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LITERATURE REVIEW REPORT

Development of a Clean Cooking Standard Advocacy and Tax Policy Stability Framework of the Clean Cooking Sector in Kenya

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List of Abbreviations

ASAL	Arid and Semi-Arid Lands
CO_2	Carbon Dioxide
ETS	Emissions Trading System
EU	European Union
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GHGs	Greenhouse Gases
ICS	Improved cookstoves
KRA	Kenya Revenue Authority
LPG	Liquefied Petroleum Gas
SEZ	Special Economic Zones
SMEs	Small andMedium Enterprises
USD/US$	American Dollar
VAT	Value Added Tax
ZAR	South African Rand

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1.0 Taxation Laws and Requirements in Kenya Relevant to Clean Cooking

1.1 Value Added Tax (VAT)

Value-Added Tax (VAT) is a consumption tax applied at each stage of production and distribution based on the added value of goods and services. Unlike a sales tax, which is only charged at the point of final sale to the consumer, VAT is collected throughout the supply chain. Businesses charge VAT on their sales while reclaiming the VAT paid on their purchases, effectively passing the tax burden to the end consumer as the accumulated VAT is reflected in the final product price.[1] The implications of VAT on production costs are significant. VAT can increase overall production costs as businesses account for the tax at each stage of the supply chain, potentially leading to higher consumer prices and affecting demand. Businesses must also manage cash flow carefully to pay VAT on purchases before reclaiming it on sales, which can be challenging for small enterprises. Moreover, the administrative burden of managing VAT requires robust accounting systems, further adding to operational costs.[2]

Despite the drawbacks to production, VAT is an effective tool for generating state revenue due to its broad tax base, covering a wide range of goods and services, and ensuring a steady revenue stream. The multi-stage nature of VAT encourages compliance and reduces tax evasion opportunities, contributing to revenue stability. VAT is also efficient to administer and collect, particularly with modern accounting systems.[3] However, fluctuating VAT rates, including exemptions, zero ratings, and temporary reductions, can have significant effects on the economy. For governments, such fluctuations can lead to revenue volatility, as lowered VAT rates or exemptions reduce immediate tax income, potentially causing budget deficits if not offset by other taxes. Additionally, managing varying VAT rates increases administrative complexity and costs for tax authorities, potentially resulting in inefficiencies and higher enforcement expenses.[4]

In the production sector, changes in VAT rates directly affect production costs. Lowered VAT rates on inputs can reduce costs, encouraging higher output and potentially stimulating economic growth. Conversely, higher VAT rates can increase production costs, potentially

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[1] Ebrill, L. P., Keen, M., & Perry, V. J. (2011). 1 The Nature, Importance, and Spread of the VAT. In *The Modern VAT*. International Monetary Fund.

[2] Andreea Macoveiciuc. (2023, August 24). *What is VAT Reclaim? Exploring the Basics of Value-Added Tax Reimbursement | Yokoy - The AI-powered spend management suite*. Yokoy - the AI-Powered Spend Management Suite. https://yokoy.io/blog/what-is-vat-reclaim-exploring-the-basics-of-value-added-tax-reimbursement/#:~:text=By%20reclaiming%20VAT%2C%20businesses%20can

[3] Ebrill, L. P., Keen, M., & Perry, V. J. (2011). 1 The Nature, Importance, and Spread of the VAT. In *The Modern VAT*. International Monetary Fund.

[4] Romer, C. D., & Romer, D. H. (2010). The macroeconomic effects of tax changes: estimates based on a new measure of fiscal shocks. *American economic review*, *100*(3), 763-801.

reducing output. These fluctuations can also influence investment decisions, with businesses possibly delaying or accelerating investments based on anticipated VAT changes. For instance, a temporary VAT reduction might prompt a surge in investment and production as businesses capitalize on the lower tax burden. For consumers, VAT rate changes impact the affordability of goods and services. Lower VAT rates generally lead to lower consumer prices, increasing affordability and potentially boosting consumption. Exemptions and zero ratings on essential goods, in particular, make these items more accessible to low-income households, supporting broader social welfare goals. However, fluctuating VAT rates can also alter consumption patterns, with temporary reductions potentially leading to short-term spikes in consumption as consumers take advantage of lower prices.

FUEL	VAT RATE PER YEAR									
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
LPG	16%	16%	Zero rated	Zero rated	Zero rated	Zero rated	Zero rated	14%	8%	Zero rated
ICS	Exempt	Exempt	Exempt	Exempt	Exempt	Exempt	Exempt	14%	16%	16%
Bio-ethanol	16%Fuel	16%Fuel	16%Fuel	16%Fuel	16%Fuel	16%Fuel	16%Fuel	14%Fuel	16%Fuel	16%Fuel
	ExemptStove	ExemptStove	ExemptStove	ExemptStove	ExemptStove	ExemptStove	ExemptStove	14%Stove	ExemptStove	ExemptStove
Electric	16%	16%	16%	16%	16%	16%	Exempt	14%	16%	16%
Solar	Exempt	Exempt	Exempt	Exempt	Exempt	Exempt	Exempt	Exempt	16%	16%
Pellets	16%	16%	16%	16%	16%	16%	16%	Exempt	Exempt	Exempt
Briquettes	16%	16%	16%	16%	16%	16%	16%	Exempt	Exempt	Exempt
Biogas	16%	16%	16%	16%	16%	16%	16%	Exempt	Exempt	Exempt

Figure 1: VAT Prices in Kenya between 2014-2023

In countries with high rates of clean cooking use, VAT rates vary but are generally significant. For example, Kenya has a standard VAT rate of 16%[5], South Africa's rate is 15%[6], and India's Goods and Services Tax (GST) ranges from 5% to 28%[7], depending on the goods and services. These VAT rates influence the affordability and accessibility of clean cooking

[5] KPMG-East Africa. (2023). KPMG Finance Act 2023 Analysis.

[6] PwC – South Africa. (2024). *South Africa Overview*. PwC. https://www.pwc.co.za/en/publications/vat-in-africa/south-africa-overview.html

[7] Bajaj Finserv. (2024). *GST rates in India*. Www.bajajfinserv.in; Bajaj Finserv. https://www.bajajfinserv.in/gst-rates-in-india

technologies, impacting their adoption and use. In Kenya, the impact of VAT changes on clean energy adoption has been notable. In 2014 and 2015, Liquefied Petroleum Gas (LPG) was subject to a 16% VAT, hindering its adoption, particularly in rural areas. To promote clean cooking, the government reduced the VAT on LPG to 0% from 2016 to 2020, significantly increasing its adoption, especially in urban areas. However, the reintroduction of 14% and 8% VAT in 2021 and 2022 raised LPG prices, reducing affordability for lower-income households. In 2023, the VAT was reduced again to 0%, balancing the need for government revenue with the push for clean energy adoption. Improved Cookstoves (ICS) faced VAT exemption from 2014 to 2020, which led to increased ICS adoption by reducing costs for manufacturers and consumers. The VAT was reintroduced at 14% in 2021 and back to the standard rate in 2022, leading to a spike in prices. Electric stoves also faced a 16% VAT from 2014 to 2020, making them costly for average households. A VAT exemption in 2020 aimed to promote cleaner energy alternatives, slightly lowering prices and boosting adoption rates, especially in urban areas although it was shortlived and the standard rate was reintroduced. For biogas digesters and stoves, the 16% VAT from 2014 to 2020 limited adoption due to high costs. However, from 2021 onwards, VAT was exempted making biogas systems more accessible, particularly in rural agricultural communities, leading to higher adoption rates. Bioethanol and bioethanol stoves have had separate tax regimes where the fuel is subject to a standard rate VAT, while the VAT on bioethanol stoves has for the most part been exempt.

In other countries, similar trends have been observed. The United Kingdom temporarily reduced VAT from 17.5% to 15% during the 2008-2009 financial crisis, leading to a short-term increase in consumption and economic output.[8] In the European Union, reduced VAT rates on essential goods have benefited low-income households, but these benefits must be balanced against potential government revenue loss.[9] Germany's temporary VAT reduction in 2020 to mitigate the COVID-19 pandemic's economic impact led to a temporary boost in consumption and supported businesses during the crisis.[10]

In conclusion, the analysis of VAT's impact on clean cooking solutions in Kenya and other countries provides valuable insights into the complex relationship between tax policy and energy adoption. The data demonstrates that fluctuations in VAT rates, including exemptions

[8] Blundell, R. (2009). Assessing the temporary VAT cut policy in the UK. *Fiscal studies*, *30*(1), 31-38.

[9] Adam, S. (2015). *A study on the economic effects of the current VAT rates structure*. Vienna: European Commission. Available at: https://ifs.org.uk/publications/study-economic-effects-current-vat-rates-structure (accessed: 10 September 2024)

[10] Funke, M., & Terasa, R. (2022). Has Germany's temporary VAT rates cut as part of the COVID-19 fiscal stimulus boosted growth?. *Journal of Policy Modeling*, *44*(2), 450-473.

and zero ratings, can significantly influence the affordability, adoption, and overall accessibility of clean cooking technologies. In Kenya, the reduction of VAT on products like LPG, Improved Cookstoves (ICS), and biogas systems has led to increased adoption rates, particularly among low-income households and in rural areas. This suggests that lower VAT rates, exemptions, and zero ratings can be effective tools in promoting clean energy solutions, which are essential for improving public health, reducing environmental impact, and achieving sustainable development goals. However, while the benefits of reduced VAT rates on clean cooking technologies are clear, the implications for government revenue must also be considered. VAT is a crucial source of revenue for the government, and any reduction or exemption needs to be carefully balanced against potential losses in tax income.[11] As the data from other countries like the United Kingdom and Germany shows, temporary reductions in VAT can stimulate consumption and economic activity in the short term, but these benefits may not be sustained over the long term without proper fiscal planning. For Kenya, the decision to reduce or maintain a standardized VAT system for clean cooking solutions should involve a nuanced approach. Exemptions and zero ratings should be strategically applied to essential clean energy products to ensure they remain affordable and accessible, particularly for lower-income households. At the same time, a stable VAT system must be maintained to ensure consistent revenue generation for the government.[12] One approach could be to implement targeted VAT reductions or exemptions for a defined period, coupled with measures to monitor their impact on adoption rates and government revenue. Additionally, the government could explore compensatory fiscal measures, such as expanding the tax base or increasing efficiency in tax collection, to offset any potential revenue losses.

1.2 Corporate Taxes

Corporate tax is a direct tax imposed by governments on the income or profits of companies, serving as a major source of government revenue. It is applied to the taxable income of businesses, which generally includes revenue minus allowable expenses, such as the cost of goods sold, wages, and depreciation. The implications of corporate tax on both production costs and government revenue are significant and multifaceted.[13] For businesses, particularly in manufacturing industries like renewable energy and clean cooking technologies, a high corporate tax rate can reduce economic growth by stifling innovation.[14] This, in turn, limits entrepreneurs'

[11] Blundell, R. (2009). Assessing the temporary VAT cut policy in the UK. *Fiscal studies*, *30*(1), 31-38.

[12] Thomas, A. (2024). *VAT Rate Structures in Theory and Practice* (No. 10677). The World Bank.

[13] Seely, A. (2023). Corporate tax reform. *Commonslibrary.parliament.uk*. https://commonslibrary.parliament.uk/research-briefings/cbp-9178/

[14] Stanford Institute for Economic Policy Research (SIEPR). (2022, October 25). *How to set top tax rates without deterring innovation*. Stanford Institute for Economic Policy Research (SIEPR); Stanford University. https://siepr.stanford.edu/news/how-set-top-tax-rates-without-deterring-innovation#:~:text=However%2C%20this%20tax%20hike%20would

ability to reinvest profits into production, research and development, or expansion.[15] Higher production costs often translate into higher retail prices, which can dampen consumer demand, especially in sectors where profit margins are already slim due to high initial investment costs. In industries like clean cooking, where competitiveness and widespread adoption are critical for both environmental and public health goals, the impact of corporate tax on pricing and production capacity can be substantial. From the perspective of government revenue, corporate tax is a significant contributor. However, a high corporate tax rate can sometimes deter investment, by both local, who are looking for low production costs and foreign companies that may seek more tax-friendly jurisdictions.[16] This presents a challenge for governments in balancing the need to set a competitive corporate tax rate to attract investment while ensuring sufficient revenue collection. Additionally, while corporate tax incentivizes compliance, excessively high rates can lead to tax avoidance or evasion strategies, ultimately undermining government revenue. Therefore, setting an optimal corporate tax rate is crucial for fostering a business environment that supports economic growth and ensures stable revenue for the government.

1.3 Excise Duty

Excise duty is a form of indirect tax imposed on specific goods and services produced, sold, or imported within a country. Unlike VAT, which is applied broadly to most goods and services, excise duty targets specific products like fuel, alcohol, tobacco, and other luxury items. The primary aim of excise duties is twofold: to generate revenue for the government and, in some cases, to regulate the consumption of certain goods deemed harmful to health or the environment, such as alcohol, tobacco, and non-renewable fuels.[17] Excise duties have the power to affect market prices, shape consumer behaviour, and influence production decisions. By raising the cost of specific goods, these taxes can diminish demand, particularly when the goods in question have elastic demand. For consumers, higher excise duties often result in increased prices, which may lower demand or push them to find alternatives with lower taxes. For businesses, adhering to excise duty regulations can lead to additional operational costs.[18]

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[15] ibid

[16] Dubay, C. (2021, April 30). *Small Business Would Be Hit Hard by Corporate Tax Increase*. Uschamber.com. https://www.uschamber.com/taxes/small-business-would-be-hit-hard-corporate-tax-increase#:~:text=This%20would%20be%20the%20highest

[17] PwC. (2023). *Excise duty - Ep3*. PwC. https://www.pwc.com/ke/en/publications/finance-act-insights/excise-duty.html#:~:text=It%20was%20a%20tax%20that

[18] Papageorgiou, C., Farlekas, P., Dermatis, Z., Anastasiou, A., & Liargovas, P. (2021). Assessing the impact of excise duties on a state's revenues: the case of Greece. *Public Sector Economics*, *45*(3), 387-412.

Excise duty rates in Kenya have fluctuated over time, influenced by economic conditions, government policies, and international trends. Initially, excise duties were primarily "sin taxes" applied to goods like alcohol and tobacco, but they have since evolved into broader tools for revenue generation. The Kenya Revenue Authority (KRA) regularly adjusts these rates to account for inflation, such as the adjustment in 2022 when the KRA increased specific excise duties by an average inflation rate of 6.3%.[19] Excise duties have been a significant source of revenue for Kenya, contributing an average of 3.1% of GDP between 1980 and 2018.[20] The government has increasingly leveraged excise duties to discourage the consumption of harmful products and promote public health and environmental sustainability. However, this approach has not been consistently applied to all energy products. For instance, Liquefied Petroleum Gas (LPG) was initially exempt from excise duty to support clean energy initiatives. Despite this, an 8% excise duty was introduced in 2020, leading to higher LPG prices and reducing its affordability, especially for low-income households in rural areas. Similarly, bioethanol has faced significant excise duties ranging from 20% to 30% due to its classification as an alcohol product. These high excise duties have considerably increased the cost of bioethanol as a cooking fuel, limiting its competitiveness against other clean energy sources and hindering the widespread adoption of bioethanol stoves.

2.0 Tax Relief Options and Shortcomings

2.1 Value Added Tax (VAT) Exemptions

Value Added Tax (VAT) exemptions are provisions in tax legislation that exclude certain goods or services from being subject to VAT, either at the point of production or at the point of sale. VAT exemptions can apply to a range of goods, including essential services, basic food items, health products, and, increasingly, clean energy products. When VAT exemptions are applied, businesses do not charge VAT to the final consumer, which reduces the overall price of the product. However, businesses may not be able to claim input VAT credits on materials or services used to produce the exempt goods.[21,22] VAT exemptions on finished products can influence production costs in both positive and negative ways. On the positive side, these exemptions lower the final price for consumers, making goods like clean cooking technologies more affordable, especially in price-sensitive markets where disposable income is limited.

[19] Bowmans Law. (2022). Kenya: Inflation Adjustment on Excise Duty Rates. https://bowmanslaw.com/insights/kenya-inflation-adjustment-on-excise-duty-rates/

[20] Ochieng, J., & Agwaya, R. (2020). Discussion Paper No. 241 of 2020 on Excise Taxation in Kenya: A Situation Analysis.

[21] GoK. (2012). Value Added Tax Act 2012.

[22] *KRA*. (n.d.). *Value Added Tax (VAT)*. Www.kra.go.ke. https://www.kra.go.ke/individual/filing-paying/types-of-taxes/value-added-tax

However, if the exemptions apply only to finished products and not to the inputs used in their production, companies cannot reclaim the VAT paid on raw materials, equipment, or services. This scenario can lead to higher production costs, which manufacturers may offset by increasing base prices, limiting innovation, or curtailing expansion due to reduced profit margins. For instance, in the case of clean cooking technologies, while VAT exemptions on finished stoves may reduce retail prices, the inability to claim input VAT on essential components like metals, electronics, or assembly services could increase overall production costs.[23]

VAT exemptions, while making certain goods more affordable for consumers, can lead to a reduction in government tax revenue by eliminating the VAT collected on these items. This loss of revenue can significantly impact public budgets, especially in countries where VAT is a major revenue source, such as Kenya, where it accounted for about 27.5% of total revenue between 1980-2018.[24] VAT exemptions can also stimulate demand for products, like clean cooking stoves, by lowering their cost, which may boost production, employment, and other taxable business activities.[25] This increased economic activity could partially offset the revenue loss from VAT exemptions on finished goods. However, in Kenya, this has not been the case with the VAT exemptions having a minimal effect in recouping lost revenue or helping in the uptake of certain goods.[26,27] Apart from the minimal effects of VAT exemptions, frequent changes to VAT exemption policies, particularly on finished products, can create uncertainty for both producers and consumers, making long-term business planning challenging. For instance, a clean cooking stove manufacturer may invest based on current VAT exemptions, only to face increased costs and reduced profitability if those exemptions are later removed. Consumers also experience price instability when VAT exemptions fluctuate, which can undermine the adoption of cost-sensitive technologies like LPG or solar stoves. Moreover, unpredictable VAT policies can deter investment, as both local and foreign investors prefer stable tax environments for assessing long-term profitability.[28] In Kenya's clean cooking sector, VAT exemptions have been applied to finished

[23] Thomas, Wein. (2011). Microeconomic consequences of exemptions from value added taxation: The case of Deutsche Post. Research Papers in Economics,

[24] Ochieng, J., & Agwaya, R. (2020). Discussion Paper No. 241 of 2020 on Excise Taxation in Kenya: A Situation Analysis.

[25] Benke, L. (2021, July 7). *A big win for Kenya: Government reinstates VAT exemption on renewable energy products | GOGLA*. Gogla.org. https://www.gogla.org/a-big-win-for-kenya-government-reinstates-vat-exemption-on-renewable-energy-products/#:~:text=Nairobi%2C%20Kenya%2C%202%20July%202021

[26] Rosenberg, J., & Toder, E. (2016). Effects of Imposing a Value-Added Tax To Replace Payroll Taxes or Corporate Taxes.

[27] World Bank. (2018). *Fiscal Incidence Analysis for Kenya: Using the Kenya Integrated Household Budget Survey 2015-16*. World Bank.

[28] Romer, C. D., & Romer, D. H. (2010). The macroeconomic effects of tax changes: estimates based on a new measure of fiscal shocks. *American economic review*, *100*(3), 763-801.

products like LPG stoves, increasing their accessibility and boosting adoption, with around 23.9% of households using LPG. However, these exemptions do not extend to inputs, leading to high production costs that limit manufacturers' ability to lower prices further. Although VAT exemptions reduce government revenue, they are part of a broader strategy to encourage cleaner energy use, which helps mitigate health and environmental costs associated with traditional biomass cooking.

2.2 Value Added Tax (VAT) Zero Rating

VAT zero rating is a tax mechanism where goods or services are taxed at a 0% VAT rate. Unlike exempt supplies, businesses that sell zero-rated goods or services still charge 0% VAT, but they are entitled to claim back VAT on inputs related to the production of those goods or services. This means that businesses can recover VAT paid on raw materials, equipment, and services used to produce zero-rated goods. Zero rating is often applied to essential goods and services, such as food, healthcare, education, and in some cases, renewable energy products like clean cooking technologies. Zero-rated goods appear on a VAT return but are taxed at 0%, allowing businesses to recoup VAT paid on inputs.[29]

VAT zero-rating offers several advantages, such as lowering production costs, encouraging investment, and improving cash flow for businesses, particularly in capital-intensive industries like clean cooking technology. By allowing producers to reclaim VAT on inputs, zero rating reduces overall costs, which can be passed on to consumers through lower retail prices. This incentive structure promotes investment and supports small- and medium-sized enterprises by enhancing cash flow through VAT refunds. However, while zero rating can stimulate economic activity and indirectly boost tax revenues, broad-based VAT systems have a more substantial impact on state revenue collection. In Kenya, for instance, VAT contributed an average of 27.5% of total tax revenue, accounting for about 6.6% of the country's GDP between 1980 and 2018.[30] This broad-based revenue stream enables the government to fund social welfare programs that can have a long-term impact on reducing energy costs, improving electrical connections, and supporting the sustained use of clean cooking solutions. Unlike the one-time benefit that zero rating provides at the purchase point, these broader initiatives can ensure continued access to

[29] KRA. (2020). *All You Need To Know About Value Added Tax (VAT) - KRA*. Kra.go.ke. https://www.kra.go.ke/news-center/blog/955-all-you-need-to-know-about-value-added-tax vat#:~:text=The%20supply%20or%20importation%20of

[30] Ochieng, J., & Agwaya, R. (2020). Discussion Paper No. 241 of 2020 on Excise Taxation in Kenya: A Situation Analysis.

clean energy, addressing the root causes of energy poverty and enhancing the overall effectiveness of clean cooking programs.[31]

2.3 Excise Duty Exemption

Excise duty exemption refers to the removal of excise tax on specific goods or services that would otherwise be subject to such taxes. Excise duty is usually levied on products like fuel, tobacco, alcohol, and luxury goods. Exemptions are granted to encourage the production and consumption of certain products deemed beneficial for public health, environmental sustainability, or economic development.[32] Excise duty exemptions have a significant impact on reducing production costs, particularly for industries that rely on excise-taxed inputs such as fuel or energy. In the clean cooking sector, exemptions on fuels like ethanol or LPG lower costs for manufacturers and distributors, which can result in more affordable retail prices for consumers. This reduction in operational costs not only encourages investment in clean energy technologies but also promotes the scaling and adoption of cleaner alternatives. By making products like ethanol and LPG stoves more price-competitive compared to traditional fuels like charcoal, excise duty exemptions drive consumer shifts toward cleaner energy options, enhancing the overall competitiveness of these products in the market. Additionally, research indicates that reforming excise duties on fossil fuels and renewable fuel sources is crucial for meeting climate goals, but this must be done in a way that considers the **redistributive impacts**. By using additional tax revenue to reform VAT the system can become more equitable, mitigating the regressive effects of excise duties. This approach aligns with the broader goal of **environmental protection** and **social equity**. This is mainly because excise duties disproportionately affect low-income households.[33]

2.4 Special Economic Zones (SEZs)

To circumvent high corporate taxes some governments have established Special Economic Zones (SEZs) to promote investment, industrialization, and economic growth by offering various financial incentives, including reduced corporate tax rates. In Kenya, SEZs play a critical role in fostering economic development, particularly in industries like clean cooking technologies, manufacturing, and renewable energy. Within these zones, companies benefit from a significantly reduced corporate tax rate, often as low as 10% compared to the standard 30%. This tax reduction lowers operational costs, making these industries more competitive both

[31] Jansen, A., & Calitz, E. (2017). Considering the efficacy of value-added tax zero-rating as pro-poor policy: The case of South Africa. *Development Southern Africa*, *34*(1), 56–73. https://doi.org/10.1080/0376835X.2016.1269635

[32] GoK. (2012). Value Added Act 2012.

[33] Lanterna, F. Reforming Energy Excise Duties: A Possible Balance Between Environmental and Redistributive Objectives.

locally and globally. In addition to reduced corporate tax rates, companies operating in Kenya's SEZs enjoy several other advantages that further decrease production costs. These include import duty exemptions on raw materials, equipment, and machinery, which directly reduce the cost of production. Furthermore, VAT exemptions on goods produced within SEZs reduce transaction costs and enhance profitability. SEZs also offer better infrastructure, such as improved transportation networks and utilities, which help lower operational costs. Additionally, accelerated capital allowances on investments within SEZs encourage reinvestment in production and technology, while concessional loans and streamlined customs procedures facilitate export activities.[34]

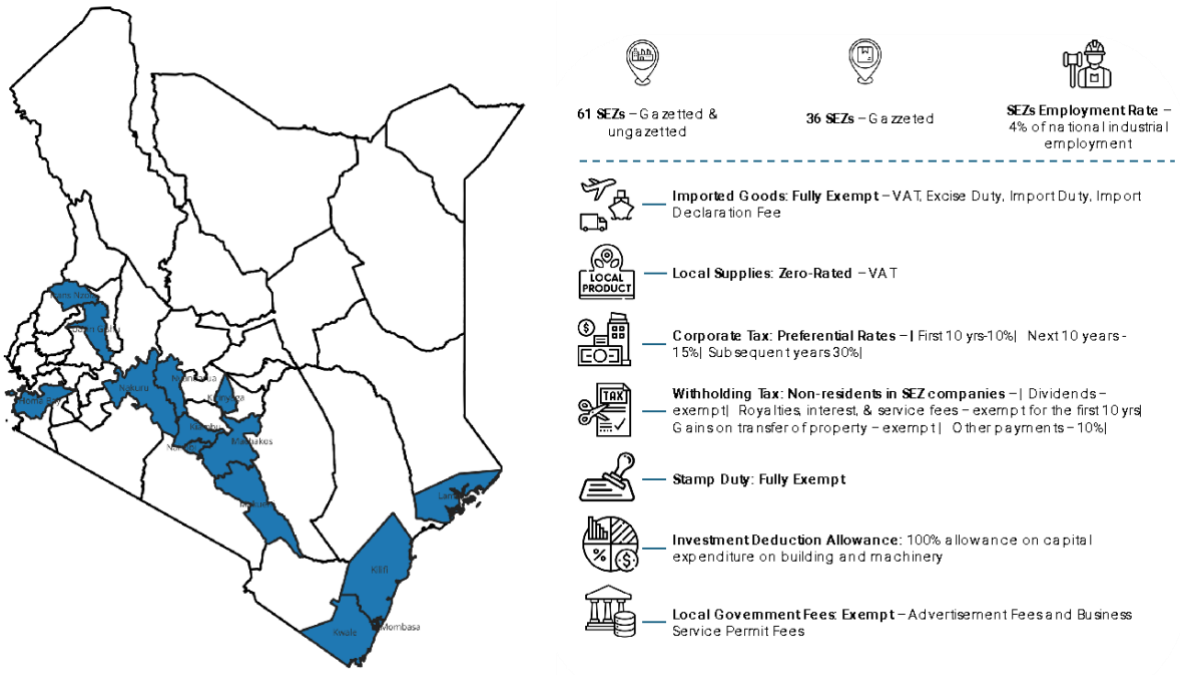

Figure 2: Status of SEZs in Kenya and their Fiscal Tax Incentives

Globally, countries like China and India have had a mixed bag of experiences when it comes to successfully leveraging SEZs to transform their economies. China's SEZs, particularly in Shenzhen, have been pivotal in establishing the country as a global manufacturing powerhouse, with reduced corporate tax rates, import duty exemptions, and other financial incentives significantly lowering production costs and furthering technological advancement.[35] In contrast, while India's SEZs, with corporate tax rates reduced to between 15% and 22%, have been successful in attracting foreign direct investment (FDI) and enhancing competitiveness, particularly in the renewable energy and clean technology sectors, they have struggled to foster backward linkages where local firms supply raw materials to foreign investors within the SEZ.

[34] Special Economic Zones Authority. (n.d.). Concept of Special Economic Zones (SEZ) in Kenya.

[35] Lei, D., & van Ameijde, J. (2022). The Special Economic Zone: The Catalytic Effect of Governmental Support, Technology Innovation, and Spatial Factors in Shenzhen.

The absence of backward linkages diminishes the effectiveness of SEZs, as they must compete with other countries offering more favourable tax terms. This challenge is exacerbated by the fact that labour and technology are often specialized and imported, reducing the integration and benefits to the local economy.[36] In Kenya, SEZs, such as the Athi River and Dongo Kundu SEZs, have attracted significant investment in manufacturing, leading to reduced production costs and more competitive export prices.[37] However, the challenge lies in recouping the losses from reduced corporate tax rates, as SEZs contributed to only 4% of national industrial employment in 2019, which amounted to approximately 60,000 people. While SEZs typically recover reduced corporate taxation through an expanded tax base from the increased number of employed individuals, this has been less pronounced in Kenya. Additionally, while Kenyan SEZ policies emphasize infrastructure development to support production, they often refer to infrastructure that already exists in other regions like China, South Africa, and India, which offer better options and access to global markets, thus putting Kenya at a disadvantage.[38] Another impediment is that Kenya's SEZs offer substantial tax reliefs for 10 years, this short-term focus may discourage long-term commitments from companies once the benefits expire, leading them to relocate to regions with better long-term incentives. Additionally, the lack of forward and backward linkages limits the integration of SEZ-based companies into the broader economy, reducing the overall economic impact of the SEZs.

3.0 Climate Finance Instruments Relevant to Tax Relief in Kenya

3.1 Green Bonds

Green bonds are debt instruments specifically issued to raise capital for projects that have positive environmental or climate-related benefits. These bonds provide a way for governments and corporations to finance projects aimed at reducing carbon emissions, improving sustainability, and meeting climate goals.[39] In Kenya's clean cooking sector, green bonds offer a mitigating effect to high taxation rates, such as VAT and excise duties, which currently increase production costs for clean cooking technologies. Green bonds provide long-term, low-interest financing, 100% VAT exempt on interests, which can help manufacturers reduce costs, improve

[36] Parwez, S. (2018). Enterprising SEZ enclaves and economic development in India. *Journal of International Business and Economy*, *19*(1), 1-33.

[37] Special Economic Zones Authority. (n.d.). Concept of Special Economic Zones (SEZ) in Kenya.

[38] Rodríguez-Pose, A., Bartalucci, F., Frick, S. A., Santos-Paulino, A. U., & Bolwijn, R. (2022). The challenge of developing special economic zones in Africa: Evidence and lessons learnt. *Regional Science Policy & Practice*, *14*(2), 456-482.

[39] Adisa, O., Ilugbusi, B. S., Obi, O. C., Awonuga, K. F., & Asuzu, O. F. (2024). Green bonds in climate finance: A review of USA and African initiatives. *International Journal of Science and Research Archive*, *11*(1), 2376-2383.

infrastructure, and ultimately lower prices for consumers.[40] This makes clean cooking solutions like LPG, bioethanol, ICS, and biogas more affordable for low-income households.[41] Green bonds can also help mitigate the instability caused by fluctuating VAT and excise duties in Kenya, providing manufacturers with a stable source of capital. By financing through green bonds, companies can invest in research, innovation, and infrastructure to further reduce production costs and stimulate the adoption of clean cooking technologies. Additionally, the government benefits from green bonds through indirect revenue gains, including VAT on services, bond issuance fees, and long-term revenue from increased individual income tax.

3.2 Carbon Pricing Mechanisms

Carbon pricing mechanisms are tools used by governments to charge entities for emitting carbon dioxide (CO2) and other greenhouse gases (GHGs), aiming to internalize the environmental costs of emissions by making it more expensive to pollute. These mechanisms encourage companies to reduce their carbon footprint and adopt cleaner practices. There are two primary types: carbon taxes, where a direct tax is imposed on the carbon content of fossil fuels, charging polluters a fixed price per ton of CO2 emitted; and Emissions Trading Systems (ETS), or cap-and-trade systems, which set a cap on total GHG emissions and allow companies to buy and sell emission allowances, with carbon prices determined by market forces. These tools incentivize industries, including the clean cooking sector, to transition to cleaner energy solutions.[42]

In African countries where carbon markets are still developing, such as Kenya, carbon pricing can have a notable impact on production costs across various industries, including energy, manufacturing, and agriculture. The effects depend on the maturity of the market, regulatory frameworks, and the country's energy mix. For instance, in countries like Kenya and South Africa, reliance on coal, oil, and natural gas means that carbon pricing would increase energy costs, raising operating expenses for businesses. In South Africa, the 2019 carbon tax on coal has already led to higher electricity prices, increasing production costs for industries reliant on coal-fired power. These increased already high energy costs are often passed down the supply chain leading to higher consumer prices.[43] However, carbon pricing can also provide strong

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[40] NSE. (2019). The Kenya Green Bond Market: Issuer's Guide

[41] Empower Africa. (2023, November 6). *BURN Manufacturing Issues Africa's First Green Bond of $10 Million for Clean Cooking - Empower Africa*. https://empowerafrica.com/burn-manufacturing-issues-africas-first-green-bond-of-10-million-for-clean-cooking/

[42] Narassimhan, E., Gallagher, K. S., Koester, S., & Alejo, J. R. (2018). Carbon pricing in practice: A review of existing emissions trading systems. *Climate Policy*, *18*(8), 967-991.

[43] Qu, M. H., Suphachalasai, S., Thube, S. D., & Walker, M. S. (2023). *South Africa carbon pricing and climate mitigation policy*. International Monetary Fund.

incentives for companies to transition to cleaner energy sources and improve energy efficiency, which can result in long-term cost savings. For example, Kenya already relies on clean energy (67.7%)[44], which offers a stable and cost-effective alternative to fossil fuels, encouraging companies to rely on the national grid when claiming environmental value chains. Therefore, businesses may invest in green technologies to lower their carbon footprint and gain carbon revenues from other processes in their production line.

Small and medium enterprises (SMEs) are particularly vulnerable to the financial strain caused by carbon pricing, as many lack the resources to invest in clean technologies or absorb rising costs. Without access to affordable financing, these businesses face profitability and competitiveness challenges. On the other hand, SMEs involved in clean energy projects can benefit from carbon credits, though many lack the technical expertise to participate in carbon markets. Government support and technical assistance are essential for enabling SMEs to navigate carbon trading and reduce their financial burden. Revenue generated from carbon pricing can be reinvested into green energy projects and infrastructure, which can help offset the negative effects of increased production costs.[45] In Kenya, the Finance Act of 2022 introduced a 15% tax rate for companies participating in carbon markets, incentivising them to engage in emissions trading and potentially lowering long-term production costs through carbon credit revenue.[46] Kenya can use this revenue to fund subsidies and tax rebates for low-income households and SMEs, ensuring economic stability amid rising costs. However, taxing entities for participating in carbon markets as opposed to having proper carbon pricing mechanisms is detrimental to Kenya.

4.0 Case Studies

4.1 A Comparative Analysis of Kenya and South Africa

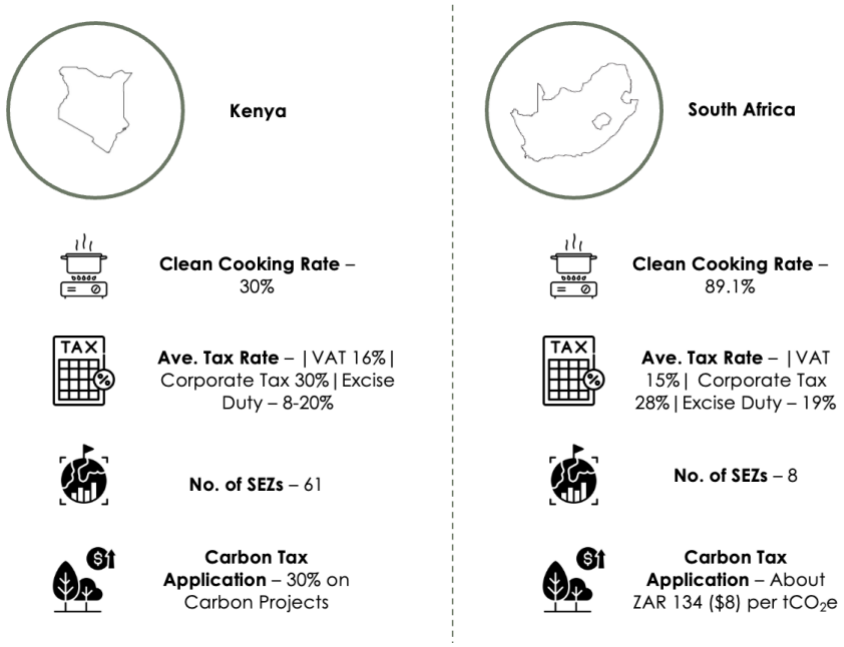
Kenya and South Africa present contrasting cases in the uptake of clean cooking solutions, with Kenya recording a clean cooking penetration rate of 30%, while South Africa's rate stands significantly higher at 89.1%.[47] This vast difference in uptake rates is notable despite both countries having implemented key policies, strategies, and taxes aimed at transitioning to

[44] World Bank. (n.d.). *Renewable energy consumption (% of total final energy consumption) - Kenya | Data*. Data.worldbank.org. https://data.worldbank.org/indicator/EG.FEC.RNEW.ZS?locations=KE

[45] Känzig, D. R. (2021). The economic consequences of putting a price on carbon. *Available at SSRN*, *3786030*.

[46] GoK. (2022). Finance Act 2022.

[47] IEA. (2022). *Access to clean cooking – SDG7: Data and Projections – Analysis*. IEA. https://www.iea.org/reports/sdg7-data-and-projections/access-to-clean-cooking



clean cooking, as well as economic frameworks that include SEZs to support local manufacturing of clean cooking technologies.

One critical difference between the two nations is the level of energy infrastructure and access to modern fuels. South Africa has a more advanced energy grid, providing wider access to electricity, 81% of the country is connected to the grid and 12% have access to mini-grids and stand-alone systems.[48] South Africa's urban centres are well-connected to infrastructure, and electric cooking is the dominant method of cooking in both rural and urban areas, however, about 4 million people in the country's rural areas still use fuelwood for cooking.[49] Kenya, on the other hand, has significant challenges with energy access, especially in rural areas where the majority of the population (89.6%) relies on traditional biomass fuels such as wood and charcoal only about 10.4% have access to clean cooking[50] and about 65.5% have access to electricity.[51] The lack of adequate infrastructure to distribute electricity or other alternative cooking to these areas is a major barrier to clean cooking adoption.

The affordability barrier is still a hindrance to clean cooking uptake in both countries, but the issue is more pronounced in Kenya. The combination of a high dependence on importation and high taxation on clean cooking technologies such as LPG, and bio-ethanol in Kenya makes these solutions financially out of reach for many households. While South Africa also imposes taxes on LPG and other biofuels, it has been able to counterbalance these costs with broader refunds along the manufacturing processes and the availability of cheaper, locally produced

[48] IEA. (2019, November 8). *South Africa Energy Outlook – Analysis*. IEA. https://www.iea.org/articles/south-africa-energy-outlook

[49] ibid

[50] World Bank. (2022). Access to clean fuels and technology for clean cooking, rural (% of rural population) - Kenya | Data. Data.worldbank.org. https://data.worldbank.org/indicator/EG.CFT.ACCS.RU.ZS?locations=KE

[51] World Bank. (2022). Access to electricity, rural (% of rural population) - Kenya | Data. Data.worldbank.org. https://data.worldbank.org/indicator/EG.ELC.ACCS.RU.ZS?locations=KE

alternatives.[52] Additionally, South Africa's grid electrification rate, which is substantially higher than Kenya's, provides a cleaner cooking alternative through electric cooking, which is also supported by subsidies for renewable energy products. However, it should be noted that the South African grid is more reliant on fossil fuels, majorly coal, unlike Kenya which means that the environmental benefits of access to clean cooking in South Africa are somewhat diminished when compared to Kenya.

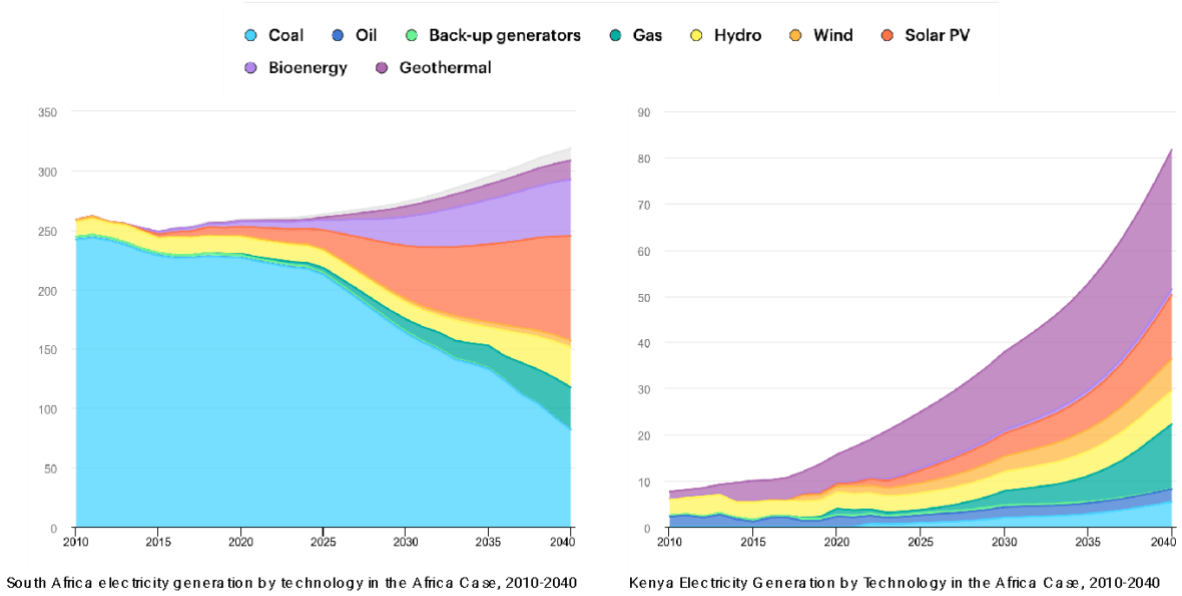


Figure 4: Comparative Analysis of Energy Generation in South Africa and Kenya[53,54]

Additionally, South Africa's carbon tax system, which charges ZAR 134 per tonne of CO_2 with phased allowances, should incentivise industries to adopt greener practices and support investment in clean energy solutions, including clean cooking technologies. However, South Africa's structured carbon tax plan, where allowances are set to reduce and tax rates rise over time, motivates industries to proactively cut emissions and transition to cleaner technologies. For instance, if a company continues emitting 100,000 tonnes of CO_2 equivalent annually, its carbon tax liability will significantly increase as the allowances diminish and the tax rate rises, making it financially unsustainable unless emissions are reduced.[55] This impending pressure drives the shift toward green technologies, including clean cooking. Similarly, Kenya's 30% tax on registered carbon projects, while aimed at generating funds for environmental projects, could limit the

[52] *South African Revenue Service*. (2021, February 3). *Schedules to the Customs and Excise Act, 1964* https://www.sars.gov.za/legal-counsel/primary-legislation/schedules-to-the-customs-and-excise-act-1964/

[53] IEA. (2019, November 8). South Africa Energy Outlook – Analysis. IEA. https://www.iea.org/articles/south-africa-energy-outlook

[54] IEA.(2019). Kenya Energy Outlook – Analysis. IEA. https://www.iea.org/articles/kenya-energy-outlook

[55] Deloitte. (2023, January 31). *South Africa's carbon tax: Changes and implications for taxpayers*. https://www.deloitte.com/za/en/services/tax/perspectives/south-africas-carbon-tax-changes-and-implications-for-taxpayers.html#

revenue available for reinvestment into clean cooking ventures. South Africa's more robust economy and high electrification rates may therefore be the reason for its high clean cooking adoption rate as compared to Kenya.

4.2 A Comparative Analysis of Kenya and Senegal

Although Kenya (30%) and Senegal (32.3%) have a similar access rate to clean cooking technologies, the trajectory for both countries has been quite different. While Kenya has had a steady rise from 2000-2023, Senegal has more or less stagnated between 2000-2023. This is especially interesting since both countries have had nearly identical taxation regimes, the only major difference being that Senegal produces natural gas. Despite Senegal's domestic resource advantage, Senegal has not seen a proportional increase in clean cooking adoption. The removal of subsidies in 2009 led to a nearly **61% drop in LPG usage in urban areas between 2009 and 2019**.[56] This decline can be attributed to the rising costs of LPG distribution and reliance on imported cylinders, equipment, and appliances, which remained expensive even with reduced import taxes.

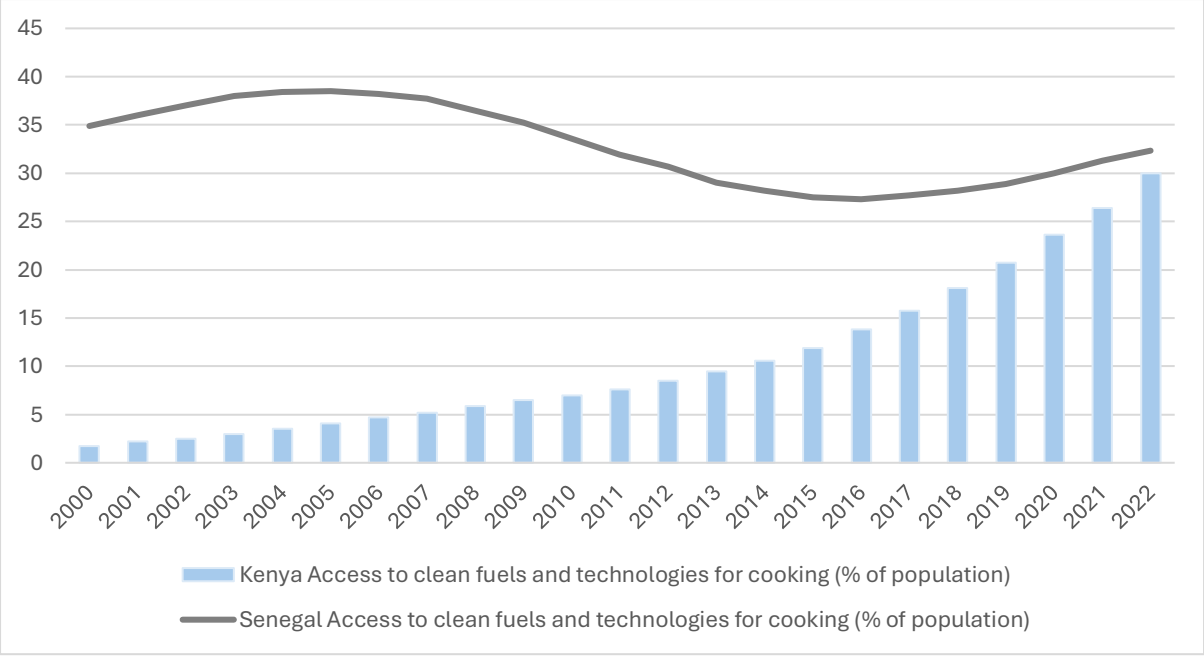


Figure 5: Access Rates to Clean Fuels and Technologies in Kenya and Senegal[57,58]

[56] Rose, J., Ankel-Peters, J., Hodel, H., Sall, M., & Bensch, G. (2024). *Lost in transition: The decline of LPG usage and the charcoal renaissance in urban Senegal* (No. 1076). Ruhr Economic Papers.

[57] World Bank. (2023). *Access to clean fuels and technologies for cooking (% of population) - Kenya*. https://data.worldbank.org/indicator/EG.CFT.ACCS.ZS?locations=KE

[58] World Bank. (2023). *Access to clean fuels and technologies for cooking (% of population) - Senegal*. https://data.worldbank.org/indicator/EG.CFT.ACCS.ZS?locations=SN

Kenya and Senegal implemented tax exemptions or reductions on clean cooking technologies, with reductions in VAT, excise and import duties being central to their tax policies. However, tax reforms alone have not proven to be sufficient in driving widespread adoption in either country, although Kenya has fared better. The **diversification of clean cooking methodologies** has, however, played a crucial role in improving clean cooking rates in both Kenya and Senegal. In recent years, these countries have introduced more inclusive policies that promote a variety of clean cooking technologies beyond LPG, such as biogas, improved biomass cookstoves, and solar cooking. Although Senegal has created a standard taxation rate for all clean cooking technologies since 2020[59], Kenya has staggered them, creating a pathway for people to revert to polluting cooking methodologies with every fluctuation in taxation regimes.

5.0 Standard Framework as a Standalone Relief

5.1 Summary Critique of Taxes and Their Impact on the Kenyan Context

The Kenyan taxation system significantly impacts the adoption of clean cooking technologies, with various taxes—such as VAT, excise duty, and corporate taxes—affecting both production and consumption. Over the years, the fluctuation in VAT rates for clean cooking products has led to price instability. For instance, VAT rates on LPG and biogas stoves have ranged from 16% to 0%, and the reintroduction of VAT at 14% in 2021 notably increased retail prices. This inconsistency has made clean cooking solutions less affordable for low-income households, particularly those in rural areas who are already burdened by limited access to these technologies. Import duties on essential materials, coupled with excise duties introduced in recent years, such as the 8% excise on LPG, have further exacerbated affordability concerns, hindering adoption rates across the country.

Moreover, Kenya's corporate tax rate of 30% places a heavy burden on clean cooking companies, limiting their capacity to reinvest in production and innovation. While companies in SEZs benefit from lower rates of 10-15%, the majority of clean cooking businesses outside these zones do not enjoy such relief and the longevity of this undertaking has not borne fruit for clean cooking. Additionally, excise duties on alternative clean fuels, such as bioethanol (taxed at 20-30%), make them less competitive with traditional biomass fuels like charcoal. These tax structures raise operational costs for clean cooking companies, making the products financially out of reach for many consumers, especially in the Arid and Semi-Arid Lands (ASAL) regions which have scattered populations for the use of options like biogas and have limited electrical connections. The

[59] IEA – International Energy Agency - IEA. (2024). *IEA – International Energy Agency - IEA*. IEA. https://www.iea.org/search?q=senegal

frequent policy shifts, lack of forward and backward linkages, and the high cost of importing essential components have further slowed down the transition to clean energy solutions in the country.

5.2 Proposed Tailored Tax Relief Instruments for Kenya's Clean Cooking Sector

5.2.1 Cap-and-Trade Systems:

Kenya could explore a cap-and-trade system tailored to its clean energy needs. This system would set a carbon emission cap for companies, and those that stay under the cap can trade unused allowances with higher emitters. For Kenya, integrating a **carbon trading framework** into the clean cooking sector would incentivize companies to reduce emissions by investing in renewable energy technologies such as solar and biogas or improving and expanding the national grid. The system could especially target **rural and pastoralist regions** where renewable energy solutions, such as decentralized solar or biogas plants, could be implemented according to existing settlement patterns.

This strategy encourages businesses to reduce emissions, and in turn, they can generate revenue through trading excess credits. Kenya could also link the system to **regional carbon markets**, encouraging larger-scale participation and broader investments. Kenya could also remove the tax on projects existing on international carbon markets as a means to encourage renewable energy projects to thrive and offer tax relief in their operations.

5.2.2 Comprehensive Cap-and-Trade Framework for Kenya

This framework blends elements from existing global emissions trading systems (ETS) with considerations specific to Kenya's economy and climate objectives. By designing a cap-and-trade system that balances emission reductions with economic growth, Kenya can position itself as a regional leader in climate action. Here's how this system would be structured:

1. Cap Calculation (Total Emission Limit) Key Considerations:

- **Historical Emissions Data**: Kenya should set caps based on historical emissions from key sectors, including energy, manufacturing, transport, and agriculture. This will require collaboration with the **National Environment Management Authority (NEMA)** to assess historical data and establish baselines.
- **Sector-Specific Caps**: Each sector should have tailored caps reflecting their emission profiles and reduction potential.
- **Progressive Reduction**: Aligning with Kenya's **Nationally Determined Contributions (NDCs)**, the cap should decrease over time (e.g., by 2-3% annually), aiming for a 32% reduction by 2030. **Example: California** decreases its cap by 3% annually, and **EU ETS**

implements similar reductions, providing a gradual yet firm trajectory for companies to reduce their emissions.

2. Allowance Allocation Approaches:

1. **Free Allocation**: **Grandfathering**: Initially, industries crucial to Kenya's economy, such as **cement, steel, and manufacturing**, may receive free allowances to avoid carbon leakage. **Benchmarking**: Set efficiency benchmarks to reward companies with low-carbon technologies.
2. **Auctioning**: **Revenue Generation**: Auctioning the majority of allowances could raise funds for **clean energy projects** and **rural electrification**. These funds can be equitably distributed per generation throughout the counties. **Incentivizing Innovation**: Market-driven allocation through auctioning encourages industries to adopt cleaner, more efficient technologies. **Example:** The **EU ETS** and **California's system** use a combination of free allowances and auctions, ensuring fairness while incentivizing innovation.

3. Investment Dynamics within the Renewable Energy Sector: Revenue from Auctioning: Funds generated through auctions can be channelled into **renewable energy**, **biogas projects**, and infrastructure improvements in **Arid and Semi-Arid Lands (ASALs)**. **Carbon Leakage Prevention**: High-emission industries, such as cement and steel, may receive more allowances initially to prevent them from relocating abroad but should be gradually phased out. **Example: California** channels auction revenue into **clean energy projects**, promoting job creation and emissions reductions simultaneously.

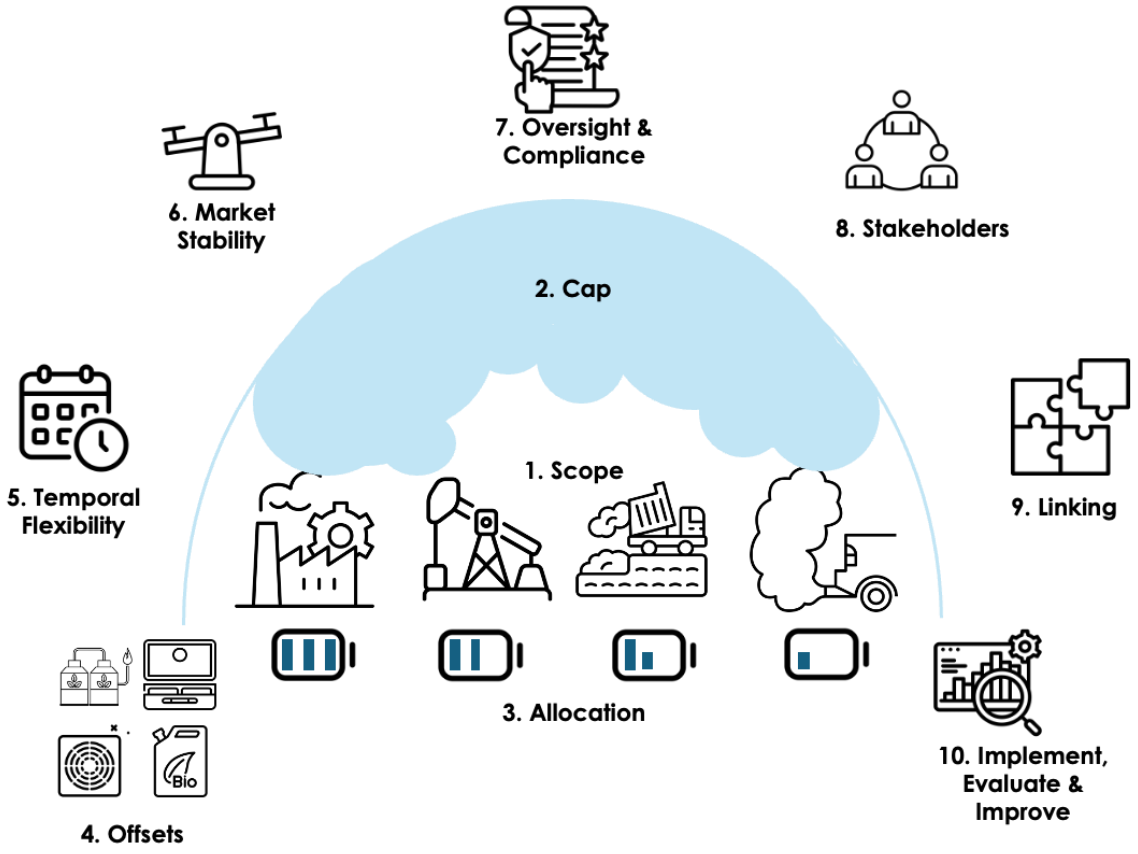
4. Emission Reduction Measurement through Monitoring and Reporting (MRV Systems): The energy and manufacturing sectors should install **Continuous Emissions Monitoring Systems (CEMS)** for real-time tracking in large factories and power plants. **The transportation** sector could monitor emissions through **fuel consumption data** in its own sector and per the other industries and the adoption of **electric vehicles (EVs)**. **Example: South Korea's K-ETS** has stringent **MRV systems** to ensure transparent and accurate emissions reporting.

5. Market Liquidity and Price Stability through Price Floors and Ceilings: Set minimum and maximum prices to prevent excessive market volatility, ensuring a stable carbon price. **Additionally, Allowance Banking** allows firms to bank unused allowances for future compliance periods, fostering flexibility. **Market Participation through SME Inclusion** encourages SMEs to participate by creating a platform for smaller trades. **Example:** The **California cap-and-trade**

system uses **price containment measures** to stabilize the market, ensuring the carbon price stays within acceptable limits.

6. International Linkages

Kenya could explore linking its carbon market with regional or global carbon markets to increase liquidity and allow businesses to trade emissions credits more efficiently. For instance, the **EU ETS** has expanded to include non-EU countries, enhancing market resilience and emission reductions.



Waste-to-Energy Tax Exemptions:

Kenya can further accelerate clean cooking adoption by introducing **waste-to-energy tax incentives**, particularly for biogas, bio-LPG, and bioethanol production and other technologies that convert agricultural waste into energy. The focus here would be on rural areas where agricultural waste is abundant or there are large vacant plots that can grow indigenous plants that can be harvested for biofuels without affecting biodiversity. Tax exemptions could stimulate investments in biogas digesters, purchasing of locally manufactured biofuels, and related infrastructure, therefore, aligning clean cooking initiatives with rural livelihoods.

(Of the proposed Frameworks, which could be suggested as the most viable one?)