



Climate & Development Knowledge Network (CDKN)

Mobilizing Private Investment (MPI) for NDC implementation

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Agenda

Introduction to CDKN and the project

Definition of scope and methodology

Elaboration on Kenya's NDC

Overview of institutional landscape

Analysis of priority sub-sectors

Questions and answers

The Climate Development Knowledge Network seeks to implement the IKI-funded Mobilising Private Investment (MPI) project



- The **Climate Development Knowledge Network** (CDKN) is a 7-year initiative funded by the UK Department for International Development (DFID) and the Dutch Ministry of Foreign Affairs (DGIS)
- CDKN supports decision-makers in designing and delivering climate compatible development
- CDKN combines research, advisory services and knowledge management in support of locally owned and managed policy processes

CDKN has engaged OCA to conduct a scoping study in Kenya

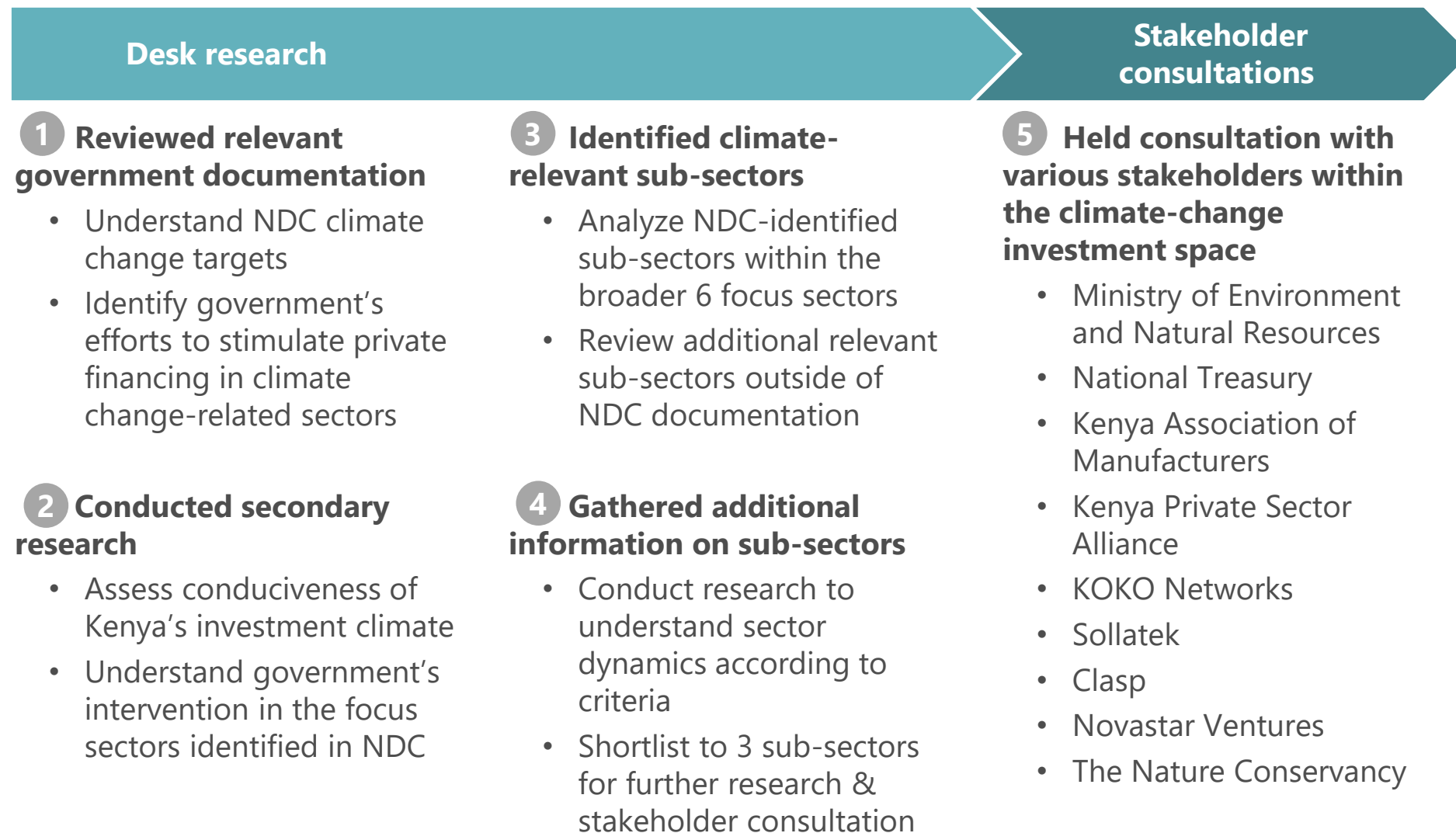
- CDKN has successfully secured funding from the German Climate Fund (IKI), to deliver the €5M Mobilising Private Investment (MPI) project, in 7 countries, of which Kenya is one
- MPI project aims to drive private investment in activities laid out in Nationally Determined Contributions (NDCs) by selecting sub-sectors for which private financing is most accessible
- The scoping study identifies 3 sub-sectors relevant to Kenya's NDCs and for which private sector financing is most accessible and also provides an analysis of the country's financing landscape

OCA was engaged to report on how private investment can be mobilized for implementation of Kenya's NDC...

The extent of the report on private investment mobilization was defined by a scope around four major tasks:

- 1 **NDC analysis**
 - **Assess extent to which the government has developed detailed NDCs** (Nationally Determined Contributions), incl. sectors, costings, pipeline, etc.
 - **Assess existence of financing strategies**, funding proposals, and processes linking NDCs to other climate plans
- 2 **sub-sector identification**
 - **Identify 3 NDC-relevant sub-sectors where there are clear financing and enabling environment** that can be addressed by further CDKN intervention
 - Provide detailed rationale for these sub-sector selections
- 3 **Institutional landscape assessment**
 - **Analyze investment and institutional landscape**
 - **Assess scale of opportunities**, risks and barriers to investment in sub-sectors
 - Make recommendations for further, in-depth analysis
- 4 **Sector actors description**
 - **Map key actors and types of expertise** for consideration by CDKN under each sub-sector for them to succeed in their project facilitation and brokering role

... and did this through extensive desk research and stakeholder consultations



Kenya has developed a number of guiding documentation for NDC implementers

143

Projected GHG emissions in 2030 in MtCO₂e

42.9

NDC 30% emissions reduction target in MtCO₂e

85.79

Reduction potential estimated by SNC in MtCO₂e

Focus on climate change evidenced by presence of government documentation and policies:

National Climate Change Response Strategy (NCCRS)

- Developed in 2010
- Focuses on economic effects of climate change and how those can be tackled

National Climate Change Action Plan (NCCAP)

- Developed in 2012
- First proposition to help guide execution of strategies listed in the NCCRS

National Adaptation Plan 2015-2030 (NAP)

- Developed to support implementation of NCCAP by county governments
- First set of strategies on building resilience through adapting to climate change

National Appropriate Mitigation Actions (NAMA)

- Projects and policies by the gov't to reduce GHG emission
- Main goal is to attract private sector investment in NDC sectors

While coordination within the institutional landscape is weak, many gov't and non-gov't climate change financing initiatives exist

Mandates exist across gov't ministries...

- **Coordination lead is CCD** (Climate Change Directorate) under MENR
- **All gov't ministries have climate change mandates**
- Not unusual to delegate across gov't, however it can **complicate exact attribution of responsibility** and accountability for facilitating private sector finance

GoK extensively consulted private sector

- **Private sector associations feel well consulted** in the development of climate change policy
- NAMAs are very detailed plans but **extent to which they have been implemented is minimal**
- Despite this, **there are also strong non-GoK led programs to promote change**

...and many GoK-driven initiatives exist

- Access to the Green Climate Fund (GCF)
- Establishing the Kenya Climate Fund
- National Environment Trust Fund (NETFUND)
- Kenya Forestry Service (KFS) & REDD ++
- Kenya National Cleaner Production Centre (KNCPC)
- KenInvest, Energy Regulatory Commission

Significant number of Non-GoK programs

- Currently **127 active climate related projects with a value of \$2.29B**, funded by donors
- Kenya Climate Innovation Centre (KCIC)
- KEPSA initiatives, KAM & Centre for Energy Efficiency and Conservation (CEEC), Clasp
- Renewable Energy and Adaptation to Climate Technologies (REACT) (AECF)

OCA undertook a detailed two-step process to select the final three sub-sectors to analyze further (1/2)

Identified over 40 sub-sectors which can support the country in achieving its NDC target

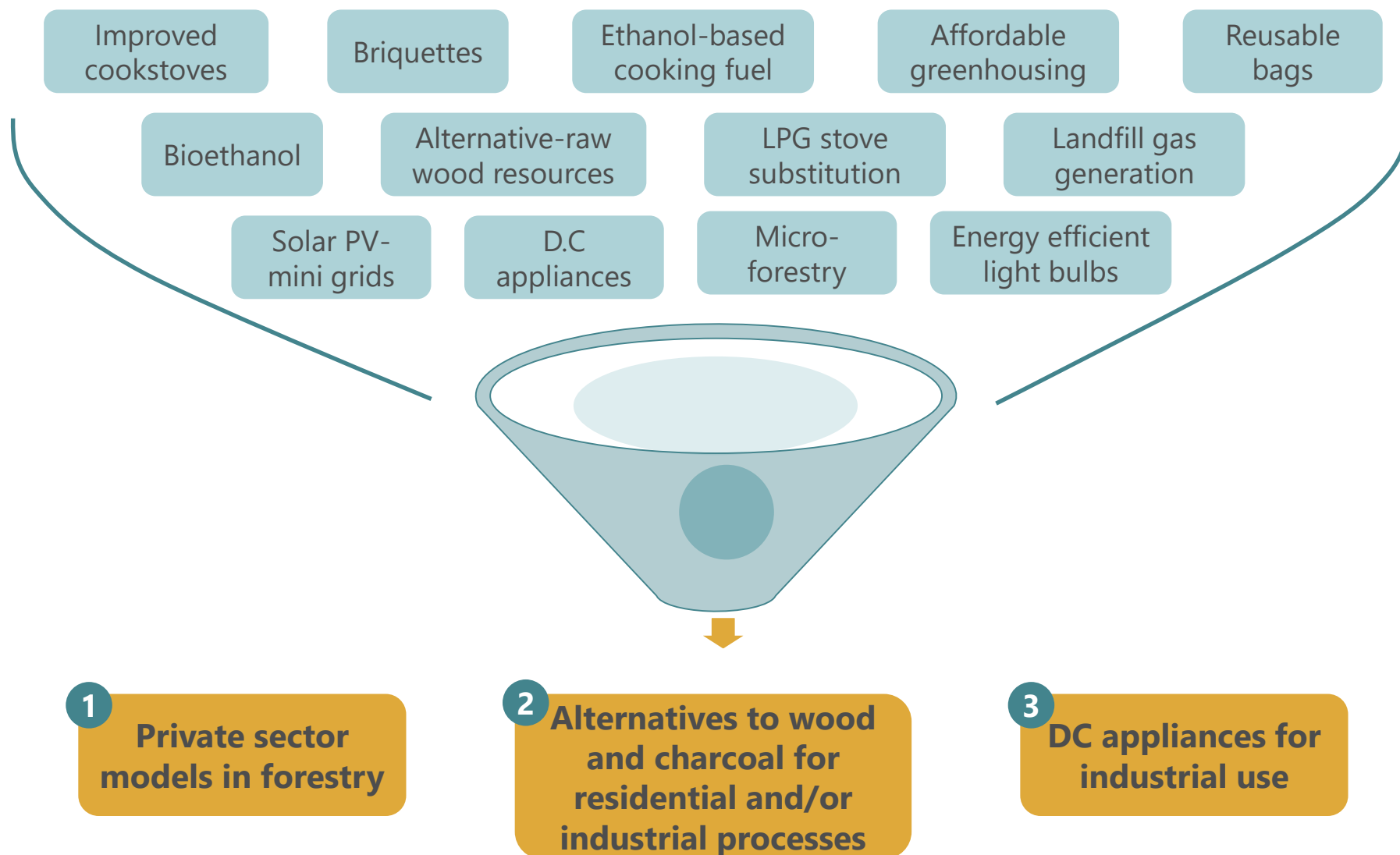
- Priority actions listed in the NDC and NCCAP documentation served as proxies for sub-sectors
- Extensive research done to get clear understanding of the sub-sectors listed – definition, market dynamics and stakeholder participation

Defined criteria for selection based on consultations with CDKN, OCA experience and research

High priority	Add'l investment impact	Additional investment that can be deployed in sub-sector to fill significant financing gaps
	Market growth potential	Extent to which market can grow, based on size of underserved market and/or structural traits
Second priority	Market growth stage	Market status in terms of size, product/service saturation, and positioning of market players
	Development impact	Environmental, social and economic co-benefits resulting from growth of sub-sector
	GHG emission reduction	GHG emission that can be reduced in sub-sector to help reach NDC target

Is CDKN able to influence sector?

OCA undertook a detailed two-step process to select the final three sub-sectors to analyze further (2/2)



First sub-sector involves wood supply management through micro-forestry and provision of alternative fibers for timber industries



Reducing deforestation through wood supply management:

1. Use of **provision of alternative fiber** for timber manufacturing industries & other industries that require wood as an input to produce goods
2. **Increase overall forest stock by managing wood supply** through micro-forestry and out-grower programs

Rationale for inclusion

Add'l investment impact	Significant gov't and NGO driven programs but little private finance into commercial models
Market growth potential	Opportunity to scale business models in the market to meet the anticipated growing demand in wood and timber
Market growth stage	The market for private sector models in forestry is still at a nascent stage with relatively few players
Development impact	Forestry sector employs 50,000+ Kenyans directly and models analyzed involve local industries, directly contributing to national GDP
GHG emission reduction	Forests are carbon sinks, helping reduce GHG emissions - NDC estimates 33 MtCO ₂ e reduction from restoration of forests on degraded land

Wood demand outstrips supply creating a national deficit estimated to be over 10 million m³, and anticipated to keep growing

There is high demand for wood...

Annual wood market estimated at ~USD 1B

- Per capita annual wood demand estimated at 1 m³, based on average price of KES 2,000 / m³

Demand anticipated to keep growing

- Annual growth in wood demand at 4%
- Economy is growing – increased population in cities demanding furniture and houses
- Demand for other uses growing as well

...but it cannot be met by current supply

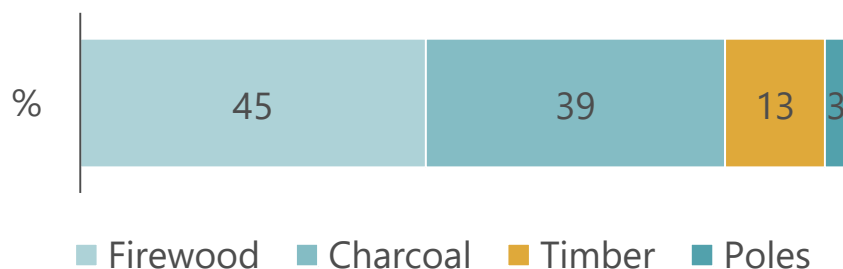
National wood demand supplied by small size of forest land

- National forest cover is **6%**
- Tree plantations account for little of forest cover – **80%** of forests are natural

Commercial and sustainable wood harvesting is underdeveloped

- ~**11%** of wood supply is from commercial plantations
- Smallholder farmers involved in commercial tree farming but scale of plantations is unknown
- Businesses, such as Komaza, operate micro-forestry models to enable large scale harvests
- Kitil farm supplies alternative fiber derived from bamboo trees

Wood demand split by use



Source: 1. Ministry of Environment, Water and Natural Resources (2013), Analysis of Demand and Supply of Wood Products in Kenya, available at

<http://www.kenyaforestservice.org/documents/redd/Analysis%20of%20Demand%20and%20Supply%20of%20Wood%20Products%20in%20Kenya.pdf>

2. Kenya Forest Service, History of Forestry in Kenya, available at <http://www.kenyaforestservice.org/index.php/about-kfs/history-of-forestry-in-kenya> 3. FAOSTAT data, Forestry Production and Trade

Growth of smallholder commercial tree farming limited by capital access, market novelty and farmer organization

Growth of sub-sector is limited by lack of access to capital:

- High risk associated with long maturity period of trees compared to average debt period
- Uninsured collateral as there are no insurance policies for trees
- Unguaranteed ability of smallholder farmers to pay back

Difficult to scale sustainable forestry practices due to current regulation

- Market undercut by large-scale, poorly regulated timber operations – many reported in Western Kenya

Recommendations		
Market research	Technical assistance	Investment de-risking
<ul style="list-style-type: none"> • Conduct study on demand for alternative fiber products • Build a detailed business case for potential alternative fiber growers • Disseminate above findings to relevant industry actors 	<ul style="list-style-type: none"> • Work with existing strategic value chain actors (e.g. transporters, aggregators) to study, create and test different supply chain management models, including out-grower schemes 	<ul style="list-style-type: none"> • Work with existing institutions to provide direct guarantees • Facilitate creation of risk-mitigating investment structures such as SPVs or pooled asset funds by involving larger blended capital players to support

Second sub-sector aims to reduce deforestation through provision of fuel alternatives to charcoal and firewood



Reducing deforestation through provision of cleaner and more efficient alternative fuels

- Alternatives considered for both household and industrial use
- Clean energy fuels analyzed include liquified petroleum gas (LPG), ethanol and briquettes for households; and the latter for industrial use

Rationale for inclusion

Add'l investment impact	Ethanol and briquette markets have received limited investments thus far – financing gaps present
Market growth potential	Growth potential is high – demand for charcoal is high, and is anticipated to continue growing
Market growth stage	Ethanol and briquettes markets are nascent; LPG is significantly more developed with the exception on the low-income household level
Development impact	Apart from direct contribution to the GDP from involvement of local industries for production, there is significant employment creation
GHG emission reduction	Forests are carbon sinks, helping reduce GHG emissions - NDC estimates 33 MtCO ₂ e reduction from restoration of forests on degraded land

Clean energy fuel markets unable to successfully replace charcoal due to both supply and demand challenges

Charcoal production advantaged vs. clean fuels

Information on local charcoal production is scanty

- Volumes not properly monitored – Production is informal and unregulated
- FAO estimated 2015 production at **>1.1 m³**

Market for alternative clean energy is underdeveloped

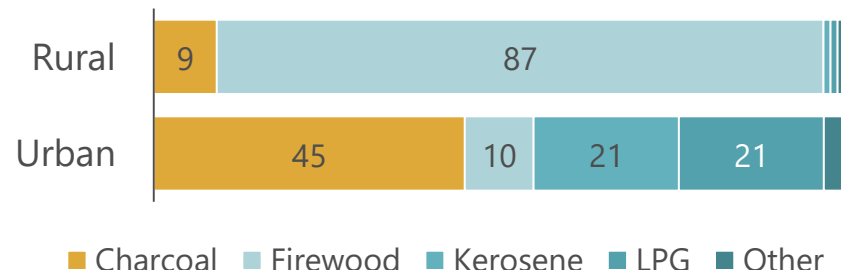
- Many briquette manufacturers lack technical expertise required for large volume production
- Local ethanol production volume insufficient to sustain industry
- For ethanol and LPG models to reach mass market, heavier investment in production and distribution infrastructure required
- Briquettes also must focus on cost-effective distribution models

Wood fuels supply 80% of energy demand

Use of clean energy fuels low on household level, but growing on industry level

- Briquette production mainly done for small businesses; BAT and KTDA are examples of larger scale industrial use
- Ethanol penetration low as market still young
- LPG penetration estimated at **5%** nationally – growth constrained by purchase cost of cookstove, gas cylinder and high infrequent refilling costs

Fuel penetration levels (%)



Growth in the markets for clean energy fuels mainly constrained by consumer awareness and underdevelopment

Growth of sub-sector is limited by:

- **Uneven regulatory playing field** – VAT exempted on traditional fuels, and LPG but imported ethanol still charged, affecting price of fuel
- **Capital intensive** infrastructure to expand LPG, ethanol processing and distribution
- Broad lack of **consumer awareness** and underdeveloped networks for last mile distribution
- **Working capital constraints** due to high cost of capital and credit-intensive nature of these technologies

Recommendations		
Consumer awareness	Technical assistance	Regulatory policy framework
<ul style="list-style-type: none"> • Work with government or associations to run alternative technology promotion campaigns targeted to households • Work with consumer groups to raise awareness on adverse health effects of traditional fuel use 	<ul style="list-style-type: none"> • Work directly with companies to support the development of well-tested distribution models, through pilot financing or technical expertise (research) 	<ul style="list-style-type: none"> • Work with relevant actors to promote the removal of VAT and import tariffs on imported ethanol, include non-biomass burning cookstoves under definition of clean cookstoves • Support actors in the research and development of a subsidy scheme for clean-burning/alternative fuels

Last sub-sector approaches climate change from an adaptation perspective in terms of using current energy supply efficiently



Adapting to climate change through efficient use of current energy supply

- Most appliances run on alternate current; direct current is more efficient
- Appliances discussed compatible with many solar-home systems, mini-grids, and other renewable off-grid electrification technologies

Rationale for inclusion

Add'l investment impact	Compared to residential appliances, commercial DC appliances have received low investment- this presents a significant financing gap
Market growth potential	High growth potential – more off-grid households acquiring SHSs; ERC moving to force heavy energy users to prioritize energy efficiency
Market growth stage	The market for small residential DC appliances is mature; large DC appliances is still nascent
Development impact	DC appliances reduce energy consumption thus saving on costs for businesses. They also provide off-grid communities the chance to live a better quality of life
GHG emission reduction	DC appliances are more energy efficient than AC appliances hence reducing the level of CO ₂ emitted in generating electricity required for that specific task

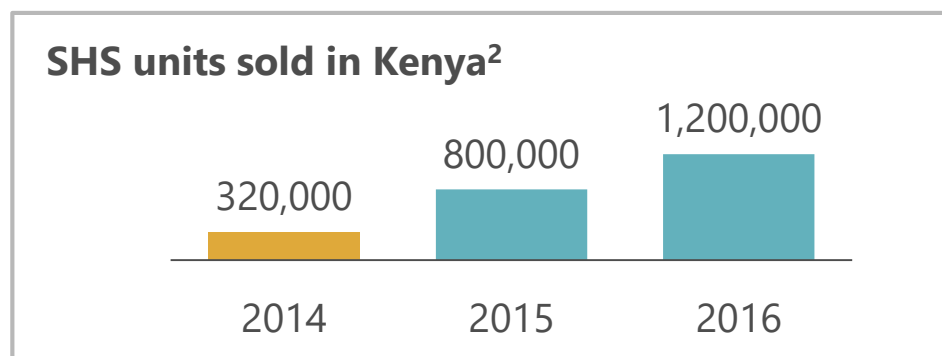
Demand and supply of DC appliances in Kenya depends on product size

The demand for DC appliances is mixed

Demand variable according to appliance size

- Low demand for large appliances mainly due to high costs and lack of consumer awareness
- Demand rising for DC refrigerators across various sectors in the economy – e.g. health care, dairy farming and fisheries

Demand for both small and large DC appliances has the potential to grow as the prevalence of SHSs also grows



DC appliances supply varies with product size

Market for small DC appliances becoming saturated

- >40 solar companies operating in Kenya
- Most sell small residential DC appliances bundled with solar panels
- However, market penetration still low

Few suppliers of large DC appliances

- Many not designed for mass market nor low-income markets – existing manufacturers focus more on technological design
- Without guaranteed demand and favorable working capital arrangements, distributors unable to keep stock for large appliances

Consumer awareness, product research and appropriate regulations can be used to overcome barriers in the sub-sector

There are 3 major barriers to unlocking private investment in the DC appliances sector:

- **Unclear and inconsistent tariff policy** – uncertainty from government introducing and scrapping tax exemptions on different products periodically
- Broad **lack of awareness** – consumers not aware of the wide variety of DC appliances available, and manufacturers have little understanding of demand in Kenya
- Without large buyer contracts and general demand uncertainty, most companies find it risky and **difficult to obtain working capital** for the large DC appliances

Recommendations

Consumer awareness

- Work with relevant stakeholders to **promote consumer awareness on economic impact** of DC appliances on the household and industry level

Product research

- **Conduct research to understand high costs of DC appliances** and identify strategies to reduce manufacturing costs
- **Support local product testing facilities** to encourage faster technology transfer and local manufacturing in Kenya

Regulatory policy framework

- Government has opportunity to **eliminate all import duty and VAT** on all DC appliances
- Work with relevant players to have a **clear definition of DC appliances** within the import policy

Questions & answers

