Summary Brief

Summary Brief Number 18

ICTD

What are 'Tax Expenditures' and How Big are Energy-related Tax Expenditures?

Roel Dom and Neil McCulloch

Abstract

Tax expenditures occur when a government provides a reduction in a tax obligation such that it collects less tax than it would have otherwise collected. Tax expenditures are an integral, though controversial, part of all contemporary tax systems. This policy briefing first summarises the various ways in which tax expenditures can be defined and measured. Estimates of the size of tax expenditures are sensitive to these decisions about definition and measurement. The brief then focuses on energy-related tax expenditures (ERTEs). ERTEs are increasingly under attack, because they can result in significant revenue losses for governments and, because, by reducing consumer prices of fossil fuel products and thus incentivising their use, they contribute to air pollution and global warming. Yet, we know little about their size, especially in developing countries. The little data that exists on ERTEs comes from the OECD and a few emerging economies; these suggest that ERTEs are relatively small in these countries. There are very few estimates of ERTEs in developing countries. However, the available estimates of the size of energy subsidies (of which ERTEs are one component) suggest that the revenue benefits of removing such subsidies in developing countries may be much larger.

Introduction

Tax expenditures are an integral, though contentious, part of contemporary tax systems. While we commonly think of subsidies as direct allocations from government budgets, tax expenditures (TEs) can also be thought of as another type of subsidy. The only difference is the delivery mechanism. Instead of a direct transfer from the government to consumers or producers, TEs work indirectly by reducing the tax liability owed by consumers and producers to the government. They are therefore associated with a revenue loss for the government, as opposed to a direct expenditure.

Although TEs reduce revenue, governments justify them on economic principles. To understand how, it is useful to think of the tax system as a tool of public policy whose

Bill & Melinda Gates foundation

UKaid from the British people

objective extends beyond raising revenue. By altering the tax structure governments can change prices and, by doing so, they can discourage or encourage certain behaviour. For example, by lowering tax on domestic production, TEs could encourage the substitution of domestically produced oil for imported oil. Alternatively, by reducing the VAT rate on basic fuels, governments claim to help the poor. Similarly, TEs could be used to stimulate the development of renewables. However, there are questions about the efficacy of TEs to achieve these policy goals (e.g. Arze del Granado, Coady, & Gillingham, 2012; Metcalf, 2008).

One of the reasons for the popularity of TEs is that they are often politically easier to implement than direct transfers that increase the government's budget. By granting tax concessions, governments can effectively finance policies outside the standard budgetary framework, since they do not explicitly require new spending. In some countries, this means that TEs do not require formal annual approval by the legislature, since they are not part of the annual budget, but rather part of the tax law. Thus, they are not always subject to the same level of scrutiny as regular expenditures (IMF, 2007). This can hinder transparency. For example, while we have some – albeit limited – estimates of TEs for OECD countries and emerging markets, we have very little information on ERTEs for developing countries, notably across sub-Saharan Africa. It is important that we improve our understanding of TEs in developing countries, both to tackle pollution and climate change, as well as to close the financing gap to achieve the SDGs.

In the next section, we discuss alternative definitions of tax expenditures. In Section 3, we introduce the different ways in which TEs can be measured. This is then applied, in Section 4, to estimate the size of energy-related tax expenditures in different OECD countries. Section 5 presents estimates of the foregone revenue from energy subsidies in developing countries (although our data do not allow us to see the extent to which these are driven by TEs or other forms of subsidy). We conclude with some suggestions for further research on ERTEs.

What are tax expenditures?

There is no unique and all-encompassing definition of tax expenditures (Bratić, 2006). Most definitions refer to transfers of public resources through a reduction in tax obligations in relation to a given tax reference point (Kraan, 2004). There are, however, many types of tax expenditures. Redonda (2016) distinguishes between six different classifications of TEs, based on: mechanism of delivery, type of tax, budget category, policy objective, beneficiary and size. Box 1 summarises the ways in which tax expenditures are provided in practice.

Box 1
Ways of providing tax expenditures

A reduction in tax obligations that gives rise to a tax expenditure can occur in the following ways:

- *Exemptions:* Revenue or transactions that are excluded from the tax base.
- *Allowances:* Amounts that can be deducted from the tax base.
- *Credits:* Amounts that can be deducted from the tax liability.
- *Rate relief:* Lower tax rates than those generally applied.
- *Deferral:* Postponement or delay in the tax payment.

Most definitions of TEs explicitly link them to the definition of a benchmark tax system. Indeed, most of the difficulties in obtaining a concrete definition for TEs can be brought back to differences in opinion about what should constitute the benchmark tax system. Hence, it comes as no surprise that different national and international bodies adopt different definitions (Burton & Sadiq, 2013). This has led some to question whether the tax expenditure concept is still relevant (Burman, 2003). Nevertheless, there are roughly two approaches to defining a benchmark tax system: a conceptual and a legal approach.

The *conceptual approach* defines TEs as deviations from a theoretically defined 'ideal' tax system. In the case of income taxation, the Haig-Simons definition of a comprehensive income tax is the usual benchmark (Surrey & McDaniel, 1985)[1]. This ensures that taxation is based on *ability* to consume rather than on actual consumption, which has the double advantage of being able to achieve horizontal equity, i.e. similarly placed individuals are taxed in a similar manner, and vertical equity, i.e. those who have the ability to pay more taxes also contribute more, while minimising economic distortions (Alm, 2018). With respect to the taxation of goods and services, economic theory provides a clear framework for what should be done. The taxation of intermediate goods (inputs to final goods) should be done in a way that does not distort production decisions (Diamond & Mirrlees, 1971), except to correct for negative externalities (Baumol, 1972), e.g. where the production or consumption of a good causes harm to others that is not taken into account by the producer or consumer. For example, fuel should be taxed so that its price is its 'external cost', which is equal to the market price + the standard tax rate + externality cost. If taxation is lower than this, then the difference is an implicit subsidy or a tax expenditure.

The *legal approach* uses a country's own tax laws as the basis to define the benchmark and identify differential and preferential treatment. Tax base definitions in the tax code are taken as the benchmark. A tax expenditure arises when there is an explicit exemption (or other form of preference – see Box 1) under the legislation. For example, the general tax code usually defines the VAT base and the applicable rate, but often sector-specific tax codes, such as a mining tax code, will contain sector-specific exceptions to the general VAT code; with the legal approach, the difference between the two is a tax expenditure.

The difference between these two approaches is their scope and (political) feasibility. Firstly, what might not be counted under the legal approach because it falls outside of the legal base, will be counted in the conceptual approach, as it still is part of the economic base. Some therefore argue that the conceptual approach is preferable, since the legal approach leaves too much room to hide tax concessions by toying with legal definitions (Villela, Lemgruber, & Jorratt, 2010). However, the conceptual approach is not objective either. The choice of the conceptual benchmark is itself related to ideas about the principles on which the tax system should be grounded (Shaviro, 2003). For instance, the Haig-Simons concept of income is based on ability-to-pay. Equity is, however, only one possible criterion for an ideal tax system, others include economic efficiency, revenue adequacy, administrative ease, simplicity or environmental sustainability. Secondly, the legal approach is often easier to implement. While economists tend to favour the more comprehensive conceptual approach, it can be hard to convert these theoretical ideas into workable administrative practices. By referring to existing legislation, the legal approach provides a more intuitive anchor, making it easier to understand, politically more feasible to sell and administratively easier to implement.

How are tax expenditures measured?

Quantifying TEs is not straightforward. From economic theory, we know that taxation can affect economic behaviour, i.e. it can change the quantity consumed. A major challenge in measuring TEs is accounting for this behavioural change. Three methods for calculating TEs can be distinguished: the revenue forgone method[2]; the revenue gain method; and the equivalent direct expenditure method.[3] Each method addresses a different measurement concept with

[1] Under this approach, income is defined as consumption plus the change in net worth.

[2] Note that the 'revenue foregone method' is the name of a method for calculating the tax expenditure, not to be confused with the colloquial use of the phrase 'revenue foregone' as the revenue that would otherwise have been collected.

[3] All three methods can be applied regardless of which benchmark is used, i.e. the conceptual or legal.

the main difference being the extent to which they take behavioural changes into account.

1. *Revenue forgone method:* this assumes no behavioural change and estimates the aggregate reduction in tax liabilities given the current state of the world. The cost of, for example, a reduced tax rate for fuel will simply be the product of the rate reduction and the total consumption of fuel – which is assumed to remain unchanged after tax.

2. *Revenue gain method:* this incorporates behavioural changes to estimate the aggregate revenue that would be collected if the tax relief were to be removed. That is, the tax that would be collected if the tax were to be applied, taking into account the reduction in consumption that would result from the higher price.

3. *Equivalent direct expenditure method:* this assumes no behavioural change but it takes into account the fact that the removal of a tax expenditure makes the taxpayer worse off. This method therefore calculates the gross transfer that would leave taxpayers with the same after-tax income as they would have obtained with the tax expenditure in place. This approach takes into consideration that transfers increase the taxable income, so a slightly larger transfer is required to leave the taxpayer equally well off after tax.

Table 1 provides a simplified example for each method. In this case, we consider a tax allowance on income tax and calculate the tax expenditure associated with this tax allowance as the difference in the revenue (income tax) collected with the tax allowance in place and the revenue collected when the allowance is removed, using each of the three methods above (see Notes for details).

Table 1 Illustration of calculation methods

			Without tax expenditure		
		(1) With tax expenditure	(2) Revenue forgone	(3) Revenue gain	(4) Equivalent direct expenditure
1	**Baseline income**	**1,000**	**1,000**	**1,000**	**1,000**
2	Tax allowance	200	0	0	0
3	Equivalent direct expenditure	0	0	0	50
4	Behavioural change	0	0	-8%	0
5	Taxable income	800	1,000	920	1050
6	Marginal rate	20%	20%	20%	20%
7	**Income tax**	**160**	**200**	**184**	**210**
8	After-tax income	840	800	736	840
9	Effective tax rate	16%	20%	20%	20%
10	**Tax expenditure**		**40**	**24**	**50**

Notes: Adapted from Villela et al. (2010: p.25). (1) The baseline income is reduced by the allowed deduction, resulting in a taxable income of 800. The marginal rate of 20% is applied, resulting in an income tax liability of 160. To answer the question about the size of the TE, we first need to estimate the size of the tax liability in the absence of the tax allowance. The difference between the two liabilities will be the tax expenditure associated with the allowance; (2) When the tax allowance is removed, taxable income becomes the same as the baseline income since we assume no behavioural change. The marginal rate of 20% is applied, resulting in an income tax liability of 200. When comparing the tax liabilities in (2) and (1), we see that the government loses out on 40 (200 - 160) in tax revenue with the allowance in place; (3) We assume that the removal of the allowance (and the corresponding increase in the effective tax rate) result in a behavioural change. Specifically, we assume that increased taxation lowers the labour supply and, hence, the resulting labour income arbitrarily by 8%. Hence taxable income reduces to 920. When we then apply the same marginal rate, we obtain an income tax liability of 184. According to this method the presence of the tax allowance leads to a tax expenditure of 24; (4) The objective here is to leave the taxpayer equally well off after the removal of the allowance. We want his or her after tax income to be the same, i.e. 840. Given a marginal rate of 20%, what is the transfer that needs to be provided to raise his or her gross income to a level where his or her net income will be 840? *Gross = Net / (1 – rate)*, thus the necessary gross income is 1,050 (=840/0.8). Hence, the transfer needed to bring the baseline income up to this amount is 50.

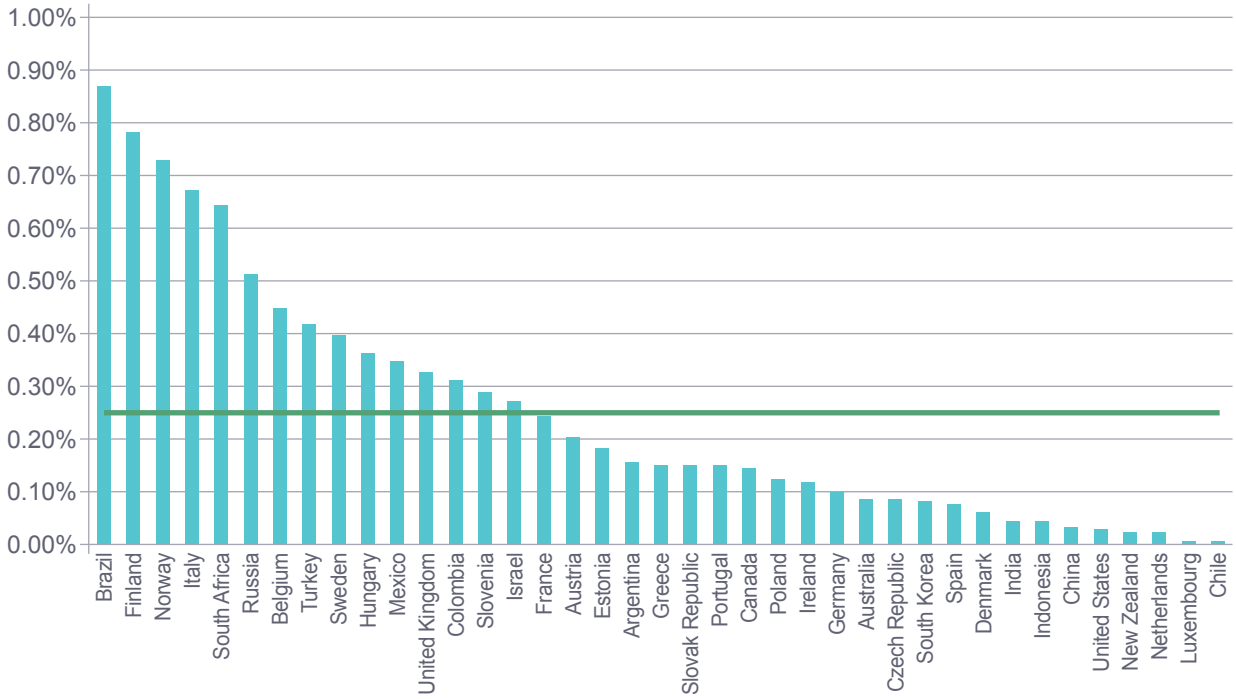
From Table 1 it is clear that the size of the tax expenditure according to the revenue forgone method is not equal to the estimate when using the revenue gain method, since the latter takes into account the change in behaviour. The choice of method usually depends on the objective of the exercise and the availability of data. If the objective is to remove the tax expenditure and to replace it with an expenditure program, then the equivalent direct expenditure method is most appropriate. Alternatively, if the objective is to get an estimate of the extra revenue that can be expected from removing the tax expenditure, then the revenue gain method is most appropriate. However, accurate estimates will crucially depend on the nature and quality of the estimated behavioural changes. These elasticities, or behavioural changes, are often not readily available, especially in developing countries. As a consequence, many estimates rely on the revenue forgone approach, even in OECD countries (Villela et al., 2010). McKitrick (2017) warns that this can inflate estimates of tax expenditures.

How big are energy-related tax expenditures?

In this section, we focus on energy-related tax expenditures or ERTEs, and specifically those related to fossil fuels. Phasing out fossil-fuel subsidies has gained momentum in the fight against pollution and climate change. However, while we are somewhat informed about direct transfers in support of fossil fuel use, since these are usually recorded in government budgets, we know less about subsidies through the tax system, or tax expenditures. This section builds on work done by the OECD (e.g. 2015, 2018) to give a sense of how big TEs are, but also to highlight some challenges in interpreting these estimates.

Figure 1 ranks tax expenditures of fossil fuels for OECD countries as a percentage of GDP. In 2016, OECD countries spent on average about 0.25% of their GDP, or 0.74% of average tax revenue, on fossil fuel support through the tax system. However, there are significant difference between countries. Brazil spends close to 0.90% of its GDP on tax expenditures for fossil fuels, while Chile's tax expenditure on fossil fuels is almost negligible.

Figure 1 Tax expenditure on fossil fuels in 2016 (% of GDP)



Source: Authors' calculations based on OECD Environmental Statistics and IMF WEO data.

> "Despite having existed for a long time, energy-related tax expenditures are increasingly seen as problematic. Not only do they contribute to pollution and climate change by subsidising fossil fuels, but they also represent a significant revenue loss for many governments. Moreover, tax expenditures are typically much less transparent than direct expenditure programmes."

However, caution should be exercised when interpreting these numbers, especially when making cross-country comparisons. Firstly, because of interactions between different TEs, the sum of the revenue gains from removing policies that lower tax obligations on individual taxes does not necessarily equal the total revenue gain from removing all such policies at once (Altshuler & Dietz, 2011). Secondly, the previous sections showed that there can be significant variation in tax expenditure estimates depending on choices regarding benchmarks and estimation methods. The OECD numbers in Figure 1 build on what individual countries publish. However, countries differ significantly with respect to the scope and depth of their reporting, as well as with respect to the benchmark and methodology used to measure ERTEs. Higher ERTEs might simply reflect a choice for a higher benchmark tax rate or greater transparency, rather than more support for fossil fuels (OECD, 2015, p. 38). For example, Määtä (2012) finds that Norway defines ERTEs as deviations from the external cost, while Denmark does not. Both countries might be providing the same level of support, but because Norway's benchmark is set higher than Denmark's, the latter shows a lower tax expenditure on fossil fuels. Cross-country comparisons are thus extremely difficult.

More should therefore be done to harmonise these estimates across countries. The OECD and the European Commission have already started working on this (e.g. Oosterhuis, Razzini, Franckx & Ding, 2014). However, while we have estimates of TEs for OECD countries and some emerging markets, we have much less information for developing countries, notably across sub-Saharan Africa.

Energy subsidies and tax expenditures in developing countries

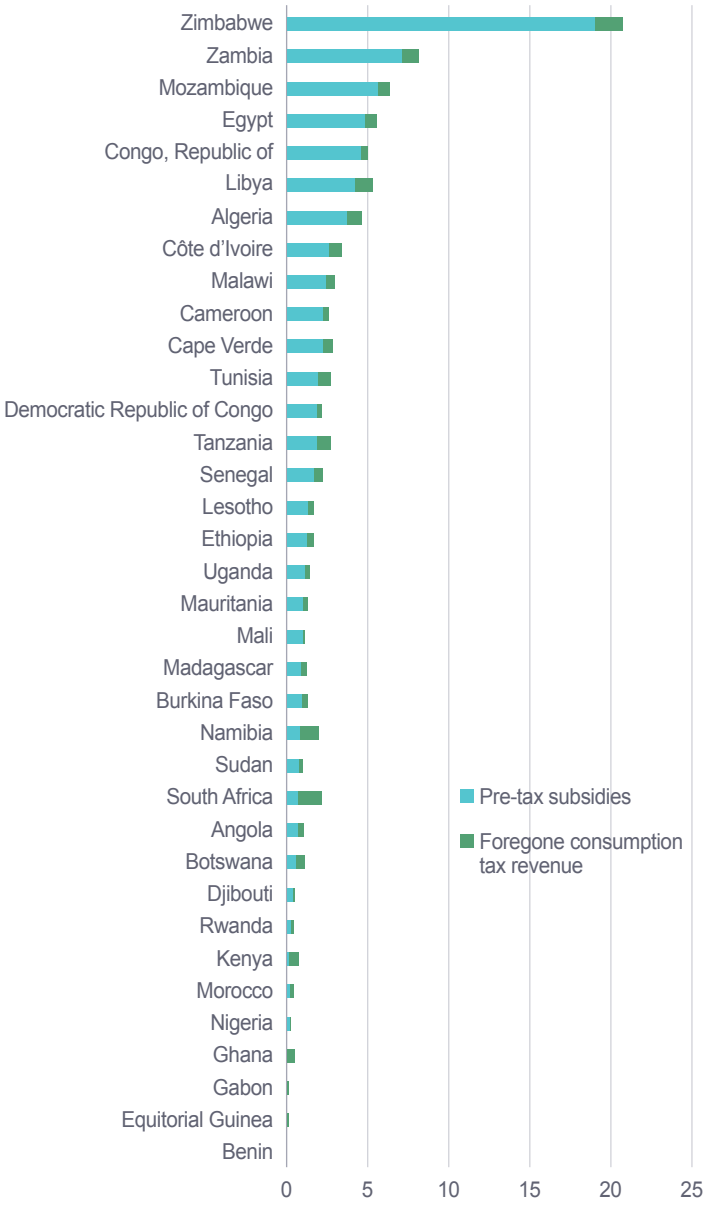
Because there is little or no systematic data on the size of tax expenditures in most developing countries (energy-related or otherwise), the only, very rough, proxy for tax expenditures is data on the size of energy subsidies in total. The IMF have collated data on the size of energy subsidies for 96 countries. They use the 'price-gap' method to calculate these subsidies; this consists of the gap between the international market price of fuel and the domestic price[4] multiplied by the current quantity of consumption[5] (Coady et al, 2016). This price gap, and the associated subsidies, are financed in one of four ways: direct budgetary transfers; tax expenditures; concessional lending; and the accumulation of liabilities (either within state-owned enterprises or by the government). Unfortunately, there is no systematic data that would enable one to disaggregate between

[4] For electricity, the cost of supply is used as the benchmark, instead of the international market price.

[5] In effect, this is the revenue foregone method, but applied to prices instead of tax rates.

these sources. However, all of them have implications for taxation: large budgetary transfers to energy subsidies imply worse other services for the same level of taxation; concessional lending, and the accumulation of liabilities both imply a future burden. Moreover, energy subsidies for some countries are large (see Coady et al., 2016; Whitley et al., 2018 for estimates of size). Figure 2 shows the size of energy subsidies in Sub-Saharan Africa as a share of GDP in 2015.

Figure 2 Pre-tax subsidies and foregone consumption revenue in sub-Saharan Africa in 2015 (% of GDP)



Source: Coady et al, 2016. Note: Pre-tax subsidies are calculated using the price-gap method. Foregone consumption tax revenue is the consumption tax revenue that would be collected if fuel and electricity were priced at an efficient price taking into account the externalities caused by the consumption of these commodities.

Although we do not know how much of these subsidies is due to tax expenditures, the overall size of the subsidies is an order of magnitude larger than those in OECD countries. The median country in sub-Saharan Africa has subsidies of over 1% of GDP. This suggests that shifting towards cost-reflective pricing, including by taxing energy appropriately, could generate significant additional revenue in many developing countries.[6]

Conclusion

Despite having existed for a long time, energy-related tax expenditures are increasingly seen as problematic. Not only do they contribute to pollution and climate change by subsidising fossil fuels, but they also represent a significant revenue loss for many governments. Moreover, tax expenditures are typically much less transparent than direct expenditure programmes.

In this concept note, we set out to briefly summarise the debates on the definition and measurement of tax expenditures. With respect to the definition, conceptual approaches are more comprehensive and comparable, but a legal approach is often more intuitive and easier to implement. With regard to measurement methodologies, a key problem is how to account for behavioural changes as a consequence of taxation. Data on tax expenditures is sparse. The little data that exists on ERTEs comes from the OECD and a few emerging economies, suggesting that ERTEs are relatively small in these countries. There are very few estimates of ERTEs in developing countries. However, estimates of the size of energy subsidies (of which ERTEs are one component) suggest that the revenue benefits of removing such subsidies in developing countries may be much larger.

[6] See McCulloch and Dom (forthcoming) for a more detailed exploration of the size of energy subsidies relative to different types of taxation in Africa.

Further reading

Alm, J. (2018). Is the Haig-Simons Standard Dead? The Uneasy Case for a Comprehensive Income Tax. *National Tax Journal*, 71, 379–398.

Altshuler, R., & Dietz, R. (2011). Reconsidering Tax Expenditure Estimation. *National Tax Journal*, 64, 459.

Arze del Granado, F. J., Coady, D., & Gillingham, R. (2012). The Unequal Benefits of Fuel Subsidies: A Review of Evidence for Developing Countries. *World Development*, 40, 2234–2248.

Baumol, W. J. (1972). On Taxation and the Control of Externalities. *The American Economic Review*, 62, 307–322.

Bratić, V. (2006). Tax Expenditures: A Theoretical Review. *Financial Theory and Practice*, 30, 113–127.

Burman, L. E. (2003). Is the Tax Expenditure Concept Still Relevant? *National Tax Journal*, 56, 613–627.

Burton, M., & Sadiq, K. (2013). *Tax Expenditure Management: A Critical Assessment. Cambridge*: Cambridge University Press.

Coady, D., Parry, I., Sears, L., & Shang, B. (2016). *How Large Are Global Energy Subsidies?* (IMF Working Paper No. WP/15/105). Washington, D.C.: International Monetary Fund.

Diamond, P. A., & Mirrlees, J. A. (1971). Optimal Taxation and Public Production I: Production Efficiency. *The American Economic Review*, 61, 8–27.

IMF. (2007). *Manual on Fiscal Transparency: 2007 Revised Edition*. Washington, D.C.: International Monetary Fund.

Kraan, D.-J. (2004). Off-Budget and Tax Expenditures. *OECD Journal on Budgeting*, 4, 121–142.

Määtä, K. (2012). Economic and Legal General Report. In J. Bolander (Ed.), *Yearbook for Nordic Tax Research 2012: Tax Expenditures* (pp. 13–72). Copenhagen: Djoef Publishing.

McCulloch, N. & Dom, R. (forthcoming). Energy Subsidies and Tax Revenues in Africa, ICTD Working Paper, Brighton, UK.

McKitrick, R. (2017). Global Energy Subsidies: An Analytical Taxonomy. *Energy Policy*, 101, 379–385.

Metcalf, G. E. (2008). Using Tax Expenditures to Achieve Energy Policy Goals. *American Economic Review*, 98, 90–94.

OECD. (2015). *OECD Companion to the Inventory of Support Measures for Fossil Fuels 2015*. Paris: Organisation for Economic Cooperation and Development.

OECD. (2018). *OECD Companion to the Inventory of Support Measures for Fossil Fuels 2018*. Paris: Organisation for Economic Cooperation and Development.

Oosterhuis, F., Razzini, P., Franckx, L., & Ding, H. (2014). *Enhancing Comparability of Data on Estimated Budgetary Support and Tax Expenditures for Fossil Fuels*. Brussels: Directorate-General for Environment, European Commission.

Redonda, A. (2016). *Tax Expenditures and Sustainability: An Overview* (CEP Discussion Note No. 3). Zurich: Council on Economic Policies.

Shaviro, D. N. (2003). Rethinking Tax Expenditures and Fiscal Language. *Tax Law Review*, 57, 187.

Surrey, S., & McDaniel, P. (1985). *Tax Expenditures*. Cambridge, MA: Harvard University Press.

Villela, L., Lemgruber, A., & Jorratt, M. (2010). *Tax Expenditure Budgets Concepts and Challenges for Implementation* (IDB Working Paper Series No. 131). Washington, D.C.: Inter-American Development Bank.

Whitley, S., Chen, H., Doukas, A., Gencsu, I., Gerasimchuk, I., Touchette, Y., & Worral, L. (2018). *G7 Fossil Fuel Subsidy Scorecard: Tracking the Phase-Out of Fiscal Support and Public Finance for Oil, Gas and Coal* (Policy Brief). London: Overseas Development Institute, Natural Resources Defense Council, International Institute for Sustainable Development, Oil Change International.

Credits

Roel Dom holds a PhD in Development Economics from the University of Nottingham, and his research focuses on the fiscal capacity of states across sub-Saharan Africa. Prior to joining the ICTD, Roel worked as an Overseas Development Institute (ODI) Fellow with the Burundi Revenue Authority and Ministry of Finance, as an advisor to the Ministry of Finance of South Sudan, and as a Doctoral Fellow with ODI's Public Finance and Institutions programme.

Neil McCulloch is a development economist with expertise in political economy analysis and the design and implementation of politically smart aid programmes. He has also done extensive work on the political economy of fuel subsidies, both in Indonesia and Nigeria, and the political economy of aid for power sector reform in Sub-Saharan Africa and South Asia.

The ICTD is funded with UK aid from the UK Government and by the Bill & Melinda Gates Foundation; however, the views expressed herein do not necessarily reflect the UK Govenent's official policies, nor those of the Gates Foundation. Readers are encouraged to quote and reproduce material from the series. In return, ICTD requests due acknowledgment and quotes to be referenced as above.

IDS Institute of Development Studies

ICTD is based at the Institute of Development Studies, Brighton BN1 9RE UK.

ICTD

International Centre for Tax and Development
at the Institute of Development Studies
Brighton BN1 9RE, UK

T +44 (0)1273 606261 **F** +44 (0)1273 621202 **E** info@ictd.ac **W** www.ictd.ac

BILL & MELINDA GATES foundation

UKaid from the British people