



Policy Recommendation for the adoption and diffusion of clean cooking solutions in East Africa

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Overview

The aim of this document is to provide policy makers with a summary of the main policy principles that are required to ensure clean cooking solutions can be effectively and efficiently utilised to play a significant role in meeting a country's energy needs, as part of a United Nations' Sustainable Energy for All and SGD 7. Clean cooking solution is central to both energy access and livelihoods for poor people globally. Current trends show that by 2030, 3 billion people will still cook using traditional fuels and, without improved appliances or fuel forms, over 30 million people will have died due to smoke related diseases as a result.

If the global community is to meet the UN Sustainable Energy for All (SE4All) Initiative goal of providing universal energy, from sustainable clean sources, by 2030, then clean cooking solutions – whether from natural biomass, bioresidues or purpose-grown biofuels - will need to be part of the solution. 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.

The creation of an enabling environment is critical for adoption and diffusion of clean cooking solution in East Africa. 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.

Clean cooking solution market development

It is evident that Kenya has a more matured clean cookstove market compared to Tanzania. Cookstove development in both countries started around the same period, even though the development of improving cookstove in Tanzania was greatly influenced by the Kenya cookstove model. While Tanzania seems to be catching up, Kenya will most like continue to be at the forefront of the adoption and diffusion of the clean cookstove. In spite of the several decades of manufacturing and dissemination, the improved cookstove markets in both countries have failed to flourish. Both countries are faced with similar challenges to adoption and diffusion of the clean cookstove. These challenges include the low demand, lack of technical skills, low consumer awareness particularly in rural areas, limited distribution networks, and lack of financial access for working capital, affordability, and overall quality of stoves. An assessment of household clean energy technologies in Kenya and Tanzania in 2012 by the African Biodiversity Collaborative Group, USAID, and GVEP concluded that a major hindrance to widespread adoption and commercialization of clean cooking solutions was the lack of financing for both the consumer



and the entrepreneur as well as lack of skilled technicians and maintenance facilities, lack of production standards and quality control, cultural reluctance to change from traditional 'three stone' cooking methods, and reticence on the part of lending institutions due to small loan amounts, high transaction costs, and lack of qualified banking personnel to assess consumer loans for household technologies (GVEP, 2012).

It seems fair to say that external donor-supported initiatives and programs have mainly given prominence to clean cookstove development, which has contributed to the current rate of adoption and diffusion in Kenya and Tanzania. Of course, the role of government and small/micro enterprises has shaped the continued existence of the clean cookstove sector. However, the major question is how variation in the amount, nature and timing of the human capital, technical skills, and financial resources invested in the cookstove sector over time may help to explain the different statuses, adoption and diffusion of cookstove in the two countries. An assessment would assist in improving the understanding of the usefulness or relevance of the different measures and instruments to creating an enabling policy environment for the adoption and diffusion of clean cooking solutions in Kenya and Tanzania.

Underlying the following recommendations is the use of market-based approach for clean cooking solutions, which focuses on transforming technology research into commercially viable delivery models that provide livelihood benefits and reduce energy poverty. This approach builds relationships and capacity across a range of the value chains, from the producers and consumers, to the

developers and exporters. These recommendations draw on a study conducted in Kenya and Tanzania as well as policy dialogue meetings conducted with stakeholders.

Clean cooking solution market needs to undergo a transformation to be viewed as an important, but largely untapped, commercial product. The key actors will therefore be the private sector of a range of sizes, from small informal enterprises, up to larger formal companies, but will need to work in coordination with civil society, who have a clear role in building capacity and facilitating change, and policy makers who need to put in place an effective and supportive enabling environment to ensure the market system delivers sustainable, healthy, affordable bioenergy for the billions that need it.

1. Resource development, Information and Modelling Systems

Resource mapping

Initially National and local level mapping need to be carried out to determine the resource base in each country while considering other land uses, particularly agricultural production and environmentally sensitive areas, as well as other resources such as soil and water resources etc.

Detailed, local level analysis needs to be carried out to ensure the production of bioenergy can be balanced with other land needs at the community level, particularly that bioenergy is balanced with food production, and to ensure the benefits reach all levels of society, not just large commercial enterprises.

Resource development

To establish a sustainable clean cooking solutions market, there is need for careful planning and development of a sustainable supply of raw material. The Forest Conservation and Management Act, 2016 of Kenya, 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 charcoal regulation 2009, 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. To have a sustainable supply of biomass, there is need for re-double the current effort on tree planting and consider development of purposely planted woodlots or plantations for bioenergy.

2. Develop Regulatory Processes

Maximising Benefits for Poor People

Policy and Regulation Framework Development

Appropriate policy frameworks and political will are required to ensure that clean cooking solutions value chain is managed sustainably, including the setting of realistic usage targets. It is vitally important that all relevant policy making departments are involved in this process, including environment, energy, forestry, agriculture, health and finance departments, as bioenergy crosses many ministerial departments.

Policies should provide incentives, such as flexible tax regimes and incentives to the poor, while also implementing environmental and social safeguards, through case by case impact assessments, to ensure such incentives are not exploitative or detrimental. It is important to note that sometimes de-regulation is as important as regulation. For example, there are

doubts over the current ban of charcoal burning in Kenya what may be needed is how to ensure sustainable charcoal as enshrined in the African Union Sustainable Market Framework.

Minimum Standards

National or regional minimum standards are required for all CCS products to ensure that they are sustainably sourced, and to increase end-user awareness regarding health and efficiency performance as well as quality issues such as durability and safety. 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). For example, at the moment, there are only two testing centres in Kenya (Kenya Industrial Research and Development Institute (KIRDI) and University of Nairobi (UON)). These are grossly inadequate and are based in Nairobi making it difficult to be accessed by actors in regions outside Nairobi. 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

Kenyan to the risk of using sub-standard products (see above).

3). Support to Markets and Innovation Systems

Innovative and inclusive market system

From remote, rural households to large scale industrial operations, effective delivery models need to be developed, including all available resources, relevant market actors, appropriate technologies, scales of usage, supporting services and the enabling environment. This type of innovative models needs incorporate innovation in ICT and gender inclusivity.

Market Development

Clean cook solution sub-sector needs to be viewed as a commercial product, which, if (and only if) sustainably managed, can improve livelihoods and increase energy access through a decentralised approach. Although the use of biomass energy needs to be regulated, there is also the need for the development of an inclusive market chain approach to support its sustainable use, including all relevant actors. If a case can be demonstrated for the sustainable export of CCS, it is important that the product value is retained in the country as much as possible (e.g. value addition of the fuels rather than just the raw materials or feedstock alone). Biomass production should be developed through community-centric activities including Public-Private Partnerships, if not the partial ownership by the communities themselves.

Gender Equality

To ensure that the full range of clean cooking solution products is used in the most efficient, clean and sustainable way it is

essential to ensure that the voices of all members of society are heard. To ensure that this happens both men and women need to be equally involved in the development of all CCS related policies and implementation strategies.

Development of appropriate funding mechanisms

To scale-up the efficient use of CCS, appropriate funding mechanisms need to develop, including more innovative financial mechanisms that can meet the needs of the very poor and marginalised. Finance is also required for R&D into small-scale clean and efficient technologies that meet the needs of rural households, as well as loans and investment financing to support the scaling up of successful initiatives.

To help level the playing field, and even tilt it in favour of more sustainably produced fuels, this might include tariffs on fossil fuels or subsidies for farmers to produce CCS.

Awareness and capacity building

Low awareness levels have been identified as one of the key challenges for sustainable CCS markets in East Africa. Innovative national-level awareness campaigns using a range of communication methods such as radio, TV and on the ground workshops can effectively highlight the multiple benefits of appropriately using CCS, particularly in rural areas, including; climate change adaptation (potentially also mitigation); increased energy access; improved livelihoods and environmental health.

Clean cooking solutions need to be viewed as a sustainable commercial business with numerous benefits, rather than a dirty fuel just fit for the poor.



Development and use of appropriate technologies and promotion of local manufacturing

There is an urgent need to adopt a range of appropriate technologies, including low emission cooking stoves and efficient charcoal kilns, use of alternative fuel such as briquette and to ensure that they are affordable and meet the end user needs, particularly women.

It is a known fact that manufacturing is basis of on economic. Literary no country has been able to achieve growth and accumulate wealth without developing a strong manufacturing industry. Among the challenges facing local manufacturing are high cost of money especially for startup companies and high cost of land. In addition, expensive and unreliable electricity supply adds to high cost of production not to mention the bureaucracy involved in setting up business and getting necessary documentation. Local manufacturing of CCS products will not only create green employment but also save the region enormous amount of needed foreign exchange.

Recommended Policy Actions

The report identifies action points 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 and Tanzania.

These are:

- i) Governments in Kenya and Tanzania should lower barriers in the clean cookstove markets to encourage the adoption and diffusion of clean cooking stoves and their components through the removal of taxes and duties on

imported cookstove technologies and parts as well as reducing the number of licenses required by cookstove manufacturers and distributors. As a market with a great potential for growth, the establishment of specialized agency can significantly assist in planning and promote clean cooking stoves, coordinate technology standards and testing, and manage national and sub-national data on clean cookstove sector, including biomass energy supply and demand.

- ii) Governments must prioritize market-based approaches, but also deploy direct subsidies linked to health and climate impacts. Market-driven models should be accentuated wherever feasible to ensure sustainability. However, maximizing climate and health benefits might also require targeted subsidies delivered through carbon markets and other financing mechanisms. Indirect subsidies for cooking market support and facilitation (e.g., consumer awareness, testing centres, industry associations) have been an essential feature of all successful clean fuel and cookstove programs, both in Africa and globally to date (World Bank, 2014). The results of direct subsidies for producers have been more mixed, however, and subsidies for consumers have been the most problematic in both modern-fuel and clean cookstove markets—with some evidence of slower longer-term cookstove adoption than through purely commercial approaches, higher risks of promoting technologies that are not



desired by consumers, and serious sustainability challenges when fuel subsidies are withdrawn.

iii) Market intelligence is a vital public good for cookstove sector development in Kenya and Tanzania, where the sectors lack in-depth data and information. The provision of systematized field data on the performance of old and emerging clean cookstoves; livelihood impacts of clean biomass and modern-fuel stoves; and knowledge on the potential clean energy consumer can assist in lowering entry barriers into the market and helping inform the design of appropriate products for the market while providing periodic insights and trends to support decision-making processes. Private-sector firms are poorly positioned to generate such market intelligence, given the high cost of deploying large-scale consumer surveys in rural Kenya and Tanzania. Currently, donors have stepped up their market intelligence activities through the GACC and the World Bank's funded ACCES program. Such donor driven activities in most cases are one-off contributions to providing baseline data. Longer-term government engagement (e.g., incorporation of more data on household cooking into national energy, health, and demographic surveys) is needed to create a repeatable baseline for clean and improved cooking solution penetration and use data. The government should, therefore, take interest and invest in market intelligence activities.

iv) In building a sustainable market for the clean cooking sector, government and

donor must make provision for access to easy financing to support manufacturers, distributors, retailers, and end-consumers). Access to finance is a major hindrance across cookstoves and fuel value chains, however governments and donors are uniquely well positioned to support critical upstream and midstream finance bottlenecks (e.g., in-country producers, importers, and distributors), via their engagement with financial institutions and small and medium enterprise promotion activities. For relatively low-cost consumer durable products, downstream financing of subsidies is less promising, given the high transaction costs of financing sub-US\$100 products in Africa, with no successful cases of downstream cookstoves financing at scale. However, for higher-cost cooking technologies (US\$500–1,500), such as biogas digesters downstream finance is essential and can be beneficial (World Bank, 2014).

v) It is essential to tap local innovation: Research and development in the local cookstoves sector should be promoted to match the support (finance and policy access) that larger, donor cookstoves partners can access. Targeted funding is required to build the local capacity of cookstoves testing centres.

vi) In spite of current support from the GACC, the WB ACCES program, and other donors on the quality and standards of the cookstove, there is still more to be done to facilitate a robust stove- and fuel-testing infrastructure.

The capacity of local testing laboratories to test the quality and performance of cookstoves is still constrained, and access to regional testing facilities is very expensive for many micro and small cookstoves enterprises. Cookstoves efficiency testing and field-testing know-how to verify the activities of stove manufacturers and carbon project developers are important capabilities to build at the national levels. Governments in Kenya and Tanzania can play an important role in linking stove-testing results to consumer-labelling provisions and awareness-raising interventions, in order to improve the overall quality profile of the cookstoves and cooking fuel market over time. A note of caution on donor efforts for quality assurance is that excessively burdensome standards and testing procedures, if poorly deployed or if improperly interpreted by governmental standard-setting bodies, may serve as a disincentive to market entry for high-quality cookstoves producers.

- vii) Governments in collaboration with all key cookstoves actors must design interventions to drive consumer behaviour change. Simply distributing cleaner cooking solutions and fuels will not lead to optimal health and environmental outcomes. The challenge of achieving the benefits of universal clean cooking in both countries is not simply one of technology and economics. Rather, clean cookstoves end-user behaviour and preferences should inform all intervention. All implementers of clean cookstoves interventions, including the private sector, NGOs, and governments, should take the cookstoves user's needs and behaviour as their starting point. There is no one-size-fits-all solution for addressing the household cooking challenge, rather a differentiated

approach based on specific socio-cultural contexts and needs is recommended. This will require better and more disaggregated data on cookstove users' preferences and capacity to pay for a clean cookstoves to inform the direction of investment and innovation in the clean cookstoves sector.

- viii) An emerging financial opportunity for clean cookstoves in Kenya and Tanzania is carbon finance. Carbon finance can be a catalytic finance mechanism for cookstoves projects, particularly those that do not rely exclusively on carbon revenues to maintain and scale implementation. Carbon revenues can bring about a range of ancillary benefits for the project developer and end-user, including quality assurance, monitoring and reporting of progress over an extended time period.

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