



TAX EXPENDITURES IN AN ERA OF TRANSFORMATIVE CHANGE

GTED FLAGSHIP REPORT 2023

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FOREWORD BY THE DIRECTORS OF CEP AND IDOS

Two years have passed since CEP and IDOS published the first report based on our joint Global Tax Expenditures Database – the GTED. The overall state of affairs reflected in the data back then and today is soberingly similar.

Governments continue to forgo trillions of dollars in tax revenues with a level of opacity that is striking. More than half of the countries worldwide still do not report at all on the costs of tax deductions, exemptions, and other benefits channeled through the tax system to specific segments of their societies and economies. Among those that do provide information, many only disclose aggregate data. Only 13 countries publish the policy objectives for the tax expenditures they report on. As a result, analysis of cost effectiveness of individual tax expenditures remains elusive.

Yet, there are bright spots. The number of reporting countries is on the rise – up from 97 in 2021 to 105 today. The share of countries providing disaggregated data has increased from 50 to 60%. Peer learning in the field is widening and deepening. The exchanges between finance ministries, tax authorities and members of parliament that CEP and IDOS, together with the Addis Tax Initiative and further partners, had the honour of hosting in the last 18 months, are cases in point. The rising number of engagements on tax expenditures by international and regional organizations, such as ADB, ECLAC, IMF, OECD, UNDP, UNEP and World Bank, provide further illustration.

The recognition of the need to scrutinize tax expenditures just as much as direct public spending is an encouraging signal. With countries worldwide under pressure to safeguard fiscal space, a review of tax expenditures is moving up on policy agendas around the globe. In that context, as highlighted in this report, systematic evaluations of tax expenditures are critical for policymakers to ensure public resources are used efficiently. Shifts in the global tax regime make this an even more urgent task. Transparency is a necessary first step in that direction.

To that end, we are delighted that in addition to releasing updated data in the GTED, we just launched the Global Tax Expenditures Transparency Index – the GTETI – and have brought both pillars together into an integrated “Tax Expenditures Lab”. The GTETI is the first global assessment to rank countries in terms of the transparency they provide on their use of tax expenditures covering the regularity, quality, and scope of tax expenditure reporting. It is designed to offer a reference point for countries to increase accountability on tax expenditures, promote public debate and encourage governments to improve their tax expenditure reporting as a critical step towards evidence-based reform.

We hope that both the GTED and the GTETI will contribute to advancing progress in that direction and we are greatly looking forward to jointly building on the accelerating momentum with our partners in the field.



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Sofia Berg at CEP as well as Paula Castells and Hossein Qorbaniazar at IDOS have helped us putting the data together and preparing our own inputs to the Flagship Report – many thanks for this!

With regard to communication and publication, we are lucky to count with the excellent support of our colleagues Pepa Echanove at CEP as well as Tanja Vogel, Senem Kaya and Cornelia Hornschild at IDOS. Katharina Schaarschmidt from IDOS has done a tremendous job editing and formatting the different contributions and putting everything together in a coherent and reader-friendly format. Andrew Colby continues to be the creative mastermind and a reliable partner regarding all questions related to the website – not only for the GTED, but also for the Global Tax Expenditures Transparency Index (GTETI) and our new landing page, www.taxexpenditures.org.

The work on the database is the backbone of our manifold joint activities on tax expenditures. The tasks of updating country-level data and integrating new reporting countries are key in this regard, and we truly appreciate the sustained support and thorough work of our international consultants Daniela de la Hoz, Darron Seller-Peritz and Paula Vijoditz.

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LIST OF ABBREVIATIONS

ACEA	European Automobile Manufacturers Association	IIR	Income Inclusion Rule
APEC	Asia Pacific Economic Cooperation	IISD	International Institute for Sustainable Development
BEPS	Base Erosion and Profit Shifting	IMF	International Monetary Fund
BEV	Battery Electric Vehicles	I-O	Input-Output
BMZ	Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung – Federal Ministry for Economic Cooperation and Development	IP	Intellectual Property
CBO	Congressional Budget Office (U.S.)	IRA	Inflation Reduction Act (U.S.)
CEP	Council on Economic Policies	ITC	Investment Tax Credit
CGE	Computable General Equilibrium	LIC	Low-Income Country
CIT	Corporate Income Tax	LMIC	Lower-Middle-Income Country
CRFB	Committee for a Responsible Federal Budget (U.S.)	LPG	Liquefied Petroleum Gas
DID	Difference-in-Differences	MIC	Middle-Income Country
DSGE	Dynamic Stochastic General Equilibrium	MNC	Multinational Corporation
EATR	Effective Average Tax Rate	MNE	Multinational Enterprise
EER	Effective Energy tax Rate	MoF	Ministry of Finance
EMTR	Effective Marginal Tax Rates	MSM	Microsimulation Model
ETR	Effective Tax Rate	MTRS	Medium Term Revenue Strategy
EPA	Environmental Protection Agency (U.S.)	MWh	Megawatt-hours
EU	European Union	OECD	Organisation for Economic Co-operation and Development
FCV	Fuel Cell Vehicles	PTC	Production Tax Credit
FDI	Foreign Direct Investment	PIT	Personal Income Tax
GDP	Gross Domestic Product	PHEV	Plug-in Hybrid Electric Vehicles
GEL	Georgian Lari	QDMTT	Qualified Domestic Minimum Top-Tax
GloBE	Global Anti-Base Erosion	QUNO	Quaker United Nations Office
GMT	Global Minimum Tax	R&D	Research and Development
GST	Goods and Services Tax	RMB	Renminbi (People's Republic of China's currency)
GTE	Green Tax Expenditure	SBIE	Substance-Based Income Exclusion
GTED	Global Tax Expenditures Database	SDG	Sustainable Development Goal (UN)
GTETI	Global Tax Expenditures Transparency Index	SME	Small and Medium-sized Enterprises
G7	Group of Seven	S-U	Supply-Use
G20	Group of Twenty	TE	Tax Expenditure
HIC	High-Income Country	UMIC	Upper-Middle-Income country
HNTE	High and New Technology Enterprise	UNDP	United Nations Development Programme
IDOS	German Institute of Development and Sustainability	UNFCCC	United Nations Framework Convention on Climate Change
IEA	International Energy Agency	US	United States
IJA	Infrastructure Investment and Jobs Act (U.S.)	USD	United States Dollar
		VAT	Value Added Tax
		WTI	West Texas Intermediate
		WTO	World Trade Organization

EXECUTIVE SUMMARY

To manage the transformational changes humankind is currently facing, setting up the right fiscal policies is of pivotal importance. Given their magnitude and widespread use, tax expenditures (TEs) play a key role in this context. TEs can be powerful policy instruments to boost investment, employment and innovation. When ill-designed, however, they can also trigger unsustainable outcomes such as accelerating climate change and exacerbating inequality. This Flagship Report shows once again that assessing the effectiveness of TEs, incorporating TEs into broader fiscal policy frameworks, and promoting political debates on TE reform critically depend on the quality of TE reporting.

TEs continue to generate large amounts of revenue forgone, but transparency is slowly improving.

The latest GTED data reveal that the revenue forgone resulting from TEs averages 3.8 percent of GDP and 23 percent of tax revenue globally. This cost is often concentrated in a small number of large TE provisions. On average, the ten largest TE provisions account for more than 70 per cent of countries' revenue forgone. However, information on TEs remains limited. 113 countries have not yet issued any public TE reports, and many countries that do report publish incomplete information. Still, since the launch of the GTED in 2021, 9 countries started reporting on TEs and 3 more countries were added to the database. In addition, some of the more recent reports published around the world show a high degree of comprehensiveness.

The Global Tax Expenditures Transparency Index (GTETI) provides a wealth of comparative information to the worldwide debate on TEs.

An in-depth analysis based on the GTETI's 5 dimensions and 25 indicators allows the identification of overarching patterns as well as areas where governments should concentrate their efforts to improve TE reporting. This includes disclosing more and better information on the policy goals of TEs and the beneficiary groups they are targeting. Conducting comprehensive TE evaluations is another area where more efforts are needed. By

providing a systematic framework to assess countries according to the regularity, quality and scope of their TE reports, the GTETI offers guidance on TE reporting and contributes to evidence-based policymaking in the TE field.

Worldwide, there is a generalised lack of TE evaluations, but the body of experience and the guidance available to policymakers are growing.

Comprehensive TE evaluations rely on diverse information sources, including administrative data, surveys, and stakeholder feedback. Although conducting such evaluations can be challenging and resource intensive, even relatively simple qualitative and quantitative analyses can make a substantial contribution to evidence-based policy making. While it is not always feasible or necessary to evaluate each TE annually, it is clearly desirable to have a framework that foresees periodic evaluations over a multi-year cycle. Such a framework should also cover ex-ante assessments, which can help limit the proliferation of TEs that are unlikely to improve social welfare. Not least, transparent reporting and dissemination of evaluation results are essential for accountability and informed policymaking.

TEs supporting the production and consumption of fossil fuels have reached new heights over the last years and need to come down.

According to estimations of the Organisation for Economic Co-operation and Development (OECD), global fossil fuel TEs in 2021 totalled at least USD 150 billion, while data taken from the GTED on 39 developing and emerging economies not covered by the OECD Inventory identified more than 200 fossil-fuel related TEs, averaging around USD 1 billion annually. Both the OECD and GTED data are likely to be significant underestimates, given that more than 100 countries do not report TEs at all, and many TEs remain unquantified, particularly in low and middle-income countries. Fossil fuel TEs are often introduced to give poorer households access to energy, or to protect energy-intensive industries against competition from abroad. However, the available

evidence indicates that their distributional impact is often regressive, and their efficiency is low compared to direct spending mechanisms. The main goal of reforms in this area should therefore be to shift support from fuels to people.

Green TEs can play an important role in bringing greenhouse gas emissions down, but they come with fiscal risks. The GTED contains information on 713 TEs that aim at lowering greenhouse gas emissions. The largest share (42 percent) of those measures targets electricity generation from renewable energy sources. In quantitative terms, however, transport-related TEs such as those promoting electric vehicles or biofuels, account for almost 60 percent of revenue forgone. Indeed, of the ten largest green TE provisions in the dataset (as a share of their respective country's tax revenue) six are transport-related and four electricity-related. Zooming in on five countries (China, France, India, Norway and United States) generates more in-depth information about the instruments available for greening the economy. It should be noted, however, that implementing large-scale TEs in this area will inevitably shift budgetary burdens onto other taxpayers, potentially resulting in deadweight losses.

The use of TEs differs between richer and poorer countries, but the factors driving this relationship have not yet been subjected to rigorous empirical analysis. There are two major reasons for this. First, the limited availability of official and public data on

TEs leads to problems of sampling bias due to non- and underreporting. Second, establishing causalities is difficult due to endogeneity concerns. Still, initial evidence indicates that economic development is indeed an important driver of TE use. Natural resource rents and the level of trade openness seem to be relevant factors, in particular for TEs offered to foreign investors. In developing countries in particular, the use of TEs could be further determined by institutional development, including levels of democracy and corruption. In addition, countries with overall low statutory tax rates for firms have less incentives to provide additional TEs for corporate beneficiaries, since these already pay little tax.

Changes in international taxation – in particular, the introduction of a global minimum tax for large multinational enterprises – are affecting the use of tax incentives for investment. The Global Anti-Base Erosion (GloBE) project developed under the roof of the OECD leads to the implementation of a 15 percent minimum tax levied on the excess profit of large multinational enterprises. Though the specific impact of the new minimum tax will be highly context-specific, it can be expected that TEs that reduce the taxation of profits are more likely to be affected than TEs that lower the taxable income. Against this background, the global minimum tax creates an opportunity for jurisdictions to revisit their tax incentives and to rethink the role of tax in promoting investment. This, however, requires more and better evidence on the use and effects of TEs.

1 INTRODUCTION

The 2023 edition of the Global Tax Expenditures Database (GTED) Flagship Report focuses on the use of tax expenditures (TEs) in the context of transformative change. At present, transformative change refers to humankind's most pressing challenge: shifting global economic growth and consumption patterns in a way that is sustainable within planetary boundaries, but also in line with societal aspirations of inclusiveness, equity and intergenerational fairness. We are convinced that TEs play a key role in this regard – often, unfortunately, to the worse, but potentially also to the better.

TEs are a negative factor if used to promote behavioural patterns that harm the environment or deepen existing inequalities in our societies. They are a negative factor if they are ill-designed, diminish public revenues and narrow the fiscal space of governments without any adequate contribution to the common good, or if they trigger significant undesired effects and negative externalities. They can be a positive factor, however, if they are well designed and effective at achieving public policy goals that are aligned with sustainable growth and development strategies.

This touches a neuralgic point: All too often, it is impossible to assess if TEs are a positive or negative factor because relevant information is missing. The GTED and the Global Tax Expenditures Transparency Index (GTETI) have above all been motivated by the fact that in many countries – large and small, rich and poor, from all regions – TEs are hidden and governments as well as societies at large are not sufficiently well informed about their use. Transparency is important per se as a driver of accountability and a pillar of the fiscal contract. Equally important, it is a crucial element of evidence-based policymaking and public deliberation. Rationalising the use of TEs not only requires knowing the fiscal cost of TEs, but also knowing which TEs are cost-effective and which ones are not, leading to their reform or removal. Both the GTED and the new GTETI

aim at facilitating access to information and adding value to reform processes.

When the GTED was launched in June 2021, it gathered data from 97 countries, covering more than 1,100 budget years and ca. 20,800 individual provisions. Two years later, our database contains eight more reporting countries, almost 6,000 provisions have been added, and coverage extended to more than 1,300 budget years. This is without any doubt a positive development, but we cannot ignore the fact that, at this moment, still more than half of the world's jurisdictions do not issue any public information on the TEs they use. **Chapter 2** of this Flagship Report gives an overview of recent developments in TE reporting and provides insights on the magnitude of TE use in terms of revenue forgone.

Beyond the number of reporting countries and provisions covered, it is important to note that the quality of TE reporting varies widely. A growing number of governments issue comprehensive reports on a regular basis, including estimates of revenue forgone at the individual TE provision level, but many others still publish only aggregate data on a reduced set of TEs. The GTETI, launched in October 2023, provides a detailed assessment of the quality and scope of TE reporting along 5 dimensions and 25 indicators. In **Chapter 3** of this Flagship Report, we present overarching patterns, ranking results and key findings from the first edition of the GTETI.

Evaluation is a key step for the rationalisation of TE regimes. Yet, one of the most salient features of the worldwide use of TEs is a generalised lack of cost-benefit analyses. Very few countries carry out comprehensive and regular evaluations of the TEs they grant. Without such evaluations, it is impossible to systematically inform policymakers about the desirability of introducing or maintaining specific tax benefits. **Chapter 4** of the report, authored by Sebastian Beer

and Jan Loeprick (IMF) discusses the design and methodological approaches of TE evaluations. It shows that even in a situation of limited availability of data, evaluations can be an important element of evidence-based policymaking.

Moving our economies and private consumption patterns from burning fossil fuels towards using sustainable energy is certainly not a minor task. It becomes even more challenging, however, due to the widespread use of TEs that subsidise the production and consumption of fossil fuels. Written by Ronald Steenblik (QUNO) and Tara Laan (IISD), **Chapter 5** of the report shows that developing and emerging economies stand to gain significantly from reform through reallocating subsidy savings to targeted social welfare or investments that boost economic growth, and reducing loss and damage from toxic air pollution and climate change.

While TEs are frequently employed to subsidise fossil fuels, it is important to note that we observe a growing use of TEs designed to mitigate environmental harm, with a particular focus on bringing greenhouse gas emissions down. This tendency is driven by governments' commitments to curtail emissions, but also by a desire to reduce dependency on volatile fossil fuel markets. An important caveat, however, refers to the growing fiscal costs related to these so-called "green tax expenditures". In **Chapter 6**, Patrick Lenain (CEP) assesses the dynamics of the use of green TEs. By focusing on five countries (China, France, India, Norway and United States), he presents the range of policy options open to governments to promote the uptake of new green technologies.

Empirical evidence indicates that, measured in percent of GDP, richer countries spend more on TEs than poorer countries. However, the picture changes when measuring TE use against actual revenue collection.

Since poorer countries collect less tax on average, a lower amount of TEs in percent of GDP may account for a larger share in terms of revenue collection. Economic development is an important driver of TE use, but other factors such as levels of democracy, corruption, rents from natural resources, and trade openness may be relevant as well. **Chapter 7** explores patterns of TE use and draws lessons with regard to the rationalisation of TE regimes in low- and middle-income countries.

Changes in international taxation are affecting the use of TEs and will have an impact on the granting of tax incentives for investment in many low- and middle-income countries as well. Particularly relevant is the introduction of a global minimum tax of 15 percent that is currently being implemented in the context of the Global Anti-Base Erosion (GloBE) project developed under the roof of the OECD. The new mechanism ensures that a top-up tax on low-tax profits is collected from large multinational enterprises even if the jurisdiction where the low tax profit arises does not collect the taxes itself. **Chapter 8** of the Flagship Report, written by Ana Cinta González Cabral, Pierce O'Reilly, Kurt Van Dender, and Tom Zawisza (OECD), discusses how the new GloBE rules will affect the use of different kinds of business-related TEs.

2 TRACKING TAX EXPENDITURES: INSIGHTS FROM THE GTED

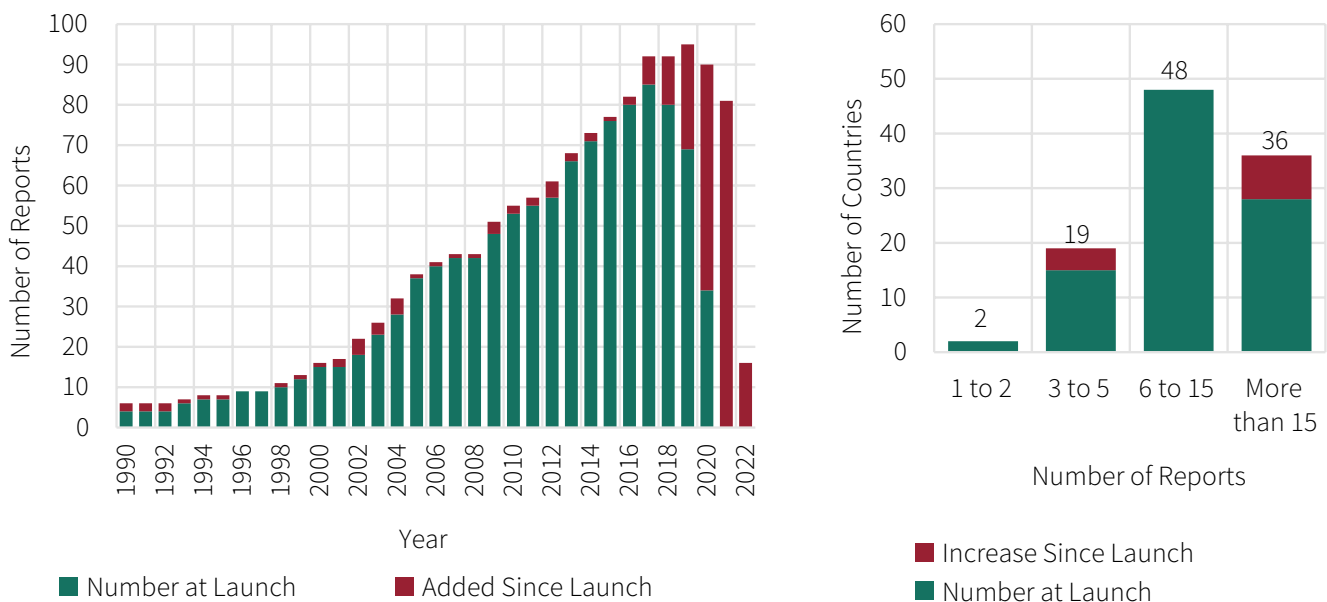
Flurim Aliu (CEP), Agustin Redonda (CEP) and Christian von Haldenwang (IDOS)

The GTED has been continuously growing since its launch in June 2021. Throughout 2022, our team added 5 new reporting countries (Kenya, Mongolia, Nigeria, North Macedonia, and Uganda) to the database, found additional historical data for 6 countries (Belgium, Finland, France, Germany, Italy, and the United Kingdom), and processed the newest reports of 75 countries.¹ In 2023, our team added 7 more countries to the database (Algeria, Georgia, Maldives, Moldova, Taiwan, Togo, and Tunisia), and collected new data for

84 existing countries. The GTED now has information on more than 25,000 individual TE provisions, with close to 120,000 revenue forgone data points from more than 1,300 budget years. 2019 is now the year with the widest coverage, providing data for 95 countries and the number of countries that have issued reports for more than 15 years is now 36 (see Figure 2.1).

To improve the quality and utility of the database, we reviewed the minimum criteria for including data in

Figure 2.1. Number of countries reporting per year and number of reports by country groupings



Note: Numbers for the past three years may be subject to delayed reporting.

Source: Authors' calculations based on Redonda et al. (2023).

¹ The second round of data gathering focused on new reports released until December 31st, 2021. For more information on the findings and the countries added during that round of data gathering, see Aliu et al. (2022).

the GTED. As a result, four countries (Central African Republic, Equatorial Guinea, Ghana, and Seychelles) are now considered non-reporting countries, since their reports do not allow to determine whether the reported figures constitute revenue forgone. Hence, the total number of reporting countries increased from 97 in 2021 to 105 today. Unfortunately, the number of reporting countries is still lower than the number of countries that have not published any information on TEs (113).

2.1 Tax expenditure reporting during 2022

Most of the 84 countries that released new or updated TE data in 2022 largely followed their previous reporting

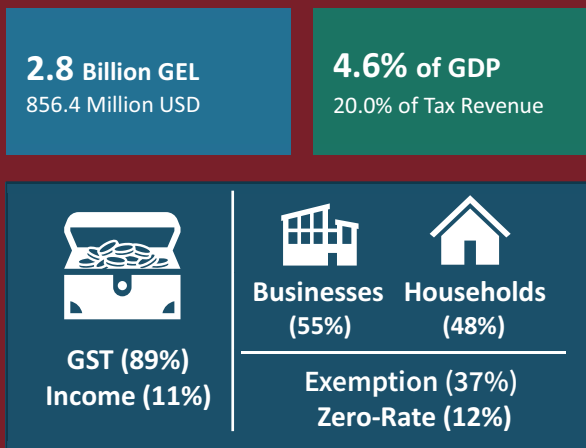
structure, with some exceptions. Some countries improved the coverage of their reports by reporting TE data for additional tax types (e.g. Rwanda) or sectors (e.g. Slovenia), or by increasing the share of provisions with revenue forgone estimates (e.g. United Kingdom). Some other countries published new reports that were more detailed than previous ones, either by including additional data analysis to the report (e.g. Benin) or by improving different sections of the report (e.g. Ethiopia, Pakistan, or Uganda). Portugal went even further and published a completely new TE report in 2022 with provision-level data on TEs for all levels of government.² In contrast, some other countries (e.g. Algeria, Madagascar, Türkiye, or Israel) went the other direction by publishing new reports with less detail or coverage than previous versions.

Box 2.1. Countries recently added to the GTED

Seven new jurisdictions – Algeria, Georgia, Maldives, Moldova, Taiwan, Togo, and Tunisia – were added to the GTED during the most recent data-gathering round. Except for Algeria and Taiwan, the remaining countries only recently published their first TE reports.

Georgia, for example, published its first TE report in December 2022. The report includes revenue forgone estimates for four years (2018-2021) for individual TE provisions (with some being lumped together) as well as aggregated statistics for different sectors, economic activities, and types of beneficiaries. The revenue forgone reported decreased from 5.4 percent of GDP in 2018 to 4.6 percent of GDP in 2021, with a temporary increase in 2020 (5.7 percent of GDP) due to the pandemic (see Figure 2.2).

Figure 2.2. Georgia: Revenue Forgone Summary Table for 2021



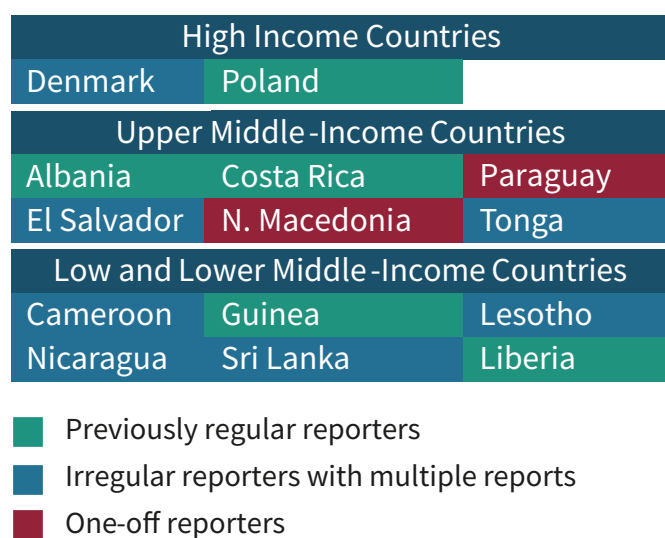
² Unfortunately, the new report issued by Portugal does not distinguish which provisions apply to the central government and which provisions to other levels of government. Since the GTED only collects data for central governments, the yearly TE report published together with the budget continues to be the one included in the GTED.

The most popular TE provisions are those in the VAT regime, accounting for close to 90 percent of Georgia’s revenue forgone and equivalent of 4.1 percent of GDP in 2021. Exemptions (37 percent of total revenue forgone) and zero-rates (12 percent of total revenue forgone) are the most popular type of TE provisions. Georgia is one of the few countries that report policy objectives for their TE provisions, making the report particularly informative. TEs target education (20 percent of total revenue forgone), agriculture (10 percent), and other objectives.³

In contrast, Taiwan is a regular reporter that first published TE information in 2005 and has continued to do so on an annual basis. Its reports include detailed information for over 200 provisions on PIT, CIT, VAT, excise, capital gains, and inheritance TEs. In 2022, its revenue forgone amounts to 2.3 percent of GDP (8.2 percent of its tax revenue). Unlike in many other countries, income-tax-related TEs constitute by far the largest share of Taiwan’s revenue forgone (close to 66 percent of total revenue forgone). Though it reports provision-level data, the Taiwanese TE report does not include detailed information about its TE provision’s policy objectives, discussions about the implementation timeframe of provisions, or consistent information on the number or type of beneficiaries.

Fourteen countries that reported at least once before did not publish any new data during 2022. This includes two countries that only had published once before (North Macedonia having published its first report in 2021 and Paraguay, which only reported in 2015), 7 countries that were previously irregular reporters, and 5 countries that were previously reporting regularly (see Figure 2.3).

Figure 2.3. Countries that did not release new TE information during 2022



Source: Authors’ calculations based on Redonda et al. (2023).

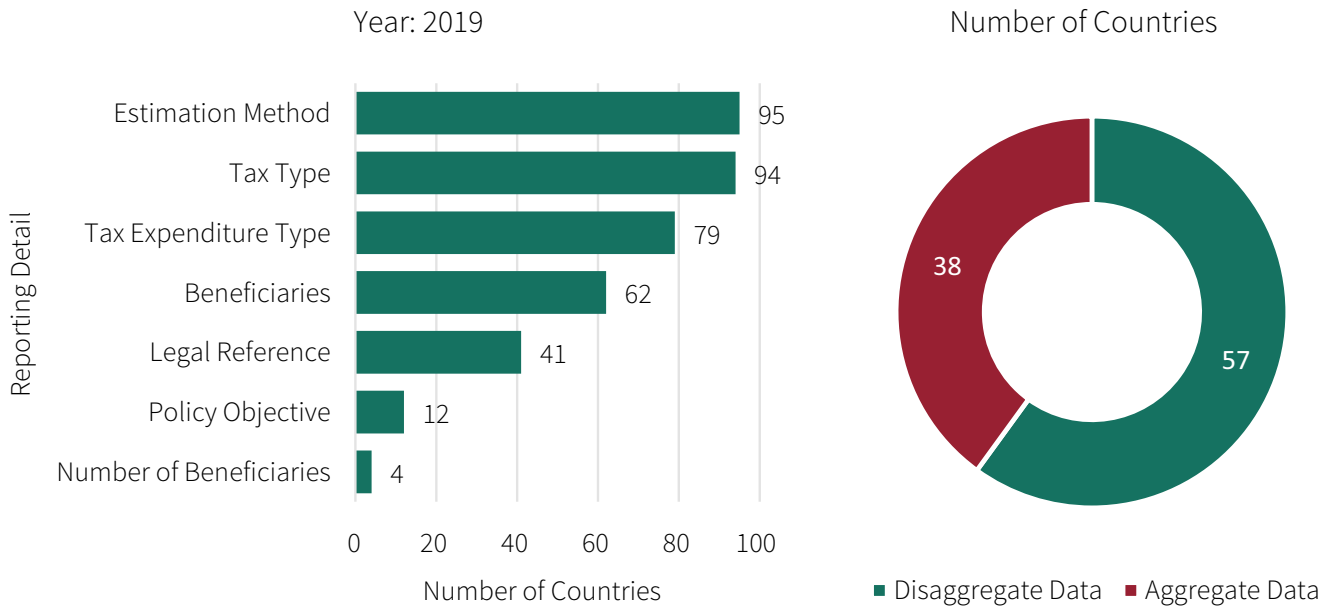
This is, nonetheless, an improvement from 2021, when 22 countries missed out on one round of TE reporting. Additionally, two countries that had previously only reported once released new TE information in 2022. Niger, having previously only reported on TEs in 2013, published two new reports (for the years 2020 and 2021). Switzerland, also previously a one-off reporter, released new TE estimates in 2022, even though those estimates are still based on the data originally collected in 2005 and extrapolated first to 2011 and now to more recent years.

2.2 Insights from the new version of the GTED

The last two years saw an expansion of the GTED not only in terms of country coverage, but also in the quality of the information included in the database. Crucially, most of the countries that started reporting in 2021 and 2022 published detailed reports with provision-level or very disaggregated revenue forgone estimates. In fact, 60 percent of the countries reporting data for 2019 (the year with the widest country coverage to date) published disaggregate revenue forgone data – either for individual TE provisions or a mix between data for individual provisions and some more aggregated figures for groups of provisions (see Figure 2.4).

³ For more details about the process to issue the first TE report, see Mikeladze and Mylonas (2023).

Figure 2.4. Number of countries reporting detailed TE information



Note: A country was coded as reporting data for a certain category when it provided details for provisions accounting for 75 percent or more of total revenue forgone.

Source: Authors’ calculations based on Redonda et al. (2023).

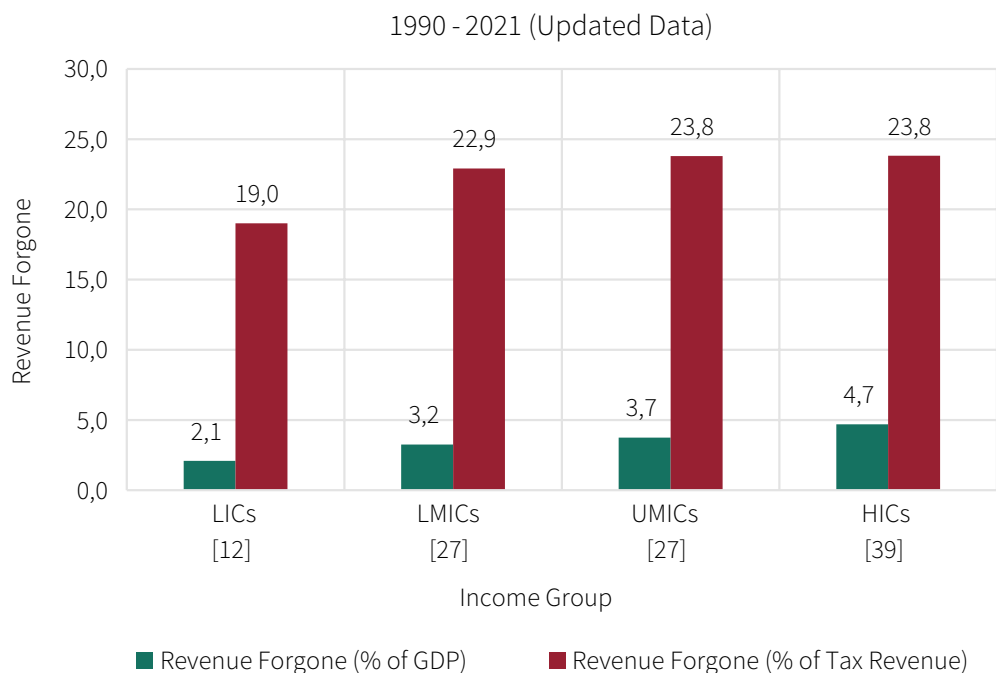
However, there is still much room for improvement since 40 percent of the countries reporting on TEs in 2019 published only aggregate estimates – either by grouping various provisions or by providing revenue forgone estimates aggregated by tax type, TE type, sector, or any other broad category. Additionally, crucial information such as the targeted beneficiaries, legal references, and policy objectives is missing from many reports. Data on the number of entities (e.g. firms or households) benefitting from a certain TE provision is absent in almost all reports. Information on policy objectives and the number of beneficiaries is particularly essential since it links the revenue forgone from TEs to the expected benefits and is the principal piece of information needed for any cost-benefit analysis of TE provisions.

Evaluating the benefits of TEs against their cost is particularly important since the fiscal cost of TEs can indeed be very high. Over the years, worldwide revenue forgone from TEs averages 3.8 percent of GDP and 23.0 percent of tax revenue collected. These figures can reach more than 10 percent of GDP and around 60

percent of tax revenue collected in jurisdictions such as Czechia, Finland, Ireland, Jordan, the Netherlands, Puerto Rico, and the Russian Federation.

The size of revenue forgone varies by country income group and increases with income levels of countries (see Figure 2.5). High-income countries (HICs) report forgoing more than 4.7 percent of GDP through TEs, on average, while for low-income countries (LICs) this figure is 2.1 percent. As a share of tax revenue collection, however, differences are smaller and revenue forgone averages range from 19.0 percent in LICs to 23.8 percent in upper-middle-income countries (UMICs) and HICs.

Figure 2.5. Revenue forgone averages by country income group



Note: Numbers in brackets indicate the number of countries in each income group with available TE data. Country classifications are based on the latest data by the World Bank.

Source: Authors' calculations based on Redonda et al. (2023).

Box 2.2. Changing patterns of TE use

The 2021 GTED Flagship Report (von Haldenwang et al., 2021) observed that revenue forgone from TEs measured as a percentage of GDP was highest in HICs, whereas it was highest in LICs when measured as a percentage of tax revenue. By then, we attributed this finding to the fact that LICs typically collect fewer taxes in absolute terms. However, based on the newest data, this trend does no longer seem to hold, for several reasons:

Firstly, it's crucial to note that the LIC average is based on a relatively small group of 12 countries. Any changes in individual countries within this group can significantly impact the average. For instance, Uganda's recent report marked a drastic decrease in its revenue forgone estimates, dropping from 3.6 percent of GDP for 2020 reported in the initial report to a revised 1.2 percent of GDP for 2020 in the most recent report. This shift, however, was not caused by an actual decrease in revenue forgone but rather by changes in the definition of the benchmark tax system.

Ethiopia exhibited a comparable downward trend, with revenue forgone declining from 5.8 percent of GDP in 2017 to 2.7 percent in 2021, the most recent report. While the exact reasons for this shift remain somewhat unclear, it's worth noting that the initial figures reported in the 2017 budget report lacked a well-defined benchmark. Subsequent TE reports updated the benchmark definition, potentially accounting for the adjustment.

Furthermore, there have been changes in country categorizations over time. For example, Guinea, initially a LIC, is now classified as a LMIC. Such changes in categorization can further influence the distribution of revenue forgone as a percentage of GDP or tax revenue among different income groups, adding complexity to the observed trends.

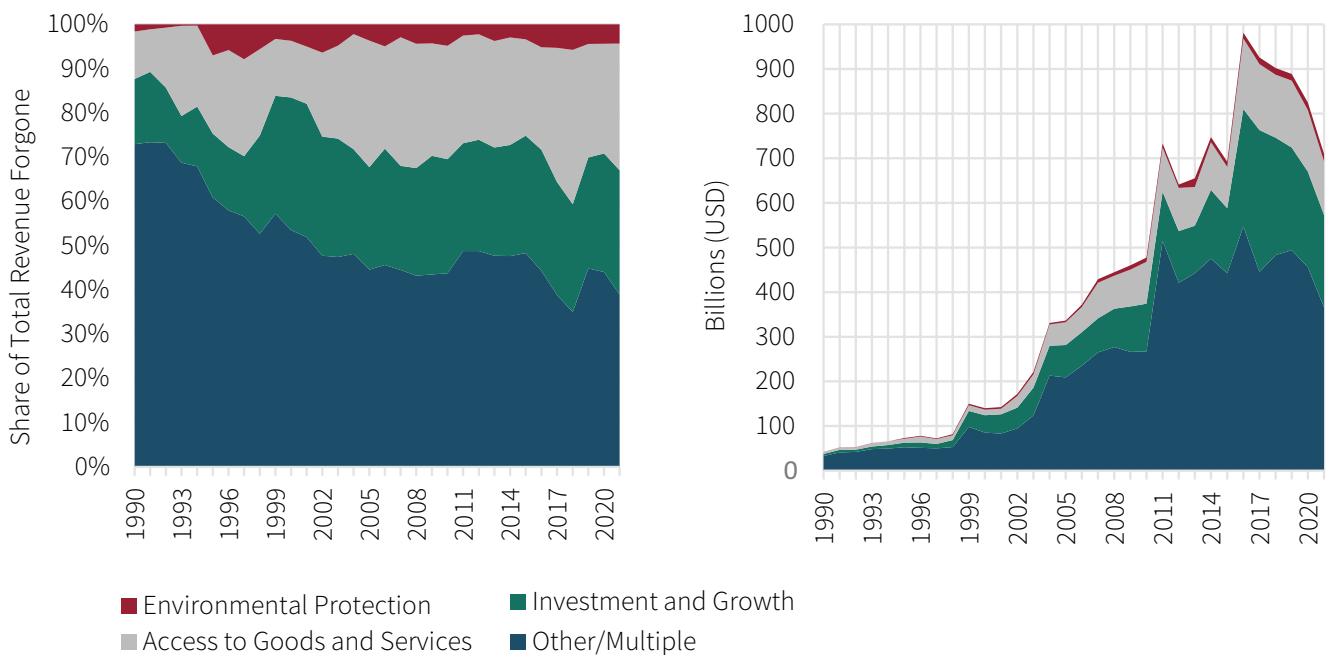
Although reported revenue forgone figures vary by country income group, they are almost always an underestimation of the true cost of TEs. Quite frequently, the cost of certain provisions is not estimated even though they are reported as TEs. The UK Tax Relief report, for example, lists 338 TE provisions but provides revenue forgone estimates for less than half of them. As a matter of fact, the 54 countries that report provision-level information only estimate the cost of about three-quarters of their provisions, on average. Sometimes this is due to confidentiality reasons or methodological difficulties while in other cases the reason for such underreporting is not clear. Moreover, some countries completely leave out entire groups of provisions. Many low- and lower-middle income countries (LICs and LMICs), for example, only estimate the cost of their customs and/or import VAT TEs and leave out

income and property taxes or internal VAT due to data availability reasons. The reports of Ethiopia, Liberia, and Sierra Leone are cases in point.

The policy objectives of TE provisions

As shown in Figure 2.4, only 13 countries publish information on the policy objectives for most of their TE provisions (provisions equivalent to at least 75 percent of their revenue forgone). In fact, only 52 countries describe the policy objective of at least one of their provisions while the remaining 53 do not provide any such information. Overall, information on policy objectives can be found for just 9,747 out of 25,208 provisions contained in the GTED – 38.7 percent of total provisions. This share has fallen from 41.4 percent in 2021, despite the newest reports of countries providing more detailed data on other categories. Additionally,

Figure 2.6. Average revenue forgone across countries and global unweighted evolution of revenue forgone by policy objective



Note: For the share of total revenue forgone, we first calculated country averages across years and then the global average across countries. All provisions that do not state a policy objective were excluded.

Source: Authors’ calculations based on Redonda et al. (2023).

not all provisions with policy objectives also have revenue forgone estimates. Only 6,967 out of 25,208 provisions in the GTED (27.6 percent) have information on both the revenue forgone and the policy objective.

There is also no common standard for the categorization of policy objectives across countries. Governments employ a large variety of terms and references at different levels of specificity. Some governments only report whether a specific TE provision has economic or social objectives, others provide general references to economic growth or development, while others go into more detail and specify the kind of sector or activity targeted, disclosing the ambitions of a particular policy. The GTED collects this country-specific information and stores it in its original form while also grouping policy objectives into nine categories, such as for instance “attract / promote investment” or “provide disaster relief” (see Redonda et al. (2021) for more detail). In most cases, TE provisions aim to develop specific sectors of the economy, attract investment, or seek to improve access to goods and services. A smaller share of TE provisions aims to contribute to environmental

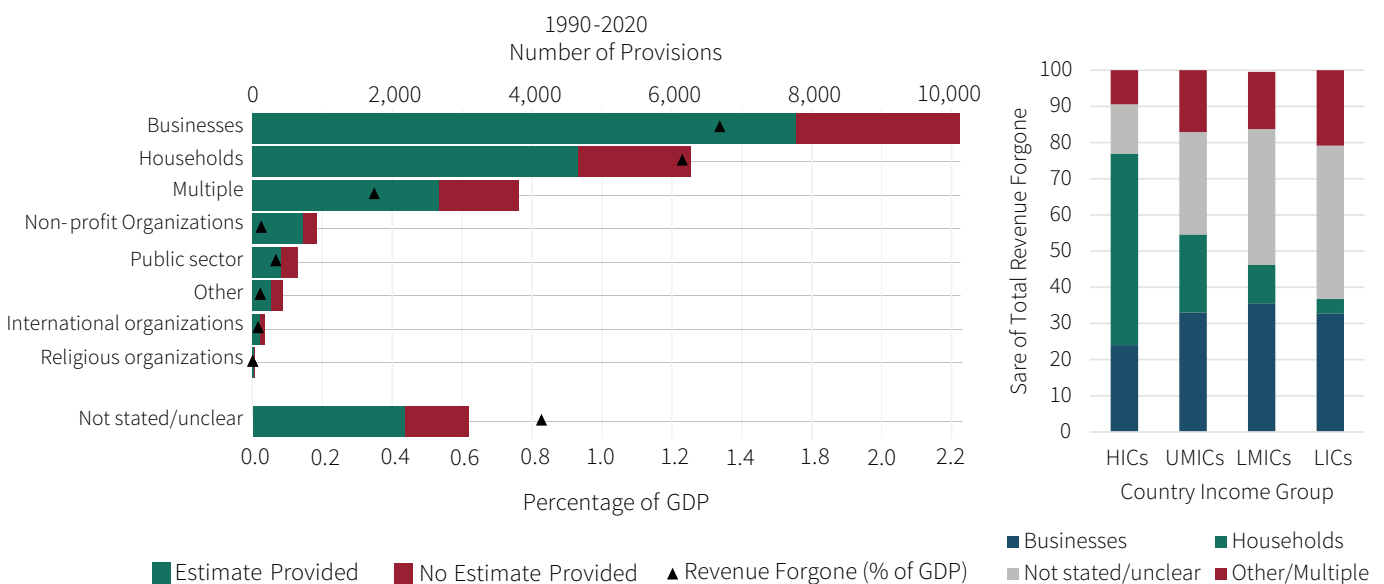
protection (see Figure 2.6). Shares have remained largely stable since the launch of the GTED.

The types of beneficiaries typically targeted by TE provisions

TEs differ widely with regard to their targeted beneficiaries. The GTED identifies six broad categories of beneficiaries, ranging from businesses and households to religious organizations and the public sector (see Redonda et al. (2021) for more detail). While some TEs are highly specific, sometimes addressing individual companies or projects, others have a broad scope. For instance, reduced VAT rates for basic goods like food, medical drugs, or books benefit all consumers of those goods, independently of their income, social condition, or residency.

Ideally, each TE provision should come with information on its targeted beneficiaries, the number of those benefiting from the provision for each year, and yearly revenue forgone estimates. As shown in Figure 2.7, however, only 62 countries provide information on the beneficiaries for most of their provisions while

Figure 2.7. Number of provisions and revenue forgone by beneficiaries



Note: For the share of total revenue forgone, we first calculated country averages across years and then the average across countries within each income group. Country classifications are based on the latest data by the World Bank.

Source: Authors’ calculations based on Redonda et al. (2023).

almost all jurisdictions (101 out of 105) publish at least some information on the beneficiaries. Of the 25,208 provisions currently registered in the GTED, 22,179 (88.0 percent) specify their targeted beneficiaries. This is a slight improvement from the first version of the GTED, which had beneficiary information for 87.3 percent of its provisions. 16,504 provisions (or 65.5 percent of all provisions) come with information on beneficiaries and revenue forgone. This is also a slight improvement from the 64.4 percent share observed in 2021.

Private sector companies are the main group of beneficiaries of TEs in terms of revenue forgone, and number of provisions targeting them (see Figure 2.7). This finding has slightly changed from the first version of the GTED which, like the current version, had more provisions targeting businesses but, unlike the current version of the GTED, had more revenue forgone benefiting private households. The change can be explained by the fact that the new wave of data is mostly coming from LICs and MICs, which tend to apply more business-related TEs. In fact, the level of income of a country and the share of revenue forgone aimed at households are highly correlated, with HICs spending more than 50 percent of revenue forgone from TEs on households, on average, and LICs less than 5 percent. It is also important to note that the share of revenue forgone without stated beneficiaries (i.e., no information on whether businesses or households are targeted) is higher for poorer countries.

While information on the types of beneficiaries is already scarce, information on the number of beneficiaries is even harder to find. In fact, only 2,700 out of 25,208 provisions in the GTED give information on the number of firms, households, or other entities that benefit from them. This information is only available in 27 countries, in most cases only for a few provisions. In fact, only four countries – Benin, Côte d'Ivoire, Ireland, and Italy – publish this information for most TE provisions (75 percent or more of revenue forgone). In a few other countries such as Canada, Ecuador, France, Greece, and India, this information is available for provisions accounting between 60 and 72 percent of revenue forgone.

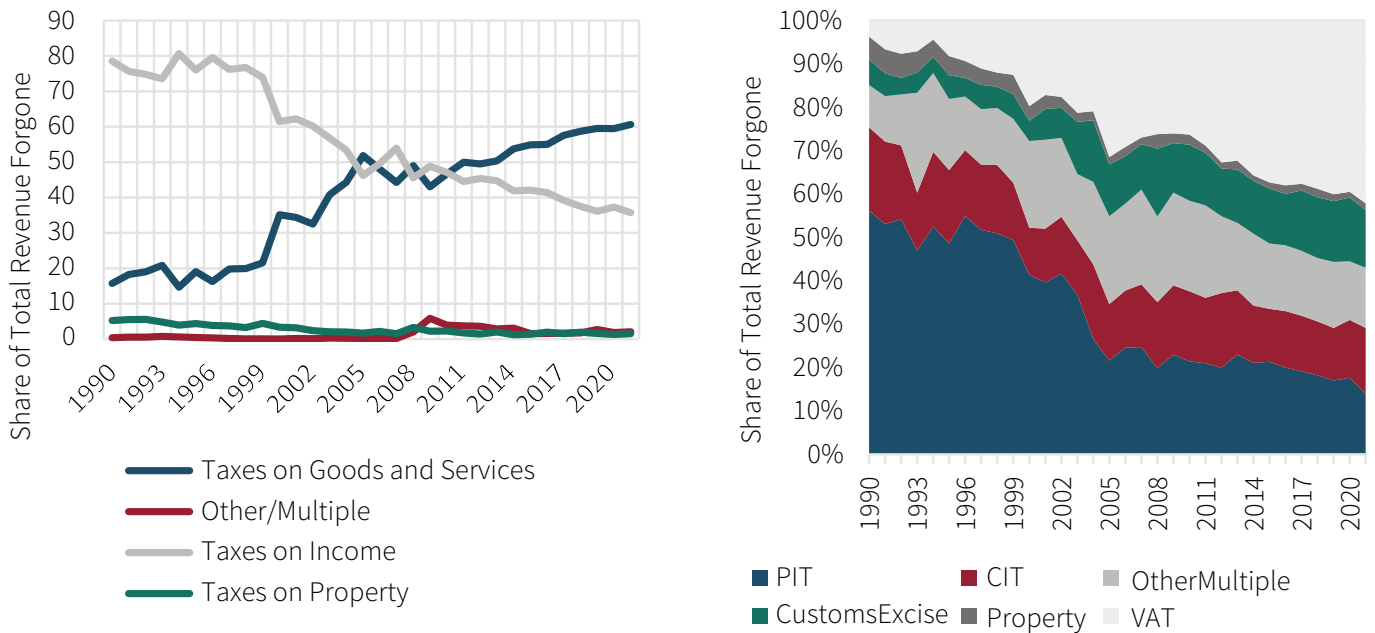
Tax types with the highest revenue forgone

Information on the tax type from which a TE is granted is provided almost universally. The most recent version of the GTED relates 24,955 out of 25,208 provisions to their type of tax (99.0 percent, slightly more than the 98.7 percent in the 2021 version). It distinguishes more than 20 different kinds of taxes that can be subject to TEs, in three broad categories: taxes on income, goods and services, and property (see Redonda et al., 2021 for more detail). In terms of revenue forgone, time trends show an interesting pattern (see Figure 2.8). In the 1990s, TEs on income were responsible for 80 percent or more of total revenue forgone, but their share declined steadily over the last two decades to well under 40 percent in recent years. Taxes on goods and services, on the other hand, followed exactly the opposite trend, starting at under 20 percent in the 1990s and passing 60 percent in recent years. This finding has remained stable with new data added to the GTED.

Once again, growing numbers of reporting countries may partly explain this observation. In the first years, HICs granting or reporting mainly income-related TEs dominated the picture. The addition of more LICs and MICs to the database, countries which mainly grant or report on consumption-related TEs, contributed to the shift. This is particularly evident in the PIT share of total revenue forgone, which drops from a global average of over 50 percent in the 1990s to less than 20 percent in more recent years. PIT-related TEs are hardly applied in LICs and MICs. At the same time, VAT-related TEs, widely used in LICs and MICs, shows a sharp increase in the share of global revenue forgone.

However, changing worldwide patterns of TE use also seem to be a relevant factor. First, TEs are increasingly used for social and welfare policy purposes, as could be seen in Figure 2.6. More and more countries report TEs on goods and services taxes and we observe a growing relevance of TEs motivated by increasing access to goods and services or housing. Most recently, following Russia's invasion of Ukraine and the ensuing global energy crisis, TEs supporting the consumption of fossil fuels have gained prominence. In fact, the OECD and IEA publish record numbers of fossil fuel subsidies worldwide (both in the form of TEs or direct transfers) in their newest report (Black et al., 2023, see also Chapter 5 of this Flagship Report).

Figure 2.8. Number of provisions and revenue forgone by beneficiaries



Note: For the share of total revenue forgone, we first calculated country averages across years and then the average across countries.

Source: Authors’ calculations based on Redonda et al. (2023).

Second, the last 40 years have seen a worldwide decline of statutory CIT rates, while the CIT share of total tax revenue in the four country income groups has remained largely stable over the same period. “With the global declining trend in corporate income tax (CIT) rates, including in LICs, it might indeed be that the benefit for investors of receiving tax incentives has somewhat diminished” (IMF et al., 2015, p. 8).

Most popular types of tax expenditures offered by countries

The GTED also contains information on the type of TE used, distinguishing six types (see Redonda et al., 2021 for more detail). Of the 25,208 provisions in the GTED, a total of 23,404 contain information on the type of TE used (92.8 percent). In fact, only 26 countries publish this information on less than 75 percent of the provisions contained in their reports.

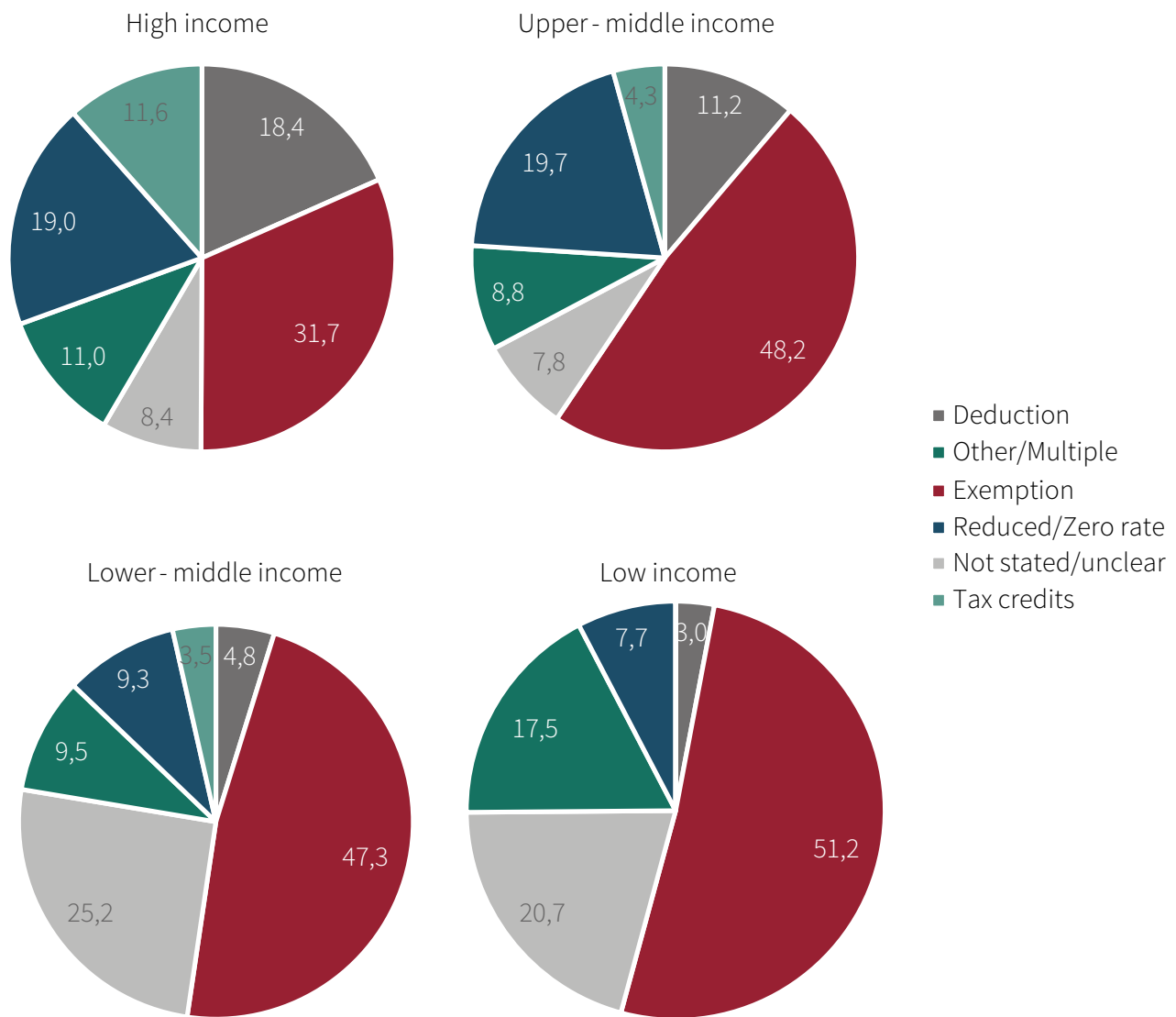
More than half of all TE provisions reported worldwide (55.1 percent) are tax exemptions. Exemptions produce most of the revenue forgone in all country income

groups but are used less (in relative terms) in richer countries. In LICs, exemptions comprise more than 50 percent of all revenue forgone, on average, while in HICs this share is less than a third (32 percent). Overall, HICs and UMICs report more diverse TE regimes, while LICs and LMICs mostly focus on exemptions or do not provide enough information to identify the type of TE (see Figure 2.9). Deductions, for example, are prominent in HICs but much less in LICs and LMICs. Similarly, tax credits are sizeable in HICs but almost not used at all in LICs.

Concentration of revenue forgone in large provisions

Delving deeper into the provision-level data contained in the GTED, we observe that revenue forgone tends to be concentrated among a relatively small number of large provisions. On average, the ten largest provisions produce more than 70 percent of a country’s total revenue forgone. In countries such as Bulgaria, Estonia, Georgia, Indonesia, Liberia, and Luxembourg, this concentration may even exceed 90 percent (see Figure 2.10). This finding applies to all country income

Figure 2.9. Revenue forgone averages by country income group



Note: For the share of total revenue forgone, we first calculated country averages across years and then the average across countries within each income group. Country classifications are based on the latest data by the World Bank.

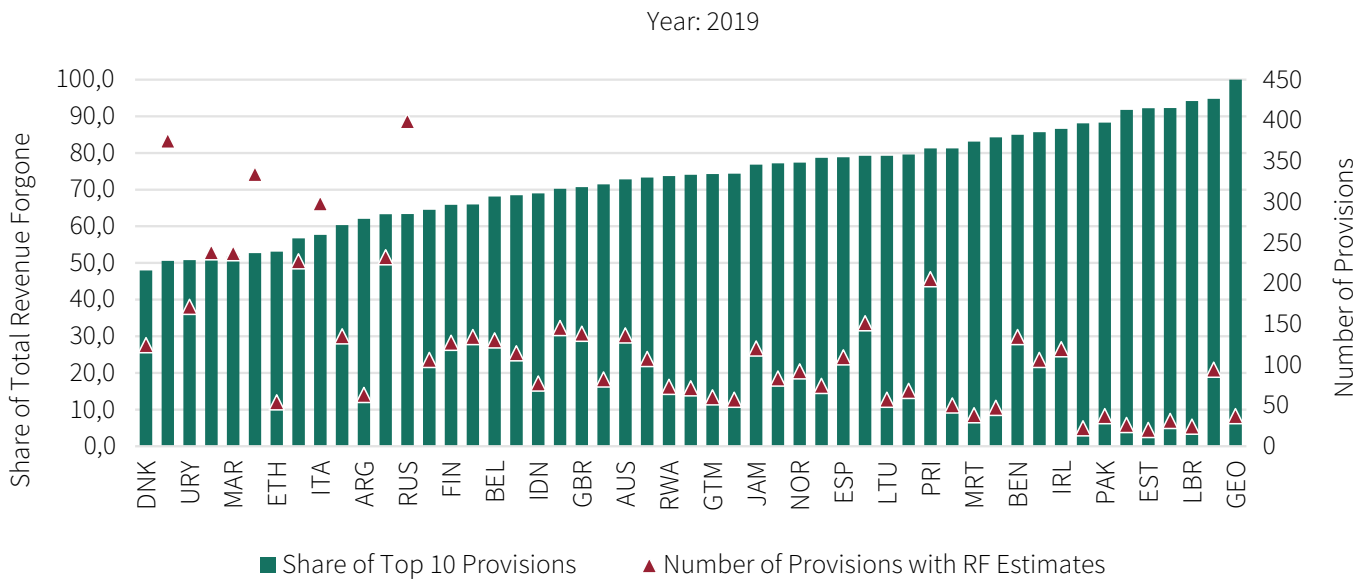
Source: Authors’ calculations based on Redonda et al. (2023).

groups, with a pronounced emphasis in LMICs, where the average share of revenue forgone originating from the top 10 provisions exceeds 80 percent.

The significance of this finding lies in its potential to guide countries in crafting more efficient TE evaluation frameworks, an area where most countries worldwide are lagging behind minimum standards (see Chapter 4 of this Flagship Report and Redonda

et al. (forthcoming) for further details). Given that TE evaluations can be quite resource-intensive, focusing on the ten largest provisions may be a good starting point for countries seeking to gain insights on the effectiveness and efficiency of a substantial portion of their TE regime. However, while such an approach may produce valuable results, it does not replace the need for a comprehensive TE evaluation framework that takes into account all provisions.

Figure 2.10. Share of total revenue forgone by top 10 provisions and number of provisions with revenue forgone estimates



Note: Countries with very low numbers of provisions reported were excluded from the chart.

Source: Authors’ calculations based on Redonda et al. (2023).

2.3 Methodological changes

Stricter Interpretation of “TE Data”

We have introduced a more stringent definition of TE data, requiring explicit references to TE-specific terms like tax expenditure, tax relief, tax incentives, or mentions of „revenue forgone“ or similar expressions (always accounting for language differences). The goal of this adjustment is twofold: first, to improve the overall data quality in our database, and second, to ensure that the GTED is reliable in representing only TE-related data. As mentioned before, based on these changes four countries—Central African Republic, Equatorial Guinea, Ghana, and Seychelles—are not considered reporting countries anymore. While the reports from these countries all feature the terms „exemptions“ or „refunds“, they lack the necessary information to classify the reported numbers and relate them unambiguously to revenue forgone.

Inclusion of Forecasted Revenue Forgone Figures

In its new version, the GTED incorporates forecasted revenue forgone figures (projections). This addition serves several purposes. First, some countries only provide forecasted data, and including it ensures a comprehensive representation of their fiscal information. In fact, among the 105 countries featured in the GTED, 12 report solely on revenue forgone forecasts. Second, including these forecasts allows us to offer users more timely and up-to-date information, which is particularly valuable for decision-making and analysis. Finally, TE projections play a crucial role in the budgetary process, providing insights into government revenue expectations. To maintain consistency and completeness, we consider all forecasts up to the current year (for example, the latest version of the GTED published in 2023 includes forecasts until 2023), thereby ensuring that our data remains reliable, comprehensive, and in line with evolving reporting standards.

Summary

The GTED continues to be a key source of information on TEs since its launch in 2021. The information provided by the database has improved in quantity and quality over the years. 12 new countries have been added to the database since its launch, along with close to 6,000 new provisions, more than 20,000 new revenue forgone entries and close to 200 additional budget years. The database was also recently improved by applying more consistent standards on the quality of information collected from governments and including forecasted revenue forgone figures.

However, the quality of the data in the GTED can only reflect what is published by the governments. Most countries continue to abstain from providing critical pieces of information, such as the policy objectives of reported TEs or the number of beneficiaries, and many countries still only report aggregated revenue forgone figures. In addition, over half of the world's jurisdictions have yet to publish any TE information.

This absence of transparency is particularly significant given the substantial revenue forgone generated by TEs, which averages 3.8 percent of GDP and 23 percent of tax revenue worldwide. As the new version of the GTED shows, this cost is often concentrated in a small

number of large TE provisions. On average, the ten largest TE provisions account for more than 70 percent of countries' revenue forgone.

Against this background, governments should continue to work on enhancing TE transparency by releasing comprehensive information about their TE regimes. Information on the policy objectives and the targeted beneficiaries of TEs is particularly important since it puts the cost of TEs into context with regard to the expected benefits and can help align TEs with national goals. However, policymakers should not stop at providing in-depth information on TE provisions but also commission comprehensive evaluations on the effectiveness and efficiency of TEs. Initially, a specific focus could be placed on large TE provisions, given their overall share of revenue forgone. Not least, international coordination on TEs is crucial to ensure that the evolving global minimum corporate tax agreements are effective and beneficial to all.

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3 THE GLOBAL TAX EXPENDITURES TRANSPARENCY INDEX (GTETI): TAKING TAX EXPENDITURE SCRUTINY TO THE NEXT LEVEL

Lucas Millan (CEP), Agustin Redonda (CEP), Christian von Haldenwang (IDOS), Flurim Aliu (CEP)

3.1 Introduction

The main motivation to launch the Global Tax Expenditures Database (GTED) in June 2021 was the striking lack of transparency in the tax expenditure (TE) field. Prior to the GTED, this observation of ours was mainly based on a few anecdotal cases such as Switzerland, which had released only one TE report back in 2011, the lack of TE reporting in several European Union (EU) member states, despite a directive that explicitly requires member states to “publish detailed information on the impact of tax expenditures on revenues” (European Union, 2011, p. 47), and the US TE report, which covers only income-related TEs.

The first version of the GTED identified 97 reporting, but at the same time also 121 non-reporting countries. Equally worrisome, the GTED highlighted several areas where the poor quality and limited scope of the information included in the TE reports would not allow to engage in meaningful discussions on the effectiveness and efficiency of TEs (von Haldenwang et al., 2021).

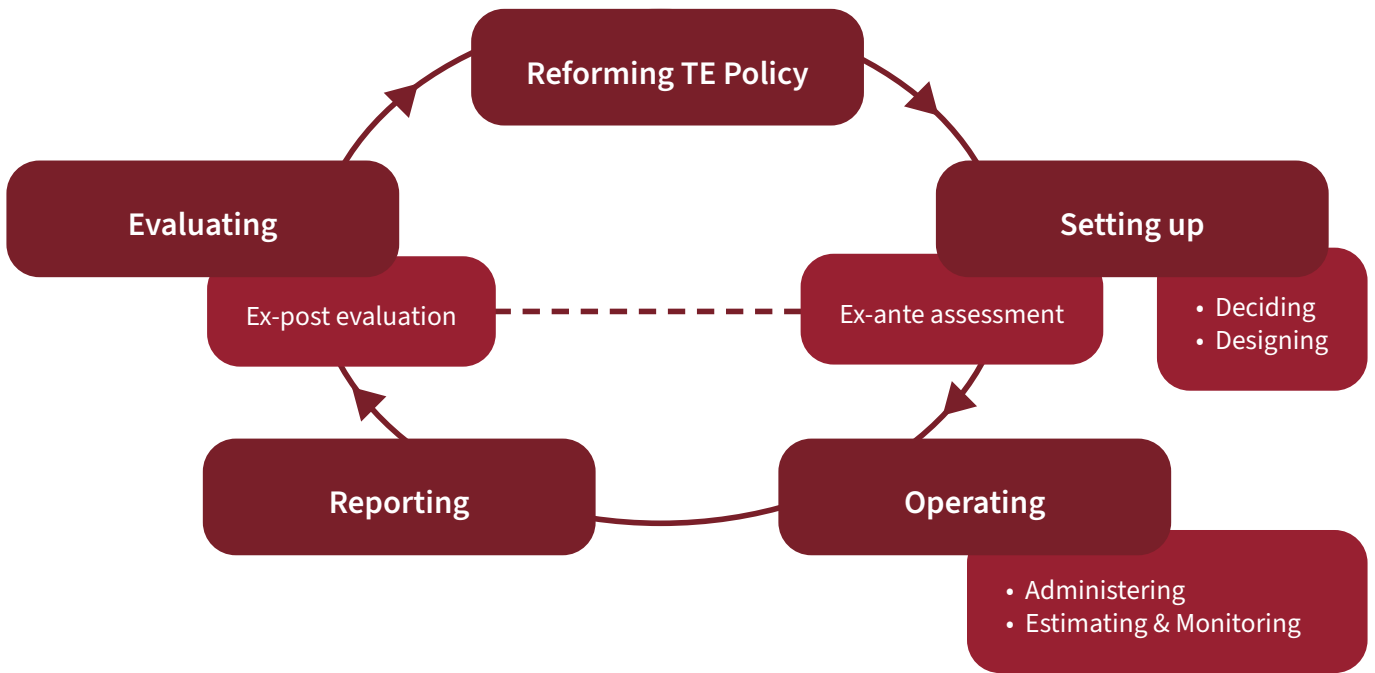
The GTED also shed light on the significant amounts of revenue that governments worldwide forgo due to the implementation of TEs. The global average revenue forgone has been quite stable throughout the time period covered by the GTED (1990-present), lying

slightly below 4 percent of GDP and one quarter of tax revenue. Figures can be much higher in individual countries, as mentioned in Chapter 3 of this Flagship Report. At times when countries are desperately looking for additional resources to fund their economic growth and development strategies, these impressive figures underline that TEs deserve to be further scrutinised.

Following the launch of the GTED, discussions with government officials, representatives from international and civil society organisations as well as researchers showed that beyond transparency a holistic view on TEs was required to support countries in their move towards TE rationalisation. This is reflected in the so-called “TE Policy Cycle” (see Figure 3.1), which, apart from TE reporting, covers four additional stages: *Setting up, Operating and Evaluating TEs as well as Reforming TE Policy* (Redonda et al., forthcoming).

Against this backdrop, TE reporting is not only important as a means to improve transparency and accountability towards the public. Rather, TE reports are key documents for policymakers, comparable to budget reports. In countries with regular and comprehensive TE reporting, the annual TE report is typically the main document submitted by the

Figure 3.1: The tax expenditure policy cycle



Source: Redonda et al. (forthcoming)

executive to inform Parliament about the fiscal cost of TE provisions. This is a prerequisite for TEs to be integrated into the broader fiscal policy framework of the government, including the budget as well as medium term planning of fiscal policies. At the same time, any impact assessment of a particular TE should start by looking at two main pieces of information provided in the TE report: the revenue forgone and the stated policy goal of the TE to be evaluated.

The importance that TE reporting has within the TE policy cycle is the main trigger behind the Global Tax Expenditures Transparency Index (GTETI). The GTETI is the first comparative assessment of TE reporting that covers countries worldwide, providing a systematic framework to rank countries according to the regularity, quality and scope of their TE reports. It thus makes a substantial contribution to take the analysis of TEs to the next level.

The following section introduces the general set-up of the GTETI, based on the GTETI Companion Paper

(Redonda, Millan-Narotzky, et al., 2023). Section 3 presents first findings from a descriptive analysis of the data provided by the GTETI, identifying general patterns of performance along the five dimensions of the index. Section 4 concludes by discussing policy implications emanating from the GTETI results.

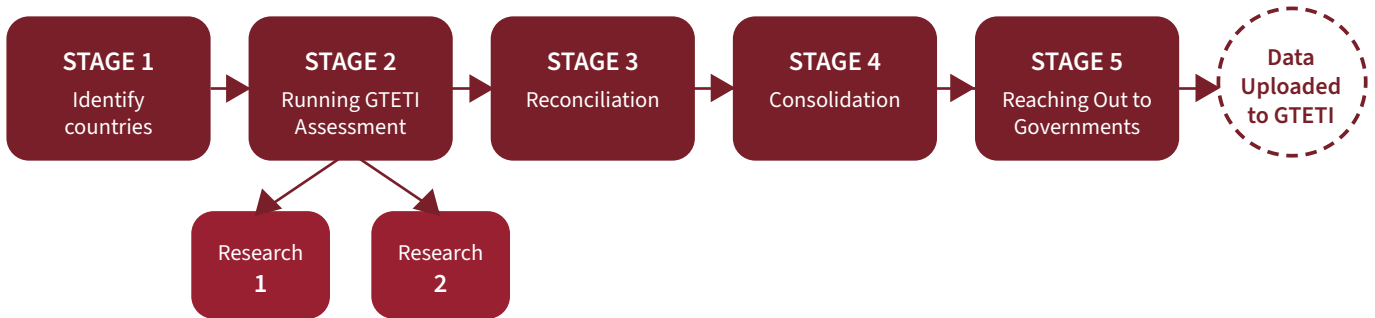
3.2 The GTETI at a Glance

The GTETI assesses countries along five dimensions that provide a comprehensive and detailed picture of the quality and scope of TE reporting: (1) Public Availability, (2) Institutional Framework, (3) Methodology and Scope, (4) Descriptive TE Data, and (5) TE Assessment. Each dimension, in turn, is made up of 5 indicators.⁴

The index is based on the latest available TE report issued by each country, and it follows a normative approach. Whereas ranking countries on the size of revenue forgone or the definition of the benchmark tax

⁴ For a more detailed discussion of the GTETI structure that make up the index, the methodology and assumptions underpinning the GTETI assessment process, as well as its limitations and technical issues, see Redonda, Millan-Narotzky, et al. (2023a).

Figure 3.2: GTETI multi-stage assessment process



Source: Redonda, Millan-Narotzky, et al. (2023a).

system would be highly controversial, the way how the relevant information on TEs should be reported can be assessed in an objective way and, hence, countries can be scored over their performance in this area, as will be shown in more detail below. It is important to keep in mind that the GTETI does not compare countries according to the amount of revenue forgone they report, or to the many ways they use TEs, but rather according to the quality and scope of their TE reporting, measured against what can be considered an ideal TE report.

The overall score achieved in each dimension is based on the assessment of the individual indicators of the dimension. Most of the indicators use a four-point ‘ABCD’ scale according to their specific scoring criteria, discussed in the GTETI Companion Paper (Redonda, Millan-Narotzky, et al., 2023). Yet, in some cases indicators may be based on a binary scale (“Yes/No” questions) or on more fine-grained scales with up to six values. Once all indicators are assessed independently, their individual scores are converted into a numerical scale with a maximum score of 4 for each indicator. As each dimension consists of 5 indicators, it can have a maximum score of 20. The GTETI is based on a full equal weighting approach regarding indicators as well as dimensions, which means that the final overall GTETI score ranges from 0 (worst possible score) to 100 (best possible score).

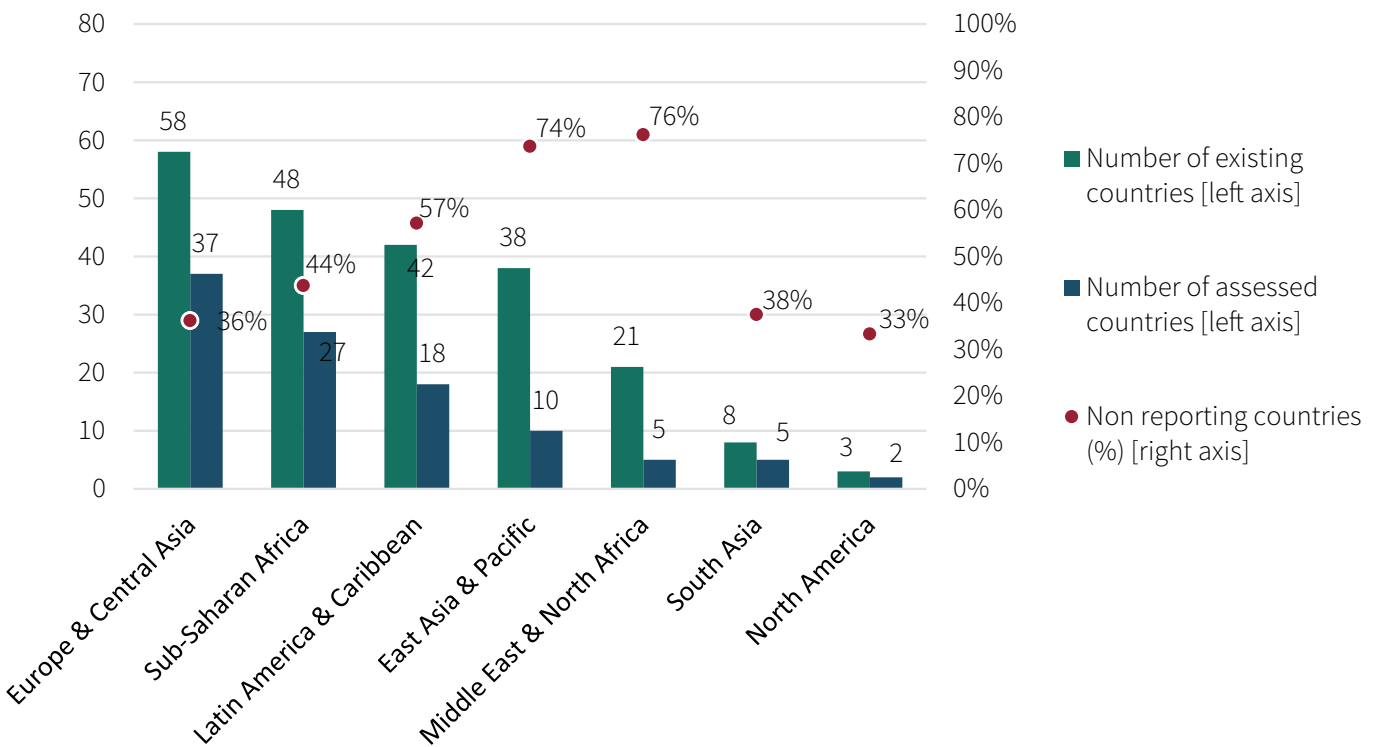
Every country is assessed based on a multi-stage process that involves several stages of data collection and internal review, before reaching out to governments (Figure 3.2).

3.3 Main findings

In order to maintain a certain level of actuality, critical for an index designed to promote political action, only countries that have issued at least one TE report over the last ten years enter the GTETI (Redonda, von Haldenwang, et al., 2023). The first edition of the index includes countries that have released at least one TE report between January 1st 2013 and December 31st 2022. Consequently, it covers 104 out of 218 jurisdictions identified by the World Bank. The remaining 114 countries not assessed by the GTETI are the 113 non-reporting countries in the GTED (countries that have never released an official and publicly available TE report since 1990) plus Nicaragua, which has published its most recent report in 2010, i.e. prior to the 10-year GTETI assessment period. The share of non-reporting countries by region is shown in Figure 3.3 (right axis). Noticeably, East Asia & Pacific and Middle East & North Africa regions present the highest share of non-reporting countries, with 74 and 76 percent, respectively. The rest of the regions show shares of non-reporting countries between 33 percent and 57 percent.

Figure 3.3 (left axis) also shows the number of existing and assessed countries per region. North America emerges as the region with the highest percentage of assessed countries (67 percent), up to a certain extent explained by the small sample of only three countries, Bermuda being the only non-assessed country in this group. Europe & Central Asia and South Asia also show high shares of assessed countries with 64 percent (37 out

Figure 3.3: Existing and assessed countries & share of non-reporting countries, by region.



Source: Authors’ calculations based on Redonda, Millan-Narotzky et al. (2023b)

of 58 countries) and 63 percent (5 out of 8), respectively. The lowest shares are observed in East Asia & Pacific and Middle East & North Africa, with 26 percent and 24 percent, respectively. Latin America & Caribbean lies in the middle with 43 percent of assessed countries.

South Africa (21.3), Eswatini (21.9), Madagascar (21.9), Tanzania (23.4) and Tonga (24.9). Several high-income countries (HICs) like Czechia (#99 and 25.2), Japan (#94 and 30.2), Romania (#91 and 32.6), Estonia (#84 and 34.7), Denmark (#83 and 34.9) and Switzerland (#81 and 36.2) also rank among the bottom 25.

3.3.1 Analysis by overall GTETI scores

The average overall GTETI score based on the 104 assessed countries stands at 47.5 out of 100, which provides a first indication of the poor quality of worldwide TE reporting. The ranking of countries based on the overall GTETI score is shown in the appendix of this chapter. The top-5 countries are South Korea (74.9), Canada (73.7), the Netherlands (73.4), Germany (72.1) and France (68.7). Three African countries – Benin (66.3), Niger (61.5) and Tunisia (61.3) – and two Latin American countries – Ecuador (61.1) and Puerto Rico (60.3) – rank among the top-15 positions. On the other extreme of the ranking, the bottom-5 countries are

Table 3.1 shows the average overall GTETI scores across regions. North America (69.4), Europe & Central Asia (49.6), Latin America & Caribbean (48.8) and East Asia & Pacific (48.5) have average scores above the global average. South Asia (43.9) and Sub-Saharan Africa (42.6) score below average. However, it is fair to say that most regions score close to the worldwide average, which implies that cross-country variation is not an inter-regional issue. It should also be noted that three of the regions (North America, South Asia and Middle East & North Africa) only comprise between 2 and 5 assessed countries each. In these cases, regional scores can be strongly influenced by the performance of individual countries.

Table 3.1: Assessed country performance by region and dimension

Region	Number of assessed countries	Overall GTETI Score	D1: Public Availability	D2: Institutional Framework	D3: Methodology and Scope	D4: Descriptive TE Data	D5: TE Assessment
Europe & Central Asia	37	49,6	11,7	11,7	9	10,1	7,1
Sub-Saharan Africa	27	42,6	11,7	11,1	8,6	6,2	5,1
Latin America & Caribbean	18	48,8	11,8	12,7	9,6	8,8	6
East Asia & Pacific	10	48,5	11,9	11,5	7,5	10,6	7
Middle East & North Africa	5	47,5	10,5	14,1	9,8	7,9	5,2
South Asia	5	43,9	13,1	9,1	8,8	7,9	5
North America	2	69,4	17,2	12,7	14	13,9	11,7
All GTETI	104	47,5	11,8	11,7	9	8,8	6,3

Sources: Authors' calculations based on Redonda, Millan-Narotzky et al. (2023b)

Given their relatively high total scores, it is not surprising that North America as well as Europe & Central Asia score relatively high in most of the dimensions. Yet, countries in the latter region perform rather poorly in Dimensions D1 (below the global average), D2 and D3 (both matching the global average). In contrast, South Asia's scores are quite low in most dimensions but the region shows the second highest average score for Dimension 1. As will be shown further down, countries in this region perform particularly well in terms of regularity of TE reports (Indicator 1.1) and timeliness (Indicator 1.2). In addition 4 out of 5 assessed countries publish consolidated TE reports including both a summary of main findings and acronym specification (Indicator 1.5). This indicates that governments in the region care about regularity in reporting as well as accessibility of TE reports.

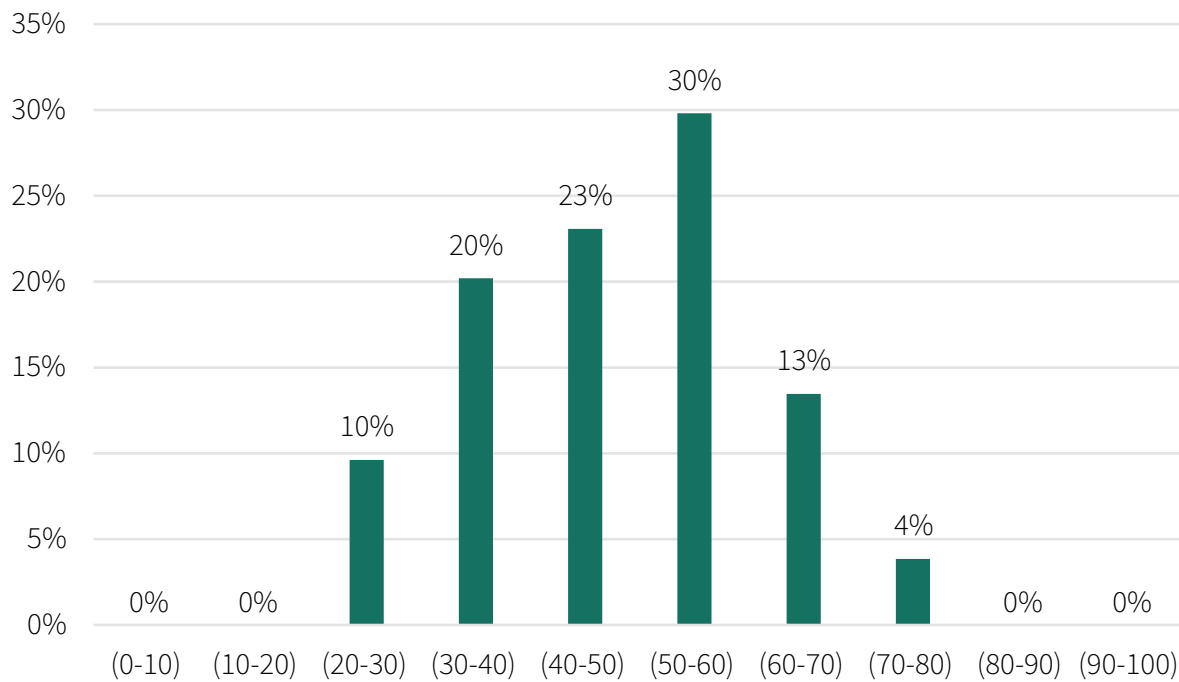
As can be observed, the distribution of (average) overall GTETI scores across regions does not always follow the distribution of regions according to the share of assessed countries: East Asia & Pacific, for instance, scores above the global average but shows the lowest share of assessed countries (26 percent). In South Asia, in contrast, 63 percent of the countries are assessed (Figure 3.3), but the average score (43.9) is the second lowest, only outperforming Sub-Saharan Africa (42.6). This confirms the importance of moving beyond

the reporting/non-reporting dichotomy to obtain a comprehensive picture of the quality of TE reporting.

As shown in the Appendix of this Flagship Report, even the four top performing countries (South Korea, Canada, the Netherlands and Germany) only achieve scores below 75. Hence, no country falls within the top-two score brackets (80-90) and (90-100) (see Figure 3.4). This indicates that even in the best performing countries there is significant room for improvement with regard to TE reporting. The distribution of countries according to score brackets follows roughly a normal distribution shape, although slightly skewed to the left. More than 75 percent of the countries lie within the middle score brackets: 20 percent of the countries obtain scores between 30-40, 23 percent score between 40-50, and 30 percent between 50-60. No country scores below 20, but 10 countries obtain scores between 20-30, which is roughly 2.5 times the share of countries falling in the 8th score bracket (70-80).

It goes without saying that the picture is significantly bleaker if non-assessed countries are included in the analysis. If we assigned a GTETI score of 0 to all 114 non-assessed countries, the share of countries scoring 30 or less would be as high as 52 percent and the share of countries scoring 70 or more, only 2 percent.

Figure 3.4: Overall GTETI score distribution by score brackets



Source: Authors’ calculations based on Redonda, Millan-Narotzky et al. (2023b)

3.3.2 Analysis by dimension and indicator

As shown above (Table 3.1), there is considerable variation of the global average scores among the 5 dimensions. The highest scores are obtained by Dimension 1. Public Availability (11.8) and Dimension 2. Institutional Framework (11.7), followed by Dimension 3. Methodology and Scope (9.0), Dimension 4. Descriptive TE Data (8.8) and Dimension 5. TE Assessment (6.3). The heterogeneity of average scores between dimensions confirms that a detailed assessment of TE reporting can significantly contribute to improving our understanding of the quality and governance of TE reports, for instance by identifying areas that need to be particularly improved. At the same time, measured against the maximum score of

20 per dimension, all average scores are rather low, which confirms that all aspects of TE reporting should be taken into account.

Public Availability

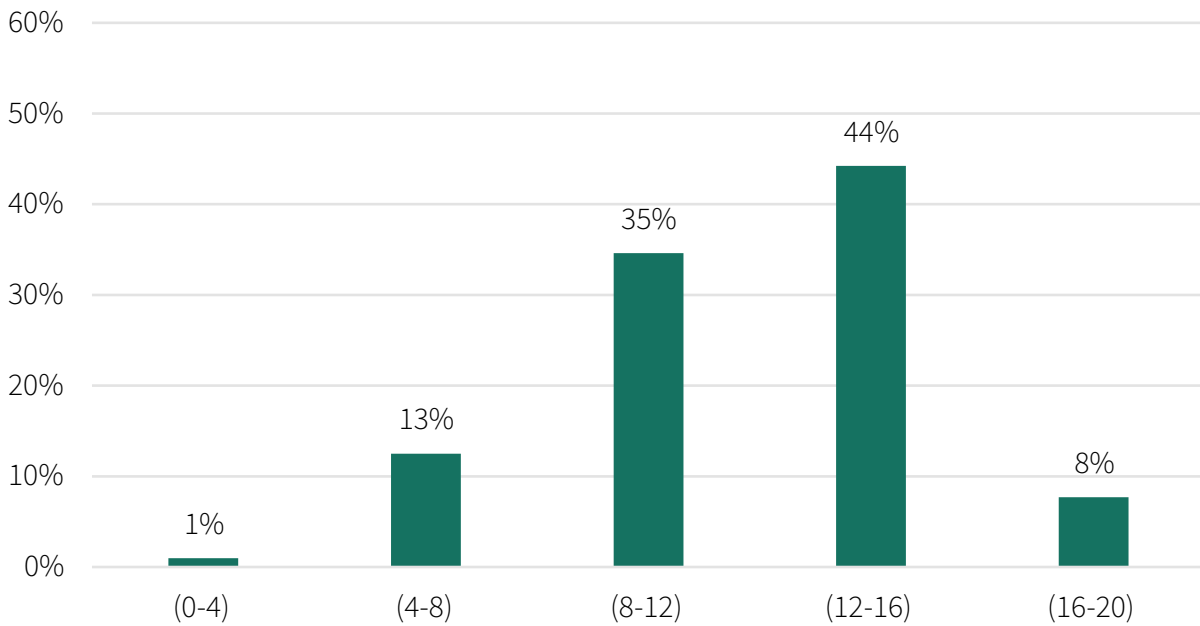
Dimension 1. Public Availability, assesses the availability of TE reports to the public. The first two indicators deal with the frequency, regularity and timeliness of TE reporting.⁵ TE reports should be available to the public and understandable by all stakeholders and the public in general. Indicators 1.3 Visibility, 1.4 Online Accessibility and 1.5 Reader-friendliness tackle these issues.

As mentioned before, this dimension has the highest average score (11.8) among the five GTETI dimensions. Figure 3.5 shows the distribution by score brackets.⁶

⁵ The full list of indicators, a detailed description and a discussion of the different technical issues that some of them face can be found in Redonda, Millan-Narotzky, et al. (2023), as well as on the GTETI website gteti.taxexpenditures.org.

⁶ Whereas the score distribution for the overall GTETI score goes from 0 to 100, the scoring range for the 5 dimensions is 0-20, hence the difference in score brackets between Figure 3.4, and Figures 3.5, 3.7, 3.9, 3.11 and 3.13.

Figure 3.5: D1. Public Availability. Score distribution by score brackets



Source: Authors’ calculations based on Redonda, Millan-Narotzky et al. (2023b)

Whereas most countries lie in the middle part of the distribution, we observe some countries falling into the top and bottom quintiles: 1 country falling in the lowest score bracket (0-4) and 8 (8 percent) obtaining scores of 16-20.

Table 3.2 shows that the performance is quite homogeneous among income groups, with lower-middle-income countries (LMICs) obtaining the lowest average score (11.2) and HICs, the highest (12.2). The standard deviation for LICs is relatively low, indicating

a high level of uniformity among countries within this income group. This is also the dimension with the narrowest gap between the highest and lowest average scores: HICs score only 9 percent above LMICs.

Figure 3.6 shows the indicator-specific distribution of scores, by score brackets. Indicators 1.1 *Frequency and Regularity*, 1.2 *Timeliness* and 1.5 *Reader-friendliness* are highly concentrated towards the highest scores, with 80 percent, 74 percent and 58 percent of the countries falling within the two top brackets. Indicator

Table 3.2: D1. Public Availability. Average score by country income groups

	High income	Upper middle income	Lower middle income	Low income
Average scores /20	12.2	12.0	11.2	11.6
Standard deviation	3.5	2.8	2.8	1.5

Sources: Redonda et al. (2023) and www.climatepolicydatabase.org

Figure 3.6: D1. Public Availability. Indicator-specific distribution of scores by score brackets



Source: Authors’ calculations based on Redonda, Millan-Narotzky et al. (2023b)

1.5 shows 56 percent of the countries falling in the 2-3 bracket.⁷ On the other hand the distribution of Indicator 1.3 *Visibility* is considerably skewed towards the lowest brackets with 33 percent of the countries falling within the 0-1 bracket and 62 percent scoring between 1-2.

The low score of Indicator 1.3 *Visibility* combined with the high score of Indicator 1.1 *Frequency and Regularity* indicates that governments are primarily concerned about publishing TE reports to comply with procedural or regulatory obligations, but significantly less about the dissemination and communication of TE reports to non-governmental stakeholders and the public in general. For instance, we observe that most countries do not rely on press releases or similar instruments to communicate that a TE report has been published. The performance of Indicator 1.4 *Online Accessibility* seems to go in the same direction, as most countries (77 percent) score between 0 and 2, mainly due to the

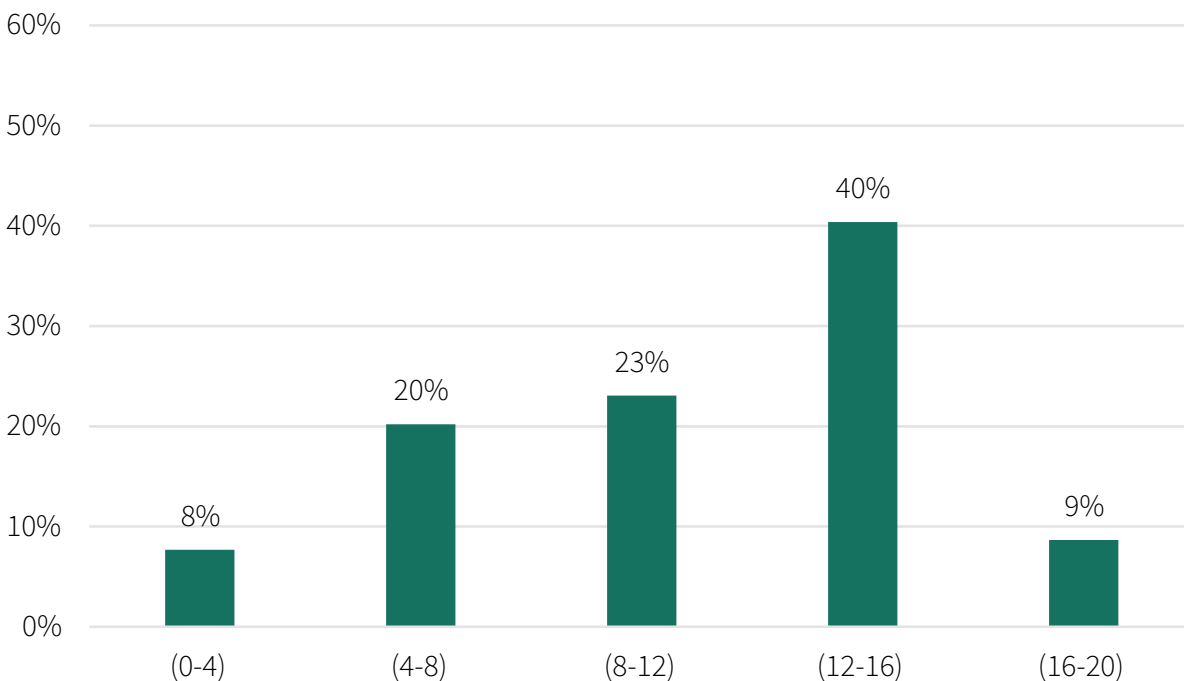
fact that TE information is rarely published in formats that lend themselves easily to data analysis (e.g. .csv, .xls etc.). Also, it is often difficult to find TE reports by using the official website search functionality.

Institutional Framework

Dimension 2 analyses the institutional framework behind TE reporting. The first two indicators consider the legal requirement to report on TEs. Indicator 2.1 assesses if the requirement clearly states the frequency and timing of reporting, and Indicator 2.2 assesses if the legal requirement also calls for the TE report to be submitted by the executive to the parliament. The remaining indicators assess the reporting responsibility (2.3), the integration into the budget cycle (2.4), and the integration into the Medium Term Strategy (MTS) (2.5).

As shown in Table 3.1, Dimension 2 got the second-highest overall score in the GTETI (11.7). Figure 3.7

Figure 3.7: D2. Institutional Framework. Score distribution by score brackets



Source: Authors’ calculations based on Redonda, Millan-Narotzky et al. (2023b)

⁷ Indicators are scored on a 0-4 scale, which explains the difference in the distribution scales for the GTETI overall score (0-100) and dimensions (0-20).

Table 3.3: D2. Institutional Framework. Average score by country income groups

	High income	Upper middle income	Lower middle income	Low income
Average scores /20	12.1	11.4	11.8	10.9
Standard deviation	4.2	3.9	4.0	4.1

Sources: Authors' calculations based on Redonda, Millan-Narotzky et al. (2023b)

shows the distribution by score brackets. The distribution is highly concentrated in the middle, with only 17 percent of the countries falling in the extreme score brackets, 8 percent in the lowest score bracket (0-4) and 9 percent in the highest one (16-20).

When it comes to the country income group distribution, HICs, with an average score of 12.1, outperform the other country groups and are the only group scoring above the average (11.7) (Table 3.3).

Figure 3.8 shows the indicator-specific distribution of scores, by score brackets. The distribution of Indicators 2.1, 2.2 and 2.3 is highly skewed to the right, with 63 percent, 70 percent and 95 percent of countries scoring between 3 and 4, respectively. In contrast, when it comes to Budget Cycle Integration and Medium-Term Fiscal Strategy Integration, roughly 50% of the countries score between 0 and 1. This distribution patterns highlight two features. First, higher scores tend to be associated with indicators that are based on legal and regulatory requirements. Other factors such as enhancing transparency and accountability (as discussed before) as well as administrative practice do not seem to have a significant impact on scoring. Second, there is a striking disconnection between TE policy making and countries' broader fiscal policy strategies, reflected by the lack of integration of TE information into the budget as well as the MTSs.

Finally, it is worth highlighting that indicators 2.2 and 2.3 are scored over a binary (Yes/No) question and hence, all scores necessarily fall within the 0-1 and 3-4 brackets.

Methodology and Scope

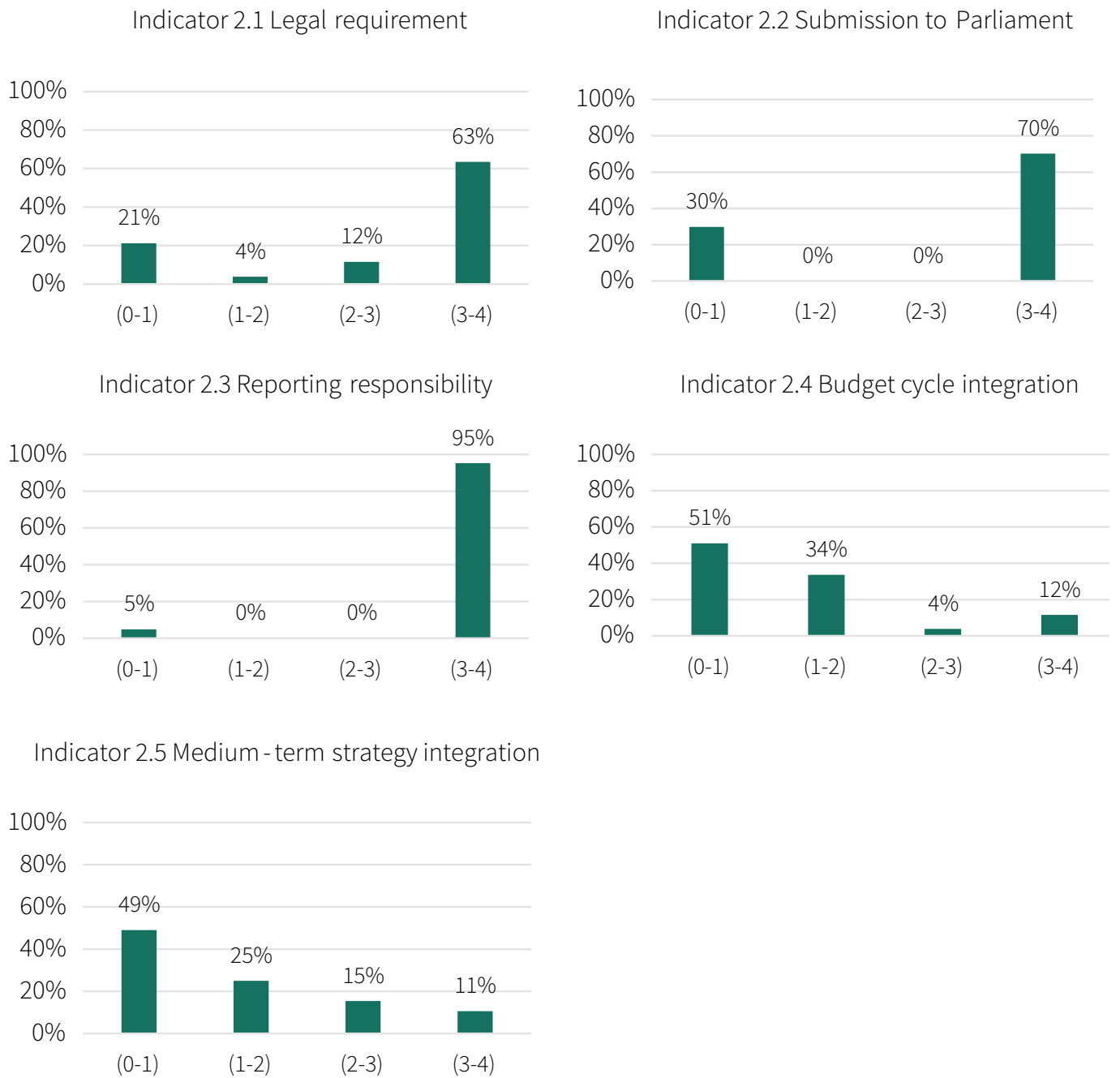
Dimension 3 assesses the methodology and scope of TE reporting. Indicator 3.1 Information on Coverage assesses the overall coverage in terms of the type of taxes existing in the country (at the national level only) that are included in the report. Indicator 3.2 Tax Benchmark assess if a clear definition of the reference tax system is provided. Indicator 3.3 Structural Reliefs captures if structural reliefs (tax breaks that are integral parts of the tax system) are reported.

Indicators 3.4 Revenue Forgone Estimation Method and 3.5 Data Sources assess if the methods, assumptions and data sources used to compute the revenue forgone estimates are disclosed and discussed in detail.

The overall average score for this dimension is 9.0. As shown by figure 3.9, the largest share of countries (35 percent) falls in the middle score bracket (8-12). 39 percent of the remaining countries score on the bottom score brackets: 24 percent in the (0-4) and 15 percent in the (4-8) brackets, and only 5 percent in the top bracket (16-20).

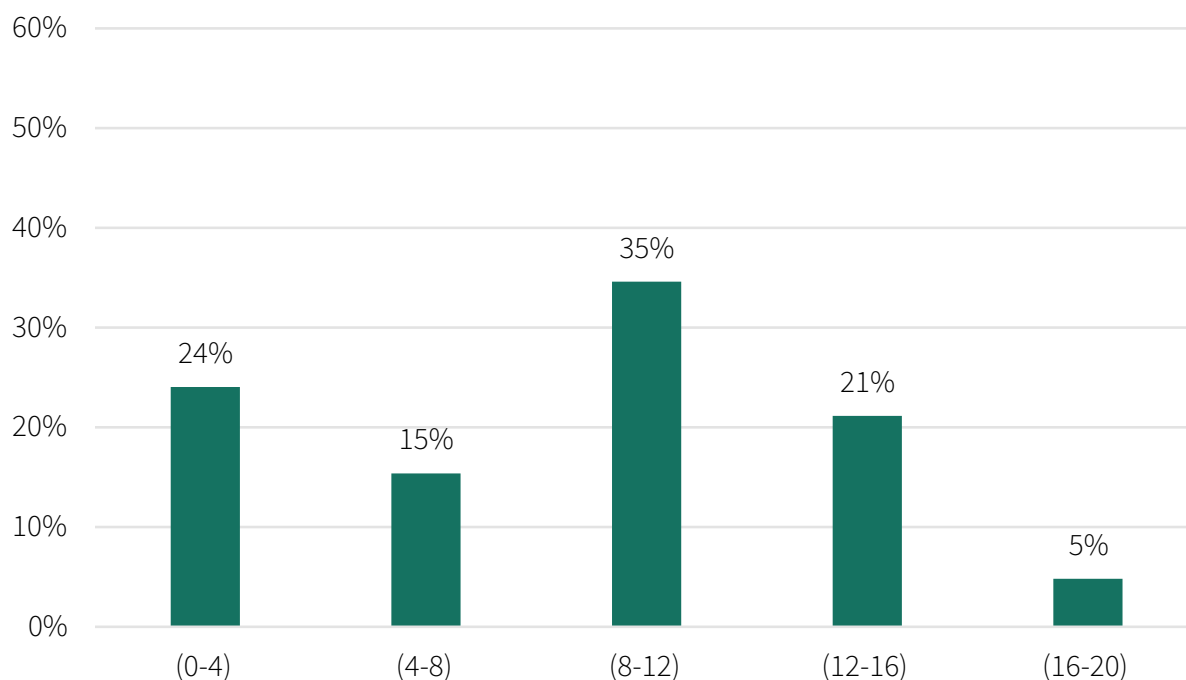
As presented in Table 3.4, the average score is similar for all income groups (between 9.2 and 9.5), except for LMICs, which score 7.9, on average. At the same time, this is the dimension with the highest standard deviations within the different income groups (particularly for LMICs and LICs), indicating a high level of dispersion among countries within income groups.

Figure 3.8: D2. Institutional Framework. Indicator-specific distribution of scores by score brackets



Source: Authors' calculations based on Redonda, Millan-Narotzky et al. (2023b)

Figure 3.9: D3. Methodology and Scope. Score distribution by score brackets



Source: Authors’ calculations based on Redonda, Millan-Narotzky et al. (2023b)

Table 3.4: D3. Methodology and Scope. Average score by country income groups

	High income	Upper middle income	Lower middle income	Low income
Average scores /20	9.5	9.2	7.9	9.2
Standard deviation	4.6	4.6	5.5	5.7

Sources: Authors’ calculations based on Redonda, Millan-Narotzky et al. (2023b)

Figure 3.10 shows the indicator-specific distribution by score brackets. The distribution of scores for Indicator 3.3 is highly concentrated towards the left side of the distribution, with 80 percent of the countries falling within the lowest two brackets: 58 percent within the 0-1 and 22 percent within the 1-2 score brackets. The gap between the lowest and highest brackets is 49 percentage points. The scores of the other indicators are distributed more evenly with the caveat that Indicators 3.4 and 3.5 are based on a “ABC’ scale, and hence there are only three score brackets

The overall picture of this dimension confirms that the lack of transparency in the TE field goes beyond the distinction between reporting and non-reporting countries. Very often, key concepts for the correct interpretation of TE data such as a detailed definition of the benchmark tax system as well as the methods and data sources used are missing or not properly presented in TE reports. Among other problems, this also undermines cross-country comparability in the TE field. Moreover, the income group distribution of average scores for this dimension clearly confirms

Figure 3.10: D3. Methodology and Scope. Indicator-specific distribution of scores by score brackets



Source: Authors' calculations based on Redonda, Millan-Narotzky et al. (2023b)

one of the main findings that we observed while constructing the GTED: opacity in TE reporting is not an exclusive LIC issue.

Descriptive TE Data

Revenue forgone caused by TEs is one of the main pieces of information that TE reports should provide. However, the quality and scope of the background information is crucial to put revenue forgone figures in context. The 5 indicators of Dimension 4 assess whether the TE report discloses the policy objective (Indicator 4.1), the type of tax and type of TE (Indicator 4.2), the group and number of beneficiaries (Indicator 4.3), the relevant timeframe (Indicator 4.4), as well as the legal reference (Indicator 4.5) for every single TE provision.

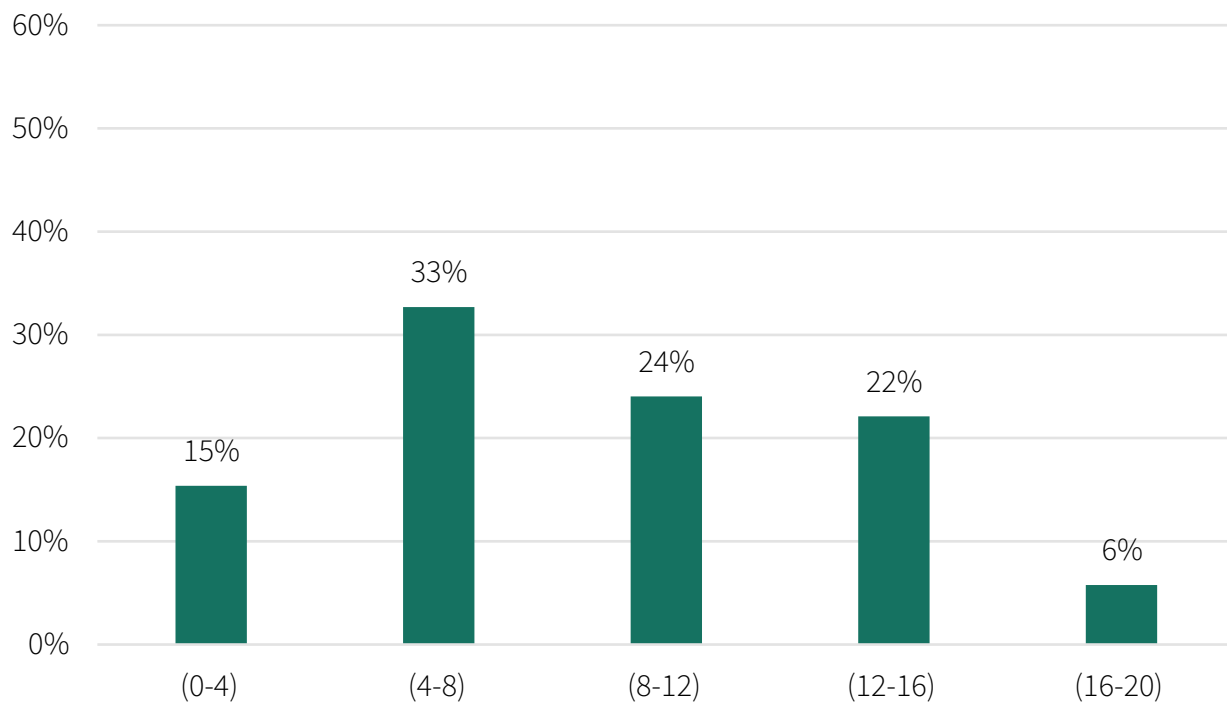
Whereas Dimensions 1 and 2 capture institutional and legal aspects of TE reporting, Dimension 4 together with Dimension 3 *Methodology and Scope* (and, up to

a certain degree, Dimension 5 *TE Assessment*), captures the quality and scope of the TE data and accompanying information within TE reports. It is noteworthy that these three dimensions are the ones with the lowest average scores, with the score for Dimension 4 being 8.8.

Figure 3.11 shows that countries are concentrated in the middle of the score distribution, although the distribution is skewed to the left: whereas 15 percent of the countries score between 0 and 4, only 6 percent fall in the top score bracket (16-20).

Across the different income groups, HICs are the best performers on average (10.6) and LICs score the lowest (6.3), as shown by Table 3.5. If we associate different country income groups with different levels of state capacity (see von Haldenwang et al., 2021), it appears that this dimension is strongly influenced by this factor.

Figure 3.11: D4. Descriptive TE Data. Score distribution by score brackets



Source: Authors’ calculations based on Redonda, Millan-Narotzky et al. (2023b)

Table 3.5: D4. Descriptive TE Data. Average score by country income groups

	High income	Upper middle income	Lower middle income	Low income
Average scores /20	10.6	8.8	7.0	6.3
Standard deviation	4.8	4.2	3.9	4.5

Sources: Authors' calculations based on Redonda, Millan-Narotzky et al. (2023b)

Figure 3.12 shows the indicator-specific distribution for Dimension 4 by score brackets. Indicators 4.1 *Policy objective*, 4.3 *Beneficiaries* and 4.4 *Timeframe* show a strong concentration at the lowest score bracket (0-1), with 69, 80 and 65 percent of the scores falling in that bracket. This confirms that key pieces of information such as the policy objectives and the targeted beneficiaries are very often not disclosed within TE reports. The distribution of Indicator 4.2 *Type of tax expenditure* shows the opposite pattern, with most countries scoring between 3 and 4. Finally, the distribution of Indicator 4.5 *Legal reference* is highly polarized between both extremes, with 39 percent of the scores falling into the bottom bracket and 46 percent into the top one. Interestingly, the standard deviations are particularly high for this dimension, showing that the performance of countries within this income group is quite heterogeneous.

TE Assessment

Dimension 5 assesses TEs not only in terms of the revenue forgone they trigger, but also with respect to their ex-ante assessment and ex-post evaluation. The first three indicators deal with revenue forgone estimates. Indicator 5.1 assesses if the estimates are provided at the individual TE provision level, Indicators 5.2 and 5.3 capture if revenue forgone estimates provide backward-looking figures as well as forward-looking projections. The other two indicators tackle the issue of TE evaluations. Indicator 5.4 *TE Evaluation Framework* assesses if there is a framework for TE evaluations (e.g., covering responsibilities, timing and data requirements), and Indicator 5.5 captures whether TE evaluations (provided they exist) are included or referenced in the TE report.

Dimension 5 is the one with the lowest average score (6.3), which clearly indicates that the TE assessment is an area where much work is left to be done. This is not an unexpected outcome since it is an area often pointed out as being particularly demanding in terms of human, financial and technological resources. On the other hand, the finding is worrisome since this dimension captures how revenue forgone estimates are reported.

Indeed, as shown in Figure 3.13, the distribution of scores presents a pronounced concentration towards the lower brackets, with 25 percent and 52 percent of the countries falling within the (0-4) and (4-8) score brackets, respectively. Moreover, this is the only dimension where no country falls in the top score bracket (16-20). Specifically, Indicator 5.5 *Availability of TE Evaluations* is the only indicator in the whole index where no country performs according to the best standard which, in this particular case, calls for governments to evaluate all TEs at least every 5 years.

Table 3.6 shows the distribution of scores by income groups. Again, as in Dimension 4, it seems that the quality and scope of TE assessments is strongly influenced by state capacity or other factors that are correlated with the level of development (see von Haldenwang et al., 2021). This is also the dimension with the widest gap between the highest and lowest average scores: HICs score, on average, roughly 88 percent higher than LICs.

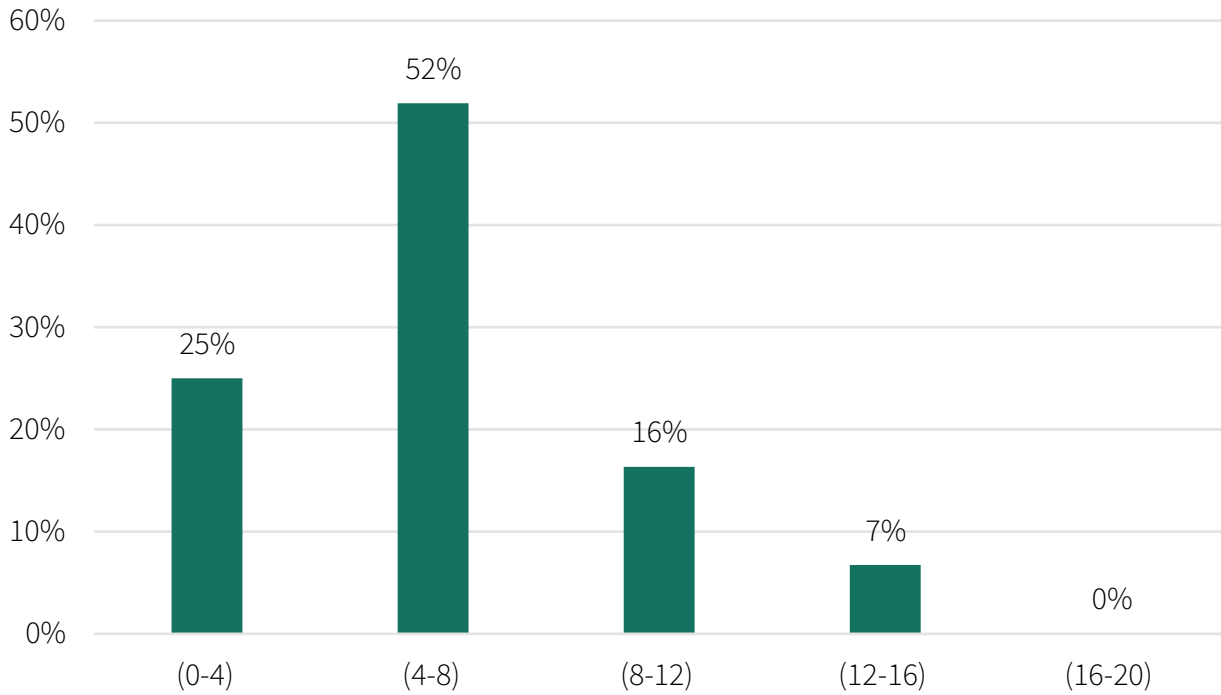
Figure 3.14 shows the indicator-specific distribution by score brackets.

Figure 3.12: D4. Descriptive TE Data. Indicator-specific distribution of scores by score brackets



Source: Authors' calculations based on Redonda, Millan-Narotzky et al. (2023b)

Figure 3.13: D5. TE Assessment. Score distribution by score brackets



Source: Authors’ calculations based on Redonda, Millan-Narotzky et al. (2023b)

Table 3.6: D5. TE Assessment. Average score by country income groups

	High income	Upper middle income	Lower middle income	Low income
Average scores /20	7.7	5.8	5.5	4.1
Standard deviation	2.7	2.5	3.0	2.6

Sources: Authors’ calculations based on Redonda, Millan-Narotzky et al. (2023b)

Figure 3.14: D5. TE Assessment. Indicator-specific distribution of scores by score brackets



Source: Authors’ calculations based on Redonda, Millan-Narotzky et al. (2023b)

Indicator 5.1 captures the level of disaggregation of revenue forgone estimates. This is a key feature since it significantly affects the usefulness of TE data for policy making purposes. Whereas most of the countries provide disaggregated data (67 percent scoring between 3 and 4), a large share of countries (25) falls in the bottom score bracket.

When it comes to the time dimension covered by revenue forgone figures, countries seem to be focusing more on reporting backward-looking revenue forgone estimates than projections, since 45 percent of the countries fall within the two top brackets of Indicator 5.2, but only 15 percent in the case of Indicator 5.3.

As expected, the distributions of both indicators dealing with evaluation (indicators 5.4 and 5.5) are heavily skewed towards the left hand side of the score distribution, with 87 percent and 93 percent of the scores falling within the 0-1 score bracket, respectively, and almost no country scoring in the two top brackets. In addition, both indicators are the ones with the highest levels of concentration at the bottom score bracket) among all 25 GTETI indicators. This clearly shows that in most countries there is an urgent need to dedicate more efforts to the evaluation of TEs, an area that is key for governments to rationalise their TE use in a context of evidence-based TE policy making.

3.4 Conclusions and policy implications

The first version of the GTETI presented in this chapter shows that the lack of transparency in TE reporting is indeed a major issue in all assessed countries. The average overall GTETI score obtained by 104 assessed countries stands at a strikingly low 47.43/100. Whereas no country scores 20 or lower, even the best performing countries score below 75 points.

While the overall picture is worrisome, there is a significant degree of variation across countries, as well as some patterns based on the analysis by income groups and regions that are worth mentioning.

First, while there is a strong correlation between per-capita income and GTETI performance, some LICs and

LMICs such as Benin and Niger belong to the 15 top performers. At the same time, some countries with the highest GDP per capita levels figure among the low performers, most notably Denmark, Japan and Switzerland.

Second, while regions from the “global North” tend to perform better, there are dimensions where this is not the case. For example, the average score of Middle East & North Africa for Dimension 2. Institutional Framework (14.2) is the highest among all regions. Up to some extent, this might be explained by the fact that several countries from this region have requested technical assistance and support for capacity development from international and regional development partners when elaborating their first TE reports.

Third, when taking a closer look into the different performances at the dimension level, we observe that Dimensions 1 and 2, which assess institutional frameworks and legal set-ups in the TE field are the ones scoring the highest. On the other hand, those dimensions capturing more technical aspects within the TE reporting process score relatively low. Particularly worrisome is the low average score of Dimension 5 since this is a dimension assessing how revenue forgone estimates are being reported and to which degree governments engage in TE evaluation, both being key aspects of the TE policy cycle (see above, Figure 3.2).

Finally, some indicators show scoring patterns that are strongly concentrated to the right side of the distribution, indicating that most countries are scoring high. As expected, most of the indicators showing these characteristics belong to dimensions 1 and 2, such as for instance Indicator 2.3 Reporting Responsibility, which shows the highest level of concentration in the top bracket (95 percent). However, Indicators 4.2 Type of Tax and Type of TE and 5.1 Disaggregation of Revenue Forgone Estimates also show concentration levels above 60 percent at the top bracket. On the other hand, several indicators (mainly in Dimensions 4 and 5) are highly concentrated towards the left of the score distribution, with 60 percent or more of the observations falling into the bottom bracket. Indicators 5.4 TE Evaluation Framework and 5.5 Availability of TE Evaluations are the lowest scoring indicators with 87 and

93 percent of countries falling into the bottom bracket. This is particularly worrisome and, again, confirms that TE evaluation is the area where more remains to be done. Likewise, the lack of information on beneficiaries and policy goals are also key areas that governments should prioritise within their TE engagement strategies.

The insights that can be obtained from the first version of the GTETI are somehow ambiguous. On the one hand, they confirm that the lack of transparency in the TE field is striking. Indeed, by shedding light on a particularly bleak area, they allow identifying

areas where governments would be well advised to significantly increase their efforts. On the other hand, the GTETI provides, for the first time, a systematic framework to assess countries according to the regularity, quality and scope of their TE reports. In doing so, it substantially contributes to improving worldwide TE reporting and creating better conditions for fiscal policy reform. Not least, the detailed discussion of an ideal TE Report in the GTETI companion paper could be a useful starting point for countries that consider embarking on TE reporting (Redonda, Millan-Narotzky, et al., 2023).

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4 EVALUATING TAX EXPENDITURES⁸

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The ubiquity of tax expenditures (TEs) attests to their use in tax policymaking. For better or worse, they are a key tool of fiscal policy to influence micro- and macroeconomic outcomes, altering allocative efficiency, influencing decisions, and affecting broader economic aggregates – employment, investment and consumption.

An efficient use of public resources requires careful management, including TEs. While they can induce marginal changes in behavior, the net effect of TEs is usually a function of the interplay of direct and indirect effects, making it complex to measure and evaluate the balance of TE costs and benefits. For example, how do we quantify investment responses that take account of replacement effects? And how do we account for potential spillover effects across sectors or actors?

Reporting on the revenue impact of TEs is required for comprehensive fiscal reporting (IMF 2018) and the starting point for any policy debate on their appropriateness (Heady and Mansour 2019). Going a step further, systematic evaluations are needed to guide informed decision-making, and to avoid a situation where the narrative on the benefits of TEs is driven primarily by the benefiting stakeholders.

An „evaluation“ is a process that seeks to systematically inform policymakers about the desirability of introducing or maintaining specific tax benefits by collecting and analyzing available quantitative and qualitative information about their effects. Importantly, evaluation processes can be tailored to different levels of levels of data availability and analytical capacity.

⁸ This chapter summarizes and reiterates key sections of the IMF’s How-to Note on „How to Evaluate Tax Expenditures,“ available here: <https://www.imf.org/en/Publications/Fiscal-Affairs-Department-How-To-Notes/Issues/2022/11/How-to-Evaluate-Tax-Expenditures-525166>

Table 4.1 TE reporting and evaluation in selected economies

Country	TEs Identified	TEs Estimated	Evaluation Referenced in TE Reporting ⁹
Argentina (2021)	72	66	No
Australia (2021)	225	133	Yes
Austria (2021)	70	51	No
Belgium (2020)	164	132	No
Brazil (2020)	230	230	No
Canada (2022)	249	150	Yes
Chile (2021)	159	124	No
Denmark (2020)	127	127	No
Estonia (2021)	24	24	No
Finland (2022)	197	126	No
France (2021)	466	333	Yes
Germany (2022)	158	91	Yes
Greece (2020)	967	163	No
Hungary (2022)	58	58	No
India (2022)	82	82	No
Ireland (2021)	59	46	Yes
Israel (2022)	64	49	Yes
Italy (2022)	592	367	No
Latvia (2021)	70	70	No
Mexico (2022)	115	111	Yes
Netherlands (2022)	108	108	Yes
Norway (2022)	94	94	No
New Zealand (2021)	50	7	No
Poland (2018)	480	93	No
Slovak Republic (2021)	70	70	No
South Africa (2020)	35	35	No
South Korea (2020)	373	352	No
Spain (2022)	118	118	No
Sweden (2021)	165	100	Yes
Switzerland (2011)	192	70	No
Türkiye (2020)	230	225	No
United Kingdom (2021)	338	100	Yes
Unites States (2022)	226	226	No

Note: For Australia, reported figures are for the Commonwealth Government only. TE = tax expenditure.

Sources: Redonda et al. (2023); IMF Staff.

⁹ Information in Redonda and Neubig (2018) is drawn from public TE reports. Where no evaluations are referenced in the report, separate evaluation efforts may still be taking place. For instance, in the United States, the Congressional Research Service (CRS) periodically produces a compendium of TEs for the Senate Budget Committee. The CRS provides a balanced discussion of available evidence relating to each TE along with references to relevant studies from the academic literature. However, the CRS does not develop direct impact evaluation estimates for the compendium.

Country experience and lessons

Evaluating TEs can be challenging but given their size, it is a crucial exercise for sound fiscal management. While only a small number of countries evaluate TEs with any regularity, the body of country experience and the guidance available to policymakers seeking to institutionalize TE evaluation are growing. And some general lessons can be drawn:

- *It is not always feasible or necessary to evaluate each TE annually.* However, periodic evaluations over a multi-year cycle are desirable. A broad scope of evaluations allows for the analysis of duplication and redundancy and maximizes transparency. For example, thematic evaluations covering several TEs with similar objectives can provide insightful comparisons. In Germany, large-scale evaluations are carried out once per legislative cycle.
- *It may be necessary to differentiate the evaluation effort based on the importance and structural nature of TEs.* For example, Ireland provides for TE evaluations every five years for each TE but recognizes that a detailed quantitative assessment cannot be prepared for many TEs—especially those whose revenue cost is small and are a nuisance in the tax system, benefiting a very narrow group of individuals or companies.
- *Ex-ante evaluations can help limit the proliferation of TEs that are unlikely to improve social welfare.* These evaluations focus on examining the justification for a TE and its consistency with broader economic policy objectives. The UK for example has sought to accelerate in-depth evaluations of high-risk areas.
- *Effective TE evaluations rely on diverse information sources, including administrative data, surveys, and stakeholder feedback.* A longer planning horizon allows for better data collection and more comprehensive evaluations. Partnerships between government agencies, academia, and think tanks can enhance the depth and breadth of evaluations and are a common practice in most countries that regularly conduct TE evaluations.
- *Transparent reporting and dissemination of evaluations of TEs are essential for accountability and informed policymaking.* Portugal, Germany, and Canada have set benchmarks in transparent reporting on TE beneficiaries and/or evaluations of TEs.

Evaluations should answer key questions about a TE's cost, effectiveness, and potential for improvement.⁹ For instance, is the TE effective in achieving its stated objectives—and are they clearly stated in budget documents? What are the associated direct and indirect costs? Could the benefits be delivered more effectively and efficiently through a different mechanism?

¹⁰ TEs are justified when their social benefits outweigh their social costs, and the use of tax instruments is preferable to a direct budgetary outlay. A useful template to guide the evaluation of tax incentives for investment (one type of TE, among others) is provided by IMF (2015), illustrating that the social welfare effect of tax incentives seeking to promote investment depends on direct (for example, jobs created, direct revenue loss) and indirect changes (for example, displacement of labor and capital, productivity spillovers, indirect revenue effects).

Box 4.1. Sample evaluation questions

Effectiveness

- What are the intended benefits of the program, and who are the intended beneficiaries?
- Do most eligible taxpayers claim the tax expenditure? If not, what prevents them from doing so?
- What are potential indirect benefits?
- Would the desired behavior also occur in the absence of the expenditure?
- What is the potential for displacement effects?

Costs

- How large and how reliable are the cost estimates for the program?
- What is the potential for market distortions introduced by the tax expenditure?
- How is the qualifying threshold for accessing the tax expenditure being monitored?
- What are the “pain points” about administering the program?
- Do taxpayers who are ineligible submit claims?
- How simple is it for eligible taxpayers to obtain the tax benefits?
- What are the implications of the tax expenditure for horizontal and vertical equity?
- Does the program have any unwanted side effects?

Potential for Improvement

- Would any program changes reduce the compliance burden associated with the tax expenditure?
- Would any program changes make the program easier to administer?
- Is eligibility defined in a way that maximizes the tax expenditure’s effectiveness?

A variety of tools and methods can be used to answer these questions. These include qualitative indicators, ideally collected at the time a TE is introduced, which can be used to measure its performance and inform policy discussions. Indicators that are informative about the effectiveness and efficiency of TEs include direct revenue foregone, the number of participants or beneficiaries, the impact of the TE on a firm’s tax liability, or its overall impact on the after-tax income distribution. In Benin, for example, a review of the available descriptive information on

the socioeconomic impact of VAT exemptions on rice, water, and electricity, published with the TE Report (Ministry of Finance, Benin 2021), informed a decision to scale them back in 2022. More advanced approaches include Microsimulation Models (MSMS) to compute changes in the distribution of disposable income and computable general equilibrium (CGE) models have been, for example, used to assess reduced VAT rates in the EU (Copenhagen Economics 2007) or tax incentives for retirement savings in Chile (Cifuentes 2005).

Table 4.2. Commonly used tools for evaluation

Tool	Basic Description	Areas Commonly Assessed	Examples
Survey-based qualitative analysis	Provide a descriptive profile of beneficiaries, self-reported impacts, and experience.	Targeted TEs with narrow group of beneficiaries.	Department of Finance (2012) review experience with the Film Tax Credit in Ireland.
Effective tax rate measures*	Summarize combined impact of statutory tax rates, tax incentives, and features of the tax system on the effective tax burden.	Assessment of relative impact of different TE investment incentives on tax liabilities. Average effective tax rates are commonly used to assess tax incentives' impact decisions to locate FDI activities.	Botman, Klemm, and Baqir (2010) compare investment incentives for seven East Asian economies.
Interrupted Time Series Analysis	Seek to identify impact of a TE by comparing pre-implementation trend for the expected result to postimplementation implementation.	Used where incentives apply broadly and no suitable comparison group of taxpayers who did not qualify is available.	Canadian Department of Finance uses administrative data to assess impact of TE on R&D expenditures.
Quasi-experimental econometric methods: (DID) analysis, statistical matching methods, and regression discontinuity designs	Compare whether deviations in pre- and post- introduction of the TE differ for beneficiaries of TEs and a similar group of nonbeneficiaries.	Whenever suitable comparison groups can be identified based on eligibility criteria of the incentives.	Department of Finance (2019) uses trade data to estimate impact of TE on export performance of beneficiaries in Ireland.
Static simulation models: MSM and models based on I-O data and S-U tables	Compute the impact of tax incentives on the tax liabilities of a representative sample (or, in some cases, the entire population) of taxpayers. Other models can be based on household survey data, for example, to evaluate targeting of VAT exemptions and reduced rates or the input and output VAT of certain sectors using disaggregated economic data.	When seeking to assess distribution of TE benefits across income groups (among individual taxpayers) or by size and sector (among corporate taxpayers).	The U.S Office of Tax Analysis (2016) uses administrative data to measure distribution of retirement savings. Hutton (2010) presents a microsimulation framework for evaluating VAT TEs.
Overlapping generations models	Study long-run life-cycle behavior (for example, retirement savings) and resource allocation across generations.	Impact of TEs affected by demographic trends, such as education, health, and retirement incentives.	Cifuentes (2005) on retirement savings incentives in Chile.
Structural modeling: CGE models and DSGE models	Used to account for spillover effects of TEs on employment, capital investment, productivity, and income and induced (multiplier) effects brought about through increased consumption.	To evaluate TEs intended to promote substantial indirect benefits.	Copenhagen Economics (2007) evaluate the impact of VAT rate reduction in the European Union.

Note: CGE = computable general equilibrium; DID = difference-in-differences; DSGE = dynamic stochastic general equilibrium; FDI = foreign direct investment; I-O = input-output; MSM = microsimulation model; R&D = research and development; S-U = supply-use; TE = tax expenditure.

* See IMF and others (2015) for a more detailed discussion of effective tax rate measures.

In practice, even if some of the outcomes following the introduction of a TE can be reliably measured, the bigger challenge is usually to establish a counterfactual using impact evaluation methods and to capture indirect effects which often impact a silent majority rather than targeted beneficiaries—e.g., a tax holidays for a handful of firms in a given sector could affect spending on primary education, and impact long-term learning. Where no reliable quantitative estimates can be obtained, it is still crucial to conduct a thorough qualitative review. In practice, TE evaluations often build on a combination of approaches.

Overall, TEs are powerful tools, capable of shaping economic outcomes at both the micro and macro level. Their significance is often matched by the complexities inherent in their evaluation. Although such efforts can be challenging and resource intensive, even relatively simple qualitative and quantitative analyses are preferable to ceding the discussion of TE costs and benefits to the benefiting stakeholders. Increasingly ambitious country practices provide both useful guidance and some confidence that more rigorous analysis will help improve TE efficiency and effectiveness in the future—and hence, fiscal policy impact and efficiency more generally.

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5 TAX EXPENDITURES RELATED TO THE CONSUMPTION OF FOSSIL FUELS

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5.1. Introduction

Fossil fuels — coal, petroleum products, and natural gas — have long been subject to taxes imposed by governments, particularly excise taxes.¹³ Exemptions from or reductions in those taxes are commonplace, however. These tax subsidies, or “tax expenditures” more formally, impose several kinds of costs on society: directly through impacts on government budgets, and indirectly by stimulating greater use of fossil fuels and hence higher emissions of air pollutants and climate-change inducing greenhouse gases.

Fossil fuel subsidies have ranged annually between USD 400 billion and USD 800 billion over the last decade, depending on the prevailing price of crude oil.¹⁴ In 2022, when global energy prices were exceptionally high, they are likely to have exceeded USD 1,500 billion.¹⁵ The largest category of subsidies is below-market pricing of fossil fuels, or “consumer price support”. The second largest is tax expenditures: revenue forgone by governments arising from reductions in, exemptions from, or other deviations from a country’s benchmark rates of taxation levied on fossil fuel production or consumption.

Various governments and groups of governments over the past 14 years — starting in 2009 with the Group of Twenty (G20) and Asia Pacific Economic Cooperation (APEC), followed by the Group of Seven (G7), and in 2021 the United Nations Framework Convention on Climate Change (UNFCCC) — have pledged to phase out “inefficient” fossil fuel subsidies. The United Nations Sustainable Development Goal (SDG) target 12.c, adopted in 2015, calls on UN members to “rationalize inefficient fossil-fuel subsidies that encourage wasteful consumption”, ideally by 2030; an accompanying indicator (12.c.1) of progress towards that goal includes among its three sub-indicators under “tax expenditures, other revenue foregone, and [the] underpricing of goods and services”.¹⁶

Data on tax expenditures related to fossil fuels are already available for some countries, but the picture is incomplete. The Organisation for Economic Cooperation and Development (OECD) has estimated that, in 2021, global fossil fuel tax expenditures totalled at least USD 150 billion (Figure 5.1). This estimate includes tax expenditures targeting all points of the value chain: research, exploration, production, and consumption. The vast majority relate to the

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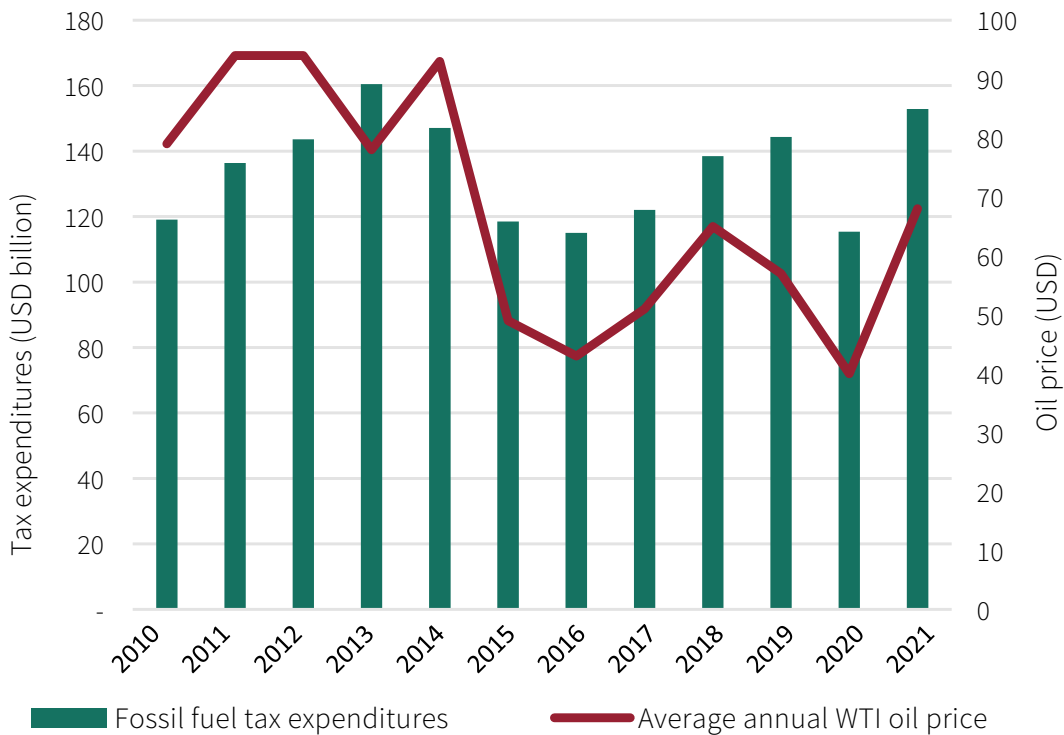
¹³ This paper uses the term “excise tax(es)” throughout; the term is used synonymously with “excise duty”, commonly used in Australia, the United Kingdom, and many other countries.

¹⁴ See the graphic “Fossil fuel support by energy product: OECD-IEA combined estimates (82 countries)”, available at <https://www.oecd.org/fossil-fuels/>.

¹⁵ Counting both the International Energy Agency’s estimates of global fossil fuel consumption subsidies and its estimate of “Government consumer measures to reduce energy bills during the energy crisis” by advanced economies, available at <https://www.iea.org/reports/fossil-fuels-consumption-subsidies-2022>.

¹⁶ See SDG 12 Hub: <https://sdg12hub.org/sdg-12-hub/see-progress-on-sdg-12-by-target/12c-fossil-fuel-subsidies>.

Figure 5.1. Quantified fossil fuel tax expenditures in the 51 countries included in the OECD Inventory of Support for Fossil Fuels



Source: OECD, 2022a.

consumption side of the ledger. Additional data are available from the Global Tax Expenditure Database (GTED). An extract of the database from 39 countries not covered by the OECD Inventory identified more than 200 fossil-fuel related tax-expenditure provisions in these economies, totalling more than USD 6 billion between 2015 and 2020, or around USD 1 billion annually (Redonda et al., 2022). Both the OECD and GTED data are likely to be significant underestimates given that more than 100 countries do not report tax expenditures at all, and many tax expenditures remain unquantified, particularly in developing and emerging economies (Aliu and Redonda, 2023).

The rest of this paper concentrates on tax expenditures related to the consumption of fossil fuels, as the largest category of tax support for fossil energy. It first explains the nature of end-use taxes on fuels and common exemptions and reductions. It then explores how such

taxes are applied, who is required to pay them, and how these practices affect tax expenditures reported by countries. It then discusses why many economies stand to gain significantly from the reform of their fuel tax expenditures, with examples from selected country experiences. Eliminating tax expenditures related to fossil fuels can be politically difficult, but it can succeed with careful planning and judicious use of the previously forgone revenue.

5.2 What counts as a tax expenditure for fuels?

The countries that levy excise taxes on fossil fuels tend to be those that allow the taxed fuels to be priced in line with world market prices. There are many countries that regulate the domestic prices for one or more fossil fuels below international price levels — i.e., provide

consumer price support. These tend to apply no or relatively low levels of excise taxes to those fuels.

In some countries, such as the United States, revenues from excise taxes imposed on transport fuels (gasoline, diesel, and liquified petroleum gas) are earmarked for funds used to finance the building and maintenance of roads, bridges, and other transport infrastructure. In most other countries, the tax revenues on transport fuels form part of the government's general revenues. Because these excise taxes are, in a sense, associated with the use of public highways, governments typically exempt fuel consumed in internal combustion engines that power vehicles or other machinery that is not used on roads, particularly tractors and other agricultural machinery, fishing vessels, and vehicles machines and machinery used in forestry and mining. Some governments also exempt from or provide rebates to, transport fuels consumed by emergency vehicles, vehicles operated by public transport companies, freight, and sometimes private taxis (OECD, 2022a).

In calculating tax expenditures, governments in the past, and still in some countries, did not include forgone revenues from exempting certain uses of the same fuels from excise taxes, much less the value of taxing one fuel at a lower rate than a similar fuel. The argument for not including them was that excise taxes are meant to change the relative price of a single good (or service) purchased by a particular type of consumer, hence a single-rate benchmark would not be appropriate (Heady & Mansour, 2019: 6).

Over time, that attitude has become less commonplace. Tax expenditure reports prepared by EU Member States have for many years included such exemptions as tax expenditures. By contrast, the U.S. Department of the Treasury in its annual report on federal tax expenditures still does not report the reduction in tax receipts as a result of exempting off-road users of diesel from its USD 0.243 per gallon (USD 0.064/litre) excise tax on transport diesel (U.S. Department of the Treasury, 2023).

Most countries that apply excise taxes to transport fuels charge lower tax rates on diesel for road use than on gasoline, despite environmental arguments for taxing diesel more heavily (Harding, 2014). A recent analysis from the OECD (OECD, 2022b) examined fuel taxes in 71 countries as of 2020 and found that only 7 of the countries (Côte d'Ivoire, Egypt, Jamaica, Malaysia, Mexico, Nigeria, Switzerland, and the United States) levied a higher average net effective energy tax rate (EER) on diesel than on gasoline. Two others (Bangladesh and the United Kingdom) charged the same average net EER on the two fuels (OECD, 2022b: 66-67).

Excise taxes on other forms or uses of fossil fuels are less common. Fuels used for international aviation and maritime transport are generally not subject to fuel excise or carbon taxes (OECD, 2018: 27). And many governments apply lower excise taxes to fuels used for cooking or for heating buildings than on road-vehicle fuels, and low or no excise taxes on fossil fuels consumed by industry.¹⁷ Excise taxes are levied on sales of electricity mainly in EU countries (but not all of them), plus a few other countries, such as Brazil, Japan, Norway, South Africa, Switzerland, Turkey, and the United Kingdom (OECD, 2018: 28). Generally, fossil fuels used to generate the electricity are not subject to excise taxes, but in the EU, Norway, Switzerland and the UK they are subject to emission trading schemes, which put a price on carbon emissions. Brazil, India, Japan, Norway, Japan and the United States levy taxes on aviation fuel consumed in domestic flights (Faber & O'Leary, 2018).

Value Added Tax (VAT) treatment of fossil fuels also varies among countries. The United Kingdom, for example, applies a standard VAT rate of 20% on most fuel, but a reduced rate of 5% on fuel used for domestic heating.¹⁸ Meanwhile, Mauritania applies a higher VAT (20%) on petroleum products than its standard rate of 16%.¹⁹ Jet kerosene is zero-rated for VAT in most countries, particularly those whose air transport is dominated by international flights.

¹⁷ See OECD (2018) for OECD and partner economies and PwC's "Worldwide Tax Summaries Online" database (<https://taxsummaries.pwc.com>) for other economies.

¹⁸ Government of the UK, "Tax on shopping and services". <https://www.gov.uk/tax-on-shopping/fuel-duty#:~:text=Fuel%20Duty%20is%20included%20in,5%25%20on%20domestic%20heating%20fuel>.

¹⁹ PwC (2023, August 1), "Mauritania: Corporate — Other taxes". <https://taxsummaries.pwc.com/mauritania/corporate/other-taxes>

All these differences in tax treatment combine with differences in tax-expenditure definitions to affect what countries report as tax expenditures related to the consumption of fossil fuels. Only a few governments treat a lower excise tax on diesel than on gasoline as a tax expenditure, for example. The Netherlands government's latest "Note on the state of the government's finances" (Netherlands, 2023) stands out in that regard. The latest advice from the International Monetary Fund (IMF) on tax expenditure reporting thinks they should, writing "the benchmark excise on vehicle fuels should be proportional to the carbon dioxide released by their use" (IMF, 2019: 6). That would imply, for example, that a country's per-litre excise tax on diesel should be 16% higher on diesel than on gasoline²⁰, rather than lower as is often the case. Accounting for other emissions, such as fine particulate matter, would also argue for a higher excise tax, or some other pollution charge, on diesel (OECD, 2022). However, the "diesel discount" does not always favour diesel vehicles over gasoline, as other charges — such as distance-based road-user charges — sometimes also apply to diesel-using vehicles (OECD, 2018: 38).

These differences in energy-taxation policies, and the lack of an internationally agreed standard for reporting tax expenditures, help explain the wide variations among countries in their reported estimates of tax expenditures related to the consumption of fossil fuels. But they also suggest numerous opportunities for reform.

5.3 Why fossil fuel tax expenditures matter

Differences among countries in what they consider qualify as tax expenditures notwithstanding, most stand to gain from the reform of their taxes applied to fossil fuels.

First, raising taxes on fossil fuels usually increases government revenues, at least in the short run (Gupta et al., 2000). (Ultimately, the aim of many governments

is to phase out the consumption of fossil fuels subject to tax.) A recent IMF review of tax-reform experiences in twelve African countries during the 2010s showed that several²¹ that increased direct and indirect taxes (including on fossil fuels) experienced large and sustained revenue mobilizations of between 3 and 4 percent of annual GDP (Jung, 2023). Though growth in real GDP of these countries was lower during the reform periods than the average for the preceding five years, the increased revenues, if invested in strategic sectors such as education, health and infrastructure, are likely to boost the countries' GDP growth over the longer term (Schultz et al., 2018).

Increasing taxes on fuels also helps reduce air pollution. Generally, the carbon-intensity of a country's energy use is inversely correlated with the average level of tax it applies to its fossil fuels and other combustible fuels (OECD, 2018: 33). Although carbon intensity is not a perfect indicator of air pollutant emissions, combustion of the most carbon-intensive fuels (coal, lignite, peat, etc.) emits higher levels of particulate matter and other air pollutants than less carbon-intensive fuels (natural gas). Developing and emerging economies suffer the greatest number of premature deaths from air pollution (Vohra et al., 2021). Countries with low per-capita GDP are also at greater risk of loss and damage from climate change (Bharadwaj et al., 2020).

What reform means in practice varies by country. There are at least three economic dimensions that policymakers have to take into account: (i) how near the country is to its "tax frontier" (or "theoretical tax capacity"); (ii) the optimal level of taxation from an environmental standpoint; and (iii) the distributional consequences (progressive, regressive, or neutral) of the tax or taxes, in interaction with other policies. For the purposes of this discussion, reform means moving closer to the ideal in one of the dimensions without significantly worsening the situation in the others. In practice, identifying the ideal levels and mix of taxes is difficult to achieve with any high degree of precision, in no small part because of data limitations, but also because of tax interactions.

²⁰ The combustion of one litre of diesel creates 2.68 kg of CO₂ and one litre of gasoline 2.31 kg of CO₂. See <https://connectedfleet.michelin.com/blog/calculate-co2-emissions/>.

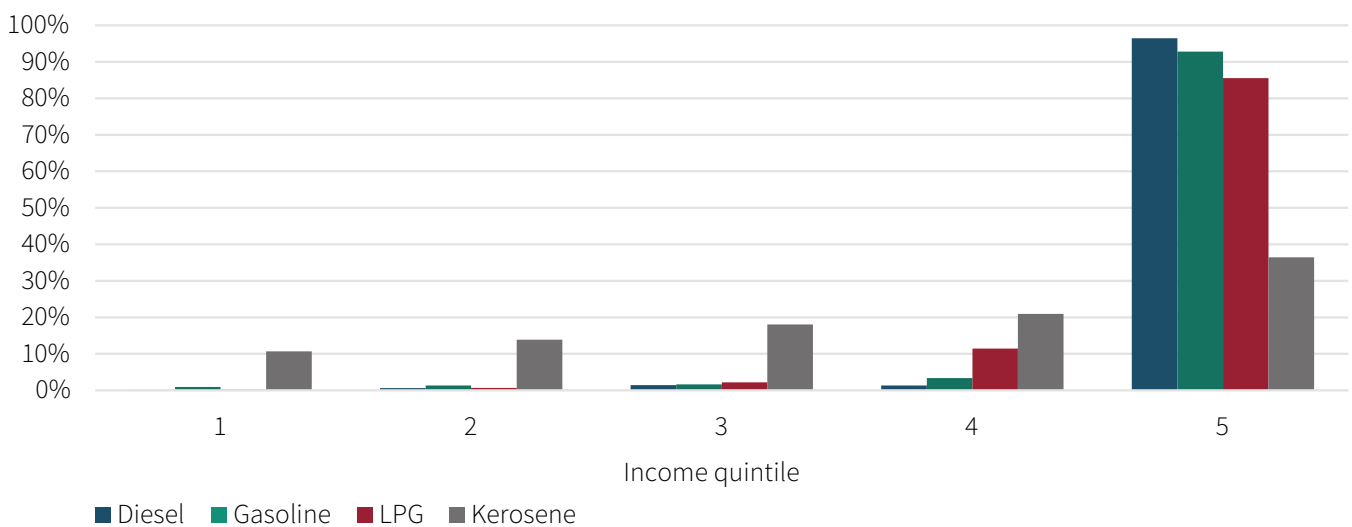
²¹ The Gambia, Mauritania, Rwanda, and Uganda.

The IMF (2018: 40) defines an economy’s tax frontier as “the highest level of tax revenue (usually measured in percent of GDP) that a country can be expected to achieve given certain macroeconomic and institutional conditions”. As a general rule, the higher a country’s per-capita GDP and institutional capacity, the higher its tax capacity. Thus the tax capacities of Botswana and Namibia are higher than for the Democratic Republic of the Congo and Madagascar (Jung, 2023: 6). Among Sub-Saharan African countries, the IMF (2018: 41) notes that, in 2015, the tax potential – the gap between a country’s actual tax revenue and its tax frontier – was largest for oil-producers.

The basic classical (Pigovian) principle for a corrective environmental tax is to set it equal to the marginal environmental damages caused by the taxed activity. However, as Bovenberg and Goulder have

demonstrated, in the typical situation of already existing distortionary taxes in a country, interactions between those distortionary taxes and a newly imposed environmental tax (the authors looked specifically at a carbon tax) raise the costs of the tax and thus imply an optimal rate below the first-best or Pigovian rate, “even in the case where revenues are recycled through cuts in marginal rates of distortionary taxes” (Bovenberg and Goulder, 1996: 995). Bearing that caveat in mind, the OECD reckons that, as of 2018, the 37 OECD and 7 non-OECD G20 countries it examined collectively had not reached a fifth of the goal of pricing all carbon emissions²² at EUR 60 per tonne of CO2 equivalent (tCO2-eq) or higher (OECD, 2021: 7).²³ Analyses by the IMF staff suggest that, on average, effective carbon and air-pollution prices in the rest of the world are even further from what the Fund considers to be optimum (Black et al., 2023). These data suggest a significant

Figure 5.2. Benefit incidence of fuel subsidies accruing to each income quintile in Ghana, 2008 (in %)



Source: Authors’ chart using results from Cooke et al. (2016), which was based on 2008 data from the Ghana Living Standards Survey.

²² The OECD approach defines carbon pricing as the sum of fuel excise taxes, carbon taxes, and permit prices related to emissions trading systems that apply to CO2 emissions.
²³ Individually, nine OECD countries had achieved a carbon pricing score of 50% or more (meaning that, on average, their carbon prices were at least EUR 30 per tonne). Among the major consuming sectors, road transport fuels scored the highest. See OECD (2021: 23-24).

opportunity and justification for raising taxes on fossil fuels in most countries.

A primary concern of policymakers when considering raising fuel taxes is the effect of such tax increases on low-income households, for whom energy costs comprise a significant share of their disposable income. In absolute terms, however, tax expenditures on fuels tend to benefit wealthier segments of the population — who are also the largest consumers of energy — more than poorer ones (OECD, 2022b: 60). Figure 5.2 shows the situation in Ghana relating to the incidence of price subsidies for several petroleum products in Ghana as of 2008, but the general shape of the distribution is likely to be similar for tax expenditures benefitting the same fuels, particularly in developing countries.

Eliminating tax exemptions or reductions on fuels can even help reduce poverty when part of the subsidy savings from the reform are used to provide targeted cash transfers (Malerba et al., 2022). This approach was used by Mauritania, for example, following a reform of its fuel subsidies in 2012 (Jung, 2023), and by the Philippines government following an increase in its taxes on fossil fuels in 2018 (Government of the Philippines, 2022). Results from “tax-interaction models” suggest that cutting pre-existing distortionary taxes (such as taxes on labour) is a more efficient use of revenues than financing lump-sum transfers (Bovenberg & Goulder, 1996; Parry & Williams, 2004), but in many developing countries with large informal sectors the scope for such cuts is limited.

As documented in a recent Council on Economic Priorities (CEP) discussion note (Laan & Steenblik, 2023), during the 2010s several developing and emerging economies successfully reformed fossil fuel tax expenditures or significantly increased their taxes on fossil fuels:

- Over the period 2010-14, India reduced its price subsidies on gasoline and diesel and then gradually increased excise taxes and VAT on fuel (Aggarwal et al., 2022).
- Rwanda’s budget for fiscal year 2015/16 included a new excise tax on petroleum, as well as higher excise taxes on several other products (Jung, 2023).

- Saudi Arabia introduced a 5 percent VAT on all goods including transport fuels in 2018, which was increased to 15 percent in 2020 (Kingdom of Saudi Arabia, 2020).
- In 2020, Indonesia removed coal from the list of goods exempted from VAT, making 10 percent VAT is payable on domestic coal sales (Prawira & Richardson, 2020).
- In 2022, South Africa increased its carbon tax rate by ZAR 144 (about USD 9) per tonne of CO₂, with annual increases thereafter to reach at least USD 30 by 2030 (Steenkamp, 2022). However, many fossil fuels and industries remain exempt.

Russia’s invasion of Ukraine in February 2022, and the sharp rise in international prices of fossil fuels it exacerbated, put a halt to many reform plans. Governments were quick to cut or suspend taxes on fossil fuels as a seemingly easy-to-apply crisis response, often without sufficient consideration of the impacts on revenues, emissions, or challenges of returning tax rates to pre-crisis levels. Various reviews of national fiscal policy responses to the energy crisis show that at least 38 countries, including three developing and emerging economies, reduced consumer fuel taxes during the energy crisis (Sgaravatti et al., 2023; Laan & Steenblik, 2023). In addition, China allowed selected businesses, including coal-fired power plants and heating firms, to defer corporate income tax payments (Zhang, 2021).

5.4 Reviving reform efforts

Periods of high energy prices might not seem like a good time to remove subsidies, but because of the boom-and-bust nature of prices, such times are when governments should be preparing for introducing consumer price and taxation reforms when international prices eventually start to fall. Phasing out consumer tax expenditures during periods of falling prices can lessen negative impacts on households and political resistance.

For tax expenditures related to fossil-fuel consumption, the goal of governments should be to shift support from fuels to people (Van Dender et al., 2022). For this to

happen, many developing countries will need to invest in welfare and tax systems to deliver alternative forms of support. Subsidy savings can provide the necessary funds to establish and deliver social support. However, the existence of strong social welfare systems alone is clearly not sufficient. During the 2022 energy crisis, many developed countries with highly functional social welfare infrastructure, developed tax systems, and strong commitments to climate action still reduced taxes on fossil fuels, particularly for transport and home heating. The reality is that citizens in many countries expect their governments to protect them from large price shocks.

More than 20 years ago, the IMF wrote a guide to reforming price subsidies (Gupta et al., 2000), drawing on its experience with 28 countries, and its advice remains relevant today, including for tax expenditures that are sub-optimum.²⁴ Success depends on:

- the political will to resist calls for or continuance of energy subsidies;
- effective social-assistance schemes based on targeted cash transfers to the most vulnerable segments of the population;
- improving the social contract between citizens and government, so that citizens — the most vulnerable households in particular — can feel confident that they will be supported as energy prices increase and that subsidy savings will be used wisely; and
- effective and early communication of the costs of tax expenditures and the benefits of their reform to the general public, informed by consultations with stakeholders,

In addition, one can add policies to facilitate the transition to alternative energy sources that are associated with much less price volatile and are much

less polluting or non-polluting (Van Dender et al., 2022; Laan & Steenblik, 2023). History has shown that political leaders find it very difficult to resist calls to reduce the cost of energy for consumers, including in the form of tax relief. Subsidizing the supply of non-fossil energy, public transport, and clean transport alternatives such as electric bicycles and other vehicles has therefore become a central strategy for many governments. While these are important for the energy transition, the reform of fossil fuel tax expenditures also remains critical to remove distortions that favour fossil energy.

5.5 Final comments

Tax expenditures related to fossil fuel consumption have reached new heights over the last couple of years and need to come down. Governments should use this period in which international prices for fossil fuels are still high by historical standards to start laying the groundwork for reforms of how and how much they tax final energy consumption. Part of that groundwork includes increasing transparency by reporting all fossil fuel tax expenditures systematically and comprehensively, but also examining the policy objectives that were used to justify those tax expenditures initially, whether those objectives remain valid, and if there are more efficient means of attaining them. Ideally, each fossil fuel tax expenditure should be assessed for its impact on consumers, poverty and inequality, industry, exports, government revenue, jobs, air pollution and climate change. Such analysis can also help identify priorities for reform and sectors most sensitive to changes in the tax-expenditure policy.

Removing of long-standing tax expenditures will likely require a comprehensive reform strategy. Learning from the experiences of other countries' in reforming their fossil fuel price subsidies and energy taxes is a useful place to start.

²⁴ See, for example, Van Dender et al. (2022).

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6 GREEN TAX EXPENDITURES

A RISING CLIMATE POLICY TOOL²⁵

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In response to the pressing issue of climate change, governments are deploying a broad set of regulatory, financial, and fiscal policy measures. Within the set of fiscal interventions, tax expenditures (TEs) assume a rising importance, encompassing measures such as reduced Value Added Tax (VAT) rates, lower excise duties, personal income tax credits, corporate income tax deductions, and accelerated depreciation programmes. When these TEs are deliberately designed to mitigate environmental harm, with a particular focus on curtailing greenhouse gas emissions, we will use the terminology of „green tax expenditures“ (GTEs) in this chapter.

6.1 Green tax expenditures on the rise

Governments worldwide are increasing their fiscal support to clean energy. The growing budgetary commitments are driven not only by the need to combat climate change, but also by a desire to reduce dependence on volatile fossil fuel markets. The Oxford Global Recovery Observatory and International Energy Agency estimate global fiscal commitments on green measures between \$1 trillion and \$1.2 trillion since 2020. The OECD Green Recovery Database estimates a roughly similar amount of € 1.1 trillion in government spending allocated to environmentally positive measures since 2021, and more spending is planned.

The bulk of this fiscal support is provided in the form of direct spending. However, under certain conditions, TEs may be a better option to pursue a specific public

policy goal. For instance, TEs may be preferred when eligibility conditions are directly linked to tax return data, when it is more important to maximize the number of beneficiaries than to minimize excess claims or when the policy objective is to incentivize a clear and broadly defined activity by reducing its net price (Toder, 2000). The latter condition supports the use of GTEs as most of these provisions seek to reduce the price of zero-carbon energy sources relative to carbon emitting alternatives. When well designed, GTEs send a powerful price signal that encourages the early adoption of renewable energies, improvements in energy efficiency, and investment in clean energy infrastructure. With complementary policy instruments like carbon pricing and emission standards, GTEs can play a crucial role in curbing carbon emissions and helping to achieve net zero targets.

GTE initiatives are estimated to result in revenue forgone of about US\$30 billion, according to the data reported by the Global Tax Expenditures Database (GTED) for the year 2020 (Redonda et al. 2023). This said, the revenue forgone resulting from GTEs is likely to have increased significantly since then, driven by the adoption of groundbreaking climate policy packages worldwide. Notably, the U.S. Infrastructure Investment and Jobs Act (IIJA) and the U.S. Inflation Reduction Act (IRA) have introduced numerous GTEs, amounting to hundreds of billions of dollars. Europe, China, and other countries have also embraced GTEs, fostering a faster diffusion of clean energy technologies across the globe.

However, governments need to design GTEs adequately to ensure their effectiveness in reaching their

²⁵ The author is grateful to Agustin Redonda (CEP Senior Fellow) and Flurim Aliu (CEP Fellow) for their extensive support and feedback on this chapter.

stated policy goals as well as to minimize undesired consequences. When ill-designed, GTEs can be costly, they can be highly ineffective and trigger undesired effects. Ex-post evaluations have shown, for instance, that GTEs supporting biofuels had overall a negative environmental impact (U.S. EPA, 2023). In the same vein, evaluations have shown that GTEs supporting the purchase of electric vehicles may benefit predominantly high-income car buyers purchasing luxury cars, and that these buyers would have bought the same vehicles even in the absence of a TE (Borenstein and Davis, 2015; Sheldon and Dua, 2019). Avoiding such negative outcomes, and ensuring that GTEs have a large positive impact, are essential to ensure cost-effectiveness and make the best of scarce budgetary resources.

All these caveats call for closer monitoring and scrutiny of GTEs. Improving transparency on TEs and disclosure during the budget preparation as well as increasing the number and quality of empirical research in the field are necessary (although not sufficient) conditions to ensure that GTEs are adequately included into evidence-based policy making.

6.2 Information available on green tax expenditures is limited

GTEs can be defined as tax treatments such as exemptions, deductions, credits, deferrals, accelerated depreciation, and reduced tax rates that are implemented to protect the environment, in particular to achieve lower emissions of greenhouse gases, both directly and indirectly.

Although they play a growing role in many countries, only partial information about GTEs is available. This is in contrast with the comprehensive efforts to keep track of carbon taxes and carbon markets made by the OECD (Garsous et al., 2023) and World Bank (2023). Detailed information on fossil fuels subsidies is also available from the International Energy Agency, International Monetary Fund, and other agencies. By contrast, there is a lack of specific information on GTEs.

Indeed, a precise taxonomy of GTEs is a long-distance goal. In the meantime, a tentative taxonomy of climate-related policies provided by Nascimento et al. (2022) can be used. The authors suggest covering measures in the areas of energy demand reduction, energy efficiency improvement, renewable energy promotion, switch from fossil fuels to low-carbon energies, non-energy related emission reductions, and policy options across these goals. The sectors concerned by these policy goals are agriculture and forestry, buildings, electricity and heat, industry, and transport.

Based on similar classifications, Kohli and Karun (2023) identify 212 green tax relief measures in G20 countries, which represent the second most frequently used tool after the category “grants and subsidies”. Linsenmeier et al. (2022) find 191 tax relief measures related to climate policy in a sample of 37 countries including all G20 countries and other major emitters. These inventories are a good start, and further work to systematically collect detailed information about the scope and breadth of these measures would help governments enhance their scrutiny of these instruments, ultimately contributing to the design of effective, efficient, and fair TEs.

6.3 How are green tax expenditures designed by governments?

As discussed in Section 6.2, the lack of a global repository is a major challenge for researchers and policy makers in the field. This section begins to fill that data gap by using the GTED to extract information related to renewable energy, energy efficiency, electricity distribution, electric vehicles, biofuels, public transport, and rail transport.²⁶

The GTED contains information on 713 TEs in these areas, with the largest number related to those promoting electricity generation from renewable energy sources (Figure 6.1). They account for almost one-fourth of revenue forgone, the largest amount in this

²⁶ The distinction between rail transport GTEs and public transport GTEs is done as follows: any provision targeting rail transport specifically (either public or commercial railways) falls under the first category, whereas provisions targeting public transport in general (which may or may not include public rail transport) fall under the second category.

Figure 6.1. Number of TEs targeting emissions reductions

ELECTRICITY	Energy Efficiency 68	TRANSPORT	Electric Vehicles 113	Public Transport 87
	Renewable Energy 301		Electricity Distribution 43	Biofuels 54

Note: Number of provisions
Source: Redonda et al. (2023).

Figure 6.2. Revenue forgone by TEs targeting emissions reductions

TRANSPORT	Rail Transport 14.95	Electric Vehicles 13.71	ELECTRICITY	Renewable Energy 24.04	Energy Efficiency 10.10
	Public Transport 18.16	Biofuels 10.74		Electricity Distribution 8.31	

Note: Average share of revenue foregone, in percent of revenue foregone of all GTEs
Source: Redonda et al. (2023).

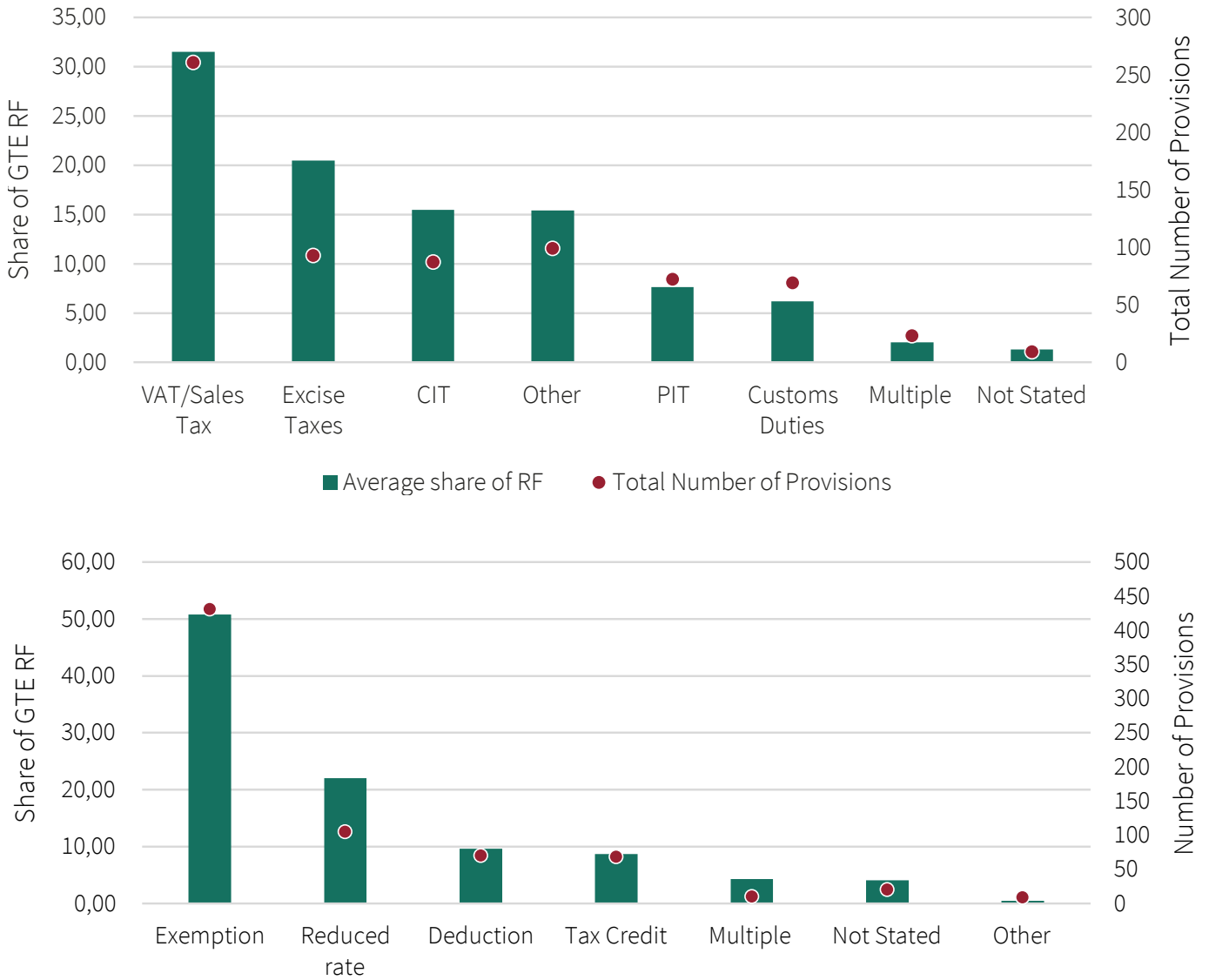
group (Figure 6.2). Transport-related GTEs such as those promoting electric vehicles and public and rail transport and biofuels seem to be more costly since they account for about 40 percent of all provisions, but close to 60 percent of the revenue forgone of all GTEs, on average. Indeed, of the ten largest GTE provisions in the dataset (as a share of their respective country’s tax revenue) six are transport-related GTEs and four electricity-related GTEs.

To lower their country’s emissions, governments predominantly favour reducing VAT, sales taxes and excise taxes. These TEs on goods and services account for half of revenue forgone (Figure 6.3). Governments also reduce taxes on corporate income (15 percent of

revenue forgone) and personal income (8 percent) to encourage lower greenhouse gas emissions.

The most frequent approach used by governments to lower the country’s greenhouse gas emissions is to exempt citizens and firms from paying taxes on qualifying transactions, such as purchases related to renewable energy equipment and services. This accounts for half of revenue forgone from GTEs (Figure 6.4). Governments also frequently adopt reduced rates on these transactions – this accounts for 22 percent of revenue forgone. Tax revenue forgone due to income tax reductions and tax credits represent significantly lower amounts than these categories.

Figures 6.3 & 6.4. Green Tax Expenditures by tax and tax expenditure type



Source: Redonda et al. (2023).

Whereas this exercise is a step forward to having a systematic and comprehensive repository of global GTEs, it is important to recall that the GTED only inputs data from official and publicly available TE reports and sticks to the data as reported by the governments. This results in two main limitations:

- First, countries that have never issued an official and publicly available TE report since 1990 are classified as non-reporting countries and hence no data is gathered. China is a case in point and yet, as discussed in Section 6.4, the government is actively using GTEs.
- Second, under-reporting is often an important issue, even among those countries that can be considered front-runners when it comes to TE reporting. In some cases, the official reports cover a subset of tax heads or a subset of policy objectives. For instance, the TE report published by the U.S. Treasury only covers income-related (both corporate and personal) TEs. In other cases, there is lack of estimates for a large share of TEs. The difference between the number of TEs that a report identifies and those for which it provides estimates for revenue losses can often be considerable (Redonda and Neubig, 2019). In the dataset used in this paper, 30 percent of provisions identified as GTEs do not have any revenue forgone estimates.

6.4 Green tax expenditures in five countries

Given the lack of a global repository and the poor quality of data published by governments, this section takes a closer look at the use of GTEs in five countries: China, France, India, Norway, and United States. These are countries where information on GTEs is readily available, although with some gaps.

China

China seeks to achieve a net zero emission target by 2060, with steep reductions planned in emissions from electricity generation, manufacturing activities, and transportation. Broad policy efforts are underway to encourage investment in renewable energy generation and in the adoption of electric cars. The government is actively supporting the development of renewable energy with a mix of policy tools including soft loans, subsidies, a new emission trading system, and GTEs exempting investment in wind and solar equipment from VAT and import duties. China has also offered the most important tax incentives for the purchase of electric vehicles in the world (IEA, 2023). The government keeps these tax incentives under review and adjusts their design based on the evolving situation.

Table 6.1. Main green tax expenditures in China

New electric vehicle tax reduction and exemption policy	China has extended until 2027 the exemption from the 10% purchase tax on EVs, plug-in hybrid electric vehicles (PHEVs), and fuel cell vehicles (FCVs), up to RMB 30,000 per vehicle. These vehicles are fully exempt until 2025, then half of the purchase tax will be exempted in 2026-2027.
Renewable energy equipment	Solar and wind energy generating systems are exempt from both import duties and value added tax (VAT). Components for use with solar and wind generation systems benefit from a preferential import duty of 5%.
Wind-generated power	A 15% corporate income tax rate (instead of 25%) may be secured for qualifying wind power enterprises operating in the western region of China until 31 December 2030. For wind power enterprises which qualify for the “High and New Technology Enterprise” (HNTE) designation, a 15% rate is also applied. Taxable income derived from wind power projects approved as “Public Infrastructure Projects” may be exempt from CIT for the first three years and entitled to a 15% rate. Suppliers of wind-generated power benefit from a “refund upon-levy” policy applicable at 50% of the VAT payable amount (i.e., the excess of output VAT over input VAT).

Sources: International Energy Agency, KPMG (2023), www.china-briefing.com

France

France is responsible for 0.8 percent of global carbon emissions, reflecting a persistent downtrend since the mid-1970s. Nuclear power provides about two-thirds of electricity, with significant contributions also from hydropower, wind and solar. Transport, agriculture and buildings are the main sources of greenhouse gas emissions, which the government plans to reduce by 50 percent in 2030 from 1990 levels, as an intermediary step to achieve carbon neutrality in 2050. In line with

EU commitments, new vehicles will need to be zero-emitters starting in 2035. Among various policy tools, France is offering GTEs to encourage lower emissions from housing and transport. These are part of the TEs annually approved by parliament, based on detailed cost estimates in draft budget documents. Overall, TEs are estimated to reach € 89 billion in 2023, of which close to € 4 billion euros have policy objectives related to “ecology, sustainable development and mobility”.

Table 6.2. Main green tax expenditures in France

Green tax expenditures	Eligible tax base	Estimated fiscal cost in 2023
Reduced VAT rate on energy efficiency work in residential premises	Eligible renovation work is subject to reduced VAT of 5.5% (instead of standard rate of 20%)	€ 2 billion
Reduced VAT rate on renewable energy supplied to the grid	Supply of renewable energy to distribution networks, such as from biomass and wood products is subject to reduced VAT rate of 5.5%	€ 66 million
Reduced taxation of biofuels	E10, E85, and B100 fuels are supported by tax exemptions.	€402 million
Personal income tax credit on electric chargers	Homeowners may claim a tax credit when installing an electric vehicle charging system	€ 13 million
Corporate income tax credit on energy renovation work by SMEs	SMEs may claim a corporate income tax credit when they carry out energy renovation work in buildings that they own or rent.	NA
Property tax credit for energy savings work	Property tax reduction equivalent to 25% of energy saving works by social housing organisations.	€ 124 million

Sources: Redonda et al. (2023), République Française (2022a and 2022b), ACEA (2023)

India

India has traditionally relied on coal and oil for its fast-growing electricity production, manufacturing activities, and transportation. The country is gradually switching to low-carbon energy sources such as hydroelectricity, nuclear energy, solar and wind power. Nonetheless, with its large share of global GDP, India remains the third largest contributor to total CO₂ emissions, after China and the United States. The government has introduced various climate policy

initiatives to mitigate the country's carbon footprint, with initial success in decoupling the growth of activity and the rise of emissions. Among various policy instruments, India is using fuel emission standards, a new carbon trading market, and a mix of tax incentives to encourage investment in solar and wind power, and to facilitate plans to develop clean hydrogen. In addition to national policies, Indian subnational governments are also active in climate policy.

Table 6.3. Main green tax expenditures in India

Accelerated depreciation	Corporate investment in renewable energy plants (solar, wind, biogas) and electric vehicles benefit from an accelerated depreciation tax benefit
Income tax exemption	Wind generation projects benefit from a 10-year income tax exemption. In addition, custom duty and excise duty concession or full exemption on certain turbine components.
Waiver of electricity transmission charges	The government has waived interstate electricity transmission charges for new projects of renewable energy from solar, wind, hydro pumped storage, and battery energy storage.
Reduced GST for BEVs	Purchases of battery electric vehicles (BEVs) face a reduced national Goods and Services Tax (GST) rate of 5% in comparison to 28% for large passenger vehicles and 18% for small passenger vehicles.

Sources: Redonda et al. (2023) and www.climatepolicydatabase.org

Norway

Norway has been very successful in promoting electric vehicles (88 percent of new light-duty vehicles in 2022), which can be recharged with an electricity almost entirely decarbonized thanks to a large supply of hydroelectric power (88 percent of electricity mix) and wind (10 percent). In addition to the natural endowment

of non-fossil fuel based energy sources, Norway has moved on a path toward net zero emissions with the support of strong policy incentives. The Norwegian Parliament decided on a national goal that all new cars sold by 2025 should be zero-emission (electric or hydrogen).

Table 6.4. Main green tax expenditures in Norway

Purchases/import tax exemptions on BEVs	Purchasers of BEVs benefit from several tax incentives: no purchase/import tax (1990-2022), restrained from 2023 based on the weight of vehicles.
VAT exemption on BEVs	Exemption from the VAT of 25% on the purchase of BEVs (2001-2022), restrained from 2023 to exclude vehicles with a purchase price from 500 000 Norwegian Kroner and over. The weight tax of NOK 12.5 per kg is applied to BEVs only for the weight above 500 kg.
Road tax exemption for BEVs	No annual road tax (1996-2021), reduced tax from 2021, and return to full road tax from 2022
Absence of charges on ferries for BEVs	No charges on ferries (2009-2017), gradually reduced and fully eliminated in 2023
Company taxes reduced for BEVs	Company car tax reduced to 20 %.
VAT exemption on leased BEVs	Exemption from 25% VAT on leasing of BEVs.
Hydropower tax benefits	Hydropower plants less than 5 MW are exempt from natural resource and ground rent taxes.

Sources: Redonda et al. (2023) and www.climatepolicydatabase.org

United States

The United States remains the second largest emitter of carbon dioxide globally, after China, though its share in global emission has sharply declined from about 50 percent after WW2 to about 13 percent in 2021. The Biden Administration has set several objectives to continue this trend: lowering GHG emissions by 50-52 percent by 2030 from 2005 levels; 100 percent pollution-free electricity by 2035; and net zero emissions

by 2050. The Inflation Reduction Act (IRA) approved by Congress in August 2022 is a landmark policy initiative to attain these objectives. IRA's energy and climate-related measures are, to a large extent, made of tax credits offered to businesses and individuals. The table below covers IRA's tax credits, and details about other U.S. GTEs are available from the GTED.

Table 6.5. Main green tax expenditures in the United States

Green tax expenditures	Description	Fiscal cost estimates (FY2023 unless noted)
Production Tax Credit (PTC)	The PTC reduces the federal income taxes of qualified owners of renewable energy projects based on the megawatt-hours (MWh) of electricity generated from qualifying low-emitting resources until end-2024, and from zero-emissions sources thereafter. The tax credit remains in place for 10 years after the equipment is placed in service. PTC is multiplied for projects that meet certain labor requirements on prevailing wages and apprenticeships, and tax credit bonuses are awarded according to additional criteria, such as providing clean electricity for steel production, domestic content, or locating facilities in “energy communities”.	\$163 billion (Congressional Budget Office, CBO); \$233 billion (Committee for a Responsible Federal Budget, CRFB)
Investment Tax Credit (ITC)	The ITC reduces federal income taxes for qualified taxpayers based on capital investment in renewable energy projects. Same additional tax benefits and bonuses as for PTC. Companies must opt either for PTC or ITC as the two tax benefits cannot be combined.	
Production Tax Credit for Carbon Capture and Sequestration	This tax credit is available to carbon capture projects. When labor requirements is met, the tax credit amounts to US\$85/ton of CO ₂ stored or US\$60 for CO ₂ utilization.	\$25 billion (CBO); \$51 billion (CRFB)
Nuclear Power Production Tax Credit	The tax credit provides up to US\$15 per MWh to existing nuclear facilities that do not yet receive financial support from the government.	0 in FY2023, \$1 billion in FY2024
Individual clean energy and efficiency tax credit	Eligible to this personal income tax credit are equipment such as home solar panels, battery storage, solar water heating, small wind energy, home insulation, windows, doors, electric heat pumps, home energy audits and electric panel upgrades when necessary.	\$38 billion (CBO)
Clean Fuels Tax Credit	Supports the production of biodiesel, renewable diesel, and alternative fuels until end-2024, and then becomes technology neutral until end-2027. Expected to benefit producers of clean hydrogen used in difficult-to-abate environment such as trucks, manufacturing, aviation, and shipping. When labour requirements are met, the tax credit amounts to US\$1.75/gallon.	\$59 million in FY2023, \$149 million in FY2024
Clean Vehicle tax credit	Applies to electric or hydrogen fuel cell vehicles up to 2032. Tax credit of up to \$7500 per vehicle, provided that the vehicle meets criteria regarding domestic content, including critical material used in the battery, and provided that it was assembled in North America. To qualify, taxpayers must not exceed specific income caps. Leased vehicles can obtain the same tax credit and are not subject to similar requirements. Previously owned clean vehicles are also eligible to the tax credit, though at the reduced amount of US\$4000.	\$10 billion (CBO); \$72 billion (CRFB)
EV chargers tax credit	Property tax credit can be used to finance 30% or up to US\$1,000 — whichever is smaller — of the cost to purchase and install home charging.	\$138 million

Sources: Congressional Budget Office (2022), Committee for a Responsible Federal Budget (2023), and Bistline et al. (2023).

6.5. Greater transparency needed as GTEs gain importance

The previous two sections have illustrated the importance that GTEs now play in the climate policy toolbox of many countries. GTEs support multiple decarbonisation objectives such as the increased production of renewable energies, early adoption of electric vehicles, and improved energy efficiency of buildings. They take the form of tax reliefs such as reduced VAT rates, lower excise taxes, income tax deductions, accelerated amortization, and a combination of these tax treatments. GTEs are typically granted with a set of conditions related to the income range of individual taxpayers, the price and weight of electric vehicles, the composition of the firm's labour force, the domestic content of equipment purchased, and the technology employed. Finally, GTEs are available either for a short time period or for a full decade. While the inventory provided in this chapter is useful, more comprehensive data will be needed to support empirical research and guide policymakers. For instance, information on whether GTEs are refundable, marketable, transferable, subject to funding caps and eligible to direct pay would be important components of a full database.

GTEs are gaining importance because they help governments to address market failures such as spillovers associated with learning-by-doing at firms adopting new, clean technologies. These innovation spillovers usually warrant more targeted measures than across-the-board increases in fossil fuel prices resulting from carbon pricing or cutbacks in fossil fuel subsidies (Black et al. 2023). Some GTEs focus specifically on sustaining the demand of zero-carbon technologies, such as electric vehicles and heat pumps, while others focus on sustaining the supply of these technologies, such as the production and storage of zero-carbon electricity. In both cases, GTEs help to scale up zero-carbon markets, thus generating economies of scale and driving down costs. Empirical research indeed finds that green subsidies such as GTEs have played a key role in the decline of electric car's total cost of ownership (Lévay et al., 2017), as well as in the lower levelized cost of solar and wind power, i.e., in terms of net present cost of electricity generation over the lifetime of the equipment (IRENA, 2023).

Furthermore, GTEs are popular among policymakers because they speed up the adoption of new green technologies. By reducing the cost of using zero-emission technologies relative to high-carbon alternatives, they improve the affordability of, and access to new technologies. A large literature has shown that GTEs have played a key role in the early adoption of electric vehicles in China, Norway, and some U.S. states (e.g., Lévay et al., 2017; Sheldon and Rua, 2023). Without this type of government measures, the take-up of electric vehicles in these jurisdictions would have happened more slowly. GTEs have helped the breakthrough of new green technologies and therefore brought forward the tipping point when they become financially sustainable without government help (SYSTEMIQ, 2023). GTEs akin to those will be essential to speed up the diffusion of new technologies that remain currently prohibitively expensive, such as green hydrogen. They will also be essential in sectors where the use of fossil fuels is difficult to abate, such as aviation, cement, shipping, and steel.

However, GTEs are poised to become increasingly expensive for the public finances if governments adopt them to attain a multitude of decarbonisation objectives. The U.S. IRA has already prompted a debate about the cost of the Biden Administration's strategy to combat climate change – even though the IRA's tax credits are largely funded by tax increases and spending cuts in other areas (CFRB, 2023). Even when funded by such tax increases and spending cuts, implementing large-scale GTEs will inevitably entail a shifting of budgetary burdens onto other taxpayers, potentially resulting in deadweight losses.

It is therefore imperative that the design of GTEs prioritizes cost-effectiveness, guided by the principles of fiscal responsibility. Policymakers need to design GTEs that reduce greenhouse gas emissions at the lowest cost for the public finances, based both on ex-ante research on the impact of new technologies and on ex-post evaluations. Keeping track of implementation, making regular independent evaluations, and amending the design of GTEs when necessary will help to reward this new enthusiasm with successful outcomes (Redonda, Lenain, and Aliu, 2023).

To navigate this complex landscape successfully, it is essential to establish a more comprehensive and improved system of monitoring GTEs. This would involve enhancing disclosure mechanisms for fiscal costs and anticipated outcomes, while also bolstering

the availability of high-quality data to support empirical research. By taking these steps, we can pave the way for a more efficient and effective utilization of GTEs in the future.

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7 DOES DEVELOPMENT MATTER FOR THE USE OF TAX EXPENDITURES?²⁷

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7.1. Introduction: tax expenditures in developing countries

As the Global Tax Expenditures Database (GTED) shows, the use of tax expenditures (TEs) is a worldwide phenomenon (see Redonda et al., 2023). This includes most developing countries, who use TEs for a variety of purposes in the context of their national development agendas. For instance, it is common for low- and middle-income countries (LICs and MICs) to offer tax exemptions or reduced rates on corporate income tax (CIT) and custom duties to attract investment and promote economic growth, even though the available empirical evidence casts doubt on the effectiveness of such measures (for instance, see Kronfol and Steenbergen 2020; Redonda et al. 2019). Also, many governments apply reduced Value Added Tax (VAT) rates on basic goods and services as a measure to fight poverty.

The use of TEs is always country- and context-specific, but all TEs have one thing in common: a direct negative impact on revenue collection. Even though some TEs can be effective in achieving their stated goals and this negative effect is compensated by higher tax revenues at a later stage, the direct impact on public revenue collection can be significant. On average, LICs and MICs forgo 3.4 percent of GDP and 23.4 percent of actual tax revenues by using TEs (see Chapter 2 of this Flagship Report). As can be seen from Figure 7.1, those averages conceal a large degree of variation within this

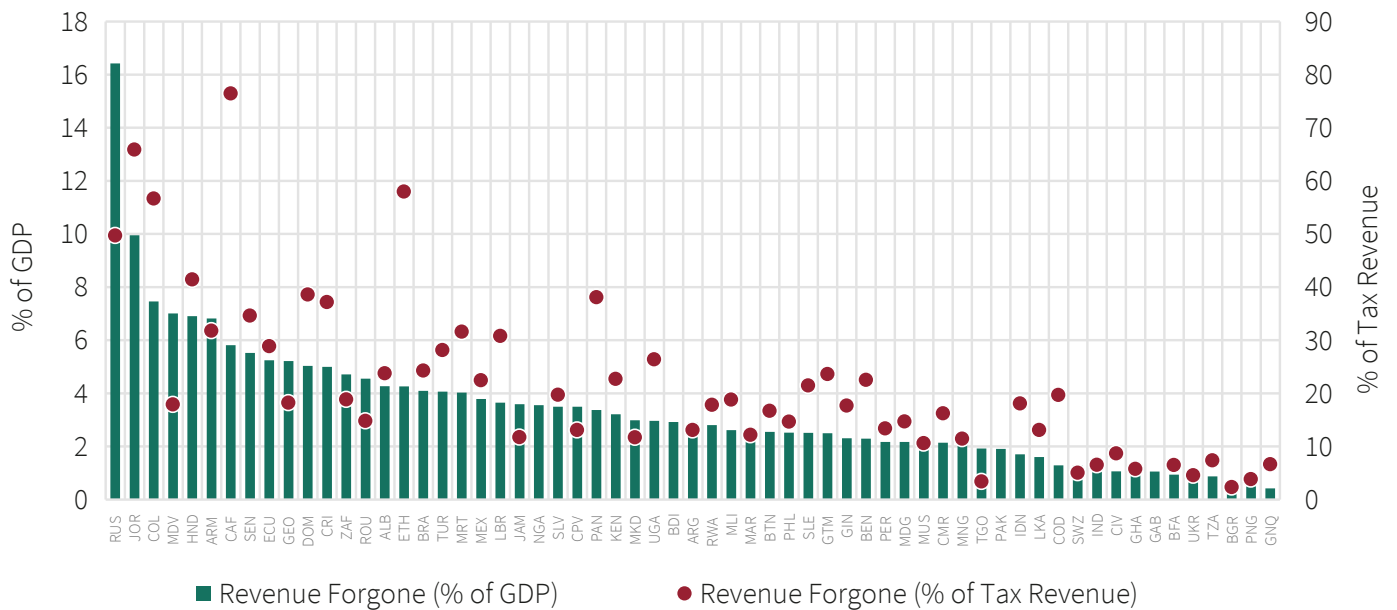
group of countries. Moreover, it is very likely that the figures do not reveal the real dimension of the issue, as underreporting of TEs is a widespread phenomenon.

At a time when many developing countries experience growing fiscal deficits and levels of indebtedness as a consequence of multiple crises (above all, climate change, the Covid-19 pandemic, and the war in Ukraine), such a drain on the fiscal systems is certainly not a minor issue. Not to forget that low levels of revenue collection impose important restrictions on the fiscal space available to developing countries. With average tax-to-GDP ratios below 15 percent for many LICs and MICs, the removal of inefficient TEs could be attractive for governments seeking to mobilise more domestic resources.

This chapter discusses whether development matters for TE use. The following section identifies potential drivers of TE use. Next, we discuss the limitations researchers face when conducting comparative empirical studies on TEs. Furthermore, we provide an overview of the literature on TEs and point out research gaps of existing comparative studies on the use of TEs in developing countries. This section also presents some preliminary empirical insights on development and TE use.

²⁷ This chapter is partly based on preliminary insights drawn from a larger research project on “Tax expenditures and development” carried out by the authors.

Figure 7.1. Average revenue forgone of low- and middle-income countries (2015-2021)



Source: Redonda et al., 2023

7.2. Determinants of TE use

As the effectiveness of TEs is in doubt and fiscal needs of states are high, it is important to learn more about the factors that determine when and how TEs are used. So far, we know little about the drivers of TEs in developing countries, and the empirical basis for evidence-based policy reform in this area is thin. At an international level, there is broad agreement on the need to modify or remove dysfunctional TEs (for instance, see IMF et al. 2015). Yet, in the absence of cross-country evidence, approaches to reform tend to be highly case-specific and learning from the experience of others is limited, even though recent years have seen a growing number of regional peer exchange and peer learning activities in Africa, Asia and Latin America.²⁸

Empirical evidence indicates that, measured in percent of GDP, richer countries spend more on TEs than poorer countries (von Haldenwang, Redonda, and Aliu, 2021). This is in line with the well-established fact that higher

welfare levels are associated with bigger fiscal states and higher tax-to-GDP ratios (Piancastelli and Thirlwall 2020; Teera and Hudson 2004). With TEs being widely used by governments worldwide, as outlined above, it is not surprising that they evolve in a similar fashion. However, a different picture emerges when measuring TE use against actual revenue collection. Since poorer countries collect less taxes on average, the same amount of TEs in percent of GDP accounts for a relatively larger part of their revenues. This is especially true for LICs (above, Chapter 2).

Beyond the general welfare of countries, other economic factors could play a role in determining the use of TEs, but have not been subjected to rigorous empirical testing. As already mentioned, most developing countries use tax incentives to attract foreign direct investment (FDI) and, hence, have been object of several studies that look at TEs to promote growth and FDI (for

²⁸ For instance, the Addis Tax Initiative (ATI) has been organising a series of regional workshops on TEs, partnering with CEP and IDOS. See <https://www.addistaxinitiative.net/resource/regional-workshop-tax-expenditures-asia-report> (accessed 10.09.2023) for the report on the latest of those workshops, held in March 2023 in Manila / Philippines.

instance, see Andersen et al., 2018; OECD, 2022). It can thus be assumed that countries that attract less FDI also use less TEs. First, they will spend less money to attract foreign capital by means of tax incentives. Second, since FDI is positively associated with trade openness, this should also translate into a lower use of TEs related to customs duties and import VAT.

Corporate income tax (CIT) rates are used as another instrument of tax competition between countries. Recent decades have seen a race-to-the-bottom in corporate income taxation, where countries undercut the tax rates of their regional competitors to attract more foreign investment. Thus, statutory CIT rates could be another indicator of whether countries provide more or less TE. Countries with lower rates should *ceteris paribus* spend less money on business-related TEs because they provide tax incentives already through low statutory tax rates. Lower rates imply less tax relief from exemptions or reduced rates, hence less revenue forgone for governments. Less tax relief also means that the respective TE is less attractive for companies and less effective as a mechanism to promote investment. It should consequently be used less. On the other hand, countries with higher statutory CIT rates should be more inclined to use TEs to lower effective tax rates for selected companies and industries and attract additional investment. In fact, many developing countries fall in this group, as they have been reluctant to cut statutory tax rates (Laudage, 2020).

In many natural resource-dependent countries, the use of TEs in the extractive industries has attracted growing attention in recent years refers, often associated with heated public debate on giving away the country's riches to multinational corporations (MNCs) (Coulibaly and Camara, 2022). Due to the capital-intensity of extractive projects and substantial up-front investments in many cases, granting sector- or project-specific tax incentives to mining and drilling companies is a common practice (Daniel, Keen, and McPherson 2010). The higher a country's dependence on natural resources, the more such TEs it should use. However, the location-specific character of mineral or carbon deposits makes them less sensitive to tax competition, which could prompt governments to rely less on TEs – particularly if the country is less dependent on capital and technology imports.

Beyond those economic conditions, the use of TEs in developing countries could be further shaped by certain political and institutional factors, though, again, the existing empirical evidence on these relationships is rather scarce. For instance, some studies highlight the lack of transparency and visibility of TEs and link the use of these mechanisms to informal political institutions such as clientelism, patrimonialism and corruption – or more generally, to the workings of the respective political regime (see Bak and Therkildsen 2022). In line with those arguments, countries with higher levels of corruption might use more TEs, as wealthy individuals and large companies find it easier to obtain lucrative TE bargains. In a similar vein, countries with weaker democratic or non-democratic rule could be more inclined to use TEs, due to two properties of these mechanisms: TEs are often less visible than direct spending, because, once established, they do not have to pass annual budget scrutiny and debate. In addition, TEs can be used to favour specific groups or economic sectors, which makes them an interesting tool for distribution in a non-democratic and elitist setting.

All these development indicators potentially influence TE use in developing countries. However, they might also vice versa be influenced by the use of TE. For example, poorer countries tend to provide less TEs as a share of GDP because they have less fiscal space to do so. To the degree that TEs are an efficient tool for the promotion of economic growth, this could negatively affect their growth prospects. Similarly, TE use might be driven by higher levels of corruption, but they themselves can at the same time act as drivers of corruption. Therefore, assessing the relationship between development and TE use encounters reverse causality issues and it is often hard to identify which causal direction is dominant.

7.3. Limitations of comparative studies on TEs

Research on TE use, particularly focusing on developing countries, is faced with two significant data challenges: (i) a large group of non-reporting countries and (ii) non-standardized TE reporting among countries that do issue such reports.

First, non-reporting of TEs creates sample selection bias in the available TE data. As the information provided by the GTED reveals, more than half of worldwide jurisdictions (113 out of 218) have not published any information on revenue forgone due to their use of TEs. However, almost all countries worldwide use TEs in their tax systems, as shown for instance by World Trade Organisation (WTO) notifications on subsidies and countervailing measures,²⁹ or by international summaries of tax regimes and tax incentives (for instance, see PwC and World Bank, 2020). The large group of non-reporting countries challenges the external validity of research conducted on countries that do report on their TE use. Non-reporting of TEs seems to be motivated by a variety of reasons:

“Obviously, governments that use tax expenditures as an element of secrecy in international tax competition do not have strong incentives to disclose this information to the public. [...] For the group of low- and lower middle-income countries as well as the group of fragile and conflict-ridden countries, state capacity is probably another limiting factor [...]. Tax expenditure reporting may also reflect a general disposition of governments to basic principles of political legitimacy and democratic rule, such as open political debate, freedom of speech and accountability.”
(von Haldenwang, Kemmerling et al., 2021, p. 134).

Second, a related issue refers to widespread under-reporting and lack of reporting consistency. Some governments provide detailed data on individual TEs, including revenue forgone estimates, policy objectives, beneficiaries, etc. However, most reports do not provide revenue forgone figures for all TEs in use, mainly due to data collection problems or the lack of relevance of smaller TEs (see Table 4.1 in this report). Many governments publish only aggregate figures, cover only specific types of taxes or TEs, or do not inform about the objectives and target groups of each TE. While the quality of reporting varies in all country income groups, it is fair to say that LICs and MICs tend to publish less information, on average (see von

Haldenwang, Redonda, and Aliu 2021). Inconsistent reporting of TEs generates another challenge for researchers who conduct comparative studies on TE use.

Obviously, a common international reporting standard on TE use would be a great contribution to future research and would also provide guidance to countries that decide to publish TE reports for the first time. International organisations and policy-oriented research have made some progress in this regard (for instance, see Heady and Mansour, 2019; Geourjon et al., 2019), but so far governments have not committed themselves to any shared international standards.

Finally, it is important to keep in mind that by definition TEs are applied and have to be assessed against each country’s standard or benchmark tax system. On top of variations in national tax systems, there are important differences in how governments define their benchmark tax system and what they consider to be a TE. To give an example, while most countries that apply reduced VAT rates on foodstuff consider those a TE, Germany categorises them as part of its benchmark tax system and does not report on them in its subsidy report (Aliu et al., 2023). Due to such conceptual differences, comparing TEs across countries can be challenging, and the findings drawn from such comparisons need to be interpreted with caution.

7.4. Empirical literature on TEs

As a result of the challenges summarised above, comparative studies tend to focus on a subset of (mostly high-income) countries and rely above all on qualitative research methods and descriptive statistics. For instance, Beznoska, von Haldenwang, and Schüler (2023) employ GTED data to explore general trends among OECD countries in the granting of TEs to business and private households (also see OECD 2010). The use of TEs in social and welfare policies is mainly approached with a view on high-income countries, often based on Howard’s (1997) influential notion of the “hidden welfare state” (Avram 2018; von Haldenwang et al. 2021). Several contributions analyse the use

²⁹ See <https://notifications.wto.org/en> (accessed 10.09.2023).

of research and development (R&D) tax incentives (Bloom, Griffith, and Van Reenen 2002; González Cabral et al., 2023). Datasets on fossil fuel subsidies (including TEs), investment incentives and R&D tax incentives have been put together by the OECD (OECD 2021; 2022). They cover OECD member countries plus some additional emerging economies.

In contrast, growth- and investment-related TEs have also been studied from a developing countries' perspective (Kronfol and Steenbergen 2020; James 2013). This research is often related to the broader debate on tax competition. Findings are largely inconclusive, but raise some doubts about the cost-efficiency of these measures (Abbas and Klemm 2013; Andersen, Kett, and von Uexkull 2018; Artana 2015). Another debate that has attracted growing attention in recent years refers to TEs related to fossil fuel consumption and energy (see Dom and McCulloch 2019). A specific strand of the literature looks at the use of TEs in the extractive sector (Readhead 2018). Some studies explore the impact of TEs and other relief measures on poverty and inequality in the context of the COVID-19 pandemic (see Avellaneda et al. 2021; Lastunen et al. 2021).

Against the backdrop of data limitations, our research on TEs and development assesses two important questions regarding the interaction of overall TE use and development: First, which factors determine the extent to which TEs are used by governments? Beyond GDP per capita as a proxy for the general welfare of a country, we look at two fiscal policy variables (the general level of taxation and the statutory CIT rate), two key economic factors (trade openness and rents from natural resources), and two governance variables (democratic rule and control of corruption). The second research question explores the extent to which the same factors determine patterns of TE use. For this analysis, the dependent variable, TE shares, is split according to type of tax, beneficiaries and type of TE.

To explore both research questions, we make use of the GTED database. This allows, for the first time, to compile a cross-country panel dataset for a total of 218 jurisdictions, 105 of which provide data on TEs, covering the period 2000 to 2020. To estimate the effects of important development indicators on TE use,

a standard toolbox of econometric panel data methods is applied.

The preliminary findings confirm that richer countries spend more on TEs when measured in USD, but not necessarily when we look at TEs as a share of actual tax revenue. In developing countries, the use of TEs seems to be driven by democratic rule and control of corruption. These effects are much less pronounced in richer countries. Rents from natural resources as well as trade openness are associated with lower levels of TE use in developing countries. Regarding the second research question, we find that richer countries tend to provide less TE on goods and services taxes and less tax exemptions as a type of TE. This is in line with the fact that developing countries collect larger shares of their overall revenue from goods and services taxes than richer countries. Tax exemptions are potentially more often used by developing countries – probably because they are less demanding with regard to monitoring and administration, compared to other types of TEs such as deferrals, accelerated depreciation or tax credits. Finally, richer countries apply more TEs that target household beneficiaries. The main reasons why we observe less TEs for household beneficiaries in developing countries are that these countries often have large informal sectors and collect not much of their overall tax revenue from personal income taxes.

7.5. Conclusion

This chapter has shown that development, in particular economic development, is an important driver of TE use. We provide an introduction to the potential determinants of TE use in developing countries and give an overview on the existing empirical literature on TEs. Furthermore, we discuss the issue of reverse causality between development and TE use, as TE use might also have adverse effect on development and economic growth.

In addition to the correlation between economic development and TE use, we show that other development indicators might be relevant for a country's choice to use TEs. In developing countries in particular, the use of TE is also determined by institutional development, levels of democracy and

corruption. Indeed, preliminary findings from our research indicate that more corrupt governments tend to use more TEs.

The overall tax system design of a country also influences the use of TEs. For example, countries with overall low statutory tax rates for firms have less incentives to provide additional TEs for corporate beneficiaries, since these already pay little tax. Natural resource rents and the level of trade openness might also be important determinants of TE use, in particular for TEs given to foreign investors.

The lack of literature on TE use in developing countries discussed in this chapter underlines the necessity for more research and better data. More comparable data on TEs would certainly lead to an increase in the quantity and quality of research in this area. Common reporting standards applied by a significant number of countries would not only increase the transparency of TE reporting (and thus indirectly promote a more rational use of these instruments), but also produce more comparable TE data across countries and over time.

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8 TAX INCENTIVES AND THE GLOBAL MINIMUM TAX

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8.1. Introduction

Tax incentives are one among many policy tools available to governments to stimulate investment. In a world of globally mobile firms, countries can use tax incentives as a response to competitive pressures to attract and retain investment. However, relying on tax incentives can result in foregone revenue, putting pressure on public finances. Tax incentives can result in windfall gains for some investors, and in limited additional investment, if they are not properly designed. These trade-offs pose a significant challenge for tax and investment policymakers. There is often little knowledge about the use and cost of tax incentives, and limited evidence about their effectiveness, including in comparison with other available instruments.

In this context the advent of the Global Minimum Tax (GMT) is an important development. The GMT acts as a top-up tax ensuring that large multinational enterprises (MNEs) pay a minimum effective tax rate (ETR) of 15 percent in every jurisdiction where they operate. Where MNEs' ETRs are below 15 percent in a given jurisdiction, top-up tax is due on the difference. The GMT is levied on excess profits, i.e., profits in excess of a fixed return on tangible assets and payroll, limiting its impacts on investments that just break even. The GMT is implemented through an interlocking set of rules, giving the right to levy the top-up tax first to the source jurisdiction, then to parent jurisdictions, and thereafter to other affiliate jurisdictions.

The GMT may curtail the effect of certain tax incentives by reducing or nullifying the monetary benefit of

the incentive. The GMT sets multilaterally agreed limits on the ability of large MNEs to take advantage of tax incentives by requiring in-scope MNEs to pay a 15 percent ETR in every jurisdiction where they operate.³⁰ This will have an effect on tax incentive policies, although the impact of the GMT will vary across MNEs, jurisdictions, and tax incentive designs (OECD, 2022).

The GMT may provide scope for countries to reform their tax incentives without impacting their competitiveness. The GMT places multilaterally agreed limits on the ability of large MNEs to take advantage of tax incentives that can create opportunities for countries to consider reforms that will result in a better use of tax incentives from an investment and tax policy perspective. Specifically, due to the focus on excess profits, the GMT can drive a shift away from some tax incentive designs considered costliest and least effective, as MNEs would be subject to a minimum level of taxation wherever they operate. While countries responses are still emerging, the GMT is a unique opportunity to consider tax reform that will strike a better balance between domestic resource mobilisation and supporting investment.

This chapter discusses how tax incentives may change as the GMT is introduced around the world. It first looks at the use of incentives and the economic evidence on their impact, then looks at some design features of the GMT that are particularly important for considering the impact on incentives. It then looks at how the GMT may impact incentives and investment more generally, and concludes with some considerations for policymakers.

³⁰ The GMT agreed by around 140 members of the Inclusive Framework on Base Erosion and Profit Shifting (BEPS) introduces a minimum level of effective taxation for MNEs with revenues above EUR 750 million (OECD, 2021; OECD, 2021).

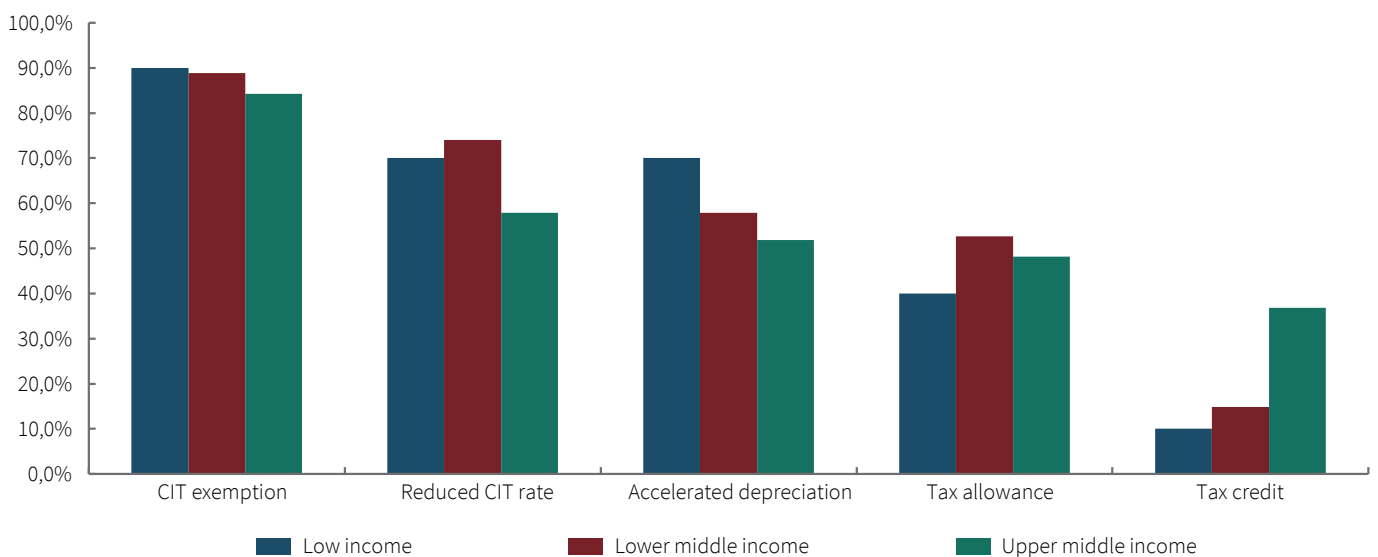
8.2. Tax incentives: theory and evidence

The most commonly cited motivation for tax incentives is to stimulate investment, including foreign direct investment (FDI). In addition to increasing investment in an economy generally, FDI inflows can – but do not always – result in wide-ranging benefits to the domestic economy, including job-creation, enhanced competition, and increased efficiency of domestic markets, all of which contribute to economic development. Stimulating investment in areas such as R&D and climate change may be justified because of knowledge spillovers and network externalities. However, the risks associated with tax incentives are significant. If tax incentives provide tax relief but do not increase investment, they result in windfall gains to companies at the expense of the jurisdiction’s public finances. From a global perspective, tax incentives that alter the location or composition of investment but not the overall amount may distort investment decisions and result in a less efficient allocation of capital.

The use of tax incentives is widespread and has increased markedly over the past two decades. It is useful

to distinguish between income-based and expenditure-based tax incentives. Income-based tax incentives (such as tax holidays – a complete exemption from tax for a limited period – or preferential CIT rates for certain taxpayers) provide support to the outputs or returns of the investment, hence making relief conditional on success. By contrast, expenditure-based tax incentives (such as targeted allowances, including deductions or credits for certain types of investments) target the inputs and costs of the investment. Income-based tax incentives are particularly widespread among low and middle-income countries (see Figure 8.1), presumably reflecting competition to attract and retain mobile capital. Outside of South Asia, between 2009 and 2015, more developing countries introduced new tax incentives or made them more generous compared to those that withdrew incentives or made them less generous (World Bank, 2017). The use of tax incentives in some developed economies has also increased. For example, the number of EU countries offering tax incentives for R&D expenditures has doubled since 2000, and the number of EU countries offering intellectual property (IP) regimes has increased fivefold (González Cabral et al., 2023).

Figure 8.1. Use of CIT incentives among developing and emerging economies



Note: This figure shows the percentage of economies using at least one incentive of each type among low income, lower middle income and upper middle economies among 56 countries covered by the OECD Investment Tax Incentives database.

Source: OECD Investment Tax Incentives database, June 2023 version, based on information for 56 countries (10 low income, 27 lower middle income and 18 upper middle-income countries) and 532 CIT incentive entries available on 1 January 2021.

Despite the widespread use of tax incentives, not much is known about their use and fiscal costs in most jurisdictions. Tax expenditure reports by national governments remain scarce. Efforts to improve the transparency of tax expenditure reporting such as the Global Tax Expenditure Database (GTED) show that, when available, there is a great disparity in the quality of reporting (von Haldenwang, Redonda and Flurim, 2021).³¹ Aggregated data gathered as part of international efforts at limiting Base Erosion and Profit Shifting (BEPS) provides evidence that MNEs which have greater flexibility to move activity across jurisdictions, can be subject to very low ETRs. In calculations based on the OECD Country by Country Reporting data, the average ETR of MNEs with revenues above EUR 750 million in the EU is around 13 percent, considerably below the average statutory rate of 22 percent between 2017 and 2019. Tax incentives likely are a key factor driving low ETRs. Although the precise magnitude may be unclear, tax incentives narrow corporate income tax (CIT) bases and reduce revenue mobilisation capacity, and increasingly so.

The evidence on whether tax incentives increase investment or change its composition is mixed.³² The literature shows different effects for income-based and expenditure-based tax incentives, with the former better targeted at reducing Effective Average Tax Rates (EATRs) and the latter at reducing Effective Marginal Tax Rates (EMTRs) (Devereux and Griffith, 2003). In other words, expenditure-based incentives may do more to support additional investment at the margin (i.e., those just breaking even). By contrast, income-based incentives have greater impact on the location of investments that may earn economic rents (i.e., those that earn more than a break-even return). The few available empirical papers find limited investment responsiveness to income-based incentives in developing economies (Chai and Goyal, 2008; Klemm and van Parys, 2011). Some find positive effects of tax incentives on FDI, but no effect on gross

capital formation, suggesting crowding out of other investment or FDI limited to changes of ownership. There is evidence that expenditure-based incentives, including accelerated depreciation and immediate expensing, are effective at increasing investment in OECD countries (Maffini, Xing and Devereux, 2019; Zwick and Mahon, 2017; House and Shapiro, 2008; Cohen and Cummins, 2006).

The effect of tax incentives on investment depends on the behaviour of other countries. Recent evidence suggests that in the context of international tax competition, tax incentives may act as ‘beggar-thy-neighbour’ instruments, leading to no significant increase in global investment overall but a relocation between jurisdictions (Knoll et al., 2021). Where a jurisdiction implements tax incentives to attract FDI – especially income-based incentives – and competitor jurisdictions do the same, the result may be a modest or insignificant increase in investment overall, but a reduction in the taxation of economic rents earned by MNEs.

The responsiveness of investment to tax globally can also differ from jurisdictional responses. This can mean that even where tax incentives do attract additional FDI for a given country, they may represent lost welfare from a global perspective because: (1) investment is lost by another jurisdiction; and (2) investment may be shifted away from its most productive location. Some studies have documented spillover effects from tax policy in one jurisdiction on investment behaviours in other jurisdictions (Hanappi and Whyman, 2023; Keen, Liu and Pallan, 2023; Suárez Serrato, 2018), showing that changes in taxes in one jurisdiction can affect investment both in that jurisdiction and elsewhere.

Tax incentives are unlikely to be the most important factor driving investment, with political and institutional stability, the availability of infrastructure and a skilled workforce cited as more important by investors (PCT, 2015). This includes demand and supply

³¹ Other initiatives collect comparable tax expenditure data for R&D tax expenditures (OECD, 2023; Appelt et al., 2023).

³² There are several challenges associated with empirical research in this area. These include the lack of data for research, the lack of clear counterfactuals, i.e., the policy outcomes in the absence of the policy intervention; or the existence of few policy changes to enable identification. Similarly, there is little discussion often about the effect of tax incentives compared to alternative policy interventions, e.g., direct spending or direct support to businesses. Finally, any estimates based on jurisdiction-specific studies may not necessarily have validity in other jurisdictions, particularly as the effectiveness of tax incentives may be dependent on other framework conditions.

factors (market size, government spending, openness to trade, natural resources, the quality of infrastructure and human capital), macroeconomic factors (political and macroeconomic stability, financial development) and institutional factors (the quality of the legal and regulatory system). Tax-based policies are unlikely to attract additional investment in the absence of a good investment environment (Van Parys and James, 2009) but can affect the choice between sets of similar locations.

8.3. Tax incentives and the design of the GMT

Implementation of the GMT is advancing rapidly and will soon cover most of the profits of large MNEs worldwide. The GMT has been agreed by more than 135 jurisdictions of the Inclusive Framework on BEPS and is currently being implemented broadly.³³ Through the interlocking nature of its various rules, the GMT ensures that top-up tax on low-tax profits is collected even if the jurisdiction where the low tax profit arises does not collect the taxes itself. The top-up tax can be collected in the first instance by the jurisdiction where low-taxed profits arise through a Qualified Domestic Minimum Top-up Tax (QDMTT). If low-taxed profit remains, any remaining top-up tax can be collected by the jurisdiction of the MNE's parent entity through the Income Inclusion Rule (IIR). Finally, should any low-taxed profit remain after both QDMTTs and IIRs are considered, top-up tax can be collected by other affiliate jurisdictions using the UTPR allocation mechanism. This interlocking set of rules means that an estimated 95 percent of MNEs in-scope of the GMT will be subject to it by 2026.

The mechanics of the GMT will strongly shape how it interacts with tax incentives and domestic policies (OECD, 2022) While the literature on this topic is still developing, four key features of the GMT that interact with tax incentive design are worth noting.

- First, only large MNEs and large investments are in-scope of the GMT. Small MNEs and small and medium enterprises that are not part of an MNE group or do not have revenues above EUR 750 million are unaffected by the GMT. Moreover, the GMT includes a de minimis threshold and applies only in respect of jurisdictions where the MNE Group has more than EUR 10 million of revenue or EUR 1 million of profits. Jurisdictions can therefore continue to target incentives toward SMEs and smaller MNEs as before.
- Second, the GMT levies top-up taxes on excess profits only. The Substance-Based Income Exclusion (SBIE) included as part of the GMT introduces the concept of “jurisdictional excess profit” (profits in excess of a five percent return on payroll and tangible assets).³⁴ This may mean that incentives that are provided to less profitable businesses or that are tightly targeted to the amount of investment or payroll may be better protected from the application of the GMT even if they generate low-taxed profits. This is because while such incentives may generate low-taxed profits, those low-taxed profits may not exceed the SBIE in the jurisdiction and the GMT would not apply.
- Third, the GMT broadly does not affect incentives based on timing differences. Incentives that maintain the nominal value of MNEs tax payments but provide a tax benefit in discounted terms will be largely unaffected by the GMT. For instance, if accelerated depreciation allows a company to temporarily reduce its income for tax purposes but additional tax is paid later, the GMT is unlikely to result top-up tax as a result of such timing differences.³⁵ This means that tax incentives that provide tax benefits by deferring taxes into the future but do not otherwise reduce tax liabilities (beyond the time value of money), are largely unaffected by the GMT.

³³ Under this agreement, the GMT rules are not mandatory but have been agreed as a “common approach”. This means that jurisdictions are not required to adopt the GMT rules, but if they choose to do so, they agree to implement and administer them in a way that is consistent with the agreed outcomes set out under those rules. Even if they do not implement the rules, agreement on a common approach means that one jurisdiction accepts the application of the GMT rules by another in respect of MNEs operating in its jurisdiction.

³⁴ These rates are higher in the initial years of the minimum tax and phase out to the five percent rate.

³⁵ Specifically, such provisions are always allowed if the acceleration concerns tangible assets and are allowed for intangible assets if the measures revert within five years (OECD, 2021).

- Fourth, some refundable and transferable credits are less affected by the GMT than other credits. The GMT treats Qualified Refundable Tax Credits³⁶ and, under certain circumstances, Marketable Transferable Tax Credits³⁷ as increases in income (i.e., as subsidies) as opposed to reductions in covered taxes. They therefore increase the denominator of the ETR for GMT purposes, resulting in higher ETRs for GMT purposes and decreasing the risk of top-up taxes compared to other tax credits.³⁸

While the GMT will affect tax incentives, MNEs and jurisdictions differently, some patterns can be discerned. Figure 8.2 provides a stylised summary of which tax incentive instruments are most likely to be affected by the GMT. Features such as the targeting of the incentive and the presence of ceilings that limit tax benefits can play an important role (OECD, 2022[1]). Given the interaction of many different incentives and design features, an assessment of the impact of the GMT in any given jurisdiction requires careful context-specific analysis.

8.4. Tax incentives and investment in the new environment

The GMT creates an opportunity for jurisdictions to re-evaluate their tax incentives and to rethink the role of tax in promoting investment. The GMT aligns with the continued use of tax incentives that are most effective in generating additional investment globally, while constraining the use of those incentives most associated with competitive pressures and representing the strongest risk of windfall gains. Tax incentives such as tax holidays, which are extensively used in developing countries, which have been shown to be less suited to supporting growth while being rather costly (Klemm and Van Parys, 2012), are most strongly affected by the GMT. Three points are worth noting concerning the impact of the GMT on investment.

First, the GMT is a coordinated cross-country change. The impact of the GMT on investment differs from that of unilateral action to increase the ETR. Studies

Figure 8.2. Categorisation of tax incentives by probability of being affected by the GMT

MORE LIKELY AFFECTED	LESS LIKELY AFFECTED	NOT AFFECTED
<ul style="list-style-type: none"> • Full exemptions (e.g. tax holidays) • Reduced tax rates or partial exemptions • Tax allowances • Tax credits 	<ul style="list-style-type: none"> • Accelerated depreciation or immediate expensing for short-lived intangibles • Qualified Refundable Tax Credits • Marketable Transferable Tax Credits 	<ul style="list-style-type: none"> • Accelerated depreciation or immediate expensing for tangible assets • Immediate expensing of R&D expenses • Gains from the sale of tangible assets if reinvested

Note: This table categorises common tax incentives into those which are most likely to be affected by the GMT, those that are less likely affected and those that are not affected at all.

Source: OECD based on OECD (2022).

³⁶ Qualified Refundable Tax Credits are refundable tax credits that are paid as cash or available as cash equivalents within four years from when an entity satisfies the conditions for receiving the credit under the laws of the jurisdiction granting the credit (OECD, 2021).

³⁷ Marketable Transferable Tax Credits are tax credits that can be transferred to unrelated parties within a certain timeframe and have a value that exceeds a minimum amount determined by reference to the face value of the credit. Further information is contained in the GloBE Administrative Guidance (OECD, 2023).

³⁸ The GloBE ETR is all taxes (where covered taxes are defined specifically for the purposes of the GMT) are in the numerator, and income is in the denominator (where income is also defined specifically for the purposes of the GMT).

that use tax elasticities with respect to investment based on unilateral tax rate changes to estimate the impact of the GMT on investment fail to account for the coordinated rate increases envisaged under the GMT. In the same vein, a common concern is that, if countries act unilaterally to rationalise their tax incentives, they face the threat of MNEs relocating to competing jurisdictions. Here too, with the GMT countries are acting in a consistent and coordinated fashion. The design of the GMT and its widespread adoption ensures that MNEs cannot easily reduce their ETR in response to it, as investments in other jurisdictions will be subject to the same top-up taxes. This means that the risks of loss of competitiveness due to tax incentive reform are considerably reduced.

Second, the GMT focusses on excess profits, protecting a routine return on investment, affecting only investments that are highly profitable. MNEs earning sufficient returns to have their low-taxed profits be in excess of the SBIE (and therefore subject to top-up tax) are more incentivised to maintain their investments even in the presence of additional taxation. This means the GMT will only impact the most profitable investments in a jurisdiction, i.e. those investment where the incentives to remain in situ are strongest. In other words, the GMT is likely to fall largely on economic rents where the literature suggests the impacts of tax on investment is more modest.

Third, to the extent that the GMT leads to any relocation of investment, the impact on global investment is likely to be much smaller. The response of the global stock of investment may be more influenced by the impact of taxation of firms' low-return investments (that might not go ahead with a higher tax burden) rather than the tax rate on high-return investments (which are more likely to be impacted by the GMT) (Devereux, Fuest and Lockwood, 2015). Low-return investments are less likely to be affected by the GMT worldwide. This means that, the global investment response is likely to be much smaller than the responses in some jurisdictions, while many jurisdictions may see increases in investment (Keen, Liu and Pallan, 2023).

8.5. Conclusions and the way forward for countries

The GMT can be expected to have a significant impact on the use of tax incentives worldwide. This chapter has argued that the GMT favours certain incentive designs over others, in particular expenditure-based over income-based tax incentives, and those incentives that are tightly linked to economic substance. Accordingly, the GMT can help governments strike a better balance between encouraging investment and protecting public finances in their policies vis-à-vis large, especially profitable MNEs.

The first requirement for better tax incentive policy is better evidence on their use and effects. Countries considering taking action to revisit tax incentives need to carefully analyse the impact of the GMT on entities in their jurisdictions. This includes assessing in their jurisdiction, the MNEs that are active, the amount of low-taxed profit, and the level of economic substance (see Box 3 in OECD, 2022). The specifics of the analysis will vary jurisdiction by jurisdiction depending on the availability of data and resources. Assessing the exposure to GloBE can help ponder the necessary policy response and help establish reform priorities.

Tax incentive reform can be complex and challenging due to a combination of informational and political economy constraints, but the GMT can ease some of these pressures. The governance of tax incentives is often fragmented involving different granting authorities which slows the process of tax reform (Celani, Dressler and Wermelinger, 2022). Other hurdles relate to lobbying, legacy provisions or tax preferences granted to certain taxpayers under stabilisation clauses or investment agreements. As the GMT is designed to ensure that the MNE will pay 15 percent on excess profits arising in each jurisdiction in which they operate, even if the source jurisdiction does not act to collect the top-up tax, other jurisdictions will. This leverage can be used by jurisdictions to reform tax incentives.

Alignment with the GMT is important, but is no substitute for good tax incentive policy. Even though the GMT can be an impetus for reform, tax incentive reform should go beyond an evaluation of the effect of the GMT on existing tax incentives. The GMT will affect different incentives differently, but tax incentives that

are less affected by the GMT are not automatically good policies, nor do they necessarily get the balance right between investment attraction and domestic resource mobilisation. Jurisdictions should avoid using the GMT rules as a standard against which to set tax incentive policy. Tax reform should build on sound economic principles, be evidence-based and contribute to enhanced tax transparency. Tax incentives may not be the best policy tool for promoting investment in certain areas.

The introduction of QDMTTs may be of value to ensure that developing countries retain the primary taxing right over low-taxed profits in their jurisdiction. As tax incentive reform may take time, the introduction of QDMTTs early in the process would ensure that the jurisdiction collects all the top-up tax arising from low-tax outcomes in the jurisdiction, particularly as the implementation of the GMT is proceeding rapidly. However, QDMTTs are not substitutes for tax incentive reform as otherwise ineffective tax incentives that are costly to administer would remain in place.

The GMT provides an opportunity for a deeper reconsideration of the role of tax in the investment policy mix and could highlight the importance of non-tax factors such as infrastructure or human capital. Tax incentives are only one part of the tax and investment policy mix. Other regulatory and support policies will become even more relevant for investors after the introduction of the GMT. When engaging in tax incentive reform and considering policy responses, countries should consult widely with the investment community and other stakeholders (UNCTAD, 2022).

Finally, tax reform should not focus solely on incentive reform, especially in developing country contexts. Broader reform options to raise domestic revenues include reducing informality, addressing profit-shifting and broadening tax bases, and exploring opportunities to strengthen domestic resource mobilisation outside the CIT, including through value-added taxes, personal income taxes and the effective use of Exchange of Information.

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APPENDIX: GTETI RANKING AND COUNTRY SCORES

Country Name	Income Group	GTETI Rank	Overall GTETI score	D1. Public Availability	D2. Institutional Framework	D3. Methodology and Scope	D4. Descriptive TE data	D5. TE Assessment
South Korea	HIC	1	74,9	16	14,7	17,2	17	10
Canada	HIC	2	73,7	18	8	17,1	18	12,6
Netherlands	HIC	3	73,4	17,3	12	16,3	15	12,8
Germany	HIC	4	72,1	16	18,7	5,2	19	13,2
France	HIC	5	68,7	16,3	17,3	8,7	18	8,4
Italy	HIC	6	66,6	13,3	16	12	15,7	9,6
Benin	LMIC	7	66,3	11	13,3	13,2	15,2	13,6
United States	HIC	8	65,2	16,3	17,3	10,9	9,8	10,8
Australia	HIC	9	63,9	13,3	13,3	11,9	15	10,4
Portugal	HIC	10	63,4	8	13,3	18,7	15	8,4
Niger	LIC	11	61,5	14,3	13,3	15,2	13	5,6
Tunisia	LMIC	12	61,3	14,3	18,7	11,9	10	6,4
Ecuador	UMIC	13	61,1	12,3	14,7	13,3	16	4,8
Spain	HIC	14	60,5	10	16	13,9	15	5,6
Puerto Rico	HIC	15	60,3	15	5,3	17,3	13	9,6
Indonesia	UMIC	16	60,3	16	5,3	15,7	15	8,2
Sweden	HIC	17	60,3	14,3	17,3	6,4	14	8,2
Costa Rica	UMIC	18	60,1	12	14,7	13,2	7,7	12,6
Austria	HIC	19	59,8	13,3	18,7	4,4	17	6,4
Morocco	LMIC	20	59,8	13,3	12	15,9	13	5,6
Moldova	UMIC	21	59,6	13,3	8	14,3	14	10
Greece	HIC	22	58,7	12	12	14,7	15,2	4,8
Russia	UMIC	23	57,7	14,3	12	8,8	13	9,6
Uruguay	HIC	24	57,1	11,3	12	11,6	15	7,2
Cameroon	LMIC	25	56,9	10	14,7	11,6	8,5	12,2
Belgium	HIC	26	56,9	14	12	11,9	8,6	10,4
United Kingdom	HIC	27	56,5	17,3	8	11,3	7	12,8
Bulgaria	UMIC	28	56,3	14,3	17,3	11,6	8,3	4,8
Pakistan	LMIC	29	56,1	13	16	12,5	9	5,6
New Zealand	HIC	30	56,1	14,3	12	6,9	14	8,8
Slovakia	HIC	31	55,5	16,3	13,3	9,1	8	8,8
Burkina Faso	LIC	32	55,4	10	13,3	11,9	17	3,2
Taiwan	HIC	33	53,7	13,3	12	6,4	14	8
Argentina	UMIC	34	53,1	14	16	11,1	5,6	6,4
Dominican Republic	UMIC	35	52,9	9	18,7	13,9	9	2,4
India	LMIC	36	52,7	13,3	13,3	10,3	10,2	5,6
Colombia	UMIC	37	52,7	16,3	12	8,9	10,6	4,8
Georgia	UMIC	38	52,7	13	5,3	14,9	13	6,4
Latvia	HIC	39	52,3	14,3	6,7	10,5	10	10,8
Jordan	LMIC	40	52	14,3	14,7	11,6	5,8	5,6
Mexico	UMIC	41	51,7	8	9,3	16	12	6,4
Norway	HIC	42	51,5	14,3	8	15,7	7	6,4
El Salvador	UMIC	43	51,3	10,3	13,3	9,6	10	8
Uganda	LIC	44	51,2	10	13,3	11,9	7,2	8,8
Chile	HIC	45	50,8	11,3	12	11,9	10	5,6
Slovenia	HIC	46	50,7	12,3	13,3	9,1	9,6	6,4
Rwanda	LIC	47	50,5	12,3	6,7	14,9	9,4	7,2
Ireland	HIC	48	50,3	13,3	12	8,4	8,6	8
Côte d'Ivoire	LMIC	49	50,3	10,3	13,3	14	5,5	7,2
Mali	LIC	50	49,6	12,3	16	14,4	4,5	2,4

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Country Name	Income Group	GTETI Rank	Overall GTETI score	D1. Public Availability	D2. Institutional Framework	D3. Methodology and Scope	D4. Descriptive TE data	D5. TE Assessment
Papua New Guinea	LMIC	51	49,5	10,3	16	7,7	9	6,4
South Africa	UMIC	52	49,3	13	10,7	12	6,5	7,2
Mauritania	LMIC	53	49,3	11	6,7	11,6	16	4
Kenya	LMIC	54	49,2	13	8	15,2	5	8
Guinea	LMIC	55	48,7	11	12	14,9	9,2	1,6
Luxembourg	HIC	56	48,1	8,3	14,7	10,9	6,1	8
Brazil	UMIC	57	47,9	9,3	14,7	6,1	13	4,8
Togo	LIC	58	47,7	12	13,3	13,9	4,1	4,4
Nigeria	LMIC	59	47,5	12,3	14,7	7,6	6,1	6,8
North Macedonia	UMIC	60	46,9	6	13,3	8,8	14	4,8
Peru	UMIC	61	46,9	10	14,7	6,3	9,6	6,4
Jamaica	UMIC	62	46,3	11,3	12	8,5	8	6,4
Senegal	LMIC	63	46,2	8	14,7	10,5	5	8
Albania	UMIC	64	45,7	13,3	6,7	12,3	11	2,4
Maldives	UMIC	65	45,3	15,3	5,3	10,4	7,9	6,4
Sierra Leone	LIC	66	44,1	13,3	16	2,9	3,8	8
Cape Verde	LMIC	67	43,9	14,3	13,3	4	6,7	5,6
Lithuania	HIC	68	43,3	11,3	16	5,6	5,6	4,8
Poland	HIC	69	43,1	8,3	4	7,7	15	8
Israel	HIC	70	42,9	5	13,3	9,7	8,3	6,6
Kazakhstan	UMIC	71	42,5	14,3	12	0	9	7,2
Honduras	LMIC	72	41,3	12	13,3	4	6,1	5,8
Iceland	HIC	73	40,3	14	14,7	2,9	4,7	4
Philippines	LMIC	74	39,2	13,3	13,3	2	4,1	6,4
Panama	HIC	75	39	12,3	13,3	3,6	4,1	5,6
Finland	HIC	76	38,5	10	5,3	8,9	5,9	8,4
Sri Lanka	LMIC	77	38,3	12,3	4	10,9	5,5	5,6
Turkey	UMIC	78	38,3	8,3	12	5,7	9	3,2
Bolivia	LMIC	79	37,5	10,3	5,3	11,6	5,5	4,8
Guatemala	UMIC	80	36,3	17,7	14,7	0	2,3	1,6
Switzerland	HIC	81	36,2	7	10,7	6,7	6,3	5,6
Armenia	UMIC	82	34,9	9,3	5,3	11,6	4,7	4
Denmark	HIC	83	34,9	8	4	10,7	5	7,2
Estonia	HIC	84	34,7	13,3	8	1,6	5,3	6,4
Ethiopia	LIC	85	34,1	9,3	4	14,9	2,7	3,2
Hungary	HIC	86	33,9	6	17,3	2,4	3,3	4,8
Mauritius	UMIC	87	33,7	12,3	10,7	1,6	2,7	6,4
Ukraine	LMIC	88	33,2	3	12	4	8,6	5,6
Gabon	UMIC	89	32,9	11,3	12	4	4	1,6
Liberia	LIC	90	32,7	13,3	9,3	4	4,5	1,6
Romania	HIC	91	32,6	7,3	16	1,6	3,7	4
Mongolia	LMIC	92	32,5	6	16	0	7,3	3,2
Paraguay	UMIC	93	31,9	9	12	5,6	1,3	4
Japan	HIC	94	30,2	6,3	8	3,3	9,3	3,2
Burundi	LIC	95	29,3	11	13,3	1,6	1,8	1,6
Congo, D.R.	LIC	96	27,2	11,3	8	0	6,3	1,6
Bhutan	LMIC	97	26,7	11,3	6,7	0	7,1	1,6
Lesotho	LMIC	98	25,3	10,3	13,3	0	0	1,6
Czech Republic	HIC	99	25,2	8	4	7,6	4	1,6
Tonga	UMIC	100	24,9	10,3	4	3,6	1,3	5,6
Tanzania	LMIC	101	23,4	14,3	6,7	1,6	0	0,8
Madagascar	LIC	102	21,9	10,3	4	4,7	1,3	1,6
Eswatini	LMIC	103	21,9	13,3	4	0	1,3	3,2
Algeria	LMIC	104	21,3	5,3	12	0	2,3	1,6
All GTETI (average)	-	-	47,5	11,8	11,7	9	8,8	6,3



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