



# Policy Brief 2

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## Policy Environment for the Adoption and Diffusion of Clean Cooking Solutions in Kenya

### Abstract

There is a pressing call for countries in East Africa to meet the growing energy demand while securing the health of people and the environment. A major goal of their national vision is to ensure sustainable access to affordable, reliable and modern energy for socio-economic development. In this report, we take a regional perspective to review the status of the development of clean cooking solutions in Kenya and Tanzania. The report reviews policy instruments and regulatory environment around clean cooking solutions with the aim of identifying policy gaps and proposing actions that support current policies to catalyse the adoption and diffusion of clean cooking solutions in Kenya and Tanzania.

Donor-supported cookstove initiatives and programs have given prominence to clean cookstove development, which has contributed to the current rate of adoption and diffusion in Kenya and Tanzania. Analysis of policies provides an impression of governments' effort to promote the use of clean cookstove as an alternative to traditional sources of energy. As much as these policies exist, their rate of their impact on the clean

cookstove sector is rather low. The report argues that it is not just about the existence of multiple policies but how well they are well aligned to address the problems and to help achieve the adoption and diffusion of clean cookstove sectors in the society.

The report identifies some drivers of change that can support transformational policy change in driving forward a market-driven approach for promoting the adoption and diffusion of clean cooking solutions in Kenya. These are: the removal of market barriers such as taxes, levies and licences; prioritization of market-driven models for clean cookstoves; conducting clean cookstove market intelligence; access to finance; tapping into local innovation through research and development; infrastructure for cookstove testing and standards; behavioural change, and exploring emerging financial mechanism such as carbon finance. Strengthening the current policy environment presents a good opportunity to stimulate a change of consumer behaviour, government thinking, policy relevance, legislative

## Introduction

In the last decade, the need for cleaner and efficient energy alternatives to address health and environmental problems associated with continued use of traditional cooking methods has been gaining momentum at national and international levels. In a global consensus highlighting the critical role of access to energy for sustainable development, the United Nations in 2012 launched the Sustainable Energy for All (SE4All) initiative that ambitiously targets a universal access to electricity and modern cooking energy systems by 2030. Goal 7 of the United Nations' Sustainable Development Goals (SDGs) “ensure access to affordable, reliable, sustainable and modern energy for all” by 2030 put clean and efficient energy at the centre stage. Nonetheless, to achieve universal access to clean cooking energy for the world over the next 15 years, a total of around US\$ 31 billion per year will be required (World Energy Outlook, 2017).

East Africa countries are faced with the pressing challenge of expanding access to affordable, reliable and modern energy services. Over 81% of its populations live without access to modern energy services (EAC, 2009). Traditional biomass energy, primarily wood and charcoal, plays an important role in the larger economy of East African countries, particularly in the rural areas. The majority East Africans rely mainly on wood and charcoal as their main cooking fuel. For example, between 76 - 82% of the population in Kenya and Tanzania relies on traditional biomass for cooking. Research has documented multifaceted negative implications of traditional biomass energy usage in East Africa including deforestation, increasing GHG emissions, land degradation and Indoor Air Pollution (IAP), which is linked to an estimated 15,000 deaths (of mainly women and children)

in Kenya and 18,900 deaths in Tanzania annually (Clough, 2012; Lambe et al. 2015; UNIDO, 2015).

The cookstoves are regarded as one of the oldest and simplest household technologies for cooking in many developing countries. For East Africa, the development of the cookstove sector started in the 1980s, with the introduction of the charcoal cookstove by the Kenyan Ceramic Jiko (KCJ). Since then, several improved clean cooking technologies have been introduced into the market to serve both urban and rural communities. There has been wide variation in the adoption and diffusion of clean cooking solutions in East African countries. In Tanzania, the rate of adoption and diffusion of clean cookstoves has been rather slow, due to the low capacity for large-scale commercialization and the fact that most of the clean cooking initiatives have been smaller scale donor-assisted projects with short-lived funding (Clough, 2012). Kenya has the most advanced clean household energy sector in East Africa in terms the adoption of improved cookstoves technologies, diversity of producers and products, marketing and distribution of products (Lambe et al. 2015).

In spite of the significant progress, the adoption and diffusion rates of clean cooking solutions remain low: this points to the persistence of significant barriers. In addition to lack of awareness and understanding of the economic, social and environmental benefits of clean cooking solutions, recent studies have indicated the need for: (i) more efficient, affordable and durable products, (ii) more intelligent business models (marketing and distribution networks, and accessing finance for working capital); (iii) smarter and holistic policies; and (iv) better understanding of household behaviour change techniques



(Global Alliance for Clean Cookstove [GACC], 2013; Namagembe et al. 2015; Lambe 2016).

There are several innovative cookstove initiatives and programs designed to address the socio-economic and environmental challenges. For instance, institutions such as the Global Alliance for Clean Cookstoves have been at the forefront of supporting the development of improved clean cookstoves programmes and initiatives in East Africa. We also see a growing cookstove sector that has the potential for large-scale commercialization given the correct financial and business development support. In order to achieve large-scale adoption and diffusion of clean household solutions, there is a need for recognition of the relevance of clean household energy use to the larger economy, especially in rural areas. The creation of an enabling environment is critical for adoption and diffusion of clean cooking solution in Kenya and Tanzania. Such an environment must foster the formulation and implementation of pro-poor economic policies, regulation and institutions that remove market barriers, nurture home-grown innovations, facilitate access to finance and credit for the development and upscale of clean cooking initiatives.

Conducive policy environment and efficiently functioning institutions play a central role in driving deployment of clean cooking solutions market and requires long-term stability, timely and adequate adaptation. Policies and regulations that change after a short period are most likely to compromise investors' confidence. Current knowledge suggests that policy framework that provides incentives for private sector operators' engagement in the production; distribution and sale of clean cooking solutions would be an enabler for the adoption and diffusion of clean cooking solution (Rehfuess et al., 2014). A well-functioning

institutional arrangement is a critical enabling environment for innovations to thrive.

This paper adopts a regional perspective, focusing on the review of existing policies and regulatory frameworks that support or hinder the adoption and diffusion of clean cooking solutions in Kenya and Tanzania. The aim is to identify the gaps and propose actions and recommendations that will help to address the identified policy gaps. The paper also examines the institutional arrangements around the clean cooking solutions and whether it is a catalyst or a barrier to adoption and diffusion of the technology.

### Methodology

The paper employs mix methods for data collection and analyses, drawing on both primary and secondary sources of data. Specifically, the paper draws on empirical research published in scientific literature including peer-reviewed articles, research papers and review papers, grey literature such as policy documents, strategy and actions plans, project reports, consultancy reports, donor reports and documentaries on clean cooking solutions, among others. The paper also draws on previous studies on clean energy solutions and low carbon development that were conducted by the research team. In addition to the review, the paper relies on expert consultations and data from surveys conducted on clean cooking solutions actors in Kenya.

### Policy environment for Clean Cookstoves Development in Kenya

With a relatively advanced cookstove sector, Kenya has made a significant effort to promote the adoption and diffusion of a cleaner, more efficient cookstoves and fuels. The government of Kenya worked closely with stakeholders including the GACC, the Clean Cookstove



Association of Kenya, and the Petroleum Institute of East Africa to provide an enabling policy and regulatory environment for the clean cookstove sector. In 2016, the government announced the removal of the 16% value-added tax (VAT) on LPG (Government of Kenya, 2016). The VAT, which was introduced in 2013, increased the price of LPG, limiting the adoption and diffusion of clean burning cooking fuel and compelling consumers to return to heavily-pollutants such as kerosene, charcoal, and firewood. The policy change has spurred a wide adoption and diffusion of LPG and high efficient clean cookstoves.

In line with the policy change on VAT removal on LPG, the government announced an increase in the cost of kerosene by Kshs 7.20 (\$.07 US) (GACC, 2016). The move seeks to discourage the use of kerosene while facilitating the adoption and diffusion of cleaner cookstoves and fuel. This change was influenced by the growing government recognition of the evidence of the toxic effects of kerosene use on human health (respiratory diseases), and the sustained sensitization and advocacy from several interest groups pushing for cleaner cookstoves adoption and diffusion. This signifies how a monetary policy change can drive a healthier, sustainable usage of clean energy at the household level and provide a conducive environment for growth in the clean cooking market.

In addition to the tax removal on LPG, the Kenya government has also drastically slashed down the import duty on energy efficient cookstoves from 25% to 10%, thus bringing the duty to similar cookstoves and cookers that use electricity, and gas, among others with a current duty rate of 10%. The outcome of this positive step is expected to be passed onto cookstove users thus boosting the efficient cookstoves adoption and diffusion as well as enhancing further growth of the companies that design,

produce, and distribute cookstoves and products with that are affordable and environmentally friendly.

The efforts by the government show the sensitivity of the government to call for policy reforms that produce an enabling environment for a well-established and sustainable clean cooking sector. These recent actions are fundamental to pursuing a universal access to energy for cooking by 2030 as specified in the Sustainable Energy for All Action agenda, achieving the Sustainable Development Goals and implementing Kenya's Nationally Determined Contribution to addressing climate change. These positive policy changes are not only vital for the sustainable growth of clean cookstove market in Kenya but also a good learning experience for other countries.

Policies supporting Clean Cookstove in Kenya  
Kenya has witnessed a significant transformation in the policy arena with the development of many policies and regulatory frameworks since the promulgation of the 2010 Constitution. The section below briefly outlines the specific government policies that are relevant to the adoption and diffusion of clean cooking solutions in Kenya. These policies, strategies and regulatory frameworks include the 2010 Constitution, the Vision 2030, the Second Medium Term Plan (SMTP), National Climate Change Action Plan (NCCAP), National Energy and Petroleum Policy, and the Green Economy Strategy and Implementation Plan 2016 – 2030.

#### **a). The 2010 Constitution**

The Constitution creates a devolved system of government decentralising power to the County levels. It declares equity as an underlying principle of governance and assures Kenyans access to essential economic, social, and environmental rights.





The Constitution calls for a 10% forest cover of the total land area of Kenya. Currently, the forest cover of Kenya is estimated to be 3.467 million ha representing 5.9 per cent of the land area, out of which 1.417 million ha is made of indigenous closed canopy forests, mangroves and plantations (GOK, 2015). Kenya has a wood demand deficit of over 10 million m<sup>3</sup> which high the critical need for sustainable wood supply (UNIDO, 2015). With such deficit, the Constitution calls for strategies and technologies that help Kenya achieve the 10% increase in forest cover. An important and fundamental co-benefit of clean cookstoves initiatives is the reduction of wood demand for fuel and subsequent contribution towards balancing the current deficit. The Constitution through the Clean Energy National Appropriate Mitigation Action (NAMA) guarantees a clean and healthy environment through the mitigation of greenhouse gas emissions and improvements in noise, air and healthcare related pollutants resulting from wood burning for cooking under articles 42, 69, and 70 in protection of the environment.

#### **b). Kenya Vision 2030**

The Vision 2030 is Kenya's long-term development blueprint, which is implemented through a series of five-year medium-term development plans with the recent plan being the Second Medium Term Plan (SMTP) 2013-2017. The Vision 2030 targets a transformation of Kenya into a middle-income country with the capacity to provide a high quality of life to all its citizens by 2030. The Vision 2030 recognizes the central role of energy to the economic, social, and political development of the country. It provides a policy framework for “cost-effective, affordable, and adequate quality energy services” on a sustainable basis over the period 2004-2023.

The promotion of clean cookstove development

in Kenya is seen as an important intervention to fulfilling Vision 2030's goal of increasing national forest cover to 10% by 2030 as well as creating wealth by building a reliable business for small, medium and large enterprises. The Clean Energy NAMA directly addresses multiple articles under the Constitution's Bill of Rights in the form of indirect economic-social-environmental co-benefits associated with healthcare related particulate emissions and a clean and healthy environment (Articles 42, 69, and 70). It supports building a clean, secure and sustainable environment that cuts household air pollution by reducing the amount of wood burning. It also directly addresses Vision 2030's stated concern about the relationship between poor air quality due to wood reliance and upper respiratory infections.

#### **c). Third Medium Term Plan (MTP3) 2018-2022**

The Third Medium Term Plan (MTP3) 2018-2022, which succeeds the Second Medium Term Plan (SMTP) 2013-2017 underscore the need to protect the environment and building resilience to climate change (MTP3). Under the SMTP, there was a notable achievement in the area of environmental management and protection. The area under forest and tree cover increased from 6.9 % in 2013 to 7.2 % in 2016. A total of 47 County Environmental Action Plans were developed and finalized. The goals of the SMTP aligns with the Sustainable Development Goals (SDGs) – to achieve economic development without destroying the environment, reducing extreme poverty, achieving health and wellbeing of all Kenyan citizens, reducing human-induced climate change with sustainable energy. The MTP3 also calls for an increase in the share of energy generated from renewable energy sources. The plan seeks to offer incentives to attract both domestic and foreign investment including



increased reliance on Public Private Partnership (PPP) arrangements in implementing programmes and projects. It, therefore, provides an enabling platform for the development of clean cooking solutions as a means to contribute towards a clean energy provision and environmental protection in Kenya.

#### **d). Draft National Energy and Petroleum Policy 2015**

The National Energy and Petroleum Policy (NEPP) draft stipulate that Kenya's overall energy and petroleum policy is to ensure affordable, competitive, sustainable and reliable supply of energy to meet national and county development needs at least cost while protecting and conserving the environment. The NEPP draft is the result of a combined effort to harmonize different provision within the energy sector including the Sessional Paper No. 4 of 2004, the Energy Act 2006, the Geothermal Resources Act N°.12 enacted in 1982; the Petroleum Act (Chapter 308 of the Laws of Kenya); and legal frameworks and regulations, administrative procedures, government guidelines and circulars on for energy development in Kenya.

The policy reiterates the deficit in wood supply and demand, emissions from wood fuels, and inadequate alternative clean energy sources as major challenges. The policy notes that firewood and charcoal account for 69% of Kenya's total energy consumption highlighting the huge gap between the existing tree cover and the constitutional requirement for 10% tree cover. The policy also raised the serious health-related problems such as Upper Respiratory Tract Infections caused by increased indoor air pollution as result of the use of wood fuels and solid fuels in the households. It also highlights the urgency to move consumers from the consumption of kerosene and wood fuel towards more efficient renewable energy

solutions.

The energy policy seeks to ensure affordable, competitive, sustainable and reliable supply of energy to meet national and county development needs at least cost while protecting and conserving the environment. The policy among other things prioritises and promotes the development of local technologies in energy development and delivery.

#### **e). The Energy Bill 2017**

The Energy Bill 2017 is a good response toward the recognition of the changing environment of energy regulation in Kenya. It recognizes the different sources of renewable energy and the creation of the corresponding licensing and regulatory agencies. It makes provision for the establishment of the plethora of regulatory bodies such as Energy Regulatory Authority, Rural Electrification and Renewal Energy Corporation, Energy and Petroleum Institute, Energy and Petroleum Tribunal, etc. With the addition of so many regulatory bodies, the 2015 Bill fails in trying to streamline energy regulation and ensure that red tape is eliminated. While each entity has its own legal personality, there is needed to have a homogenous set of regulatory bodies with similar corporate structures and different functions.

This Bill and others make provision ...

“(f) support the establishment of energy centres in the counties; (h) undertake on-farm and on station demonstration of wood-fuel species, seedling production and management; (l) to undertake feasibility studies and maintain data with a view to availing the same to developers of renewable energy resources; (m) develop and promote, in collaboration with other agencies, the use of renewable energy and technologies, including

*but not limited to biomass, biodiesel, bio-ethanol, charcoal, fuel-wood, solar, wind, tidal waves, mini-hydropower, biogas, cogeneration and municipal waste...*

The Bill makes provision that any undertaking or works under it shall be in compliance with the local content provisions. The release of the 2015 Bill was coupled with the release of the draft “Energy (Local Content) Regulations, 2014” (the “Regulations”). Local content refers to the preference given to Kenyan citizens with suitable skills and training in matters of employment governed by the 2015 Bill. It also entails the use of certain goods and services made in Kenya and in the specific county where an energy project is being implemented. The Energy Regulatory Commission requires foreign project sponsors to have local offices where procurement, project management and implementation decision making will occur to the satisfaction of the Commission. How a lapse in the regulations is the lack of clarity about whom such decisions are to be made. In addition to the local office, any potential license applicant must also file a “Local Content Plan” which should generally contain plans for employment, training and succession, research and development, technology transfer, legal services, and financial and insurance services.

f). Forest Act 2005 (Charcoal Regulation 2009)  
Makes provisions for charcoal burning on a sustainable basis to stop forest destruction and ensure a constant supply of fuel to families that cannot afford alternative fuels. The regulation, which are currently being enforced by the Kenya Forest Service (KFS), seek to regulate an industry that has largely been viewed as illegal and promote it as a sustainable enterprise.

### **g). National Climate Change Action Plan, 2013**

Kenya's National Climate Change Action Plan guides the transition of the country towards a low carbon climate resilient development pathway. It designates improved cookstoves as one of the country's six top Priority Mitigation Programmes (NCCAP, 2013), identifies the promotion of improved cookstoves as a priority intervention. A shift to support the Government's efforts to reduce over-reliance on fuelwood and reduces deforestation and increases access to clean reliable energy. It recognizes the considerable social, economic, and healthcare-related co-benefits associated with improved cookstoves, especially for women and children – including reducing time to collect fuelwood, reducing indoor air pollution, and potentially introducing cost savings to households.

### **h). Green Economy Strategy and Implementation Plan (GESIP) 2016-2030**

The GESIP is Kenya's blueprint in advancing towards a low-carbon, resource efficient, equitable and inclusive socio-economic transformation. The plan builds upon Kenya's commitment to a Low-Carbon Development Pathway and represents an advancement of this commitment to integrate resource use efficiency and minimizing environmental impacts into Kenya's economic development. Even though the plan does not specifically mention clean cooking solutions as a means to pursuing a low carbon pathway, the plan clearly reiterate the need for eco-innovation and technologies that address indoor air pollution, increase resource use efficiency, ensure equity and social inclusion. These principles directly speak to the critical functions and contribution of clean cooking solutions to Kenya's green economy agenda.

### I). The Forest Conservation and Management Act, 2016

For a long time, there was a ban on charcoal burning in Kenya under the Forest Act of 2005. This provision has been reversed by a new Forest Conservation and Management Act, 2016, which makes provisions for charcoal burning on a sustainable basis to stop forest destruction and ensure a constant supply of fuel to families that cannot afford alternative fuels. The new charcoal rules, which are currently being enforced by the Kenya Forest Service (KFS), seek to regulate an industry that has largely been viewed as illegal and promote it as a sustainable enterprise but the short-term effect has been a spike in the retail cost of charcoal, hurting household budgets. The rules which came into effect after gazettment in 2016 aim at making the industry attractive to investors in order to achieve sustainable charcoal production while promoting conservation and reforestation and the use of technology for production.

#### Key policy gaps in Kenya

Despite the relatively advanced sector, several policy challenges remain in the clean cookstove and fuel markets in Kenya. The most notable gaps in the enabling environment have to do with tax and tariff policies, the infrastructure for cookstove quality testing, regulations on biomass and modern fuels, and access to finance.

#### i) Clean Cookstove taxes and Tariffs

The Kenya government recently reduced import duty on energy efficient cookstoves from 25% to 10%, thus bringing the duty to similar cookstoves and cookers that use electricity, and gas, among others with a current duty rate of 10%. In spite of the reduced rate taxes on efficient cookstoves serves as an impediment to the development and diffusion of clean cookstove in the market, considering that the

clean cookstove subsector is one of the least prioritised energy subsectors. The current tax rates on cookstove are still at levels that significantly reduce consumers' access to highly efficient clean cooking appliances as well as limit the growth of the cookstove sector.

#### ii) Infrastructure for Cookstove Quality Assurance

In spite of the development of new International Organization for Standardization/International Workshop Agreement ISO/IWA stove standards, cookstove quality standards and testing remain a significant policy gap. The provisional ISO standards, while an important step forward, have limited awareness and buy-in among local stakeholders; existing local standards are not aligned to the provisional ISO guidelines; many local African stove models remain untested; and the build quality of artisanal products distributed via pure private-sector channels (e.g., Kenya ceramic jiko-style stoves) is often low. Furthermore, the testing costs are prohibitively high for many potential users (e.g., artisanal and semi-industrial manufacturers). Existing stove and fuel testing protocols are not harmonized into the Kenyan context. At the moment, there are two testing centres in Kenya (Kenya Industrial Research and Development Institute (KIRDI) and University of Nairobi (UON) (Kenya Renewable Energy Clean Cooking, 2017). Importers have tested their stoves in foreign labs whose methods and conditions differ from those in Kenya. This has led to conflicting verifying claims. There is also no labelling system to inform the public about the performance of these products, which exposes Kenyans to the risk of using sub-standard products (see above). A Cook-stoves Standards and Labelling Committee was formed in July 2017 convened by CVAK (Kenya Renewable Energy Clean Cooking, 2017).



### iii) Regulation of Biomass and Modern Fuels

The policy around energy for cooking has centred on promoting modern fuels, such as LPG rather than the sustainable use of biomass energy, which serves as the major source of cooking energy for most Kenyans. Insufficient investment in forestry management and conservation, poor incentives throughout biomass fuel supply chains, impede more rational biomass fuel use that can complement demand-side efforts to reduce biomass consumption and supply-side policies that promote modern and alternative renewable fuels. There is an on-going debate on production of charcoal and wood fuel following the recent ban on production of charcoal by the Kitui County Government. Other counties that depend on Kitui for charcoal are crying foul as a result.

### iv) Lack of access to finance to promote clean cookstove market

The lack of access to finance is a crosscutting obstacle to faster clean cookstove market growth. At the micro level, this policy challenge cuts across the value chain where artisan and small/ medium. Clean cookstove manufacturers and distributors are often unable to access credit to fund product innovation, distribution network development, and consumer marketing.

### Conclusion

This paper has analysed the policy and regulatory environment, including the gaps that may influence the adoption and diffusion of clean cookstove in Kenya. The clean cookstove sub-sector very long time remained unregulated and lacked specific policy measures and incentives that encourage the adoption and diffusion of clean household cookstoves. However, there are slight improvements in the specific policy initiatives that foster the development of the clean cookstove sector.

There are visible efforts to incentivise cookstove diffusion with the government of Kenya reducing the import duty on energy efficient cookstoves from 25% to 10%.

Despite promising trends, there are several gaps in policy and regulatory frameworks associated with the clean cookstove markets. The most notable gaps in the policy environment have to do with institutional set-up, prioritization of government policies, tax and tariff policies, the infrastructure for cookstove quality testing, access to finance and regulations on biomass and modern fuels. Nonetheless, the cookstove sector could still benefit from utilizing effectively existing policy environment.

Government agencies play important roles in the growth of the clean cookstove markets. Coordinated and coherent policies, tax incentives and funding, regulations, and standardization are critical to effective adoption and diffusion of clean cooking solutions as well as building on business base for clean cookstoves. It is essential for stakeholders in the cookstove sectors to advocate for inclusive policies that support clean cookstove business start-ups and formalization while lobbying for the prioritization of clean cookstove development, which is currently not among government priorities. An enabling policy environment presents a good opportunity to stimulate a change of consumer behaviour, government thinking, policy relevance, and legislative landscape, among other things for the adoption and diffusion of clean cookstove.

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