can also be a useful mechanism to build support for reform (see section 4.4).

A key issue to ***clarify is the scale of the welfare impact associated with the GFR*** and how it is distributed across income groups. Distributional effects of GFR can be identified and assessed through different tools, including economic models (e.g. micro-simulation model, computable general equilibrium model and the input-output model, among others) and empirical studies (Heindl, Germany, & Löschel, 2014). Such tools can make use of data on energy use, national statistics and household surveys, among others, and can inform the effective design of the reform process. When considering such effects one needs to take into account:

- ***Direct price effects*** from the higher prices faced by households on those products/ natural resources targeted by the GFR (e.g. fuels used for cooking, heating and private transport);

- ***Indirect price effects*** from the higher prices faced by households on other goods and services consumed which are intensive users of the products/ natural resources targeted by the GFR (e.g. fuel-intensive goods and services, such as public transport and food).

The scale and distribution of price effects depends on the level and pattern of consumption across income groups, the extent to which consumers are able to adjust their consumption when prices change from the GFR, and the distribution and type of income-generating activities across groups (World Bank, 2014). Although indirect price effects are harder to quantify than direct price effects, they can be significant (Arze del Granado, Coady, & Gillingham, 2010) and in some cases can be a higher burden for low-income households. For example, in countries where the poor spend a small share of their budget on transport fuels they are likely to be more affected by indirect effects of an increase in fuel prices as they have to pay higher prices on key items, such as food and public transport (World Bank, 2014). In other countries, such as the United States, the direct component

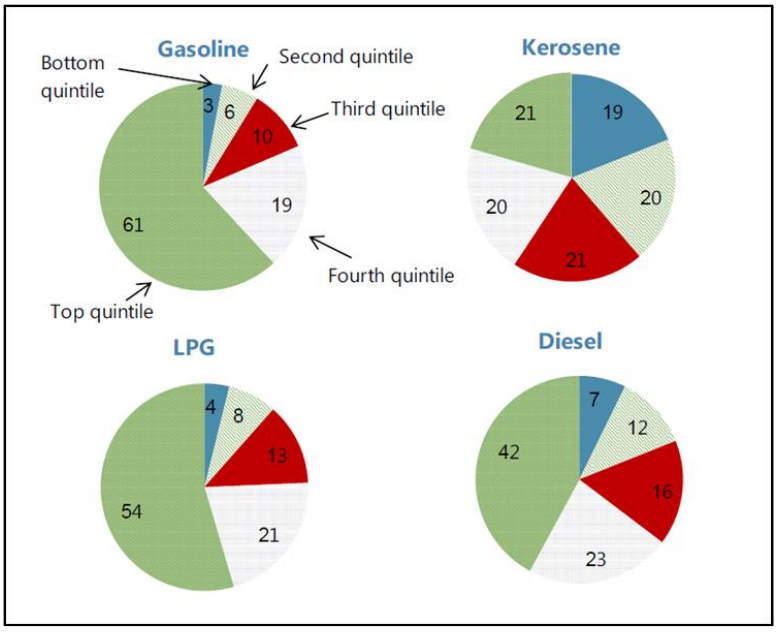
of a potential carbon tax is found to be larger than the indirect component with the regressivity of indirect effects estimated to be less than that of the direct effects and roughly proportional between top and bottom deciles (Mathur & Morris, 2012). This highlights the sensitivity of assessments to the underlying context, structure of the economy and nature of the GFR as regressive impacts can differ by country.

In addition to direct and indirect price effects, there is also a need to take into account ***non-price effects*** (e.g. attitudes and social norms, general socio-demographic characteristics of households and substitution effects) and possible ***rebound effects and changes over time*** (e.g. benefits from improved access to water/ electricity) (Heindl et al., 2014). In some cases, the degree of regressivity depends on the metric against which it is measured. For example, using total expenditure as the basis of calculation rather than disposable annual income often makes environmental taxation appear less regressive, although it does not eliminate the regressivity of taxation for necessary household items, such as heating and electricity (Kosonen, 2012).

Box 5. Distributional impacts of fossil fuel subsidies and their reform

Spending on fossil fuel subsidies is increasingly recognized as an inefficient means of protecting the welfare of low income groups. For example, it has been estimated that the richest 20 per cent of households in low and middle income countries capture six times more of the benefits of fuel product subsidies than the poorest 20 per cent of households (Clements et al., 2013). Impacts vary across fuel types. Eighty per cent of the benefits from gasoline subsidies, for example, go to the top two income quintiles. The benefits of kerosene subsidies are more uniform across income groups although there is still substantial leakage to high income groups (see Figure 2).

Figure 2. Distribution of subsidies to petroleum products by income group



Source: Arze del Granado, Coady, and Gillingham (2012) and Clements et al. (2013).

Subsidies to natural gas and electricity have also been found to be badly targeted as the poorest 20 per cent of households receive 10 per cent of natural gas subsidies and 9 per cent of electricity subsidies (IEA, 2011). This leakage of benefits and inefficiencies could provide an important guiding principle for action on GFR. Moreover, communicating such distributional effects can be

useful to build support for reform.

However, even if the status quo benefits the rich more than the poor, some fossil fuel subsidy reforms could be regressive, particularly in the short- to medium-term depending on the type of fuel taxed and the characteristics of the national economy. A study by Arze del Granado et al. (2010) found that an increase in fuel prices of $0.25 per litre across 20 developing countries would result in an average 5.9 per cent decline in real household incomes with distributional impacts approximately neutral.

Direct effects vary across products with impacts for gasoline and electricity strongly progressive, impacts for kerosene strongly regressive and impacts for LPG differed across regions. Indirect impacts accounted for a substantial share of total impacts (with regional variation), indicating that a high proportion of total fuel use is for intermediate consumption. These results highlight the need to consider the range of effects of GFR on income distribution and the need for possible mitigation measures.

The impact of GFR on vulnerable households strongly depends on how revenues from the GFR are used, the nature of the wider GFR, the reduction in other taxes, elasticity of demand, substitution possibilities (including those available and those to be developed as part of the reform package) and the wider context and structure of the economy. Impacts vary across applications and over time as well as within countries (e.g. between rural and urban areas) (World Bank, 2014). Impacts also depend on the design of the GFR process, communication, the wider reform package and the context within which the reform is undertaken as ***distributional effects in developing and emerging economies can be quite different to effects in developed countries.***

Even if the overall GFR process is progressive, a sharp increase in prices of certain essential products and services (e.g. energy and water) will have a direct and indirect impact on the budgets of poor households. GFR can also have wider impacts on poor households depending on substitution effects. For example, in developing countries where access to electricity grids is limited, higher fuel prices could lead to increased use of biomass for heating and cooking with related health and environmental implications (World Bank, 2014). These impacts will vary across different countries depending on various factors. In some cases there may be a need to introduce targeted mitigation measures for certain vulnerable groups to ensure that the GFR process does not lead to increased poverty (Sterner, 2012) or other adverse impacts. Communicating to the public plan to introduce such mitigation measures together with messages on the wider benefits can help build support for the process (see section 4.4).

2.4 Mitigation measures and approaches

Once the impacts of the GFR have been identified, there is a need to select those that may require mitigation so as to address potential negative impacts from the reform (which may otherwise hinder progress) and maximize associated gains. Criteria to assess whether or not a particular negative impact requires mitigation could take into account different economic, social or environmental considerations, such as the impact on vulnerable groups defined in relation to income, among others. In some cases they could be politically motivated and are a matter of expediency (e.g. to help pass a GFR bill in the parliament, to generate favour and avoid disfavour among voters or certain influential groups). See Box 6 for some considerations to keep in mind when assessing which impacts require mitigation.

Box 6. Considerations to help assess whether an impact of GFR requires mitigation

Social considerations

- Does the impact affect a group considered vulnerable based on its income or status, such as low-income households, pensioners, rural poor, belonging to a minority group, a particular gender (e.g. impoverished women) or social status (e.g. low caste groups in India)?

Economic considerations

- Does the impact affect a sector which plays an important role in the national/regional/local economy, such as employing a large number of people or accounting for a substantial share of GDP? If yes, does the sector have the capacity to either absorb or pass on the impact?

- Does the GFR lead to isolated losses for a particular group, such as job losses in a particular sector, firm, industry (e.g. coal mining) or among a certain group of people (e.g. fishermen)?

Environmental considerations

- Can the GFR lead to substitution effects that are detrimental to the environment and/ or human health? For example removing subsidies for heating fuel could lead to increased wood burning, which in turn results in deforestation and deteriorating indoor air quality.

Political feasibility / acceptability issues

- Does the GFR impact on a politically influential group/sector, such as farmers or energy-intensive industry?

Identifying the need for mitigation as well as the level and degree of compensation required is challenging, particularly given the numerous political factors at play. It is important that any decision to mitigate impacts of GFR is transparent and based on a careful analysis of:

- ***Who benefits*** from the status quo (i.e. subsidy in place) and whether the measure in place reaches intended beneficiaries;

- The ***impacts of the reform*** on winners, losers, third parties, and external impacts (e.g. on trade);

- ***Who should be compensated*** and how;

- ***Affected stakeholder interests*** and concerns;

- The ***impacts of different mitigation options***, including potential trade-offs;

- What ***level of compensation*** is appropriate, what ***timescale*** should be provided, and where relevant a clear timetable for ***phase out*** of compensation over time.

There are a number of different types of mitigation options and in most cases a package of different measures may be required with different target groups and timelines. For example some impacts

require temporary mitigation measures to ease the transition and buy-in support for reform, while others require longer-term or more permanent forms of support. The timeline and appropriate speed of adjustment will depend on the resilience of the affected group and its ability to absorb or respond to changes from the GFR, as well as external pressures and access to alternative options, including other sources of employment and income, among others (Withana et al.,2012).

Potential mitigation options should be discussed in advance with affected stakeholders and designed to adequately take into account their concerns. Transparent preparation of the process and the introduction of mitigation measures before price rises take place can help build trust among affected groups (Beaton et al., 2013). Moreover, it is useful to identify potential trade-offs in different mitigation measures as this can alter the design of the reform so that it is politically acceptable (Coady & Newhouse, 2006).

In general, one can distinguish between two types of mitigation measures and approaches as set out below (and discussed in further detail in Chapters 3 and 4). The distinction between the two approaches is not clear cut and both types of measures are closely related:

- ***Design and implementation options*** that seek to avoid or minimize potential negative impacts of the reform. For example, timetable and sequencing, such as a phased/ gradual approach to introduction, a tax-free threshold for essential use, non-regressive tariff setting, a differentiated or narrow tax base, and complementary policies (e.g. temporary reductions in taxes on substitute products). Communication and dialogue are also key factors to consider (see Chapter 4 for a more detailed discussion on issues of design and implementation strategies for GFR).

- ***Compensation measures***, such as payments and transfers to remunerate certain groups for a loss of welfare associated with the GFR. For example targeted lump sum transfers and incentives (e.g. support for the adoption of clean technologies), means-tested refunds and reductions, vouchers, transitional assistance to displaced workers, exemptions and support for social protection programmes (e.g. health and education services used intensively by the poor). Such measures should be carefully designed and well-targeted to ensure they reach the intended beneficiaries (see Chapter 3 for a more detailed discussion on compensation measures and revenue use).

When considering potential mitigation options, it is important to keep in mind that the overall objective of GFR is to generate structural changes and support a shift towards a more efficient, sustainable and equitable economy in the long-term. Thus, not all impacts of GFR require mitigation. The extent to which mitigation measures are introduced and targeted at specific groups “is a strategic decision that involves trade-offs between fiscal savings, capacity to target, and the need to achieve broad acceptance of the reform” (Clements et al., 2013). The package of mitigation measures adopted will depend on a number of factors, including specificities of the GFR process, the sector or issue of focus, envisaged impacts, mitigation options, stakeholder perceptions, government credibility and administrative capacity to implement different measures. In certain cases administrative and/ or institutional capacities for the delivery of more advanced measures may need to be developed, and thus alternative types of mitigation measures may need to be considered in the interim period.

While some mitigation measures may be necessary to ease the transition in the short-term, in the long-term, given the need to allocate scarce productive capacity and resources efficiently across the economy, activities that cannot compete when market prices reflect externalities should arguably not be supported with public funds and mitigation measures should be phased out over time (see section 3.4 on smart design principles for mitigation measures). Moreover, compensation measures

imply some opportunity costs and trade-offs (as they take up revenues which could otherwise be used to lower distortionary taxes). Thus, where mitigation measures are introduced, they should be carefully designed, well-targeted and time limited, maintaining positive incentive effects and supporting the overall objectives of the GFR process.

3. Compensation measures for vulnerable groups

This chapter focuses on compensation payments and transfers to remunerate affected groups, in particular vulnerable firms or sectors and households. It also discusses the use of revenues from GFR and concludes with some general smart good governance principles to keep in mind when designing compensation measures.

3.1 Compensation measures for vulnerable firms or sectors

As noted in Chapter 2, there are numerous potential impacts of GFR on vulnerable firms or sectors. The available literature on concerns about negative impacts of environmental policies (including GFR) on the economy and competitiveness does not reveal statistically significant or robust evidence to support the claim.[5] While opposition to GFR on the basis of unwanted impacts on vulnerable firms is sometimes misplaced or myopic in that it does not take into account wider, long-term transformational needs, it remains one of the major obstacles to meaningful GFR in several areas. Thus, impacts of GFR on vulnerable firms need to be carefully assessed, and where relevant, mitigation options introduced. These measures should be well-designed and targeted, aligning short-term concerns with long-term needs for change.

Adverse impacts of GFR on vulnerable firms can be mitigated through ***careful design and implementation of the process,*** such as a phased approach to implementation with gradual expansion in coverage and a ratcheting up of rates (or reduction in subsidies) over time to overcome resistance, allow affected actors time to adapt and enable learning (see the discussion in Chapter 4).

A range of ***compensation measures*** can also be introduced to remunerate vulnerable firms or sectors for the loss of income associated with a reform. These measures are often closely linked to the use of revenues from GFR and have different strengths, weaknesses and trade-offs. Certain measures may be more relevant or useful in particular circumstances depending on the nature of the GFR process, targeted sector and available administrative capacities. Compensation measures should be designed so that they maintain a positive incentive effect and should be independent of the tax burden (World Bank, 2005). An overview of different types of mitigation measures for vulnerable firms or sectors, along with their strengths and weaknesses, is provided in Table 1. This is followed by an elaboration of certain types of compensation measures, drawing on insights from practical experience across different sectors.

Table 1. Overview of potential measures to mitigate impacts of GFR on vulnerable firms or sectors

Type of measure	Strengths	Weaknesses
Design and implementation approaches		
Timetable	- Pre-announced, phased introduction allows time to	- Could lead to backsliding and reversals of reform commitments

[5] See for example: Albrizio et al., (2014); Jaffe et al., (1995); Smarzynska and Wei (2001); Sijm et al. (2004) ; Oikonomou et al. (2006); OECD (1996) ; Ekins and Speck, (2012)

	adjust - Provides certainty - Reduce opposition to reform	- Risk of hoarding and shortages - Creates expectations of inflation
Stakeholder engagement	- Build ownership and legitimize process - Increase awareness of pros and cons, winners and losers - Reduce opposition to reform	- Risks delaying GFR process - Opportunity for lobbying against reform and platform for opposition
Compensation mechanisms		
Reductions/ exemptions	- Reduce opposition and build support for reform - If linked to effective conditionalities, could be useful to encourage change and improve information asymmetry - Useful for political and public acceptability purposes	- Does not provide efficient price signal or incentive, thus foregoing cost-effective opportunities - If not well designed, could be over-generous - Imply advantages for certain firms and sectors, but disadvantages to others - Once established, may be difficult to revise or phase-out as it becomes entrenched in expectations
Transitional assistance to affected workers	- Reduce opposition and build support for reform - Linked to wider complementary policies, e.g. to encourage new job opportunities	- Could become entrenched in expectations of beneficiaries if not time limited
Incentives for innovation	- Facilitate transition in affected sector - Drive innovation - Reduce opposition and build support for reform	- Could become entrenched in expectations of beneficiaries if not time limited
Minimum agreements/ cooperation between countries	- Avoid concerns of leakage and competitiveness impacts - Increase support for GFR - More effective and efficient instruments - Support more ambitious GFR - Reduce opposition and build support for reform	- Difficult to get agreement on fiscal cooperation between countries, particularly larger groupings
Border adjustments	- Reduce concerns of competitiveness impacts - Increase support for GFR - Encourage other countries to initiate pricing regimes and thus support global efforts - Reduce opposition and build support for reform	- WTO compliance - Could be administratively complicated depending on number of sectors/products covered - Political barriers given fears of adverse impacts on relations between trading nations

Source: Own synthesis.

3.1.1 Partial reductions or exemptions

Some form of exemptions or special provisions for vulnerable firms and sector(s) are often relied on as a politically expedient measure when introducing GFRs. Such practices, however, contravene the

principles of conventional economic theory and tend to impair the effectiveness of these instruments as the cheapest emission reduction potential is not exploited. For example, in Germany derogations granted to manufacturing and energy-intensive industries from the energy tax have limited the environmental impacts of the tax as the high energy efficiency potential in this sector remains largely untapped due to insufficient price signals (Speck and Jilkova, 2009). Furthermore, such practices may imply advantages for certain firms and sectors, but disadvantages to others. In some cases, exemptions can be considered to be overly generous. For example, it has been estimated that if the Climate Change Levy (CCL) in the United Kingdom of Great Britain and Northern Ireland (UK) had been implemented at the full rate for all businesses, further substantial cuts in energy use could have been achieved without jeopardizing economic performance (Martin, de Preux & Wagner, 2009).

In some cases, exemptions are linked to conditionalities, such as voluntary agreements (see Box 7 on the case of the Netherlands). Such agreements, if well designed, can improve the information asymmetry between companies and authorities, inform discussions on further revisions to the instrument and potentially act as a constructive means to encourage change (ten Brink, 2002). Specific requirements, such as an environmental management system, regular energy audits and a commitment to investments or initiatives that have a short payback time to be eligible for the exemption, can also give the issue due executive attention and thus encourage progress (Withana et al., 2013).

Exemptions are introduced for a number of reasons. While they tend to undermine the effectiveness of GFR, they are often necessary for political and public acceptability purposes. A critical issue is how such exemptions are designed and their development over time (see section 3.4).

Box 7. The energy tax in the Netherlands

The "energy tax", formerly known as the "regulatory energy tax", was introduced in 1996. It applies to energy products used for heating and electricity generation by households, small businesses and intermediate firms. It is part of the wider Dutch energy taxation regime which has developed over the last two decades into an output-style system whereby fuels used in electricity generation have been exempted from fuel taxes, while rates levied on electricity under the energy tax have increased. Different rate schedules are applied for electricity and natural gas with regressive rate structures so that rates decline with the level of consumption. The rate structure was partly based on the carbon content of the fuels and indexed to inflation since 1999, however it has subsequently been changed and its basis on energy/ CO_2 abolished.

Exemptions are applied to help address competitiveness concerns and include:

- A refund from the energy tax for large industrial electricity consumers (>10 million kWh/year per electricity connection) if they enter long-term agreements on energy efficiency with the government and pay on average more than the EU minimum rate.

- Reduced natural gas tax rates on the horticulture sector on the condition of participating in energy efficiency agreements with the government.

- Rebates and subsidies for energy distribution firms for the deployment of CHP, energy-saving technologies and renewable electricity.

Revenues from the energy tax have increased over time from EUR 400 million when the tax was initially introduced to EUR 3.9 billion in 2012 and amounted to 0.65 per cent of GDP in 2012.

Revenues are recycled back to the economy through:

- Lower income tax rates and higher tax free allowances for households (especially pensioners);
- Reduced employers' social security contributions, increase in tax free allowances for small and medium sized enterprises (SMEs), reduced corporate tax rates;
- A tax credit in the form of a lump sum refund on households' electricity bills;

Until 2003, around 15 per cent of revenues were earmarked to reward the purchase of energy-efficient appliances.

Available evaluations suggest that the energy tax has supported a reduction in residential energy demand and an improvement in energy intensity among the Dutch industry. The regressive elements of the tax are nearly neutralized through recycling measures, such as the tax free allowances, reductions and the tax credit per electricity connection (which is considered a good example of how to avoid negative distributional effects of ETR on households). There have also been some criticisms of the system. For example, Vollebergh (2008) notes that CO_2 emissions from the production of most final energy products in the Netherlands are exempted from energy taxation either implicitly (e.g. crude oil and natural gas) or explicitly (e.g. electricity production), leading to low or zero energy taxes for those sectors with the cheapest abatement options.

Sources: Duscha, Grießmann, Rath, Seebach, and Thomas (2005); EEA (2011); European Commission (2013a); OECD (2013); OECD/EEA (2014); Peter et al. (2007); Speck and Jilkova (2009); Vollebergh (2008, 2013); Withana et al. (2013, 2014).

3.1.2 Transitional assistance for displaced workers

If GFR has significant impacts on a specific economic activity, industry or firm, targeted compensatory measures can be considered (e.g. payments to assist in structural change, provision of information, advice and retraining to help affected workers find other jobs or activities, early retirement schemes, and support for scholarship programmes, among others). Such transitional assistance for displaced workers has been provided, for example, in a number of European countries when reforming subsidies to the coal-mining sector, including in France which supported alternative economic activities in affected areas and provided employment guarantees to affected miners, Poland which provided severance packages to workers leaving the mines and in the UK which supported alternative economic activities in affected areas and the development of skills (Bruvoll & Vennemo, 2014). Such support can help reduce opposition to the reform and reallocate resources to other activities, stimulating economic growth in areas where industrial activities are to be scaled-down or closed, and creating new job opportunities in the long-term.

Such assistance can also be controversial. The coal subsidy reforms in Europe were undertaken against a highly charged political context with questions about the appropriateness and adequacy of the transitional assistance provided. In the UK, for example, although the reform enabled the country to maintain a more or less competitive coal industry, it came at the cost of extensive mine closures and significant social costs as the compensation provided was considered insufficient to avoid an increase in unemployment (IEEP, Ecologic, Fondazion Eni Enrico Mattei & Vrije Universiteit Amsterdam, 2007).

Thus, transition measures need to be carefully designed and reviewed to ensure that they are appropriate and adequate. While such measures can help buy support for the reform, they can also be costly, particularly in the short- to medium-term. Care needs to be taken to ensure that such assistance does not become entrenched in the expectations of beneficiaries (OECD, 2005a); this

requires careful design with clear review clauses and end dates (see section 3.4). Such assistance is also linked to wider, complementary policies introduced as part of the reform package, such as measures to stimulate new employment opportunities in a geographic area or sector affected by the reform (see Box 17 on support to the fisheries sector in New Zealand when fisheries subsidies were reformed).

3.1.3 Incentives for innovation and more efficient technologies, processes and practices

Certain countries use mechanisms to recycle revenues raised by the GFR back into the affected sector to help keep down pressure, encourage transformation and drive innovation (see Box 8 on Sweden). Such mechanisms can be useful in supporting structural change in the sector over time. However, to do so they need to be carefully developed to ensure effective incentives and encourage due dynamics in the sector. Incentives should be performance linked, favouring more efficient or innovative players so as to reward good behaviour and penalize a lack of action. They should be targeted at the most vulnerable sectors and be time-limited, and reduced gradually over time so that they do not become entrenched in the expectations of beneficiaries (see Box 12 on Australia).

Box 8. The NOx tax and refund system in Sweden

In 1992, Sweden introduced a tax on emissions of nitrogen oxide (NOx) from energy generation at stationary combustion plants at a rate of SEK40/kg ($6000/ton) of NOx emitted from stationary combustion plants producing useful energy above a specified threshold (the threshold has been reduced from 50 MWh of useful energy per year to 25 MWh). All revenues raised from the tax (except administration costs) are recycled back to participating plants in relation to the amount of energy generated. Thus, plants with low NOx emission intensities are net beneficiaries of the system while those with high NOx emission intensities are net losers.

This innovative feature has provided a strong incentive for participating firms to reduce NOx emissions per unit of energy produced and has stimulated significant innovation and investment in combustion and pollution abatement technologies. For example, the number of plants subject to the NOx tax with NOx abatement technologies in place increased from 7 per cent in 1992 (when the tax was introduced) to 72 per cent in 1995.

There are, however, some shortcomings of the system. For example, the refunds mean that the tax has little impact on relative product prices and thus does not discourage demand for such products; it goes against the “polluter pays principle” and maintains inefficient resource allocation patterns as polluters do not pay the full cost of pollution. The design of the refund provides an incentive to reduce NOx emissions per unit of energy produced, but does not reduce the overall amount of energy produced. Thus, while the average emission intensity of participating plants was nearly halved in 1992-2005, total energy output increased by more than 70 per cent and total NOx emissions did not fall by much.

Nonetheless, the recycling mechanism has made the NOx tax more politically acceptable in Sweden. It has helped reduce concerns of negative competitiveness and distribution impacts and is thus considered a useful approach, particularly in small open economies.

Sources: OECD (2013a, 2010, 2010a); Sterner and Turnheim (2009) ; De Mooij et al. (2012); Sterner and Hoglund-Isaksson (2006); OECD (2013a).

3.1.4 Minimum agreements or cooperation among coalitions of countries

Cooperation between countries on GFR could be another mitigation measure that potentially leads to more harmonized or synchronized approaches, such as an agreed minimum level or threshold of a given measure. The EU Energy Tax Directive (2003/96/EC) is an example of such a common approach (see Box 9). Such agreements are likely to be more useful in certain circumstances, in particular depending on the ease with which a given tax or charge could be avoided for example through trade (e.g. waste exports) or movement of consumers (e.g. airline tax and fuel tax). Such cooperation could take place between neighbours (e.g. to reduce the risk of fuel tourism or smuggling of fuels) (see OECD, 2005) or between countries in a certain geographic region that face a common challenge (e.g. marine litter in the Baltic Sea or identified hot spots in the Caribbean). It could help overcome obstacles to progress – as it may be easier to garner support if potential competitors work together to design and launch measures. Such cooperation between countries could lead to more effective and efficient GFRs (Withana & ten Brink, 2015).

Although such cooperation between countries may be difficult given various political considerations and sensitivities, it is likely to be more feasible when smaller groups of countries are involved. Moreover, cooperation may be more likely when countries agree to set minimum requirements (e.g. minimum tax rates) rather than specify individual rates. This allows a certain degree of flexibility among participating countries, with those wishing to go further being able to do so. For example, cooperation between countries in setting waste-related taxes and fees could help avoid waste exports for energy recovery where other treatment options such as recycling, reuse or prevention may be environmentally preferable (Associate Parliamentary Sustainable Resource Group, 2013). Such cooperation could help ensure that the price of waste treatment is higher at the bottom of the waste hierarchy (i.e. for landfill and incineration) and lower towards the top (i.e. for recycling, reuse). This would not necessarily mean applying the same tax rates across cooperating countries, but rather that the rates applied are set above an agreed minimum so as to discourage exports/ imports and thus drive waste management improvements (Watkins et al., 2012; Withana et al., 2014).

Box 9. Agreeing minimum energy taxes among 28 EU member States

The EU Energy Tax Directive (ETD) (2003/96/EC) was adopted in 2003 and provides a common framework for the taxation of energy products and electricity across the 28 EU member States. It aims to harmonize and gradually increase the minimum excise duty rates applied on energy products. However, given political sensitivities it includes a number of exemptions and derogations for particular countries and sectors, which has somewhat undermined its effectiveness (European Commission, 2014).

In 2011, the European Commission tabled a proposal to revise the Directive so that energy taxes would be based on two components (European Commission, 2014):

- A minimum tax rate for CO_2 of EUR 20 per ton of CO_2 for all uses of the energy products;
- A minimum rate for energy based on the energy content of a fuel which varies depending on whether the energy product is used as a motor fuel (EUR 9.6 per GJ to be reached gradually by 2018) or as a heating fuel or motor fuel for specific purposes such as agriculture (EUR 0.15 per GJ as of 2013).

The proposal seeks to reduce distortions in competition between different fuel types and promote more efficient energy use. It has, however, faced significant opposition from certain countries and discussions have been stalled since 2011. The difficulties facing the proposal reflect a number of

issues including the underlying economic climate – with countries particularly sensitive to pushing ahead with ambitious environmental policies for fear of impacts on competitiveness and industry relocation, among others – and institutional barriers (e.g. the fiscal unanimity rule in the EU on tax issues). It also reflects the difficulty in reaching agreement among a larger and more diverse group of countries. The initial Directive was agreed among 15 member States and the proposed revision requires agreement among 28 member States, including a number of countries in Central and Eastern Europe whose economies are heavily reliant on fossil fuels.

In early 2015, the Commission withdrew the proposal on the grounds that there was no real prospect for member States to reach an agreement. The Commission could put forward another proposal in this area. Another option could be for a subset of member States (currently at least nine) to take forward the issue under the "enhanced cooperation procedure". Such cooperation is in principle possible but can only be undertaken as a last resort and under certain conditions (Bassi , Pallemaerts & ten Brink, 2010). There has been limited use of this approach to date (e.g patents and a proposed financial transaction tax). However, it remains an option which could be relied on more frequently in the future, particularly given the current political context and discussions on the potential need for a "multi-speed" Europe.

3.1.5 Border adjustments

Another option for consideration could be the use of trade-related measures, such as border carbon adjustments (BCAs) which would adjust the prices of traded goods based on a pre-determined measure of environmental impacts (e.g. GHG emissions emitted) such that prices/ costs of imports and exports are aligned. Border adjustments could, for example, take the form of taxes, charges, refunds, carbon labels, carbon and/ or energy-intensity standards or bans (Ecoplan, WTI Uni Bern, & Rechtswissenschaftliches Institut Uni, 2013). Such adjustments could be an effective way of encouraging other countries to initiate pricing regimes and to undertake GFR as they are effectively penalized for not having a similar system in place (De Mooij et al., 2012).

Border adjustments are often raised in discussions. Such adjustments are, however, difficult to implement in practice and remain controversial. They are politically highly sensitive given trade implications and fears that they will strain relations with trading partners. Nonetheless, there are some studies that suggest that well-designed BCAs could overcome concerns of feasibility and political acceptability (e.g. see: Vivid Economics, 2012). There is a need for further analysis of such measures, in particular on how they could be designed and implemented to be WTO compliant and whether they provide a feasible and practical option that can help mitigate some of the concerns related to more ambitious GFR efforts.

3.2 Compensation measures for vulnerable households

As noted in chapter 2, adverse impacts of GFR on vulnerable households can be mitigated through ***careful design and implementation***. For example, in the Netherlands the regressive impact of energy taxes has almost been neutralized through the use of tax free allowances, tax reductions and credits (see Box 7). Similarly, means-tested heating benefits are being offered in Germany, mitigating the impact of energy price increases on the poorest households (EEA, 2011). Using GFR revenues to lower income taxes and social security payments could also help mitigate some potential negative impacts.

A range of ***compensation measures*** can be introduced to remunerate vulnerable households for the loss of income or welfare associated with a reform. These measures have different strengths,

weaknesses and trade-offs and may be more relevant or useful in particular circumstances depending on the nature of the GFR process and administrative capacities, among others. Compensation measures need to be tailored to the national context (e.g. providing compensation through changes in social security payments may be easier to administer in developed countries where a dedicated administration and infrastructure already exists for such payments). This may be more challenging in developing countries where other measures can be considered, such as increased spending on health and education programmes (at least in the short- to medium-term) while administrative capacities and supporting infrastructures are further developed (Clements et al., 2013).

An overview of different types of mitigation measures for vulnerable households, their strengths and weaknesses is provided in Table 2. This is followed by an elaboration of certain types of compensation measures, drawing on insights from practical experience across different sectors and issues. The need and type of compensation provided will depend on a number of factors (see section 0), including the consumption patterns of vulnerable households and the extent to which households can manage their demand or secure access to alternatives (World Bank, 2014). Better access to substitutes and alternatives (e.g. public transport) can also help increase acceptability of the GFR.

Table 2. Overview of potential measures to mitigate impacts of GFR on vulnerable households

Type of measure	Strengths	Weaknesses
Design and implementation approaches		
Timetable	- Gradual introduction allows time to adjust to revised prices - Reduce opposition to reform	- Could lead to backsliding and reversals of reform commitments - Risk of hoarding and shortages - Create expectations of inflation - Foregone revenues (and environmental benefits) in short-term
Sequencing	- Reduce impacts on vulnerable groups	- Reduce revenues from GFR - Create distortions or negative incentives - Time for opposition to build up
Stakeholder engagement	- Build ownership and legitimize process - Increase awareness of objectives, pros and cons, winners and losers - Reduce opposition to reform	- Risks delaying GFR process - Opportunity for lobbying against the reform and platform for opposition
Compensation mechanisms		
Allowances/ reductions	- Protect low-income groups by offering certain basic level of service - Reduce opposition and build support for reform - Ease of administration - Can provide incentives for conservation if well-designed (e.g. rising block tariff)	- Limited reach as only covers households connected to the electricity grid/water system - Undermine incentives for conservation if not well designed - It measures are not means-tested or well-targeted, there is a risk of leakage (e.g. higher-income groups)
Cash transfers	- Give beneficiaries flexibility in spending	- Need to be targeted to ensure transfers are manageable

	- Link to conditionalities to ensure transfers spent on 'desirable' uses (e.g. education) - Reduce opposition and build support for reform	- Requires administrative capacity and infrastructure (e.g. bank accounts) - Increases risk of corruption - Targeting errors - Requires regular monitoring to ensure transfers reach intended beneficiaries - Could become entrenched in expectations of beneficiaries
In-kind transfers	- Useful when government lacks administrative capacity to implement cash transfers - Ease pressure on vulnerable groups - Win political and public favour as limits freedom of recipients to spend on 'undesirable' uses - Can include incentives to encourage behaviour change (e.g. energy efficient lighting)	- Limited flexibility - Distort household choices - Could become entrenched in expectations of beneficiaries - Difficult to target, risk of diversion, smuggling, corruption

Source: Own synthesis.

3.2.1 Tax free allowances or targeted reductions

Tax free allowances or "lifeline tariffs" can be provided for basic use of an essential service by targeted groups (e.g. linked to income level or family size)**.** Such lifeline tariffs can help provide access to basic services (e.g. water and electricity) for vulnerable households and mitigate the impacts of price increases on poor households. In Uganda, for example, a lifeline tariff of Ugandan shilling 100 per kWh is provided for electricity consumption of up to 15 kWhs a month by poor households; in the Philippines discounts in electricity tariffs of between 5–50 per cent are provided to three million poor households (IMF, 2013). Such tariff schedules can help reduce the adverse effect of electricity tariff increases on poor households. Above the threshold of the lifeline tariff, a rising block tariff structure could be introduced to ensure rates increase with consumption.

However, the adoption of allowances or lifeline tariffs requires supporting infrastructure, such as metering devices and connection of vulnerable households to the grid (World Bank, 2014), both of which may require some upfront investment or support. Such allowances should be carefully designed and limited to modest levels of consumption to ensure that they are well-targeted and not appropriated by richer households (OECD, 2005). Moreover, experiences in the application of such tariffs in some countries suggest they are less effective in protecting low-income households in practice, particularly in those countries where access to the water or electricity grid is limited. For example, in El Salvador, a large proportion of low-income households do not benefit from lifeline electricity tariffs as they are not connected to the grid or their consumption levels are above the lifeline threshold (the latter linked to large family size) (see Arze del Granado et al., 2010).

An additional disadvantage of such tariffs is that they do not provide an incentive for reduced consumption among households that receive the tax free allowances. Thus, other measures could be considered that incentivize reduced consumption while also supporting or protecting vulnerable groups. In Denmark, for example, water pricing is based on metering, while the affordability of water and waste water services is ensured by income support through existing social policy systems (OECD, 2008). This approach has the advantage of retaining an incentive element in water pricing for all water users irrespective of their income (EEA, 2013). Another option could be to apply the full tax

rate to all users and provide a targeted lump-sum refund to vulnerable groups in order to cover their basic use of the service.

3.2.2 Cash transfers

Many countries use targeted or untargeted cash or near-cash (e.g. vouchers) transfers to compensate for some of the impacts of GFR. Such transfers can be a useful mechanism to overcome obstacles to GFR. In Indonesia, for example, the government used an unconditional cash transfer programme to help overcome opposition to fossil-fuel subsidy reform (see Box 11). Cash transfers are considered an effective way of compensating households for both direct and indirect effects of GFR, such as fossil fuel subsidy reform (World Bank, 2014), and are considered economically efficient as they allow beneficiaries the flexibility to spend according to their needs (Clements et al., 2013). However, such transfers are also inefficient in the sense that unlike cuts in payroll/personal income/corporate taxes, they do not increase incentives for work effort, capital accumulation and human capital, among others, and thus do not provide as efficient an outcome for the economy overall (see section 3.3).

There are also issues of corruption and fraud, technical and administrative costs and targeting errors, which have arisen in the practical application of such cash transfers. Thus, there is a need for careful design and implementation of the cash transfer system as well as regular monitoring and review to ensure transfers reach intended beneficiaries. Such programmes may also require complementary investments and capacity (e.g. for the registration of eligible groups) and a system to administer or distribute cash, such as bank accounts which may take time and money to set up (see Box 10 on India). Technological advancements can simplify the technical and administrative costs of implementing such programmes (World Bank, 2014) and help to improve targeting and efficiency, reduce corruption and prevent leakage to unintended beneficiaries (see Box 10 on India).

Box 10. Driving fuel subsidy reform in India

Fossil fuel subsidies account for a substantial share of public expenditure in India. For example during 2012-2013, 2.3 per cent of India's GDP was spent on fossil fuel subsidies (Merrill & Chung, 2014). Not only are these subsidies an increasing burden on the public budget, they have also been found to be inefficient and inequitable with the richest ten per cent of households benefiting seven times more from the subsidies than the poorest ten per cent (Anand, Coady, Mohammad, Thakoor, & Walsh, 2013). Recognition of these shortcomings has led to numerous calls for reform and in recent years the government has taken some steps in this regard. In 2010, the government liberalized petrol prices. In 2013, it introduced a policy of gradual monthly increases in retail diesel prices, a cap on the consumption of subsidized LPG cylinders per household and a policy of progressively reducing total PDS kerosene (Clarke & Sharma, 2014).

Despite efforts, progress has been slow, hampered by concerns of impacts on the economy and vulnerable groups and a public backlash over price increases (WEF, 2013). Eliminating fuel subsidies will have a negative impact on household incomes (in particular from higher prices for kerosene and LPG), with impacts estimated to range from 4 per cent for the lowest income groups to 5 per cent for higher income groups (Anand et al., 2013). Subsidy removal may also lead to wider impacts (e.g. as higher prices drive poor households to rely more heavily on traditional fuels, such as firewood and animal dung, with associated negative impacts on indoor air quality and health, among others)(Clarke & Sharma, 2014).

Supporters of fuel subsidy reform hope that India's new Prime Minister Narendra Modi will provide leadership and impetus to the process. Fossil fuel subsidy reform (and food subsidy reform) is part of a wider package of good governance and reform that is being driven by the

Prime Minister. One of his key election pledges was to reform India's inefficient public services and get public finances in order. His popularity and wider reform agenda could help build broad-based support for fossil fuel subsidy reform. In October 2014, the government announced a number of reforms including: the immediate decontrol of diesel prices, an increase in the regulated price of natural gas, fixing the total subsidy per LPG cylinder, reintroducing the Direct Benefit Transfer for LPG (DBTL) scheme, and considering adoption of a Direct Benefit Transfer for kerosene (DBTK) scheme (Clarke & Sharma, 2014).

Support measures need to be better targeted to ensure coverage of genuinely poor households that are currently excluded from programmes. There is also a need to withdraw entitlements from non-poor households which currently receive support (Anand et al., 2013). This can be supported through careful design of programmes as well as technology assisted measures. For example, a scheme to increase the number of bank accounts among households (Pradhan Manrei Jan Dhan Yojana) will help implement cash transfers as households can receive payments directly in their new accounts, while the Aadhaar unique identification scheme, currently being rolled out nationwide, will help reduce corruption and leakage of benefits (The Economist, 2014). These developments make it more feasible for the government to provide direct support to the poor instead of fuel subsidies.

There are concerns that cash transfers may be spent on undesirable uses. These transfers are linked to specific conditionalities with eligibility for the transfers linked to a commitment to use the transfer to improve the welfare of the household (e.g. by investing in the education or health of members). Such conditionality, while challenging to implement, could help alleviate the impacts of GFR and at the same time address some of the root causes of poverty in the country (Clements et al., 2013). Similar conditional cash transfers have been successfully used in a number of countries, including Brazil, Columbia and Mexico. They do not require complex administration or governance systems and can be distributed through existing structures, such as schools or local post offices (Laan et al., 2010).

3.2.5 In-kind transfers

Where cash transfers are not feasible (e.g. due to limited administrative capacity), another compensation measure to consider is in-kind transfers. These transfers can help cushion the direct and indirect impacts of GFR on vulnerable households by reducing spending on other items or services on which they are reliant. This could, for example, include investments in existing social programmes, which can reduce pressure on the budgets of low-income households and thus alleviate the negative impacts of the GFR (see for example, Box 3 on fuel subsidy reform in Ghana and Box 11 on fossil fuel subsidy reform in Indonesia).

In-kind transfers can also include incentives to encourage behaviour change, which can in turn ease pressure on household budgets (e.g. well-designed programmes for energy efficiency improvements and insulation, tax breaks on public transport to reduce costs of public transport, and support to households to convert from the use of kerosene for cooking to low-cost LPG). Although such in-kind transfers are less favoured from an economic efficiency point of view (as they distort household choices), they are sometimes favoured by policymakers and the public as they ensure spending on acceptable uses and are often relatively easy to implement as they can make use of existing mechanisms and processes (World Bank, 2014). They should be carefully designed and regularly reviewed to ensure they are effective and reach the intended beneficiaries.

Box 11. Fossil fuel subsidy reform in Indonesia

Fossil fuel subsidies are a politically sensitive issue in Indonesia. Such subsidies have had mixed experiences with reform efforts since the late 1990s. Given concerns of the growing fiscal pressure from fuel subsidies and equity considerations, in 2005 the government began a process to gradually liberalize the fuel market and eliminate fuel subsidies. This reform process entailed a substantial rise in fuel prices, which increased by an average of 125 per cent in 2005 and 29 per cent in 2008. These reforms were supported by a public information campaign along with an extensive programme of cash and in-kind transfers that made use of existing social protection programmes. The package of compensation measures included:

- Temporary, unconditional cash transfer payments, targeting poor households (e.g. in 2005 the transfers covered 19 million poor families over six months). Vulnerable households were identified through local community leaders and cash was distributed through local post offices.

- Savings from reform used to finance investments in education, rural development and health through existing social protection programmes.

- Incentives to shift from the use of kerosene for cooking to low-cost LPG, including provision of a free starter pack and a program to educate the public on the safety of LPG.

This package of measures helped reduce opposition to the reform (and reduced the intensity of protests to the price increases). Existing social protection programs facilitated timely delivery of the compensation measures. The popularity of then President Yudhoyono and the credibility of his government are considered other factors that helped the reform (in contrast to previous efforts in 1998 and 2003 which met with significant public opposition). Assessments of the reform highlighted the success of the cash transfer programme and concrete achievements from other elements of the package, such as the repair and development of new roads, bridges and irrigation systems, among others. Such assessments can help maintain public support for the reform and build government credibility.

However, the reform also had some shortcomings. In particular, it lacked a long-term strategy which together with other factors resulted in the reintroduction of subsidies in 2009 in the lead up to national elections. The reform was put back on track in 2013 when fuel prices were increased to slightly above 2008 prices. This was accompanied by a package of compensatory measures which amounted to $2.9 billion and included a temporary unconditional cash transfer scheme and the provision of support through existing social welfare programmes, including assistance for poor students, subsidized rice, basic infrastructure and a conditional cash transfer program targeted at very poor households.

The newly elected President, Joko Widodo, has prioritized fossil fuel subsidy reform given its impacts on the current account deficit. In November 2014, the government raised gasoline and diesel prices, and in January 2015 it announced the elimination of gasoline subsidies and a reduction in the diesel subsidy to a fixed 1,000 rupiah ($0.08) per litre. Falling global oil prices have helped mitigate the impacts of these reforms as unsubsidized fuel prices are less than previously subsidized prices. Revenue savings are expected to support social spending programmes, including cash transfers of 200,000 rupiah ($15.75) per month to the poor to mitigate impacts of the reform and infrastructure investments including port and rail connections.

Sources: IMF (2013), GIZ (2013), Beaton et al. (2013), Merrill and Chung (2014) *The Economist* (2015, 2015a), World Bank (2014).

3.3 Using GFR revenues

As noted above, compensation measures are closely related to the use of revenues from GFR. Careful use of these revenues can mitigate some of the adverse impacts on vulnerable groups and help overcome obstacles to the reform. How revenues are used has an important influence on the impact and effectiveness of the GFR as well as on its political and public acceptability. There are different options for how revenues from GFR are used – from contributing to a wider tax-shifting programme to raising revenues, recycling revenues or a mix of these approaches.

How revenues are used and the proportion used for mitigation measures depends on various factors, including the objectives and specificities of the GFR process, the sector or issue of focus, envisaged impacts of the reform and of potential mitigation options, stakeholder perceptions, the existing tax structure, government credibility and administrative capacities. Different options for using revenues from GFR are summarized in Table 3, which is followed by some insights and lessons from practical experience in relation to recycling mechanisms and earmarking for specific expenditures.

Table 3. Overview of potential options for revenue use from GFR

Revenue use option	Strengths	Weaknesses
Tax shift	- Part of wider tax shifting programme - Can help with economy wide efficiency by allowing reduction in more distorting taxes (e.g. on labour) which can help stimulate growth, increase incentives for employment etc. - Helps to "lock-in" GFR as any future change would require an increase in other taxes (De Mooij et al., 2012) - Allows overall tax burden to remain the same, thus avoid concerns of tax increase	- Only affects people who are working/pay taxes (except for VAT reductions which affects all) - Needs to be combined with additional measures to address regressivity concerns - Immediate benefits may be less clear than other options (see below), which can lead to less public acceptability
Raise revenues for general budget	- Allows flexibility in government spending to support different priorities including fiscal consolidation - Maintains rigour in budgetary allocation systems - Support fiscal consolidation needs	- May not be favoured by public as benefits are not visible, revenues disappear into "black box" of government revenues with no way to track related expenditure - Against public perceptions that revenues from green reforms should be used for environmental purposes
Recycle into economy or affected sector	- Can help transform a sector and maintain international competitiveness - Increase acceptance among affected sector/group, reducing	- Limit signaling effect and incentives for change if not well designed - Should be time limited

	transition costs - Revenue neutrality can help increase political acceptability as overall tax burden on the sector as a whole remains the same	
Earmarking (full or partial)	- Facilitate/catalyse innovation - Ease transition costs among affected group(s) - Ensure resources available for relevant activities (e.g. enforcement) - Can be useful way of building support including among the public which believes revenues from GFR should be used for environmental purposes	- Usually no relation between amount of revenue from GFR and the efficient amount of spending on a particular earmark - Can create distortions, lead to a prioritization of certain spending over others - Once in place, may be difficult to reverse or revise - Creates obstacles and rigidities in the tax system - Conflict between revenue raising potential and achievement of environmental objectives - Legal obstacles to earmarking in some countries - Not favoured by finance/economic departments as it reduces flexibility in the public budget

Source: Own synthesis.

Revenue recycling mechanisms include reductions in income tax rates, a reduction in social security contributions, and lump-sum transfers to those who do not pay income tax or social security contributions but face higher bills, such as pensioners, and tax credits for households, among others. While some researchers consider there to be a potential trade-off between efficiency and equity as recycling revenues through lump sum transfers rather than a reduction in distortionary taxes is more inefficient and costly, other researchers conclude that carefully designed revenue recycling mechanisms can both mitigate negative distributional effects and foster growth (Heindl et al., 2014). Which recycling mechanisms are used and what share of revenues is distributed to different groups depends on the impacts of the GFR on particular sectors or groups and political considerations. Revenue recycling can also be a useful way to increase the acceptability of GFR by industry (see Box 8 on Sweden).

Box 12. Lessons from the carbon tax experiment in Australia

A carbon tax was introduced in Australia in July 2012. The tax applied to the largest emitters and was to be replaced by a tradable permit system from July 2015. It was, however, repealed in July 2014. Although no longer in existence, the Australian carbon tax had a number of interesting mechanisms to mitigate impacts on vulnerable groups which may provide insights to others considering reform.

The system had rather detailed revenue-recycling mechanisms to ensure the tax was revenue neutral. This included support for around eight million households through increases in pensions, allowances, family payments and income tax cuts. Businesses benefited from incentives to invest in cleaner energy programmes and a shift to cleaner production processes. This support targeted

"emission-intensive trade-exposed" industrial activities and varied according to the degree of exposure of industries, and it was to be reduced by 1.3 per cent/year. It thus provided targeted assistance to the most affected sectors while ensuring due dynamics in the sector through a gradual reduction over time.

Despite this rather comprehensive package of compensating measures, the carbon tax was the target of major attack in the lead up to the national elections in 2013. Critics of the carbon tax argued that it would lead to substantial job losses and economic costs (despite previous modelling results from the Treasury which suggested otherwise). Abolishing the tax was the central campaign pledge of the newly elected Prime Minister Tony Abbott. Political interests and a very strong mining lobby led to the eventual unravelling of the tax, which was repealed by the Senate in July 2014. The tax has been replaced by a Direct Action Plan that offers competitive grants to companies that are voluntarily reducing their emissions (BBC, 2014). This experience highlights the numerous political challenges facing GFR as well as the importance of building broad support and political capital for reform which can transcend party-political lines and short-term electoral timelines.

Sources: Australian Government (2011, 2012); BBC (2014); Withana et al. (2013).

Such mechanisms need to be carefully designed to ensure effective incentives and encourage due dynamics in the sector (see Box 12 on Australia). Recycling mechanisms may also need to be revised in light of changes to tax rates over time, for example to maintain revenue neutrality or to ensure the system does not become regressive. This was, for example, the case in British Columbia (see Box 4). According to Lee (2011), while the impact of the tax on lower-income households was initially fully offset by corresponding tax cuts and credits, successive increases in the tax rate have not been matched by sufficient increases in the low income tax credit and have resulted in an increasingly regressive carbon tax regime. This reflects the needs for regular monitoring and review to ensure such issues are identified and appropriate action taken.

Earmarking revenues (partially of fully) for specific purposes is another option for revenue use. For example, in the Netherlands until 2003, 15 per cent of revenues from the energy tax were earmarked to reward purchases of energy-efficient appliances (see Box 7). Although a number of economic efficiency arguments portray earmarking as controversial, it can be useful in certain circumstances. For example the OECD (2005) and World Bank (2005) argue that despite concerns, partial earmarking of revenues from GFR "may be a price worth paying to ensure the financing of environmental monitoring and enforcement efforts, particularly in countries where such activities are underfunded (see Box 13 on Columbia). Revenues can also be used to improve government administrative capacities to implement GFR measures, contribute to related policy packages, improve tax collection efforts and build public support for GFR.

Box 13. Wastewater pollution charges in Columbia

A national discharge fee programme was established in 1993 with the adoption of Law 99, which mandates Regional Autonomous Corporations (CARs) and Urban Environmental Authorities (AAUs) to apply retributive charges (*tasas retributivas*) on water effluents. Each region sets its own pollution reduction goals, applies national base charges and tracks discharges for six months. The charge is applied progressively over five years, with increases every six months by pre-set amounts until the regional environmental quality objective is achieved. The programme has benefited from successful collaboration between regional environmental agencies, local businesses and communities. Funds raised from the charges are used by environmental authorities for environmental investments in industries and capacity-building in environmental agencies.

Despite some problems (including limited implementation in many regions and noncompliance by

municipal sewerage authorities), pollution discharges have dropped significantly in some watersheds since the program was introduced in 1997. In addition to incentivizing emission reductions, the scheme has helped enhance transparency and accountability in certain cases, while the prospect of increased revenues from the charges has incentivized some local regulators to improve permitting, monitoring and enforcement of a broad range of water-pollution related legislation. This has, in turn, boosted the effectiveness of pre-existing emission standards as well as the new discharge fees, thus highlighting the potential benefits of such an approach.

Sources: Blackman (2007), GIZ (2013), ECLAC and UNDP (2001), World Bank (2005).

Revenues from GFR could also be used to support new measures (e.g. positive incentive schemes or payments for ecosystem services (see Box 14) and/ or green technologies (e.g. renewable energies). Such earmarking can help build acceptance of the reform process given that the public sometimes believes that revenues from GFR should be used for environmental purposes. Where such an approach of (partial) earmarking of revenues from GFR is adopted, this needs to be carefully evaluated and designed with a clear target, level and timescale, which takes into account the needs and absorption potential among the target group or sector. Such provisions should be regularly reviewed and adequate safeguards should be in place to ensure the correct management and use of funds (OECD, 2005) and avoid creating a new set of problems.

Box 14. Supporting forestry conservation in Mexico

In 2003, the Mexican government launched the hydrological environmental services (PSAH) programme which pays forest owners to conserve forests. The objective is to support watershed protection and aquifer recharge in forest areas that are at risk and important for the water supply. Payments are made annually and are conditional on performance (CBD, 2011).

The programme is financed through an earmarked share of water-use fees charged by the municipalities and channeled to the federal authorities. Initially this earmarking was to be based on 2.5 per cent of total revenues. It was, however, later changed to a fixed amount, which started at 200 million Mexican pesos (approximately $20 million) in 2003 and increased to 300 million Mexican pesos (approximately $30 million) in 2005 (Porras and Neves, 2006). This approach with earmarking based on a fixed amount of revenues reduced the possibility that the PSAH would benefit from future increases in water fees (Alix-Garcia, de Janvry, Sadoulet, & Manuel Torres,, 2009).

This mechanism proved popular but is generally oversubscribed. However, impacts in terms of avoided deforestation have varied. Since its introduction, a series of weights for water scarcity, deforestation risk and poverty have been integrated into the grading system to improve targeting and efficiency (CBD, 2011).

When considering the development of revenues from GFR over time, one should keep in mind the issue of ***revenue erosion*** which could be a concern from a finance perspective, whereas from an environmental perspective a lack of revenue erosion could be a concern as it implies a limited environmental effect of the instrument. In the short- to medium-term, there are different measures which can help address possible shrinking revenues from GFR:

- ***Indexing rates to inflation***. A good example is the case of the Netherlands (see Box 7) where the indexation of energy tax rates provides constant real incentives and support to avoid falling real tax revenues (European Commission, 2012).

- ***Dynamic development of rates***. This can, for example, occur through scheduled increases in the rates each year (i.e. ramping up rates to better reflect environmental and social externalities) and/ or a broadening of the tax base (i.e. to cover more products) over time.

- ***Performance related indicator***. This links the increase in rates to performance against set targets. For example, in Switzerland, if emission reduction targets are not met in a given year, a higher CO_2 tax rate is applied (Withana et al., 2013).

- ***Gradual reduction in exemptions and reductions*** over time to ensure positive incentives. In some cases, such provisions can be considered a harmful or ineffective subsidy that needs to be reformed (Oosterhuis & ten Brink, 2014).

- ***Mix of instruments.*** For example, one tax could be targeted at emissions and another on a less mobile tax base, such as vehicle ownership or electricity.

These measures should be complemented with a ***monitoring system*** which takes into account developments with regard to affordability, changes in the tax base and external factors (e.g. events affecting energy security). This will allow an ambitious rate escalator to be set with options to reduce it depending on needs (e.g. if world prices rise above a certain threshold, the escalator would not be waved in that year) or where a rate increase is not needed (e.g. target has been met), thus helping to avoid political fallout while offering clarity (Withana et al., 2013). This can form part of a ***formal review*** of the GFR to assess progress and needs for change in light of experience in implementation.

In the **long-term**, if environmental policies and instruments (including GFR) and technological innovations lead to a situation where many environmental challenges have been addressed and the shift to a low carbon, resource efficient economy has been achieved, this would lead to real downward pressure on revenues from GFR given the smaller tax base. If environmental progress of this scale is achieved, then the rationale for GFR will not be the same as it is today and new sources of government revenue will need to be explored. This is an issue for the longer term which should be monitored and kept under review to ensure timely action when necessary (Withana et al., 2014). It is, however, worth noting that such challenges are not unique to environmental taxes as the need to identify potential new sources of fiscal revenues may also arise in other areas. For example, the ageing population may have significant budgetary implications for certain EU member States as revenues decline due to a reduction in the labour force, while the pressure for increased expenditure on pensions and health care grow (Speck, 2015).

3.4 Smart principles for the design and implementation of compensation measures

As discussed above, in certain cases, compensation measures are required to mitigate impacts of GFR and help overcome obstacles. These measures need to be carefully designed and monitored to ensure that they achieve intended objectives and to ensure that the costs of compensation programmes do not spiral out of control (UNEP, 2004a). Careful design can also help avoid the entrenchment of compensation measures in the expectations of beneficiaries, thus making it easier for future revisions of the system in light of changing circumstances. Some general principles to guide the design and implementation of compensation measures are set out in Box 15, which was built on findings by Withana et al. (2013). To the extent possible, such measures should maintain a positive signalling effect, not undermine incentives and contribute to the overall objectives of the reform.

Box 15. Smart principles for the design and implementation of compensation measures

- Measures should ***target*** the most exposed or vulnerable groups. This could, for example, be energy-intensive industries that operate in a highly competitive market and are in a sector

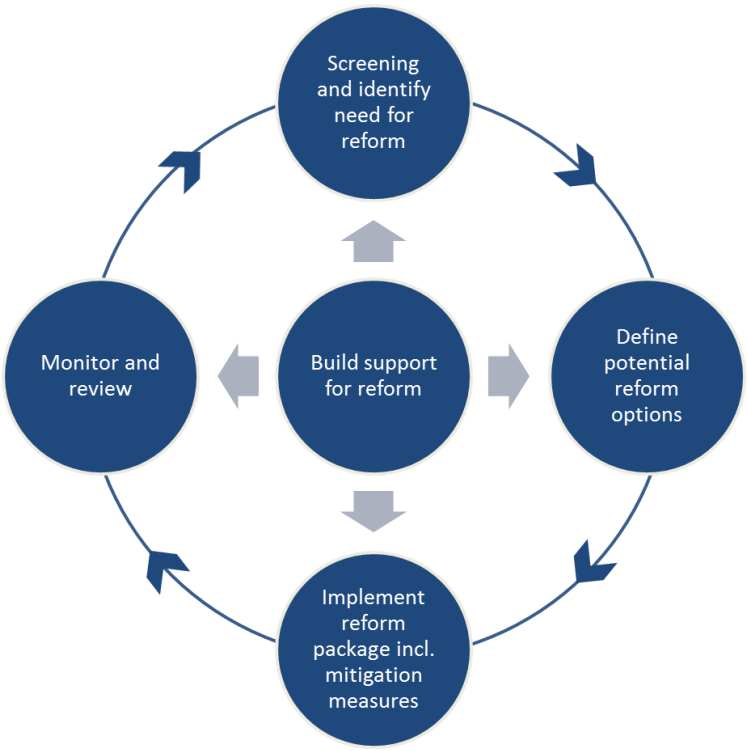
with significant international trade. Criteria for granting exemptions (including the definition of the target group) should be developed with tax authorities to ensure that they are practical and enforceable.

- Measures should have a ***clear timeline*** that includes, where relevant, a schedule for a progressive phase-out (sunset clause) that is specified upfront to avoid beneficiaries becoming "hooked".
- Measures should be developed in an ***open, participatory approach*** with key stakeholders to reflect concerns, ensure more effective measures and secure buy-in.
- Measures should be ***simple to administer*** and built on existing systems and procedures to the extent possible. This will avoid the need for new administrative capacities and procedures, which are costly and take time to set up.
- Exemptions should be ***gradually reduced or phased out over time*** towards a more restrictive system as preferential treatment is understood to no longer be needed (e.g. capacity of the affected sector to absorb impacts improves through technological advancements).
- ***Partial reductions*** should be used rather than full exemptions to keep marginal incentives positive. This can help reduce the feeling of entitlement among beneficiaries, provide an opportunity to review provisions and maintain a positive signalling effect within target groups (e.g. boards and finance directors of companies).
- Exemptions (and other relevant compensation measures) should be ***linked to effective conditionalities***, such as specific agreements or general commitments that contain different elements (e.g. audits, environmental management systems, and/ or requirements for information flow). Conditionalities should be designed so that they are more demanding for more significant exemptions and less demanding for smaller advantages.
- Exemptions should have some sort of ***reporting agreement*** that requires beneficiaries to demonstrate the merits of the exemption (proof of effectiveness). This can help address information asymmetry, feed into evaluations and help authorities better understand the potential for future reform, which are positive outcomes in terms of incentive effects and sensitivity to industry realities.
- A ***monitoring and review system*** should be put in place to assess the effectiveness of measures (assess if they well targeted) and undertake revisions where necessary (increase the tax rate or tighten eligibility criteria). This should include a review of the use of revenues to assess implementation of government commitments to reform (i.e. assess if revenues are being spent as promised), reduce risk of fraud and corruption, and maintain public support and trust in the process.

4. Strategies, approaches and tools to drive GFR

In addition to the compensation measures discussed in Chapter 3, there are a number of other strategies, approaches and tools which can be used to overcome obstacles to GFR. These measures form part of a ***clear and comprehensive GFR strategy*** that encompasses all stages of the GFR policy cycle: initial screening and identification of the need for reform, defining potential reform options, building support for reform, implementing the reform and related mitigation measures, and monitoring and review processes (see Figure 3). The strategy should have clear objectives and a timetable for reform and be presented as a comprehensive package of reform that includes complementary policies and measures to mitigate adverse impacts and ensure long-term sustainability; it should also include an extensive communication campaign and be prepared in close consultation with relevant internal and external stakeholders.

Figure 3. Stylized representation of GFR policy cycle



Source: Own representation.

GFR processes should make use of relevant windows of opportunity to drive reform forward, link to wider policy commitments and processes at different levels and take into account the underlying context in the country, including wider structural reform needs. Any GFR effort is part of a wider policy context and cannot be seen as separate or self-standing. Moreover, efforts should be sustainable (economically, socially and environmentally) to avoid future reversals or set-backs. Thus, GFR processes should be comprehensive and have a long-term perspective, taking into account the broader policy environment, the complex interconnections and interdependencies therein and seek to contribute to wider policy objectives. These various elements are discussed in more detail below. They form part of a wider GFR strategy and can help overcome some of the obstacles to the process.

4.1 Processes and tools to support GFR

Before deciding on whether or not to undertake a GFR process, there is a need to identify potential needs for GFR and priority areas for action at different levels. Such an assessment could begin with a more strategic process to identify the role and potential for GFR in the wider policy context. This was, for example, the approach taken in South Africa (see Box 16). Such an approach could be helpful in developing a consistent overall fiscal policy framework to support wider sustainable development objectives (Schlegelmilch, Speck, & Maro, 2010).

Box 16. Promoting a comprehensive and coherent approach to GFR in South Africa

In the early 2000s, the South African National Treasury launched a process to identify the role of economic instruments in supporting sustainable development. In 2003, the Treasury commissioned a study to identify criteria for developing and evaluating proposals on environmental taxes, which was financially supported by the UK Department for International Development (Speck, 2010). In 2006, the Treasury published the "Draft Policy Paper: A Framework For Considering Market-Based Instruments To Support Environmental Fiscal Reform In South Africa", which set out the preliminary thinking of the Treasury on current and possible future use of GFR in South Africa and aimed to facilitate an open and honest discussion on the issue (South African National Treasury, 2006). Studies analysing the impacts and potential of specific GFR designs were also undertaken by academics (Schlegelmilch et al., 2010).

This process was followed by the introduction of a number of GFR related initiatives in the 2009/2010 Budget, including an increase in the general fuel levy, an electricity tax, incandescent light bulb levy, air passenger departure tax and a plastic bag levy (Speck, 2010). The initial leadership and political support by the Treasury was important in generating interest in GFR and supported implementation of a number of reforms (Speck, 2010). Recent efforts have focused on wastewater charges and carbon pricing with a carbon tax scheduled to come into effect in January 2016 at a rate of R120 ($12) per ton of CO_2, and increasing by 10 per cent per year until the end of 2019 (World Bank & Ecofys, 2014).

Countries can also launch an assessment or screening of the status quo. For example, in relation to subsidies, this could include identification of intended and unintended beneficiaries of the subsidy, the scale and impact of the subsidy, both in terms of its effectiveness/ efficiency (or lack of) and its negative social, economic and environmental effects (e.g. see: van Beers & van den Berg, 2014). Such an assessment can help establish which subsidies are harmful and require action and are thus priorities for reform. This is by no means an easy task. However, a number of quantitative and qualitative tools and approaches have been developed that can support the process. For example, OECD tools developed to support EHS reform include:

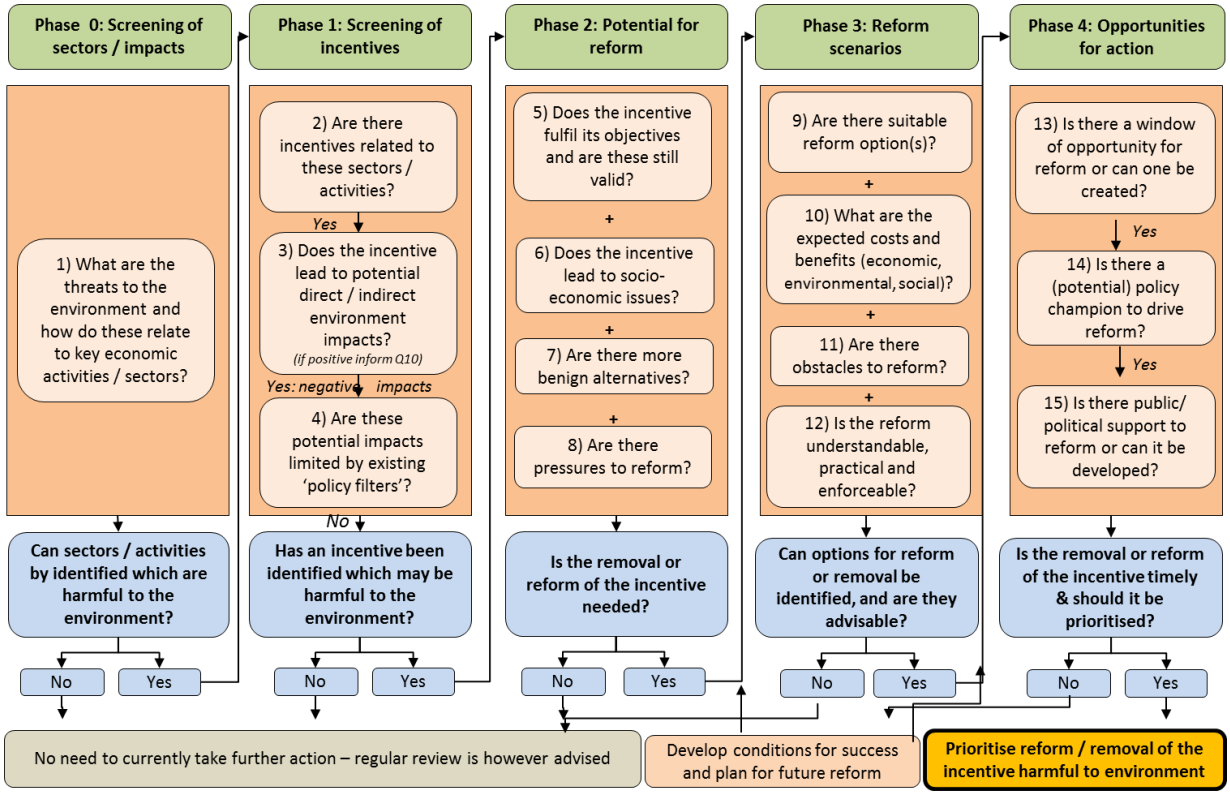
- ***Quick scan***, which inter alia shows that there is no direct linkage between the amount and nature of support and the environmental impact (OECD, 1998);

- ***Checklist***, which enables the assessment of whether, given the circumstances, removal of a subsidy will benefit the environment (OECD, 2005a);

- ***Integrated assessment framework***, which includes a sustainability perspective and ensures that social and economic trade-offs are included in the assessment (OECD, 2007).

A subsidy reform flowchart developed by IEEP (ten Brink, Bassi, Badura, Hart, & Pieterse, 2012) for the UK Department for Environment and Rural Affairs (Defra) to help identify subsidies that need to be reformed in the context of meeting Target 3 under the Strategic Plan for Biodiversity 2011-2020 is provided in Figure 4. This flowchart was piloted in the UK and builds on previous work by IEEP and partners. It can be adapted to national priorities to provide an initial screening to identify potential focus areas and where more in-depth analysis is merited.

Figure 4. Subsidy reform flowchart



Source: Adapted from ten Brink et al. (2012) which builds on Valsecchi et al. (2009), as well as Lehmann et al. (2011).

Such tools can be used to improve transparency of public expenditure and inform future GFR efforts. For example, the OECD tools could be used to establish transparent and comprehensive inventories of existing subsidies that could focus on: 1) one or more priority area(s) (e.g. transport); 2) a particular environmental problem and contributing factors, such as biodiversity and problems of eutrophication, or wetland loss; or 3) responses to legislative requirements or specific commitments (e.g. G20) (see Withana et al.,, 2012). Such efforts could build on existing work to identify and quantify subsidies that are particularly advanced in the area of fossil-fuel subsidies. Parry et al. (2014), for example, provide estimates of revenue, health and environmental benefits of implementing corrective taxes on fossil fuels in over 150 countries. These estimates can inform and help to prioritize reform efforts.

Countries could establish ***commissions or committees on (green) fiscal reform*** to help identify needs for action, potential reform options/ proposals, and engage stakeholders, among others. Such commissions have been set up in a number of countries and in some cases have supported GFRs. In Portugal, for example, the government established a commission to reform environmental taxes in January 2014, with the ultimate purpose of investigating the potential to shift the fiscal burden towards green taxation. The commission was introduced as part of a wider discussion on addressing fiscal consolidation challenge. The commission undertook extensive stakeholder consultations and its final report covered a number of issues, including energy, transport, water, waste, urban and spatial planning, forestry and biodiversity. Some of the commission's proposals were subsequently taken up by the government and put forward in legislative proposals, including a proposed tax on GHG emissions and a plastic bag charge. However, some concerns have been raised about the ambition of the proposals, revenue recycling mechanisms and potential redistributive impacts (Soares, 2014).

Country efforts could ***be linked to international commitments*** (e.g. CBD, Rio+20) and regional processes (e.g. APEC, G20) to support the case for action (see section 4.6). Efforts could also be

technically supported through ***external agencies and bodies,*** including international bodies, such as the Green Economy Advisory Service[6] of UNEP (to implement subsidy reforms), the GIZ-IMF-UNEP Green Fiscal Policy Network[7] (which facilitates knowledge sharing on GFR), and the Energy Subsidy Reform and Delivery Technical Assistance Facility of the World Bank[8] (which supports the design and implementation of subsidy reforms). County efforts could also be promoted through national agencies or civil society organizations. For example, the UK government provided financial support for an initial study on GFR in South Africa (see Box 16). The focus of such efforts could be expanded to cover different types of reform (i.e. beyond fossil subsidy reform to reflecting externalities in taxes and charges applied) and support GFR across different sectors and areas, such as natural resources (water, fisheries, forestry, waste, materials and biodiversity). Such external support should be carefully managed and should reflect domestic circumstances to avoid allegations of undue external influence, which could be used by opponents to mobilize groups against the process.

4.2 Design and implementation options

The timetable adopted to introduce a GFR is important and can help overcome some obstacles to the process. In a number of cases, a step-by-step or phased approach to GFR may be easier to implement (and face less obstacles) than a more sudden or immediate approach. One could, for example, begin with low rates and progressively scale them up over time. This was the approach taken in British Columbia (see Box 4), where the carbon tax rate had four scheduled annual increases of CAD 5 (EUR 4) per ton of CO_2. A gradual phasing-in of GFR allows actors time to change and can help reduce resistance to the process. While such a phased approach is attractive, it also has some shortcomings, including the risk of backsliding or derailment of the process (particularly over longer timelines) where support for reform is not sufficiently broad and the reform lacks a clear long-term strategy – as for example in Indonesia in 2009 (see Box 11) and in Australia in 2014 (see Box 12).

In some cases, a more rapid approach may be necessary (e.g. where there is significant political opposition and a gradual approach risks being derailed) (see Beaton et al., 2013). There are some cases where a swift reform has been successful, particularly when accompanied by a wider package of reform and economic transformation (see Box 17 on reforming fisheries subsidies in New Zealand). There are, however, significant risks associated with sudden price hikes. In Nigeria, for example, an overnight increase in gasoline prices of 117 per cent in January 2012 led to mass public riots and the government had to subsequently scale back the price increase to 49 per cent (IMF, 2013). Similarly in Bolivia, the decision of the government to end subsidies in 2010 (in an effort to reduce smuggling to neighbouring countries) led to an unexpected and sudden increase in prices by over 80 per cent. This led to widespread protests, with the government eventually reinstating subsidies (WEF, 2013; and UNEP/CBD/WGRI, 2014). These experiences illustrate that even a sudden GFR requires appropriate planning and communication to avoid reversals (World Bank, 2014) and needs to be accompanied by a wider package of measures to ensure acceptability (see section 4.3).

The timing of the GFR is another important consideration that can help neutralize opposition. For example, one could introduce GFR at a time when its effects would be minimal, such as in a summer period when heating costs are lowest or when fuel prices are falling (as is the case with falling oil prices today). This would help to mitigate impacts of higher prices from reform and reduce potential opposition. Another option could be to introduce it when the effects of inaction are particularly evident, for example in winter when the litter problem is most visible, as was done with the

[6] http://www.unep.org/greeneconomy/AdvisoryServices/tabid/4603/language/en-US/Default.aspx

[7] http://www.greenfiscalpolicy.org/

[8] http://www.esmap.org/node/3043

introduction of a plastic bag charge in Ireland (see Box 19). One could also coordinate the GFR with other measures. For example, increases in electricity tariffs in Uganda coincided with an expansion in grid capacity which helped build broad public acceptance for the reform (Clements et al., 2013).

The sequencing of GFR is important and can be a temporary measure to alleviate impacts on vulnerable groups. For example, in the case of subsidies to fossil fuels the reform process could start by focusing on those subsidies which benefit the rich most (e.g. subsidies to gasoline) while adopting a slower pace of reform for subsidies that are most important to the budgets of the poor (e.g. kerosene) (see Box 5). This should, however, only be considered a short-term or temporary solution as large price differentials between different types of fuels could lead to distortions, such as the redirection of subsidized kerosene to the transport sector and/ or an increase in cross-border smuggling (Beaton et al., 2013).

Another option related to the design and implementation of GFR that could help improve acceptance of the reform could be to implement a pilot scheme or a test programme of the GFR. Such an approach would enhance transparency and provide an indication of expected effects of the reform, as well as provide the opportunity to revise and fine-tune the reform before its more widespread implementation. Such an approach was adopted when introducing a congestion charge in Stockholm, Sweden, which was implemented on a permanent basis from August 2007 after a seven-month trial period (De Borger & Proost, 2012).

4.3 GFR as part of a wider reform package and policy context

Another option to help overcome obstacles to GFR is presenting it as part of a wider package of reform (e.g. major tax reform) accompanied by a range of complementary policies and measures that seek to alleviate some of the adverse impacts of the reform and create opportunities for affected groups (e.g. in terms of future employment and income prospects) (see Box 17 on New Zealand). Making GFR part of a wider reform package that includes compensation mechanisms and complementary policies can help ease transition costs of reform and potentially contribute to the long-term sustainability of the reform (Lehmann et al., 2011).

GFR could be part of wider efforts to reduce distortions in the economy and correct market price signals to better reflect externalities. In relation to fossil fuels, this could include depoliticising energy price settings through increased independence and transparency, establishing automatic price adjustment mechanisms, delegating decisions on pricing to an independent body and over the longer-term moving towards a fully liberalized pricing structure (Clements et al., 2013). It could also entail investments in substitution possibilities that support the reform (e.g. the development of public transport systems) (see Box 3 on Ghana).

Box 17. Reforming fisheries subsidies in New Zealand

New Zealand undertook a major reform of its fisheries policy in the late 1980s. The reform was justified on the basis of a fiscal crisis facing the government that required cuts in public expenditure across different sectors (CBD, 2011). Subsidies to the fisheries sector were eliminated abruptly, virtually overnight. However the reduction was combined with more fundamental changes to the fisheries management regime which dampened the effect of the subsidy removal. The wider reform package included the introduction of a property rights-based quota management system (QMS) and individual transferable quotas (ITQs) combined with a minimum buy-out of existing rights from fishermen. These complementary measures helped create a sustainable fishing sector by giving those actors wishing to remain in the sector an opportunity to create a profitable environment, while allowing those who wished to leave the sector to be bought out.

The package of measures accompanying the reform helped avoid potential negative social and environmental impacts of the sudden removal of the subsidies and increase public acceptability of the reform. The subsidy removal and introduction of the new management regime contributed to more effective management of fish stocks and in some cases a recovery of certain stocks from overexploitation (CBD, 2011). The reform has encouraged ITQ owners to participate in the collective management of fisheries resources and reduced the incentive to "race for fish", thus encouraging sustainable utilization of New Zealand's fish stocks (OECD, 2011).

Sources: CBD (2011); Lehmann et al. (2011); OECD (2007, 2011); ten Brink , Lehman, Kretschmer, Newman, & Mazza,,(2014).

It is also useful to **link GFR to wider policy commitments and processes at different levels**. For example, in France work to identify and analyse biodiversity-harmful incentives (including a report by the Committee to Evaluate Tax Expenditures and Social Security Contribution Exemptions and a report by the Strategic Analysis Centre on government subsidies harmful to biodiversity) were launched in the context of the wider *Grenelle de l'environnement* process. This helped maintain momentum and focus on the issue as it was anchored in a wider programme of work, which led to the adoption of legislation in the Grenelle 1 and Grenelle 2 (Withana et al., 2012). GFR commitments could also be framed in relation to commitments at the regional (e.g. G-20, APEC, EU) or international levels (e.g. in the context of the CBD), which could help increase pressure for action on policymakers, build the case for reform and overcome resistance.

When developing GFR strategies it is important to take a comprehensive approach that includes consideration of wider impacts, including unintended effects across sectors and groups as well as impacts over time. For example, promoting GFR for certain purposes (e.g. to meet short-term fiscal consolidation challenges) should keep in mind broader impacts, including on vulnerable groups to ensure the process is sustainable. The wider context is also important in identifying potential unintended effects of GFR, as for example in terms of substitution effects where higher prices for energy could lead to poor households in developing countries substituting kerosene with wood, which leads to deforestation and adverse impacts on health. Such unintended effects could be mitigated through complementary policies, such as incentives to alter household behaviour (e.g. as in Indonesia with its incentives to shift from kerosene to low-cost LPG) (see Box 11).

GFR should be linked to wider structural changes, which in some countries may relate to efforts to build ***credibility and trust in the government*** as well as to strengthen implementation and enforcement capacities. While credibility and trust are not exclusive to GFR – as it encompasses wider political reforms and governance challenges – they are nonetheless important and critical enabling factors. For example, trust and government credibility are considered key factors underlying the success of ETR efforts among Scandinavian countries and of previous fossil-fuel subsidy reforms in Indonesia (see Box 11). Addressing issues of corruption and governance could be an important entry point for reform efforts in some countries. This is by no means a trivial task. It encompasses multiple dimensions and challenges that are at the core of the debate on international development including how to improve good governance, enhance transparency and accountability, build administrative capacities and engage stakeholders. The tools and strategies to support GFR (as discussed in preceding sections of this paper) can support these different elements. They can: encourage communication and stakeholder dialogue; build administrative, implementation and enforcement capacities; support the objectives of budgetary transparency and the more efficient use of public funds; and enhance the transparent provision of information, among others. GFR can thus be seen as a process to support wider structural change and governance reform (see Box 18 on Cameroon).

Box 18. Forestry reform in Cameroon

The forestry sector is an important contributor to the economy of Cameroon, accounting for a large share of employment and export earnings. Corruption was endemic in the sector with estimated lost revenues of over $100 million each year from illegal logging and low rent collection. In the late 1990s, the government initiated a number of transparency and governance reforms in the forestry sector to improve its international credibility (which was facing pressure over corrupt practices) and also increase fiscal revenues from the sector. The reforms included the participation of independent observers in the process of bid evaluation, commissioning of concession awards and in field control operations, a system of guarantees to ensure forest taxes are paid in full and on time, and public availability of records of crimes against forestry observers (OECD, 2005; World Bank, 2005).

The reform movement was driven by the Ministry of Finance, which was interested in collecting increased revenues from the sector. The publication of data on lost revenues from the sector helped build support for the reforms. The reform movement also successfully engaged a number of key stakeholders, including environmental agencies, NGOs, civil society, different ministries and external observers (OECD, 2005; World Bank, 2005).

The reforms increased revenues from about $5 million to $50 million per annum in state fiscal revenues, and from close to zero to $9 million per annum in fiscal revenues to local governing bodies from 1994 to 2002 (OECD, 2005; World Bank, 2005). The reforms have led to substantial environmental improvements (e.g the reforms introduced policies that contained deforestation and improved forestry management practices, resulting in a well-conserved forest resource). The reforms also increased recognition of customary rights and the social welfare contributions from forest resources, encouraged collaboration between forest institutions and civil society, and improved forest governance and transparency (Topa, Karsenty, Megevand, & Debroux, 2009).

4.4 Communication and engagement

Building support for the GFR is critical to ensure the success of the process and requires a strong strategy for communication and engagement that targets specific actors, both **externally** (with key stakeholders, interest groups, wider public and parliamentarians) and **internally** (between different government departments to ensure consistent messaging and a "whole of government" approach). This needs to be integrated throughout the GFR process. On this point, the GFR process should:

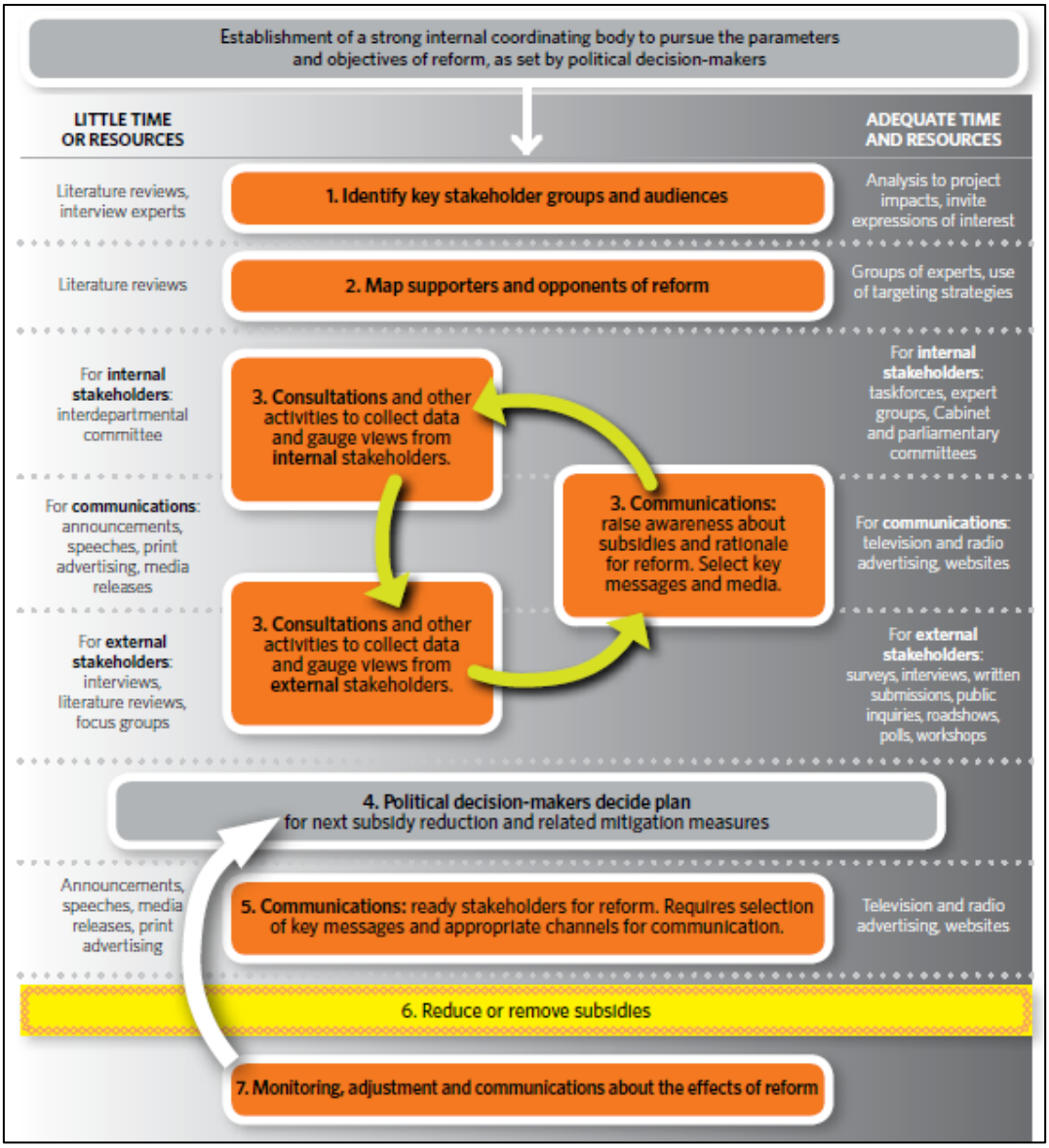
- Identify the need for reform (i.e. clarifying who benefits from the status quo, including unintended beneficiaries, such as smugglers);
- Assess the probable impacts of reform and potential mitigation options;
- Design the process, which should include mitigation measures;
- Implement a review and follow-up (including an assessment of how revenues from GFR are used).

Effective communication and stakeholder engagement can help increase awareness of the problem and the benefits of GFR, neutralize potential opposition to the process and build broad political and public support, which can help drive GFR forward. For example, an IMF review of experiences with subsidy reform in 40 countries between 2002 and 2006 found that the likelihood of success almost tripled with public support and an engaging public communications campaign (IMF, 2011).

Communicating an early commitment to compensate vulnerable groups can also help generate goodwill (World Bank, 2014).

There is a need for ex-post assessments of experiences with GFR to show the actual impacts and benefits of reform. Such assessments should go beyond climate and energy to encompass wider issues, such as the impacts of air pollution on public health, among others. They can engage the academic community and be used to identify insights on specific factors of design and implementation that affect the efficiency and effectiveness of the process. Similarly such assessments can highlight lessons from experiences that did not go as planned. Assessments can also provide useful proof that GFR works, and they can also illustrate how it works, providing valuable input – specifically, examples of how GFR has worked successfully in other countries – to policymakers who are considering GFR and attempting to build broad public support.

Figure 5. Developing a communication and engagement strategy for fossil fuel subsidy reform



Source: Beaton et al. (2013).

Figure 5 sets out key steps in a GFR communication and engagement strategy for both internal and external stakeholders and presents potential tools that can be used depending on available

resources. This flowchart was developed by the Global Subsidies Initiative (GSI) and is focused on fossil fuel subsidy reform. However, it includes a number of common elements that are relevant to wider GFR processes.

In terms of **external communication and messaging**, using a positive narrative on the overall benefits and expected outcomes of the GFR can be a powerful mechanism to build support for the process. Similarly, cases of successful reforms can be useful to illustrate that reforms can work and demonstrate how they work. Progress in one sector or one country creates a precedent that may help generate momentum for change in other countries (Withana et al., 2012).

It is important to carefully target and develop communication strategies for specific groups, use a variety of media and frame/ repackage messages for different audiences while remaining coherent and consistent in overall messaging. GFR is a rather dry concept that few people can relate to. Thus, it is important to frame messages on GFR in relation to the concrete benefits/ impacts it will have on the everyday lives of people. These messages should focus on the objectives of the reform and the overall benefits to society, including those beyond the environment (e.g. impacts on the economy, health and public budget, among others), and on how those adversely affected by the reform will be supported. Such an approach can help sell the GFR message and build broad support for the process. One could also develop myth-busting facts (e.g. myths on energy poverty and the real beneficiaries of subsidies) that would help build support for reform.

Box 19. Plastic bag levy in Ireland

The Irish plastic bag levy was introduced in 2002 with the aim of reducing consumption of disposable plastic bags, reducing the presence of plastic bags in the landscape and increasing public awareness of littering. The levy was introduced at a rate of EUR 0.15 per bag in March 2002 and increased to EUR 0.22 from July 2007. Revenues from the levy are earmarked to an environment fund that is used to cover the administrative costs of the levy and provide support to waste management and recycling centres, litter clean-up events and other environmental initiatives.

Following its introduction, plastic bag use fell from an estimated 328 bags per capita before the introduction of the levy in 2002 to 21 bags per capita at the end of 2002. Following this reduction, however, there was a slight increase in plastic bag usage to 33 bags in 2007. This was countered by an increase in the levy in July 2007 and led to a further reduction in usage to 14 bags per capita in 2012.

In preparing legislation for the levy, the then Irish Environment Minister ensured close collaboration between various arms of government and was influential in ensuring a robust legislative and regulatory base for the levy. The government undertook extensive advance consultation on the design and implementation of the scheme with the general public, the Irish Business and Employers' Confederation, and leading retailers. This helped increase support for the levy. A national publicity campaign reiterated the message that revenues from the levy would be used for environmental purposes, which helped address concerns among retailers that they would be blamed for profiting from the levy. The levy was introduced at the end of the winter when littered plastic bags are especially visible given limited vegetation.

Sources: Convery, McDonnell and Ferrira (2007); GIZ (2013); Lyons (2013); O'Connell (2013); Withana et al. (2014).

Being transparent on the distribution of the benefits and costs, the winners and losers, and the intended and unintended effects of GFR can allow an honest and balanced discussion of the pros and cons of reform. Telling stories about the winners of reform could help generate support for reform (e.g. GFR could lead to improved service provision and expanded coverage of the electricity

network). One could also draw on examples in other countries that have successfully implemented GFR or have managed to do without the subsidy in the first place. The government's approach to introducing a plastic bag charge in Ireland highlights the importance of good communication and engagement (see Box 19). There is also a need for **internal communication and engagement** within government. In some cases, the interests of different departments may be aligned, such as in the area of budget savings, while in others they may not be aligned, such as in the agriculture and transport sectors. Thus, there is a need for wider consultation and engagement to secure support for the process across relevant government departments, including the ministry of finance. This could, for example, entail setting up a cross-departmental working group/ task force to carry the reform forward and ensure that the momentum is kept up (Withana et al., 2012). Cooperation between different government departments (and in the case of federal systems, between different state legislatures) can help ensure the successful implementation of a GFR process (see Box 20 on Cuba).

Box 20. Havana Bay user tax in Cuba

Since 2002, the Cuban government has applied a tax on all users of Havana Bay. The tax covers tourism, recreation and commercial activities that impact on the harbour. The tax rate is calculated based on use of the entrance channel to the harbour and use of the shore, including the use of harbour infrastructure. Revenues from the tax – estimated to be 1.6 to 2.6 million Cuban Nonconvertible Pesos per year – are earmarked to an environmental fund that finances clean-up activities in the Bay (CBD, 2011; Garrido, 2009).

The tax was designed and promoted by an inter-ministerial group established to clean-up Havana Bay. The "*Grupo Estatal para el Trabajo de Saneamiento de la Bahía de la Habana*" helped coordinate efforts of the ministries of transport and environment and the Havana city government. This high-level of coordination between economic and environmental policymakers is considered an important factor that led to the successful introduction of the tax. The work of the group was supported by experts from the ministries of economy, finance and environment, which carried out relevant studies, prepared the tax and supported its implementation (Garrido, 2009).

The tax has helped reduce emissions of industry effluent by 50 per cent, led to the recovery of the ecosystem, and is credited with helping to restore certain fish and phytoplankton species in Havana Bay. Building on this success, the government introduced similar taxes in other Cuban bays including Matanzas Santiago de Cuba, Cienfuegos and Mariel. It also increased the tax rate applied, expanded the number of users covered by the tax and introduced an additional payment for wastewater spills in watersheds and in selected bays (CBD, 2011; UNEP/CBD/WGRI, 2014).

4.5 Monitoring and review

The impacts of GFR can change over time. Thus it is important to regularly review the process to reassess impacts over time and ensure mitigation measures are effective or reach their intended beneficiaries and achieve their objectives (UNEP, 2011). Regular and transparent reporting on progress on GFR is essential to determine the effectiveness of the process and inform possible future revisions. It can also help maintain the commitment to reform and keep up momentum by ensuring regular visibility of the issue. In China, for example, the Pollution Levy System (PLS) was reviewed in the early 2000s as the low rates applied were considered ineffective at promoting a change in behavior or reducing emissions across the economy, despite raising significant revenues for enforcement activities of local environmental protection agencies. In light of these shortcomings, the system was revised in 2003 to cover a larger tax base, and higher rates were introduced (World Bank, 2005). However, despite the reforms the rates are still considered too low to incentivize

pollutant abatement (Xu, 2012). Given the continuing water pollution challenges in China (e.g reversing water scarcity and eliminating waste), the government is considering further revisions to the system and the introduction of several environmental taxes to cover resource extraction, discharges of polluted water and CO_2 emissions (GIZ, 2013).

Monitoring and reporting of GFR can be done at different levels:

- At the ***national level*** revenues raised and revenue use should be monitored to assess implementation of government commitments to reform, reduce risks of corruption, review the need to change mitigation measures (e.g. particularly as revenues decline, behaviour changes or technology improves) or how the instrument is designed (e.g. the tax rate in place or the tax base on which it is applied). Being transparent on how revenues from GFR are used and how compensation measures are implemented can maintain support for the process, strengthen accountability and help build trust in the government, which can be useful for future reform processes. A number of countries have set up fiscal "watchdogs" to provide independent analysis of public finances (e.g the Office of Budgetary Responsibility in the UK, the Parliamentary Budget Officer in Canada, the Mexican Centre for Public Finance Studies, and the Parliamentary Budgetary Office in Georgia, among others.[9] Organizations can be used to provide independent reviews of the use of revenues from GFR to ensure spending commitments are upheld, and to avoid potential issues of fraud or backsliding on reform commitments.

- At the ***regional level*** voluntary peer-review processes have been initiated under the G20 and APEC in relation to commitments to review, rationalize and phase out inefficient fossil fuel subsidies. China and the United States have been the first countries to volunteer to undergo such a process in the G20, and among the APEC countries, Peru and New Zealand have been the first volunteers (FFFSR, 2014). In the EU, regular reporting by the 28 member States under the European Semester process of economic governance is being used as an avenue to drive forward reform and GFR in a number of countries (Withana, Kretschmer, & Farmer, 2013a).

- At the ***international level*** reporting could build on efforts to monitor progress on relevant international commitments. For example, the latest Conference of Parties (COP 12) of the CBD calls for regular reporting by Parties on progress on Aichi Biodiversity Target 3, setting out a clear timeline and set of milestones for action to 2018 (UNEP/CBD/COP, 2014). These reports could be used as a mechanism to monitor and review a country's GFR efforts in this area and its progress in light of international obligations. One could also make use of the developments in relation to wider reporting frameworks, such as the development of the United Nations System of Environmental and Economic Accounting (SEEA).

4.6 Windows of opportunity

Smart use of potential windows of opportunity could provide wider justification for GFR and help ensure the success of reform efforts. For example, the ***current economic context, high levels of public debt and pressing need for fiscal consolidation*** seem to be particularly pertinent windows of opportunity for taking GFR forward, at least in some countries. A number of countries in Europe, including Ireland, Italy and Portugal have taken advantage of this window, using it to drive forward a number of interesting GFR-related initiatives at the national level in the past few years (Withana et al., 2014). Thus, a crisis, such as an economic or financial one, can simultaneously be a useful trigger

[9] http://budgetresponsibility.org.uk/links/#overseas

to mobilize action and an opportunity to generate change. However, in some situations a crisis can also prompt countries to stall or backtrack on reform commitments (e.g. as seen in Ghana in 2008 where a subsidy reform was put on hold due to escalating oil prices) (see Box 3).

Several other windows of opportunity are evident at the ***national level***. These could, for example, include taking advantage of a post-election period (e.g. see Box 10 on India), a period of economic growth, and pressures, such as deteriorating public energy or water infrastructure or dwindling national energy reserves (see Box 11 on Indonesia). The recent steep decline in oil prices provides a conducive environment to launch carbon-pricing mechanisms (Summers, 2015) and reform fossil-fuel subsidies. Some countries, such as Indonesia (see Box 11), have already taken advantage of this opportunity. Such efforts need to be well planned and based on a comprehensive strategy and timeline to ensure that they are not reversed when times change. Addressing issues of corruption and governance could also be an important entry point for reform efforts in some countries (e.g. see Box 18 on Cameroon).

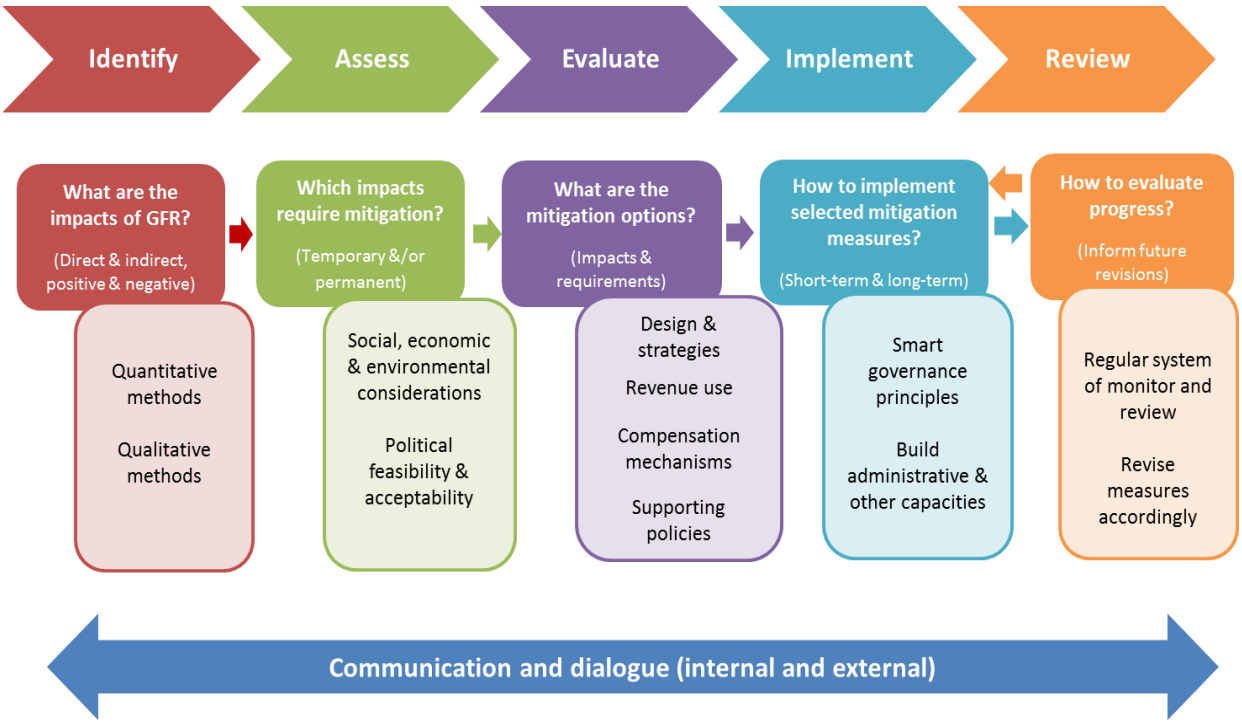
Commitments made at the ***regional or international level*** can also be useful windows of opportunity for action to support and drive GFR. For example, GFR processes could be structured as responses to the need to implement the commitments adopted at Rio+20 Conference (e.g. on fisheries subsidies) and within the context of commitments made on mobilizing financing for biodiversity and climate change adopted at the CBD and UNFCCC, or in the context of emerging commitments, such as the post-2015 Sustainable Development Goals and related Means of Implementation.

It is also possible to create ***new windows of opportunity and avenues for progress*** on GFR. In the EU, for example, the launch of the European Semester process in 2010 provides a potentially powerful mechanism to monitor the progress of member States on various issues, including GFR and recommend improvements in this regard (Withana et al., 2013a). A future avenue for progress could appear in a possible revision of the Regulation on European Environmental Economic Accounts No. 691/2011 – which has already started to provide useful data including on environmental taxes and subsidies in EU member States – to include an additional module on environmentally related subsidies (ten Brink, Withana & Oosterhuis, 2014b).

5. Moving forward with GFR

GFR can lead to multiple benefits and has attracted renewed interest in recent years, driven by a number of considerations that reflect various needs: the need for fiscal consolidation, the need to address environmental challenges, the need to alleviate energy security, and the need to reduce poverty. Further progress is often held back by various obstacles, which include competitiveness and distributional concerns, lack of information, legal, administrative and technological constraints as well as wider governance challenges, including a lack of support and trust in government. This scoping paper has examined how obstacles to GFR can be overcome through the use of targeted and well-designed mitigation measures for vulnerable firms/sectors/households, careful use of revenues, and complementary strategies and tools. It has focused not so much on why countries should explore GFR but rather on how' countries can best do so in order to maximize associated benefits and minimize or avoid potential adverse impacts.

Figure 6: Identification, design and implementation of mitigation measures for GFR



Source: Own representation.

As elaborated in this paper and illustrated from practical experiences with GFR in a number of countries, ***well-designed mitigation measures can help overcome some obstacles to the process***. Key steps in the identification, design and implementation of mitigation measures for GFR are set out in Figure 6. It is important that mitigation measures are carefully designed, reflect national administrative capacities and are in line with good governance principles (see Box 15) to ensure they are effective, maintain a positive signalling effect and contribute to overall objectives of the reform. This paper has attempted to provide general insights on how to overcome obstacles to GFR. The paper was built on practical experiences and embraced the concept that a "one-size-fits-all" approach is not appropriate; it has recognized that there is a need to tailor GFR approaches to national circumstances, interests and priorities.

As reiterated in the paper, ***preparation and careful planning are critical*** to GFR efforts. There is a need to adopt a ***comprehensive, integrated and consultative approach*** to reform that reflects good governance principles with clear objectives and a timeline. Given the time it takes to prepare, build support for and implement a given reform GFR, it can be deduced that GFR is a slow, dynamic and evolving process. Thus, to be robust and sustainable, GFR requires a ***strong and broad commitment to the process in the short-term to the long-term.*** Positive and negative impacts, costs, benefits and potential trade-offs need to be identified early and clearly communicated. There is also a need to be ***pragmatic*** in the approach to GFR, allowing for deviations from certain theoretical ideals (e.g. no earmarking, avoiding exemptions or compensation) because such departures are probably inevitable and may be a politically expedient way of making progress. Such provisions should be tolerated provided that they are well-designed with adequate safeguards, including regular monitoring and review mechanisms (World Bank, 2005).

The political challenges of reform remain significant, and sometimes despite good intentions and due processes GFR efforts fail or decisions are reversed. A striking recent example of this is the case of Australia where the government repealed the carbon pricing mechanism (see Box 12). In other countries, governments have backtracked on reform commitments in light of political circumstances

– as was the case in Ghana right before an election (see Box 3) – or in the face of mass protests (e.g. in Nigeria). Cases where governments have backtracked highlight the political economy of GFR and the importance of ***building broad support and political capital for reform*** that transcends party-political lines and short-term electoral timelines. As with other types of political reform, durable GFR reform also depends on government credibility and thus links to wider issues of structural change and good governance. This is by no means a trivial task and encompasses multiple dimensions and challenges. However, the tools and strategies for GFR can contribute to these wider processes (e.g. encouraging communication and stakeholder dialogue, building administrative capacity, improving enforcement capacities, supporting budgetary transparency and the efficient use of public funds) and help to ensure the GFR stays on track despite potential changing circumstances (e.g. an election or rise in oil prices) and populist arguments to renege on commitments.

In some cases, a country's efforts on GFR have been hindered or complicated by a lack of action or concerns about the unilateral introduction of measures, particularly in relation to impacts on competitiveness. Thus, in certain cases, some form of ***cooperation and coalitions between groups of countries can help build political and public support for reform*** (Withana & ten Brink, 2015). Although such cooperation may be challenging given various political economy considerations, it is possible and in some cases necessary (e.g. to address international aviation or maritime emissions). Lessons from past experience suggest that cooperation between countries is probably more feasible between smaller groups of countries (e.g. neighbours or a regional grouping) and when the adopted approach allows for a certain degree of flexibility among participating countries (e.g. setting minimum requirements).

Additional research on ***ex-post assessments of GFR*** across different sectors/ areas (including but going beyond climate and energy) and on impacts of GFR on competitiveness, innovation, jobs and health can help build support and credibility for the process. Such assessments can engage the academic community and provide ***lessons on design***, which can inform the development of practical guidance for policymakers considering such reforms, keeping in mind the need for a tailored approach for each country. Research on ***options for further progress***, such as cooperation or coalitions between like-minded countries or border adjustments, could be useful to drive more ambitious efforts. There is also a need to better understand ***the role of GFR in the wider policy mix*** to support the shift to a green, inclusive global economy. GFR is recognized as an important enabling condition and part of the portfolio of measures needed for the transition (UNEP, 2011; ten Brink, Mazza, Badura, Kettunen, & Withana, 2014a). Identifying the scope and space for action through GFR will help focus future efforts.

Finally, there are several attractive windows of opportunity to further promote the GFR agenda, including current falling oil prices. Some countries are already seizing these opportunities and creating new avenues to promote GFR, and others should be encouraged to follow their lead.

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