Global NDC Conference 2019 Berlin

a contribution to NDC PARTNERSHIP

as well as the work of INITIATIVE FOR Climate Action Transparency, LEDS GLOBAL PARTNERSHIP, Partnership on Transparency in the Paris Agreement

and jointly implemented with IKI NDC SUPPORT CLUSTER, giz, UNDP, CDKN

Scaling up clean cooking in Kenya with Bio-ethanol

Using technology and business model innovation to promote sustainable cooking fuels

REPUBLIC OF KENYA

MINISTRY OF ENVIRONMENT AND FORESTRY

SOUTH SOUTH NORTH
TOWARDS CLIMATE RESILIENCE

NDC FACTS

TARGET

→ **30%** Emission Reduction by 2030 Relative to Business As Usual (BAU)

MITIGATION SECTORS

Energy, Transport, Waste, Forestry, and Agriculture

ADAPTATION SECTORS

Agriculture, Coastal Zone, Cross-Cutting Area, Disaster Risk Management, Education, Energy, Environment, Health, LULUCF/Forestry, Social Development, Tourism, Transport, Urban, Water

PARIS AGREEMENT RATIFICATION

28 December 2016

NDC IMPLEMENTATION PLAN

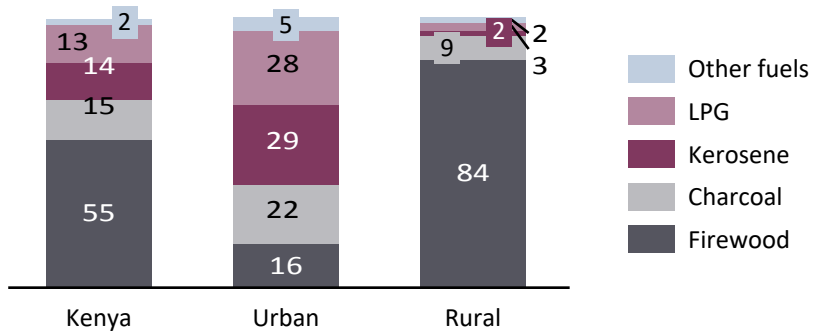
In Progress

SDG LINKAGES

The urban Kenyan cooking fuel market is estimated at USD 600m – USD 800m per annum, and remains dominated by dirty fuels

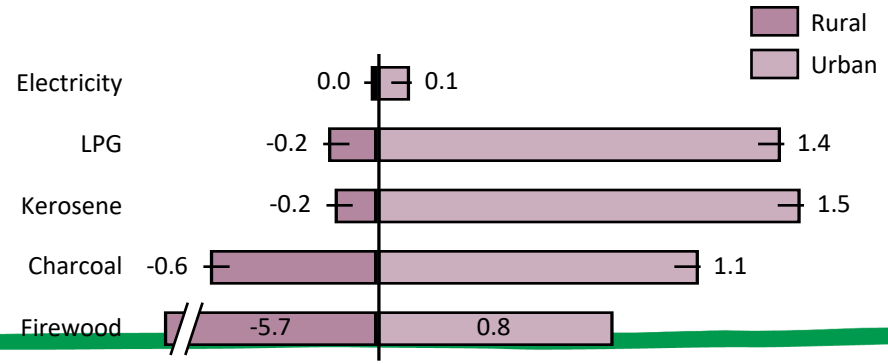
In urban Kenya, the majority still use charcoal and kerosene; this number is much higher when fuel 'stacking' is included

Primary Cooking Fuel Used in Kenyan Households in 2017
(% of population)



Kenyan urban households are now ready for rapid uptake of clean, modern fuels

Primary Cooking Fuel Used in Kenyan Households in 2017 *(households, millions)*



This report focuses on the opportunity for Bio-ethanol to serve urban Kenyan population (market estimated at ~$600-800mn* annum with full fuel transition).

The majority of Kenyans currently paying for cooking fuels live in urban Kenya

- Most fuel used in rural areas is gathered and not purchased (e.g., 84% of households use firewood as their primary fuel)
- Market-driven approaches for expanding the use of modern fuels are unlikely to take hold in these areas in the short term
- In urban areas, on the other hand, over 80% of households are already purchasing cooking fuel and are prime targets for modern fuel use

Within modern fuel options, Bio-ethanol and LPG are the most feasible today; Bio-ethanol is the least understood

- LPG is well-understood, already promoted by the Government, and enjoys strong consumer recognition
- Bio-ethanol is relatively unexplored and has achieved lower penetration thus far
- Electricity will become increasingly important to the overall cooking mix; however, for now, only higher income consumers can afford the expensive but efficient electric stoves that are needed to make electric cooking viable

Continued dependence on dirty cooking fuels poses serious health, environmental, and food insecurity risks for Kenya

Impact of using biomass fuel for cooking

Health

- **Indoor air pollution**: 728k Disability-Adjusted Life Years (DALYs) and 16.6k deaths annually, **8-10% of early deaths** in Kenya[1], likely a substantial underestimate of the full disease burden as many negative cooking health effects have not yet been quantified (e.g., burns, eye diseases, physical injuries from carrying firewood, etc.)
- **Lower respiratory tract disease** is the third largest contributor of deaths in Kenya while pneumonia is a major cause of death to children under the age of five, largely due to indoor air pollution[1]

Environment

- **Deforestation and forest degradation:** Kenya loses **10.3 million m^3 of wood from its forests** every year from unsustainable charcoal and wood fuel use, a major contributor to the 0.3% per year deforestation rate[2]
- **GHG emissions:** Household fuel use in Kenya contributes **22-35 million tonnes of CO2 eq** each year, which is equivalent to **30-40% of total Kenya GHG emissions[2]**

Food insecurity

- **Food insecurity:** deforestation, resulting from the use of dirty fuels, exacerbates food insecurity and harms the agriculture sector. Kenya's five forest water towers feed filtered rainwater to rivers and lakes and provide **over 75 per cent of the country's renewable surface water resources[3]**

Mobilising Investment for NDC Implementation

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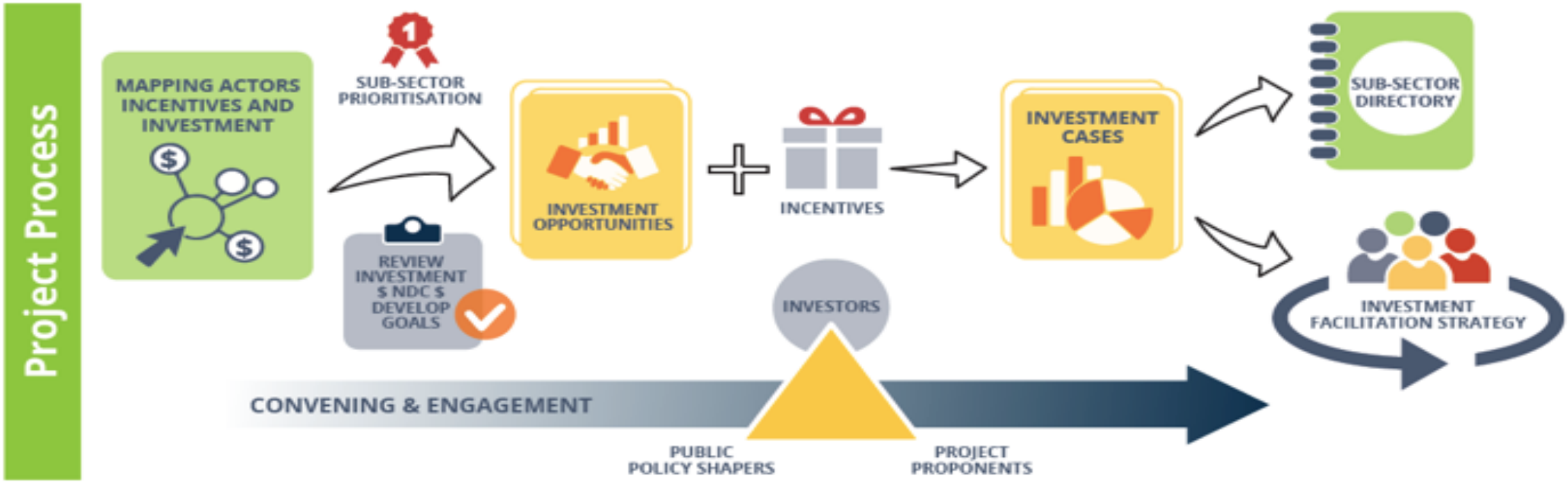
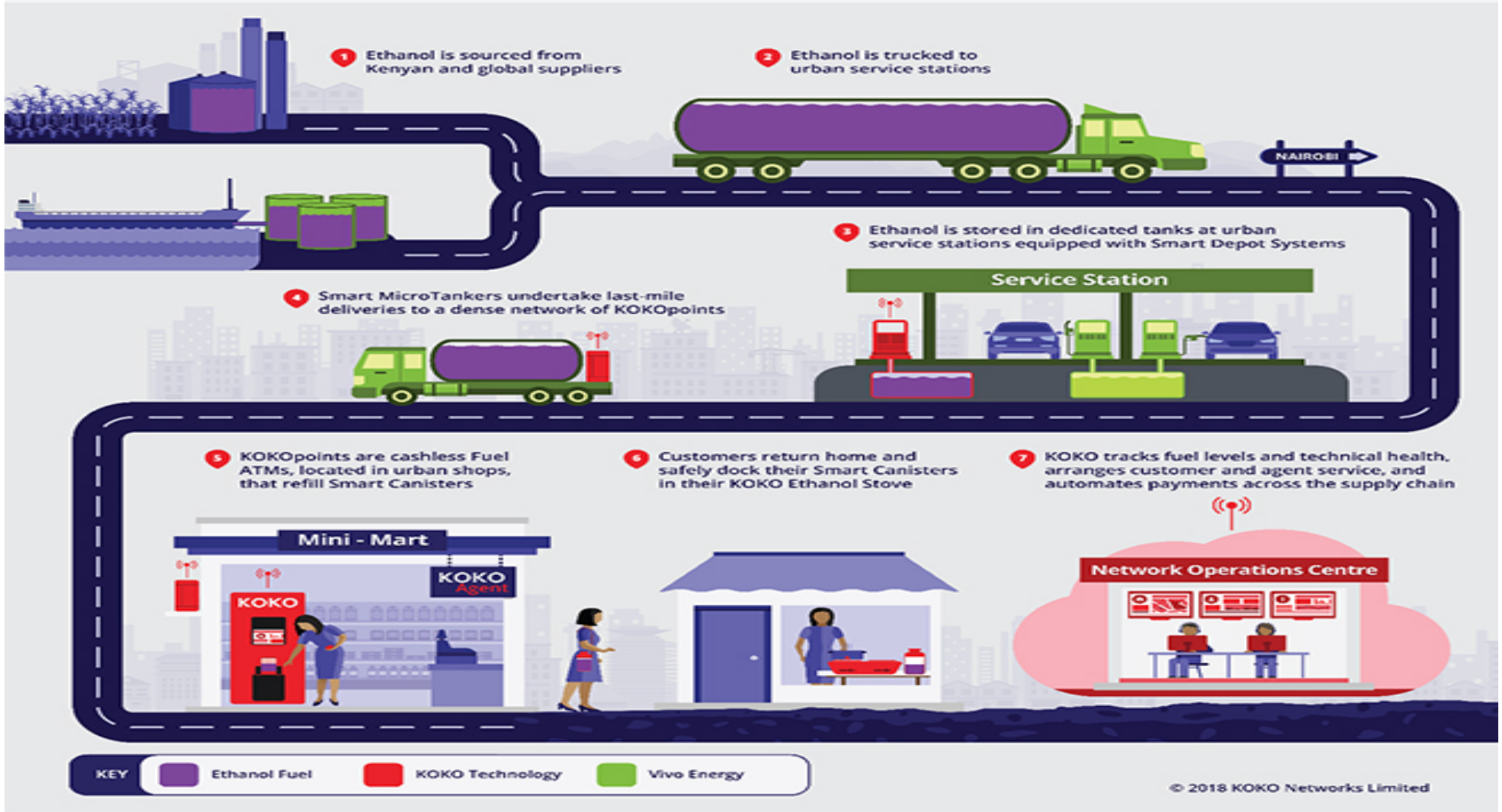


KENYAN PARTNERSHIP OVERVIEW

KOKO NETWORKS | VIVO ENERGY



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A transition of all kerosene / charcoal users in Nairobi to Bio-ethanol could result in ~2mn tonnes GHGs, 200K DALYs, and 1,500 deaths averted p.a.

A full transition of kerosene and charcoal users to Bio-ethanol in Nairobi alone would help towards achieving the Sustainable Development Goals

~200,000 DALYs and 1,500 deaths averted[3] [4] over a three year intervention period

time savings from collection, cooking, and cleaning **will accrue to women**

USD 60mn in annual consumer savings[4]

Reduction of 2mn tonnes of CO2eq emissions[1]

This represents 2-3% of Kenya's annual GHG emissions and **10% of Kenya's 2030 GHG reduction goal**[2]

The cost at which Bio-ethanol can be sold to customers is inflated by high import taxes and VAT, which drive ~25% of the retail price

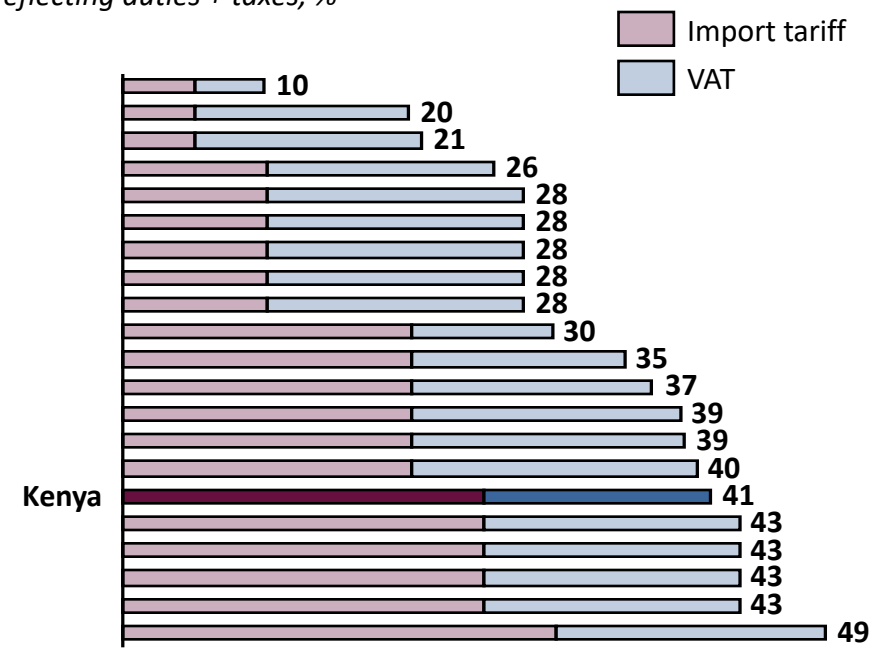
Taxes on Bio-ethanol are high relative to those on other fuels in Kenya

Kenyan duty and VAT rates for cooking fuels:

FUEL	Effective duty	Effective VAT
Charcoal	N/A	N/A
LPG	0%	0%
Kerosene	9%[1]	0%
Denatured technical Bio-ethanol	25%	16%

Taxes on Bio-ethanol are high in Kenya relative to in other countries

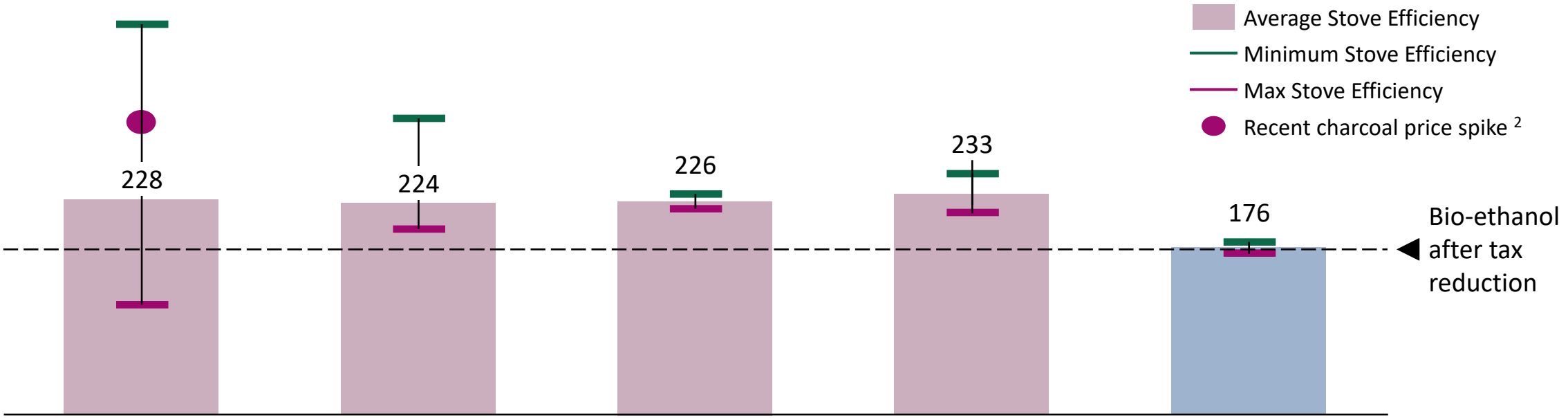
Duty and tax burden on imported denatured Bio-ethanol;
subset of 21 SSA nations,
reflecting duties + taxes, %



Granting industrial Bio-ethanol imports a VAT-zero rating and eliminating associated tariffs could reduce Bio-ethanol retail prices from $0.85 /L to $0.64/L

Granting Bio-ethanol a VAT-zero rating and eliminating tariffs would make it the cheapest cooking fuel option for Kenyans

Average annual fuel expenditure by fuel type to meet 3,500 MJ fuel diet of a typical Nairobi household[1], *USD / year*



Price	***$0.40/kg***	***$0.82/L***	***$0.79/L***	***$1.70/kg***	***$0.64/L***

Bio-ethanol presents potential opportunities for strengthening the Kenyan economy

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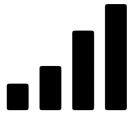
1 **Tax revenue**

- **Domestic Bio-ethanol production has the potential to increases tax revenues in the long-run** as formal, income tax-paying jobs are created in the domestic Bio-ethanol industry

2 **Trade balance**



- In the future, **domestically produced Bio-ethanol could replace imported kerosene,** improving the trade balance
- **With enough investment into domestic production, Kenya could one day be a regional net exporter of Bio-ethanol** (vs. imports from Sudan, Mauritius, and Pakistan)

3 **Jobs**

- **Domestic Bio-ethanol industry will deliver better-paying, formal jobs** along the Bio-ethanol value chain, from farmers to distributors
- Depending on business models adopted, an industry serving 500,000 customers could create **40-70K new jobs, generating USD 17-35mn in incremental incomes**

4 **Food security**

- **Reducing charcoal use could enhance food security**
- **~90% of charcoal for cooking is harvested from non-renewable forests**, driving food insecurity through negative impacts on water cycles and land degradation

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The way forward

Creating awareness on the dangers of using dirty cooking fuels…

Chuja Anthem

Exploring the prospects of a Bio-ethanol Master Plan

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Thank you

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