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# **ALTERNATIVES TO CHARCOAL**

## *Annual Progress Report FY 2022*

**Submitted: October 19, 2022**  
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**Activity Start Date and End Date: January 5, 2021 – January 4, 2026**

*COVER PHOTO: Community influencers showcasing different alternatives to charcoal during a demonstration event in Matero compound, Lusaka. Credit: A2C*

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**ANNUAL PROGRESS REPORT**  
FISCAL YEAR 2022

SUBMITTED OCTOBER 19, 2022  
RESUBMITTED DECEMBER 16, 2022

## **DISCLAIMER**

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# ACRONYMS AND ABBREVIATIONS

A2C	USAID Zambia Alternatives to Charcoal Activity
AFROX	African Oxygen Limited
AMELP	Activity Monitoring, Evaluation, and Learning Plan
ATFs	Alternative Technologies and Fuels
BDS	Business Development Services
BEP	USAID Business Enabling Project
CCA	Clean Cooking Alliance
CCSF	Clean Cooking Solutions Finance
CCZ	Christian Council of Zambia
CIFOR	Center for International Forestry Research
CLA	Collaboration, Learning, and Adaptation
COP	Chief of Party
COR	Contracting Officer's Representative
CPS	Consumer Preference Survey
DCA	Development Credit Authority
DCOP	Deputy Chief of Party
DFC	U.S. International Development Finance Corporation
DoE	Department of Energy
EA	Enumeration Area
EFZ	Evangelical Fellowship of Zambia
EMMP	Environmental Management and Monitoring Plan
EODB	Ease of Doing Business
EQ	Enabling Capital
ERB	Energy Regulation Board
ESAG	Energy Sector Advisory Group
FAO	United Nations Food and Agriculture Organization
FD	Forestry Department
FSD Zambia	Zambian Financial Sector Deepening Limited
FY	Fiscal Year
GHG	Greenhouse Gas
GRZ	Government of the Republic of Zambia
GUC	Grants under Contract
IAPRI	Agricultural Policy Research and Outreach Institute
IT	Information Technology
KSP	Knowledge Sharing Platform
LOA	Life of Activity

LPG	Liquid Petroleum Gas
MCHF	USAID Malawi Modern Cooking for Healthy Forests Project
MECS	Modern Energy Cooking Solutions
MEL	Monitoring, Evaluation, and Learning
MGEE	Ministry of Green Economy and Environment
MoE	Ministry of Energy
MOU	Memorandum of Understanding
NAPSA	National Pension Scheme Authority
NHIMA	National Health Insurance Management Authority
NIPA	National Institute of Public Administration
PACRA	Patent and Company Registration Agency
PayGo	Pay-As-You-Go
PPDF	Public Private Dialogue Forum
PSA	Public Service Announcement
PSE	Private Sector Engagement
SBCC	Social Behavior Change and Communications
SOP	Standard Operating Procedure
SOW	Scope of Work
STTA	Short-Term Technical Assistance
SVAS	Shared Value Africa Services International
TA	Technical Assistance
ToC	Theory of Change
ToR	Terms of Reference
UBA	United Bank of Africa
UNZA	University of Zambia
USAID	United States Agency for International Development
USG	United States Government
VAT	Value-Added Tax
ZABS	Zambian Bureau of Standards
ZANACO	Zambia National Commercial Bank
ZCCB	Zambia Conference of Catholic Bishops
ZDA	Zambia Development Agency
ZMW	Zambian Kwacha
ZRA	Zambia Revenue Authority

# I.0 ACTIVITY OVERVIEW

## I.1 ACTIVITY OVERVIEW

<b>Project Name</b>	USAID Alternatives to Charcoal
<b>Program Start &amp; End Date</b>	January 5, 2021–January 4, 2026
<b>Name of Prime Implementing Partner</b>	Tetra Tech ARD
<b>Contract Number</b>	72061121C00001
<b>Award Ceiling</b>	US\$ 24,999,557.00
<b>Subcontractors</b>	Tetra Tech ESI, PMTC Zambia, Shared Value Africa Services Int'l (SVAS)
<b>Reporting Period</b>	October 1, 2021 – September 30, 2022

## I.2 ACTIVITY DESCRIPTION

The USAID Alternatives to Charcoal (A2C) Activity works to reduce dependence on charcoal for household energy in Zambia and catalyze the increased use of low emission alternative technologies and fuels (ATFs) through innovation and increased private sector engagement (PSE) to reduce charcoal production-driven deforestation and greenhouse gas (GHG) emissions. A2C works with the private sector, the Government of the Republic of Zambia (GRZ), civil society, community-based organizations, and communities to remove barriers and create opportunities to advance consumer adoption of ATFs; strengthen enforcement of existing charcoal regulatory frameworks; and work alongside consumers to shift preferences and reduce demand away from charcoal while supporting alternative sustainable livelihoods for former charcoal-producing households. The activity is guided by an understanding of local market systems, strong PSE, and a commitment to engaging youth and empowering women.

### Activity Objectives:

A2C will achieve the above goals by implementing five overarching objectives, as listed below.

- **Objective 1:** Identify and remove market barriers to enable a 38% increase in the household use of ATFs
- **Objective 2:** Support the GRZ to improve the business enabling environment for low emission charcoal ATFs
- **Objective 3:** Implement social behavior change and communication interventions to increase consumer use of low emission ATFs.
- **Objective 4:** Support alternative livelihoods in charcoal producing communities and improve capacity to regulate and enforce charcoal supply chains
- **Objective 5:** Integrate adaptive management including through Pause, Reflect and Pivot workshops



## 2.0 EXECUTIVE SUMMARY

This report serves as the A2C Annual Performance Report for Fiscal Year 2022 (FY22) and the FY22 fourth quarter (Q4) technical report. The report covers the period of performance between October 1, 2021 and September 30, 2022, the Activity's second fiscal year (although A2C has only completed 21 months of implementation, having been awarded in January 2021). Specific achievements (organized by objective) are summarized below.

### **Objective 1: Identify and Remove Market Barriers**

Objective 1 achievements during FY22 include: expanded PSE and mapping of ATF companies and investors; development of a database to track ATF business development needs; matchmaking between companies and investors; implementation of a loan guarantee fund for clean cooking between the U.S. International Development Finance Corporation (DFC) and Absa Bank; the launch of A2C's first round of grants, valued at \$1 million; provision of tailored technical assistance (TA), including a ATF business incubator; a consumer preference survey in Solwezi and the mobilization of finance, investment, and matchmaking for ATF private sector companies, resulting in USD \$653,474 of investment leveraged and a 3.7% increase in use of ATFs as compared to FY21.

### **Objective 2: Strengthen the Business Enabling Program**

During FY22, A2C continued to address barriers and opportunities in the business enabling environment that prevent, delay, and/or disincentivize the transition from charcoal to ATFs. Key achievements include: launching the re-establishment of the Energy Sector Advisory Group and the Zambia Gender and Energy Network; supporting the Energy Regulation Board (ERB) to develop and review standards for ethanol for cooking and Liquefied Petroleum Gas (LPG) respectively; a detailed cost-benefit analysis (CBA) of removing taxes on selected ATFs; submission of proposals to provide tax incentives for ATFs, which resulted in the elimination of the 15% customs duty on LPG cylinders; feedback to GRZ on three energy related policies and strategies; and convening a workshop with regulators and the private sector to discuss international best practices in ATF regulation.

### **Objective 3: Social Behavior Change and Communication**

Key achievements under A2C's SBCC component during FY22 include: the recruitment and training of community influencers and religious leaders to directly reach consumers in Zambia's urban neighborhoods through cooking demonstrations, road shows, sensitization meetings and door-to-door campaigns. A2C also disseminated messages about clean cooking using television and radio advertisements, billboards, branding of minibuses, and social media influencers. A clean cooking hotline was also established and enabled over 1,500 consumers to access information about the affordability and accessibility of different ATFs. A2C SBCC interventions reached a total of 2.27 million people in FY22.

### **Objective 4: Improve Capacity to Regulate and Enforce Charcoal Supply Chains**

Key achievements during the fiscal year include the establishment of a National Charcoal Taskforce; co-hosting a national Forestry Conference; the selection of four districts where A2C community forest and alternative livelihood initiatives will be implemented; awareness-raising about community forestry areas in all four districts; completion of the A2C Value Chain Analysis for sustainable livelihoods, training of 160 people on the Forests Act to improve charcoal enforcement; and completion of a second charcoal producer survey, which interviewed approximately 1,100 producers.

### **Objective 5: Adaptive Management**

Major achievements under adaptive management during FY22 include: facilitating two Pause, Reflect and Pivot events; monthly monitoring of key metrics; a survey of charcoal use by institutions in Lusaka, Ndola, and Solwezi; controlled cooking tests to determine the cost of cooking using ATFs; hosting A2C's first Knowledge Sharing Platform; and providing internal on-demand mapping and GIS support to A2C staff.

## 3.0 PROJECT MANAGEMENT

### 3.1 ANNUAL OPERATIONS OVERVIEW

During this reporting period (October 1, 2021 to September 30, 2022), A2C operations staff provided significant administrative, financial, logistical, and human resources support. Achievements include overseeing the competitive procurement of two local subcontracts, hiring of four new staff, recruitment of four local consultants, the launch of A2C's grants under contract (GUC) program, procurement of a new project vehicle, extensive administrative logistics related to staff travel and events, identifying additional office space in Solwezi and completion of an internal compliance audit. Below is a summary of operational accomplishments achieved during FY22.

#### **Administrative**

During FY22, the operations team oversaw the procurement of two local subcontracts including the release of Requests for Proposals (RFPs), budget negotiations, due diligence and contract execution. Other administrative tasks included procurement for travel, events, equipment, office supplies, and services in compliance with USAID regulations. Operations staff also applied for and received a toll-free number from Zambia Information and Communications Technology Authority (ZICTA) for the clean cooking hotline and held extensive negotiations with telecommunication providers to access toll free services. The operation team also supported significant logistical arrangements for staff and beneficiaries including travel, transport, accommodation, conference facilities, audio visual support and travel advances. A third (budgeted) project vehicle was also procured during FY22 and will be delivered next quarter.

Other activities included identification and renting of a new office space in Solwezi, issuance of Blanket Purchase Agreements (BPAs) for vendors' services and supplies, non-expendable inventory updates, facilitating office maintenance and cleanliness, overseeing security (guard) services and engaging various service providers to ensure quality IT, cleaning and waste disposal services. The administration team also facilitated travel by Home Office personnel and local consultants that supported the project during the fiscal year.

#### **Financial Management**

A2C also engaged a local vendor to support mobile money transfers to beneficiaries thereby reducing the risks associated with direct cash transfers. Improved financial projection planning and modeling tools were developed for use by staff which has resulted in more accurate spending forecasts and budgets. In Q4 A2C also completed a full-scope internal compliance review to evaluate the effectiveness of A2C's internal controls, to identify key risks and determine A2C's compliance with USAID rules and regulations. The review included accounting, financial reporting, procurement, human resources, project management, subcontracts and safety and security. No significant findings were identified.

#### **Human Resources**

During FY22, a total of four (4) new staff were recruited and onboarded (see Table I below). A2C staff also completed annual performance reviews, probationary period evaluations for qualifying staff and completed trainings on preventing sexual harassment, exploitation, and abuse. In line with Tetra Tech's compliance best practices and internal requirements, staff were trained on hiring and managing local consultants, and the distinction between consultant and subcontract mechanisms. In addition, the Human Resource Manager coordinated A2C's first team building event, which was successfully held after the Pause, Reflect and Pivot workshop held in June.

**Table 1. A2C Staff Hired in FY22**

<b>Position</b>	<b>Date of Hire</b>
Monitoring, Evaluation and Learning Assistant	October 7, 2021
Livelihoods Coordinator	January 1, 2022
Project Driver	January 1, 2022
Assistant Accountant	July 11, 2022

In addition, A2C competitively advertised and hired four consultants during FY22, three (3) of which supported a value chain analysis for sustainable livelihoods, and one supported a revision of the Social Behavior Change and Communication (SBCC) strategy.

The project continued to remain compliant with the requirements of the Zambia Revenue Authority (ZRA), National Pension Scheme Authority (NAPSA), and National Health Insurance Management Authority (NHIMA), including timely submissions of taxes and payments, among other obligations.

**3.2 MODIFICATIONS AND AMENDMENTS FY22**

USAID issued one modification (P0002) to incrementally fund the Award by \$ [REDACTED].

## 4.0 PROGRESS BY OBJECTIVE

### 4.1 OBJECTIVE I: IDENTIFY AND REMOVE MARKET BARRIERS FOR ATFS

#### 4.1.1 FY22 ACHIEVEMENTS

Objective I achievements during FY22 include: expanded private sector engagement and mapping of ATF companies and investors; development of a database to track ATF business development needs; matchmaking between companies and investors; implementation of a loan guarantee fund for clean cooking between the DFC and Absa Bank; the launch of a USD 1 million grants program (the Year 2 portion of the overall USD \$3 million grants program); provision of tailored TA, including a business incubator; a consumer preference survey in Solwezi and the mobilization of finance, investment, and matchmaking for ATF private sector companies, resulting in USD \$653,474 of investment leveraged and a 3.7% increase in use of ATFs as compared to FY21.

#### **Private Sector Identification and Engagement**

During FY22, A2C continued to expand engagement with private sector companies, including ATF businesses, retail outlets, commercial banks, investors, and business development services. A stakeholder mapping exercise was conducted in Lusaka and the Copperbelt during Q2 on business locations, sources of finance and investment, and TA needs. The companies collectively employ 5,856 people (37% female and 63% male) and have a collective total of almost 150 ATF outlets. A mapping of the outlet locations in Lusaka revealed a high concentration of ATF outlets along major roads, with less penetration in neighborhoods. This suggests accessibility of ATFs by households can be improved through expanded distribution networks, including expansion of home delivery services and retail outlets in/near urban compounds.

The data were then fed into a database developed by A2C to track the location and status of each company, summarize business development needs and gaps, and support matchmaking between companies and investors. The database currently includes 63 ATF companies. A2C also tracked 47 local and international investment companies offering financing for the ATF sector (including commercial banks, micro finance institutions, grant facilities and impact investors (see Figure I below) and shared this research with ATF companies.

Many companies that engaged by A2C this year pointed to a need for TA, including strengthening access to finance, marketing, and business operations (e.g., record keeping, financial management, customer retention and sales strategies). ATF business owners also cited business growth as a key requirement and identified investment and financing as the two primary mechanisms to achieve growth. The results informed A2C activities and interventions including the design of A2C's grants program and TA support, which are described in more detail below.

During FY22, A2C observed an increase in the number of companies interested in investing in ATFs in Zambia. This interest is especially concentrated in electric appliances, PayGo LPG, ethanol, and LPG distribution. A2C is supporting potential investors with market related information as well as by supporting companies to become investment ready through legal, registration and regulatory compliance assistance. Companies have started realigning their business approach in response to research shared by A2C. For instance, Mount Meru (LPG) has begun to adjust their marketing approach to make their products more accessible by strategically opening outlets closer to low and middle-income earners. Likewise, Chinaeli Enterprises is opening additional LPG distribution points based on research shared by A2C to improve LPG accessibility.

**Figure 1. Investors identified in the clean cooking sector by A2C**

Name	Type	Name	Type
ABSA Zambia	National/regional bank	Kukula Capital	Local investor
Acumen	Impact investor	NATSAVE	National/regional bank
Africa Infrastructure Investment Fund III (AIIF3)	Equity + Mezzanine Debt	Oikocredit International	Impact Investor Commercial Debt
Africa Infrastructure Investment Managers	Private equity firm	P4G - Start-up Funding, Scale-up Funding	Foundation/NGO Grant
AfricaConnect (DEG)	Commercial Debt	Pangaea Investments	Equity + Mezzanine Debt
AHL Venture Partners	Impact investor	Powering Renewable Energy Opportunities (PREO)	Foundation/NGO Grant
AlphaMundi	Equity + Mezzanine Debt	Proparco	DFI Concessional Debt
AlphaMundi	Commercial Debt	Proparco	DFI Commercial Debt
Demo Environment Programme	Grant	Research and Development Fund (Efficiency for Access)	Grant
Development Bank of Southern Africa	National/regional bank	Sima Angaza Distributor Finance Fund	Commercial Debt
D-Prize	Grant	Solar Frontier Capital (SFC)	Commercial Debt
EEP Africa Catalyst Window	Commercial Debt	Spark + Africa	Fund
EEP Africa Innovation Window	Grant	Stanbic	National/regional bank
Enabling Capital (EQ)	Commercial Debt	Sustainable Energy Fund for Africa (SEFA)	Grant
EnAccess	Grant	Treehouse Investments	Equity + Mezzanine Debt
Engise Africa	Commercial Debt	U.S. International Development Finance Corporation (DFS)	Credit Guarantee
Energy Access Ventures	Equity + Mezzanine Debt	United Bank of Africa (UBA)	National/regional bank
ENGIE Rassembleurs d'Energies	Social impact investor	United Nations Capital Development Fund (UNCDF)	Grant
FinnFund	Commercial Debt	Venture Catalyst (Clean Cooking Alliance)	Grant
FinnFund Equity Facility	Equity + Mezzanine Debt	Zambia National Commercial Bank (ZANACO)	National/regional bank
FMO	Equity + Mezzanine Debt	Zambian Financial Sector Deepening Limited (FSD Zambia)	Financial Inclusion
Frontier Capital Partners	Equity + Mezzanine Debt	Zambian Industrial Commercial Bank	National/regional bank
GroFin SME/Business Loans	Commercial Debt	Zenga Capital	Equity + Mezzanine Debt
Investrust Bank	National/regional bank	NEFCO	Result Based Financing

A2C also continued to create platforms for ATF companies to market their products and services through community influencer-led demonstrations and roadshows. There has been a noticeable increase in private sector businesses' participation in these awareness initiatives in Q3 and Q4, particularly among LPG and biomass businesses.

A2C also saw an increase in women and youth led companies expressing an interest to participate in activities such as demonstrations. For example, Chinaeli Enterprises is a female-owned LPG distribution company founded in 2020. The proprietor started the business after seeing an advert in a local newspaper soliciting for local LPG distributors in Lusaka. Chinaeli now operates two distribution points and has engaged with A2C to open two new locations with support from the DFC loan guarantee with Absa Bank (See Figure 2).

**Consumer Preference Survey in Solwezi**  
During Q3 A2C conducted a Consumer Preference Survey (CPS) of 420 households in Solwezi to capture awareness and use of ATFs as well as the fuels and appliances households aspire to use. The results revealed that charcoal is used by households across all income groups. Electricity for cooking was used in middle and high-income households, and significantly less by low-income households. This is likely a function of higher incomes and the limited number of electricity connections in low-income communities. Respondents across all income groups demonstrated a high awareness of electricity and LPG, while lower income groups knew significantly less about ethanol and pellet



**Figure 2. The CEO of Chinaeli meeting with A2C staff in front a distribution point. Credit: A2C**

stoves. The majority of respondents reported wanting to cook with LPG and electricity, with electricity being favored by low-income households (25%) and LPG by middle- and high-income households (40% and 43% respectively). Results from the survey were shared with ATF companies and used to inform SBCC interventions such as demonstration days and pamphlets about ATFs.

### **Grants Under Contract**

A2C launched a USD \$1 million GUC program during FY22 to support eligible organizations working in the clean cooking supply chain to increase the uptake of ATFs in urban areas through market-based approaches. A2C prioritized submissions that addressed affordability, acceptability, and accessibility barriers and the potential to significantly reduce urban charcoal consumption. The competitive selection process resulted in the selection of six companies for a total of \$986,642 in grant awards. Additional details about GUC can be found in Section 5.2.

### **Technical Advisory Support**

During FY22 A2C designed and launched a suite of TA interventions for ATF companies to improve their business models, attract investment and accelerate their expansion. These included:

*ATF Incubator.* During Q3 A2C launched an ATF business incubator to support the growth, development, and capacity-building of early stage/start up ATF companies and entrepreneurs. A competitive procurement process was initiated, beginning with the release of a RFP and subsequent scoring of proposals by a technical evaluation committee. Ultimately, Growth Africa was awarded a local subcontract to provide TA incubation services for up to 10 companies, organized into two cohorts. The incubator will deliver tailored business development skills to each company including fundraising, accounting, financial planning, marketing, product development and governance. Upon completion of the incubation program, each company will have developed a professional pitch and business plan (including a financial plan and product/service pricing model) that they can use. A final capstone event will enable participants to present their business pitch to a panel of potential investors.

*Growth Technical Assistance.* During the last quarter of FY22, A2C designed a Growth TA program which will provide support to ATF companies and entrepreneurs of varying maturity, size and investment readiness, but passed start-up stage. Details on the Growth TA program can be found below in the Q4 activity section.

*Mentorship.* Upon the successful completion of the incubator and/or Growth TA programs, businesses and entrepreneurs will be eligible for mentorship support directly from A2C. The mentorship program will enable companies and entrepreneurs to achieve business development and personal growth goals that support their business objectives and plans. The focus of mentorship will be driven by the needs of the entrepreneur; however, a key focus will be to strengthen entrepreneurs' investment readiness.

### **Private Sector Financing and Investor Mobilization**

A major milestone for A2C during FY22 was the launch of a \$20 million loan guarantee between the DFC and Absa Bank to finance small and medium-sized enterprises (SMEs), including in the clean cooking sector. To assess the value of financing required by the clean cooking sector, A2C first conducted stakeholder mapping surveys in Lusaka, Ndola, Kitwe and Solwezi. The surveys revealed a total investment need of USD \$4.9 million. A pipeline of 32 clean cooking sector companies seeking finance was then prepared and submitted by A2C to Absa bank for consideration. During Q3 and Q4 Absa bank and A2C conducted joint meetings with prospective ATF companies, which resulted in prioritizing 11 companies for further due diligence for a total bankable package of \$2.6 million. A key finding from these meetings was that many SMEs struggle to maintain audited financial records, which are required for determining credit eligibility. To address this challenge A2C will provide TA in FY23 to those companies requiring assistance in preparing and maintaining audited financial records.

A second important milestone was A2C's collaboration with Spark+ Africa, a USD \$50-70 million clean cooking-focused debt and equity impact investment fund implemented by Enabling Capital and the Clean



Cooking Alliance. During the year A2C introduced Spark+ Africa to various commercial banks and microfinance institutions including Atlas Mara, Absa, Zambia Industrial Commercial Bank, United Bank for Africa (UBA), INDE credit, and FINCA Zambia. As a result of A2C's efforts, Spark+ Africa subsequently offered a term sheet of USD \$300,000 to INDE Credit to finance ATF companies in Zambia through various models including consumer financing. The term sheet was signed in September 2022 and the committed funds will be released to INDE Credit upon completion of a due diligence process, which was underway at the time of reporting. A2C has subsequently encouraged INDE Credit to partner with retailer Radian to develop a partnership that will enable customers to access energy efficient appliances and fuels on credit from Radian stores.

### **LPG Value Chain Finance Model**

The LPG Value Chain Finance model will facilitate access to savings and credit facilities by Afrox LPG distributors, who will form self-selected savings groups and borrow working capital from their savings pool to finance the purchase of cylinders and gas. This model presents a unique opportunity to increase access to working capital, allowing distributors to invest in growing their businesses with the aim of expanding access to LPG for consumers. During FY22 A2C concluded the selection of the implementing partner (FSD Zambia) for the LPG Value Chain Finance model, which will be supported under the grants program. The model is expected to result in a 15% increase in sales among the LPG distributors. At the end of the grant, A2C expects the model will be replicated with distributors from other gas suppliers such as Ogaz Zambia, Lake Gas and Oryx Energies.

### **Clean Cooking Solution Finance (CCSF) Model**

In recognition of the challenges associated with the affordability of ATFs, the Clean Cooking Solution Finance (CCSF) model was designed by A2C to enable private sector employees to acquire clean cooking technologies through payroll deductions. During FY22 A2C engaged Zambeef, Oryx Energies and United Bank for Africa (UBA) to collaborate in piloting the model. The model will enable Zambeef employees to purchase and own LPG cylinders and cook stoves from Oryx Energies and make incremental payments through a payroll deduction scheme. This will initially be implemented at Zambeef's Huntley farm located approximately 60 kilometers north of Lusaka, which has over 1,000 eligible employees. UBA will provide working capital for Oryx to purchase the required number of cylinders and stoves. A memorandum of understanding (MoU), for all parties was prepared by A2C and is expected to be signed in the first quarter of FY23.

## **4.1.2 Q4 ACTIVITIES**

### **Annual Private Sector Stakeholder Workshop**

On 7-8 September 2022, A2C successfully convened an Annual Private Sector Stakeholder Engagement Workshop, which brought together investors and ATF companies under the theme "*Bridging the Finance Gap for Sustainable Clean Cooking Sector Growth in Zambia.*" Day 1 focused exclusively on investors with the aim of sharing information about the business opportunities in the clean cooking sector and the work of A2C. Seventeen different finance and investment companies attended Day 1 and virtually interacted with development organizations and investors who shared their experiences working in the clean cooking sector from a finance and investment perspective. Participants later reported they had a much stronger understanding of the clean cooking sector, its importance and the potential for revenue generation.

Day 2 included 22 ATF companies in Zambia and focused on sharing relevant market research and explaining the types of support A2C can provide to support businesses. Participants also interacted with international speakers from Gaia Impact Fund, Infraco, and Lendahand for a high-level conversation on becoming investment ready. The workshop culminated with an in-person business networking event between investors and companies which was well attended.

## Matchmaking

After the Annual Private Sector Stakeholder Engagement Workshop, A2C identified investors whose appetite and support requirements were aligned with those of identified Zambian ATF companies. A2C then embarked on a series of site visits to ATF companies to explore the possibility of matching them with earmarked investor companies. A summary of the ATF companies and their finance and investment matches are provided in Table 2 below. Next quarter A2C will follow up with each of the companies to track their process in engaging investors.

**Table 2. ATF companies matched with potential financiers**

Company	USD Amount Requested	Purpose	Matched Investor	Outcome of Matching
Pharmaking Limited	350,000	New bulk LPG storage and distribution system	Trident Foundation	Concept note for USD \$350,000 submitted to Trident on 29 August, 2022, undergoing review
Tranquility Enterprises	60,000	Purchase of LPG delivery truck	Absa Zambia Bank	Initial meeting held on 12 September 2022. Accepted to be linked to Absa/DFC fund
Emerging Cooking Solutions	TBA	Linkages to providers of equity finance and carbon credits	AERA, Oikocredit, GAIA	Pitch deck submitted, undergoing a review. Introduced to AERA for carbon financing opportunity
Falcon Gas	1,900,000	New bulk LPG depots and cylinder importation	Absa Zambia Bank	Absa Zambia Bank will provide a term sheet for USD \$1.9 million denominated in kwacha currency.
Puma Zambia	TBA	New LPG storage and distribution	Local Bank (TBD)	To be linked with an appropriate financial institution when their business model is clear
Meit Technologies	250,000	Importation of cylinders	Absa Zambia Bank	Linked with Absa to access the DFC funding. To submit financial information for credit assessment
Mt. Meru	330,000	Importation of cylinders	Absa Zambia Bank	To be linked to Absa/DFC fund
Radian Stores	TBA	Developing a consumer financing model	Inde Credit	Introduced to Inde Credit on 26 September 2022. Collaborating on development of consumer financing
Oryx Energies	700,000	Installation of bulk LPG storage tanks and cylinder importation	Absa Zambia Bank	Absa bank provided an expression of interest letter to finance USD \$350,000 at 18% in kwacha. Undergoing review.
Vitalite	TBA	Application to MECS grant window	Modern Energy Cooking Solutions (MECS), Oikocredit	Introduced to AMW Legal to conduct due diligence for the loan application
<b>Total</b>	<b>\$US 3,590,000</b>			

## Growth TA program

During Q4 A2C designed its Growth TA program, which will provide tailored business development support to up to ten companies (in two cohorts) of varying maturity, size and investment readiness, but passed start-up stage. In line with A2C's goal of supporting private sector-led solutions, a particular emphasis will be placed on investment facilitation support. Eligible ATF companies must have an



established business plan, a demonstrated ATF product and market base as well as the desire to enter or expand operations in Zambia. Illustrative categories of TA to be provided under the growth program include investment facilitation, business development and strategy, product refinement, marketing, legal guidance and organizational capacity development. A scope of work and RFP were drafted and will be released in Q1 of FY23.

### **Unlocking late-stage external financing**

A2C began exploratory talks during Q4 on two key transactions that could provide a pathway to support companies in late stages of financing. One such initiative was to offer legal services to an ATF company for review of their loan documents and external opinions on the validity of proposed deals. A2C also provided technical expertise and assistance to two ATF companies on their carbon credit applications and prefinancing. Progress on this tailored TA will be reported next quarter.

#### **4.1.3 CHALLENGES ENCOUNTERED**

Challenges encountered during FY22 included survey 'burnout' by private sector partners who were repeatedly approached by A2C for information throughout the year. This has been addressed by ensuring partners have a single focal point within A2C to streamline and coordinate information requests, share research results and explain the various opportunities and types of support A2C can provide to companies. A2C also observed that several companies who were not successful in their grants application no longer wanted to engage with the project. This has been mitigated through personal emails sent by the Chief of Party and further nurturing of relationships including by explaining other types of support A2C can provide to businesses. Access to affordable financing remains the primary constraint for ATF companies due to extremely high interest rates (22% and higher) associated with commercial loans. The DFC loan guarantee is intended to address this challenge by de-risking loans and offering lower interest rates. In addition, matchmaking with potential investors and grant making facilities and TA will also help address this challenge.

#### **4.1.4 NEXT QUARTER**

- Prioritize funding for ATF companies through the DFC loan guarantee and will host focus group discussions to link ATF companies with appropriate investors.
- Explore forming an industry-wide clean cooking association with interested companies.
- Host a roadshow in Lusaka during December to showcase and sell their ATF products to consumers.
- Design a RFA under GUC program with a specific focus on supporting ATF businesses.
- Undertake a rapid assessment on the availability of sawdust/wood shavings for producing pellet fuel. The current sole producer of pellets (SupaMoto) revealed they have been facing challenges securing a continuous supply of sawdust/wood shavings, which has resulted in low production of pellets. Results will be used by businesses currently producing pellets, and individuals/businesses considering investing in pellet production.

## **4.2 OBJECTIVE 2: STRENGTHEN THE BUSINESS ENABLING ENVIRONMENT**

### **4.2.1 FY22 ACHIEVEMENTS**

During FY22, A2C continued to address identified barriers and opportunities in the business enabling environment that prevent, delay, and/or disincentivize the transition from charcoal to ATFs. Key achievements include: launching the re-establishment of the Energy Sector Advisory Group (ESAG) and the Zambia Gender and Energy Network (ZGEN); supporting the Energy Regulation Board (ERB) to develop and review standards for ethanol for cooking and Liquefied Petroleum Gas (LPG) respectively; a detailed CBA of removing taxes on selected ATFs; submission of proposals to provide tax incentives for ATFs, which resulted in the elimination of the 15% customs duty on LPG cylinders; feedback to GRZ on three energy related policies and strategies; and convening a workshop with multiple stakeholders to discuss international best practices in ATF regulation.

#### **Energy Sector Advisory Group**

During FY22, A2C supported the Ministry of Energy to re-establish the ESAG which had been inactive since 2016. The ESAG provides a multi-stakeholder platform (GRZ, private sector partners, co-operating partners, civil society, and academia) to advise the Ministry of Energy (MoE) on national planning priorities related to all aspects of the energy sector. The ESAG consists of five subcommittees including: Renewable Energy, Clean Cooking, Petroleum, Electricity and Cross Cutting. During FY22, two full ESAG meetings were held in Q1 and Q3, while subcommittee meetings were held in Q2 and Q3. Key topics discussed included: pricing related to electricity and petroleum products, the potential for ethanol as a clean cooking fuel and tax incentives for ATFs.

Since the re-establishment of the ESAG, the various sub committees developed workplans targeted at monitoring the work of the MOE in implementing the national energy policy. The ESAG provides feedback to the MOE on key and emerging issues on energy which the MOE is expected to address or implement. Examples of such action points include the monthly review of petroleum prices and how this has affected consumers and OMCs, the implications of the closure of INDENI Petroleum Refinery, and initial discussions regarding interest in a national clean cooking strategy.

#### **Zambia Gender and Energy Network**

A2C supported the MOE to re-establish the ZGEN this fiscal year to create a platform to spearhead implementation of gender policy measures in the National Energy Policy and associated strategies such as the Gender Strategy and Action Plan, as well as bring to the attention of Government the gender specific requirements in the Energy Sector. The ZGEN was originally established in 2004 with the aim of strengthening the integration of gender and energy into policies and programs of Government institutions, Non-Governmental Organizations, cooperating partners and private companies engaged in sustainable development in Zambia. It had however become inactive due to inadequate resources. The relaunch of the ZGEN took place on 19 May 2022 and four subcommittees were established as follows: (i) Awareness Creation and Outreach; (ii) Monitoring and Learning; (iii) Knowledge Sharing and Capacity Building; and (iv) Investment and Resource Mobilization.

Since the relaunch of the ZGEN, various stakeholders in the sector have articulated their interests in supporting activities of the network. These include commitments to conduct gender mainstreaming workshops, provide trainings on clean cooking for consumers (including the benefits to women) as well provide trainings for female energy engineers. The four subcommittees are currently drafting work plans which should be ready for discussion in January 2023.

#### **Review and Development of Standards**

In FY22, A2C worked with the ERB and the Zambia Bureau of Standards (ZABS) to develop standards for ethanol for cooking as well as standards related to the handling, storage and distribution of LPG in domestic, commercial and industrial installations. This marks the first time standards have been developed in Zambia related to ethanol for cooking, which are intended to ensure taxation of ethanol

for cooking is differentiated from ethanol used in the production of alcohol. Revision to the LPG standards will ensure handling, storage and distribution of LPG remains safe while expanding accessibility and distribution. Further details are provided in the Q4 section below.

### **Workshop on International Best Practices for the Regulation of ATFs**

In March 2022 A2C collaborated with the ERB to facilitate a two-day workshop to showcase international best practices in regulating ATFs titled “Developing a sustainable market for ATFs in Zambia through Appropriate Regulations.” The workshop convened GRZ authorities, private companies, research institutions and civil society to profile international best practices for regulating electricity, LPG, biogas, bioethanol and biomass products. The workshop included sessions dedicated to international examples for regulating each ATF and a panel discussion, featuring Modern Energy Cooking Services, the Global LPG Partnership, SNV, and the Global Bioethanol Coalition. The workshop also included sessions on technology innovation, product quality standards, LPG master plans, LPG cylinder exchange and financial regulations. The workshop was attended by 70 in-person participants and 15 virtual participants and was very well received.

### **Cost Benefit Analysis and Proposed Fiscal Incentives**

As part of the government’s strategy to reduce charcoal consumption nationally to 20% by 2030, A2C proposed a set of fiscal reforms to the MoE and the Ministry of Finance and Planning (see Table 3). In support of the proposal, A2C separately drafted and submitted a detailed CBA of the proposed tax exemptions for the selected ATFs. The CBA analyzed the costs and benefits of removing Value-Added Tax (VAT), import duty and excise tax on induction electric stoves, electric pressure cookers, LPG, ethanol gel and liquid, and pellets over a ten-year period. The CBA estimates the proposed tax exemptions would yield a net value (e.g., benefits minus costs) of 2.5 billion ZMW between 2022-2032. A major success resulting from these gendered advocacy efforts was an announcement in the presentation of the 2023 national budget to remove the 15% customs duty on LPG cylinders to diversify Zambia’s energy mix. This important milestone is expected to result in more cylinders being imported into Zambia and to make LPG more affordable and accessible (see Annex D: Success Stories).

**Table 3. Fiscal reforms for ATFs proposed by A2C in 2022**

		Current Tax Status			Proposed Tax Status		
ATF	Component	Customs	VAT	Excise	Customs	VAT	Excise
LPG	Cylinders	15%	16%	-	0%	0%	-
Biomass Stoves / Pellet Fuel	Pellets	40%	16%	-	40%	0%	-
Electric	Hotplate Cooker	40%	16%	-	0%	0%	-
	Electric Pressure Cooker						
	Induction Cooker						
Ethanol	Gel Fuel	15%	16%	-	0%	0%	0%
	Liquid Fuel	5%	16%	125%	5%	0%	0%

### **Stakeholder Engagement**

A2C continued engaging with various stakeholders during FY22, including GRZ, quasi-governmental institutions, local government and other projects in the energy and ATF sector. One of the outcomes of this engagement was the signing of a (MoU with Lusaka City Council (LCC) in April 2022. Some of the key provisions in the MOU are that the LCC will facilitate provision of trading and distribution spaces for ATF entrepreneurs, collaborate with A2C on sensitization campaigns, assist with data collection about the charcoal trade in Lusaka and participate in the Charcoal Taskforce.

A2C also engaged with the following projects in the energy sector to identify synergies and areas of future collaboration: the USAID Business Enabling Project (BEP); USAID Revenue for Growth; as well as the Public Private Dialogue Forum (PPDF) under the Office of the President. A key outcome from these engagements was that the A2C Regulatory Advisor was appointed to be part of the Energy Sector Technical Working group in the PPDF. As the PPDF reports directly to the Office of the President, it is expected that having an officer from A2C will ensure that policy and other proposals from A2C are received by that high office in addition to the other channels that A2C has been using.

#### 4.2.2 Q4 ACTIVITIES

During Q4, A2C conducted the following activities under Objective 2:

##### **Policy and Regulatory Mapping**

A2C updated the *Annual Report Outlining Policy Recommendations to Support the Business Enabling Environment* during Q4 (Deliverable T.13). The assessment highlighted several acts, policies and strategies GRZ is revising and / or developing which present an opportunity for A2C to ensure that provisions for clean cooking are included. A2C will continue to provide feedback and submit comments to GRZ on specific policies and strategies that affect the clean cooking sector.

##### **Clean Cooking Strategy and Action Plan**

A2C is supporting the GRZ to develop a National Clean Cooking Strategy and Action Plan (CCSAP). The purpose of the CCSAP is to (i) solidify GRZ's vision for the future of the clean cooking sector, (ii) present the case on the benefits of clean cooking in Zambia, (iii) identify actionable targets, interventions and public-private cooperation and accountability mechanisms, (iv) map a pathway to achieving universal access to clean cooking leveraging all technology tiers. During Q4 A2C developed a concept note that outlines the proposed contents of the CCSAP, provides a timeline for the development of the CCSAP as well as expected outcomes of the strategy. The concept note was shared with MoE and cooperating partners for feedback. Subsequently, A2C developed a scope of work for a proposed technical committee that will lead the development of the CCSAP. A2C is currently awaiting feedback on both the CCSAP and SOW and to provide guidance on how they would like the work to proceed from the MOE before assisting with the development of the strategy. It is A2C's intent the MOE lead the development of the CCSAP while A2C will provide logistical and technical support for the development of the strategy. This approach is expected to result in the MOE taking ownership of the strategy and ensure sustainability beyond the A2C project.

##### **LPG Accessibility Study**

The ERB requested A2C's support to develop a rapid assessment on promoting LPG accessibility and LPG cylinder revalidation/requalification. During Q4 A2C developed scopes of work for: (i) a rapid assessment on promoting accessibility to LPG cylinders; and (ii) a rapid assessment on LPG cylinder revalidation/requalification. To support the cylinder revalidation assessment, A2C also contracted a local consultant that will serve as the lead writer of the LPG revalidation study and an international expert reviewer. Both assessments will commence in the first quarter of FY23.

##### **Ease of Doing Business Index**

The Ease of Doing Business (EODB) index aims to identify inefficiencies and barriers related to business registration, property registration, financial flow, customs clearance, permitting, licensing, and tax structures that undermine the development of the ATF sector in Zambia. The survey collects data to measure the experience of starting and running a business in the ATF sector and examine issues such as the cost and time burden of starting a business, ability to access to skilled workers, and level of support from the government. This quarter, A2C received feedback on the 2022 EODB survey from a total of 47 stakeholders including 30 companies, eight investors and nine regulators. The final report will be completed in Q1 of FY23.

### **Comments on Energy Regulation Act (2019) and Electricity Act (2019)**

During Q4, the MoE requested that A2C provide input into the Energy Regulation Act (2019) and the Electricity Act (2019). Comments submitted on the Energy Regulation Act included provisions for licensing and blending of biofuels and that biomass and its derivatives be included in the licensing of energy. This would enable ATFs such as pellets, ethanol and biogas to be explicitly accounted for. For the Electricity Act, A2C recommended it should include the regulation of off grid electricity production as the current document focused primarily on grid-based electricity.

### **Input into the National Policy on Environment**

A2C participated in a consultative meeting during Q4 for Lusaka Province regarding the development of the National Policy on Environment. A2C submitted detailed comments on the policy to the Ministry of Green Economy and Environment (MGEE), including:

- i. The need to harmonize government policies and legislation on the environment.
- ii. The need to explore opportunities offered by carbon credits and ensure that local communities benefit from carbon finance.
- iii. Inclusion of details regarding the consumption of charcoal in the situation analysis (the document only elaborated on the production of charcoal).

### **Finalization of the Ethanol Standards**

A2C worked with the ERB and the ZABS during Q4 to develop standards for ethanol for cooking. The standards were drafted by a technical committee comprising of officers from A2C, ERB, MoE, ZABS, University of Zambia as well as private sector players (Biofuels Association of Zambia, Thomro Biofuels, Sunbird Bioenergy, Zhongkai Zambia Limited and Tapera Industries). The standards were released for stakeholder comment and are awaiting publication by the ZABS.

### **Development of LPG Standards**

A2C further collaborated with the ERB and ZABS to revise Standard ZS 429 (Parts 1-4) related to the handling, storage and distribution of LPG in domestic, commercial and industrial installations. The technical committee that drafted the standards consisted of A2C, MoE, INDENI Refinery, Alfred H. Knight (private laboratory), the private sector (Afrox and Oryx) and the ZABS. The revisions will ensure handling, storage and distribution of LPG remains safe while expanding accessibility and distribution. The draft standards are currently out for public comment. When the period for public comments elapses, another meeting of the technical committee will be convened to incorporate the public comments after which the draft standards will be submitted to ZABS for clearance and publication.

#### **4.2.3 CHALLENGES ENCOUNTERED**

No major challenges were experienced.

#### **4.2.4 NEXT QUARTER**

- Attend the Clean Cooking Forum in Ghana (October 11-13, 2022).
- Finalize scope of work for the CCSAP, conduct a literature review to establish the baseline of clean cooking in Zambia as well as reviewing other clean cooking strategies in the sub Saharan Africa, hold an inception meeting with identified Zambian stakeholders to collect feedback on the SOW, and produce a first draft of the strategy and action plan.
- Collaborate with MoE and ERB to undertake an LPG accessibility study.
- Publish draft standards for Ethanol for Cooking.
- Convene a technical committee to review the proposed LPG standards.

- Convene quarterly ESAG meetings and deliver a presentation to the electricity subcommittee on electric cooking as an alternative to charcoal. This follows the sub-committee's request for a detailed presentation to enable the sub-committee to appreciate the A2C plans on electric cooking and thus provide feedback and support the activity more effectively. Another activity that is expected from the convening of the Clean Cooking sub-committee that will provide input into the development of the CCSAP.
- Support MoE to host the first subcommittee meetings for ZGEN. A2C hopes to use the ZGEN platform to implement some of the targets on gender such as providing support to female and youth entrepreneurs as well as disseminate information on clean cooking.
- Engage the Ministry of Trade and Industry and the Ministry of Small and Medium Enterprises to strengthen collaboration in improving the business enabling environment, including improving the ease of starting a business from a regulatory and permitting perspective.



## **4.3 OBJECTIVE 3: SOCIAL BEHAVIOR CHANGE COMMUNICATIONS**

### **4.3.1 FY22 ACHIEVEMENTS**

Key achievements under A2C's SBCC component include the successful use of community influencers and religious leaders to directly reach consumers in Zambia's urban neighborhoods through the organization of cooking demonstrations, road shows, sensitization meetings and door-to-door campaigns. A2C also disseminated messages about clean cooking using billboards, branding of minibuses, and social media influencers. A clean cooking hotline was also established enabling consumers to access information about the affordability and accessibility of different ATF types. A total of 2.27 million people were reached through SBCC efforts during FY22.

#### **Develop and Test SBCC Strategies**

A2C reviewed its SBCC strategy to analyze which interventions were working and why, and what adaptations were needed to improve awareness raising and behavior change. A total of seven focus group discussions were convened, including in Lusaka (3) one each for women, men and youth, Ndola (2) one each for women and youth, and Solwezi (2) one each for women and youth, to better understand the information needs of different demographics and how decision-making occurs about cooking in Zambian homes. Based on the findings, the SBCC strategy was adapted to: a) include more tailored messaging about affordability and accessibility of ATFs, b) pivot from a mass media approach (which was appropriate during the height of the pandemic) to more direct community engagement, and c) launch a campaign called 'Telling My Story,' through which ATF adopters share their personal experiences. A2C shares the outcomes of its SBCC approach on a quarterly basis with GRZ as part of our regular updating to GRZ on A2C's progress and planned activities. The Ministry of Energy has for example shown an interest in attending demonstration events so they could the same after A2C during National Energy Week.

#### **Community Influencers**

This year A2C pivoted to focus more on direct community engagement using community influencers in urban compounds to disseminate information and promote desired behaviors. Community influencers are individuals who reside in a specific geographical location and hold a social, political, economic, or religious association that places them in a position of authority.

A2C identified community influencers by holding consultative meetings in urban compounds (originally Mutendere, Kalingalinga, Matero and George) with ward councilors, community elders, religious leaders, media, community-based organizations, marketeers, youth, and women's groups. A total of 175 community influencers (95 female and 80 male) were selected and trained throughout the fiscal year, including 133 in Lusaka, 15 each in Ndola and Kitwe and 2 in Solwezi. Trainings included understanding the benefits of and how to use different ATFs, community mobilization approaches, and social marketing skills. Following the trainings, many influencers elected to purchase ATFs for their own household and now use their personal experiences to motivate fellow community members.

Influencers were provided with identity cards, talk time, A2C branded t-shirts and caps, and informational awareness materials such as brochures and ATF flash cards. Each influencer developed an outreach plan, which included door-to-door campaigns, cooking demonstrations and community meetings. Each urban center also created a WhatsApp group to share information and testimonies from people that had adopted ATFs and provide peer support. Regular feedback meetings revealed having community influencers organize events and share information directly with their peers is more effective in promoting behavioral change than interventions by project staff. Results from the Annual Household survey indicate 63.4% of respondents (out of a sample of 2,440 households) clearly understood the SBCC messages, and 49.5% stated the information provided helped them to decide to use an ATF.

### Collaboration with the Church

A key recommendation from A2C's strategic review of the SBCC strategy was to leverage spiritual leaders to promote clean cooking. During FY22, A2C engaged with five church bodies in Zambia, including: the Christian Council of Zambia, Evangelical Fellowship in Zambia (EFZ), Catholic Women's Organization through Zambia Conference of Catholic Bishops (ZCCB), Seventh Day Adventist (SDA), and Independent Churches of Zambia (ICoZ). A2C decided to focus specifically on female leaders within each of the church bodies given their ability to engage with and influence other women (noting that females play a dominant role in using charcoal and cooking within the household). In total 15 religious leaders were selected from the above-mentioned churches.

As with the community influencers, A2C provided a series of trainings to sensitize the religious leaders about the impact of charcoal on Zambia's environment and introduce them to the different ATFs. This was followed by trainings on community mobilization approaches and social marketing skills. Following the trainings, religious leaders elected to link messages about clean cooking to man's divine mandate to take care of God's creations, and that continued reliance on charcoal leads to deforestation. All 15 religious leaders also adopted an ATF after the trainings and publicly testified about the benefits of using ATF with their congregants.



**Figure 3. Religious leaders taking home LPG cookers after a sensitization meeting**

A2C's collaboration with religious leaders culminated in hosting 10 demonstration days and two sensitization meetings across Lusaka, Kitwe and Ndola, reaching an estimated 1,800 men, women, boys and girls. EFZ Executive Director, Bishop Andrew Mwenda, applauded A2C for tapping into the potential of the church, stating: "In many cases, national issues and projects have not achieved desired results because the church has not been involved. I'm happy this USAID project has from the very start realized that we're an important stakeholder. I can assure you that we will support promotion of clean cooking because the message aligns with the Word of God, which instructs man to protect the environment."

### Demonstration Days

Working directly with community influencers enabled A2C to substantially increase the number of demonstration days held during the fiscal year. A demonstration day is a publicly held activity designed to raise awareness and promote ATFs through live cooking demonstrations (see Figure 4). Different types of ATFs are showcased including ethanol, biomass pellet stoves, electricity and LPG. The demonstrations are important in the context of Zambia where little is known about clean cooking fuels and technologies and many misperceptions exist, such as that cooking with LPG is dangerous or that food tastes better when cooked over charcoal. The demonstrations are conducted within urban



**Figure 4. A2C's demonstration day in Matero compound, Lusaka**



residential areas known as compounds (in parks, schoolyards and community centers). During FY22, a total of 25 demonstration days were held including 13 organized by community influencers, 10 by religious leaders and two by youth groups (see Table 4 below for details).

Private sector participation was also strongly encouraged during demonstration days to promote brand awareness and promotional sales. Companies working with LPG and pellet stoves were the most frequent participants at events; one company manager stated, "Thanks to our participation in these demonstration events, our sales agents in compounds are reporting improved sales." It was also observed that perceptions of ATFs vary among consumers. For example, LPG, biomass pellets and ethanol draw the most interest, while electricity continues to be misperceived as expensive despite Zambia having some of the lowest tariffs in the region and high urban connection rates.

To address the misperception of the cost of electricity, A2C is undertaking controlled 'cost of cooking' tests (See Section 4.5.2 for details), the results of which will clearly convey the cost of cooking with electricity on both efficient electrical devices such as induction cookers and one plate burners versus charcoal. To demonstrate LPG safety, A2C asks influencers and early adopters to provide personal testimonies and experiences during outreach and community events. The users convey they too had similar concerns before adopting LPG, but once they did they never regretted their decision because safety measures, including smell of gas in case of a leak, knowledge of how to use gas safely, and dealer's safety checks of cylinders when refilling were enough to guarantee safety.

**Table 4. Summary of Demonstrations held in Lusaka March 2021-September 2022**

Location	No. of Demonstrations	No. of People
Mutendere	3	459
Kalingalinga	3	504
Matero	3	510
George	3	460
Ng'ombe	1	89
National Institute of Public Administration	1	42
The University of Zambia	1	35
Catholic Women's Organization – Kanyama and Bauleni	2	262
Evangelical Fellowship of Zambia – Chawama and Garden	2	298
Christian Council of Zambia – Ng'ombe and Chawama	2	231
Independent Churches of Zambia – Linda and Zingalume	2	184
Seventh Day Adventist – Chelston and Munali	2	267
	<b>25</b>	<b>3,341</b>

### Road Shows

Four (4) clean cooking road shows were also held between December and August 2022 in Lusaka, Ndola, Kitwe, and Solwezi. A road show is a mass community awareness approach that includes clean cooking demonstrations, promotional sales as well as entertainment (see Figure 5, next page). A2C used both community-based demonstration events and road shows as part of a mutually reinforcing and integrated approach to ensure different types of audiences in diverse spaces are reached. Road shows, for example, typically attract more youth and draw larger crowds because of the entertainment at the event. A2C's brand ambassador, Ms. Wanga Zulu, also participated in two roadshows held in Ndola and Kitwe, which help boost attendance.



**Figure 5. Participants at an ATF road show in Kitwe**

### Advertisements

**Audio and Visual Campaigns:** During Q1 and Q2, A2C ran radio and television advertisements on ZNBC, Komboni Radio, Radio Christian Voice and Radio Maria Yatsani. Messages addressed the affordability, accessibility and acceptability of ATFs, as well as reducing deforestation. The television campaign (see Figure 6) had a significant viewership reaching 1.5 million viewers (including the Bemba and Nyanja weekly segments), while radio programs reached 474,178 people. A2C received feedback through focus group discussions and feedback from community influencers and religious leaders that viewers and listeners positively received the messages, noting specifically the use of the celebrity Ms. Wanga Zulu to raise awareness about alternatives to charcoal.

**Billboards and Minibuses:** Starting in Q2, A2C branded billboards and minibuses throughout Lusaka to promote ATFs. Featuring brand ambassador, Ms. Wanga Zulu, A2C supported 17 billboards in Lusaka between March to June promoting electricity, ethanol, pellet stoves and LPG. The billboards were strategically placed around the city and included the 3838-hotline number (see below) and displayed messages in English, Nyanja, and Bemba. Similarly, vinyl posters promoting ATFs were installed on 300 minibuses in Lusaka and carried the hotline number. Feedback from community influencers and others confirmed the campaigns significantly raised public awareness. For example, Winford Simwanza from the MoE remarked, “Your adverts are everywhere and the feeling we’re getting is that people are now beginning to talk about technologies like LPG that previously were not talked about.”



**Figure 6. Behind the scenes producing an ATF promotional video**

A2C also measures the impact of SBCC interventions in several ways. First, the annual household energy survey, which samples approximately 2,440 households in Lusaka, Ndola and Solwezi, asks respondents if they have been exposed to any SBCC messaging and which ones, followed by if they found messages to be effective and did it result in adoption of an ATF? The most recent survey results (2022) indicate the majority (49%) received messages from TV advertisements, followed by radio, social media. 11.2% of respondents in Lusaka received information from billboards and another 11.7% from the branded minibuses. Of all respondents who were exposed



to SBCC messages, 49.5% stated the messaging helped them to decide to adopt an ATF. Other ways A2C gathers feedback on the impact of SBCC programming include in-person focus groups with community influencers and religious leaders, data metrics from the clean cooking hotline and data market research.

### Clean Cooking Hotline

In March 2022, A2C launched a toll-free hotline to enable the public to ask questions about ATFs including what types of alternatives to charcoal are available, where they can access them, how much do they cost and if they are safe (among other questions). Three call center operators were trained on standardized call scripts focused on ethanol, electricity, LPG, and pellet stoves and fuel. The scripts provide operators with clear and consistent information about the affordability, accessibility, and acceptability of various ATFs, and are continuously updated with new information related to accessibility and cost. A2C also developed an interactive dashboard to track the number of calls received, from which location, the subject of the query and how many callers were assisted. A total of 1,587 calls were received in FY22, of which 93.4% were fully assisted. Most of the calls received (86%) inquired about both cost and accessibility, and LPG was the most common ATF inquired about (64.5% of calls). The majority of calls came from Lusaka (57%) followed by Ndola and Solwezi (11% and 9% respectively), and 86% of callers reported they learned about the hotline from A2C’s television advertisements.

### Building Partnerships with Youth Organizations

In recognition of the need for young people to drive change towards clean cooking, in FY22 A2C collaborated with students from the University of Zambia (UNZA) and the National Institute of Public Administration (NIPA). Cooking demonstrations were conducted at both institutions and enabled students to appreciate that ATFs were safe, clean, fast, and that the food cooked on them tastes just as good as charcoal. One of the participants from NIPA stated, *“With what I have seen and learned today, I’ll become an influencer in my family and community to shift away from charcoal. Because of the level of education I have, people at home will believe what I tell them.”* During FY23, A2C plans to partner with the Ministry of Education to conduct sensitization meetings about the impacts of charcoal and the benefits of ATFs within select secondary schools in Lusaka. The sensitization will target teachers and pupils and is expected to result in messages transmitting onwards to parents, guardians and neighbors. A2C supports greater youth and female engagement in the ATF sector by providing technical support (the business incubator for example specifically aims to attract women and youth entrepreneurs). In addition, the grants program requires applicants to address how they expand access to ATFs by youth and women and finally A2C linked youth and women entrepreneurs with potential investors.

### Media Engagement

At the end of Q2, A2C held a one-day media workshop in Lusaka with 25 journalists from print, electronic and digital media. The workshop explained the objectives of A2C, provided details about charcoal production and the impacts of charcoal on deforestation and degradation, as well as sensitization around gender and clean cooking. The outcome was publication of ten stories (in print, radio and social media) after the training about A2C’s work and the environmental impacts of charcoal (previously only three stories had been published). For example, as shown in Figure 7, the *Daily Mail* newspaper published a feature story on the establishment of the charcoal taskforce.



Figure 7. Daily Mail newspaper March 2022

## Energy Week

A2C collaborated with the MoE in October 2021 to commemorate Energy Week in Kitwe; the event theme was “Sustainable Energy, a Key Driver to Economic Development in Zambia.” Events ran from 4-8 October 2021 and focused on promoting clean cooking technologies and the negative impact that using charcoal has on the environment. Activities supported by A2C included a public exhibition of ATFs, radio programs, and a school essay writing competition. A2C’s Brand Ambassador Ms. Wanga Zulu took part in all awareness activities and events. A total of 18 exhibitors, including distributors and retailers in biofuels, LPG, biomass pellets and biogas, participated in the exhibition (the first in years), was held in Kitwe City Square. The exhibition was highly successful in raising awareness about the cost and availability of different ATFs and included the participation of 1,403 persons.



**Figure 8. The essay writing contest winner from Ndola Secondary receiving her prize**

In collaboration with the Ministry of Education, pupils from Ndola Girls Technical School, Mufulira Secondary School and St. Marceline’s Secondary School, participated in a clean cooking essay writing competition. The competition asked students to write an essay identifying energy sources other than charcoal that can be used for cooking and discuss the importance/advantages of using that other energy source. A total of 150 pupils submitted their scripts and winners received school bags, calculators and branded t-shirts and caps (see Figure 8).

### 4.3.2 Q4 ACTIVITIES

#### Social Media Campaigns

A2C produced a set of four short visual and audio advertisements for posting on social media about ethanol, biomass pellets, electric induction stoves and LPG during Q4 to enhance awareness of the clean cooking hotline and promote adoption of ATFs. Based on consumer feedback, the materials focused heavily on affordability and accessibility, provided greater detail about pricing and promoted the clean cooking hotline. The advertisements were produced in English, Nyanja and Bemba, and featured A2C’s brand ambassador, Ms. Wanga Zulu. The videos were posted on Facebook pages of popular social media influencers, such as Dr. Aaron Mujajati, as well as Mwebantu Media and Zambia Reports. The social media campaign had 247,076 views in total and were well received based on comments posted.

#### Cooking Demonstrations

During Q4, a total of six cooking demonstrations were organized by community influencers in Lusaka compounds (Matero, George, Kalingalinga, Mtendere, and Ng’ombe). Falcon Gas and SupaMoto were consistent participants and sold dozens of units during the events. Additionally, religious leaders held 2 sensitization meetings and 10 cooking demonstrations in Lusaka during the quarter, which were well attended and resulted in purchases of LPG and biomass (pellet) stoves.



**Figure 9. Mutendere community influencer demonstrating cooking on a biomass gasifier stove**

### **Community Influencers Training**

In recognition of the positive impact community influencers are having raising awareness and adoption of ATFs, two additional groups of influencers were identified and trained during Q4 – in Kamwala South and Ng’ombe compounds – bringing the total of community influencers from 133 to 175 persons. The SBCC team trained the influencers on key messages, community engagement skills, and impact monitoring. A2C intends to continue providing regular trainings based on feedback from the influencers to ensure they can capably market ATFs.

### **Religious Influencers Feedback Meeting**

A2C hosted 13 religious leaders for a feedback and planning meeting during Q4. The meeting reviewed the collaboration with the church, with a particular focus on reviewing the impact of demonstration days and sensitization meetings. The leaders reported the church remained supportive of A2C and noted a higher interest by youth to participate in activities. To further youth engagement, A2C will work with religious influencers to design special meetings for youth, including sharing A2C messages through social media groups like WhatsApp. There was also a strong appeal for A2C to train religious influencers in social marketing skills for them to adequately deliver clean cooking messages to congregants. A2C will provide this training in FY23 and finalize a workplan for demonstration days and sensitization meetings through the end of the calendar year.

### **USAID Congressional Staff Visit**

During the quarter, a U.S. congressional staff delegation visited a community-led cooking demonstration in Ng’ombe compound in Lusaka (see Figure 10, previous page). The delegation interacted with the private sector and community influencers, with the latter explaining their commitment to clean cooking was aimed at protecting the environment and enabling their families to save money by adopting ATFs. The



**Figure 10. Members of a U.S. congressional staff delegation learning about a gasifier pellet stove**

delegation also interacted with purchasers of various ATFs and were able to witness different ATFs being used.

#### 4.3.3 CHALLENGES ENCOUNTERED

Despite high levels of public willingness to adopt ATFs, affordability and accessibility remain serious barriers. A2C expects the rollout of the grants program to help address these barriers by making ATFs more affordable through PayGo technologies, smart metering and consumer finance plans alongside improved distribution.

#### 4.3.4 NEXT QUARTER

- Support the MoE to host Energy Week events focused on clean cooking (October 2022)
- Review results from the Cost of Cooking Study, the annual household survey and call center data to produce clear and concise messages for consumers and train influencers.
- Continue collaboration with religious and community influencers to raise awareness and promote the adoption of ATFs.
- Provide updated data about ATFs to the clean cooking call center.
- Organize a road show event in December to promote the sale of ATFs.



## 4.4 OBJECTIVE 4: SUSTAINABLE LIVELIHOODS AND IMPROVED MONITORING AND ENFORCEMENT OF CHARCOAL SUPPLY CHAIN

### 4.4.1 FY22 ACHIEVEMENTS

Key achievements during the fiscal year under Objective 4 include the establishment of a National Charcoal Taskforce, co-hosting a National Forestry Conference, the selection of four districts where community forestry and sustainable livelihood activities will be established, awareness-raising about community forestry areas in all four districts, completion of a value chain analysis for alternative livelihoods, training of 160 persons on the Forests Act to improve charcoal enforcement and completion of a baseline charcoal producer survey, which interviewed 1,167 producers.

#### National Charcoal Task Force

In March 2022 A2C established an intergovernmental Charcoal Task Force to improve inter-governmental cooperation and capacity to regulate the charcoal supply chains. The Task Force is co-chaired by the MoE and the Forest Department and oversees the coordination, development and implementation of strategies and activities related to the regulation, enforcement, and monitoring of the Zambian charcoal value chain.

Following the launch of the Task Force, the first technical meeting was convened in April to review and validate the draft Terms of Reference and propose the formation of subcommittees. In total, four subcommittees were formed under the themes of (i) law enforcement, (ii) governance, (iii) finance, monitoring and communication and (iv) sustainable charcoal and alternatives to charcoal. Participants approved A2C's recommendation to decentralize the Task Force to the district level. However, the members felt there is need to proceed with caution before replicating the Task Force in all districts. It was therefore agreed A2C would pilot decentralization in the project's four target districts (Solwezi, Kalumbila, Lufwanyama and Mumbwa).

#### National Forestry Conference

MGEE and A2C co-hosted a National Forestry Conference on 22 and 23 March, in Lusaka at the Mulungushi International Conference Centre. The general objective of the Conference was to facilitate discussions on issues related to deforestation and forest degradation in Zambia focusing on encroachment, excisions and degazetting of Protected Forest Areas and unsustainable charcoal production. Participants acknowledged the FD is vastly understaffed and under-equipped to effectively regulate the forestry sector, including illegal charcoal production. The Conference concluded by agreeing upon a set of recommendations shared with GRZ (see Figure 10), several of which (f, g and h) are being implemented by A2C. The FD is also planning to generate policy briefs about encroachment, excision and degazetting of protected areas and unsustainable charcoal production.

#### Revised Charcoal Regulations

A core focus on Objective 4 is to collaborate with GRZ to support strengthening the enforcement of charcoal regulations. During Q1 A2C submitted

- a. Facilitate restructuring and staffing of the FD; and provide more operational funds to districts from headquarters.
- b. Improve stakeholder participation in forestry management and involvement of traditional authorities in forest conservation and management.
- c. Development of a resource mobilization strategy for the forestry sector, capacity building and improving political commitment and implementation of the policy at scale.
- d. Develop a national charcoal strategy to support the charcoal regulations.
- e. Remove market barriers and subsidize alternatives to charcoal.
- f. Reduce tariffs on LPG accessories and other alternatives to charcoal.
- g. Localize the production of ATFs.
- h. Promote behavior change and communication on alternatives to charcoal. Wider stakeholder consultation at all levels regarding degazetting and excision of protected forest areas.
- j. Evict illegal settlers in forest reserves and withdraw the Farmer Input Support Program for farmers who encroach in Forest Reserves.

**Figure 11. Recommendations from the National Forestry Conference 2022**

comprehensive comments to the Forestry Department (FD) to strengthen draft charcoal regulations developed by the FD. Key recommendations included: simplify the requirements for charcoal associations to be officially recognized, incorporate incentive mechanisms for charcoal producers to form and register groups, provide a more specific definition for 'sustainable charcoal production' and elaborate on provisions related to charcoal transport by, for example, restricting transport to hours when enforcement agencies can monitor and inspect trucks. A2C also recommended introducing a combined cordwood and conveyance permit (to be sold at a lower price) to increase applications and resulting revenue for the FD. However, at the end of Q2, it was announced by GRZ the National Forestry Policy and Forests Act were going to be amended, therefore work on the regulations was suspended until after the two documents were finalized. The government is expected to commence stakeholder consultations in FY23.

In Q2 A2C also participated in a consultative meeting with the House of Chiefs to discuss the draft charcoal regulations and solicit their input. The Chiefs supported legislation aimed at addressing the challenges of rampant illegal charcoal production but pointed out that the challenge of illegal charcoal production and trade is partially due to the limited enforcement capacity of the FD and not a lack of regulations. The Chiefs also urged the government to promote alternative sources of energy and provide alternative livelihoods for charcoal producers in rural areas. At the end of Q2, it was announced by GRZ the National Forestry Policy and Forests Act were going to be amended, therefore work on the regulations was suspended until after the two documents were finalized. The government is expected to commence stakeholder consultations in FY23.

**Capacity Building for Improved Charcoal Enforcement** The application of Zambia's Forests Act has been a challenge due to inadequate sensitization and training of GRZ officials after the Forests Act was enacted into law in 2015. During FY22, A2C worked with the FD to develop a training manual on the principles of forestry law, the different types of licenses and permits available, the procedures for issuance of permits and licenses, and how to handle offences. The manual was used in three separate training workshops convened by A2C, including in Lusaka (17-18 February 2022), Copperbelt Province (4-5 May 2022) and Northwestern Province (6-7 May 2022). To date, a total of 160 participants (119 male and 41 female) have been trained in using this manual. Participants were drawn from the FD, Zambia Police, Zambia National Service, Drug Enforcement Commission, Anti-Corruption Commission, and National Parks and Wildlife. Participants came from Mumbwa, Shibuyunji, and Lusaka districts as well as a representative each from North-Western and Copperbelt Provinces. The trainings used a combination of presentations, case studies and role playing to make the exercise as practical as possible and included a discussion on how to improve collaboration among the different GRZ agencies in the enforcement of the Forests Act. Participant feedback revealed that few officials understood the Act or their responsibilities prior to the training and follow up from A2C indicated 122 officers (or 76% of trained officers) applied conservation law enforcement measures after the training (see Indicator 15).

#### **Site Selection for Community Forestry and Sustainable Livelihoods**

If A2C successfully reduces urban charcoal consumption, then it is anticipated rural charcoal producers will be negatively impacted, many of whom rely heavily on income earned from producing, transporting, and selling charcoal to meet their daily needs. Accordingly, a portion of Objective's 4 focus (after urban charcoal has been reduced) is to develop and promote community forestry and sustainable livelihood opportunities for charcoal producers in selected districts. A major milestone during FY22 was the final selection of four districts (and sub-sites) where alternative livelihoods and community forestry activities are proposed.

A2C began by evaluating all 117 districts according to a set of standard criteria, which included: areas with at least 50% forest cover, evidence of charcoal-driven deforestation/degradation, districts which produced charcoal for large urban markets, evidence of interest in community forestry among local communities and traditional authorities and the potential to reduce greenhouse gas emissions through



improved community-based forest management. Field-based verification and reconnaissance was undertaken to confirm the final four (4) districts which are: Mumbwa, Solwezi, Kalumbila and Lufwanyama Districts. A consultative process (as depicted in Figure 12 below) with district authorities then identified sub-sites within each district with the final result being Kaindu (Mumbwa), Kapijimpanga (Solwezi), Kyangozi (Kalumbila) and Mukumbo (Lufwanyama). Appendix D provides a map of the four districts.

### **Community Forestry Management Areas (CFMAs)**

The effective monitoring, regulation and enforcement of the charcoal supply chain cannot be achieved by the FD alone given its limited human and financial resources, and the widespread practice of charcoal production. Community forestry thus plays an important role in regulating the charcoal supply chain, including preventing new areas of forest being opened for charcoal production. The establishment of a CFMA is an intensive, multi-stage process, which requires sustained engagement, commitment and ownership by local communities and authorities. This fiscal year A2C completed the first two (of seven) steps required to establish CFMAs in each of the four selected districts – namely awareness raising and boundary mapping/ negotiation.

During Q3 A2C commenced awareness raising about CFMAs in the target districts of Lufwanyama, Kalumbila, Solwezi and Mumbwa. A2C drew on CFM sensitization materials developed by the USAID Integrated Land and Resources Governance (ILRG) project for awareness raising. Stakeholders included the District Development Coordinating Committees (DDCC) which are comprised of district level GRZ officials from various ministries, traditional authorities (chiefs and headmen) and community members.

Initial awareness raising meetings for the DDCC focused on the processes involved in formation of Community Forest Management Groups (CFMG) and the roles and responsibilities of government officials. Awareness meetings with headmen and community members explained the concept of community forestry management, the costs and benefits of CFMAs and the steps involved in the formation of CFMAs. Following the sensitization meetings, community leaders generally welcomed the concept of establishing CFMAs as a deterrent to charcoal production if alternative livelihood opportunities are made available. Results from the baseline charcoal survey (see Section 4.4.2 below) however indicate that information about CFM and the objectives of A2C may not be accurately passed along from community leaders to charcoal producers. A2C will need to address this in FY23, including having meetings with both stakeholders simultaneously.

In Q4 a specialized team of members from the DDCC were trained by A2C on the steps required to establish a CFMA, and the formation of district subcommittees to lead CFM activities. District facilitation teams were established in Kalumbila, Solwezi and Lufwanyama, but not in Mumbwa as there was already one already in existence supported by ILRG. The district facilitation teams include representatives from the FD, local authorities, Ministry of Agriculture, Department of Community Development, Chiefs and Traditional Affairs, District Administration, among others. The district facilitation teams continued the sensitization of local communities with a view of electing CFM executive committees in the districts.

### **Value Chain Analysis**



**Figure 12. Discussing community forestry with headmen in Solwezi**

To inform the design of A2C's sustainable livelihood interventions, a Value Chain Analyses (VCA) was conducted during FY22 to assess and recommend the most promising and sustainable livelihood interventions in the districts listed above. The study was designed to understand current livelihood strategies, challenges, and opportunities and identify value chains with potential to offer improved food and nutritional security, and income streams that are competitive with charcoal. Community members in each of the four districts were engaged through one-on-one interviews and Focus Group Discussions to get their input on potential value chains.

The study concluded that scarcity of food, poor nutrition and the absence of income to meet basic needs were the primary factors fueling the decision to enter the charcoal trade. The VCA also observed agriculture is the primary livelihood strategy for most households, and often combined with charcoal production on a temporal basis. Given households' existing experience with agriculture and the need to address food insecurity the analysis recommended maize, soya beans, groundnuts, sunflowers, mixed beans, horticulture and poultry value chains.

A2C recognizes the potential for the above agricultural value chains to contribute to increased land use/forest cover change. Accordingly, A2C will begin by focusing on conservation-based enterprises that can be implemented by CMFGs. In addition, A2C will seek to collaborate with private sector partners to build partnerships on agricultural value chains which are climate smart and will not result in increased forest cover loss. COMACO's conservation pledges are a good example of this model, whereby communities agree to protect their soils, forests and wildlife and in return their crops are purchased by COMACO at premium market prices. A2C will need to ensure sustainable value chains can match the flexibility and income generating potential of charcoal.

#### 4.4.2 Q4 ACTIVITIES

##### **Charcoal Producer Survey**

A2C conducted a charcoal producers survey between 22 August and 16 September 2022 in Kalumbila, Lufwanyama, Mumbwa and Solwezi districts. A total of 1,167 charcoal producers were interviewed across the four sites. Results indicate producers spend 7.38 months out of their year in the charcoal value chain, or 62% of their time. This is an increase of 14% over the pilot survey which was conducted during the wet season in March 2022. Charcoal production (i.e., the average number of tons reported, per person, per year) increased by 32% as compared to the pilot survey, and charcoal production is becoming increasingly commercialized in all areas surveyed. The reasons for this increase are complex but can likely be attributed to the increasing commercialization of the charcoal trade (which not only uses mechanized equipment but in some cases offers pre-payments to producers making it very attractive), high unemployment and a lack of alternative livelihoods in rural areas, continued demand and lack of enforcement. The full details of the survey can be found in Deliverable T.22, however the implication for A2C is the urgent need to provide sustainable alternative livelihoods for charcoal producers - many of whom have no choice but to enter the charcoal value chain to make ends meet.

##### **Community Forestry Management**

A2C and the district CFM facilitation teams continued to carry out sensitization of stakeholders in all four target districts about community forestry throughout the quarter. Sensitization meetings were held for headmen and community leaders and participants were requested to identify sites for CFM implementation within their communities. However, identifying contiguous areas of intact forest to establish a CFMA proved difficult in some districts such as Mumbwa, which have significant forest degradation. In other cases, the forest areas proposed were very small in area. For these it was agreed that A2C would adopt an integrated land use approach inclusive of forests, small scale agriculture and human habitation with the goal of preventing further deforestation in these zones and promoting sustainable alternative livelihoods for charcoal producers. Finally, development of the CFM site in Mumbwa (Kamilambo) could not proceed because it was discovered the proposed site was already part



of a larger CFM under development with support from COMACO. A2C instead proposes to work with an existing CFMG in Kaindu.



**Figure 13. Beehives in Mumbwa (Left) and a natural fishpond in Kalumbila (Right) Credit: A2C**

### CFM Value Chain Mapping

During Q4 A2C conducted a participatory rapid appraisal of non-wood value chains, which community members felt would be viable alternative income generating activities to charcoal. Rapid appraisals were conducted in all four districts. The most common value chains identified were beekeeping for honey production, and mushroom and wild fruit collection for sale in local markets. In Kalumbila, Lufwanyama and Solwezi, caterpillar harvesting and fish farming were also identified by communities. Caterpillars are currently sold in local and regional markets, whereas fish farming seems less viable given that uncontrolled fishing would require ponds to be restocked and closely managed.

In Lufwanyama naturally occurring bamboo is used by community members to produce bamboo crafts for markets in Ndola, Solwezi and even Lusaka (see Figure 14). The advantages of the bamboo value chain include quick regeneration and it is easy to harvest. However, there are also challenges, including the lack the skills to make high quality products and market access.



**Figure 14. Bamboo forest (left) and locally produced bamboo crafts in Mukumbo (right). Credit A2C**

### District Feedback Workshops

In an effort to strengthen communication among stakeholders, A2C organized Stakeholder Feedback workshops during Q2 in all four districts to share A2C research findings, including the site selection process, charcoal producers survey and value chain analysis for alternative livelihoods. The meetings were attended by heads of government departments including the District Commissioners, private

sector representatives, local NGOs, community leaders and members from the community sites. Participants appreciated the sharing of research results and requested A2C continue to do so.

### Forest Cover Monitoring

Currently the FD is using different systems to monitor forest cover change, including Sepal, Collect-Earth and Google Earth Engine. The use of different platforms for remote sensing and GIS poses a challenge in harmonizing forest cover monitoring across the department. It was also revealed there are significant disparities in human resource capacity and equipment between headquarters and the district forestry offices. A2C decided to therefore assess the technical capacity of the forestry staff to carry out effective forest monitoring and contribute to the national forest monitoring system. Data was also collected about the type of hardware and software within FD headquarters and at the district level. Results indicate district level offices have practically no equipment (e.g., computers, GPS units, printers and other equipment to conduct basic forest monitoring). For example, only Mumbwa district and headquarters have computers and staff in other districts rely on personal computers or borrowed computers to complete their work. During FY23 A2C will prepare a list of minimum “must have” equipment that would be used for forest cover monitoring in A2C’s four districts for consideration under an In-Kind grant.

### Partnership Engagements

During Q4 A2C met with several private sector mining companies to discuss potential collaboration on livelihoods activities. Figure 15 summarizes these discussions. Further discussions will be pursued in FY23 and MoUs signed if concrete activities are agreed to.

**Figure 15. Potential Private Sector Collaboration for Alternative Livelihoods**

<b>Lumwana Mine:</b> Carbon/Livelihood project. Investment in infrastructure to support value chains such as a meat processing plant.
<b>Kagem Mine:</b> Procurement of goats from cooperatives Support youth with inputs for gardening and conservation farming. Support community enforcement efforts to curb deforestation resulting from rampant charcoal production.
<b>Grizzly Mine:</b> Support women and youth groups in poultry and horticultural production.

A2C also engaged with COMACO, Prospero, WeForest and USAID’s Emerging Farmer Partnership project during Q4 to explore synergies and possibilities of partnering. Finally, A2C conducted a field visit to COMACO’s processing plant and target communities in Mumbwa to appreciate the work they are conducting related to value chains and establishing CFMAs. During Q1 of FY23 A2C intends release a Request for Applications/Proposals to support both CFM and livelihoods activities in all four districts.

#### 4.4.3 CHALLENGES ENCOUNTERED

- The process of identifying land to set aside for CFMAs was longer than anticipated as some communities struggled to find suitably large enough areas.
- Increased commercialization of the charcoal value chain in all four districts, alongside increased charcoal production and associated deforestation/degradation pose challenges for A2C’s CFM and livelihoods activities and will require close monitoring and adaptation.
- Poor reporting by GRZ officials who received training about the Forests Act resulted in additional efforts required from the MEL team to understand the impact of the training.
- Delayed signing of MoU with the FD despite making several follow-ups.
- Difficulties in securing facilitators from the FD for trainings and meetings.
- Limited vehicles and lack of funds for fuel resulted in delays with GRZ officials in the field.

#### 4.4.4 NEXT QUARTER

- In support of A2C's objective of improved charcoal enforcement and the establishment of community forest management areas, the project will support the first national Community Forestry Management Conference, forest inventories in the CFM sites and issue RFAs and/or RFPs to support CFMAs.
- In support of Objective's 4 goal to support sustainable livelihoods for charcoal producers, an RFP/RFA will be released to identify grantees or subcontractors to lead this work in collaboration with the private sector.
- In support of A2C's objective of improved charcoal enforcement A2C (and Deliverable T.20) A2C will convene a National Charcoal Taskforce meeting
- In support of A2C's objective of improved charcoal enforcement (and Deliverable T.28) A2C will provide capacity building to CFMGs in organizational and financial management.
- In support of A2C's objective of improved charcoal enforcement A2C will conduct Forests Act sensitization with Judiciary and Prosecutors
- As part of A2C's focus on building the capacity of the FD the project will host a partners meeting on forest cover monitoring, including identifying potential support for monitoring by the FD.
- As part of Objective's 4 goal to support sustainable livelihoods for charcoal producers (and Deliverable T.29) A2C will sign MoUs with private sector partners for the support of alternative livelihood activities.

## 4.5 OBJECTIVE 5: ADAPTIVE MANAGEMENT

Major achievements under adaptive management during FY22 include facilitating two Pause, Reflect and Pivot events, the collection, analysis and sharing of monthly monitoring metrics, controlled cooking tests to determine the cost of cooking using ATFs, hosting A2C's first Knowledge Sharing Platform, a survey of charcoal use by institutions, and on-demand mapping and GIS support.

### 4.5.1 FY22 ACHIEVEMENTS

#### Pause, Reflect and Pivot Sessions

A2C's second and third Pause, Reflect and Pivot workshops were held in November 2021 and June 2022, respectively. The workshops assessed progress against project indicators, identified challenges and mitigation measures and reviewed the Theory of Change (ToC).

Key points that arose during the workshops were:

- Focus Group discussions are not the most effective way to collect information from private sector players as they prefer not to reveal confidential information to their competitors. Rather, one-on-one interactions work best and yield more detailed information.
- With respect to the ToC, it was agreed to shift emphasis away from enforcement to include alternative livelihoods (incentives) and that there had been significant changes in the macro-environment landscape (elections) which could impact (either positively or negatively) the A2C activity. It was agreed the project would continue to monitor these trends and adjust the ToC if necessary.
- There are factors beyond A2C's control which could significantly impact the project (e.g., rising electricity tariffs, exchange rates and fuel prices) and should be closely monitored. At the same time, there are opportunities in the external environment such as the national budget submission and political will to support clean energy and the private sector.
- Continue strengthening collaboration and integration-both internally and externally. A2C is a data driven project, and we should promote continued learning while paying particular attention to the 'C' and 'A' of CLA.
- A2C should engage with the Ministry of Small and Medium Enterprises and other USAID-funded project such as ILRG and the Business Enabling Program. Increased collaboration has since occurred with these organizations.
- A2C needs to pivot from identification and mapping of private sector stakeholders to direct support and assistance. This includes being more explicit about the types of support available to the private sector beyond grants (e.g., the business incubator, other technical assistance, matchmaking, marketing, sharing research results etc.).
- Community-led demonstrations and sharing of direct experiences are very effective in promoting behavioral change. A2C did an excellent job in creating demand for ATFs, but there is insufficient supply. Recommended to place a greater focus in FY23 on building supply while maintaining demand and the grants program is key to achieving this.

#### Monthly Metrics Data Collection

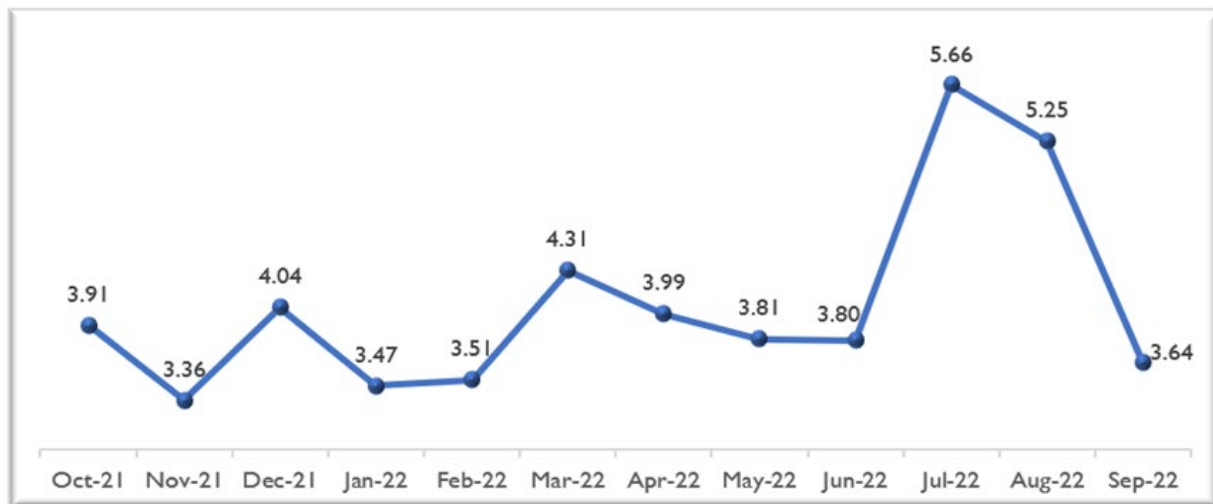
A2C collects data related to the macro-economy and the price of different charcoal and LPG quantities among other metrics. Data are collected in Lusaka monthly, and in Ndola, Kitwe and Solwezi quarterly. Macro-economic trends examined include the Bank of Zambia monetary policy rate, foreign exchange rates, inflation as well as diesel, petrol and kerosene prices. Charcoal prices for sixteen different bag sizes are collected from eighteen different markets in the cities mentioned above. Finally, LPG cylinder and gas prices are also collected in Lusaka, Ndola, Kitwe and Solwezi from nine different oil marketing companies. Data are analyzed and monthly presentations are provided to A2C staff on the findings. Data



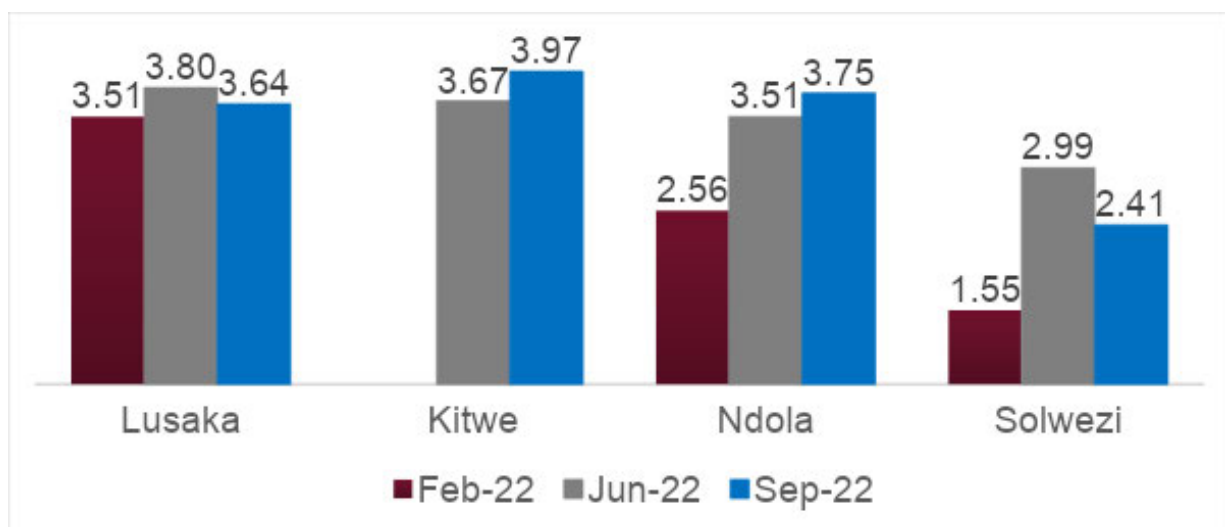
are also shared with private sector partners, GRZ, Lusaka City Council and the clean cooking hotline. Several key trends observed this year include:

- The average price of charcoal remains around 4 ZMW, with a noticeable price spike between June and August in Lusaka during the cold season (see Figure 16).
- The price of charcoal is consistently highest in Lusaka, and lowest in Solwezi (see Figure 17).
- A slight increase in the cost of LPG was observed in Lusaka (4.5%) and Solwezi (1.5%), while pricing remained flat in Ndola and Kitwe (See Figure 18).
- Starting in April 2022, there was a convergence of LPG prices among major oil marketing companies.

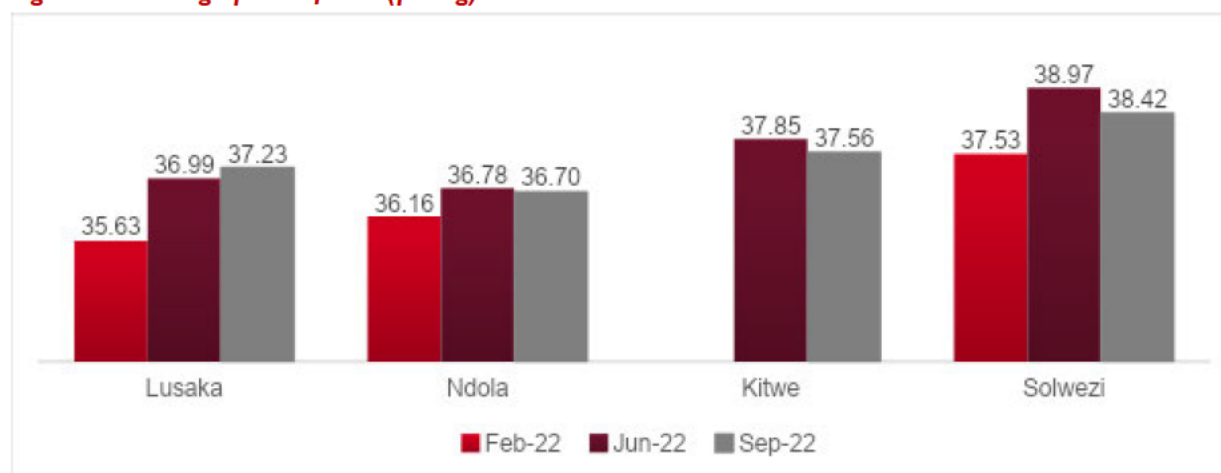
**Figure 16. Average price of charcoal (per kg) in Lusaka during FY 2022**



**Figure 17. Average price of charcoal (per kg) in urban areas**



**Figure 18. Average price of LPG (per kg) in urban areas**



### Survey on Institutional Uses of Charcoal and ATFs

While urban households consume a significant portion of charcoal produced, there is limited data on the industrial and institutional uses of charcoal in Zambia. Accordingly, A2C undertook a study to understand how, why, when and how much institutions use charcoal to inform targeted interventions that could significantly reduce charcoal consumption in urban areas and promote the uptake of alternative fuels. Fifty-one (51) institutions were surveyed in Lusaka, Ndola, and Solwezi between January and February 2022, including boarding schools/colleges, hospitals, breweries, bottling plants, a cement processing and agricultural processing facilities (including chicken farms).

Key findings were that all institutions engage in fuel stacking (see Figure 19), with electricity being the most widely used (both on and off grid), followed by charcoal and then LPG. Out of the 28 institutions which use charcoal, seven use charcoal as their primary fuel source, while 13 use it as their secondary fuel source and six use it as their tertiary fuel choice. Not surprisingly, institutions reported relying more heavily on charcoal when they experienced load shedding. Out of the 51 institutions surveyed, 17 use LPG, making it the third most used fuel source.

**Figure 19. Fuel stacking by institutional type**

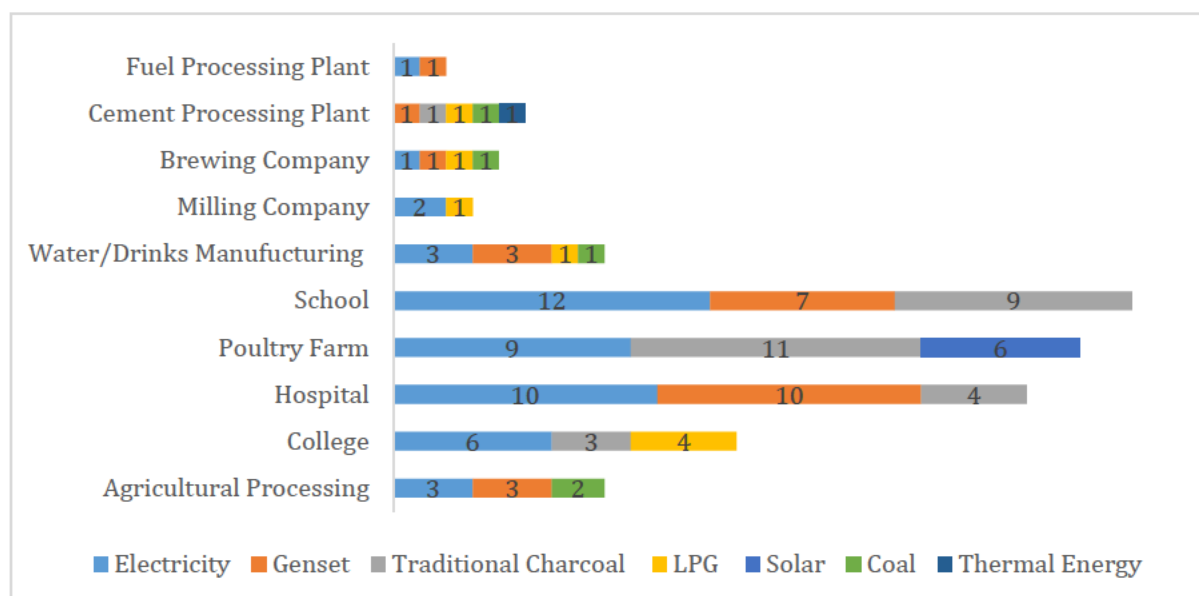




Table 5 below shows that average amount (kg) of charcoal consumed annually by institution type. Educational institutions including colleges and schools used the most charcoal to cook meals for students. Poultry farms come in third place, but this is likely an under-estimate because the survey only captured farmers keeping a relatively small number of birds (200 to 300).

**Table 5. Average annual charcoal consumption by type of institution**

Institutions	Average annual amount used (kg)
Colleges	15,376
Schools	5,712
Poultry Farms	1,390
Hospitals	326
Cement & Agricultural Plants	0

### Knowledge Sharing Platforms

Knowledge Sharing Platforms (KSP) provide an opportunity to share findings, initiate debate and facilitate meaningful inter-stakeholder communication. A2C's first Knowledge Sharing Platform event was held in Q3 and focused on charcoal. A2C shared results with the private sector, cooperating partners and GRZ regarding surveys of charcoal producers, household and industrial charcoal consumption of charcoal, and data around the pricing and availability of charcoal in A2C's urban intervention sites. Participants engaged in a lively debate about the data and expressed appreciation for the detailed analysis of the charcoal value chain.

#### 4.5.2 Q4 ACTIVITIES

##### Cost of Cooking Study

A2C initiated a Cost of Cooking Study during Q4 to compare the costs and cooking times of standard Zambian meals on various ATFs as compared to charcoal. Three households in Lusaka conducted controlled cooking tests on LPG, a hot plate, electric induction stove, electric pressure cooker, a pellet stove and charcoal based on a standard set menu of Zambian breakfast, lunch and dinner dishes. In total, 496 controlled cooking tests were performed across the three households. Enumerators weighed the amount of fuel before and after the meal had been cooked, and for the electrical appliances a smart meter recorded the number of kilowatt hours used. Data are being analyzed with results available in Q1 of FY23 which will be used to inform SBCC programming and private sector marketing efforts.

##### A2C Quarterly Update to Government Partners

A2C held its first quarterly meeting with GRZ officials in September 2022 to keep its government partners up to date A2C achievements during the quarter, discuss challenges and opportunities observed and summarize activities planned for the following quarter. The meetings enable GRZ colleagues to be fully informed about A2C's progress, which will in turn help them to brief more senior GRZ officials when needed, provide an opportunity to ask questions and to indicate if/how they would like to participate in upcoming events.

In attendance at the September meeting were representatives from the following institutions: MoE, ERB, Ministry of Finance, MGEE, FD, Ministry of Commerce, Trade and Industry and the Lusaka City Council. The main take-aways from the meeting were that FD and MoE are eager to share A2C information, research findings, events such as the demo days on their platforms; ERB is considering regulating the price of LPG; and MoE would like to collaborate with A2C in monitoring the price of charcoal.

#### 4.5.3 CHALLENGES ENCOUNTERED

- During the monthly data collection, it has not always been possible to find all 16 charcoal bag types at each market.
- Timing around when A2C's charcoal data is collected has not been consistent (i.e., collected at different times throughout the day).
- The 'Cost of Cooking Study' experienced several setbacks, including one cook dropping out after the first day of training, and frequent loadshedding.

#### 4.5.4 NEXT QUARTER

- Host the fourth Pause, Reflect and Pivot Workshop, and preparation of the report.
- Finalize the Cost of Cooking Study Results and report.
- Continue with monthly metrics monitoring data collection and monthly presentations to staff.
- Share the quarterly reports and monthly presentations with various Ministries and relevant quasi-Government bodies, and with the ESAG.
- Conduct the first round of the Longitudinal Household Charcoal Consumption Survey in areas where A2C community influencers are working to complement the Annual HH Survey.

## 5.0 CROSS-CUTTING THEMES

### 5.1 GENDER AND YOUTH INTEGRATION

During FY22, A2C initiated engagement with religious institutions - and female church leaders in particular - as an integral feature of the project's SBCC interventions. Starting in Q1, A2C approached five church bodies to discuss collaboration, including: the Evangelical Council of Zambia (ECZ), Independent churches of Zambia (ICOZ), the Catholic Women's League (CWL), Seventh Day Adventist (SDA) Church, and the Christian Council of Zambia (CCZ). Following these initial meetings, it was decided to focus specifically on female leaders within each of the church bodies given their ability to engage with and influence other women (noting that females play a dominant role in using charcoal and cooking within the household). In total, 15 religious leaders were chosen to collaborate with A2C from the five church bodies listed above.

A2C then provided a series of trainings about the impact of charcoal on Zambia's environment and to introduce ATFs. This was followed by trainings on community mobilization and social marketing skills. The approach used by religious leaders during demonstrations days is much the same as the community influencers in that they perform cooking demonstrations with ATFs with congregants, respond to questions and encourage people to participate in cooking by using the different ATFs (see Figure 19). Religious leaders also use demonstration events to personally testify about the benefits of using ATFs (all 15 have adopted and use ATFs in their household), which include time savings, clean cooking and long-term financial savings for the family based on reduced expenditures on charcoal. Leaders also spoke about the role of the church in conserving the environment, the impact of unclean cooking on gender (time poverty, drudgery, the ill effects of unclean cooking) and harnessing the power of collective savings for acquisition of ATFs.



**Figure 20. Member of the Christian Council of Zambia test-cooking on different ATFs in Garden compound, Lusaka**

Church-led events were also attended by private sector players such as Falcon (an LPG distributor) and Emerging Cooking Solutions, a biomass pellet stove and fuel supplier. This gave the women an opportunity to hear about the cost of the ATFs, ask pertinent questions and make purchases. This was particularly important for LPG, which is widely believed to be dangerous and explosive.

During community-led cooking demonstrations A2C made a concerted effort to clarify that cooking is not a women's chore and ensured that men cook alongside women during the demonstrations. Men also participated in the distribution of cooked food to demystify stereotypes that cooking is supposed to be done only by women. This role modeling has encouraged diffusion of information among peers in the community, men to men, women to women and youth to youth. Women also report referring their peers to ATF companies to make purchases.

Finally, certain women and men chose to become distributors of fuels such as biomass pellets and LPG. For instance, one male influencer on the Copperbelt has become a distributor for Falcon Gas, while a Lusaka-based female influencer in George compound saw her biomass pellet fuel business boosted by her community mobilization activities with A2C.

Youth are also a critical component of A2C's target audience; they are more comfortable with and likely to accept new technologies and easily diffuse message and raise awareness through social media. Zambia's youth are also actively engaged and concerned about climate change and eager to adopt climate smart solutions such as clean cooking. During FY22, two youth led cooking demonstrations were conducted at the National Institute of Public Administration and the University of Zambia reaching a total of 77 students. In addition, A2C sponsored essay writing contests about deforestation and clean cooking at three secondary schools during national energy week. A total of 150 pupils submitted essays, which were scored by teachers, and awards and prizes were given to the top essays. Young men and women also play a critical role in the establishment of CFMGs. A2C is prioritizing at least 50% representation of women within CMFGs and likewise recognizes the importance of providing alternative livelihoods to youth who work in the rural charcoal supply chain. Accordingly, the design of alternative livelihoods has taken into consideration the views and needs of youth including in the charcoal producer survey. Many youth also report wanting an alternative livelihood other than charcoal, but commented any alternative needs to provide the same (or more) income than they currently earn in the charcoal sector.

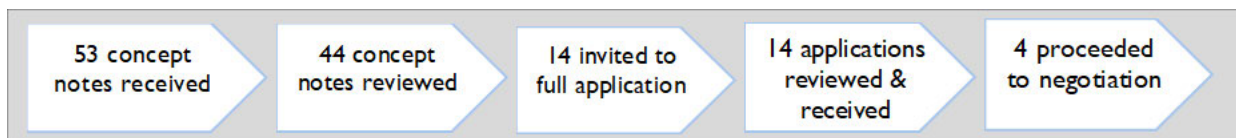
Currently, youth comprise one-third (33%) of the 175 community influencers A2C is working with. Their role is to mobilize fellow young people to participate in demonstration days and share information with their peers and guardians. Feedback from the community influencers suggests this peer-to-peer diffusion of clean cooking information is proving to be very effective for transmitting clean cooking messaging to the household level. Cooking is also a lived experience, and people find it easier to dialogue with each other personally about changing their cooking behaviors. Youth in particular report teaching and speaking to their peers about the benefits of ATFs and successfully encouraging them to adopt alternatives to charcoal.

## **5.2 GRANTS UNDER CONTRACT**

A2C launched a Grants under Contract (GUC) component during FY22 with the release of a RFA on 29 November 2021. This first round of grants focused explicitly on supporting private sector companies well-placed to (i) address barriers to ATF expansion and (ii) jumpstart, accelerate, replicate, and/or scale up innovative solutions and best practices related to ATF uptake.

Eligible ATFs included electricity, biogas, Tier 3 and above biomass stoves, LPG, ethanol, as well as associated technologies. Improved cookstoves (wood or charcoal), and carbonized fuels such as briquettes and sustainable charcoal were not eligible for support. A2C prioritized submissions that addressed affordability, acceptability, and accessibility barriers experienced by households, and resulted in a measurable reduction in urban charcoal consumption. Individual awards were expected to range between USD \$25,000 and USD \$250,000 (not to exceed USD \$1 million in total) for a period of between 12-18 months.

The RFA was designed as a two-phase application process: starting with a concept note, followed by a full application and budget. During Phase 1, A2C received a total 53 concept notes, 44 of which were screened and sent to the technical committee for evaluation (nine were turned down for late submission or non-compliance). After evaluation, 14 applicants were invited to proceed to Phase 2 (four of which were women-led) and submit a full proposal and detailed budget. In January, A2C hosted a virtual grants workshop to orient organizations selected for Phase 2 about the project and to answer any questions about the application process. Out of the 14 applicants invited to submit full proposals, 14 applications were received and reviewed and four were selected to proceed in cycle. Applicants not selected to proceed were informed in writing, and those that requested feedback received a technical response.



**Figure 21. GUC process and progress made during FY22**

Additionally, A2C requested a full application from two local organizations with exclusive and/or predominant capability based on proprietary resources for consideration by the Technical Evaluation Committee under the Automated Directives Systems (ADS) 303.3.6.4 and ADS 303.3.6.5. These solicited applications were also reviewed and scored by the technical committee, and each obtained a score of at least 75 out of 100 to proceed in cycle.

In total six (6) organizations (one led by a male youth and one led by an adult woman) were selected to proceed in cycle for approval by USAID. Proposed award sizes for the six proposed grantees ranged between USD \$35,000 and USD \$248,250, for a grand total of \$986,642 of grant funding to be awarded. The remaining USD \$13,000 was earmarked for micro grants to be awarded to companies with the best business plan and “pitch” after completing A2C’s forthcoming business incubator program during FY23.

A Simplified Pre-Award Survey was conducted to determine whether applicants had the financial and managerial capacity to oversee the grant. The Grants Manager also undertook a cost/price analysis of applicant budgets to determine their understanding of the financial aspects of the project and how they would apply the funds when performing their activities. Environmental compliance reviews and field visits were also conducted to assess the environmental and climate-related impacts and identify appropriate mitigation and monitoring actions.

Between July and September 2022 negotiations were held with prospective grantees to finalize technical approaches and budgets, and negotiation memos were drafted. In total, two (2) grant awards were submitted and approved by USAID before the end of FY22, and the remaining four will be submitted in Q1 of FY23.

### **5.3 COMMUNICATIONS**

The following communication activities were completed during FY22:

- In collaboration with MoE, A2C supported Energy Week activities in Kitwe including exhibitions of ATF companies, presentations at primary and secondary schools (including prizes for top essays about alternatives to charcoal) as well as radio programs.
- In collaboration with the FD A2C supported the commemoration of the International Day of Forests. The included branding and printing of banners, t-shirts, as well as media invitations.
- Trained 24 journalists from different media houses about the impact of charcoal production and alternatives to charcoal resulting in increased coverage and interest from media on A2C activities.
- Training provided to Community Influencers in Lusaka, Kitwe, Ndola and Solwezi on interpersonal communications and social marketing. In addition, visual aids, brochures and ID’s were designed, branded and procured.
- Various radio and TV programs were facilitated and broadcast in Lusaka, Copperbelt and Solwezi, including Zambia National Broadcasting Corporation, Radio Maria Yatsani, Komboni Radio, Radio Christian Voice, Yar FM, Radio Chengelo, Sun FM, Chimwemwe Radio and Solwezi Radio. The advertisements target women by demonstrating women speaking to women, and women speaking with men about clean cooking solutions in their home, with an emphasis on the cost and time savings.



- A2C produced and aired public announcements about new standards related the production of ethanol and LPG standards for cooking. The announcements are part of the formal public comment period required by the Energy Regulatory Board.
- A2C ensured visibility and branding at various events including the launch of the ESAG, Charcoal Taskforce and ZGEN. These events had media coverage ranging from print, radio, television and social media which raised the profile of the project.
- Branded ID's and T-shirts were designed and procured by A2C for enumerators working on surveys for A2C including the annual household survey, CPS and monthly metrics.
- Due to an increased number of activities during FY22, additional Activity branded materials were designed and procured including pop ups, teardrops, gazebos, telegraphic flags, and raincoats for community influencers.

#### **5.4 ENVIRONMENTAL COMPLIANCE**

A2C recognizes the potential for adverse environmental impacts of interventions across each of the five objectives and continuously aims to integrate mitigation and monitoring actions directly into implementation, including climate risk management (CRM) measures. FY22 included several activities that had implications for environmental compliance, namely the selection of districts for sustainable livelihood interventions and community forestry, and proposed awards under GUCs.

Accordingly, environmental compliance activities during FY22 included:

- Site selection in four districts: The Environmental Compliance Specialist joined a reconnaissance survey in the four selected districts to obtain data about existing environmental conditions and develop screening tools.
- The Environmental Compliance Specialist also collected data related to proposed livelihood interventions and commenced developing a database of relevant environmental parameters including watersheds, climate, geology, existing natural resources, soil characteristics, etc.
- Collected information from local stakeholders at each site around environmental degradation, deforestation, air pollution and climate change.
- A2C ensured that no proposed CFM sites are in environmentally sensitive areas or critical ecological corridors.
- Environmental compliance information was provided to shortlisted grantees for the development of full proposals under the grant program. It was stressed potential grantees should understand and budget for environmental mitigation measures if needed.
- The Environmental Compliance Specialist screened the activities for shortlisted grantees to identify and mitigate environmental consequences. Screening focused on assessing the environmental footprint of the grantee's overall projects and selective activities, identifying related risks, where applicable, and designing actions for mitigating and monitoring the risks. Through the screening process, A2C also assisted grantees to strengthen their ability to evaluate potential environmental effects of proposed development strategies and activities.
- A comprehensive screening form was developed to continue monitoring grantee activities for environmental risks. A climate risk assessment was also completed to identify and plan for climate impacts that may impair the achievement of objectives and setting out a plan for adaptation measures in the conception of the project. The screening process included meetings and field assessments for grantees whose activities have physical outputs such as setting up of distribution sites, production facilities and setting up of new sites.

- Results from the screening process are:
  - Three proposed grantees have activities identified to be administrative in nature and assessed to have potentially low risks. As such, Categorical Exclusion was recommended, pursuant to 22 CFR 216.2(c)(2)(i),(iii) and (v) and submitted to USAID for approval.
  - Three proposed grantee projects had activities which had components of environmental risks, and these were determined as medium risks. As such Negative Determination with Conditions was recommended pursuant to 22 CFR 216.3(a)(2) (i) (ii).

For projects with negative determinations outside categorical exclusions, comprehensive mitigation measures were developed with specific actions and guidance related to requirements by national regulators and USAID. Grantees will be assisted by the Environmental Compliance Specialist on how to monitor their activities and implement mitigation measures.

Finally, the Environmental Management and Mitigation Plan (EMMP) for A2C was updated as specified in ADS 204, when the 22 CFR 216 documentation governing the project (e.g., the Initial Environmental Examination (IEE)) specifies mitigation measures are needed for newly identified actions). Most actions in the approved workplan for FY23 fall within the scope of categorical exclusion, nonetheless A2C has continued to monitor activities across all objectives to maintain a low-risk status and provide mitigation measures for identified actions with potential environmental impacts.

The updated EMMP (to be submitted in FY23 Q1) identifies activities that have the potential for environmental impacts and provides appropriate mitigation measures. The FY23 EMMP also identifies the climate risks related to the actions and provides CRM measures. Environmental sustainability is integral to A2C's overall goal, and therefore the EMMP specifically recommends implementable and verifiable mitigation measures to achieve optimal results and avoid inadvertent environmental or social risks.

## **5.5 MONITORING, EVALUATION AND LEARNING (MEL)**

### **Annual Survey on Household Charcoal Consumption and Use of ATFs**

During Q4, A2C conducted a baseline annual household survey to measure the percent change in charcoal energy consumption and domestic use of ATFs within the household energy mix. The survey also determined: i) the percent change in deforestation directly attributable to charcoal production, and (ii) the amount of greenhouse gas emissions avoided from reduced consumption of charcoal in urban areas through promotion of ATFs. The survey was conducted in July and August 2022 by local subcontractor IAPRI, and included 2,440 randomly selected households in Lusaka, Ndola and Solwezi. The survey team was comprised of four quality controllers, 12 supervisors and 49 (31 Female and 19 Male) enumerators. In interpreting the results, it is important to note the 2022 (baseline) survey was conducted in winter (July/August) when charcoal usage is at its highest due to the cold weather, while the pilot Year 1 survey was conducted in summer (November/December). Going forward, A2C will continue to conduct this annual survey in July/August for continuity. Results from the 2022 annual household survey will also serve as A2C's baseline going forward.

Results from the baseline indicate that across all three urban areas surveyed charcoal consumption has declined by an average of two percent as compared to the Year 1 pilot survey (see Table 6 below). Disaggregating the results by urban area reveals a more complex picture. According to 2022 data, charcoal consumption in Lusaka increased four percent from 660 Kg per household annually, to 689 Kg per household annually. As mentioned above, this increase is likely attributable to the 2022 survey being conducted in winter, when charcoal use is highest. Results also indicate charcoal consumption in select urban areas outside Lusaka have declined between 2021 and 2022 surveys by 4.9% in Ndola and 4.2% in Solwezi.

**Table 6. Annual household charcoal consumption by urban district**

District	2021 Consumption (Kg) (Pilot)	2022 Consumption (Kg) (Baseline)	Percent Change (%)
Lusaka	660	689	+4.3
Ndola	748	711	-4.9
Solwezi	893	855	-4.2
<b>Average</b>	<b>767</b>	<b>751</b>	<b>-2%</b>

Analysis of data by housing density (which is a proxy for income) reveals little statistical difference in the amount of charcoal consumed between high, medium and low-income learners (see Table 7).

**Table 7. Household charcoal consumption by population-density areas**

Housing Area	2022 Quantity (kg)	
	Monthly	Annual
High Density (low income)	69	826
Medium Density (medium income)	66	788
Low Density (high income)	65	785

Analysis of expenditure data by housing density (again a proxy for income) is provided in Table 8 below.

**Table 8. Household expenditure on charcoal by population-density areas**

Housing Area	2022 Expenditure (ZMW)	
	Monthly	Annual
High Density	224	2693
Medium Density	213	2558
Low Density	180	2160

Data also suggest households are increasingly engaging in fuel stacking. Results indicate the percentage of households using an ATF is 27.4%. This corroborates other findings by A2C that while preference for and use of charcoal declines with rising income, it is still used in combination with other ATFs through fuel stacking. Accordingly, the use of an ATF within a household does not automatically equate to less charcoal being used. As such, A2C needs to focus on changing the fuel stack, rather than a wholesale shift from one fuel to another.

It should be noted the annual household survey is a random sampling of 2,440 households in Lusaka, Ndola and Solwezi, and therefore does not include the specific urban compounds that A2C targets, for example through community and religious influencers and demonstrations. Next quarter A2C will undertake a similar household survey specifically in the Lusaka compounds targeted by the project to gain a better understanding of the direct impact of A2C interventions.

Indicator 4 (Greenhouse gas emissions reduced, sequestered, or avoided through sustainable landscapes activities) accounts for the amount of GHGs either removed from the atmosphere or prevented from entering the atmosphere as would have occurred without activity interventions. A2C interventions will generate emissions reductions through the uptake and increased use of alternative technologies and/or fuels (ATFs) (linking to indicators 1, 2, and 3). The primary source of GHG reductions will therefore come from reduced consumption of charcoal in urban areas through promotion of ATFs. Likewise, for Indicator 5 A2C calculates avoided deforestation directly from the change in charcoal energy consumption estimated through the urban household energy surveys. Indicator 5 is thus calculated directly from Indicator 4. By starting with reduced charcoal consumption, the calculations can be directly attributed to alternative technologies and fuels switching.

A summary of baseline results for Indicators 1-5 and 9 are provided in Table 9 below and are included in the performance indicator tracking table (Appendix A).

**Table 9. Results for Indicators 1-5 and 9 per the 2022 annual household survey**

#	Indicator Name	Unit	Baseline
1	Change in charcoal consumption in Lusaka	Kg/HH/Year	689
2	Change in charcoal consumption in select urban areas outside of Lusaka (e.g., Ndola and Solwezi)	Kg/HH/Year	783
3	Change in use of low emission ATFs in Lusaka and select urban areas	% Use	27.4%
4	Greenhouse gas (GHG) emissions, estimated in metric tons of CO2 equivalent, reduced, sequestered, or avoided through sustainable landscapes activities supported by USG assistance (EG.13-6)	Tons/year	4,434,128
5	Percent change in deforestation directly attributable to charcoal production	Hectares/year	31,785 ha
9	Number of Zambian Households Using ATFs	# Households	309,411

### Performance Monitoring Data

The MEL team collected data on key output level performance indicators to track progress towards planned targets throughout the fiscal year. This included data collection and analysis on the reach of SBCC campaigns through TV and radio advertisements, as well as community influencer interventions and live demonstrations. During the period under review, the MEL and Charcoal Legality teams also conducted monitoring visits to Lusaka, Central, Copperbelt and Northwestern provinces to assess the progress made on conservation law enforcement practices.

The MEL team also completed data anonymization of the baseline survey, the second annual household survey and the Solwezi consumer preference survey datasets to remove personal identification and locational information prior to submission to the USAID Development Data Library (DDL) scheduled for the first quarter of Year 3.

### Internal Data Quality Assessment

Led by the Home Office MEL Specialist, A2C conducted an Internal Data Quality Assessment (DQA) during the third quarter of FY22. The internal DQA verified the quality of data reported to date to identify strengths and areas of improvement. Six indicators were sampled from a total of 19 performance indicators for the assessment. The assessment determined the MEL system to be robust, accurate and capable of producing high-quality data. Several recommendations were made regarding data storage, analyses and enhancing reporting which have since been addressed by the A2C MEL team.

### Training in Data Collection, Analysis and Reporting

During the reporting period, the SBCC team identified and trained 175 community influencers in Lusaka, Ndola and Solwezi on data collection, aggregation and reporting to ensure quality reliability, accuracy and completeness. The MEL team also participated in the sensitization of 160 (117 male and 43 female) government officials on the Forests Act. GRZ officials were trained on the indicator that tracks number of people applying improved conservation law enforcement, including the indicator definition, data collection forms, data aggregation and reporting procedures.

### Revision of the Activity Monitoring, Evaluation and Learning Plan (AMELP)

In the last two quarters of FY 22, A2C's AMELP underwent revision which included updating baseline figures and contextual assumptions as well as revising the Performance Indicator Reference sheets. The revision also included the revision of the learning questions, Theory of Change (ToC) and Conceptual framework.

## 6.0 DELIVERABLES AND EVENTS

### 6.1 DELIVERABLES APPROVED IN FY22

A2C submitted the following 19 activity-level and technical deliverables during FY22, 95% of which were submitted on time (18 out of 19 – all except the Baseline Indicator Report (A.12), for which an extension had been requested but not approved).

**Table 10. Deliverables Approved During FY22**

#	Deliverable	Approval Date(s)
T.1	Private sector focus groups convened	26 October 2021
T.17	Annual Demonstration Days Report (FY21)	26 October 2021
T.25	Communications strategies tested by focus groups (FY21)	26 October 2021
A.6	Quarterly Progress Reports (Q1, Q2 and Q3)	10 February (Q1), 14 July (Q2), 15 August (Q3); 2022
A.7	Annual Progress Report	18 November 2021
A.12	Baseline Indicator Report	2 June 2022
T.3	Annual Monitoring Report on ATFs and Technological Advances	3 August, 2022
T.4	ZGEN Launch report	7 October 2022
T.6	Private Sector ATF Research and Investment Mobilization Report	2 August, 2022
T.9	Documentation of information provided to investors on Zambian ATF market innovations	12 January 2022
T.10	Matchmaking service provided between investor(s) and entrepreneur(s)	18 May 2022
T.13	Progress report on policy recommendations to support enabling environment	20 September 2022
T.20	Intergovernmental Charcoal Taskforce established and functioning	2 May 2022
T.21	Awareness materials developed and in use by enforcement agents	1 August 2022
T.25	Communications strategies tested by focus groups (FY22)	11 May 2022
T.26	Survey of charcoal producers	28 June 2022
T.27	Value Chain Analysis	14 September 2022
T.31	Pause, Reflect, and Pivot Reports x 2	10 February and 2 August 2022
T.32	Adaptive Management Baseline Report	1 August 2022

### 6.2 UPCOMING INTERNATIONAL TRAVEL (STAFF AND CONSULTANTS)

October-November 2022: Monica Raphita Simarmata will travel for an LPG Accessibility Study short-term technical assistance assignment.

### 6.3 LIST OF UPCOMING EVENTS NEXT QUARTER

As reflected in Table 11 (next page), A2C anticipates the following upcoming activities and events, some of which may require USAID involvement.



**Table 11. Upcoming A2C Activities and Events in FY23 (Q1)**

Event Title	Event Type	Dates	USAID Involvement (Yes or No)
Global Clean Cooking Forum	Meeting	11-13 October in Ghana	No
Resource Mobilization Workshop for Private Sector	Training	12-13 October and 19-20 October	No
ESAG subcommittee meetings	Meeting	19-21 October 2022	If desired
Charcoal Taskforce Subcommittee Meetings	Meeting	27-28 October 2022	If desired
Community Forestry Management Learning Event	Workshop	2-4 November (organized by ILRG)	If desired
Pause, Reflect, and Pivot Workshop	Workshop	8-9 November 2022	Yes
Charcoal Taskforce Full Mtg	Meeting	Week of 14 November	Yes
Stakeholders' consultation meeting on the LPG access study	Meeting	15-16 November	If desired
Resource Mobilization Workshop for Private Sector	Training	23-24 November 2022	If desired
ZGEN sub committee meetings	Workshop	28-30 November	If desired
Quarterly Update Meeting to GRZ partners	Meeting	8 December	Yes
Technical Committee meeting to review stakeholder comments on LPG standards	Meeting	12-16 December	No
ATF Roadshow in Lusaka	Event	17 December 2022	If desired

## APPENDIX A: INDICATOR PERFORMANCE TABLE

N°	Performance Indicator	Frequency	Baseline	Year 2		LOA		Notes
				Target	Achieved	Target	Achieved	
1	Change (%) in charcoal energy consumption in Lusaka	Annual	689 kg/HH/Year	-5%	-	-25%	-	As agreed, the second urban HH survey figures, collected in FY22, are now the projects baseline for outcome indicators. Therefore, no achievement was recorded.
2	Change (%) in charcoal energy consumption in select urban areas outside of Lusaka	Annual	783 kg/HH/Year	0	-	-5%	-	As agreed, the second urban HH survey figures, collected in FY22, are now the projects baseline for outcome indicators. Therefore, no achievement was recorded.
3	Change (%) in use of low emissions charcoal alternative technologies and/or fuels (ATFs) in Lusaka and select urban areas outside of Lusaka	Annual	27.4% of HH	+5%	-	+38%	-	. As agreed, the second urban HH survey figures, collected in FY22, are now the projects baseline for outcome indicators. Therefore, no achievement was recorded.
4	Number of metric tons of GHG emissions reduced, sequestered, or avoided through sustainable landscapes activities supported by USG assistance (EG.13-6),	Annual	4,434,128 Tons/year	-147,020	-	-735,100	-	As agreed, the second urban HH survey figures, collected in FY22, are now the projects baseline for outcome indicators. Therefore, no achievement was recorded.
5	Change (%) in deforestation directly attributable to charcoal production (charcoal production is estimated to be 25% of national deforestation)	Annual	31,785 Hectares/year	-2%	-	-6.7%	-	As agreed, the second urban HH survey figures, collected in FY22, are now the projects baseline for outcome indicators. Therefore, no achievement was recorded.

N°	Performance Indicator	Frequency	Baseline	Year 2		LOA		Notes
				Target	Achieved	Target	Achieved	
6	Percent of female participants in USG-assisted programs designed to increase access to productive economic resources (GNDR-2)	Annual	0	25%	54%	40%	54%	Through the ECS grant the project increased access to productive economic resources for 13 female participants. In addition, 110 female participants out of 190 community influencers and religious leaders now have access to productive economic resources due to their engagement as social behavior change agents.
7	Value of investment (USD) mobilized for sustainable landscapes as supported by USG assistance (EG.13-4)	Quarterly	0	\$1,500,000	\$653,474	\$10M	\$653,474	35% of Year 2 target met. \$ 300,000 was mobilized through the issuance of a term sheet from Spark+ to INDE Credit to finance clean cooking in Zambia. \$248,250 is the Burn grantee contribution and \$105,224 is the Emerging Cooking Solution grantee contribution Both grants were approved during FY22.
8	Number of private sector enterprises newly supplying ATFs as a result of USG assistance	Annual	0	5	1	35	1	Litkon Solution is a new distributor of Falcon gas to customers in Ndola on the Copperbelt province.
9	Number of Zambian households using ATFs	Annual	309,411	+10,000	-	+83,700	-	As agreed,, the second urban HH survey figures, collected in FY22, are now the projects baseline for outcome indicators. Therefore, no achievement was recorded.
10	Change (%) in Ease of Doing Business score for "starting a business" for ATF-related enterprises as a result of USG assistance	Annual	0	5%	1.1%	25%	1.1%	The deviation in FY22 is caused by several metrics not performing as expected including the perception of registering/licensing a company, costs associated with registration and licensing, difficulty finding labor/technicians, and lack of fiscal incentives being a barrier to business growth
11	Number of improvements made to the ATF business enabling environment as a result of USG assistance	Quarterly	0	3	0	12	0	The national budget submission does include an elimination of customs duty on LPG cylinders but which we expect

N°	Performance Indicator	Frequency	Baseline	Year 2		LOA		Notes
				Target	Achieved	Target	Achieved	
								to be passed next quarter, and other recommendations remain at proposal stage.
12	Number of laws, policies, regulations, or standards addressing sustainable landscapes formally proposed, adopted, or implemented as supported by USG assistance (EG.13-3)	Annual	0	2	6	8	7	During FY22, the following standards were proposed at national level: National Renewable Energy Strategy and Action Plan, National Charcoal Regulations, National Energy Efficiency Strategy and Action Plan, Proposed Tax and Non Tax Incentives for 2023 National Budget, new Bioethanol standards, Revision of LPG Standards and recommendations to the National Policy on Environment. Kindly note that the National Energy Efficiency Strategy and Action Plan proceeded to adoption and full implementation.
13	Number of innovations supported through USG assistance (STIR-10)	Semi-annual	0	1	1	6	1	A2C supported the design a particle circuit board (electrical drawings/schematics and board layout). This innovation enabled a Next Generation Advanced Biomass stove to have a PayGo technology that is connected to the internet and a smartphone app.
14	Number of people reached with SBCC campaigns, advertisements, and other related outreach as a result of USG assistance	Quarterly	0	1,000,000	2,275,523	3M	3,897,829	Revised AMELP (to be submitted) has a new LOA target of 7.5 million people. The # of people reached in Year 2 included: 1,520,957 people reached through TV, 474,178 through radio and 247,076 through social media, 28,785 people through community and religious influencers; 1,816 through women meetings with different Christian dominations 1,403 during energy week, 1,253 through A2C led cooking demonstrations/ roadshows, 47 people

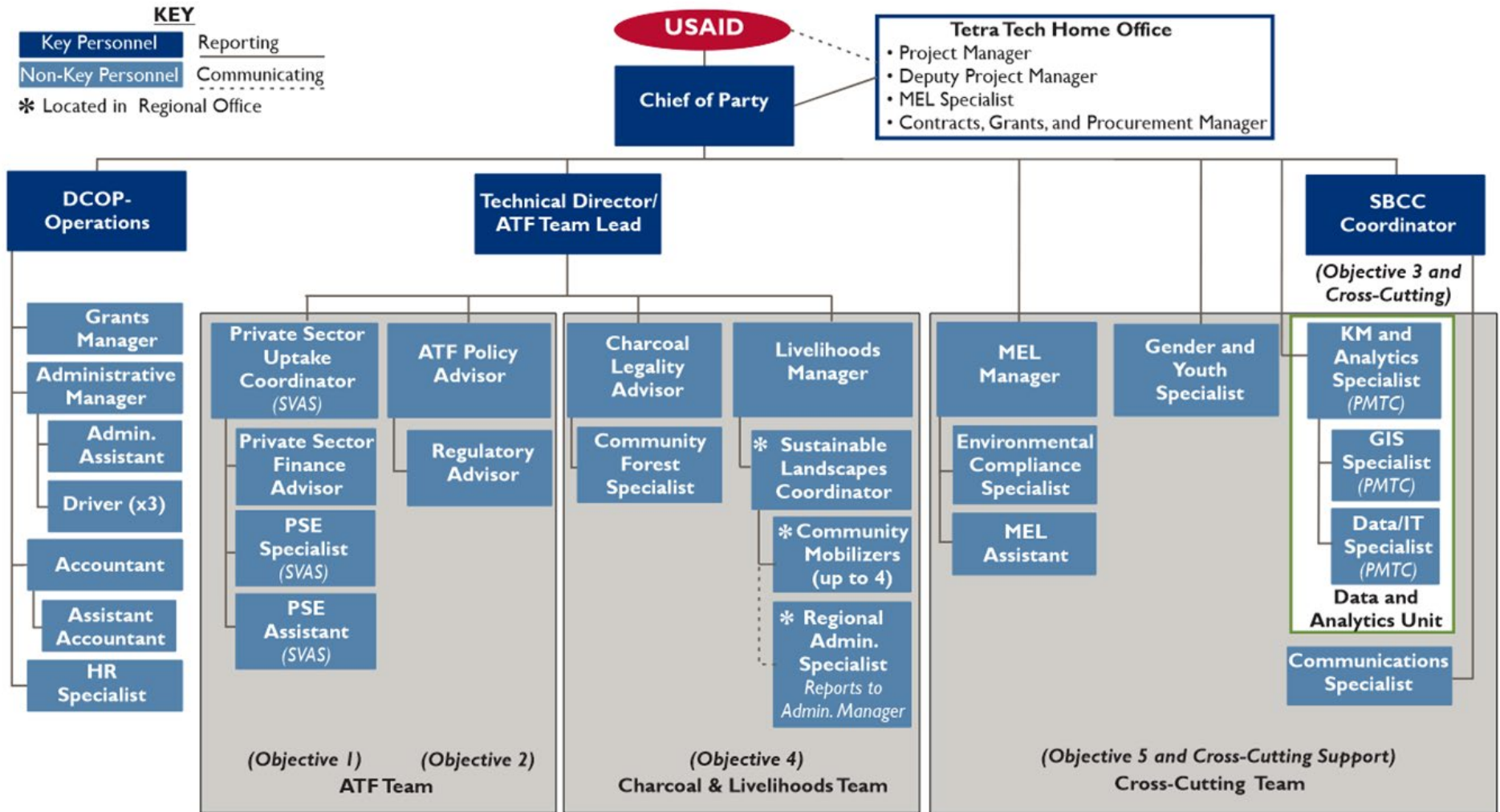
N°	Performance Indicator	Frequency	Baseline	Year 2		LOA		Notes
				Target	Achieved	Target	Achieved	
								during a women and youth engagement meeting, 8 through a focus group discussions with students.
15	Number of people that apply improved conservation law enforcement practices as a result of USG assistance (EG.10.2-6)	Quarterly	0	200	122	1,247	122	During FY22, a total of 160 govt officials were trained in the Forest Act, including: 57 from Northwestern Province, 55 from the Copperbelt and 48 Lusaka Province. A total of 76% (122 officials) reported <u>applying</u> enforcement practices post- training. Others were transferred during the reporting period outside the target areas.
16	Change (%) in number of number of months people are engaged in the charcoal value chain in targeted areas as a result of USG assistance	Annual	7.38 months/person/year	-5%	-	-33%	-	The charcoal producers survey baseline was done in FY22. Therefore, no achievement was recorded.
17	Number of hectares under improved management expected to reduce greenhouse gas emissions as a result of USG assistance (EG.13-8)	Semi-annual	0	0	0	119,121	-	Selected areas in the targeted districts have been identified and the boundary mapping for CFMAs has begun.
18	Number of people receiving livelihood co-benefits (monetary or nonmonetary) associated with implementation of USG sustainable landscape activities (EG.13-5)	Quarterly	0	0	0	19,559	-	A2C has proposed a LOA target of 19,559 based on research to date. Per USAID, alternative livelihoods activities will not commence until a measurable reduction in urban charcoal use has been documented.
19	Number of institutions with improved capacity to address sustainable landscape issues as supported by USG assistance (EG.13-2)	Annual	0	4	6	20	6	Year 2 target exceeded by 66%. The six institutions include: the Forest Department in 3 provinces (Northwestern, Central and Copperbelt) and 3 District Government offices in Lufwanyama, Mumba and Kalumbila all of whom were trained and have increased capacity to support community forests as parr of district Community Forestry Facilitation Teams.



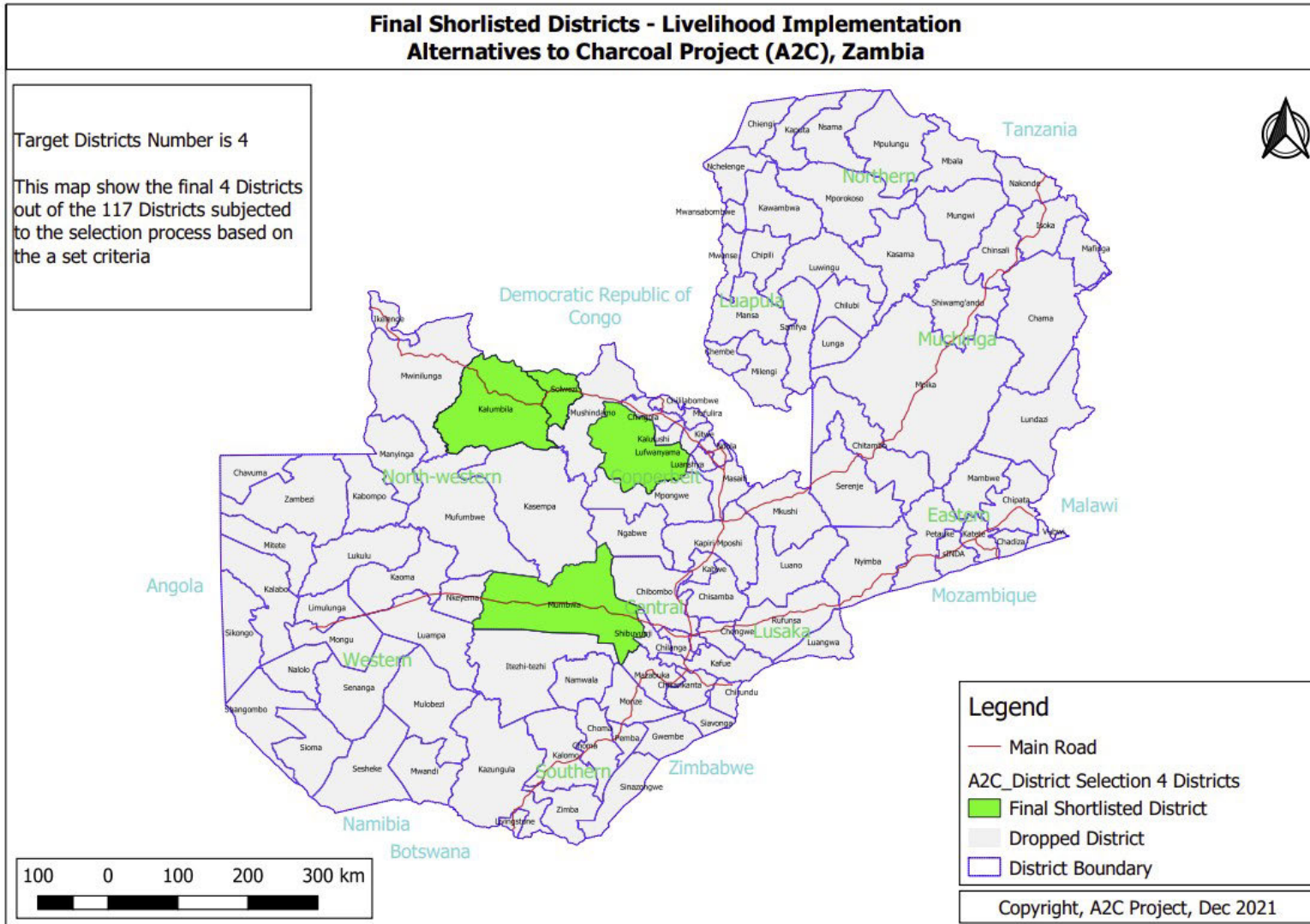
## **APPENDIX B: QUARTERLY FINANCIAL REPORT (Q4 FY22)**

This information has been redacted in the PDF version of this report.

# APPENDIX C: ORGANIZATIONAL CHART



# APPENDIX D: MAP OF FOUR TARGET DISTRICTS SELECTED BY A2C



# APPENDIX E: SUCCESS STORIES



## Increasing Access to Alternative Fuels and Incomes

Ms. Tembo at her shop in George compound, where she sells biomass pellets



*"I want to start selling stoves so more people can access them near their homes."*



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U.S. Agency for International Development  
Washington, DC 20523-1000  
<http://stories.usaid.gov>

The USAID Alternatives to Charcoal (A2C) Activity works to catalyze the increased use of and demand for alternative technologies and fuels (ATFs) to replace charcoal. The Activity partners with the private sector to help increase the supply ATFs available on the market and ensure that alternatives are affordable, accessible and acceptable for urban Zambian consumers. In addition, the project empowers women and youth to help catalyze a transformation away from charcoal and towards clean cooking options.

One such person who has benefited from the project is Ms. Vaileti Tembo, from George compound in Lusaka, Zambia. Ms. Tembo has sold pellets as an alternative to charcoal since 2018. She is an agent for the company SupaMoto, which manufactures and sells biomass pellets and low emission gasifier pellet stoves. Ms. Tembo is one of many entrepreneurs in Zambia who is advancing the shift towards clean cooking in Zambia. She does so by addressing the challenge of limited accessibility to ATFs.

"SupaMoto does not have branches in my compound where people can buy pellets. So I asked to become trained as an agent so I could make extra income for my family," stated Ms. Tembo.

When she started the business, Ms. Tembo had 35 customers. Today, thanks to the support of A2C, she has grown her business to 150 customers. She reflects, "When A2C started promoting pellets in my community through community influencers, I immediately experienced an increase in demand for pellets and it helped me grow my business."

A2C has recruited and trained 175 community influencers in Zambia's major urban centers (Lusaka, Kitwe, Solwezi and Ndola) to raise awareness in their communities about alternatives to charcoal. This includes through door-to-door sensitization campaigns and live cooking demonstrations showcasing different alternatives. Messages highlight the cost of alternatives and where they can be purchased; influencers also particularly stress how they are safe to use in order to dispel any misconceptions.

"This place is becoming small," Ms. Tembo states as she points to her makeshift store next to her home. "I want to expand my store and my business to other parts of my neighborhood so more people can access these pellets. I'm also happy because now I make more money and I am re-investing this to expand my business," she adds.

Looking ahead, Ms. Tembo plans to not only expand her pellet business but also sell pellet stoves. "I have engaged SupaMoto to allow me to start selling stoves, and I plan to purchase 15 stoves for resale as soon as possible," she adds.

A2C will continue to engage community influencers to raise awareness about alternatives to charcoal in urban communities and is developing tailored technical support for small businesses such as Ms. Tembo's to improve their business planning and ability to access financial investment.





## Improving the Business Enabling Environment for Clean Cooking

**A religious leader tests the safety of a gas stove during a sensitization meeting.**



*Photo Credit: A2C*

**Liquefied Petroleum Gas (LPG) cylinders waiting for export**



*Photo Credit: Getty Images iStock*

Zambia has one of the highest rates of deforestation in Africa, losing approximately 250,000 hectares each year, in part due to the significant urban demand for charcoal for cooking and heating. Deforestation in Zambia is driving greenhouse gas emissions and climate change impacts, and leads to environmental degradation such as soil erosion, reduced ecosystem functions of forests, and decreased water and air quality. Despite the wide usage of charcoal across Zambia, alternative technologies and fuels (ATFs) do exist. However, widespread adoption has been hindered by poor enabling and inefficiencies that keep costs prohibitively high and limit consumers' access. The USAID Alternatives to Charcoal (A2C) Activity works to catalyze the increased use of and demand for alternative technologies and fuels (ATFs) to replace charcoal.

Liquefied Petroleum Gas (LPG) is a cooking fuel alternative that can significantly reduce urban charcoal demand and offers many advantages over charcoal, including more efficient cooking time, ease of controlling heat output, and improved indoor air quality. Furthermore, research conducted by the A2C activity found that replacing charcoal-based cooking with LPG would result in an overall reduction in emissions of 2.34 tons CO<sub>2</sub>e per household per year.

One of the main barriers to adopting LPG in Zambia is affordability. LPG cylinders are imported into Zambia and are subject to a 16% Value Added Tax (VAT) and 15% customs duty, both of which are passed down to the consumer. As part of A2C's efforts to improve the business enabling environment for alternatives to charcoal, the project submitted a proposal to the Ministry of Energy to eliminate taxes on LPG cylinders and provided a detailed cost benefit analyses to support the proposal.

After significant awareness raising and advocacy by A2C, the Minister of Finance announced during the 2023 national budget presentation that the 15% customs duty on LPG cylinders would be eliminated to "make LPG affordable, safeguard the environment and diversify the energy mix."

This decision is expected to ultimately reduce the cost of cylinders for end users and increase the uptake of LPG as a clean cooking technology as part of Zambia's transition towards clean cooking.

Moving forward, A2C will continue to improve the business enabling environment for a variety of ATFs in addition to LPG, such as high-efficient electrical appliances, low emissions gasifier stoves, ethanol and biogas. Planned activities include additional proposals to reduce or eliminate taxes on other clean cooking technologies and fuels, development of a national clean cooking strategy to identify actionable targets and interventions to scale up clean cooking and revised standards for ethanol as a cooking fuel.

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