



AFRICAN FORUM AND NETWORK  
ON DEBT AND DEVELOPMENT



# **ENVIRONMENTAL TAXATION**

## **AND ITS IMPLICATIONS ON DOMESTIC RESOURCE MOBILISATION**

# EXECUTIVE SUMMARY

African countries face growing pressure to mobilise domestic resources while responding to climate change and environmental degradation. High debt burdens, limited fiscal space, and continued dependence on external financing have increased the need for sustainable domestic revenue sources. Environmental taxation provides an opportunity to address these challenges by generating revenue while encouraging more sustainable production and consumption. However, its use across Africa remains limited and uneven, and its fiscal and environmental potential is not yet fully realised.

This paper examines the role of environmental taxation in strengthening domestic resource mobilisation and supporting environmental objectives in Africa. It assesses the design and implementation of environmental taxes, their revenue potential, their effectiveness in achieving fiscal and environmental objectives, and the challenges associated with their implementation. The paper also draws lessons from African and international experiences to identify approaches that can expand environmental taxation without placing disproportionate burdens on vulnerable households and local industries.

The findings show that environmental taxation remains underdeveloped across much of the continent. Energy taxes account for the largest share of environmental tax revenues, contributing approximately 77 percent, while transport taxes account for about 21 percent. Pollution and resource taxes together contribute only around 2 percent, indicating limited diversification beyond relatively established energy and transport related instruments. Countries such as Seychelles, Mauritius, South Africa and Kenya have recorded comparatively higher environmental tax revenues, while others, including Nigeria and Morocco, have considerably lower levels. These differences reflect variations in tax structures, administrative capacity, environmental policy frameworks and the extent to which countries have developed pollution, resource and carbon-related instruments.

The analysis indicates that environmental taxation has significant, although not unlimited, revenue potential. Africa's average environmental tax revenue is currently below 1 percent of GDP. If countries were to increase environmental tax revenues towards levels achieved by leading regional performers, the paper estimates that this could generate approximately USD 40–87.6 billion annually. This potential would depend on gradually broadening tax bases to include pollution, resource extraction and carbon related instruments, alongside improvements in tax administration and compliance. The paper also highlights the substantial fiscal implications of fossil fuel subsidies and the potential for subsidy reform to create additional fiscal space.

At the same time, the effectiveness of environmental taxation depends heavily on how taxes are designed and implemented. Poorly designed or regressive taxes can place disproportionate burdens on low-income households and communities whose livelihoods depend on natural resources. Weak administrative capacity, limited data, informality, inadequate monitoring and political resistance can also undermine implementation. The evidence reviewed therefore points to the importance of simple and transparent tax systems, effective enforcement, appropriate sequencing of reforms and measures to protect vulnerable groups. Revenue generated from environmental taxes can also be used strategically to support climate adaptation, clean energy, public transport, waste management and other public goods.

The paper recommends that African governments expand and streamline environmental tax bases, beginning with relatively simple and administratively feasible instruments such as fuel, vehicle, plastics, waste and resource taxes, while gradually introducing more complex pollution and emissions-based taxes as capacity improves. Tax rates should reflect environmental harm and fiscal objectives, consistent with the polluter pays principle. Governments should also progressively reform fossil fuel subsidies while protecting vulnerable groups, strengthen coordination between fiscal, environmental and sectoral institutions, and improve tax administration through digital systems, data sharing and emissions monitoring.

Environmental tax reforms should further be supported by transparency and accountability in the collection and use of revenues, targeted measures to address distributional impacts, and appropriate green fiscal incentives to encourage private investment and innovation. At the regional level, the African Union and Regional Economic Communities can support policy coordination, knowledge exchange and greater harmonisation of environmental tax approaches.

Overall, environmental taxation can make a meaningful contribution to domestic resource mobilisation and Africa's environmental and climate objectives, but it should form part of broader fiscal reforms rather than be treated as a standalone solution. Its contribution will depend on careful policy design, gradual implementation, equitable burden-sharing, stronger institutions and transparent use of the revenues generated.



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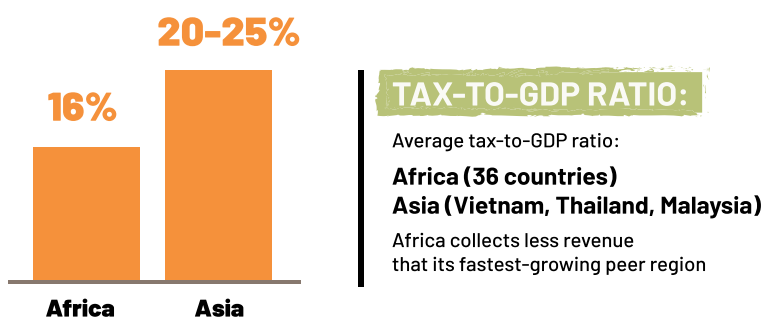
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# 1.0

## INTRODUCTION

Africa's weak domestic resource mobilisation (DRM) limits revenue growth and development. In 2022, the average tax-to-GDP ratio among 36 African countries was 16 % well below the Asian average between 20% and 25% in countries such as Vietnam, Thailand and Malaysia highlighting Africa's ongoing revenue-mobilization challenges compared to its fastest-growing peer region. Revenue authorities on the continent face capacity issues, outdated tech, and overlapping roles between revenue authorities and the Ministries of Finance which are hampered further by political interference and elite lobbying for exemptions, especially by large corporations. Corruption and poor accountability reduce public trust. For instance, wealthier individuals and multinational companies exploit loopholes, tax incentives and illicit financial flows that drain an estimated USD 88 billion annually from the continent's funds that could otherwise support climate initiatives and raise additional revenue.



While there has been a decided emphasis on DRM in the last couple of decades, Africa's revenue challenges are not new. They stem from colonial legacies, where colonial regimes replaced indigenous, reciprocal systems with coercive taxes like hut and poll taxes that favoured resource extraction and neglected ecological costs. These taxes were regressive, exploitative, and biased against sectors like mining and agriculture, hindering fair and sustainable growth. Since the colonial taxation systems were inherently exploitative, they sparked widespread resistance which saw rebellions such as the Aba Women's Revolt in Nigeria (1929), the Hut Tax War in Sierra Leone (1898) and the Mau Mau Uprising in Kenya (1952-1960), all responses to unfair and coercive taxation.

In the post-independence period from the 1950s onwards the newly sovereign states sought to reform colonial fiscal systems to support nation-building and development. Many countries replaced regressive colonial levies with personal and corporate income taxes signalling a shift toward equity and self-determination. However, these efforts were constrained by weak administrative capacity and narrow formal tax bases, while environmental considerations remained marginal to fiscal policy. The focus of the time was on economic growth, industrialisation and public service expansion not on integrating environmental sustainability into tax regimes.

The structural adjustment era led by the IMF and the World Bank in the 1980s and 1990s responded to the declining revenues, rising public expenditure and growing external debt of the previous period. This wave of reform prioritised fiscal consolidation, trade liberalisation and efficiency. This led to the widespread adoption of value-added tax (VAT) as the cornerstone of African tax systems. VAT was implemented to address the narrow tax bases in highly informal economies, where inadequate corporate and personal income tax revenues prompted its widespread adoption as a fundamental element of African tax systems. While VAT broadened tax bases, its emphasis on neutrality and revenue stability left little room for environmental concerns. Since the late 1990s, African governments have launched tax modernization efforts to boost efficiency, compliance and administrative independence. The creation of semi-autonomous revenue authorities, electronic filing systems, taxpayer identification numbers and mobile payment platforms signalled notable progress. These reforms saw environmental taxes as secondary within fiscal policy, mainly confined to environmental ministries with limited influence.

In summary, African tax systems remain narrow, relying heavily on consumption taxes and are weakly aligned with sustainability goals. VAT makes up roughly 27% of total tax revenue in African countries. In comparison, environmental taxes contribute just 3–4%, significantly below the 5–6% seen in many OECD and middle-income nations. This indicates Africa's limited utilization of fiscal tools to promote environmental and sustainability goals. Consequently, the existing tax structure remains loosely aligned with broader sustainability and green-transition objectives.

In recent years, there has been more discussion of environmental taxation, both as an instrument to manage environmental harm, as well as for purposes of DRM. Given that ETs play relatively little role in Africa, there may be room to expand them for both purposes. However, the introduction or further development of environmental taxes in Africa face deep structural hurdles due to narrow and highly informal economic structures, weak administrative capacity in revenue authorities, limited data for monitoring taxable activities and political resistance to measures perceived as increasing costs for households and firms.

Environmental taxes are generally defined as levies imposed on activities or bases with a proven negative impact on the environment. Broadly, these taxes are categorised into four dimensions based on their field of operation: energy, transport, pollution and resources. Their purpose is to correct market failures by ensuring that those who pollute or degrade the environment bear the associated social costs. This principle, widely known as the "Polluter Pays Principle," is rooted in the economic theory advanced by Arthur Pigou, who argued that the social cost of pollution exceeds its private cost, thereby justifying corrective taxation.

Globally, environmental taxation has evolved over several decades as a key instrument for integrating environmental considerations into economic decision-making. In Europe, eco-taxes were first introduced in the 1970s and have since expanded from user charges to comprehensive environmental tax reforms that underpin the European Union's 2020 strategy for sustainable growth. These experiences demonstrate how well-designed environmental taxes can correct market distortions, promote corporate responsibility and generate revenues averaging as much as one (1) percent of GDP in African countries that finance green initiatives. Among them, the carbon tax has been the most widely implemented, levied on the carbon content of goods and closely associated with fossil fuel use in production. However, despite growing global support for such instruments only **28 per cent** of worldwide greenhouse gas emissions are currently covered by explicit carbon pricing, and even among OECD and G20 countries, roughly 60 per cent of energy-related carbon emissions remain untaxed.

African countries are increasingly recognising the promise of environmental taxation as a tool for both environmental protection and revenue generation. South Africa pioneered this approach in 2019 with the enactment of the Carbon Tax Act, which increased transportation and electricity costs but earmarked revenues for green initiatives and low-carbon investments. Ghana has implemented a range of environmental levies, including those on plastics, over-aged vehicles and petroleum products and in 2024 introduced an Emissions Levy on vehicles and industrial emissions. Kenya, Mauritius, Malawi, Nigeria and Zambia are also exploring or piloting various forms of eco-levies targeting vehicle emissions, fossil fuels or pollution sources. Kenya's proposed vehicle tax based on engine size and fuel consumption aimed to promote the adoption of electric vehicles, while Malawi and Zambia have established forms of carbon taxation. These examples indicate a growing policy momentum toward aligning fiscal systems with environmental sustainability and climate resilience across the continent.

Despite their potential, environmental taxes also raise fundamental challenges. Poorly designed taxes risk being regressive, disproportionately affecting low-income households who depend on fuel-intensive livelihoods. For instance, many Africans rely on motorcycles as a source of income and increased fuel or vehicle taxes could push vulnerable groups deeper into poverty. Political backlash is another risk, from France's "Yellow Vest" protests to Kenya's 2024 Finance Bill, which faced widespread rejection partly because of an eco-levy on items such as diapers and sanitary towels which was perceived as unjust. In Ghana, the introduction of environmental taxes on plastics, over-aged vehicles, petroleum products and most recently the 2024 Emissions Levy on vehicles and industrial emissions, has sparked controversy over fairness and economic impact even as public opinion surveys show moderate acceptance when revenues are transparently linked to development projects.

These experiences illustrate that while environmental taxes hold promise, their design in African contexts must carefully balance equity, political feasibility and environmental objectives. Other concerns include discouragement of investment, potential regressivity and inefficiency if tax rates fail to create sufficient incentives for behavioural change. Nonetheless, when implemented thoughtfully, environmental taxation offers a “triple win” for African countries in generating revenue, improving efficiency by correcting market failures and reducing environmental harm. Evidence from both developed and emerging economies suggests that environmental taxes may also contract output and employment less severely than traditional taxes, making them particularly attractive in contexts of narrow fiscal space and high debt pressure. They provide governments with a sustainable mechanism for addressing environmental challenges without resorting to additional borrowing thereby helping to break the cycle of debt dependence and environmental vulnerability. At the same time, while ETs can create additional revenues, political pressures typically require that much of the funds raised are needed to compensate groups hurt by the tax. This means that although they are effective policy tools, they cannot consistently function as broad, discretionary revenue sources.

## 1.1 Problem Statement

Climate change is a major global challenge, especially for the Global South. Africa, contributing less than 5% of emissions, faces disproportionate impacts like droughts, floods, and shifting rainfall, which harm agriculture, food security, health, and infrastructure. These shocks cost 2-5% of GDP annually and generate adaptation needs of USD 30-50 billion yearly. These costs would strain public finances at the best of times, but the continent’s debt crisis compounds this situation. Many African countries face unsustainable debt burdens with debt-to-GDP ratios exceeding 90% in states such as Mozambique, Zambia and Angola. Over twenty countries in sub-Saharan Africa are either at high risk of debt distress or already in distress and several including Ethiopia, Ghana and Zambia are undergoing restructuring under the G20 Common Framework.

The linkage between debt and climate crises is more than incidental: the IMF observes that countries hit by climate emergencies often see debt-to-GDP ratios rise significantly in the aftermath since governments resort to more borrowing to finance recovery and reconstruction. The cycle of fiscal vulnerability exacerbates environmental risks and shocks, deepening fiscal fragility.

Environmental taxation can contribute to remediating these challenges by reducing ecological damage in advance, generating revenue for adaptation investment, and boosting domestic revenue to tackle climate shocks when they occur. However, the fiscal potential, design challenges and impacts of such taxes are not well understood in Africa. While underdeveloped and unevenly implemented, environmental taxes hold significant untapped potential to increase revenue, promote greener production and consumption, and enhance resilience to climate shocks. Achieving this depends on addressing issues of equity, institutional capacity and political feasibility.

## 1.2 Research Questions

This paper interrogates the following research questions:

- i Which design features and implementation practices make environmental taxes more effective and equitable in the African context?
- ii What is the revenue potential of environmental and environmentally related taxes for African countries and how can this be enhanced?
- iii How effective have existing environmental taxes been in achieving fiscal and environmental objectives in African countries?
- iv What are the expected challenges that African countries should be wary of when designing an environmental tax system, and how can those challenges be mitigated?
- i What lessons can African governments learn from both regional and global experiences to optimise environmental taxation while avoiding disproportionate burdens on vulnerable groups and local industries?

Environmental taxes offer a valuable but modest opportunity for African countries and are strongly reliant on design quality and political support. While there is revenue potential, especially from energy, transport, resource and pollution taxes, reaching transformational impact requires complementary reforms that broaden tax bases, improve administration and reduce informality. Evidence from Africa and globally shows that well-designed environmental taxes can meet fiscal and environmental goals, but their success depends on simple, transparent systems, effective monitoring and the strategic use of revenue to ease burdens on vulnerable groups and promote investment. Challenges such as weak administrative capacity, political resistance, limited data and competitiveness risks mean these taxes should be phased in gradually, with compensatory measures and aligned with broader development goals. Ultimately, environmental taxation can play a small but important role in Africa's fiscal and sustainability strategies, with success relying on careful sequencing, equitable burden-sharing and strong institutions.

## 1.3 Methodology

This paper is based on both a desk review and data-driven quantitative analysis of environmental taxation. The desk review covers official documents from organizations such as the African Tax Administration Forum (ATAF), the OECD, the World Bank and the International Monetary Fund. When relevant, additional documents from other reputable sources have been reviewed to support the findings. These insights inform policy on how best to employ environmental taxation in Africa.

The rest of this paper is organized as follows: the next section examines environmental taxes' design, structure and revenue potential in Africa; the third explores case studies of African leaders leading to the final section with conclusions and recommendations on the role of environmental taxes in green transformation and revenue generation across the continent.

# 2.0

## ENVIRONMENTAL TAXES IN AFRICA: DESIGN, STRUCTURE, AND REVENUE POTENTIAL

An environmental tax is defined as 'a tax whose tax base is a physical unit (or a proxy of it) that has a proven specific negative impact on the environment. They place a price on pollution and resource use, thereby incentivizing more sustainable behaviours and aim to reduce greenhouse gas emissions, promote energy efficiency, encourage of cleaner technologies, both of which underscore the need to make polluters financially responsible for the environmental damage they cause. The Polluter Pays Principle, adopted by the OECD in the early 1970s, asserts that those who generate pollution should bear the costs of managing and mitigating its impacts, instead of shifting those costs to society at large. This principle is foundational to sustainable economic development, as it incentivizes industries and consumers to adopt cleaner production methods and reduce environmental

The System of Environmental Economic Accounting (SEEA)<sup>1</sup> classifies environmental taxes into four broad categories: energy (including carbon), pollution, resource, and transport taxes, each designed to internalize environmental externalities and thereby correct market failures. While there is some overlap among categories (e.g., GHG emissions fall under energy, but are also a form of pollution), these remain useful for organizing analysis. Carbon or energy taxes, levied on the carbon content of fuels or CO<sub>2</sub> emissions, are the most prominent tools for reducing greenhouse gases by making high-emission options more expensive and encouraging a shift toward cleaner energy. Pollution taxes target specific harmful outputs, such as sulphur dioxide, nitrogen oxides, and solid waste, to hold polluters accountable and drive emission reductions. Resource taxes impose charges on the extraction or use of natural assets like timber, minerals, or fisheries, promoting sustainable management and preventing overexploitation. Lastly, transport taxes, including vehicle registration fees, congestion charges, and fuel levies, aim to curb environmental harm from transportation while raising public revenue.

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<sup>1</sup> The SEEA is a framework that integrates economic and environmental data, and incorporates internationally agreed standard concepts, definitions, classifications, accounting rules and tables for producing internationally comparable statistics and accounts

These four categories provide a systematic framework for analysing environmental tax base and identifying areas with potential for reform or expansion.

Table 1: Classification of Environmental Taxes under the SEEA Framework

| SEEA Environmental Tax Category | Definition / Purpose                                                                                                                                | Typical Instruments                                                                              |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| 1. Energy Taxes                 | Levied on the use or production of energy products (e.g., fuels, electricity) or directly on carbon emissions to internalize climate externalities. | Carbon taxes, fuel excises, electricity levies                                                   |
| 2. Pollution Taxes              | Target emissions or discharges of specific pollutants to encourage cleaner production and consumption.                                              | SO <sub>2</sub> and NO <sub>x</sub> emission charges, wastewater discharge fees, landfill levies |
| 3. Resource Taxes               | Charged on the extraction or use of natural resources to promote sustainable management and avoid depletion.                                        | Royalties on mining, water abstraction charges, logging fees                                     |
| 4. Transport Taxes              | Aim to reduce environmental impacts from transport activities and manage congestion.                                                                | Vehicle registration and ownership taxes, congestion charges, road tolls                         |

## 2.1 Typologies and Mechanisms of Environmental Tax Instruments

Environmental tax instruments encompass a diverse set of fiscal tools designed to correct market failures by internalizing the social and environmental costs of economic activity. Understanding these categories is essential for designing coherent, efficient, and equitable green fiscal systems. While energy and transport taxes typically generate the highest revenue through broad consumption bases like fuel and vehicles, pollution and resource taxes play a more targeted role in addressing specific environmental harms such as emissions, waste, and overextraction. This section therefore unpacks the typologies and mechanisms underpinning each category, illustrating how they function, their policy rationale, and the design considerations that determine their effectiveness in advancing both environmental and fiscal objectives.

### 2.1.1 Environmental tax design considerations

The first important design consideration is the tax base. The tax base identifies exactly what activity or input is being taxed. This can include direct emissions (for example tonnes of CO<sub>2</sub> emitted from vehicles or industries), specific materials (plastic packaging), or characteristics linked to environmental impact (such the size of motor vehicle engine). A key aspect of defining the tax base is deciding whether all activities of a particular type are included or whether certain activities are exempted. For instance, some fuels or industrial processes might be partially or fully exempted from taxation due to social, economic, or political considerations, which can affect both the environmental effectiveness and revenue yield of the tax.

The second important consideration is the applicable tax rate. Tax rates determine how heavily the tax influences behaviour and how much revenue the tax can generate. Rates can be fixed, such as a uniform fee per unit of pollutant, or progressive/targeted as in the case of Norway where taxes are structured to increase with greater environmental harm. South Africa uses both fixed and graduated

rates: electricity-generation levies started at R0.02/kWh and progressively increased to R0.035/kWh. In Kenya, the applicable excise duty rate is higher on larger engine vehicles (35 % for >1,500 cc vs. 25 % for smaller models), while electric vehicles benefit from a reduced excise duty rate of 10 %.



### **Cross-cutting considerations**

While tax base and rate are the primary levers, several other considerations depend on these choices and are essential for designing effective environmental taxes.

**Equity and distributional impact:** When selecting tax bases and rates, policymakers must consider the equity implications of tax design. When environmental taxes are not carefully designed, they may disproportionately burden low-income households. Carbon taxes, for instance, have proven regressive (due to their impact on public transport costs, for example) unless paired with compensatory measures such as rebates or cross-subsidies. Moreover, the framing matters: punitive taxes impose steep costs to deter harmful behaviours quickly but risk backlash and inequity, while incentivizing designs, such as rebates for clean technologies or tiered rates favouring greener alternatives, can encourage sustainable transitions more equitably and effectively. Embedding these taxes into broader policy mixes, including subsidies, infrastructure, or innovation support, is essential to ensure they are part of a coherent strategy rather than isolated fiscal penalties.

**Availability of alternatives or substitutes:** Environmental taxes are intended to influence behaviour, which often requires that affected households or firms have viable options to shift consumption toward cleaner or less damaging alternatives. In contexts where substitutes are unavailable or unaffordable, as is often the case in many African markets, environmental taxes can raise revenue but may lead to perverse outcomes, such as higher costs for low-income households, limited behavioural change, or the expansion of informal markets. This underscores the importance of linking tax design to market realities, including the affordability and accessibility of low-emission goods and services.

**Exemptions:** Policymakers may need to exclude certain goods, services, or income groups from taxation to avoid excessive burdens or regressive effects. Exemptions are closely related to both the tax base and the availability of substitutes, as they help mitigate unintended social impacts while maintaining revenue efficiency.

**Earmarking:** Another consideration in environmental tax design is whether the revenues from such taxes will be earmarked in some way to either support those negatively affected by them, or to ensure that the revenue is used for environmental services. Earmarking can serve multiple purposes: it can compensate households or businesses that are disproportionately affected by the tax, fund specific environmental programs such as renewable energy, waste management, or biodiversity conservation, and increase public acceptance by linking the tax directly to visible benefits. However, earmarking can also reduce fiscal flexibility, limiting the government's ability to allocate resources to higher-priority social or economic needs. Policymakers must balance these trade-offs, considering both the potential environmental impact and broader fiscal efficiency when deciding whether and how to earmark revenues.

**Tax administration:** A final cross-cutting consideration is the strength of tax administration. Effective environmental taxation requires reliable monitoring, enforcement, auditing, and reporting systems to ensure compliance and accurate collection. Countries with strong administrative capacity,

such as Mauritius, where IMF assessments highlight strict fiscal discipline and consistent auditing practices, tend to achieve higher compliance and more predictable revenue from green taxes. Weak administration, by contrast, can lead to under-collection, evasion, and reduced environmental impact. Thus, the effectiveness of environmental taxes ultimately depends not only on how they are designed, but also on how well they are administered.

## 2.1.2 Energy Taxes

Energy taxes refer to government-imposed levies on the production, sale, or consumption of energy products such as gasoline, diesel, natural gas, coal, and electricity. These taxes serve multiple objectives: generating fiscal revenue, promoting energy efficiency, and internalizing the environmental and social costs associated with energy use, particularly air pollution and greenhouse gas (GHG) emissions.

The structure of energy taxation is typically multifaceted, encompassing a range of instruments that target different stages of the energy value chain:

-  **Excise Taxes:** These are direct taxes applied to specific fuels, such as gasoline, diesel, and kerosene, commonly earmarked for infrastructure development, including road construction and maintenance.
-  **Carbon Taxes:** Levied on the carbon content of fuels, these taxes explicitly price GHG emissions (e.g., per tonne of CO<sub>2</sub>-equivalent emitted), thereby incentivizing emission reduction and low-carbon innovation.
-  **Electricity Taxes:** Applied to the consumption or withdrawal of electricity from the grid, these taxes can cover both fossil-based and renewable energy sources, often reflecting policy priorities in energy transition.
-  **Non-Tax Levies or Surcharges:** These are additional charges integrated into energy prices to fund specific policy programs, such as renewable energy expansion, rural electrification, or energy efficiency schemes, for example, Germany's *Renewable Energy surcharge*.
-  **Value Added Tax (VAT):** A general consumption tax applied as a percentage of the retail price of energy products and services, contributing to overall fiscal revenues while maintaining neutrality across sectors.
-  **Investment or Production Credits:** Although not taxes per se, these are fiscal incentives designed to stimulate private investment in clean energy technologies such as solar, wind, or geothermal power.



### Energy tax bases

Countries have adopted diverse approaches to defining the tax base for energy taxes, reflecting differences in economic structure, environmental priorities, and administrative capacity. South Africa was the first African country to implement a carbon tax through the Carbon Tax Act of 2019, which was applied to greenhouse gases emissions in sectors such as energy, transportation and industry. The Nordic countries (Denmark, Finland, Iceland and Norway) also levy taxes broadly on fossil fuels based on carbon content, ensuring comprehensive coverage and simplicity in administration. British Columbia's carbon tax similarly applies to all fossil fuels and is paid by all individuals and businesses that purchase or use fuel.

In contrast, many developing economies, including Kenya, rely on fuel excise duties primarily for revenue generation rather than environmental objectives. This is because unlike carbon taxes which are levied based on the actual volume of greenhouse gas emissions, energy taxes such as fuel excises are imposed on the quantity of fuel consumed making them easier to administer. Due to limited technical capacity, inadequate monitoring infrastructure and weak emissions-tracking systems, most African economies are not yet positioned to implement a full carbon tax regime. As a result, fuel excise duties serve a dual role of generating essential revenue while indirectly supporting environmental policy objectives. The European Union has harmonized excise duties on energy products but continues to debate the inclusion of electricity and differentiated VAT rates for energy-efficient goods. These variations underscore the interplay between environmental ambition and political economy considerations in setting the tax base to ensure that it is not regressive and disproportionately impacting low-income households.

The choice of a tax base is driven by a combination of environmental effectiveness, administrative feasibility, and equity concerns. Countries with strong institutional capacity and climate commitments, such as Sweden and Denmark, have opted for upstream carbon-based taxation to maximize coverage and minimize monitoring costs. Upstream environmental taxation matters as it targets producers or importers of raw materials of energy inputs unlike downstream taxation that apply at much later stages of the product life cycle, often at the stage of final consumption or at the point where pollution is actually emitted. By intervening early in the value chain, upstream taxation is easier to monitor, enforce and administer, since there are fewer entities to track and the flows of materials are more centralised thus making it more efficient. Importantly, taxing inputs at the source sends a powerful economic signal across the entire supply chain. It pushes firms to use resources more efficiently, shift to cleaner or alternative materials, and invest in greener production methods right from the outset. In this way, upstream taxation shapes behaviour long before environmental harm occurs, making it more effective than downstream approaches in driving broad, system-wide environmental improvements.

Conversely, in jurisdictions where affordability and competitiveness dominate policy debates, governments have narrowed the tax base or granted exemptions to energy-intensive, trade-exposed sectors to mitigate carbon leakage and protect employment. These design decisions reflect the tension between theoretical efficiency and practical constraints. Despite their conceptual appeal, setting and taxing the energy tax base presents significant challenges for policymakers. Measurement difficulties arise when taxes target emissions rather than fuel quantities, requiring robust monitoring systems that are often lacking in developing countries. Political resistance is another barrier, particularly where energy taxes are perceived as regressive or inflationary. The “Yellow Vest” protests in France illustrate how poorly communicated tax reforms can trigger social backlash, even in high-income economies.



## Energy taxes rates

Energy taxes rates have evolved significantly over the past three decades, reflecting shifts in climate policy, fiscal priorities, and political economy constraints. In high-income economies, rates have generally increased gradually and predictably, aligning with long-term emission reduction targets and minimizing economic shocks. Countries such as Sweden and Denmark have maintained some of the highest energy tax rates globally, with carbon taxes exceeding US\$117 per tonne in recent years, reflecting strong environmental commitments and robust administrative capacity. These rates set by Sweden and Denmark align with the High-Level Commission on Carbon Prices recommended benchmark of US\$40–80 per tonne of CO<sub>2</sub> by 2020 and US\$50–100 per tonne by 2030 in order to achieve the Paris Agreement’s goals. Consequently, developed economies place greater emphasis on environmental effectiveness,

price certainty, and policy credibility than on short-term revenue extraction, using energy and carbon tax rates as strategic instruments to drive technological change, emissions reductions, and long-term climate planning.

Developing countries have generally applied lower and less differentiated energy tax rates, driven primarily by revenue needs and affordability concerns as well as climate objectives. Fuel excise duties in sub-Saharan Africa, including Kenya, often range between 10 and 30 percent of retail fuel prices, but these levies are not explicitly linked to carbon content and rarely increase over time. The absence of carbon-based differentiation reflects both technical limitations in monitoring emissions and political sensitivity to energy price increases in economies where fuel costs constitute a significant share of household expenditure. Moreover, energy subsidies remain prevalent in several African countries, further rendering the tax rates less effective.

Rate setting has not been without challenges, even in advanced economies. Political resistance to perceived cost increases has derailed or delayed reforms, as illustrated by France's aborted carbon tax proposal following widespread protests in 2018. Developing countries face additional hurdles, including volatility in global fuel prices, which complicates efforts to maintain predictability in revenue generation and weak enforcement capacity, which limits compliance at higher rates. These challenges highlight the delicate balance policymakers must strike between environmental ambition, economic competitiveness, and social equity.



### Exemptions from Energy Taxes

Countries have employed a range of exemption strategies tailored to their economic and social contexts. In France, agricultural diesel enjoys reduced tax rates to shield farmers from abrupt cost increases, reflecting the sector's strategic importance and limited short-term substitution options. Italy and Spain have historically granted exemptions for electricity-intensive industries, citing competitiveness concerns within the EU single market. In Canada, British Columbia's carbon tax exempts certain interjurisdictional transport fuels, acknowledging the complexity of taxing emissions across provincial boundaries. Developing countries often adopt implicit exemptions through fuel subsidies, which lower effective tax rates for all consumers but disproportionately benefit wealthier households, a practice widely criticized for its fiscal and environmental inefficiency. These examples illustrate the diversity of exemption practices and the trade-offs they entail.

For African economies, several policy lessons emerge. First, exemptions should be targeted, temporary, and transparent, limited to sectors with verifiable exposure to international competition and governed by clear sunset clauses. Second, social equity objectives are best addressed through direct cash transfers or tax credits for vulnerable households rather than generalized fuel subsidies, which are fiscally costly and regressive. Third, regional coordination on exemption frameworks would help avoid competitive undercutting and promote consistency in carbon pricing across East Africa. Finally, governments should consider complementary mechanisms, such as border carbon adjustments, although these are controversial due to concerns that they may be disguised trade barriers, and performance-based rebates, to sustain competitiveness while maintaining environmental integrity.

Transparency remains non-negotiable. Without clear disclosure of revenues and expenditures, environmental taxes risk being perceived merely as revenue-raising tools rather than instruments of sustainable development. In all contexts, powerful emitters will attempt to shape policy in ways that preserve their interests. The challenge for policymakers is to design environmental tax systems with minimal loopholes, backed by independent oversight institutions insulated from both political and corporate influence. Such discipline is essential to uphold the credibility, equity, and effectiveness of green fiscal policy in Africa.



### **Enhancing the Enforcement of Energy Taxes**

Administering energy and carbon taxes remains a formidable challenge, often constrained by technical capacity and inter-agency coordination. For instance, in Nigeria, the Federal Inland Revenue Service faces persistent difficulties enforcing even modest tariffs on flared gas (\$2–\$3.50 per Mscf), with unpaid liabilities pegged at over half a billion dollars in 2021. In South Africa, the DEA oversees compliance with carbon budgets and maintains the national emissions inventory. Independent auditors play a vital role by validating emissions reporting and financial records: SARS (South African Revenue Service) imposes stiff penalties (e.g., a 25% tax surcharge plus interest for late or incorrect carbon filings), backed by external verification requirements. Morocco, under its energy efficiency agency, conducts verifications for major industrial facilities; however, coverage is selective and capacity remains limited. These challenges highlight the need for satellite-based monitoring and increased technical investment to ensure reliable compliance.

Moreover, an ideal framework should also integrate e-invoicing data with emissions records through centralized digital tax platforms. Systems like Kenya's iTax portal can cross-verify fuel usage from eTIMS against emissions reports, triggering alerts if anomalies arise or if entities exceed permitted carbon budgets. This hybrid approach ensures that fuel purchases are detected via invoicing support, but it does not replace the legally mandated measurement of emissions. Ultimately, digital invoicing offers the fiscal transparency necessary for enforcing carbon tax regimes, while direct emissions monitoring and legal mandates establish the actual tax base and compliance standards.

### **2.1.3 Transport Taxes**

Environmental taxes on transport are among the most promising yet underutilized fiscal tools in Africa's climate and revenue generation strategies. These taxes primarily target the ownership and use of motor vehicles but can also apply to other modes of transportation such as aircraft, ships and railways. When well designed, they can reduce harmful emissions, promote cleaner transportation and generate stable domestic revenue. Although many African countries already implement some transport-related charges such as import duty on motor vehicles, registration fees and road levies, their environmental aspects are often weakly integrated. As a result, the potential of these instruments to influence behaviour and produce stable, optimal revenue outcomes remains largely underexploited.



### **Defining the Tax Base and Tax Rates**

At the centre of a reformed transport tax framework lies the Motor Vehicle Tax (MVT) which can serve as the cornerstone of an environmentally responsive regime. The MVT based on engine capacity and vehicle age can be implemented as an annual levy collected at vehicle registration or insurance renewal.

That tax rate can be differentiated based on engine capacities with a high of 5% for high-value/ luxury vehicles and a floor of 2.5% for low-value and low-emitting vehicles. In Germany, the motor vehicle tax includes the engine size (cylinder capacity), fuel type (diesel or gasoline) and CO<sub>2</sub> emissions. The annual motor vehicle tax charges €2 for every gram of CO<sub>2</sub> emitted above 95 g/km. The MVT in African countries would ensure high-emitting vehicle pay more thus creating a continuous incentive for households and firms to switch to cleaner, more efficient models.

Import and sales taxes on motor vehicles provide another key lever for reform that would complement the MVT. The widespread importation of second-hand vehicles in many African countries has resulted in an older, less efficient and more polluting fleet than the global average. The absence of upper age limits or differentiated import tariffs has contributed to this trend which allows the continued inflow of high-emission vehicles. As such, an import and sales tax of 25% for vehicles between 0 and 4 years, 35% for vehicles aged 4 to 8 years and a complete ban on all vehicles aged 10 years and above would be ideal. For instance, Uganda implemented an environmental levy on second-hand vehicles via the 2018 Traffic and Road Safety Act which can be restructured to promote environmental goals and boost revenue by charging higher rates on cars older than eight years and completely banning those over fifteen. However, experience shows that while such measures are effective at ports of entry they must be complemented by domestic circulation taxes to address the large stock of older vehicles already operating within the country. Integrating import duties with recurrent domestic taxes creates a consistent incentive framework that discourages pollution across the entire vehicle life cycle while maintaining a steady revenue stream.

Annual registration and circulation taxes ensure that environmental costs are continually internalized throughout a vehicle's lifespan once the vehicle enters circulation. These recurrent taxes can be based on engine size, emissions level or vehicle efficiency and would be typically collected during annual registration or insurance renewal. The rates can be differentiated from as low as 2% for low-emission vehicles up to 30% for high-emission vehicles and adjusted over time to encourage the retirement of older, high-emission vehicles and promote cleaner replacements. For instance, in Finland the vehicle registration tax is based on CO<sub>2</sub> emissions ranging from 2.7% of the vehicle's price for zero-emission cars to 48.9% for high-emission cars. In Ireland, the registration tax also depends on CO<sub>2</sub> and NO<sub>x</sub> emissions for passenger vehicles with up to nine seats and some commercial vehicles with more than four seats.

The taxation of road use adds another critical dimension to the design of transport environmental taxes but this would depend mainly on their design and purpose. Traditional motorway tolls and road use charges when applied solely for maintenance and cost recovery are not environmental taxes but they can be linked to environmental taxes through differentiation to reflect vehicle weight, intensity of emissions and congestion levels, hence internalizing the environmental costs. The toll charges can vary depending on the type of vehicle, age and engine capacity. For instance, toll systems can charge a higher cost for high-emission and heavy-duty vehicles to account for their pollution and greenhouse gases alongside their contribution to road wear and tear.

Congestion charges and city tolls offer direct and practical tools to reduce traffic and enhance the quality of the air. Singapore has operated an Electronic Road Pricing (ERP) system since 1998 to reduce congestion and improve travel time. Using over 80 sensors, it detects vehicles and charges fees based on vehicle type, route and time. The ERP earns about \$100 million annually which is reinvested in transportation. London introduced congestion pricing in 2003 to manage traffic and

fund transportation. Cameras record vehicles entering an 8-square-mile zone, and drivers pay £5 to £15 daily, with discounts for low-emission vehicles. The scheme raises about £200 million annually for transportation improvements. It has also lowered traffic congestion by 30%, increased bus ridership by 38% and decreased CO<sub>2</sub> emissions by 16%, maintaining these improvements over time despite population growth. Staffed toll booths, daily access stickers or differentiated parking fees are practical first steps that can still deliver visible results when coupled with clear public communication and transparent reinvestment of revenues in better public transport.

Transport taxation can also expand to other modes of transport further diversifying the environmental tax base. Levies on air travel and flight tickets target the fastest-growing sources of emissions worldwide and a sector dominated by higher-income users. Similarly, differentiated port and shipping fees can encourage cleaner fuels and improve vessel efficiency while modest surcharges on rail transport can yield small revenues without discouraging a relatively low-emission mode of travel. Together, these measures broaden the fiscal base of transport taxation while reinforcing environmental goals across sectors.



### **Exemptions From Transport Taxes**

In designing transport environmental taxes, targeted exemptions and preferential treatment should be considered to ensure fairness and policy coherence. Exemptions could be extended to public transport vehicles, emergency and essential service fleets, vehicles for persons with disabilities and low- or zero-emission vehicles. Kenya's existing excise duty structure, for example, already exempts certain specialized vehicles such as ambulances and fire trucks. However, exemptions should remain limited to avoid eroding the tax base or distorting incentives.



### **Administrative and Institutional Considerations**

The successful implementation of transport taxes in Africa depends on gradual sequencing, administrative simplicity and clear communication. Policymakers should begin with measures that are easy to administer such as differentiated import duties and annual circulation taxes and progressively introduce more sophisticated tools like congestion charging as capacity develops. Administratively, existing vehicle registries and inspection systems provide a solid foundation for enforcement. However, many African countries still face challenges, including outdated vehicle databases, weak emissions testing capacity and limited digital integration between agencies. Strengthening the linkage between the National Transport and Safety Authority (NTSA) and the Kenya Revenue Authority (KRA) in Kenya, for example, could improve data accuracy and compliance monitoring.

Institutionally, transparency in the use of revenues is essential to maintain public trust and political support for environmental taxes more broadly, not only those applied to transport. Strong coordination between revenue, environment and transport authorities is critical for the successful implementation of transport environmental taxes. Ringfencing a portion of revenues for sustainable transport investments such as electrified buses and Bus Rapid Transport Systems (BRT), non-motorised transport infrastructure and road safety initiatives can enhance legitimacy and behavioural acceptance. Most importantly, transport environmental taxes must demonstrate tangible public benefits. Public communication campaigns and citizen participation in planning can further strengthen compliance and accountability.

However, implementing the various transport environmental taxes faces several challenges which include political and public resistance due to perceptions of unfairness, weak institutional and enforcement capacity, limited public transport options and poor transparency in revenue use. Many existing charges lack clear environmental goals, while fragmented policy frameworks and outdated vehicle data systems hinder effective implementation. To address these issues, African governments should adopt a phased and transparent strategy that links environmental taxes to visible improvements in mobility and air quality, invests in reliable public transportation to offer viable alternatives and strengthens administrative systems for enforcement and monitoring. Clear communication, equitable design and transparent reinvestment of revenues are essential for building public trust and ensuring that transport ETs serve as effective tools for climate action and raising revenues for sustainable development.

### 2.1.4 Resource Taxes

Resource taxes are a form of environmental taxation designed to internalize the environmental costs associated with the extraction and use of natural resources such as minerals, water, forests, land, wild flora, and fauna. Their primary goal is to discourage the overexploitation of these resources while generating government revenue that can be used to support sustainable management and conservation efforts. Resource taxes ensure that users and extractors contribute to the preservation of ecosystems by linking tax liability directly to the quantity of resource extracted or used, often through volume-based assessments rather than profit-based systems. This approach not only raises revenue but also provides economic incentives for efficient and responsible resource utilization. The rationale behind such taxation is that natural resources and ecosystems are vital to the livelihoods of many people, serve as safety nets for local communities, and are central to climate change adaptation and mitigation efforts. By creating financial incentives for good practices such as sustainable forest management and responsible extraction, resource taxes complement regulatory measures and promote long-term environmental sustainability across many African countries.



#### Defining the Tax Base and tax rate for Resource Taxes

The effectiveness of resource taxation depends on a clearly defined and measurable tax base. ATAF emphasizes that the tax base should correspond directly to physical quantities of resources extracted or utilized such as tons of minerals mined, cubic meters of water abstracted, or cubic meters of timber harvested. By anchoring the tax base in measurable indicators, governments can capture environmental degradation and promote accountability in resource use. South Africa provides a good example through its mineral royalty framework, where the tax is calculated based on the gross sales value of extracted minerals, adjusted for profitability. This approach ensures that both the scale and value of extraction are reflected in tax assessments, making the system responsive to economic conditions while ensuring environmental sustainability. However, practical considerations must also guide the choice of a tax base to reduce the administrative complexity of a tax including ease of collection.

ATAF recommends that rates be set at levels that internalize environmental externalities while remaining administratively feasible and economically efficient. Rates can take the form of fixed charges per unit of extraction or ad valorem rates based on the resource's market value. Botswana's water abstraction charges illustrate this principle effectively. The country applies a tiered rate system in which industrial and commercial users pay higher charges than domestic users, thereby encouraging conservation and efficient resource utilization. This approach reflects the "polluter pays" principle, ensuring that resource taxes promote equity and sustainability in natural resource management.

Environmental taxes in the forestry sector in low-income countries are often complex and comprise multiple instruments such as stumpage fees, felling taxes, charges on the extraction of particular species, area or volume-based levies on timber, and export duties differentiated by species or quantity. In many cases, these taxes remain unchanged for long periods without revision or adjustment to reflect economic conditions. Weak enforcement, driven by limited administrative capacity, poor fiscal governance and corruption, further undermines the effectiveness of these taxation measures in promoting sustainable forest management.

ATAF further recommends integrating resource taxes into broader environmental and fiscal frameworks. Beyond revenue mobilization, such taxes can promote sustainable resource use and support community development. Rwanda's mining royalty system demonstrates this integration by earmarking a portion of the revenues for community development projects in mining regions. This not only enhances the legitimacy of resource taxation but also ensures that affected communities benefit from local resource exploitation.

Taxes on natural resources hold significant potential for enhancing both fiscal capacity and environmental stewardship. Uganda's Sustainable Fisheries User Levy has demonstrated it is possible to achieve environmental sustainability through resource taxes. The levy charged as a royalty of 2 percent on value of all fish raises an estimated USD 2.5 million annually. Twenty (20) percent of these revenues are dedicated to the general budget while the rest of the revenues are invested in improving management practices, including research, surveillance and enforcement. The levy is complemented by a permit system for fishers that raises revenues from user fees.



## **Administrative and Institutional Considerations**

Administrative and institutional capacity are also crucial for successful implementation. ATAF underscores the need for robust data systems, inter-agency coordination, and transparent monitoring to minimize underreporting and enhance compliance. Ghana's forestry sector offers an instructive example, where the Forestry Commission collaborates with the Ghana Revenue Authority to monitor timber harvests and verify tax obligations. This joint framework strengthens compliance and ensures that tax policy supports environmental protection. For Kenya, similar coordination between the Kenya Revenue Authority, the Ministry of Environment, and sectoral agencies could enhance monitoring and improve the management of forestry and mining taxes.

However, as Cottrell and Falcão (2028) resource taxes are often designed primarily as revenue generating instruments rather than mechanisms to promote sustainability or curb ecological degradation. The result is that they may raise revenue but fail to curb unsustainable activity. For example, despite raising considerable revenues from environmental taxes on fisheries in West Africa, it is estimated that about 50 percent of all marine fisheries in the region are overfished. The same challenge exists in forestry. In

Uganda, for example, the forest revenue system relies on licence and fee-based charges on activities such as timber harvesting, charcoal production and non-timber forest products. Revenues generated by the Forestry Department increased from approximately US\$ 100 million (about US\$ 50,000) in 1990 to about US\$ 1 billion (about US\$ 5 million) by 1999/2000, with timber royalties accounting for nearly 60 percent of total forest revenue. Despite these gains, the system has been criticised for failing to internalise environmental costs or incentivise sustainable harvesting practices, thereby weakening the potential of fiscal instruments to serve conservation objectives.

In introducing environmental taxes, African countries must also consider their implications on equity in addition to meeting their intended environmental goals. Niger's example demonstrates how governments can integrate social equity and sustainability in the design of environmental taxes. Niger's decentralised tax on wood resources is managed by local populations, with revenues flowing to local management structures, village communities and development funds. This localised system supports investments in healthcare, education and water supply, reduced rural-urban migration, and enhanced food security.



### Exemptions from resource taxes

Exemptions from resource taxes are widely used across developing countries, particularly in forestry and fisheries, often justified as measures to promote investment, support local livelihoods, or reduce administrative burdens. However, when such exemptions are broad, permanent, or poorly targeted, they tend to undermine environmental and fiscal objectives. Instead of promoting sustainable resource use, they reduce the effectiveness of tax instruments designed to internalize environmental costs, weaken fiscal governance, and create opportunities for rent seeking. Cottrell and Falcão (2018) recommends that exemptions should be time bound, transparent, and periodically reviewed to ensure they remain consistent with environmental and equity goals.

The experience of Benin demonstrates the long-term fiscal and environmental costs of failing to adjust or review resource tax rates. The country's timber extraction charge, known as the *permis de coupe*, remained unchanged for over 30 years between 1974 and 2005, effectively losing its real value due to inflation. This significantly reduced the government's ability to capture forest rents and finance conservation and enforcement. Similarly, across West Africa, fisheries tax regimes have been weakened by low licence fees and exemptions granted to industrial fleets. In Ghana, for instance, industrial fishing licence fees collected in 2018 represented only 0.4 percent of the landed value of catches, far below regional benchmarks, limiting public revenue and weakening the fiscal leverage needed to manage fish stocks sustainably.

The persistence of low or unreviewed tax rates and exemptions in the forestry and fisheries sectors contributes to fiscal leakage, weakens environmental incentives, and distorts equity in resource access. Research evidence suggests that subsidies and incentives contribute to overexploitation of natural resources and as a result cause environmental harm. A review of Cameroon's forestry and wildlife taxation system confirms this claim; forestry and wildlife taxation system shows that some concessions and reduced rates are granted to both domestic and foreign operators, often without clear public justification, while general rates have remained largely unchanged over extended periods. This combination of outdated rates, broad exemptions, and limited enforcement reduces the corrective impact of taxation on resource use. Therefore, effective reform should prioritise narrowing exemptions, publishing clear justifications for any concessions, adjusting rates regularly to account

for inflation and environmental damage, and strengthening enforcement. By aligning resource taxation with sustainability and equity objectives, governments can enhance both revenue mobilisation and the long-term protection of natural resources.

From a governance and equity perspective, these cases demonstrate that while resource taxes can strengthen domestic revenue mobilisation and reduce reliance on external borrowing, poorly designed systems risk reinforcing inequality and environmental degradation. In both Uganda and West Africa, weak regulatory oversight and low penalty regimes, reduce the effectiveness of taxation as a tool for resource stewardship. Furthermore, uniform or regressive tax structures disproportionately burden small scale and subsistence users, often rural and low-income households, who rely on forests and fisheries for their livelihoods. As Cottrell and Falcão argue, environmental tax design must therefore integrate social equity and sustainability principles to ensure that fiscal instruments contribute not only to state revenues but also to the long-term resilience of ecosystems and the communities that depend on them as demonstrated in Niger's example.

### 2.1.5 Pollution Taxes

Pollution taxes impose levies on emissions of harmful substances to air, water, and land and are classified into five main categories based on the type of pollution they target: solid waste, wastewater, air pollution, hazardous chemicals, and noise. Pollution taxes may be explicit which are measured at the emission source or implicit, which are based on inputs related to pollution. Explicit emissions taxes directly charge firms for actual pollution and are economically, the best instrument governments use for correcting externalities. In practice, however, measuring each pollutant is difficult or costly, so many countries instead employ tax proxy measures, an example is applying excise duties to the production or import of pollutive goods.

Solid waste taxes include a range of measures designed to reduce waste generation, addressing externalities such as disease, greenhouse gas (GHG) emissions, and marine plastic pollution. Kenya for instance had a plastic bag levy which is a great example of a solid waste tax. Wastewater taxes apply to various sources of water contamination such as industrial discharge and sewage effluents. Air pollution taxes target emissions that degrade air quality, including both greenhouse gases and other pollutants like sulphur dioxide ( $\text{SO}_2$ ) and nitrogen oxides ( $\text{NO}_x$ ). Hazardous chemical taxes cover substances such as pesticides and radioactive waste, which release harmful pollutants into the air, water, and soil. Noise pollution taxes focus on regulating excessive noise levels, with a particular emphasis on emissions from airports and other high-noise activities.

Pollution taxes raise only modest revenue on average. According to the OECD, pollution taxes yield about 0.04% of GDP in OECD countries. Notwithstanding, pollution taxes serve as regulatory tools that effectively influence change in behavior and encourage firms to internalize environmental costs.



#### Defining the Tax Base and Tax Rates

The tax base for a pollution levy depends on the pollutant and how it can be measured. Ideally, taxes are set per unit of pollutant emissions (e.g. €/kg of  $\text{SO}_2$  or  $\text{NO}_x$ , or €/ton of waste). For example, many air-pollution taxes are explicit charges per ton of emitted pollutant. Water-pollution taxes often use

measures like biochemical oxygen demand or chemical oxygen demand of effluent, or a composite “pollution unit” that weights substances by toxicity. Hazardous chemicals are usually taxed per kilogram or liter of substance with higher rates for more toxic substances. Noise charges typically target the source of noise.

In principle, the tax rate on emissions of a pollutant should correspond to the marginal social damage (MSD) that those emissions cause. By imposing a tax per unit of emissions, polluters are incentivized to reduce any emissions that can be abated at lower costs. This mechanism ensures that all cost-effective abatement measures are undertaken, leading to an economically efficient outcome where the emissions tax is equal to the marginal social damage.

Many countries manage pollution not through fiscal instruments but via “command-and-control” regulations, which establish specific limits on the permissible emissions of hazardous substances. The choice between using taxes or regulations depends on the relative risks associated with pollution and the costs of implementing abatement measures. In some contexts, regulatory controls may be more effective, while in others, economic instruments such as pollution taxes offer greater efficiency and flexibility. Effective pollution taxes require strong institutions and clear regulations. Shared responsibilities among relevant agencies is key. Typically, the Ministry of Finance (or National Treasury) and Revenue Authority handle tax collection, while an environment or energy agency may set targets and monitor emissions.

Reliable data on emissions or pollution-generating activities is critical. Countries must track fuel sales, import volumes, or self-reported emissions to enforce the tax. Many African countries have limited data systems, so taxes may initially rely on well-documented proxies. As data systems improve, governments could refine the base (e.g. introduce periodic audits for major industries).

The tax must be hard to evade. Using established tax helps minimize loopholes. Penalties for under-reporting or smuggling should be clear and enforceable. For example, a customs duty on plastic imports can be easily checked at ports, whereas measuring actual plastic consumption domestically is harder. Tax authorities may need training and resources to handle new tax regimes. A climate tax might require specialized auditors or new software. Regional bodies like the African Tax Administration Forum (ATAF) provide guidance on environmental taxes for member countries.

Introducing any new tax faces opposition. Pollution taxes may be particularly sensitive if public awareness of climate issues is low. Garnering support often requires transparent dialogue, gradual implementation, and clear revenue use. Early engagement and demonstration projects can build confidence. In sum, institutional readiness from legal frameworks to inter-agency coordination is as important as technical design. Governments should plan well in advance to allow systems and society to adapt.



### **Exemptions in Pollution Taxes**

Exemptions are sometimes granted to industries to avoid harming international competitiveness or to encourage environment investment. However, these exemptions can weaken the tax effectiveness and revenue generation. Furthermore, these exemptions create inefficiencies in pollution abatement

and undermine application of the polluter pays principle. They are often introduced to balance environmental objectives with economic and administrative practicality. Additionally, exemptions may apply where alternative regulatory measures already control emissions, or where taxation could cause excessive administrative burden relative to environmental gains. While these provisions aim to prevent economic distortion and double regulation, they can reduce the environmental effectiveness of the tax if applied too broadly.

## 2.2 Revenue Potential from Environmental Taxes in Africa

Environmental taxation across Africa remains limited in scale but unevenly distributed, with a few frontrunners demonstrating that well-designed instruments can yield meaningful fiscal revenues and support sustainability goals. Using reported figures for 2017–2021, this section presents both the revenue levels and share of GDP across a subset of African economies, applying the IMF typology of environmental taxes, energy, transport, pollution, and resource-based.

Table 2: IMF Classification of Environmental Taxes and Common African Applications

| Type of Environmental Tax | Description                                                                                        | Typical Examples in Africa                                                                             |
|---------------------------|----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| <b>Energy taxes</b>       | Levies on energy products used for transport or stationary purposes; primarily fuel excise duties. | Fuel levy (Kenya, Uganda), carbon tax (South Africa), electricity levy (Morocco)                       |
| <b>Transport taxes</b>    | Taxes on vehicle ownership, registration, or road use.                                             | Vehicle import duty (Kenya, Mauritius), congestion charges (Seychelles), road maintenance levy (Kenya) |
| <b>Pollution taxes</b>    | Charges on emissions, waste, or pollutants.                                                        | plastic bag levy (Kenya), waste management fees (Mauritius)                                            |
| <b>Resource taxes</b>     | Taxes on extraction or depletion of natural resources.                                             | water abstraction charges (Seychelles), forestry and sand permits (Kenya)                              |

The table below presents cumulative environmental tax collections in Africa (2017–2021) based on available IMF data, illustrating the dominance of energy and transport taxes within the overall composition.<sup>[1]</sup>

Table 3: Cumulative environmental tax collections in Africa (2017–2021) – Africa vs OECD/EU

| Category                    | Africa Total (USD bn) | Africa % of Total ET | EU-27 Total (USD bn, 2017–2021) | EU-27 % of Total ET |
|-----------------------------|-----------------------|----------------------|---------------------------------|---------------------|
| Environmental Taxes (Total) | <b>62.55</b>          | 100%                 | <b>1,837.9</b>                  | 100%                |
| Taxes on Energy             | 47.9                  | 77%                  | 1,327.0                         | 72.2%               |
| Taxes on Transport          | 13.24                 | 21%                  | 425.2                           | 23.2%               |
| Taxes on Pollution          | 0.68                  | 1%                   | 46.0                            | 2.5%                |
| Taxes on Resources          | 0.92                  | 1%                   | 36.8                            | 2.0%                |

DataSource(Author calculation): [https://climatedata.imforgdatasets/3fb1ed30d3394574b3145246846023b1\\_0/explore](https://climatedata.imforgdatasets/3fb1ed30d3394574b3145246846023b1_0/explore)

This comparison illustrates a contrast between African and OECD/EU tax structures. While energy and transport taxes dominate both regions, OECD/EU countries collect a larger proportion from pollution and resource-based instruments, which diversifies their fiscal base and strengthens incentives for sustainable production and consumption.

Energy and transport taxes dominate across the continent, accounting for more than half of all environmental tax revenues. Between 2017 and 2021, energy taxes accounted for nearly 77% (USD 47.9 billion) of the continent's environmental tax base, while transport added a further about 21% (USD 13.2 billion). In contrast, pollution and resource taxes made up just around 2% combined, a signal of both institutional gaps and political resistance from high-emitting sectors. This dominance stems from administrative ease, as they are collected through existing customs and excise systems. In contrast, pollution and resource taxes remain negligible across most African jurisdictions due to weak monitoring frameworks, limited institutional enforcement capacity, and political resistance from extractive and manufacturing sectors.<sup>[1]</sup>

This structural composition of environmental taxes differs significantly from that of Organisation for Economic Co-operation and Development (OECD) and European Union (EU) countries. While OECD and EU member states also rely heavily on energy- and vehicle-related taxes, they tend to collect a larger proportion of revenue from pollution- and resource-based instruments. These include explicit carbon taxes, emissions trading systems (ETS), and broader use of resource royalties, which complement energy taxation and provide a more diversified and resilient revenue base. This relatively balanced mix allows these countries not only to raise fiscal revenue but also to incentivize greener production and consumption patterns, encourage the adoption of low-emission technologies, and promote sustainable use of natural resources. By contrast, countries with a narrower focus on fuel and vehicle taxes may see declining real revenue over time as energy efficiency improves and vehicle fleets transition to lower-emission alternatives. A broader and more diversified tax base, as observed in OECD and EU countries, thus strengthens both environmental and economic outcomes, offering lessons for emerging and developing economies seeking to "green" their taxation systems while maintaining fiscal stability.

In the EU-27, environmental taxes have increased in absolute terms from €259.6 billion in 2010 to a provisional €341.5 billion in 2023. However, as a share of GDP, environmental taxes have declined from 2.4% in 2010 to 2.0% in 2023, and as a share of total government revenue, from 6.3% to 5.1% over the same period. Energy taxes continue to dominate the EU's environmental tax structure, accounting for 76.4% of revenues in 2023. However, the EU has registered modest but steady growth in pollution and resource taxes (together 4.8% in 2023), driven by strengthened fiscal measures such as emissions trading, waste levies, and circular-economy incentives. This stands in contrast to Africa, where environmental taxes contribute less than 1% of GDP, and remain heavily skewed toward fuel and vehicle levies with minimal adoption of pollution or resource-based instruments. The EU's shift, though modest, reflects a broader strategic move toward pricing environmental externalities beyond energy, indicating policy space that African economies could potentially explore as institutional capacity expands.

The revenue impact of energy taxes has been substantial in many jurisdictions, though outcomes vary by design and context. In OECD countries, environmental taxes account for an average of 6.7 percent of total tax revenues and approximately 2 percent of GDP, with energy taxes comprising the largest share. In developing economies, fuel levies remain a critical source of government revenue, though their environmental impact is limited by low rates and persistent subsidies. South Africa collected an estimated ZAR 1.6 billion in 2022, while this amount makes up less than 0.2% of the total revenue

collected, the carbon tax has the potential to become a significant contributor when the second phase begins in 2026 due to planned increases in the tax rate (legislated to reach \$30 per tonne by 2030), broader coverage of sectors, and strengthened enforcement mechanisms.

In effect, Africa has a highly concentrated tax profile: heavy reliance on fuel and transport taxes, minimal use of pollution and resource pricing, and far lower overall environmental tax yields than European or OECD counterparts. While energy and transport bases offer short-term administrative efficiencies, Africa's limited use of pollution and resource taxes reflects unexploited potential for broadening revenue and driving green behaviour change. Africa is not simply at a lower level of environmental taxation, it also has a *narrower and less diversified* mix, missing out both on fiscal revenues and environmental incentives that align growth and sustainability.

However, there is significant variation between countries. The data show a concentration of revenue among a few leaders, who have either diversified their environmental tax bases or effectively integrated energy and transport levies into fiscal frameworks. Between 2017 and 2021, South Africa, Kenya, Ghana, and Mauritius collectively contributed significantly to environmental tax revenue in Africa.

Table 4: Environmental Tax Revenues in Some African Countries (2017–2021)

| Country      | 2017 (USD bn) | 2018 (USD bn) | 2019 (USD bn) | 2020 (USD bn) | 2021 (USD bn) | Avg. % GDP (2017–2021) |
|--------------|---------------|---------------|---------------|---------------|---------------|------------------------|
| Seychelles   | 0.08          | 0.07          | 0.08          | 0.05          |               | 4.38%                  |
| Mauritius    | 0.34          | 0.4           | 0.43          | 0.3           |               | 2.97%                  |
| South Africa | 9.53          | 10.38         | 10.35         | 8.8           |               | 2.94%                  |
| Kenya        | 1.76          | 1.9           | 2.15          | 1.84          |               | 2.10%                  |
| Senegal      | 0.36          | 0.36          | 0.39          | 0.56          | 0.54          | 1.80%                  |
| Ghana        | 1.09          | 1.15          | 1.04          | 1.18          |               | 1.70%                  |
| Uganda       | 0.52          | 0.59          | 0.65          | 0.66          |               | 1.80%                  |
| Tunisia      | 0.65          | 0.6           | 0.57          | 0.55          |               | 1.30%                  |
| Burkina Faso | 0.16          | 0.19          | 0.19          | 0.2           |               | 1.10%                  |
| Morocco      | 0.26          | 0.29          | 0.32          | 0.39          |               | 0.30%                  |
| Nigeria      | 0.06          | 0.08          | 0.1           | 0.08          |               | 0.02%                  |

DataSource(authorscalculation): [https://climatedata.imf.org/datasets/3fb1ed30d3394574b3145246846023b1\\_0/explore](https://climatedata.imf.org/datasets/3fb1ed30d3394574b3145246846023b1_0/explore)

The data reveal three clear tiers of performance across the continent:



### High-performing economies

Seychelles (4.38% of GDP), Mauritius (2.97%), South Africa (2.94%), and Kenya (2.10%) are clear leaders. These countries combine broad tax bases, energy, transport, and, in some cases, pollution levies, with relatively strong institutional capacity. Based on total tax-to-GDP ratios (ranging from ~14% in Kenya to ~21% in Mauritius), environmental taxes in these economies likely account for between 10–20% of total tax revenue, levels comparable with advanced OECD economies. Their cases illustrate that African countries can, in practice, achieve environmental tax-to-GDP ratios in the 2–3% range, and derive significant fiscal space from pollution and resource taxes when supported by sound policy design.<sup>[1]</sup>

Table 5: Environmental Tax Revenues in High-Performing African Economies (2017–2021)

| Country      | Indicator           | 2017(USD)      | 2018(USD) | 2019(USD)      | 2020(USD)     | 2021(USD) | TOTAL          |
|--------------|---------------------|----------------|-----------|----------------|---------------|-----------|----------------|
| Seychelles   | Environmental Taxes | 75,000,000     |           | 75,000,000     | 51,750,000    |           | 201,750,000    |
| Seychelles   | Taxes on Energy     | 61%            |           | 61%            | 61%           |           | 61%            |
| Seychelles   | Taxes on Pollution  |                |           |                |               |           |                |
| Seychelles   | Taxes on Resources  |                |           |                |               |           |                |
| Seychelles   | Taxes on Transport  | 39%            |           | 39%            | 39%           |           | 39%            |
| Mauritius    | Environmental Taxes | 425,600,000    |           | 425,600,000    | 298,166,667   |           | 1,149,366,667  |
| Mauritius    | Taxes on Energy     | 38%            |           | 38%            | 34%           |           | 36%            |
| Mauritius    | Taxes on Pollution  | 4%             |           | 4%             | 5%            |           | 5%             |
| Mauritius    | Taxes on Resources  | 2%             |           | 2%             | 1%            |           | 2%             |
| Mauritius    | Taxes on Transport  | 56%            |           | 56%            | 60%           |           | 57%            |
| South Africa | Environmental Taxes | 10,345,000,000 |           | 10,345,000,000 | 8,804,878,049 |           | 29,494,878,049 |
| South Africa | Taxes on Energy     | 87%            |           | 87%            | 86%           |           | 86%            |
| South Africa | Taxes on Pollution  | 1%             |           | 1%             | 1%            |           | 1%             |
| South Africa | Taxes on Resources  |                |           |                |               |           |                |
| South Africa | Taxes on Transport  | 12% %          |           | 12%            | 13%           |           | 13%            |
| Kenya        | Environmental Taxes | 2,147,500,000  |           | 2,147,500,000  | 1,841,666,667 |           | 6,136,666,667  |
| Kenya        | Taxes on Energy     | 42%            |           | 42%            | 38%           |           | 41%            |
| Kenya        | Taxes on Pollution  |                |           |                |               |           |                |
| Kenya        | Taxes on Resources  |                |           |                |               |           |                |
| Kenya        | Taxes on Transport  | 58%            |           | 58%            | 62%           |           | 59%            |

Table 6: Environmental Taxes as a Share of Total Tax Revenue (2017, 2019, 2020)

| Country      | 2017 Env Tax (USD Bn) | 2017 Total Tax (USD Bn) | 2017 Share (%) | 2019 Env Tax (USD Bn) | 2019 Total Tax (USD Bn) | 2019 Share (%) | 2020 Env Tax (USD Bn) | 2020 Total Tax (USD Bn) | 2020 Share (%) |
|--------------|-----------------------|-------------------------|----------------|-----------------------|-------------------------|----------------|-----------------------|-------------------------|----------------|
| Seychelles   | 0.08                  | 0.77                    | <b>9.80%</b>   | 0.08                  | 1.05                    | <b>7.10%</b>   | 0.05                  | 0.79                    | <b>6.50%</b>   |
| Mauritius    | 0.43                  | 4.48                    | <b>9.50%</b>   | 0.43                  | 5.46                    | <b>7.80%</b>   | 0.3                   | 5.08                    | <b>5.90%</b>   |
| South Africa | 10.35                 | 178.02                  | <b>5.80%</b>   | 10.35                 | 192.4                   | <b>5.40%</b>   | 8.8                   | 194.16                  | <b>4.50%</b>   |
| Kenya        | 2.15                  | 31.68                   | <b>6.80%</b>   | 2.15                  | 35.16                   | <b>6.10%</b>   | 1.84                  | 34.79                   | <b>5.30%</b>   |

Source: <https://ato.ataftax.org/atafdatabank/>

Environmental taxes constitute a meaningful component of total government revenue in high-performing African economies. In Seychelles, environmental taxes accounted for 9.8% of total tax revenue in 2017, falling to 7.1% in 2019 and 6.5% in 2020. Mauritius shows a similar pattern, with environmental taxes representing 9.5% in 2017, 7.8% in 2019, and 5.9% in 2020. In South Africa, environmental taxes contributed 5.8%, 5.4%, and 4.5% in 2017, 2019, and 2020, respectively, while Kenya's environmental taxes accounted for 6.8%, 6.1%, and 5.3% over the same years. These figures demonstrate that environmental taxes already form a material share of domestic revenue mobilisation, highlighting their fiscal importance alongside their environmental objectives.



### Mid-range performers

Countries such as Ghana (1.70%), Senegal (1.80%), Uganda (1.80%), and Tunisia (1.30%) fall into the mid-performance band, averaging 1–2% of GDP in environmental tax revenue. These countries primarily rely on fuel levies and vehicle-related taxes, which are easier to administer but may not fully reflect environmental externalities. Given their total tax-to-GDP ratios (ranging from ~12% in Ghana and ~20% in Senegal), environmental taxes in this group likely account for 5–8% of total tax revenues. This tier reflects economies that have institutional capacity for modest environmental taxation but have yet to meaningfully diversify into pollution or resource-based instruments.



### Low performers

Nigeria (0.02%) and Morocco (0.30%) represent countries where environmental taxes contribute less than 1% of GDP, indicating largely untapped revenue potential. Both countries also have narrower tax bases and, in cases like Nigeria, extremely low total tax-to-GDP ratios (~7.9% as of 2022). As a result, environmental taxes represent less than 1–3% of government revenue. Barriers include entrenched fossil fuel subsidies, weak enforcement systems, and limited alignment between fiscal and environmental policy frameworks, even in contexts like Morocco, where renewable energy targets are otherwise ambitious.

## 2.2.1 Revenue Scaling Scenarios: Lower and Upper Bound Potential

Africa's average environmental tax revenue currently stands at less than 1% of GDP, well below the OECD average of 1.82% of GDP and the EU of above 2%–2.4% of GDP. If African countries were to replicate the performance of current regional leaders, the potential fiscal yield could be transformative. Assuming Africa's combined GDP is approximately USD 2 trillion annually (World Bank, 2022), raising environmental taxes to match leading regional performers, 2% of GDP in countries like Kenya and Mauritius or 4.38% in Seychelles, would yield between USD 40 and USD 87.6 billion per year in dedicated revenue. These figures assume a gradual expansion of tax bases into pollution, resource extraction, and carbon levies, and do not include revenues generated from the removal of fossil fuel subsidies.

Fossil fuel subsidies in Africa represent a substantial fiscal drain, totalling approximately USD 434.5 billion in 2022, equivalent to more than 10% of the continent's GDP and far exceeding public spending on health or clean energy in many countries. This figure includes both explicit subsidies, such as direct underpricing of fuel, and implicit subsidies arising from the under-taxation of environmental and health externalities, based on IMF 2023 data adjusted to constant 2021 USD. The distribution of these subsidies is highly uneven, with just five countries, Egypt (USD 89.3 billion), Algeria (USD 75.3 billion), South Africa (USD 47.6 billion), Libya (USD 31.1 billion), and Nigeria (USD 25.5 billion), accounting for over 50% of the regional total. These subsidies not only distort energy markets and crowd out green public investments but also underscore the untapped fiscal space that could be unlocked through well-designed subsidy reforms and environmental tax broadening.

Table 7: Revenue Scaling Scenarios

| Scenario           | Assumed ET (% of GDP)        | Estimated Annual ET Revenue (Billion USD) | Fossil Fuel Subsidy Savings (Billion USD) | Total Potential Fiscal Gain (Billion USD) | Description                                                                  |
|--------------------|------------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------------|------------------------------------------------------------------------------|
| <b>Lower Bound</b> | 2.0% (Kenya benchmark)       | ~ 40                                      | ~ 435                                     | ~ 475                                     | Achievable through moderate ET reforms and full subsidy phaseout.            |
| <b>Upper Bound</b> | 4.38% (Seychelles benchmark) | ~ 87.6                                    | ~ 435                                     | ~ 522.6                                   | Ambitious ET expansion including pollution/resource taxes + subsidy removal. |

Given that Africa's average tax-to-GDP ratio is approximately 16%, raising environmental taxation from the current average of less than 1% to between 2% and 4.38% of GDP would increase overall tax revenues by 6–27 percentage points relative to current levels (since 1% of GDP equals roughly 6.25% of current tax revenues).<sup>2</sup> This scale of fiscal expansion is substantial: even a shift to 2% of GDP (~USD 40 billion) would mobilize more than USD 25 billion in net new resources after accounting for partial revenue recycling. Revenue recycling from environmental taxes or carbon pricing varies widely across jurisdictions and can include transfers to households (rebates or lump-sum payments), reductions in distortionary taxes (tax swaps), targeted support for affected industries, and direct funding for climate and nature programmes. Empirical reviews and policy guidance show that governments tend to use revenue mixes

2 Calculation of Revenue Increase: Africa's current average tax-to-GDP ratio is approximately 16% (OECD, 2024). This implies that every additional 1% of GDP in new tax revenue corresponds to a 6.25% increase relative to current tax collections (since  $1 \div 16 = 0.0625$  or 6.25%). Therefore, raising environmental taxes from less than 1% to 2–3.5% of GDP would represent an increase of 1–2.5 percentage points of GDP in revenue, equivalent to approximately 6.25–15.6% more tax revenue compared to current levels.

tailored to local priorities, for example, to protect vulnerable households, offset competitiveness impacts, or finance green investments, rather than following a single fixed rule. Analyses of carbon pricing systems and tax reforms find that a substantial share of revenues has been directed to climate-related spending in many jurisdictions (about half in one recent survey of carbon systems), while the OECD and World Bank emphasize the importance of combining redistribution (to address regressivity) and investment (to support the transition). These practices imply that a meaningful portion of ET or carbon revenues may need to be recycled to ensure social and political acceptability, but the actual share depends on domestic objectives and design choices.'



**A greener tax system  
isn't just good for  
the planet, it could  
generate USD 25+  
billion for Africa's  
development.**

# 3.0

## CASE STUDIES OF GOOD PRACTICE IN AFRICA

### 3.1 South Africa



South Africa operates among the continent's most advanced and diversified environmental tax architecture, combining energy levies, transport-related taxes, and an explicit carbon tax. The carbon tax, introduced on June 1, 2019, was Africa's first comprehensive carbon pricing instrument, initially set at USD 8.31 per ton of CO<sub>2</sub>e (equivalent to ZAR 120/tCO<sub>2</sub>e at the time). By 2025, the rate has risen to USD 12.69 per ton of CO<sub>2</sub>e (ZAR 236/tCO<sub>2</sub>e), with further increases planned, reaching USD 30 by 2030 and USD 120 by 2050 under South Africa's low-carbon transition pathway. Key revenue instruments include the Fuel Levy, now at approximately USD 0.21 per litre of petrol and USD 0.20 per litre of diesel (equivalent to ZAR 3.85/l and ZAR 3.70/l, respectively), and the Road Accident Fund Levy, charged at around USD 0.12 per litre (ZAR 2.18/l). Together with levies on electricity generation from non-renewable sources (electricity-generation levies started at R0.02/kWh and progressively climbed to R0.035/kWh), these instruments form the backbone of South Africa's green fiscal system.

South Africa's motor-vehicle carbon tax is levied at fixed rates per gram of CO<sub>2</sub> emissions above defined thresholds (R146 per gram beyond 120 g/km). Plastic bag levies, such as 25 cents per bag in South Africa, also exemplify a material-based tax approach.

Between 2017 and 2021, South Africa generated an average of USD 9.8 billion annually from environmental taxes, equivalent to about 2.9% of GDP, among the highest absolute yield on the continent. Administration is centralized under the South African Revenue Service (SARS), using established customs and excise mechanisms. During the initial phase, generous exemptions significantly reduced the effective carbon price to under USD 1 per ton, but policy reforms and reduced allowances mean effective rates are set to increase steadily, aligning both fiscal and emissions-reduction objectives.

In South Africa, accelerated depreciation allowances (Sections 12B, 12L, 12N, and 12U of the Income Tax Act) incentivize investment in renewable energy and energy-efficient infrastructure. However, certain resource-intensive industries may receive phased or partial exemptions to maintain international competitiveness, e.g., extra allowances for iron, steel, glass, cement, and sugar in South Africa's carbon tax scheme.

South Africa has solid technical capacity. It launched a measurement reporting verification (MRV) mechanism and offset scheme early on with World Bank support, though its uptake and technical efficiency have room for growth. As far as institutional coordination and governance go, South Africa Revenue Service (SARS) and the National Treasury handle the collection of carbon taxes. While they are capable, these institutions face structural challenges including weak inter-agency coordination between energy and environmental ministries. The legal and regulatory framework in South Africa entails a comprehensive Climate Change Act, which was enacted in July 2024. The act establishes carbon budgets for major greenhouse gas emitting companies, setting a limit on their emissions over a specified period of time. It also mandates local adaptation planning, which will require every province and municipality to assess climate change risks and develop a response plan thereby entrenching enforcement architecture of carbon tax in law.

## 3.2 Mauritius



Mauritius operates one of the most developed and revenue-productive environmental tax systems in Africa. The system relies predominantly on **energy- and transport-related excises**, including excise duties on petroleum products, the Maurice Île Durable (MID) levy, motor vehicle registration and ownership taxes, and a CO<sub>2</sub>-based levy/rebate for new cars. While these taxes are revenue-productive, their environmental alignment is mixed: for example, the MID levy applies a uniform rate across fossil fuels without regard to carbon content, and diesel, a more polluting fuel, is taxed at a lower excise than gasoline. Certain fossil fuels used in electricity generation, such as coal and fuel oil, are exempt from excises altogether. The bulk of revenues are collected upstream at import points, while vehicle registration and CO<sub>2</sub> levies represent downstream taxes on consumption.

Environmental taxes contribute historically **7–11% of total tax revenue**, with vehicle excises reaching **up to 100% of import value for large-engine vehicles**. Incentives for low-emission vehicles include excise reductions and import rebates, commonly around **USD 4,400 per qualifying** imports. Supplementary fuel levies on diesel raise its effective tax rate closer to European benchmarks (e.g., EU minimum rate of EUR 0.33/litre).

Mauritius relies on centralized excise systems at import points, ensuring high compliance and revenue stability. Multiple levies, including excise duties on fuel, contributions to the Build Mauritius Fund, and earmarked funds for subsidies on essential goods like LPG, flour, and rice, are collected through this centralized system. This approach streamlines administration but may reduce transparency, as the costs and benefits of individual levies can be harder to evaluate. The IMF has cautioned that such fragmentation could impede assessment of levy efficiency.

Many levies are **earmarked for specific funds**. MID levy proceeds, for example, are directed to the Maurice Île Durable Fund., supporting green initiatives such as renewable-energy projects. While earmarking can enhance public acceptance, it may limit fiscal efficiency by constraining reallocation of resources to higher-priority social or environmental objectives.

Mauritius has paired its environmental tax system with a reform agenda to scale up climate finance. The **2016 Green Economy Fiscal Policy Analysis** proposed converting the MID levy into a fully-fledged carbon tax by 2025, projecting revenue growth from **MUR 97 million (USD 2.68 million) in 2016–18 to MUR 943 million (USD 26 million) annually**. Transport fuel taxation reforms integrating carbon pricing would reduce gasoline prices by 3.9% while increasing diesel by 8.1%, generating an additional **MUR 282 million (USD 7.8 million)** per year, with distributional neutrality preserved. Other green fiscal incentives include **tax credits for renewable-energy investments, subsidies for electric vehicles, and rebates for energy-efficient appliances**.

Mauritius' environmental taxes yield materially more than the sub-Saharan average, estimated at **2–3% of GDP**, reflecting strong revenue productivity. This performance is largely due to energy- and transport-related excises rather than extensive use of complex pollution-pricing instruments. Environmental levies contributed roughly **8–9% of tax revenue in 2008/09 (~USD 172 million)**. Despite this performance, the system's corrective environmental function is partially compromised due to uniform or unevenly applied rates across fuels and exemptions for certain high-emission energy sources.

Like many countries with vehicle or fuel taxes, Mauritius faces structural challenges: excise yields are sensitive to import cycles, as illustrated by the 25-day transition period in 2025 when 6,703 new and refurbished vehicles were registered, resulting in a foreign currency outflow of approximately USD 200 million (Le Mauricien, 30 July 2025). Fuel-tax revenue is also exposed to longer-term decarbonization trends. Future reforms, including rationalizing waste tariffs ('pay-as-you-throw'), reforming domestic water pricing, and expanding green fiscal incentives, will be critical to sustain environmental objectives alongside fiscal efficiency. Mauritius illustrates how integrating tax base, rate design, administration, and earmarking is essential for any environmentally effective and revenue-productive system.<sup>3</sup>

3 [LE MAURICIEN, 2025, Automotive Market: Excise Duty 6,703 new cars on the roads in 25 days](#)

### 3.3 Seychelles



Seychelles has a variety of environmental tax instruments despite being a relatively small economy. The country has a tax-to-GDP ratio of 31.5%, the highest among African countries. This strong fiscal effort spreads to green taxes as well. The country achieves Africa's highest environmental tax-to-GDP ratio (4.4%) through its innovative tourism-linked levies. In recent years, the government has introduced a number of new levies and incentives aimed at environmental conservation and pollution control. The Environmental Protection Act (2016) forms the legal basis for these taxes and related measures.

In August 2023 Seychelles introduced an environmental sustainability levy. Every visitor to Seychelles pays a flat fee per night ranging from Seychelles Rupee 25-100 depending on accommodation size. The revenue generated from this levy are channelled towards an environmental fund. The levy explicitly targets tourists entering the country thereby raising earmarked revenue for conservation without necessarily broadening the tax base of residents.

On energy taxes, Seychelles structures are weighted toward consumption taxes on transport fuels, with preferential treatment of electricity fuels. The excise rates on petroleum are relatively high (SCR 8.5 per litre). Other taxes on energy are lower, in particular fuel used for power generation is charged at (SCR 0.50 per litre). This may cause environmental challenges, but the alternative would be taxing energy inputs used in electricity generation, thereby raising electricity prices. This would be politically challenging.

Seychelles uses customs duties as environmental levies. In 2015, all duties and environmental levies on electric vehicles were removed to encourage green transport. Similarly, goods imported for renewable-energy projects are exempt from VAT entirely.

Seychelles has also had a long-standing beverage container levy on plastics, glass bottles and cans, a form of pollution tax. This levy is meant to curb littering in the country. Since 2013, manufacturers and importers pay an environmental levy. In practice, the ministry of environment operates a deposit-refund system where consumers pay the levy on purchase and are indemnified once the containers are returned to recycling centres. Although revenues are small, these waste taxes influence a change in behaviour while limiting fiscal burdens on residents.

Concerning implementation and enforcement of these environmental taxes, the administration of environmental taxes involves multiple agencies. The Ministry of Finance, National Planning and Trade oversees revenue collection through its departments. Customs officers collect import duties and environmental levies at ports and airports. The Seychelles Revenue Commission administers domestic taxes and levies. Environmental authorities under the Ministry of Environment are responsible for enforcing waste-related levies and recycling regulations. In practice, enforcement is backed by strong penalties and public awareness. The small size and high transparency of Seychelles help ensure compliance.

For the new tourism levy, collection is straightforward: hotels and guesthouses collect the per-night fee from guests (similarly to the existing marketing tourism tax). Revenues are pooled into a designated environment fund. The container deposit scheme is enforced at retail and recycling centres, with the policy that any unreturned containers forfeit their deposits. Energy and vehicle taxes are collected at import or point-of-sale petrol stations. Auditing and cross-checks by finance and environment inspectors aim to minimize evasion. The effectiveness of these mechanisms is supported by international monitoring. Recent IMF reports note that the government maintains strict fiscal discipline and audits which reinforces tax compliance across the board, including for green taxes.

Seychelles' environmental tax program is often cited as a regional success. By design, the country leverages on its economic structure, small population accompanied by high tourism to raise green revenues efficiently. Taxing tourists rather than residents means the levy taps a large and growing base with minimal administrative cost. Likewise, the deposit-refund system for beverage containers has achieved high return rates. These features, together with Seychelles' generally high tax effort, make its environmental tax collections stand out.

Seychelles' overall tax collections are robust, which implies strong capacity to collect earmarked environmental taxes as well. In percentage terms, Seychelles' environment-related taxes are among the highest in the region. This performance reflects broad tax bases and diligent enforcement. In sum, Seychelles' top performance in environmental tax collection stems from a combination of comprehensive legislation, targeted tax design, and rigorous administration.

### 3.4 Netherlands



The Netherlands is a global pioneer when it comes to environmental taxes. The Netherlands's environmental taxes are tied to the country's broader goals like climate action, clean mobility and energy transition. These taxes have successfully influenced behavioural changes by consumers, such as the massive switch to electric vehicles by the general public. At the same time, they provide considerable contributions to public finances by promoting green investments and important services;

- a** Energy tax- which is applied to electricity and natural gas consumption. The Dutch government taxes the use of electricity and natural gas. Energy suppliers pay directly to the tax and customs administration and they may then charge the tax back to their customers. There are cases where companies you can receive an energy tax refund or exemption for instance if you use natural gas or electricity to generate electricity.
- b** Waste tax-The Dutch government implemented this tax in 2016 on waste that goes to landfills or is incinerated. There is no charge on waste that is recycled.
- c** Motor vehicle taxes-This is levied on the possession of a passenger car, delivery van, motorcycle, truck and on driving buses. It is a one- off tax on the first person who registers such a vehicle.
- d** Water tax-The Netherlands has both a tap water tax and a groundwater tax. The tap water tax is levied on businesses and households whose water is supplied through waterworks. The groundwater tax is a tax charged on the abstraction of fresh groundwater from the soil. The tax is paid by water companies, agricultural holdings and manufacturers.

The Netherlands collected 23 billion euros in 2023 from environmental taxes. This figure amounts to about 10% of the total tax revenue for the country. This is above the European Union average where environmental taxes generally contribute about 6-7%. This underscores the notion that environmental taxes are an integral part of the Dutch tax system. The reliance on consumption related taxes like energy use, fuel and waste generation makes the system predictable and reliable, as these bases are more stable than income or corporate taxes.

In the Netherlands part of the revenue collected is recycled into renewable energy subsidies, public transport investment and lower social security contributions. This demonstrates to the public that revenue is being utilised prudently, enhancing accountability.

In terms of institutional capacity to implement environmental taxes, the Netherlands has a strong and comprehensive technical capability. It operates on the European Union emissions trading system (EU ETS) under national laws. Under this system, regulated firms must submit verified emissions reports annually which provides a strong technical base for administering carbon pricing. The Dutch institutional and governance framework features a multi-tiered governance system which includes the national government, provinces and municipalities, with clear and vertically integrated roles in climate policy enabling strong local implementation of national agreements such as the Climate Agreement. The country has also integrated carbon pricing instruments into national laws.

### 3.5 Considerations in rolling out ETs: Lessons from country experiences

An environmental tax works best when designed to match environmental objectives. This, coupled with administrative simplicity and strong institutions ensure high compliance and revenue stability. Countries who are looking to implement effective environmental taxes can borrow concepts that worked from the above-mentioned case examples. These concepts can help in ensuring that the country in question sets up an efficient environmental tax system that is robust and equitable to all citizens.

Core considerations include ensuring the tax base reflects the targeted pollutant. For example, in Mauritius, the MID levy raises significant revenue but is not calibrated to carbon content. This has led to reforms aimed at transforming the levy into a product specific carbon price to improve environmental efficiency.

Countries should also consider collection points that minimize tax evasion and administrative costs. Seychelles and Mauritius do this effectively. In Seychelles, the tourism levy is collected at hotels for ease and high compliance, whereas in Mauritius, the country's reliance on centralized excise systems tied to import points ensures high compliance and revenue stability.

Social welfare is essential. Any government looking to implement environmental taxes should ensure that they protect poor and vulnerable households. Energy and fuel taxes are regressive if they are unaccompanied by compensatory actions like cash transfers, subsidies targeted toward the poor and reduced taxes on cleaner alternatives.

Institutional capacity should be considered before adoption because the technical ability to administer and enforce environmental taxes influences revenue mobilization and policy credibility. For example, in the Netherlands environmental tax revenues amounted to approximately 2.4 % of GDP, above the EU-27 average of around 2.0 %, and accounted for about 6.2 % of total tax revenues, also above the EU

average.<sup>4</sup> This reflects a relatively developed administrative and fiscal framework that enables broad tax bases and enforcement across energy, transport, and other environmental tax categories. Such capacity has also allowed the Netherlands to design recycling and reinvestment mechanisms, including subsidies and public transport investments, that reinforce the environmental and social goals of the tax system.

Countries also need sufficient institutional capacity before adopting such taxes. The Netherlands demonstrates this clearly: it has robust monitoring systems, digitalised tax administration, and strong enforcement mechanisms that ensure accurate reporting and high compliance. This technical capability explains why it collects more revenue than the EU average and channels it effectively into subsidies and public transport investment.

Furthermore, the Dutch government has strong coordination across ministries and independent oversight bodies, enabling effective enforcement, timely auditing, and recycling of revenues into targeted environmental programs, such as subsidies for renewable energy and public transport investments. This level of technical and administrative capacity allows the Netherlands to collect environmental taxes at rates well above the European average while maintaining high compliance and ensuring that revenues are effectively channeled into sustainable development objectives.

Exemptions should be tailored to meet clear equity goals. Countries have employed a range of exemption strategies tailored to their economic and social contexts. In France, agricultural diesel enjoys reduced tax rates to shield farmers from abrupt cost increases, reflecting the sector's strategic importance and limited short-term substitution options.<sup>5</sup> Italy and Spain have historically granted exemptions for electricity-intensive industries, citing competitiveness concerns within the EU single market.<sup>6</sup> In Canada, British Columbia's carbon tax exempts certain interjurisdictional transport fuels, acknowledging the complexity of taxing emissions across provincial boundaries.<sup>7</sup> Developing countries often adopt implicit exemptions through fuel subsidies, which lower effective tax rates for all consumers but disproportionately benefit wealthier households, a practice widely criticized for its fiscal and environmental inefficiency.<sup>8</sup>

While the introduction of exemptions can play a useful role, it is equally important to ensure that such measures do not dilute the effectiveness of environmental taxes through political or corporate influence. South Africa provides a cautionary example of how entrenched interests and state-corporate linkages can weaken tax design and implementation. The close alignment between government and major state-linked companies, particularly Eskom and Sasol, has resulted in significant policy capture. Eskom, the state-owned electricity utility, generates approximately 90 percent of South Africa's power, more than 80 percent of which is coal-based. Sasol, a petrochemicals and energy conglomerate, produces synthetic fuels from coal and gas and remains one of the country's largest corporate greenhouse gas emitters. Both firms exert substantial influence through sustained lobbying and deep political connections, frequently advocating for exemptions and tax rebates. When South Africa introduced its carbon tax, up to 95 percent of emissions were exempted during the first phase, largely due to lobbying from these major emitters. Sasol warned that the tax would undermine competitiveness, while Eskom

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 4 European Union, 2025 Environmental Implementation Review, Country Report - THE NETHERLANDS  
 5 Litman (2009) above.  
 6 Kosonen & Nicodème (2009) above.  
 7 Litman (2009) above.  
 8 Heine (2012) above.

argued that it would lead to higher electricity prices for low-income households. The resulting policy concessions underscored how political influence can erode environmental ambition and compromise the integrity of fiscal reforms.

For Kenya and other African economies, several policy lessons emerge. First, exemptions should be targeted, temporary, and transparent, limited to sectors with verifiable exposure to international competition and governed by clear sunset clauses. Second, social equity objectives are best addressed through direct cash transfers or tax credits for vulnerable households rather than generalized fuel subsidies, which are fiscally costly and regressive. Third, regional coordination on exemption frameworks would help avoid competitive undercutting and promote consistency in carbon pricing across East Africa. Finally, governments should consider complementary mechanisms, such as border carbon adjustments and performance-based rebates, to sustain competitiveness while maintaining environmental integrity.

Transparency remains non-negotiable. Without clear disclosure of revenues and expenditures, environmental taxes risk being perceived merely as revenue-raising tools rather than instruments of sustainable development. In all contexts, powerful emitters will attempt to shape policy in ways that preserve their interests. The challenge for policymakers is to design environmental tax systems with minimal loopholes, backed by independent oversight institutions insulated from both political and corporate influence. Such discipline is essential to uphold the credibility, equity, and effectiveness of green fiscal policy in Africa.

Penalties and sanctions can also be used as mechanisms to enforce collection of energy taxes, even though they are often frowned upon as they discourage voluntary compliance. Non-compliance with climate and tax regulations can trigger a spectrum of penalties across Africa, ranging from financial fines to legal sanctions and licensure consequences. In Kenya, the 2024 Carbon Market Regulations classify failures such as omitting mandatory annual reports as minor offences punishable by fines up to Ksh 20,000- or six-months' imprisonment, whereas deliberate offenses, like falsifying carbon data or trading without authorization, carry steep penalties of up to Ksh 500 million or 10-years jail, or both. Beyond financial sanctions, environmental non-compliance (for example improper waste handling, illicit mining) can result in licence revocations or suspensions, particularly for high-risk sectors like mining or waste management. In Uganda, under new regulations, serious air pollution violations, such as emitting excessive toxic gases, can carry fines between UGX 400 million to 1 billion (approx. USD 110,000–275,000) or 4–10 years imprisonment. Uganda's NEMA also enforces an express penalty scheme, with instant fines like UGX 6 million for littering or unauthorized waste disposal, and up to UGX 1 billion for missing mandated environmental assessments. The Democratic Republic of Congo introduced a 15% severance tax on non-renewable resource extraction (oil, minerals, timber, uranium), with exemptions for low-output wells. It is designed to compensate the state for resource depletion and operates alongside standard corporate income tax.

# 4.0

## CONCLUSION AND RECOMMENDATIONS

### 4.1 Conclusion

Environmental taxes offer a powerful and largely underused way for African countries to tackle both climate challenges and budget pressures at the same time. By charging for activities that harm the environment, governments can raise money to fund green development, encourage cleaner choices, and build stronger economies. This paper has shown that if countries across Africa were to follow the examples set by leaders such as South Africa, Mauritius, and Seychelles, they could help generate an additional USD 40–87.6 billion every year. Based on patterns from these leading countries, however, a substantial portion of this revenue would need to be recycled to maintain political and distributional acceptability. International experience suggests that 30–60% of environmental-tax revenues typically must be returned through targeted transfers, consumption subsidies, or industry adjustment support. For example, South Africa recycles a significant share of its carbon-tax revenues through energy-efficiency tax incentives and trade-exposure relief allowances, while Mauritius uses part of its environmental-levy revenue to offset costs for low-income households and fund public-transport reform. Applying this range to Africa's potential annual revenue implies that USD 12–52.6 billion would likely need to be returned, leaving USD 16–61 billion available for climate adaptation, clean-energy expansion, and fiscal consolidation.

Yet, turning this potential into real outcomes requires facing several local challenges. Many countries in Africa have small formal economies, weak tax systems, and limited administrative capacity to monitor emissions, enforce compliance, and manage revenue systems. Many also face significant political pressures from powerful industries. There are also concerns about fairness, especially where new taxes might place extra burdens on low-income households. But experience shows that these obstacles can be managed with careful and practical choices such as phased implementation, targeted compensation mechanisms, and investments in administrative systems.

To work well, environmental taxes need to be adapted to local conditions. That means starting with simpler taxes on fuel and transport, areas where systems already exist to collect revenue. At the same time, governments should make sure that the tax system does not worsen inequality. This can be done by using some of the money raised to support low-income households or invest in public services that benefit everyone, such as affordable public transportation and renewable energy projects. Making these choices openly and clearly is essential for building public trust.

Strong institutions and good coordination between tax and environmental agencies are also important. Investing in tools like digital monitoring and better reporting systems can improve enforcement and make it easier to collect taxes fairly. Publishing clear information on how much money is raised and how it is spent can help prevent misuse and limit the influence of powerful groups who might resist change. Reform does not need to happen all at once. A step-by-step approach is more realistic and allows governments to build experience and capacity over time. Many countries can begin by updating their fuel taxes to better reflect the real costs of pollution, then move toward adding taxes on waste, plastics, or resource extraction as systems improve.

In the end, environmental taxation can only generate so much revenue, but it clearly has a role to play. With well-designed tax policies that are fair, simple, and transparent, African countries can create new sources of revenue to support national development and climate goals. By doing so, they can reduce their dependence on loans and foreign aid, protect their people from climate risks, and build stronger economies that serve both present and future generations. The tools are available, what is needed now is the will to use them wisely.

## 4.2 Recommendations

From the reviewed literature and country experiences, this research makes the following recommendations:

-  To unlock the potential of environmental taxation in Africa, governments should expand and streamline tax bases. Starting with high-yield simple sources like fuel, vehicle emissions, plastics, waste and resource extraction which already have revenue systems, will ease integration. As capacity grows, more complex areas like emissions or discharges can be included to reflect environmental costs better.
-  It is critically important to align tax rates with environmental harm and fiscal goals using the “polluter pays” principle, setting rates based on pollution’s estimated cost. Start with fixed rates for simplicity, then shift to progressive structures that incentivize cleaner tech and penalize high emissions. Similarly, indexing to inflation or pollution levels maintains effectiveness.
-  Equally essential is putting an end to fossil fuel subsidies and adding carbon pricing to fiscal plans. Subsidies lower fuel costs, undermine climate goals and strain budgets. Phasing them out gradually while protecting vulnerable groups will free funds for renewable energy and public transport. Correctly priced energy allows carbon taxes on polluters, leading to a fairer fiscal system.

-  Environmental taxes must also be fair and acceptable, ensuring low-income households aren't disproportionately burdened. Revenue should support targeted needs like cash transfers, vouchers or public transport. Investing in public goods such as clean energy, waste management and green jobs can offset reform costs and build trust. Additionally, offering targeted exceptions would promote fairness and equity concerns that are associated with environmental taxes. While exemptions can be useful, it is important to prevent political or corporate influence from diluting environmental taxes' effectiveness.
-  Countries must improve coordination and capacity among key ministries for environmental tax reform which involves fiscal, environmental and industrial policies. Clear mandates, data-sharing and joint monitoring will boost coherence. Additionally, the deployment of digital systems like e-invoicing and emissions tracking enhances compliance, reduces evasion and ensures transparent revenue collection.
-  Transparency and accountability must be built into every stage of reform. Governments should publish regular and accessible reports on environmental tax revenues and their allocation to green projects. Civil society participation in monitoring revenue use can reinforce accountability while partial earmarking of funds for climate adaptation or renewable energy can demonstrate tangible benefits to citizens. Open communication about how taxes are used builds public confidence and limits resistance from vested interests.
-  Governments should integrate green incentives like tax deductions, accelerated depreciation and VAT exemptions into broader fiscal policies to stimulate private investment and innovation. Combining fiscal incentives with environmental taxes promotes greener choices without relying solely on punitive measures. Of course, such policies have costs and will reduce the revenue from environmental taxes available for other expenditure.
-  Increased cooperation and knowledge exchange at the regional level is essential. The African Union and Regional Economic Communities can lead in harmonizing environmental tax policies, reducing cross-border tax competition and promoting peer learning. Learning from countries like South Africa, Mauritius and Seychelles can help others adopt successful models and build capacity for green fiscal reform across Africa.

# 5.0

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