

Introduction & Approach

Context

This paper builds on the Market Assessments conducted by the Global Village Energy Partnership (GVEP) and Accenture Development Partnerships (ADP) on behalf of the Global Alliance for Clean Cookstoves. Four assessments were conducted across East Africa in Kenya, Uganda, Tanzania and Rwanda as part of a broader effort by the Alliance to enhance the sector market intelligence and knowledge. A dozen assessments have been commissioned to contribute to a process where the Alliance will decide which countries, regions and interventions to prioritize.

The aim of this paper is to identify themes within the cookstove sectors of the four East African countries covered in the Market Assessments, and investigate whether there is any case for regional market interventions. In this situation, a regional intervention option is defined as one that looks to act collectively on a particular issue to develop the cookstove markets across all four countries in question. It also aims to have a greater impact by taking advantage of economies of scale and/or efficiency savings by acting across the region rather than on an individual country-by-country basis.

Approach

A set of intervention options has been developed for each country to help grow the market and contribute to the Alliance's mission of saving lives, improving livelihoods, empowering women, and combating climate change through the increased use of improved cookstoves (ICS) and fuels.

The paper begins by providing a brief overview of the situation in each country and the intervention options developed to support the market. It then compares the issues faced in the cookstove sectors across East Africa to identify regional themes. This analysis was based on the two frameworks used in the Intervention Options papers; 'Foster an Enabling Environment' and the 'Cookstoves Value Chain'. These frameworks were based on the Global Alliance's Igniting Change Strategy, which was developed during 2011 in consultation with over 350 global experts.

Once themes were identified, the opportunities and challenges for greater regional collaboration were assessed for each. Finally, the paper looks at the potential forums or platforms for regional action within the cookstove sector.

Limitations

The findings, hypotheses and intervention themes outlined in this paper are intended to form a basis for a discussion on potential regional collaboration within the cookstoves sector. The regional intervention options listed here are illustrative and not exhaustive. If a regional strategy is developed, a more detailed analysis into the implementation and challenges of each intervention option would need to be considered, in conjunction with all of the stakeholders from across the region.

Country Comparison: An Overview

This section will summarize the situation in each country and the intervention options developed as part of the Market Assessment process. The section provides a brief overview. It is recommended to refer to the individual country reports for the full list of intervention options and the associated analysis.

High Level Country Comparison: Cookstove Market Indicators

The table below illustrates a strong case for change across all four of the countries, although the development of each sector is clearly at different stages. Adoption of ICS varies considerably from country to country. Tanzania has a 5% adoption rate; whilst ICS have reached over half of Rwanda’s population. However, the extent to which many of the stoves in Rwanda are ‘improved’ has been questioned by some in the sector.

IAP deaths are high across the region, with Rwanda and Uganda suffering from the highest burden of disease. Interestingly, Rwanda has both a high ICS penetration and the highest burden of disease. International research has shown that the link between ICS use and health improvements is tenuous, until very high levels of thermal efficiencies are reached and cleaner, more complete combustion occurs. Therefore it is important not to focus too heavily on the links between these statistics at this point.

Traditional biomass use is consistently high. More than 80% of all rural populations use wood to cook, with a similar mix across every country. This is recognized to put pressure on biomass resources, and is a major factor in the European Union Energy Initiative Partnership Dialogue Facility’s (EUEI PDF) decision to fund biomass strategies across the region. In urban areas, the situation is more diverse. Uganda, Tanzania and Rwanda show reasonably similar practices whereas Kenya stands out due to its higher use of Kerosene. Demand for Kerosene in this part of Kenya appears to be increasing further as charcoal and LPG prices have risen dramatically whilst Kerosene rises have been more modest. However, this situation may change due to the Kenyan government’s recently announced Kerosene Free Kenya initiative which aims to reduce the dependence on kerosene in many communities.

	Kenya	Rwanda	Tanzania	Uganda
<i>Annual deaths attributed to IAP¹</i>	14,300	12,500	18,900	19,700
<i>Global Rank for IAP deaths (1 = highest)</i>	18	23	14	13
<i>% of Population using Clean Fuels²</i>	4.1%	0.1%	0.5%	0.1%
<i>Burden of Disease³</i>	2.9%	5.8%	4.4%	4.9%
<i>Overall Penetration of ICS⁴</i>	36%	>50%	5%	8.4%

¹ WHO Indoor Air Pollution, National Burden of Disease Estimates, 2007

² Global Alliance for Clean Cookstoves, 2011

³ WHO, Indoor air pollution: national burden of disease estimates, 2002

⁴ Calculation derived from Shell Foundation, Breathing Space Research, 2007, Rwanda: Biomass Energy Strategy 2009

<p><i>Urban Fuel Mix</i>⁵</p> <ul style="list-style-type: none"> ■ Wood ■ Charcoal ■ Kerosene ■ Electricity ■ Other ■ Gas ■ Crop waste 				
<p><i>Rural Fuel Mix</i> Same as above</p> <ul style="list-style-type: none"> ■ Wood ■ Charcoal ■ Kerosene ■ Electricity ■ Other ■ Gas ■ Crop waste 				
<p><i>% of total forest area lost (1990 – 2010)</i>⁶</p>	6%	36% ⁷	19%	37%
<p><i>Share of population without electricity access</i>⁸</p>	84.9%	95% ⁹	86.1%	91%

Intervention Options Summary

Kenya

Kenya is the most developed cookstove sector in the region in terms of number of people using ICS, diversity of producers and selection of products. Interesting experiments are taking place in the LPG sector, and this could lead to an expansion in this market. Urban penetration levels appear high but the challenge of addressing rural communities remains prominent. Intervention options focused on stimulating further consumer demand through sales & marketing support whilst at the same time attempting to drive up the quality of stoves in the market. The interventions proposed to achieve this through a mixture of broadened standards, focused awareness campaigns in certain communities, improved access to testing for stove businesses and crucially, product development support to build on the back of this.

Tanzania

Tanzania has a rich heritage in the cookstove sector but the lowest ICS penetration across the region. Both consumer demand and awareness are seemingly low. Meanwhile, few stove businesses have managed to commercialize at any scale, resulting in the continuing dominance of the informal artisanal production base. However, there is renewed momentum in the sector following a recent study by SNV and Roundtable Africa which has led to the formation of a sector Taskforce. It's proposed that any interventions work closely with this taskforce to improve market intelligence (currently very limited), develop supportive standards & policy and then, crucially, support aspiring stove businesses with the potential to commercialize at scale.

⁵ Kenya: UNDP/WHO 2009, Rwanda: Biomass Energy Strategy 2009, Tanzania: SNV Desk Report 2011, Uganda: National Household Survey 2010

⁶ Food & Agriculture Organization, Global Forest Resources Assessment 2010

⁷ Rwanda government statistics contradict FAO figures. Figures from the Rwanda Biomass Energy Strategy 2009 were used

⁸ IEA, World Energy Outlook 2011

⁹ Government of Rwanda, Power Supply Overview, 2011

Uganda

As with other countries in the region, much of Uganda’s stove manufacturing and distribution is done in urban areas, particularly around the capital Kampala. Despite a number of players and international interest, ICS penetration has actually stagnated in recent times, falling dramatically in some areas. The pressure on biomass resources are most acutely felt in this country, which is driving up fuel prices (a theme across the region). Intervention options aim to boost government funding to help reach their ambitious ICS targets, raise consumer awareness to increase demand for quality stoves and increase access to cleaner, alternative fuels such as LPG and briquettes. Finally, intervention options were proposed to support the marketing and distribution development needed to stimulate further consumer demand and reach remote communities.

Rwanda

The cookstove sector in Rwanda has significant visibility due to the government’s concern around the use of biomass and the threat of deforestation. The Biomass Energy Strategy developed in 2009 to address this is a policy that much of the cookstove sector looks to align with. The interventions proposed address what are seen as the two primary challenges to the ICS sector’s growth and overall impact; the consistency of quality amongst ICS and the low disposable incomes of a large part of the population. Working with local partners to improve last mile distribution, creating consumer finance options, grouping production to lower costs & improve quality will all help to improve the affordability and availability of the stoves, a crucial part to growing the sector.

Regional Theme Analysis

The table below is a summary of the main insights derived from the Market Assessments conducted in each of the East African countries. The purpose of the comparison is to identify some themes which are common across a number of the countries, providing opportunities for regional interventions or simply sharing knowledge. The themes have been categorized based on how strong the opportunity is perceived to be. Both the level of similarity and feasibility to work as a region on a solution, have been considered in this analysis.

A key for the categorization is shown below.

	Favorable: The insights display strong shared characteristics, and an opportunity may exist to develop shared solutions
	Moderately favorable: The insights share common features and although not precisely aligned, they merit further analysis
	Unfavorable – Very different issues, or issue does not exist for some countries, no opportunity appears to exist

		Kenya	Rwanda	Tanzania	Uganda
Foster an Enabling Environment	Regulation & Testing	<ul style="list-style-type: none"> All countries either have developed (Uganda & Rwanda) or are developing (Tanzania & Kenya) a national biomass strategy. Testing facilities exist in all countries but many lack the ability to test emissions 			
		<ul style="list-style-type: none"> Standards only applicable for two ICS models in supermarkets Government policy on domestic cooking fuels Several well developed testing facilities 	<ul style="list-style-type: none"> Only 1 stove type has a legally recognized standard No fuel standards appear to be in place Basic testing facilities exist at KIST but lack funding to develop 	<ul style="list-style-type: none"> Standards currently being developed with the sector No fuel standards appear to be in place Testing facilities at University of Dar es Salaam 	<ul style="list-style-type: none"> No current ICS standards although interest shown. Both energy and fuel standards exist Several well developed testing facilities
	Awareness	<ul style="list-style-type: none"> A general theme of lower awareness of ICS benefits in low income rural communities that collect wood for free 			
		<ul style="list-style-type: none"> Low consumer awareness / motivation for quality & ICS benefits Medium awareness of sector but low priority for govt. 	<ul style="list-style-type: none"> Low consumer confidence in the health benefits & fuels savings of ICS Some govt. departments active but not all relevant players such as Ministry of Health 	<ul style="list-style-type: none"> Very low consumer awareness in rural areas Recent market studies have successfully coalesced the sector players to form a Taskforce 	<ul style="list-style-type: none"> Low consumer awareness / motivation for quality, ICS benefits & fuel safety Basic sector awareness for health/emissions impacts
	Support & Funding	<ul style="list-style-type: none"> Several government initiatives but funding status unknown Greater sustainability of the market with less reliance on program based funding Strong support and funding in the sector 	<ul style="list-style-type: none"> Pressing biomass concerns means Govt. provides strong support to sector Broad support & funding for the sector 	<ul style="list-style-type: none"> Numerous government orgs. Involved with ICS but mainly on a smaller scale Funding has historically been based around programs New taskforce secured initial funding but will likely need more sustainable resources 	<ul style="list-style-type: none"> Pressing biomass concerns means strong Govt. ICS targets but currently face funding gap Funding historically based around programs Basic support / funding for: government & sector

	Knowledge Capital & Transfer	<ul style="list-style-type: none"> Limited research around the role of gender in the sector or localized health & environmental impacts caused by cooking 	<ul style="list-style-type: none"> Good consumer research but with gaps, dated, & no research into kerosene market 	<ul style="list-style-type: none"> Market intelligence relatively strong with national surveys on energy & ICS use Good macro level environmental research on deforestation 	<ul style="list-style-type: none"> Limited baseline information available, taskforce has commissioned studies to gather more 	<ul style="list-style-type: none"> Robust baseline information on ICS adoption (UBOS survey) Good macro level environmental research on deforestation Strong consumer research but with gaps & dated
	M&E	<ul style="list-style-type: none"> M&E reasonably advanced to support advanced carbon market Limited M&E initiatives 	<ul style="list-style-type: none"> Many projects appear to lack money, expertise &/or manpower to carry out solid M&E 	<ul style="list-style-type: none"> The ProBEC program had comprehensive M&E but information from other initiatives is hard to source 	<ul style="list-style-type: none"> In depth M&E for carbon projects Highlighted as a barrier to growth by some large producers 	
		Kenya	Rwanda	Tanzania	Uganda	
Cookstoves Value Chain	Design	<ul style="list-style-type: none"> Broad range of stove designs offered for major fuels in every country, with varying levels of quality 				
		<ul style="list-style-type: none"> Certain stoves do not offer the full benefit of fuel savings & emission reductions Quality stoves not easily distinguished from competitors 	<ul style="list-style-type: none"> Many stove designs being developed with significant improvements versus traditional methods. 	<ul style="list-style-type: none"> Certain stoves do not offer the full benefit of fuel savings & emission reductions Quality & durability of certain stoves perceived to be low 	<ul style="list-style-type: none"> Certain stoves do not offer the full benefit of fuel savings & emission reductions Larger businesses have more some marketing but others struggle to distinguish products 	
	Materials / Fuel	<ul style="list-style-type: none"> Price of charcoal increasing, particularly in urban areas. Availability of LPG unreliable in every country while upfront cost is often prohibitively expensive for the higher income, typically urban consumers looking to switch. 				
		<ul style="list-style-type: none"> No significant issue with raw materials, producers locate near to clay pits, steel prices rising Briquette businesses active but market presence is low LPG demand increasing, while rising prices causing desire to switch to kerosene 	<ul style="list-style-type: none"> Imported raw materials are expensive while there is a lack of high quality metal for ICS production Imported fossil fuels & electricity both expensive 	<ul style="list-style-type: none"> Raw material prices reported to be high Briquette businesses starting to emerge Demand for LPG is low despite high charcoal prices, partly due to awareness & safety concerns 	<ul style="list-style-type: none"> No significant issue with raw materials, steel prices rising Biomass prices rising & availability reducing, Briquette supply increasing Desire to switch to modern fuels, but concerns about the safety of LPG 	

Cookstoves Value Chain	Production	<ul style="list-style-type: none"> • Many stove businesses face the common challenge of accessing finance to help manage their working capital 	<ul style="list-style-type: none"> • Few producers operating at scale (~1000s) • High producer fragmentation: 'jua kali' artisanal base • Women are involved in liner production & consumer awareness 	<ul style="list-style-type: none"> • Production predominantly at the local artisan level, with varying methods & quality • Almost all stoves produced locally on a small scale but international players entering the market 	<ul style="list-style-type: none"> • Small scale producers dominate the market but other players are emerging • Most production based in urban areas, northern region or near Mwanza • Quality of production (particularly clay liners) is perceived to be poor • A recent ProBEC study suggested female producers achieved far less than men in their program 	<ul style="list-style-type: none"> • 2 main producers operating at scale (~1000s) • Medium level of producer fragmentation, most based in central region near Kampala • Female headed businesses are less common
	Sales & Distribution	<ul style="list-style-type: none"> • Affordable last mile distribution remains one of the biggest challenges for stove programs and businesses. Consumer willingness to purchase in many rural communities remains low. 	<ul style="list-style-type: none"> • Relatively mature carbon finance presence with strong pipeline • Willingness to purchase higher priced goods is higher than region but for ICS, it's almost nonexistent • Marketing & distribution are greatest challenges for large and small producers / distributors • Rural penetration low but recent programs have shown success 	<ul style="list-style-type: none"> • No registered carbon finance but some in the pipeline • Extremely low consumer willingness & ability to pay • Low willingness/ability to pay for many consumers • Very limited consumer micro finance • Distribution extremely challenging for all businesses despite a densely populated country 	<ul style="list-style-type: none"> • Many carbon finance projects in the pipeline but process appears lengthy compared to the region • Consumer willingness to make large purchases is very low and practically nonexistent for ICS • Distribution typically costly with many stove businesses struggling to access new markets due also to low demand and poor access to finance • Consumer credit facilities not prevalent or widely used 	<ul style="list-style-type: none"> • Advanced carbon pipeline; Gold Standard business receiving credits • Low willingness to pay but high ability in certain segments • Barriers to last mile distribution include poor access to finance and limited demand in rural communities • Low penetration in rural but free trial' pilots have shown promising results • Low penetration in IDP settings
	Repair & Replacement	<ul style="list-style-type: none"> • After sales service varies considerably across the market • Certain stoves' durability is still perceived as questionable, while low quality stoves are likely to be replaced rather than repaired 	<ul style="list-style-type: none"> • Traditional stoves break down quickly & are usually not repaired but replaced • ICS durability is often questionable 	<ul style="list-style-type: none"> • After sale service varies considerably and tends to happen on an ad hoc basis 	<ul style="list-style-type: none"> • Lack of repair skills available in humanitarian settings • Variable life span of stoves • Fixed stove installers often local 	

As a result of the comparison, the table below illustrates which categories may contain potential opportunities for shared regional action. The favorable and moderately favorable topics will now be discussed in more detail.

Favorable	Moderately Favorable	Unfavorable
Materials/Fuels	Regulation & Testing Awareness Knowledge Capital & Transfer Design Production	Support / Funding Repair and replacement Monitoring & Evaluation Sales & Distribution

Regional Themes: Opportunities & Challenges

Foster an Enabling Environment

Regulation & Testing

The maturity of stove and fuel standards is at different levels across the region, with room for improvement in every country. However, parties in all countries have shown an interest in ICS standards. This interest will position the sector well for the time when global standards are agreed and published. In the meantime, there is an opportunity to create a foundation of consistency across the region by encouraging national standards agencies to collaborate and share their approach to developing ICS & fuel standards. These agencies tend to be inundated with requests so another organization or body may need to play a facilitation role. No matter who takes the lead, common stove standards developed in East Africa (with global advice), for East Africa will signal a strong message of intent around the development of the stove sector.

To summarize, there may be an opportunity to partner with the East African standards agencies to help develop better standards across the entire region. Such a partnership would allow for action taken at a regional level to inform and drive standards in each country. This fundamentally would allow the stove sector to influence these standards in one forum and potentially save time by simplifying the process and avoiding duplication. These efficiency savings would help to avoid people ‘reinventing the wheel’, while at the same time provoke valuable debate that could help improve the overall quality of these standards. Of course, there may be some challenges in trying to encourage this type of regional action. Firstly, the distinct nature of the products and distribution networks in each country may make enforcement of these standards incredibly difficult, undermining the entire effort. In addition, the desire for ICS & fuel standards may well vary, with some countries content with light touch regulations while others may want strongly enforced regulations. These concerns would need to be addressed up front if this collaboration is to reach its potential.

When considering the stove testing capabilities across the region, every country has facilities and appears to have the intent to build upon these. However, there appears to be similar opportunity to above where these institutions could be partnered across the region to encourage greater sharing of expertise and knowledge. With each institution at different stages of maturity the capacity building

could even take on a 'train the trainer' approach whereby one institution is built as a regional hub that can then provide training and expertise to others in the region. Before this approach could be taken, the apparent capability gaps around emissions testing would need to be addressed and tied in with the emerging global standards. This approach undoubtedly holds the potential of a broader regional impact through the capacity building of only one institution, implying that limited resources applied to this centralized approach could go further than a distributed approach. However, this type of regional intervention could cause tension across countries if some were seen to benefit more than others. In addition, the ongoing funding of this dissemination of stove expertise would need to be supported in at least the short term, as the sustainability of these testing operations can often be a challenge.

Awareness

Stakeholder awareness within the cookstove sector is important on two levels. Firstly, the cookstove sector (governments, NGOs, carbon developers and stove businesses) should understand the health issues associated with emissions. As explained above, global research is not conclusive on the links between ICS usage and health improvements, however the sector should be aware that stoves should 'do no harm' and never increase emissions. Secondly, consumers need to be aware of the benefits that are delivered through high quality products. This of course must go hand in hand with a supply of these products. The level of stakeholder awareness for each of these topics varies considerably across the region.

Consumer awareness campaigns tend to work best when tailored to cultural, behavioral and environmental factors, which differ considerably from country to country. For this reason, there is limited opportunity to collaborate across the region when educating the consumer. However, there are potential opportunities to address some of the common issues in this area, predominately in relation to government awareness.

Given the increasing political integration across East Africa (discussed further later), there is an opportunity for the cookstove sectors of each country to work collectively with the aim of raising cookstoves further up the political agenda of their respective governments. Although the governments are at varying levels of awareness and action, capitalizing on the broader voice of the region, with four countries instead of one, could strengthen the political sway of the sector and help to drive it forward. The East Africa Community (EAC, discussed in more detail below) presents a potential forum where a regional intervention could arguably have a greater impact action than an individual country-by-country approach. The significant presence and government support given to the EAC could allow the sector to influence numerous government policies at once, with the right concerted action. If such an act was successful, it could help create the foundation for stronger policy and action on cookstoves across the region.

There are some risks associated with this approach however. Coordinating a large number of stakeholders from four countries into a single voice may be difficult, as it is challenging enough when done in one country. As mentioned, the EAC may be a potential vehicle for this group. Secondly, there may be little common ground between the diverse range of stakeholders within the sector. These issues would need to be discussed carefully before setting up any such group.

Knowledge Capital & Transfer

There appears to be a similar level of research available in each of the countries in the East Africa region, with no country particularly advanced, although focus can vary depending on the most pressing priorities of each market. The Alliance is collecting market intelligence from its partners across the globe and East Africa should actively participate in this process.

On a regional level, there is relatively limited information on gender and health, and more substantial environmental and consumer research. It is not thought that specific research into gender or health could be collected at a regional level, given its complexity. There may however be an opportunity to collect basic data on ICS adoption across the region as well as sharing market insights and best practices. There are countless cookstoves programs active across the so there is an opportunity to share any insights and experiences from these across the region.

The Bureau of Statistics in Rwanda and Uganda are leading the way by assessing ICS adoption in periodic household surveys. There is an opportunity to expand this practice to the other countries, who do not currently gather such information. Research would still be collected at country level; however it would be standardized across the countries and then shared regionally. A coordinated approach to understanding the level to which improved cookstoves are used across the region would enable countries to monitor and benchmark their progress against adoption targets and each other. Many of the East African countries have several 'versions of the truth' as different organizations have tried to assess and baseline the sector. There is a huge wealth of knowledge and market intelligence in these research papers and reports that should be capitalized on. However, much time and resource is being spent on the repetitive 'baselining' of the sector. If governments were able to play this role, even on a longer 4 year cycle such as in Uganda, it could reduce the inefficiency and duplication inherent in these individual approaches. Furthermore, publicly available, regional data would enable stakeholders to identify further opportunities for interventions and working together.

This approach does not come without its challenges. There will naturally be many requests to include additional information in national surveys, so there could be some resistance to expand. Secondly, household surveys are normally conducted once every four years, so this approach would not be sufficient to fully understand the sector nor provide the information required by many programs and organizations. It should however be a step in the right direction, and could provide valuable long term information on the progress of the sector. As with this study, any future national research projects should consider a similar methodology to neighboring countries, to enable comparisons to be made across the region.

Cookstoves Value Chain

Design

Most stakeholders in East Africa share the common goal of improving the quality of cookstoves in the market. Each country has a long history of cookstove activity, dating back to the 80s, and benefits from a wealth of technical experience. Informal innovations often occur, in response to consumer feedback or new research.

Adopting successful designs has been a long standing practice across the region, as was seen with the KUUTE and Jiko Bora stoves in Tanzania which were modeled on Kenya's Kenyan Ceramic Jiko (KCJ). Product development will remain a national activity, but there may be an opportunity to support the distribution of high quality stoves throughout the region beyond those already imported by Envirofit. This would increase the choice of products for consumers and in turn generate greater competition in the market. In order to make regional distribution more accessible to stove businesses, governments could offer import and export relief for those products identified to be of a certain standard. Additionally, support could be given to link distributors with developed regional supply chains and networks, such as those of consumer goods, energy and oil companies. In the absence of physically distributing products, stove designs and training opportunities could be provided to entrepreneurs across the region to enable them to produce high quality stoves within their local market.

If such a development was welcomed by the sector and shows promise amongst certain consumer groups, this would open the door to further regional interventions focused on stove designs in the market. There is a perception in the sector that consumers are still not satisfied with the choice of stoves on offer, despite the large range of models currently present. If this anecdotal view holds true, the spread of stove designs across East Africa and the associated growth of their producers would present the opportunity for further regional interventions aimed at improving the quality, reach and affordability of these products. As the companies grow, they would also be able to take advantage of economies of scale by expanding production and driving down costs related to manufacturing and distribution of these stoves. Any interventions that help to lower the taxation barriers for regionally active products would also have a 'multiplier effect', by creating a more supportive environment for other promising producers and products to take advantage of. This shows the potential for a regional intervention to have a greater impact than the contrasting country-by-country approach.

The additional cost of these initiatives would need to be carefully managed; as adding a considerable amount to the existing price of stoves would reduce demand, and these products may only be feasible for higher income segments. In addition, distribution remains a significant challenge for many local and national stove businesses, so the cost and challenge of transporting products regionally should not be underestimated. Finally, the political sensitivities around importing stoves would need to be overcome. These could exist for many reasons such as the sensitivity around cultural nuances and a desire for local production and the potential economic benefit can bring.

Materials / Fuels

The region faces many shared issues such as increasing the rate of electrification, improving the supply of LPG and enhancing the sustainability of the charcoal sector. These are already recognized as important regional issues and many are being addressed by the EAC's Energy Scale Up Strategy. For that reason, the broader strategic issues faced at a national level won't be discussed further here.

While stove designs often need to be tailored to the communities and people for whom they are intended, fuels are much more standardized. Issues around access, reputation and distribution can be locally specific but the fuel and often the hardware, in the case of LPG, varies little depending on the user. This presents an opportunity for innovative solutions to be shared from country to country with fewer barriers. Of course, the infrastructure needs to be in place and the correct segments considered, but the opportunity remains nonetheless.

Two potential opportunities stand out across East Africa; Pima Gas from Kenya and Inyenyeri model in Rwanda. For Pima Gas, their approach of using 1kg canisters and reducing the minimum refills from 300Ksh to 50Ksh helps to reduce the barrier of prohibitively high initial LPG costs. Their model is innovative and straightforward to replicate if the right investments are secured. More importantly, the premise is simple and could have potential in certain urban segments in both Tanzania and Uganda. Inyenyeri on the other hand, have piloted an original approach where biomass is sourced by rural communities. This biomass is then used to create high density pellets, which are four times as efficient as traditional wood fuels. The pellets are distributed to the biomass collectors for free and sold to those who would rather pay for fuel (typically those in urban areas). For all customers, high performing Philips Gasifier stoves are distributed for free and the fuel sold for a price lower than charcoal. Given the dominance of biomass across the region and the universally high prices of charcoal, this approach shows promise for other parts of East Africa.

It is important to emphasize that these are just two examples of original pilots, and that there will be many more across the region, particularly with regard to ethanol and briquettes. Furthermore, both of these examples undoubtedly have challenges to overcome before they can be scaled up in their own countries. However, there is clear potential to share and transfer innovative approaches to fuel across the region. Transferring these approaches from country to country could help to increase adoption of alternative fuels that minimize the environmental and health impacts of cooking compared to more traditional solid fuels. Potential challenges to this approach are of course dependent on individual circumstances in each country. Care must be taken to ensure that ‘innovative’ approaches are not shoehorned into countries without due consideration and planning. The potential demand and conditions often need to be just right to make it successful.

Production

Although designs differ from country to country, some of the fundamental production processes involved can be remarkably similar. For example, many stoves in East Africa contain a clay liner that contains the combustion and helps to increase the thermal efficiency. Research has shown that these liners are vital to the overall performance and durability of the stoves but anecdotal evidence suggests that the quality varies considerably in Tanzania, mainly because they are not fired. However in Kenya, the home of the KCJ, the quality appears to be much higher with some producers near Nairobi gaining attention for improved production methods. In this example, production methods for the similar components could be ‘exported’ to Tanzania to help improve the quality of their products. Of course, education and marketing support would need to be provided to the Tanzanian businesses to ensure that they understand the value of these improved methods and can then communicate those to potential customers.

On a larger scale, building networks of larger stove businesses across the region could contribute to more than just production improvements. In Uganda for example, Ugastove is the dominant stove producer and may benefit from partnerships with larger Kenyan producers such as Musaki Enterprises. A time may come when these producers compete across the region but right now, that appears to be much further down the line. Therefore, the opportunity to connect the most promising businesses from each country is worth consideration. This peer network may help build the aspirations of business

owners while at the same time sharing knowledge around production scale up as well as the all-important challenge of sales & distribution.

One of the major challenges to this approach is primarily the amount of return that a donor would get for their investment. Knowledge sharing is always difficult to quantify and ensure tangible results beyond informal discussions. This approach would hold much more promise when these relationships start to transform into genuine business agreements that open up new markets and opportunities for the players involved. That may be a far way off but the potential appears to be there.

Regional Platforms for Action

When considering these interventions, it's equally important to look at the potential forums on which regional issues could be raised and addressed. These platforms will be crucial for any regional action to be successful. This section looks at a couple of potential options to coordinate regional action across the cookstove sector.

East African Community

The East African Community (EAC) is an obvious forum for raising any issue that affects the region. This intergovernmental organization was originally founded in 1967 and suspended in 1977 before being officially revived in 2000. It currently consists of 5 East African countries; Kenya, Rwanda, Uganda, Tanzania and Burundi, but is likely to expand to encompass more in the coming years. Its mandate started with a commitment to political co-operation and trade agreements but has now expanded to aspirations of monetary and political union.

The EAC's interests are lengthy but it has recognized energy as a strategic priority due to its "catalytic role in stimulating investments and higher levels of productivity". Within their energy agenda, the EAC has a specific mandate on renewable energy for which they developed a Regional Strategy on Scaling-Up Access to Modern Energy Services, in partnership with GIZ and UNDP in 2005. This strategy aims to develop "Millennium Development Goals (MDG)-based energy access investments in the framework of High Impact Low Cost Scalable options for four target areas". The first of these targets is "access to modern cooking practices for 50% of traditional biomass users". With biomass still the dominant fuel across all of East Africa, this sign of intent implies significant repercussions for the cookstove sector in all of the countries discussed in this paper.

The EAC Energy Strategy Scale Up discusses the East African stove sector in detail and addresses important broader issues such as charcoal production and LPG supply. Moreover, it makes specific statements as to what it defines as "modern cooking practices":

"In this target, modern cooking practices are defined as practices that minimize environmental impact, require less than one hour per day to collect cooking fuel, and do not emit in excess of a safe level of indoor air pollution. Cooking practices that meet these criteria include the use of improved cook stoves, LPG stoves, and biogas stoves, but do not include traditional three-stone fires or unimproved stoves"

A crucial point to raise here is the process for distinguishing between “improved” and “unimproved” stoves. Their exact definition is not mentioned in either the scale up strategy or the follow up ‘Project Document for Initial Implementation Activities’. If this has not been defined precisely, the EAC’s plans should be closely linked with the region’s move towards developing cookstove standards, as mentioned previously.

The strategy document mentions several broad cookstove activities that it will look to promote, such as; supporting the commercial sales of ICS in urban areas, training up local artisan ICS producers to address rural areas, supporting LPG suppliers to improve supply of the fuel and finally, promoting NGO models for ICS dissemination amongst vulnerable communities. They also mention the “Regional standardization of LPG and ICS specifications” and “Formulation of working capital funds for ICS distributors” as specific EAC goals.

However, despite the ambitious and well founded strategy, there is little in the 2009 implementation report to suggest movement towards putting these plans into action. If this is indeed the case, some likely causes are the dominance of electrification in the agenda, the limited source of resources to meet their ambitious targets and the insufficient capacity of the EAC Secretariat. On the last two points, the EAC has already recognized this limitation in its EAC Development Strategy where it states, “The mandate of the Secretariat has expanded over time without corresponding expansion of its capacity (staff and resources)”. This is clearly an important consideration as the cookstove sectors in each country look to building working relationships with the Secretariat.

Given this background, any regional cookstove intervention should look to work with the EAC to develop their strategy and potentially access resources through the \$5M regional seed fund they intend to create to support promising start-up initiatives. From the governance laid out in their strategy, the Renewable Energy Working Group appears to be the correct channel to communicate with the Secretariat, so any planned regional action should consult with them. An important question the sector must ask is - who represents its voice on this group, if at all. And if no one does, can the sector raise its voice and presence within this organization. Finally, the EAC Secretariat aims to develop capabilities across fund mobilization, knowledge sharing, program management and communication of results so they could potentially play an active, supporting role in some of the opportunities for collaboration mentioned previously.

Informal Sector Forums

Regardless of the EAC’s future role in the sector, there will likely be a need for another forum should any regional activity take place. This forum could take many forms and will depend entirely on the will of the stakeholders across the four countries in question and the level of combined action they will look to take. No matter what form it takes, it’s crucial that any regional forum presents a balanced representation of what is a very diverse sector, with players from many backgrounds.

Conclusion

Following the analysis of the situation and proposed intervention options for each country, there are some obvious opportunities for collaboration and knowledge sharing across East Africa. A greater push to share successful approaches and innovative models across the region will hopefully lead to a more knowledgeable, coordinated and successful sector.

As mentioned previously, there are also some specific areas where regional interventions that look to create a more enabling environment, which could take advantage of both economies of scale and efficiency savings. In short, there is real potential for certain regional interventions to have a greater impact in a shorter period of time than an individual country-by-country approach. Moreover, these regional interventions would help develop the market in several countries rather than concentrate efforts and limited resources in certain ones first, potentially leaving others behind. East Africa has a rich stove history and shares many pressing concerns around fuel use and environmental impacts, so well thought out regional actions could catalyze the sector across the region. Areas where such regional interventions show promise include development of stove & fuel standards, improving local testing capabilities, raising cookstoves further up the political agenda and influencing important policies that affect the sector (the last two potentially via the EAC). Such interventions would only work if there was broad consensus across the sector and a clear plan on how each country would benefit.

Outside of broader market development, interventions targeted at the cookstove value chain appear to be much more feasible on an individual country basis. As discussed previously, many of the issues facing the cookstove markets & value chain are shared across the region, however, the environment in each country is so specific, that broad brush regional interventions appear to be an overly simplistic solution. On a case by case basis, there may well be interventions shared across two countries on a bilateral basis. Several of these examples are mentioned above and in the country intervention papers. In these cases, greater collaboration between countries should be encouraged, even when it does not include all members of the East African Community. Knowledge sharing across the region will, at a minimum, provide a strong foundation for any broader action in the future.

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