



POLICY BRIEF

# Carbon Taxation in Africa



AFRICAN TAX  
ADMINISTRATION FORUM  
FORUM SUR  
L'ADMINISTRATION  
FISCALE AFRICAINE



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## Executive Summary

Carbon taxes are amongst some of the most efficient policies in pricing carbon, particularly if employed at “choke points” at the upstream level, due to the ability to reach the whole of the economy, without the need to focus on certain industries or sectors. An upstream carbon tax is simple to administer and can impact both the formal and the informal economies, a point which is particularly relevant for middle- and low-income countries.

As a policy design option, carbon taxes can be employed at the upstream or at the downstream level. Downstream carbon taxes adopt a sectoral approach to the pricing of carbon, to the extent that they only capture the externalities associated with the industries enumerated in the law foreseeing such regimes. The reach of these measures is therefore narrower, if compared to an upstream carbon tax, and the revenue resource mobilization potential is also more restrained. These measures usually require greater reliance on monitoring, review and verification processes, which makes them more complex to implement and more burdensome to administer. In spite of the above, these are measures that can provide an explicit price on carbon.

This brief explores the key features in the design of a carbon tax that can meet the dual objective of raising revenues while conferring a positive effect on the environment. It begins with a descriptive overview of what carbon taxes are and how they may be

administered at national level, when employed either at the upstream or downstream levels. It then provides for an ample discussion of the parameters for tax rate implementation, the definition of the tax base, and revenue use considering the African context.

While centred on the key policy aspects of introducing a broad-based carbon tax, capable of providing an impact on the whole of the economy, and equally burdening the formal and informal sectors, the brief also discusses the role of supplementary policies in achieving the climate goals. For example, there is abundant discussion concerning the need for countries to assess and eventually eliminate harmful fossil fuel subsidies, in line with the commitments assumed by African countries under the Glasgow Pact, the role of implicit carbon pricing in complementing explicit pricing approaches, and general remarks on measures to alleviate concerns around potential competitive disadvantages triggered from the implementation of a carbon tax.



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## 1. Introduction

The present policy brief provides in-depth knowledge on carbon taxation, the most effective and efficient instrument to price carbon. It draws from an earlier policy brief which discussed the conceptual approach employed by ATAF in defining the different types of environmental taxes for statistical purposes.<sup>1</sup>

Carbon taxation has been put forward as one of the key policy approaches to raise revenue, as the world recovers from the recessionary environment caused by the COVID-19 pandemic<sup>2</sup>. A carbon tax is a desirable policy for economic recovery because it affords governments new revenue resources domestically, while at the same time providing an economic incentive for the consumption of less carbon-intensive products, resulting in environmental benefits as well. Therefore, a well-designed carbon tax policy enhances collections and enables sustainable economic growth that are consistent with the U.N.'s sustainable development goals.

The fast approach of the deadline for countries to deliver on the 2030 Sustainable Development Goals, and the growing evidence of extreme weather conditions that are spurred by global warming, make the implementation of domestic carbon taxes a strategic issue in establishing a path of sustainable economic growth in Africa. Recent evidence suggests that Africa will be the continent hardest hit by climate change because its economies are climate-dependent, relying heavily on sectors such as agriculture, with limited capacity to cope and adapt to climate change. According to the World Bank, climate change could cause up to 86 million Africans to migrate within their own countries by 2050, with some of these movements already happening as early as

2030 due to water scarcity, lower crop and ecosystem productivity, sea level rise and storm surges.<sup>3</sup>

The establishment of an effective carbon tax policy could be an important instrument to assist countries in mobilizing funds to adapt to this new climate environment, while at the same time mitigating the impact of climate change on their people and the environment in which they live.

Furthermore, the establishment of an effective carbon price could help to source significant tax revenues in Africa at a time when the global landscape is one that would be permissive of conferring that right to a secondary state. The absence of a domestic carbon tax policy may ultimately qualify other countries to employ a price or a tax on the African country's behalf, through the implementation of a Border Carbon Adjustment (BCA) measure.<sup>4</sup>

As instruments capable of conferring an explicit price on carbon, carbon taxes could help countries to meet their Nationally Determined Contributions (NDCs), as set by the Paris Agreement. Approximately 100 countries, or two thirds of all submitted NDCs, consider the use of carbon pricing to attaining their emission reduction targets. According to the United Nations,<sup>5</sup> carbon pricing alone could reduce the cost of climate change mitigation by 32% by 2030 and achieve full potential when associated with other energy and environmental policies. The only country currently administering a carbon tax policy in the African continent is South Africa.

According to the African Development Bank, the African continent holds 8% of the world's proven oil reserves, 7% of the global natural gas stock and roughly 30% of all global mineral reserves.<sup>6</sup> This fact alone could be

<sup>1</sup> ATAF Policy Brief, *Environmental Taxes Defined*, November 2021, available at: [https://events.ataf.africa/index.php?page=document&doc-view&document\\_id=143&token=8a62179d04d8e5e130ee93255b2e45d4b4nkyo](https://events.ataf.africa/index.php?page=document&doc-view&document_id=143&token=8a62179d04d8e5e130ee93255b2e45d4b4nkyo).

<sup>2</sup> IMF Blog, *What COVID-19 can teach us about mitigating climate change*, By *Dya Céspedes, Ezerice Jaumotte, and Antonio Spillimbergo*, IMF publications, July 9 2021, available at: <https://blogs.imf.org/2021/07/09/what-covid-19-can-teach-us-about-mitigating-climate-change/>, medium: email: [source@imf.org](mailto:source@imf.org).

<sup>3</sup> World Bank, *Climate Change Could Further Impact Africa's Recovery, Pushing 86 Million Africans to Migrate Within Their Own Countries by 2050*, October 27, 2021, available at: <https://www.worldbank.org/en/news/press-release/2021/10/27/climate-change-could-further-impact-africa-s-recovery-pushing-86-million-africans-to-migrate-within-their-own-countries>

<sup>4</sup> A BCA is a charge on embodied carbon in products imported into a jurisdiction with carbon pricing, potentially matched by rebates for embodied carbon in exports. As per the IMF, "Carbon pricing – what role for BCA", 2021.

<sup>5</sup> United Nations, Committee of Tax Experts on International Cooperation in Tax Matters, *Note by the Secretariat on Environmental and environmentally-related taxation*, E/C.18/2021/CRP.26, 11 October 2021, available at: <https://www.un.org/development/desa/financing/sites/www.un.org/development/desa/financing/files/2021-10/CRP.26%20Environmental.pdf>.

<sup>6</sup> Africa Development Bank, African Natural Resources Center, *Catalyzing Growth and Development through Effective Natural Resources Management*, 2016, pg. 3, available at: [https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/ANRC\\_AINRC\\_BROchure\\_en.pdf](https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/ANRC_AINRC_BROchure_en.pdf).



responsible for granting African states a competitive advantage over other countries across the globe, in exercising their primary right to tax carbon intensive mineral ores at a level that is sufficient to spur regional economic development, while at the same time addressing environmental concerns. That is because from a trade perspective, countries engaging in trade relationships with African states would be required to confer a credit for any carbon tax that has already been employed domestically prior to an export event. Through its offerings, the ATAF aims to assist countries to obtain this competitive advantage over global partners to a level where countries can self-finance the shift into a sustainable growth pattern. A carbon tax could be the vector to assist countries to attain these goals.

### 1.1. The Role Carbon Taxes can play in achieving the Sustainable Development Goals

Carbon taxes are amongst some of the most efficient policies in pricing carbon, particularly if employed at “choke points” at the upstream level,<sup>7</sup> due to the ability to reach the whole of the economy, without the need to focus on certain industries or sectors. An upstream carbon tax is simple to administer and can impact both the formal and the informal economies, a point which is particularly relevant for middle- and low-income countries.

Downstream carbon taxes<sup>8</sup> (as well as ETS measures) adopt a sectoral approach to the pricing of carbon, to the extent that they only capture the externalities associated with the industries enumerated in the law foreseeing such regimes. The reach of these measures is therefore narrower, if compared to an upstream carbon tax, and the revenue resource mobilization potential is also more restrained. These measures usually require greater reliance on monitoring, review and verification processes, which makes them more complex to implement and more burdensome to administer. In spite of the above, these are measures that are apt for providing an explicit price on carbon.<sup>9</sup>

Every time the topic of carbon taxation is considered within the larger scenario of environmental fiscal reform, one topic which is always contended for discussion is the reiterated use of harmful fossil fuel subsidies. That is because, in broad terms, the subsidization of fossil fuels is a policy that objectifies a result that is diametrically opposed to the imposition of a carbon tax. A subsidy, by definition, aims to stimulate a behaviour (in this case, consumption of the carbon-intensive product). Environmentally, harmful subsidies can encourage the overuse of scarce environmental resources, and therefore should be phased out, if possible.<sup>10</sup>

Therefore, the implementation of an environmental fiscal reform and establishment of a national carbon tax would also involve the reform or review of any fossil fuel subsidies and incentives employed at national level.<sup>11</sup>

In light of the above, this brief explores the key features that are necessary in the design of a carbon tax that can meet the dual objective of raising revenues, while conferring a positive effect on the environment. This brief starts with a descriptive overview of what carbon taxes are and how they may be administered at national level, both at upstream and downstream levels.

The purpose of this brief is to provide a broad-based assessment of the main issues that should be considered by tax policymakers in introducing a carbon tax regime. It therefore also discusses (i) the desired carbon tax rate, (ii) what other complementary policies should be put to effect, (iii) how revenues from the tax can be employed in order to harness maximum taxpayer support, (iv) competitiveness impacts of introducing a carbon tax, (v) communication strategies for the successful implementation of a carbon tax, and (vi) the role of subsidies within the larger array of policies administered by a country that is interested in effecting a positive carbon price.

The application of a carbon tax leads to what is commonly referred to as a double dividend — that is, the tax generates revenues for the government employing it and also provides a positive environmental result in the form of reduced emissions.

## 2. How a Carbon Tax Works: An Overview

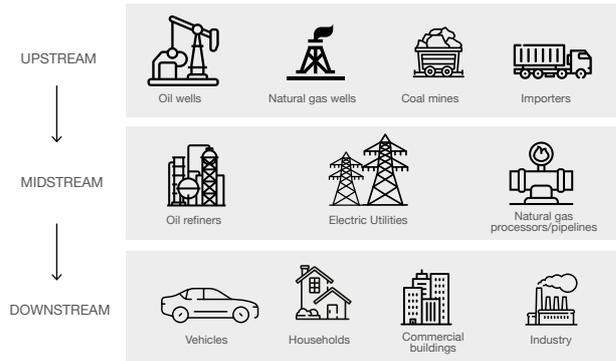
A carbon tax is a specific excise tax — a price per ton of carbon, usually applied by weight or volume. A carbon tax is relatively easy to administer, and the revenue-generating potential can be determined even before the tax is applied. If one knows how much fossil fuel is employed in a process, then both the taxpayer and the tax administration can predict the amount of carbon tax revenue that will be generated as a result of the combustion of that product. Given that the correlation between a volume of product and the carbon content is mathematical, the law can apply pre-calculated tax rates without verifying actual emissions. The tax, expressed in terms of weight or volume, is based on the average carbon content of the relevant fuel.

Proponents assert that a carbon tax can encourage a positive change in consumer behaviour to the extent that it provides an incentive for the consumer to acquire the least carbon-intensive product. That is because the tax would apply to a greater or lesser extent, depending on the carbon intensity of the product, resulting in a higher tax burden on more carbon-intensive products and a

lower tax burden for products that generate less carbon. A carbon tax on fossil fuels would automatically create a price differentiation between diesel, gasoline and natural gas, because diesel is more carbon-intensive than gasoline, which in turn is more carbon-intensive than natural gas. Therefore, a carbon tax employed per ton of carbon would automatically affect diesel more than it would natural gas, creating an incentive for consumers to purchase products that use natural gas rather than diesel. Similarly, it would encourage both consumers and businesses to use natural-gas-based vehicles and machinery, because they would be cheaper to operate than a diesel-based vehicle. Therefore, the tax could lead to a reduction in the consumption of carbon-based products and a consequent reduction in carbon-based emissions.

A carbon tax can be employed at the upstream or downstream<sup>12</sup> levels of a fossil fuel's production chain. The figure below illustrates the different phases for ease of reference:

FIGURE 1: THE OIL, GAS AND COAL SUPPLY CHAINS:



T. Falcão, *A Proposition for a Multilateral Carbon Tax Treaty*, IBFD Publications, 2019.

<sup>7</sup> Please refer to Section 2 for a discussion on what is meant by upstream and downstream taxation.

<sup>8</sup> Please refer to Section 2 for a thorough discussion of the meaning of the word downstream.

<sup>9</sup> Carbon taxes and ETS measures are the only two instruments capable of conferring an explicit price on carbon. Carbon taxes that are employed at the upstream and downstream levels are capable of providing an explicit price on carbon, but the price signal will be larger through the use of the former, due to its ability to price all segments of the economy equally.

<sup>10</sup> See M. Sjöstrand and J. Bohanes, *Trade and the Environment*, in *The World Trade Organization: Legal, economic and political analysis* (P.J. Macrory, A.E. Appleton and M.G. Plummer eds., Springer, 2005), ch. 18, pp. 548-549.

<sup>11</sup> See broad discussion in: IMF/OECD, *Tax Policy and Climate Change – IMF/OECD Report for the G20 Finance Ministers and Central Bank Governors*, (April 2021), pg. 14, available at <https://www.imf.org/external/np/g20/pdf/2021/04/0721.pdf>

<sup>12</sup> Some countries foresee the application of a carbon tax at midstream level (i.e. at energy processing plant level), but that is generally referred to as a downstream carbon tax.