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NATIONAL CLEAN COOKING ENERGY SECTOR INVESTMENT PLAN OF ETHIOPIA (2025 – 2035)

June 2025, Addis Ababa, Ethiopia

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Executive Summary

With less than 10% of Ethiopians having access to clean cooking solutions in 2024, the country faces a serious energy crisis. The vast majority depend on traditional biomass fuels, which leads to severe health complications caused by indoor air pollution. This reliance also drives accelerated deforestation, threatening environmental sustainability. Additionally, the significant time required for fuel collection and cooking disproportionately affects women and children, limiting their opportunities for education and economic participation. Addressing this challenge is critical to improving public health, protecting natural resources, and promoting social equity. Thus to solve this critical issue, a comprehensive national roadmap for clean cooking in Ethiopia has been developed, using the Multi-Tier Framework and combining best practices and local insights to overcome key barriers, prioritize advanced Clean Cooking technologies, and outline phased strategies to improve access, health, and reduce emissions by 2035. Ethiopia's National Clean Cooking Roadmap targets 75.87% access by 2035, benefiting 90.6 million people while reducing

emissions by 75 $MtCO_2eq$, saving 105.3 million tons of wood, creating over 335,700 jobs, and empowering 2 million women across the country. Implementation requires a total investment of $3.38 billion, allocating $2.6 billion for Clean Cooking Technology Solutions (including microfinance programs, carbon project prefinancing, subsidies, revolving funds, and supply chain support) and $780 million for Enabling Components (covering program unit setup, activity costs, end-user and supply-side support, policy strengthening, R&D to develop technologies in line with local cooking culture, infrastructure, and monitoring systems and other enabling activities) over a ten-year implementation period.

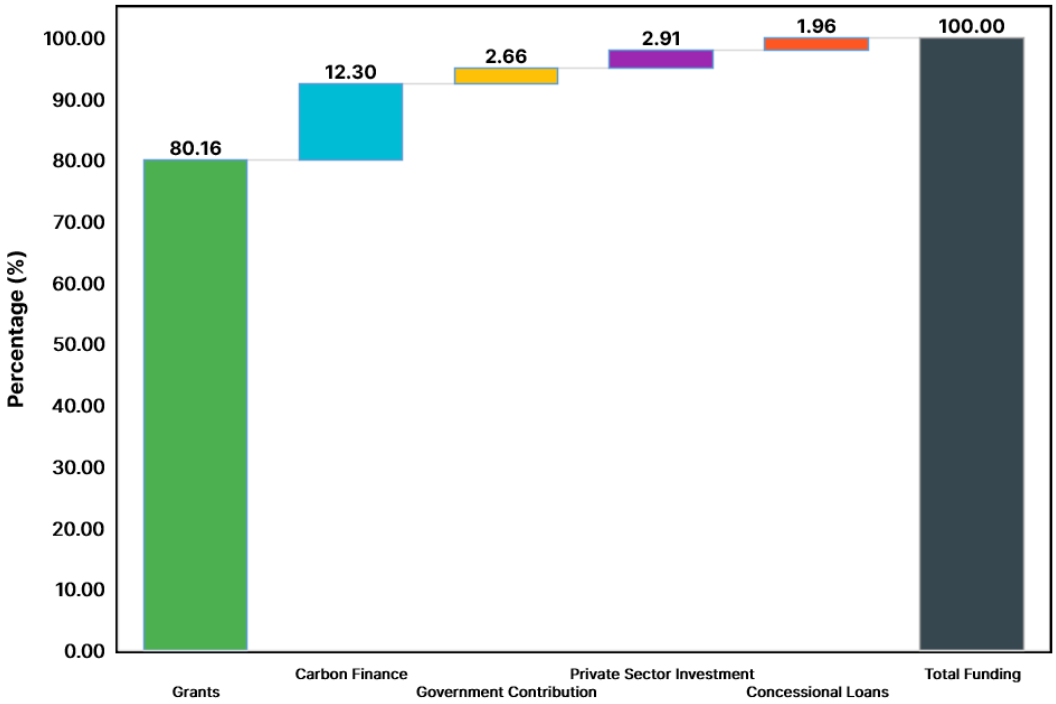
The main **objective** of the Clean Cooking Energy Subsector Investment Plan is to mobilize $3.38 billion to increase Ethiopia's clean cooking access to 75.87% by 2035. This will be achieved through a comprehensive analysis of past and current funding trends, financial mix projections, and identification of bankable projects. The plan details financing needs for clean cooking solutions and the enabling environment, assesses appropriate financing instruments, and maps potential funders. It also proposes central coordination mechanisms, highlights investment-ready bankable projects, aligns with national policies, and develops strategies to engage key stakeholders and funding partners effectively.

Methodologically, the Clean Cooking Investment Plan (2025-2035) is structured around three critical components: Historical Funding Analysis for Cookstove Projects, Current Funding Landscape Assessment, Future Investment and Financial Options Projections, and Strategic Investment Planning. The Historical Analysis delves into past funding trends, sources, and impacts, providing valuable insights into what has worked and the lessons learned. The Current Funding Landscape Assessment identifies existing financing sources, eligibility criteria, and emerging models like carbon finance and public-private partnerships, helping to bridge funding gaps. Additionally, financial options and funding opportunities from peer countries are incorporated to draw lessons on successful international strategies and best practices. Strategic Investment Planning outlines a total investment requirement of $3.38 billion, specifying detailed allocations for clean cooking technologies and the creation of an enabling environment, along with phased implementation plans, expected outcomes, and risk management strategies.

The methodology also includes a comprehensive Risk Analysis and Mitigation Framework, addressing financial, institutional, and external risks while proposing de-risking measures. Moreover, it identifies potential bankable projects for advanced biomass stoves, electric stoves, biogas systems, and related infrastructure, ensuring alignment with climate finance and scalable impact. This holistic approach integrates past experiences, current opportunities, and future projections to create a robust investment plan.

Historical Funding Source for Cookstove projects: Based on a comprehensive review of all cookstove projects funded in Ethiopia from 2004 to 2024, the historical funding landscape for cookstove projects shows a total investment of approximately $131.9 million. Grants accounted for 80.16% of the funding, while carbon finance made up 12.3%. The funding supported various projects that aimed to improve energy efficiency, reduce deforestation, and promote health benefits. The funding landscape highlights the dominance of grants in supporting clean cooking initiatives in Ethiopia. However, the significant contribution from carbon finance suggests a growing recognition of the potential for clean cooking solutions to generate carbon credits. The relatively small share of government contribution and private sector investment highlights the need for increased support from these stakeholders to achieve sustainable growth in the clean cooking sector. Overall, the funding mix presents opportunities for diversifying funding sources and exploring innovative financing models to support the development of the clean cooking sector in Ethiopia. One critical observation shows that despite their vital role in improving health, reducing environmental impact, and enhancing social outcomes, cookstove projects receive only about 2.31% of the funding allocated to electricity infrastructure $131.9 million compared to over $5.7 billion (2004 – 2024).

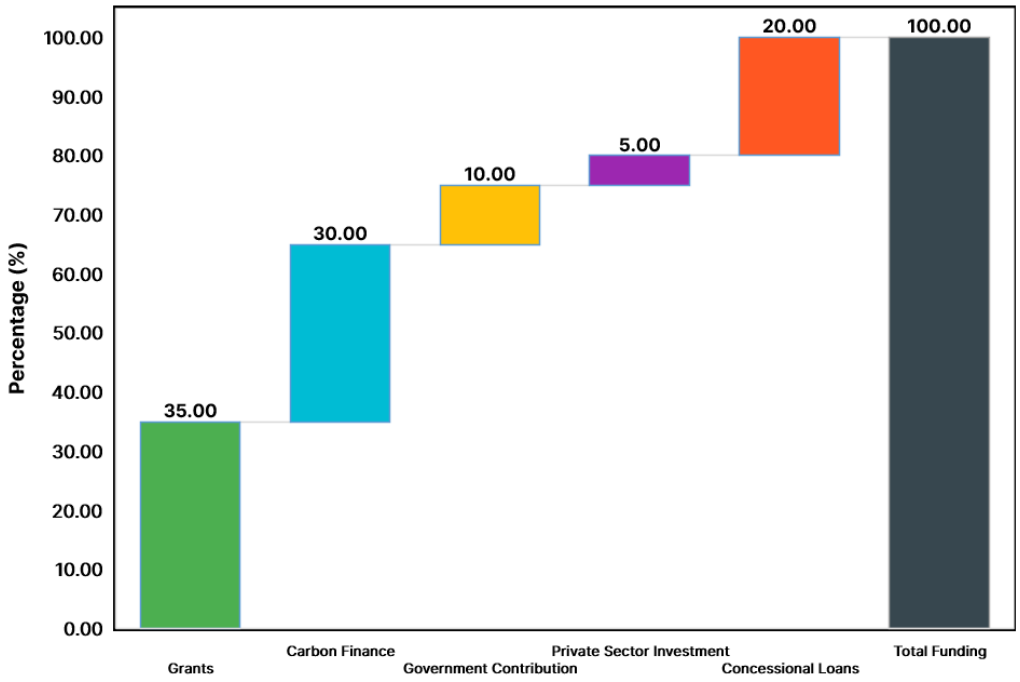
This stark funding disparity overlooks the opportunity to enhance system-wide efficiency and grid performance through the integration.



Historical Funding Sources for Cookstove Projects in Ethiopia (2004-2024)

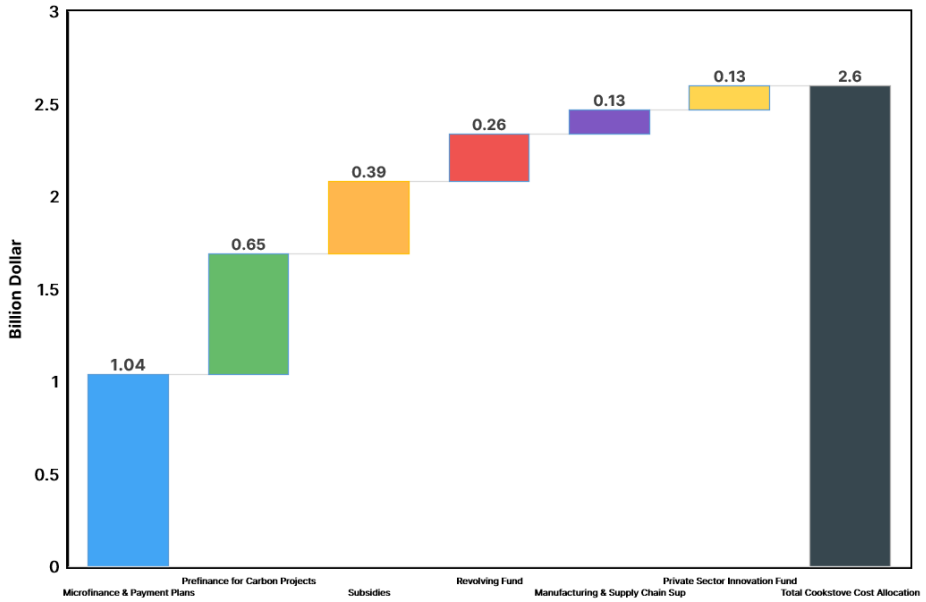
The current financial landscape presents opportunities for growth in the clean cooking sector. Initiatives such as the $40 billion Africa Energy Fund, the Accelerating Sustainable and Clean Energy Access Transformation (ASCENT) Program, and the Distributed Access through Renewable Energy Scale-Up Platform (DARES) offer potential funding opportunities. Innovative financing models, including results-based financing, pay-as-you-go consumer financing, and community savings and cooperative loans, can help address the financing gaps and challenges in the sector, driving growth and adoption of clean cooking solutions in Ethiopia.

Future Investment Projection, Financial Mix, Detailed Activity Costs, and Justification: To mobilize the $3.38 billion required for Ethiopia's clean cooking transition by 2035, a diversified financial mix has been designed to balance impact, scalability, and sustainability. The proposed mix allocates 35% ($1.18B) to grants, 30% ($1.014M) to carbon finance and pre-financed carbon-linked loans, 10% ($338M) to direct government contributions, and 5% ($169M) to private sector investment and 20 % ($676M) concessional loans. The proposed financial mix for 2025–2035 emphasizes a strategic reduction in grant dependency while significantly increasing funding from carbon credits, concessional loans, government contributions, and private sector investments to ensure sustainable growth, diversify risk, and capitalize on emerging climate finance opportunities in Ethiopia's clean cooking sector. Specifically, grants are reduced due to the global shift toward integrated climate finance and the risks of overreliance, while carbon credits increase because of Ethiopia's existing experience in cookstove and forest-related projects in obtaining carbon finance, and the carbon credit framework is in the final stage of development to boost credit generation. Private sector funding should grow with rising clean energy entrepreneurship and blended finance models that reduce investment risk. Government contributions should rise to demonstrate political commitment and drive public health and environmental goals. Concessional loans expand owing to global blended finance initiatives and Ethiopia's eligibility for funding from major development banks.



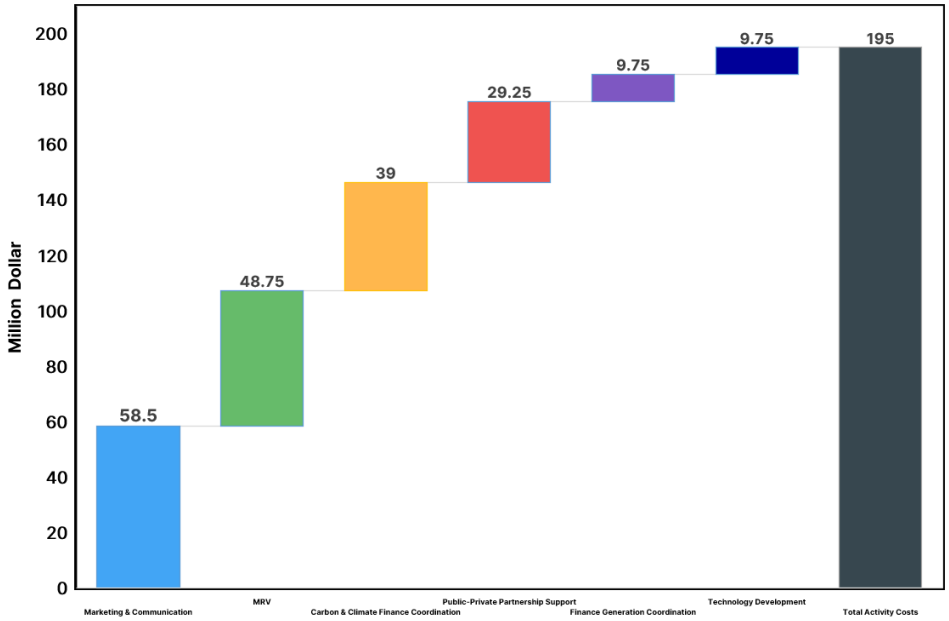
Proposed Allocation of Clean Cookstove Finance by Source (2025 - 2035)

Of the total investment, $2,600 million will be directed toward Clean Cooking Technology Solutions, aimed at accelerating widespread adoption across advanced biomass, electric, biogas, and solar cooking solutions. The largest allocation, $1.04 billion, will support microfinance and payment plans to increase affordability for end-users and expand access to finance to clean cooking products. This is followed by $650 million allocated for prefinancing carbon projects, enabling upfront deployment of clean stoves and monetization of emission reductions through carbon credit revenues. An additional $390 million will fund targeted subsidies to reduce initial adoption costs and incentivize early users. The revolving fund, receiving $260 million, will provide continuous financial support to consumers and small businesses through recyclable capital structures. Furthermore, $130 million will be invested in strengthening the manufacturing base and supply chain infrastructure, ensuring technology availability and regional distribution capacity. Lastly, $130 million will be allocated to a Private Sector Innovation Fund to catalyze enterprise-led innovative financial solutions and support local assembly initiatives. Together, these targeted investments aim to transition the majority of households to Tier 3+ clean cooking technologies by 2035 through an inclusive, diverse technology and market based approach.



Proposed Cookstove Allocation Cost (2004 – 2025)

The remaining $780 million investment is dedicated to foundational ecosystem development, which is essential for the success and sustainability of clean cooking technology deployment. Leading the allocation, $200 million will establish and operationalize national and regional program units, enhance institutional capacity, and coordinate implementation across government agencies and stakeholders. This is followed by $120 million for critical infrastructure upgrades particularly electricity grid enhancements to enable electric cooking adoption in urban and peri-urban areas. Approximately $110 million is dedicated to end-user engagement, supporting public awareness campaigns, consumer education, and gender-inclusive programming to boost adoption and equity. Monitoring, Reporting, and Verification (MRV) systems and digital tracking infrastructure will receive $85 million to ensure performance-based finance mechanisms such as carbon credits are transparent and verifiable. Research and development efforts tailored to local cooking needs and cultural preferences will be backed with $100 million, while policy reform and regulatory strengthening activities will utilize $90 million to standardize technologies and ensure product quality. Finally, $75 million will be invested in supply-side capacity building, including clean cook stove manufacturers training, business development services, and market facilitation. This comprehensive package lays the institutional and operational groundwork required to scale clean cooking access nationwide by 2035.



Proposed Program Activity Costs (2025 – 2035)

Risk Analysis and Mitigation Strategies: Ethiopia's clean cooking investment plan will face a range of financial, institutional, and policy-related risks that could hinder implementation and impact. Key financial risks include shortfalls in expected funding, inflation pressures, and over-reliance on volatile carbon credit revenues. Institutional challenges stem from fragmented mandates, weak monitoring systems, and limited capacity to design bankable projects, while policy risks arise from unpredictable regulatory shifts and inconsistent taxation frameworks. To mitigate these threats, the strategy prioritizes diversified climate-aligned financing, phased implementation, and capacity-building for local banks and SMEs. Establishing a centralized Clean Cooking Coordination Unit with a top priority that will streamline coordination and governance, while long-term regulatory frameworks and improved ease of doing business will foster investor confidence. Strengthening MRV systems, bundling carbon projects, and promoting blended finance will further de-risk investment and attract sustained capital flows. Together, these measures create a robust mitigation framework to support Ethiopia's transition to clean cooking at scale.

Detailed Action Plan for Implementation, Enabling Investment Environment, and Leveraging Financial Resources: The comprehensive action plan for Ethiopia's Clean Cooking Subsector Investment Plan centers on a strategic three-phase approach from 2025 to 2035, with critical focus areas spanning implementation, investment environment, and financial resource mobilization. The cornerstone of the strategy is establishing a National Clean Cooking Implementation Taskforce (NCCIT), a multi-stakeholder body that will provide strategic guidance, coordinate efforts across government ministries, private sector, and civil society, and drive resource mobilization. The implementation strategy is deliberately phased, beginning with a foundational period (2025-2027) that focuses on establishing frameworks, conducting pilot programs, and building institutional capacity, followed by a scaling-up phase (2028-2030) to accelerate market development, and concluding with a consolidation phase (2032-2035) aimed at achieving national clean cooking access targets and ensuring long-term market sustainability. To create an enabling investment environment, the plan emphasizes policy and regulatory reforms, including developing a dedicated national clean cooking policy, streamlining importation procedures, establishing quality standards, and creating targeted investment incentives such as tax breaks and affordable financing mechanisms. Financial resource leveraging is innovative, with a diverse funding mix comprising 35% grants, 30 % carbon finance, 10

% government contributions, 5 % private sector investment, and 20% concessional loans, strategically designed to attract international development partners, tap into carbon markets, secure government commitment, and create robust public-private partnerships that can transform Ethiopia's clean cooking landscape.

Possible Bankable or Investable Clean Cooking Projects in Ethiopia: Ethiopia's clean cooking investment strategy includes bankable projects across four technology pathways advanced biomass, electric cooking, biogas, and solar cooking. Focused on local manufacturing, innovative financing, and ecosystem development, the plan features regional production hubs, results-based financing, grid-integrated electric stoves, biogas systems in livestock areas, and solar solutions for off-grid communities. Crosscutting initiatives like the Women-Led Clean Energy Microenterprise Program and policy support align with national goals, climate commitments, and SDGs, positioning Ethiopia for scalable, inclusive, and sustainable sector transformation.

In conclusion, Ethiopia's Clean Cooking Investment Plan aims to transform the national energy landscape by increasing clean cooking access from less than 10% to 75.87% by 2035, addressing critical challenges in health, environment, and economic development. Success in Ethiopia's clean cooking transformation relies on a collaborative, comprehensive approach that simultaneously addresses technological innovation, financial sustainability, social empowerment, and adaptive implementation strategies.

Key Strategic Recommendations

- **Prioritizing clean cooking as a national development priority**, as the government unlock multiple benefits like preventing deforestation, creating jobs, empowering women, improving health, reducing pollution, & mitigating climate change.
- Create **a dedicated Clean Cooking Coordination Unit** within the Ministry of Water and Energy, with focused divisions for grants, carbon finance, and financial innovation. This unit will drive strategic decisions, pull in diverse funding, build lasting financial models across the sector and work hand in hand with regional energy office.
- Establish a **Carbon and Climate Finance Team** under ministerial guidance to lead carbon initiatives nationally and regionally by developing national PoAs, deploying digital MRV tools, reducing emissions to generate revenue, and engaging with global carbon markets to maximize returns
- To mobilize funding for clean cooking initiatives, a diversified financing strategy should be adopted that combines grants to de-risk early-stage projects, carbon finance to monetize emissions reductions through certified carbon markets, concessional loans to provide affordable financing for manufacturers and distributors, government contributions to create enabling environments via tax incentives and policy integration, and private sector investment to drive long-term sustainability and technological advancement through blended finance and impact investing; all aligned with global best practices and targeted implementation strategies.
- Develop **a bankable clean cooking proposal** by aligning with key funder priorities-including market development & commercialization, technology innovation & R&D, gender inclusion & social impact, climate finance & environmental sustainability, results-based financing (RBF), health impact, policy advocacy, early-stage grants , and supply chain & infrastructure development while linking to global frameworks such as the **SDGs (3, 5, 7, 13) ,NDCs & national energy strategies , and ensuring compliance with funding requirements** such as co-financing arrangements, verified results-based disbursement models, technical assistance for

enabling environments ,and local stakeholder engagement , to demonstrate multi-sectoral impact, scalability, and donor alignment for increased funding success.

- Key metrics should be tracked and measured frequently to align with funder expectations to establish clear monitoring frameworks for health improvements, emission reductions, household adoption rates, gender impacts, and market development indicators.
- Several major funders have specific commitments to Africa, including Ethiopia, making them particularly relevant partners for Ethiopia's clean cooking sector.
- Results-Based Financing (RBF) should be integrated, as many funders are moving toward results-based approaches.
- Cross-sectoral benefits should be highlighted, as clean cooking delivers multiple benefits across health, gender equality, climate change mitigation, and forest conservation, helping to attract diverse funding sources.
- Set up a unified digital platform to track clean cooking adoption, funding movements, supply chains, user feedback, and carbon data. This system will support transparency, enable fast decisions, and verify carbon credits.
- Create a unified digital platform to track clean cooking adoption, funding, supply chains, user feedback, and carbon data, improving transparency, verifying emissions, reducing certification costs and enabling quick responses to usage issues.
- Support local and regional clean cooking manufacturers by providing financial incentives, technical help, and easier access to low-cost loans to reduce reliance on imports, lower prices, create jobs, and increase access.
- Launch a Women-Focused Entrepreneurship Program offering tailored credit, matching grants, business coaching, and skills training to empower more women across the clean cooking value chain.
- Offer tax breaks, duty-free imports, and direct subsidies for clean fuels and Clean Cooking Technologies.
- Set clear quality standards and certification processes for stoves and fuels to protect users and grow the market. Make sure these standards match global best practices but fit local needs, updating them as tech evolves.
- Integrate electric cooking programs with national grid expansion and mini-grid planning to incentivize suppliers and end users to adopt and promote high-efficiency electric stoves, while developing targeted financing solutions
- Establish large-scale and decentralized clean cooking manufacturing facilities with government support to reduce costs through economies of scale, improve affordability, and encourage private sector participation in every region

Chapter 1: Introduction and Context

1.1. Background and Rationale

Ethiopia faces significant and persistent challenges in expanding access to clean cooking energy solutions, with less than 10% of the population utilizing clean methods as of 2024. The vast majority remain reliant on traditional biomass fuels, resulting in severe indoor air pollution, significant deforestation, and widespread adverse health impacts. Progress has been hampered by a complex array of barriers, including low public awareness and demand, prohibitive upfront costs of technology, insufficient clean fuel availability, ingrained behavioral and cultural practices, and a chronic lack of sustained funding. Compounding these issues are institutional fragmentation and inadequate coordination among sector organizations, which have led to inefficiencies, duplicated efforts, and stalled comprehensive advancement in the clean cooking subsector.

In response to the critical challenges facing clean cooking adoption in Ethiopia, a comprehensive national roadmap for clean cooking was developed through in-depth modeling, extensive stakeholder consultations, and fuel resource assessments to recommend the right technology based on available resources nearby, local cooking culture, and technology preferences. Drawing on both international best practices and local experience, the roadmap identifies key barriers such as affordability, awareness, enabling policies, and fuel availability, while emphasizing the importance of inclusive participation, social and cultural influences, and ongoing research and development. The strategy advocates for a robust, multisectoral approach involving government, NGOs, civil society, the private sector, and development partners. The roadmap sets a target of achieving 75.87% clean cooking access by 2035, aiming to serve 90.6 million Ethiopians and achieve a significant CO_2 reduction of 75 $MtCO_2eq$ over the 2025–2035 period. By prioritizing technological diversity, urban-rural equity, and targeted interventions to address key barriers, the roadmap provides a practical yet transformative framework to advance Ethiopia's clean cooking transition and deliver long-term health, environmental, and economic benefits

Achieving the roadmap's ambitious targets will require substantial investment, with the total estimated cost reaching approximately $3.38 billion over the 2025–2035 period. The largest portion of this budget, approximately $2.6 billion, is allocated to the deployment of clean cookstoves. To ensure successful implementation and long-term impact, an additional 30% of the core cost, roughly $780 million, is needed for critical enabling activities across several major areas. These include distribution and market development to expand supply chains; capacity building and institutional support through the establishment of a Clean Cooking Coordination Unit and capacity building training; awareness creation and behavior change campaigns to drive adoption; financial access and sustainability via consumer incentives and affordable financing; policy development and coordination to strengthen the enabling environment; technical support and demonstration encompassing quality assurance and after-sales services; and research, monitoring, and evaluation to track progress and inform continuous improvement. Together, these integrated efforts form a comprehensive support framework essential to realize the roadmap's goals.

The Clean Cooking Energy Subsector Investment Plan serves as the critical next step to operationalize the national roadmap and address the significant funding challenge. Its primary purpose is to translate strategic objectives into a concrete, actionable plan for resource mobilization and coordinated investment by identifying diverse sources of finance and developing tailored strategies to access these resources effectively. This plan will detail the specific financing needs, propose a phased investment strategy, and thoroughly identify and assess viable funding sources and instruments, including public sector finance, private investment, international development assistance, carbon finance modalities, blended finance structures, philanthropic contributions, and concessional loans from national and international financial institutions. It will analyze past funding trends and map the current landscape to inform realistic future projections and allocations from 2025-2035. Furthermore, the plan will recommend institutional arrangements, propose mechanisms to access financing at various levels, and identify possible bankable, investment-ready projects by bringing multiple stakeholders together. These efforts are designed to accelerate progress toward the national clean cooking access objectives. This approach will bridge the gap between policy ambitions and tangible implementation, ensuring alignment with Ethiopia's broader development, climate, and health goals.

1.2. Objectives of the Investment Plan

1.2.1. Main Objective

To develop a comprehensive Clean Cooking Energy Subsector Investment Plan that mobilizes $3.38 billion needed to raise Ethiopia's clean cooking access to 75.87 % by 2035 grounded in an analysis of past investment trends, current funding opportunities, projected financing scenarios, coordination mechanisms, and pipelines of bankable projects.

1.2.2. Specific Objectives

- Assess and detail the total financing needs for prioritized clean cooking technology solutions including advanced biomass, electric, biogas, and solar options—as well as supporting infrastructure, market development, and enabling activities for the period 2025–2035.
- Review and document historical and current investments in Ethiopia's clean cooking sector, including sources, volumes, mechanisms, and lessons learned, to inform future resource mobilization and sector strategy.
- Systematically map existing and emerging sources of finance: public, private, international, carbon markets, concessional loans, and philanthropic and identify key funding gaps and opportunities for innovative financing models.
- Develop and model future financing scenarios, proposing an optimal mix of grants, carbon finance, government contributions, private sector investment, and concessional loans to mobilize the $3.38 billion required and reduce overreliance on any single source.
- Propose a detailed allocation of funds across technology types, programmatic activities, and enabling environment components, ensuring efficient and impactful use of resources.
- Recommend effective institutional frameworks and coordination mechanisms including the establishment of a National Clean Cooking Coordination Unit and regional structures to streamline finance generation and management, implementation, monitoring, and stakeholder engagement.

- Conduct a comprehensive risk analysis and develop mitigation strategies addressing financial, institutional, policy, and external risks to ensure the sustainability and scalability of clean cooking investments.
- Identify, prepare, and present a portfolio of bankable and investable clean cooking projects, complete with financial models, risk assessments, and implementation roadmaps, tailored to the priorities of key funders and aligned with national targets.
- Ensure all investment plan recommendations and actions are fully aligned with Ethiopia's national development, energy, climate, and health strategies, including the NDCs, SDGs, and the national clean cooking access targets outlined in the Roadmap.
- Develop targeted engagement pathways for communities, private sector, development partners, and public institutions, and build capacity for program implementation, monitoring, and adaptive management.
- Create a tiered matrix ranking potential funders by commitment likelihood and strategic fit, and design tailored engagement and value-proposition strategies for both primary and secondary funding targets
- Recommend robust monitoring, evaluation, and learning systems to track progress, measure impact, and adapt strategies as needed to achieve the national clean cooking access target.

1.3. Alignment with National and Global Goals

The Clean Cooking Energy Subsector Investment Plan is designed to align with Ethiopia's national development priorities and international commitments, ensuring that progress in clean cooking access directly supports the country's broader objectives. At the national level, the plan is fully integrated with the National Targets to Improve Access to Clean Cooking Energy of Ethiopia (2025-2035), the Nationally Determined Contributions (NDCs) under the Paris Agreement, the Long-Term Low Emission and Climate Resilient Strategy (LT-LEDS), and the National Sustainable Energy Development Strategy and strategic documents. This alignment reinforces the government's commitment to universal energy access, climate change mitigation, and sustainable development. By targeting a substantial reduction in indoor air pollution and deforestation, the plan advances public health and environmental sustainability, key pillars of Ethiopia's national agenda. Globally, the investment plan contributes to the achievement of Sustainable Development Goal 7 (Affordable and Clean Energy) by accelerating access to modern, clean cooking solutions, while also supporting SDG 3 (Good Health and Well-being), SDG 5 (Gender Equality) and SDG 13 (Climate Action). The plan's emphasis on robust monitoring, stakeholder coordination, and innovative financing mechanisms with international best practices and aligns with the objectives of the United Nations' Sustainable Energy for All initiative. By bridging the gap between policy ambition and implementation, the investment plan positions Ethiopia as a regional leader in clean energy transition, demonstrating a scalable model for integrating national priorities with global climate and development goals.

1.4. Methodology and Analytical Framework

Methodologically, the Clean Cooking Investment Plan (2025-2035) is structured around three critical components: Historical Funding Analysis for Cookstove Projects, Current Funding Landscape Assessment, Future Investment and Financial Options Projections, and Strategic Investment Planning. The Historical Analysis delves into past funding trends, sources, and impacts, providing valuable insights into what has worked and the lessons learned. The Current Funding Landscape Assessment identifies existing financing sources, eligibility criteria, and emerging models like carbon finance and public-private partnerships, helping to bridge funding gaps. Additionally, financial options and funding opportunities from peer countries are incorporated to draw lessons on

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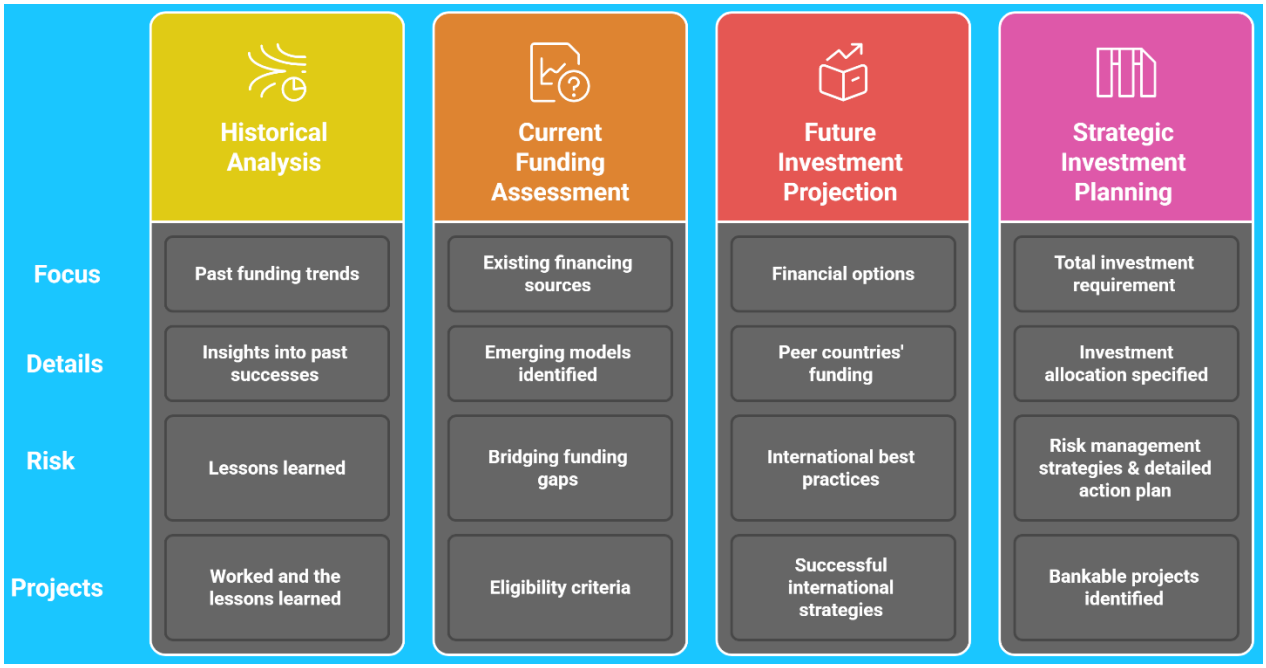

Figure 1 : Methodology and Analytical Framework

Chapter 2: Sector Overview and Targets

2.1. Current Status and Sectoral Challenges

Ethiopia's clean cooking sector remains in an infant state, with adoption rates significantly lagging behind population growth. Recent data paints a concerning picture: less than 10% of households use clean cooking fuels[1], with 2022 statistics revealing that only 8.8% of the population has access to clean fuels and technologies for cooking . This low adoption rate persists despite Ethiopia's large population of over 100 million people, the vast majority of whom continue to rely on traditional biomass fuels for their daily cooking needs.

[1] Modeling Exercise and Develop National Targets to Improve Access to Clean Cooking Energy, MoWE and UNDP (2025)

The urban-rural divide is particularly stark, with urban access at 28.6% compared to a mere 0.6% in rural areas. This disparity highlights the uneven distribution of clean cooking solutions across the country. While electric cooking is emerging as a promising alternative, with approximately 4.1% of households utilizing it (primarily in urban areas with better electricity access), projections indicate that without significant interventions, the national access rate will remain below 10% through 2024[1].

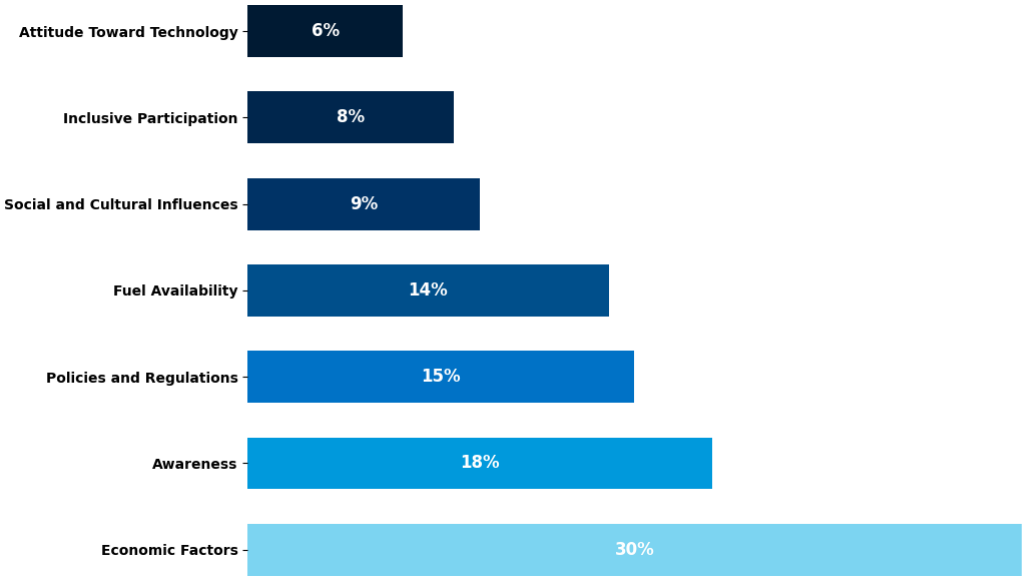

Figure 2 : Relative Importance of Factors Influencing Clean Cooking Adoption in Ethiopia[1]

Several interconnected challenges hinder the widespread adoption of clean cooking solutions in Ethiopia[1]:

- **Economic Factor:** Low-income levels across much of Ethiopia severely constrain households' ability to invest in clean cooking technologies. The high upfront costs of clean cooking solutions present a major barrier for many families living on very low incomes. Even when subsidies are available, the ongoing costs of cleaner fuels remain too high for many families. This is especially true when compared to traditional fuels like firewood which can be collected can be collected rather than purchased. Recent analyses suggest that affordability accounts for approximately 30% of the barriers to adoption. Rising fuel prices have also prompted many households to adopt fuel-stacking practices, combining different cooking methods based on cost considerations.
- **Accessibility:** Limited availability of clean fuels and technologies in rural and remote areas significantly restricts adoption. Weak infrastructure and underdeveloped supply chains mean that even households willing to transition to clean cooking solutions often lack access to them. Fuel availability is estimated to account for approximately 14% of adoption barriers[2].
- **Cultural Barriers**: Resistance to changing traditional cooking practices represents another major obstacle. Many households have strong preferences for the taste of food cooked using traditional methods, familiarity with established cooking practices, and cultural attachments to methods of the three-stone traditional cooking habit. These cultural factors influence

[2] Modeling Exercise and Develop National Targets to Improve Access to Clean Cooking Energy, MoWE and UNDP (2025)

households' willingness to adopt new technologies, even when they are available and affordable[2].

- Infrastructure Gaps: Electric cooking faces particular challenges related to infrastructure limitations. Low grid connectivity in rural regions, unreliable power supply, and frequent voltage fluctuations make electric cooking solutions difficult for many households. Despite the growing interest in eCooking, these infrastructure constraints continue to limit its potential reach[2].
- Lack of Awareness: Many households remain uninformed about the health risks associated with traditional cooking methods or the benefits of clean alternatives. Awareness of risks and benefits accounts for approximately 18% of adoption factors. Education and information campaigns face challenges in reaching remote communities and overcoming established beliefs about cooking practices[2].
- Market Immaturity: The clean cooking market in Ethiopia suffers from weak supply chains, lack of standards and quality control, limited availability of spare parts, and inadequate after-sales services. These market deficiencies undermine consumer confidence and the sustainability of clean cooking initiatives. Enabling policies and regulations, which could address these market failures, account for approximately 15% of factors influencing adoption[2].
- Gender Dynamics : Cooking responsibilities predominantly fall on women in Ethiopia, whose involvement in household decision-making and access to resources significantly influences adoption rates. Women often bear the burden of traditional cooking methods, including time spent collecting fuel and exposure to harmful smoke, yet may have limited input into decisions about purchasing new cooking technologies. Inclusive participation is a key complementary factor in supporting adoption efforts[2].

These challenges are closely linked and require a comprehensive, integrated approach to solve. Tackling economic, cultural, infrastructural, and social factors together is essential for real progress. Supporting elements like attitudes toward technology, social influences, and research also play important roles. Without addressing these issues simultaneously, Ethiopia's clean cooking sector will continue to face low adoption rates. Focusing on these critical and complementary areas is key to creating the right environment and tailored solutions for wider, lasting impact. Therefore, the investment plan will allocate funds by assigning costs to specific activities aimed at overcoming these barriers.

2.2. Summary of National Clean Cooking Roadmap

The developed national targets to improve access to clean cooking energy clearly outline Ethiopia's strategic direction from 2025 to 2035, with the main goal of achieving 75.87% access to clean cooking solutions by 2035. These targets are aligned with key national and international commitments, including Sustainable Development Goal 7 (SDG 7), Ethiopia's National Sustainable Energy Development Strategy (N-SEDS), the Nationally Determined Contributions (NDC), and the Long-Term Low Emission Development Strategy (LT-LEDS). The plan aims to transition households to higher-tier clean cooking solutions, ensuring sustainability and inclusivity by promoting advanced technologies such as biomass, biogas, electric, and solar stoves. This approach is designed to enhance public health, reduce environmental impacts, and drive economic growth. The purpose of this investment plan is to identify ways to mobilize $3.38 billion in resources and recommend a financial mix that considers all available financing options to achieve these targets.

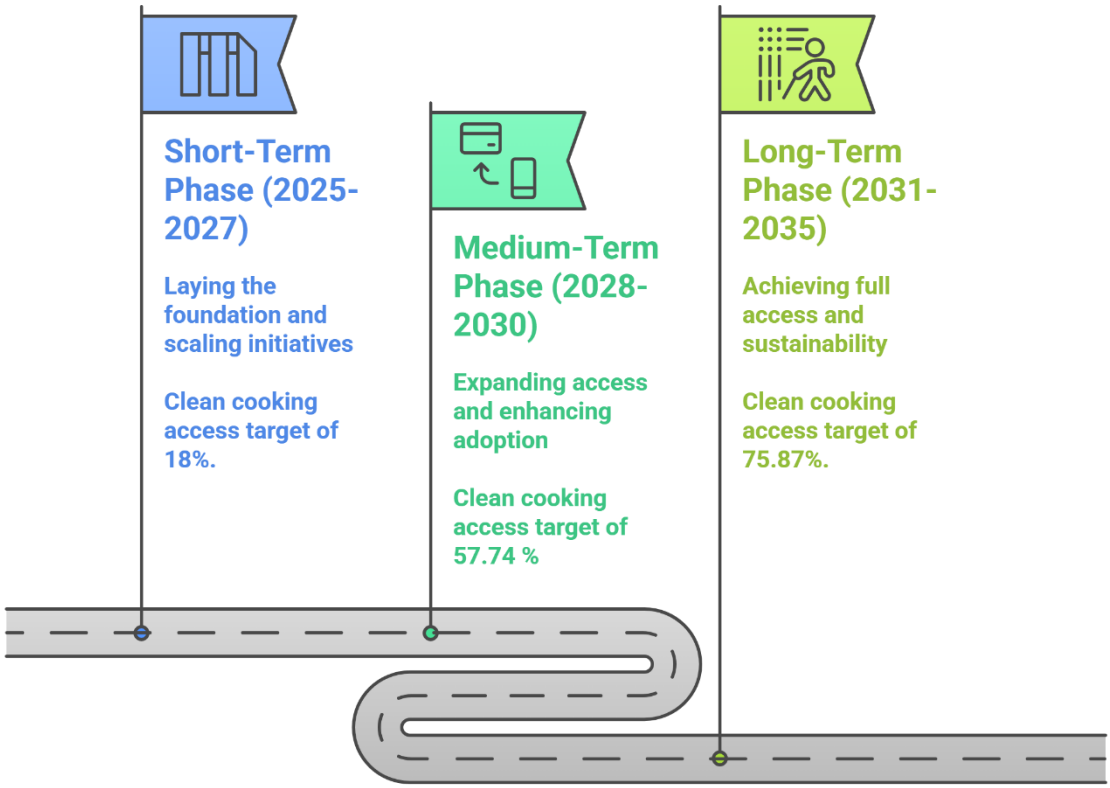

Figure 3 : National Targets of Ethiopia to Improve Access to Clean Cooking Energy[3]

The national targets are structured around three distinct phases:

- The Short-Term (2025 - 2027) phase focuses on laying the foundation and scaling initiatives. This includes establishing a dedicated Clean Cooking Coordination Unit, elevating clean cooking to a national priority, increasing awareness, providing subsidies and financial support, developing infrastructure, and implementing pilot projects, with a clean cooking access target of 18%.
- The Medium-Term (2028–2030) phase emphasizes expanding access and enhancing adoption by developing policy frameworks, driving technological advancements, strengthening capacity building, stimulating market development, integrating with other development programs, and increasing funding aiming for a clean cooking access rate of 57.74%.
- The Long-Term (2031–2035) phase concentrates on achieving full access and sustainability by prioritizing transitions to higher-tier clean cooking solutions, fostering sustainable market development, maximizing environmental and health impact, strengthening long-term monitoring, driving global leadership, and bridging knowledge gaps, with a target access rate of 75.87%.

In conclusion, Ethiopia's National Targets for Clean Cooking adopt a multi-faceted approach involving technological advancements, policy support, financial mechanisms, awareness campaigns, infrastructure development, capacity building, and community engagement to reach universal access by 2035. These targets highlight the importance of alignment with broader national and

[3] Modeling Exercise and Develop National Targets to Improve Access to Clean Cooking Energy, MoWE and UNDP (2025)

international development and climate objectives and emphasize a phased implementation strategy with increasing levels of intervention and technological sophistication. Ultimately, successful implementation of these targets is crucial for improving the quality of life for millions of Ethiopians by addressing health, environmental, and economic challenges associated with traditional cooking practices.

2.3. Access Target

The clean cooking access target of 75.87% by 2035 is a central goal of the roadmap. This target is supported by its alignment with Sustainable Development Goal 7 (SDG 7), Ethiopia's National Sustainable Energy Development Strategy (N-SEDS), the Nationally Determined Contributions (NDC), and the Long-Term Low Emission Development Strategy (LT-LEDS), representing a balanced approach between ambition and feasibility. Under the Moderate Intervention Scenario, the plan aims to achieve a substantial reduction of 75 million tonnes of CO_2 emissions from 2025 to 2035. Reaching this access rate is expected to benefit 90.6 million people throughout Ethiopia by deploying 36.25 million cookstoves, using a mix of technologies such as advanced biomass stoves (Tier 3 and above), electric stoves, biogas, and solar solutions. Importantly, this roadmap will also serve as a key input for the upcoming third Nationally Determined Contribution (NDC-3), ensuring Ethiopia's clean cooking ambitions are reflected in future climate commitments.

2.4. Prioritized Technology Options

Based on the developed national targets to improve access to clean cooking energy, Ethiopia has identified and prioritized a range of technologies to ensure broader access and sustainability by 2035. The prioritized technologies include advanced biomass stoves (Tier 3 and Tier 4), electric stoves (Tier 5), biogas stoves (Tier 4), and solar-powered stoves (Tier 3–4). Among these, advanced biomass stoves are emphasized as the most widely accepted and affordable solution in the first and second phases of implementation, particularly for rural and peri-urban communities, with a targeted cumulative adoption of 18,557,143 units by 2035. Electric stoves, aligned with ongoing grid expansion and efficiency labeling initiatives, are projected to reach 16,167,857 units, supporting the push towards electrification. Biogas stoves, although scaling more slowly, are prioritized for areas with high availability of livestock and agricultural residues, targeting 852,273 cumulative units. Solar-powered stoves, suitable for off-grid areas with abundant solar resources, are projected to reach 669,643 units by 2035.

Characteristic	Advanced Biomass Stoves	Electric Stoves	Biogas Stoves	Solar-Powered Stoves
Target Users	Rural and peri-urban communities	Areas with grid expansion	Areas with livestock/agricultural residues/organic waste	Off-grid areas
Target Units by 2035	18,557,143	16,167,857	852,273	669,643
Technology Tier	Tier 3 and Tier 4	Tier 5	Tier 4	Tier 3–4

Figure 4: Targeted Clean Cooking Energy Technologies in Ethiopia by 2035[4]

While LPG and Ethanol stoves are recognized for their potential, their wider adoption is challenged by high fuel costs, increasing LPG and Ethanol cost and infrastructure limitations, thus requiring targeted subsidies and supportive policies in case of a complete policy change from the government. Thus, the roadmap focus majorly on those for technologies due to this reason[4].

Table 1 presents the clean cooking access target and contribution by phase for the years 2025–2035. The plan outlines the distribution of advanced biomass, electric, and biogas & solar stoves across three phases, aiming to progressively increase clean cooking access in Ethiopia.

Table 1 : Clean Cooking Access Target and Contribution by Phase and Tier (2025–2035)[4]

Phase	Access Target	Tier	Contribution (%age Points)	Units
Phase 1 (2025–2027)	18%	Tier 3 (Advanced biomass)	55.05	2,192,857
		Tier 4 (Biogas & Solar)	4.09	162,338
		Tier 5 (Electric)	40.86	1,617,857
Phase 2 (2028–2030)	57.74%	Tier 3 (Advanced biomass)	52.08	10,750,000
		Tier 4 (Biogas & Solar)	4.17	852,273
		Tier 5 (Electric)	43.75	8,875,000
Phase 3 (2031–2035)	75.87%	Tier 3 (Advanced biomass)	47.26	5,614,286
		Tier 4 (Biogas & Solar)	4.31	507,305
		Tier 5 (Electric)	48.43	5,675,000
			Total Number of Stoves (2025 – 2035)	36,246,916

In Phase 1 (2025–2027), the access target is 18%, with advanced biomass stoves (Tier 3) contributing the largest share at 55.05%, totaling 2,192,857 units. Electric stoves (Tier 5) account for 40.86% of the target, amounting to 1,617,857 units, while biogas and solar stoves (Tier 4) make up 4.09% with 162,338 units. Phase 2 (2028–2030) sees a significant rise in the access target to 57.74%. Advanced biomass stoves continue to play a key role, contributing 52.08% with 10,750,000 units. Electric stoves show notable growth, contributing 43.75% with 8,875,000 units, while biogas and solar stoves account for 4.17%, totaling 852,273 units. In Phase 3 (2031–2035), the access target reaches 75.87%, with advanced biomass stoves contributing 47.26% (5,614,286 units), electric stoves making up the largest share at 48.43% (5,675,000 units), and biogas and solar stoves contributing 4.31% (507,305 units). The total number of stoves targeted for distribution from 2025

[4] Modeling Exercise and Develop National Targets to Improve Access to Clean Cooking Energy, MoWE and UNDP (2025)

to 2035 is 36,246,916, with each stove type playing a crucial role in achieving the clean cooking access goal.

This phased and inclusive strategy reflects a strong commitment to bridging access disparities between urban and rural populations while contributing to national environmental goals. It aims to achieve a total emission reduction of **75 $MtCO_2eq$ between 2025 and 2035** and save approximately 105.3 million tons of wood annually. In addition to environmental benefits, the strategy delivers substantial socio-economic gains, including the creation of over **335,700 jobs** across manufacturing, distribution, and maintenance within the clean cooking sector. It also promotes enhanced gender empowerment, targeting the **empowerment of 2 million women by 2035** through clean cooking initiatives that provide training, employment, and leadership opportunities. The overall target is to achieve **75.87%** access to clean cooking by 2035. Thus, the strategy is not only technically sound but also socially transformative, supporting Ethiopia's broader climate commitments and development aspirations through a strategic, data-informed approach[5].

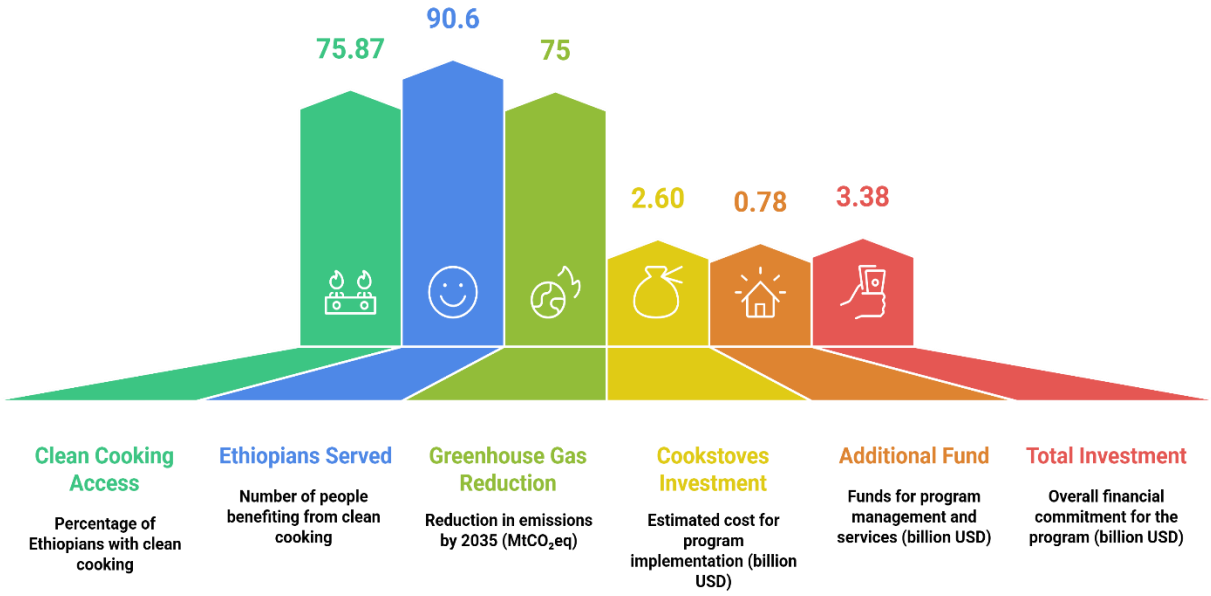

Figure 5 : National Targets to Improve Access to Clean Cooking Energy by 2035

Chapter 3: Investment Needs and Cost Analysis

3.1. Total Investment Requirement

To achieve Ethiopia's clean cooking access targets of 75.87% by 2035 a total investment of approximately $3.38 billion is required between 2025 and 2035. The majority of this funding, about $2.6 billion, will be dedicated to the widespread adoption of advanced biomass, electric, biogas, and solar cooking solutions, ensuring that households across the country have access to modern, efficient technologies. In addition, roughly $780 million (30% of the total investment) is allocated to foundational activities essential for the program's success. These include establishing a Clean

[5] Modeling Exercise and Develop National Targets to Improve Access to Clean Cooking Energy, MoWE and UNDP (2025)

Cooking Coordination Unit, covering staffing and operational costs, strengthening the enabling environment, stimulating both supply and demand, and supporting robust monitoring, evaluation, research, and learning initiatives. Together, these investments will lay the groundwork for scaling up clean cooking access, driving adoption, and ensuring the long-term sustainability of Ethiopia's clean cooking sector.

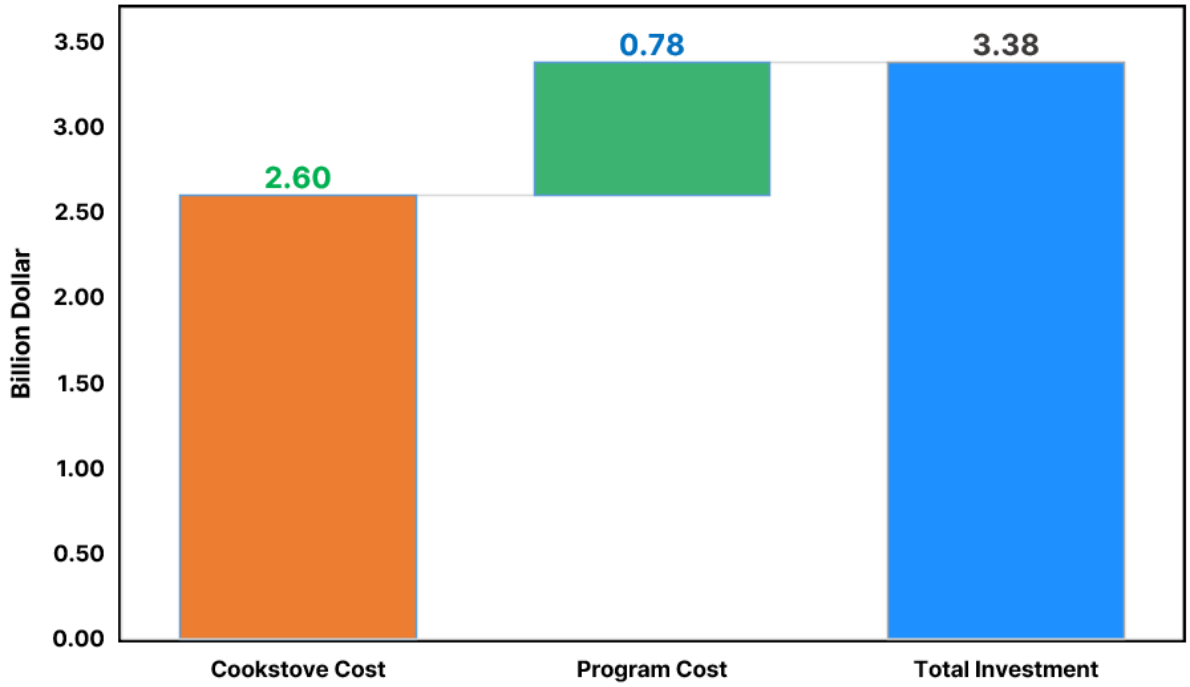

Figure 6 : Total Investment Requirement

3.2. Cost by Technology Type

The cost estimation by technology type for clean cooking solutions in Ethiopia is clearly illustrated in Figure 5[6]. Figure 5 illustrates the projected investment costs required for the adoption of clean cooking technologies in Ethiopia from 2025 to 2035. It shows that the total yearly cost for stoves comprising advanced biomass, electric, biogas, and solar cooking solutions will increase steadily from 2025, peaking around 2030, before dipping and then rising again towards 2035. Advanced biomass and electric stoves represent the largest share of annual investments, reflecting their central role in the national strategy. Biogas and solar cooking solutions account for smaller, but important, portions of the total cost, especially in targeted regions. The cumulative cost required for stoves only, shown by the red line, rises sharply over the decade, surpassing $2.5 billion by 2035. This trajectory highlights the significant and sustained financial commitment needed to achieve Ethiopia's ambitious clean cooking access goals.

[6] Modeling Exercise and Develop National Targets to Improve Access to Clean Cooking Energy, MoWE and UNDP (2025)

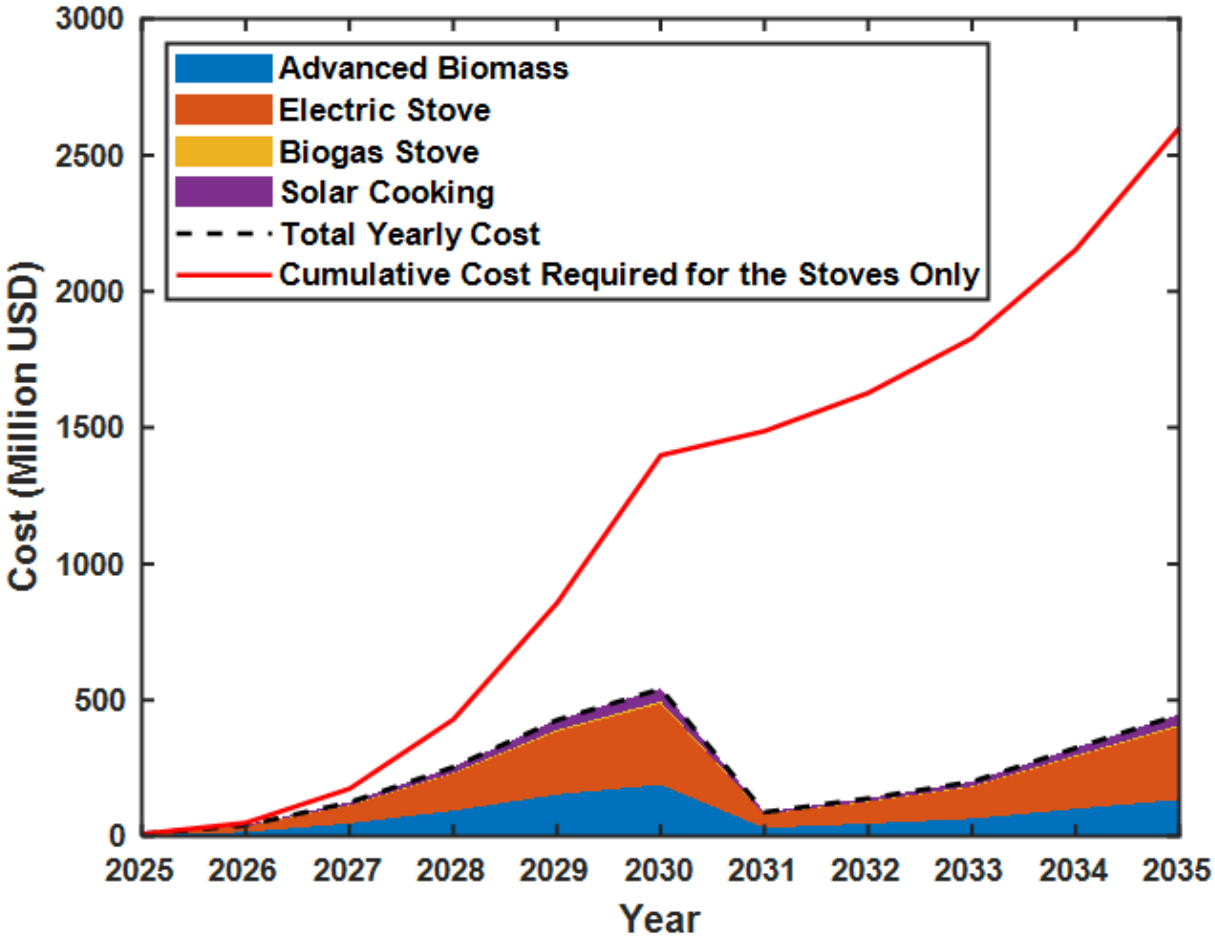

Figure 7: Cumulative and Yearly Cost Required for the Stoves Only (2025 – 2035)

The total yearly cost increases from US$9.08 million in 2025 to US$447.70 million by 2035, with electric and advanced biomass stoves representing the largest portions of annual spending. Biogas and solar cooking solutions contribute smaller but gradually rising shares. Over the 11-year period, the total cumulative cost amounts to approximately US$2.6 billion, highlighting the significant financial resources required to scale up clean cooking access across the country. However, when factoring in additional costs for crucial program activities beyond the cookstoves themselves such as awareness campaigns, capacity building, monitoring, and distribution infrastructure the total investment required increases. These added costs are estimated at 30% of the cumulative cookstove cost, amounting to US$780.42 million, which brings the total projected expenditure to US$3.38 billion.

3.3. Investment Timeline and Milestones

The estimated cost per year for implementing clean cooking technologies in Ethiopia from 2025 to 2035 is detailed in the diagram above. The total projected cost over this period is $2,601,393,262 USD. In 2025, the investment begins at $9,080,964 USD and rises steadily each year reaching $40,648,666 USD in 2026, $125,098,469 USD in 2027, and $254,545,538 USD in 2028. The upward trend continues, with costs increasing to $427,300,443 USD in 2029 and peaking at $541,960,496 USD in 2030. After this peak, the annual cost drops significantly to $89,194,440 USD in 2031, then gradually rises again to $139,746,498 USD in 2032, $201,076,242 USD in 2033, $325,039,970 USD in 2034, and finally $447,701,536 USD in 2035.

Based on these annual estimates, the overall cost for each implementation phase can be summarized as follows: Phase 1 (2025–2027), focused on foundations and early scaling, requires a total investment of $174,828,099 USD. Phase 2 (2028–2030), which covers expansion and consolidation, is the most resource-intensive, with a total cost of $1,223,806,477 USD. Phase 3 (2031–2035), aimed at achieving 75.87% access and ensuring sustainability, has a total estimated cost of $1,202,758,686 USD. As shown in the diagram, the cost trajectory highlights a significant ramp-up in investment during the middle years, followed by a temporary decrease and a renewed increase toward the end of the period. This pattern reflects the phased approach needed to scale up clean cooking access and sustain progress through to 2035.

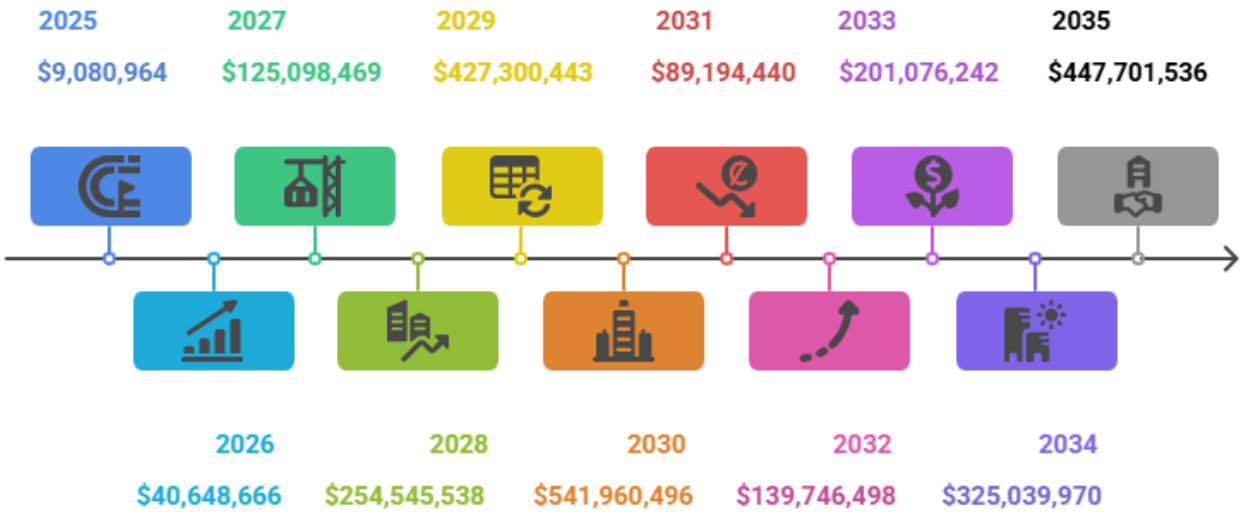

Figure 8 : Estimated Cookstove Cost (2025 - 2035)[7]

Chapter 4: Past and Current Funding Landscape

4.1. Historical Investment in Cookstove Projects (2004–2024)

Understanding historical funding patterns for cookstove initiatives in Ethiopia is essential for informing future investment planning in the clean cooking subsector, as it helps identify reliable past and potential future funders, assess various means of financing such as grants, loans, government contribution, private sector investments, carbon markets, and public-private partnerships and ultimately supports the development of realistic, targeted, and sustainable investment strategies. Thus, data were collected from 2004 to 2024 to obtain detailed information on each project or program, including the name, implementing organizations, funding source and type, funding mechanism, amount, project timeline, status, geographic and technological focus, incentive

[7] Modeling Exercise and Develop National Targets to Improve Access to Clean Cooking Energy, MoWE and UNDP (2025)

mechanisms, type of intervention, number of stoves disseminated, CO_2e saved, beneficiaries, objectives, and data sources.

Based on the data collected from 2004 to 2024, a total of 23 projects were identified as linked to clean cookstove initiatives in Ethiopia 16 of which were directly focused on cookstoves, led by various organizations, while the remaining 7 were cookstove-related projects that received carbon finance. The 16 direct cookstove projects together with a very small portion of private sector investment mobilized approximately USD 131,930,905 , while the carbon-financed projects raised an additional USD 16,230,000, bringing the total funding to nearly USD 131.9 Million. These resources were obtained through a mix of grants, loans, government contributions, private sector investments, and carbon financing, supporting a wide range of activities.

The projects implemented a wide range of activities to promote clean energy and improved cookstove adoption (2004 – 2024). Key interventions included the distribution of improved cookstoves (ICS) and the establishment of revolving funds to support cookstove distribution, capacity building, equipment purchasing, and technical support. National-level programs focused on establishing and supporting program offices, building institutional capacity, promoting standards, developing local entrepreneurs, strengthening stove performance measurements, and conducting research and evaluation. Biogas initiatives emphasized installation, promotion, and marketing, as well as the development of biogas slurry utilization, financial support, and integration with sanitation and health improvements. Market-based approaches were adopted, such as business coaching, access to finance for entrepreneurs, innovation funds, and results-based financing to encourage higher-tier clean cooking solutions. Technology transfer, capacity building, and policy support were provided for both producers and end-users, with attention to the integration of solar and other renewable energy systems.

Efforts also targeted market development through business development support, consumer subsidies, and awareness campaigns, ensuring that producers and end-users benefited from subsidized prices and improved market access. Capacity development, policy and strategy revision, standard enforcement, sector coordination, and stakeholder engagement were central to many programs. Social impacts were addressed through women's empowerment, health benefits, and value addition in the clean cooking value chain. Pilot interventions, subsidies, awareness-raising campaigns, research, and policy support further strengthened these initiatives. Additional measures included free appliance distribution, energy vouchers, user trials, and appliance performance pilots. Experience sharing programs, community campaigns, and integrated clean cooking solutions such as fan-forced cookstoves, biomass pellets, and biogas projects were also implemented. Overall, these projects combined technology, finance, market development, capacity building, and policy reform to create sustainable, self-sustaining markets for clean energy and improved cookstoves, contributing significantly to environmental protection, economic growth, and improved household well-being.

The total funding for clean cooking projects from 2004 - 2024 amounts to ~$131,930,905, based on the historical funding landscape, collected data, and data analysis. The projects linked to cookstoves and carbon credits generated a significant amount of funding. Considering the overall funding amount in those years, ~$105,762,091 (80.16%) came from grants and ~$16,230,000 (12.30%) from carbon finance. The remainder includes loans (1.96%), government contributions (2.66%), and private sector investment (2.91%).

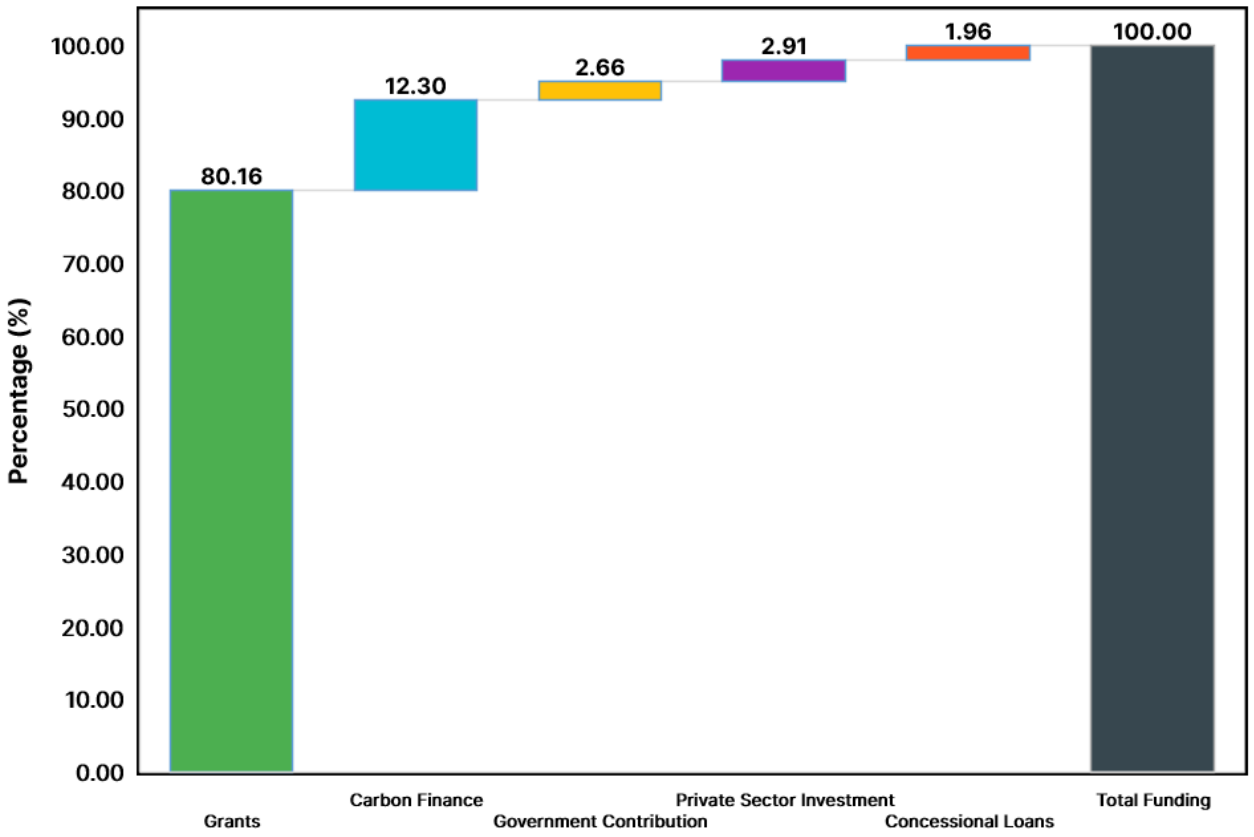

Figure 9 : Historical Funding Sources for Cookstove Projects in Ethiopia (2004-2024)

This heavy reliance on grants and to a smaller extent carbon finance for cookstove projects can be explained by several factors. Clean cooking solutions often involve high initial costs for building infrastructure, manufacturing high quality clean cooking technology, and conducting community outreach, which can be too expensive for the target populations, primarily low-income or rural areas. As a result, grants have historically been the most practical source of funding and have significantly supported the sector. Additionally, the financial benefits of these projects often take time to materialize, especially in underserved regions. This delay makes them less attractive to private investors and microfinance institutions or banks, which typically seek quick returns and charge high interest rates. Many of the rural communities that benefit from clean cooking technologies also lack access to formal financial services, which makes repaying loans difficult and risky. Finally, clean cooking projects are often viewed as integral to broader social and environmental objectives, such as improving public health and reducing carbon emissions, rather than as profit-driven ventures. This perspective justifies the heavy reliance on grants, as such funding provides the necessary support to achieve the long-term social and environmental goals of these initiatives. However, excessive dependence on grants can also pose challenges, including limited scalability, vulnerability to shifts in donor priorities, and a lack of incentives for private sector participation and innovation. For these projects to be sustainable in the long run, it is important to have diversified sources of finance by balancing the use of grants with the promotion of market-based solutions and encouraging investment from a variety of stakeholders.

Despite their vital role in improving health, reducing environmental impact, and enhancing social outcomes, cookstove projects received only about 2.31% of the funding allocated to electricity

infrastructure $131.9 million compared to over $5.7 billion (2004 – 2024). This stark funding disparity overlooks the opportunity to enhance system-wide efficiency and grid performance through the integration of electric cookstoves with electricity projects. High-efficiency appliances like induction stoves significantly reduce energy losses and cooking time, ease grid strain, and support better load management. Integrating these technologies into electrification efforts creates a virtuous cycle expanding energy access, improving health, and optimizing infrastructure use. Therefore, allocating a portion of electricity project funding specifically for the electric cookstove dimension should be a core component of energy planning, ensuring inclusive and efficient energy transitions.

4.2. Key Milestones in Cookstove Initiatives

The implemented cookstove programs have delivered significant benefits across sustainable development. They have evolved from simple improved cookstove distribution to market-based approaches with diverse technologies and financing. Key achievements include environmental protection by reducing deforestation and greenhouse gas emissions, and health improvements from lower indoor air pollution.

These initiatives have boosted local economies by developing manufacturing capabilities and creating self-sustaining markets for clean cooking technologies. Support for SMEs through capacity building, product development, and market linkages has been central, with result-based financing encouraging innovation and growth. Technical assistance has improved product quality and business operations, fostering entrepreneurship, job creation, and a stronger clean energy value chain.

4.3. Major Historical Funding Sources

The funding landscape for cookstove initiatives in Ethiopia reveals that bilateral donors contributed the largest share, accounting for approximately 60% of the total fund, while multilateral institutions contributed around 40%. This substantial support from bilateral and multilateral sources underscores the importance of government-to-government cooperation and international development institutions in advancing energy access. In addition to these, carbon finance mechanisms, foundations, and private sector investments have supplemented funding, often overlapping with the main sources through co-financing or implementation partnerships.

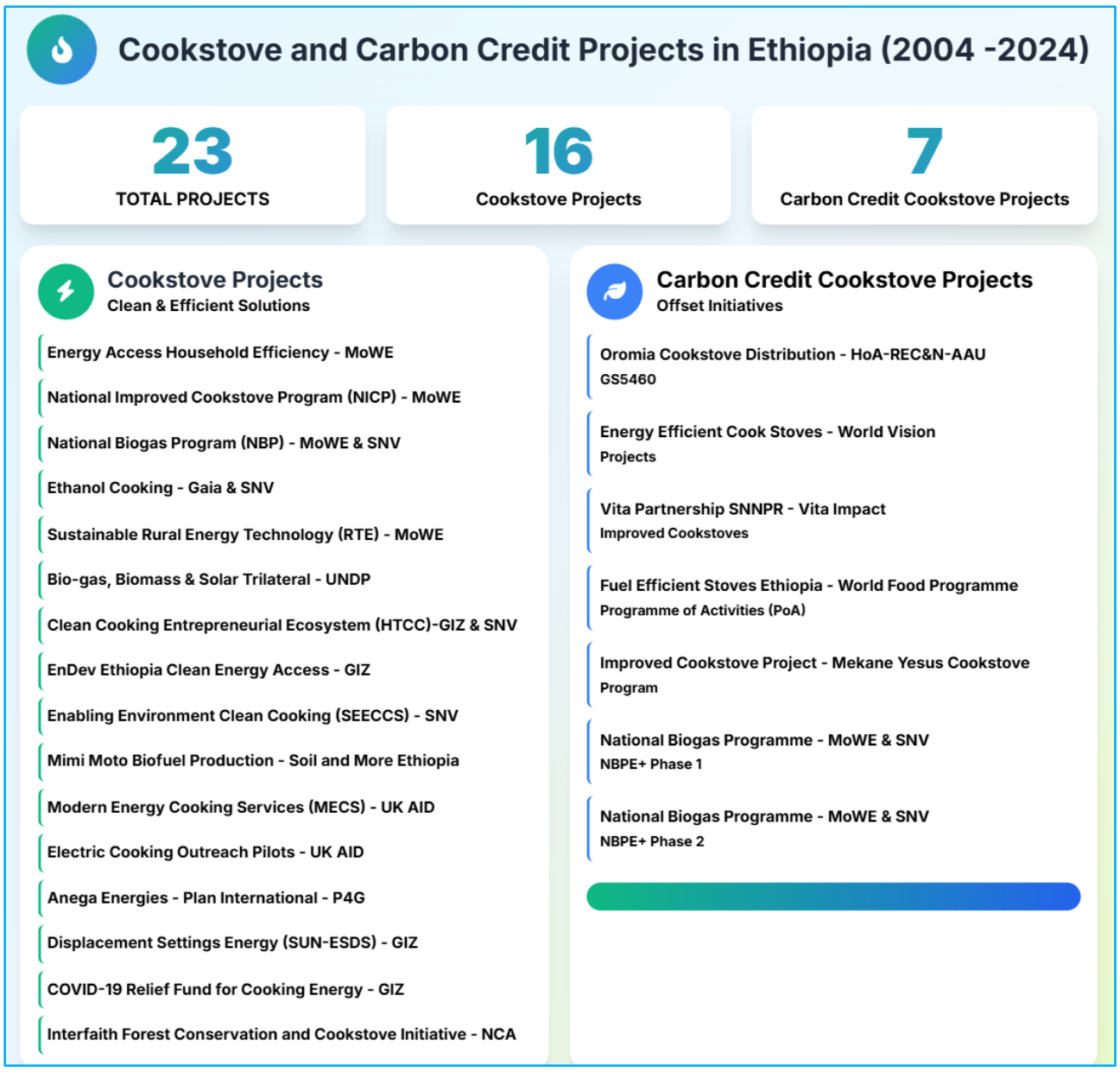

Figure 10 : Major Historical Cookstove Funding Sources and Projects (2004 - 2024)

Multilateral Projects

- Energy Access Household Energy Efficiency Improvement Project (Ethiopian Rural Energy Development and Promotion Center, MoWE; World Bank)
- The National Improved Cookstove Program (NICP) (MoWE; BARR Foundation, UNDP, Norwegian Embassy)
- National Biogas Program (NBP) (National Biogas Program, MoWE; Bilateral and Multiple donors including DGIS, EU, SNV, Hivos)
- Strengthening the Entrepreneurial Ecosystem for Clean Cooking (HTCC) (GIZ, SNV, RVO)
- Ethanol Cooking (Gaia Association, SNV; Holistic Feasibility Study for a National Scale-up Program)

- Promoting Sustainable Rural Energy Technology (RETs) for Household and Productive Use (UNDP, MoWE)
- Bio-gas, Biomass and Solar Trilateral Cooperation : (UNDP; Ethiopia-China-Sri Lanka Renewable Energy Transfer Project)

Bilateral Projects

- Advancing Clean Energy Access in Rural Ethiopia – EnDev Ethiopia (GIZ, Germany, Netherlands, Norway, Switzerland)
- Strengthening Enabling Environment for Clean Cooking Sector (SEECCS) (Netherlands Enterprise Agency, SNV)
- Modern Energy Cooking Services (MECS) Programme – Ethiopia Research and Innovation Project (University of Surrey, AAIT, CLASP, UKAid/FCDO)
- Electric Cooking Outreach Pilots in Ethiopia (MECS Programme, CLASP, Modern Energy Cooking Ethiopia Working Group, UKAid/FCDO)
- COVID-19 Relief Fund for Cooking Energy and Off-Grid Solar Sectors in Ethiopia (GIZ, DBE)
- Energy Solutions for Displacement Settings Ethiopia (SUN-ESDS)(GIZ, UNHCR, ARRA, MoWE)

Carbon Projects

- Oromia Cookstove Distribution Project (GS5460) (Horn of Africa Regional Environmental Center & Network (HoAREC&N); Oromia Coffee Farmers Cooperative Union; Prefinance)
- Energy Efficient Cook Stoves Projects (World Vision Australia, Sweden Energy Agency)
- Vita Partnership's SNNPR Improved Cookstoves Project (Vita/Irish Aid Organization, UN/IFAD)
- Mekane Yesus Cookstove Program (EECMY-DASSC, various bilateral and foundation funding)
- Fuel Efficient Stoves for Ethiopia Programme of Activities (PoA): (World Food Programme (WFP); Ministry of Agriculture, Ministry of Environment and Forest, Ministry of Water and Energy)

Private Sector

- Various private sector actors have invested their own money and received grant funding to support interventions such as decentralized biofuel production, high-efficiency clean cookstove projects, and market-based solutions, often gaining additional incentives through results-based financing (RBF), carbon finance, and innovation funds.

It should be noted that, while there are slightly more multilateral projects by number (2004 - 2024), bilateral projects have contributed a larger share of the overall funding .Recently, the global trend has shifted toward more complex funding arrangements that combine multiple sources, rather than relying solely on either multilateral or bilateral funding.

4.4. Summary of Major Activities Supported by Cookstove Initiatives Funding in Ethiopia (2004 - 2024)

The allocated program funds for cookstove initiatives in Ethiopia were used to implement a range of activities aimed at enhancing access, adoption, and sustainability of majorly improved cookstove

solutions across the country (2004 – 2024). The funding supports interventions not only for cookstove dissemination but also for building institutional frameworks, market systems, behavioral change, supply and demand side support, and evidence-based learning. Below is a summary of the major activity areas carried out under various cookstove initiatives.

Table 2 : Summary of Major Activities in Cookstove Initiatives in Ethiopia (2024 – 2024)

Major Activity Area	Summary of Activities
Distribution and Market Development	– Large-scale dissemination of clean cooking solutions – Support to local producers and suppliers with materials, logistics, and tools – Development of sustainable market and supply chains – Support for enterprise development and entrepreneurship, including local manufacturing support
Capacity Building and Institutional Support	– Training for producers, technicians, entrepreneurs, and public officials – Business development services and mentorship – Strengthening institutional capacity at local, regional, and national levels – Establishment and coordination of national and regional program offices
Awareness Creation and Behavior Change	– National and community-level awareness campaigns – Promotion of Improved Cookstove benefits & practice – Implementation of Information, Education, and Communication and Behavior Change Communication strategies
Financial Access and Sustainability	– Facilitating access to finance for both producers and users – Establishing links with microfinance institutions – Supporting sustainable enterprise development – Leveraging carbon finance mechanisms to support clean cooking programs
Policy Development and Coordination	– Drafting and supporting implementation of clean cooking policies, strategies, and regulations – Developing standards and quality assurance systems – Coordinating multi-stakeholder platforms and national programs
Technical Support and Demonstration	– Providing technical assistance, maintenance, and after-sales services – Demonstrating integrated clean energy models – Developing technical manuals and user support tools – Strengthening stove performance testing and measurement capabilities
Research, Monitoring and Evaluation	– Conducting studies on alternative fuels, market dynamics, and user needs – Assessing feasibility, scalability, and impact of interventions – Supporting R&D for innovation and improved performance – Implementing monitoring, evaluation, and learning systems for adaptive program management

4.5. Current Financial Landscape and Opportunities ahead

Ethiopia's cookstove sector has attracted support from a wide range of influential donors NGOs and development partners who have played a key role in funding, technical assistance, and carbon

finance. These actors have contributed to expanding access to clean cooking solutions, improving household energy efficiency, and advancing climate and health co-benefits across the country.

The most influential donors and development partners engaged in Ethiopia's cookstove landscape are:

- World Bank, UNDP, Africa Development Bank, European Commission (EU), German Agency for International Cooperation (GIZ), Netherlands Development Organization (SNV), the Netherlands Government through RVO, the Norwegian Government, UK Aid/FCDO, Norwegian Church Aid, Irish Aid, Swedish International Development Cooperation Agency (SIDA), World Vision, VITA, and The Horn of Africa Regional Environment Centre and Network - Addis Ababa University (HoA-REC&N-AAU) – longstanding and major funders and partners of clean cooking programs in Ethiopia.
- BARR Foundation – a philanthropic partner supporting innovation and scaling in improved cookstove initiatives.
- DGIS/Netherlands, Irish Government, GIZ, SNV, and Hivos – bilateral and technical partners contributing funding, policy development, and implementation support.
- Private sector partners and carbon credit intermediaries – including Fair Climate Fund, CO_2 balance, World Vision, and WFP, who drive results-based finance through carbon credit mechanisms and support project implementation at the community level.

Opportunities Ahead

Several significant initiatives present future opportunities for financing clean cooking in Ethiopia, particularly through climate and sustainable energy funds:

- **The $40 billion Africa Energy Fund:** Launched at the Mission 300 Africa Energy Summit, this fund aims to provide 300 million people in Africa with access to cleaner, more reliable energy by 2030, aligning with sustainable energy solutions, including clean cooking. Backed by institutions like the World Bank ($22 billion), African Development Bank ($18.2 billion), Islamic Development Bank ($2.65 billion), and OPEC Fund ($1 billion), Ethiopia can potentially access this fund by developing clear strategies and presenting viable, bankable projects. The Mission 300 initiative itself focuses on accelerating electrification and providing clean, reliable, and affordable energy access.
- **Accelerating Sustainable and Clean Energy Access Transformation (ASCENT) Program:** This multi-phase program aims to accelerate sustainable and clean energy access for 100 million people in up to 20 countries across Eastern and Southern Africa over seven years. It anticipates outcomes including improved health and reduced time spent on cooking chores.
- **Distributed Access through Renewable Energy Scale-Up Platform (DARES):** A World Bank initiative to accelerate electrification in Africa towards universal access by 2030. It calls for joint action by government, private investors, and development agencies to solve immediate needs while developing distributed renewable energy solutions.

4.6. Historical Funding Sources and Mechanisms

Ethiopia's cookstove sector is supported by a range of funding sources and financial mechanisms aimed at promoting clean cooking technologies, enhancing access for low-income households, and building a sustainable market ecosystem. Over the years, the funding landscape has evolved from traditional grant-based models to more diversified and performance-driven approaches. These mechanisms not only provide the capital needed for production, distribution, and consumer access but also encourage innovation, local enterprise development, and long-term sector sustainability.

Historical Funding Sources and Mechanisms:

- **Grants and Technical Assistance:** This remains the dominant funding model, particularly from multilateral and bilateral organizations and philanthropic foundations, supporting project design, capacity building, and early-stage implementation.
- **Loans and Results-Based Financing:** Institutions like the World Bank, African Development Bank and European Union have increasingly adopted results-based financing and commercial lending approaches, particularly for scale-up initiatives and infrastructure investments.
- **Carbon Credit Finance:** Cookstove projects receive prefinancing or partial funding through the sale of carbon credits, often facilitated by international carbon credit buyers and intermediaries. Efficient cookstove and forest-related projects in Ethiopia already receive carbon credits, and leveraging that experience is crucial to tapping carbon credits as a funding source. Carbon projects not only help reduce emissions but also lower the cost of clean cooking, making clean cookstoves more affordable through the sharing of carbon revenue.
- **Market-Based and Blended Finance:** There is growing emphasis on integrating business coaching, commercial capital (such as private equity, venture capital, and impact funds), and user-based financing models like revolving funds or installment payments, especially to support higher-tier cookstoves and small enterprises.
- **Consumer Incentives and Subsidies:** Between 2004 and 2024, clean cookstove adoption was accelerated by direct subsidies (covering 50–80% of costs), revolving funds, and innovative financing (private equity, venture capital). Programs used market-based approaches, business coaching, and technical support to foster local production and enterprise growth. Additional incentives included carbon credits, free appliance distribution, energy vouchers, and awareness campaigns, making clean cooking solutions more affordable and accessible, particularly for vulnerable households. Expanding and tailoring incentives will be key to achieving universal access to clean cooking solutions by reducing upfront costs, supporting local enterprise growth, and ensuring affordability for even the most vulnerable households.

4.7. Financing gaps and key challenges of the Clean Cooking Sector

Several significant financing gaps and key challenges persist in the Ethiopian cookstove sector despite years of substantial investment. Heavy dependence on external donor funding, with limited local contributions and low government contributions, raises concerns about long-term

sustainability. The sector also suffers from limited commercial viability, as most projects rely on grants and carbon credit mechanisms while market-driven investments remain nascent. End-user affordability is a persistent issue, often requiring high subsidy levels (up to 80% in some projects) or tailored payment models, and is further complicated by the limited engagement of local financial institutions in consumer financing. Incomplete value chain development highlights the ongoing need for technical, market, business, and entrepreneurial support to foster local production and sustained sales. Policy and enabling environment constraints remain, with continued needs for regulation, standard development, sector coordination, and reliable carbon finance flows. Project developers face uncertainties in the carbon market, including verification challenges, price fluctuations, and long delays before revenue is realized. Furthermore, the transition from donor-funded programs to sustainable, market-based approaches is incomplete, and most projects only reach thousands or hundreds of thousands of households far short of the millions needed for nationwide impact. Geographic disparities also persist, as funding and project coverage are often concentrated in certain regions, leaving emerging areas underserved.

Financing Gaps & Key Challenges

Despite significant investments over the years, several financing gaps and challenges persist in Ethiopia's cookstove sector:

- **Heavy Dependence on External Funding**: Most initiatives rely heavily on donor funding with limited local contribution or with many projects reporting low Ethiopian government contributions, raising sustainability concerns.
- **Limited Commercial Viability**: Most of the sector is not yet commercially viable, with grant and carbon credit mechanisms dominating while significant market-driven investment streams remain in early stages.
- **Affordability Gap**: End-user affordability remains a critical challenge, requiring high subsidy levels (up to 80% in some projects) or tailored payment models.
- **Incomplete Value Chain Development**: Recurring need for technical, market, business, and entrepreneurial support to ensure local production and sustained sales.
- **Policy and Enabling Environment Constraints**: Ongoing needs for regulation, standard development, sector coordination, and reliable carbon finance flows.
- **Scale-Up Limitations**: Most projects reach thousands to hundreds of thousands of households, falling short of the millions needed for nationwide impact.
- **Transition to Market-Based Models**: The transition from donor-funded programs to sustainable, market-based approaches remains incomplete.
- **Limited Local Financial Institution Engagement**: Insufficient involvement of local banks & microfinance institutions in providing loans to suppleir & End-users.
- **Carbon Market Uncertainties**: While carbon finance is increasingly important, project developers face challenges with verification processes, market fluctuations, and long periods before revenue realization.
- **Geographic Disparities**: Funding tends to concentrate in certain regions with less coverage in emerging regions.

4.7.1. Innovative Financing Models for Clean Cooking Sector

Results-Based Financing (RBF): RBF uses public/donor funds to pay cookstove suppliers only after verified results (e.g. stoves distributed and used), de-risking private investment. This approach has proved effective in accelerating clean cooking uptake. For example, the World Bank reports that RBF "has been demonstrated as an effective approach" to use public resources to spur clean-cooking

markets[8]. RBF programs (often supported by MDBs or donors) set per-unit incentives that align supplier effort with outcomes, leveraging private sales while ensuring performance. Globally, RBF has become a major clean-cooking funding tool over the last decade[9], boosting sales of efficient stoves and fuels in countries from Nigeria to Kenya. In Ethiopia, an RBF window could partner with private distributors to reward verified stove/fuel sales in underserved areas, attracting investors who otherwise lack sales guarantees. By tying payments to results, RBF helps scale cookstove markets rapidly while minimizing financial risk.

Pay-As-You-Go (PAYGo) Consumer Financing: PAYGo schemes allow households to access clean cooking solutions with low or no upfront cost by paying in small installments via mobile money. Already adopted in Ethiopia's solar energy sector, this model can be extended to clean cooking technologies such as improved biomass stoves, biogas systems, electric stoves, and solar cookers. Experiences from Kenya and Uganda where PAYGo is actively used in the clean cooking sector offer valuable lessons for Ethiopia[10]. By turning large upfront costs into affordable daily or weekly payments, PAYGo expands access and provides a stable, recurring revenue stream for suppliers.

Carbon Finance / Climate Credits: Carbon credits can mobilize international climate capital for clean cooking initiatives. Under a results-based financing (RBF) arrangement, cookstove distributors can generate carbon credits by measuring the avoided emissions from each stove or fuel switch. To fully leverage carbon credits for the private sector, the carbon credit framework currently being developed by Ethiopia's Ministry of Planning and Development will be immensely beneficial. In recent years, carbon revenue has rapidly expanded: the Clean Cooking Alliance reports carbon-credit sales accounted for 22% of industry revenue in 2022 – 45 times the level of 2017[11].

Microfinance and Consumer Credit: Microloans and consumer credit lines can help finance stove purchases and fuel costs by allowing low-income households to spread payments over time. In Ethiopia, microfinance institutions (MFIs) have already provided loans for solar projects in collaboration with the Development Bank of Ethiopia. It is important to learn from these experiences and expand similar microfinance solutions to the clean cooking sector, potentially by partnering with rural MFIs or cooperatives to offer low-interest loans for stoves and fuel. Well-structured microloan programs have proven successful elsewhere because they align repayment schedules with regular fuel savings (daily or weekly), making installments manageable while also helping borrowers build local credit histories[12].

Community Savings and Cooperative Loans: Informal savings groups, like Village Savings & Loan Associations (VSLAs) or Rotating Savings and Credit Associations (ROSCAs), can finance cookstoves through pooled community funds. These groups common in rural Africa enable members to accumulate savings and take turns accessing lump sums for household investments. CARE's experience shows that VSLA members frequently use their savings to buy livelihood assets,

[8] Zhang, Y., Adams, N., Pemberton-Pigott, C. R., Pinto, A. N., Wu, J., Barnes, D. F., & Durix, L. (2023). Unlocking Clean Cooking Pathways: A Practitioner's Keys to Progress.

[9] Ritchie, A., Leary, J., Batchelor, S., & Brown, E. (2021). Results-Based Financing (RBF) for Clean Cooking: A Review of Current Evidence. Modern Energy Cooking Services (MECS) Research Report.

[10] Perros, T. (2023). The potential for pay-as-you-go liquefied petroleum gas to accelerate access to clean cooking in Rwanda and Kenya (Doctoral dissertation, UCL (University College London)).

[11] Clean Cooking Alliance. (2023). Clean Cooking Industry Snapshot 2023. https://cleancooking.org/wp-content/uploads/2023/12/CCA-2023-Clean-Cooking-Industry-Snapshot.pdf

[12] Zhang, Y., Adams, N., Pemberton-Pigott, C. R., Pinto, A. N., Wu, J., Barnes, D. F., ... & Durix, L. (2023). Unlocking Clean Cooking Pathways: A Practitioner's Keys to Progress.

including stoves and lanterns[13]. In Ethiopia's context, integrating clean cookstoves into local savings groups could mobilize community capital at scale. This model builds on strong social trust and does not burden external financiers with transaction costs. It is most effective when combined with group-led bulk purchases or community microfinance facilities, allowing multiple households to co-finance cleaner stoves through pooled resources.

The EneRSU project by Caritas Switzerland and Power-Blox AG piloted a community-driven electrification model in Oromia, Ethiopia, using a lease-to-own system for Power-Blox units in schools, health centers, and micro-enterprises. Through a Community Mobilization Fund (CMF), communities contributed down payments and installments, fostering ownership and access. The model improved services while reducing reliance on diesel. Its success, especially among MSMEs, highlights the potential to replicate similar mechanisms like a Clean Cooking Mobilization Fund (CCMF) and lease-to-own models for clean cooking, enhancing affordability, ownership, and health outcomes in rural Ethiopia[14].

Vita's Inclusive Financial Mechanism : Affordability remains a critical barrier to clean stove adoption, particularly in communities with irregular income patterns. In rural Ethiopia, where livelihoods depend heavily on seasonal agricultural harvests, many households lack upfront capital for stove purchases. To address this, Vita has established a credit facilitation model in collaboration with Rural Saving and Credit Cooperatives (RuSACCOs) community-based financial institutions operating at the Kebele level and supported by Unions at the Woreda level. Vita strengthens these cooperatives through capacity building and financial support, enabling households to access credit and defer payments until post-harvest periods. This inclusive approach ensures broader participation in clean cooking programs by aligning financing with rural income cycles.

Green Bonds and Sustainable Financing Instruments: Capital-market instruments can channel large-scale investments into the clean-cooking sector. Notably, in late 2023 BURN Manufacturing (a Kenyan stove-maker) issued a **$10 million green bond** – reportedly the first-ever green bond in Sub-Saharan Africa earmarked for clean cooking[15]. Proceeds are financing new factories and ramped-up production of biomass, electric and LPG stoves, extending life-saving stoves to millions more households[6]. Such bonds appeal to institutional investors seeking ESG returns and typically offer tax or regulatory incentives. For Ethiopia, this suggests possibilities like issuing diaspora bonds or municipal infrastructure bonds to fund cookstove programs. These market-based instruments can raise hundreds of millions by tapping domestic savings and diaspora contribution, leveraging Ethiopia's substantial global diaspora. By packaging cookstove expansion as a green investment, the government or large community mobilization could attract pension funds, impact investors, and even retail purchasers through bond offerings.

Blended Finance and Impact Funds: In practice, many successful programs use blended finance, combining concessional public capital (grants, low-interest loans, guarantees) with private equity or commercial loans. For example, donor seed funding can reduce risk for private investors in clean-cooking companies or distribution networks. Ethiopia could establish a dedicated clean-cooking investment fund or guarantee facility: donors front early losses or provide first-loss capital, while commercial investors provide the bulk of capital.

[13] Clean Cooking Alliance. (2021). Clean Cooking: A Climate Investment Opportunity. https://cleancooking.org/wp-content/uploads/2021/07/421-1.pdf
[14] https://caritasempower.com/
[15] FSD Africa. (2023). BURN issues USD 10M green bond to support clean cooking in Sub-Saharan Africa. https://fsdafrica.org/press-release/burn-issues-usd-10m-green-bond-to-support-clean-cooking-in-sub-saharan-africa

Blended Finance Lessons to be Adopted for the Clean Cooking Sector : The **Distributed Renewable Energy-Agriculture Modalities (DREAM)** project, implemented by **SNV (Lead Energy component)**, showcases a pioneering **blended finance** model that holds strong potential for replication in Ethiopia's clean cooking sector[16]. The project is financed through a mix of **40% grants**, **50% concessional loans** from the **African Development Bank (AfDB)**, and **10% private sector equity**, effectively reducing investment risk while mobilizing commercial capital to scale renewable energy solutions for agricultural productivity such as solar-powered irrigation, cooling, and processing. This structure demonstrates how coordinated financing can deliver inclusive, market-sustaining outcomes. In parallel, Ethiopia has also launched its first-ever **Independent Power Producer (IPP)** model for distributed renewable energy, with **nine pilot sites** selected to deliver a combined **4.6 MW** of off-grid power capacity. This marks a major milestone in **private-sector-led energy investment**, providing a replicable framework for small-scale, commercially viable electrification that can be extended to support clean cooking infrastructure especially for electric cooking technologies and energy-integrated community hubs. Together, these initiatives illustrate how innovative, blended financing and private sector participation can unlock transformative energy access and serve as cornerstones for the Clean Cooking Investment Plan.

4.8. Concluding Remark on Past and Current Funding Landscape

The analysis of Ethiopia's clean cooking funding landscape from 2004 to 2024 reveals a sector that has made some progress and faces huge financial challenges. With over USD 131 million mobilized across 23 major initiatives, clean cooking projects have evolved from basic stove dissemination efforts to sophisticated, market-based programs integrating carbon finance, institutional capacity building, and gender-responsive design. The overwhelming reliance on grants (over 80% of total funding) and the growing role of carbon finance (12.3%) reflect both the critical social value of clean cooking and the limited commercial viability of such projects in the absence of enabling finance and supportive policy.

Historical investments have delivered improved results in terms of improved health, reduced deforestation, and strengthened local supply chains. Programs have promoted innovation, contributed to economic development, and increased household access to modern energy solutions. The funding landscape has also diversified over time, shifting from solely bilateral and multilateral grants to include results-based financing, microfinance, community savings schemes, and emerging private sector and blended finance models.

Nevertheless, the sector continues to face significant challenges. The clean cooking subsector has received less than 3% of the funding allocated to electricity infrastructure over the same period, despite its strong alignment with public health, environmental, and energy access goals. Financing gaps persist due to end-user affordability constraints, the limited participation of local financial institutions, and the slow maturation of carbon markets. Regional disparities, fragmented project coordination, and an incomplete transition to commercially sustainable models further limit scale and long-term impact.

Despite these constraints, new opportunities are emerging. Large-scale initiatives such as the Africa Energy Fund, ASCENT, and the World Bank's DARES program offer promising avenues for Ethiopia to position clean cooking within broader energy access and climate finance agendas. Domestic financial institutions and models such as PAYGo, lease-to-own, and community financing are beginning to close affordability gaps. Blended finance models demonstrated in related sectors (e.g.,

[16] https://www.snv.org/project/distributed-renewable-energy-agriculture-modalities-dream

SNV's DREAM project) show that catalytic public investment, when paired with private capital and performance-based incentives, can create self-sustaining clean cooking markets.

To capitalize on these opportunities, Ethiopia must shift from reactive, project-by-project fundraising to a more strategic, coordinated investment approach. This includes strengthening national systems for pipeline development, preparing bankable clean cooking projects, donor engagement, and carbon market participation, while also incentivizing local banks, cooperatives, and clean cooking enterprises to play a larger role in financing. A key recommendation is to allocate a dedicated share of national electrification and climate budgets specifically for electric and clean cooking technologies, thus integrating cooking into broader energy transition frameworks. Ultimately, bridging the historical funding gap requires bold partnerships, innovative finance, and a commitment to ensuring that every Ethiopian household has access to safe, sustainable, and affordable cooking solutions by 2035.

4.9. Lessons Learned and Peer Country Comparisons: Clean Cooking Technologies Investment

Benchmarking against South Africa, Kenya, Tanzania, Ghana (Africa); India, China (Asia); and Brazil, Peru (Latin America) reveals diverse financing models. Kenya and South Africa excel in carbon finance and private sector engagement, offering scalable models for Ethiopia. Brazil and Ghana demonstrate effective public-private partnerships, while India and China rely on strong government contributions. Tanzania and Peru, like Ethiopia, are grant-heavy but show emerging diversification. Ethiopia can enhance sustainability by reducing grant reliance, scaling carbon markets, and increasing private and government involvement. Each country's financing structure is assigned a value score (1–5) based on scalability, sustainability, and alignment with Ethiopia's context.

Table 3 : Comparative Financing Models for Clean Cooking: Lessons and Relevance for Ethiopia

Country	Grants (%)	Carbon Finance (%)	Government Contribution (%)	Private Sector Investment (%)	Concessional Loans (%)	Value Score	Relevance to Ethiopia	Key Insights
South Africa	20	15	25	32.5	7.5	4/5	High	Diversified model; scalable but needs strong regulation.
Kenya	30	35	10	20	5	5/5	Very High	Innovative carbon finance; adaptable frameworks.
Tanzania	50	20	14.5	10	5.5	3/5	Moderate	Grant-heavy; emerging carbon markets.
Ghana	35	15	20	26	4	4/5	High	Balanced approach; room for carbon finance growth.
India	25	10	40	22	3	4/5	Moderate	Strong public funding; fiscal constraints may limit replication.
China	10	20	37.5	30	2.5	3/5	Low	Advanced market structure; less adaptable to Ethiopia.
Brazil	20	15	30	25	10	4/5	High	Bioenergy and PPPs model fits Ethiopia's context.
Peru	50	10	20	14	6	3/5	Moderate	Grant-driven; growing private role offers potential.

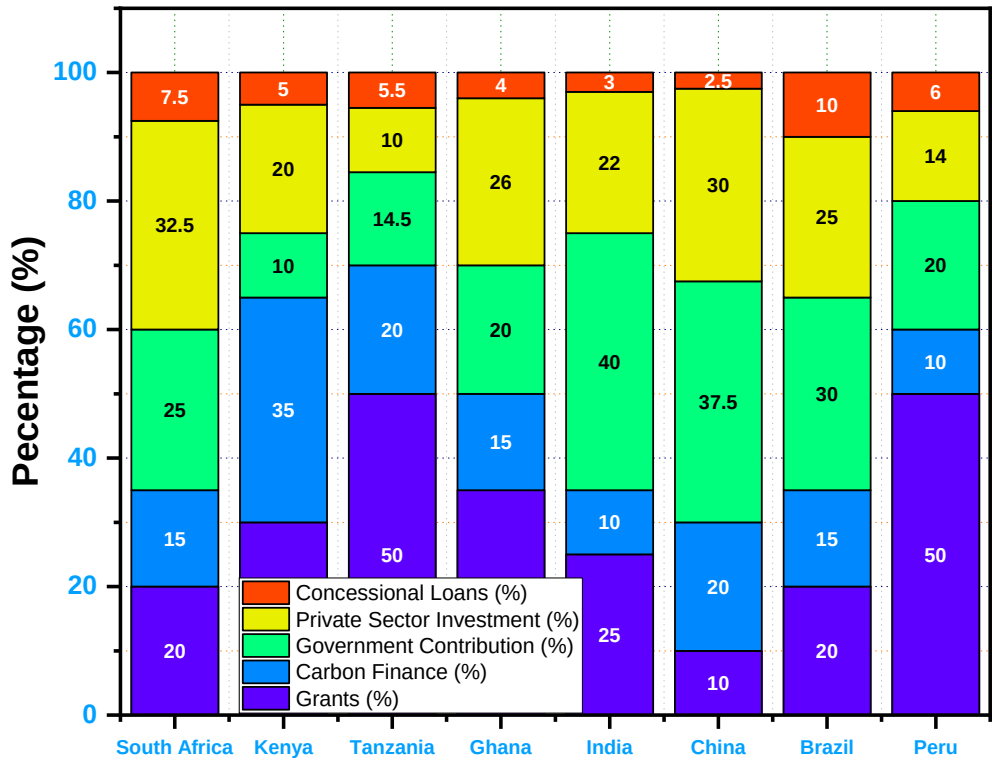

Figure 11 : Clean Cooking Funding Mechanisms by Country[17]

South Africa demonstrates a diversified financing model for clean cooking, with 32.5% private sector investment and a strong government contribution of 25%. Carbon finance (15%) and grants (20%) further balance public and private roles, while concessional loans (7.5%) play a supporting role. This blended approach offers Ethiopia a scalable template, provided robust regulatory frameworks are established.

Recommendation: Ethiopia should boost private sector participation through public-private partnerships and increase government support to achieve a similar balance.

Kenya stands out as a leader in carbon finance, which accounts for 35% of its clean cooking funding, complemented by 20% private sector innovation and 10% government support. Guided by a national carbon market framework and bilateral agreements, Kenya's model is highly relevant for Ethiopia.

Recommendation: Ethiopia should strengthen its carbon market frameworks and aim to scale carbon finance to at least 20% by 2030, following Kenya's example.

Tanzania relies heavily on grants (50%), with carbon finance contributing 20%, government support at 14.5%, and private sector investment at 10%. Concessional loans (5.5%) round out the mix. While Ethiopia's current approach is similarly grant-dependent, this limits scalability.

Recommendation: Ethiopia must diversify its funding sources and expand carbon markets through partnerships with initiatives like the Modern Cooking Facility for Africa (MCFA) and reducing heavy reliance on donor funding.

[17] https://cleancooking.org/

Ghana offers a balanced model, with 26% private sector investment, 20% government support, 35% grants, and 15% carbon finance. Concessional loans make up 4%. This approach is highly relevant for Ethiopia's transition to sustainable financing.

Recommendation: Ethiopia should enhance private sector participation and build strong public-private partnerships, modeled after Ghana.

India's financing is government-led, with 40% government contribution, 25% grants, 22% private sector investment, and 10% carbon finance, supported by 3% concessional loans. While effective, this model depends on strong fiscal capacity, which may be challenging for Ethiopia.

Recommendation: Ethiopia should increase government contribution to clean cooking programs as inspired by India's commitment.

China integrates clean cooking into its broader green finance ecosystem, with 37.5% government investment, 30% private sector funding, 20% carbon finance, and only 10% grants. Concessional loans are minimal (2.5%). While China's advanced market structures are less adaptable to Ethiopia, its integration of clean cooking into climate finance offers valuable lessons.

Recommendation: Ethiopia should focus on localized, scalable models while drawing lessons from China's integrated approach.

Brazil emphasizes public-private partnerships (PPPs) and bioenergy, with 30% government contribution, 25% private investment, 15% carbon finance, 20% grants, and a notable 10% in concessional loans. This model is especially relevant for Ethiopia given both countries' reliance on biomass.

Recommendation: Ethiopia should leverage concessional loans for large-scale projects and diversify funding sources using Brazil's PPP model.

Peru's grant-driven model (50%) is complemented by 14% private sector investment, 20% government support, 10% carbon finance, and 6% concessional loans. While its rural focus aligns with Ethiopia, scalability is limited by grant dependency.

Recommendation: Ethiopia should increase private sector investment and improve market development for long-term sustainability.

Comparative insights: Ethiopia's current financing landscape is dominated by grants (80.04%), with minimal private sector investment (2.91%), carbon finance (12.44%), and government contribution (2.66%), falling short of scalable and sustainable models. Drawing on best practices from Kenya, South Africa, Ghana, and Brazil, Ethiopia should diversify funding, strengthen carbon markets, and build robust public-private mechanisms to mobilize resources and achieve its 2025 - 2035 clean cooking goals.

4.9.1. Integrated Recommendations for Ethiopia: Clean Cooking Financing and Implementation Strategy

Each peer country offers unique contributions that can help Ethiopia strengthen its clean cooking sector. Kenya leads in innovative carbon finance and private sector engagement through a national carbon market guidebook, providing a model for scaling climate finance. South Africa demonstrates a diversified financing structure with strong public-private partnerships, useful for building Ethiopia's regulatory and investment frameworks. Tanzania shows the importance of a clear national strategy and structured donor coordination, offering lessons for Ethiopia's policy development. Ghana's balanced model and effective tax incentives highlight pathways to grow Ethiopia's local

manufacturing and private investment. India exemplifies how strong government commitment can drive large-scale adoption, supporting Ethiopia's case for increased public funding. China's technology-neutral approach and integration with green finance demonstrate how to support a variety of solutions without bias, while Brazil's success with bioenergy and concessional loans offers strategies for large-scale infrastructure financing. Finally, Peru emphasizes consumer awareness and robust monitoring systems, which Ethiopia can adopt to increase usage and track impact. Together, these country experiences provide a comprehensive roadmap for Ethiopia to build a sustainable and scalable clean cooking ecosystem. Building on these lessons, Ethiopia's phased implementation timeline (2025–2035) begins with strategy development, Clean Cooking Fund launch, carbon MRV guidelines, and initial tax reforms (2025 –2027); continues with private sector scaling, carbon market operationalization, government budget integration, and consumer campaigns (2028-2030); and concludes with consolidation, rural expansion, concessional loan deployment, and advanced MEL integration (2031–2035). Together, these country experiences and phased actions provide a comprehensive roadmap for Ethiopia to build a sustainable and scalable clean cooking ecosystem.

Table 4 : Integrated Recommendations for Ethiopia: Clean Cooking Financing and Implementation Strategy

Recommendation	Inspiration / Model	Key Actions for Ethiopia	Expected Impact
1. Develop a Comprehensive Clean Cooking Strategy with Clear Targets	**Tanzania, India**	• Implimnet the adoption targets of the raodmap & technology certification standards • Align with NDCs and energy access goals.- Outline funding mix and investment plans	Strategic clarity, improved coordination, and investor confidence.
2. Establish a Clean Cooking Fund with Diverse Financing Windows	**Kenya, Ghana, Brazil**	• Create a Clean Cooking Fund with RBF, carbon pre-financing, and innovation grants. • Structure fund into windows for entrepreneurs, distributors, and carbon credit support. • Administer through MoWE or an autonomous facility.	Unlocks blended capital, de-risks early-stage investment, and ensures equitable access.
3. Strengthen Carbon Market Frameworks and Access	**Kenya, South Africa**	• Adopt Kenya's carbon guidebook and create Ethiopia-specific MRV protocols. • Partner with MCFA, GCF,GEF,WB and AfDB for infrastructure. • Train local developers to aggregate and certify credits.	Scales carbon finance to 30%+ of funding mix by 2035.
4. Increase Government Contribution to 5–10% by 2030	**India, Brazil**	• Allocate a dedicated budget line for clean cooking under the national energy budget. • Allocate resources for technology adoption, consumer awareness, and M&E. • Link with electrification & climate programs.	Ensures policy stability, commitment, and encourages private sector investment.
5. Enhance Private Sector Participation via PPPs and Tax Incentives	**South Africa, Ghana**	• Offer tax holidays, VAT exemptions, and green bonds for clean cooking enterprises. • Incentivize local manufacturing and service models and Engage diaspora investors and social enterprises.	Grows private sector investment to at least 5% and more by 2035.
6. Leverage Concessional Loans for Infrastructure and Manufacturing	**Brazil, China**	• Partner with DFIs and multilateral banks to finance large scale cookstove hubs, manufacturing plants, and last-mile logistics. • Bundle loans with grant co-financing and credit guarantees and Prioritize large-scale, rural-focused interventions.	Finances large-scale transformation without overburdening public finance.
7. Promote Consumer Awareness and Behavioral Change Campaigns	**Peru**	• Develop culturally-sensitive outreach using local leaders and media. • Demonstrate time, health, and cost benefits. • Use gender-smart messaging and incentives for early adopters.	Increases actual usage and long-term adoption.
8. Adopt a Technology-Neutral Approach to Support All Viable Solutions	**India, China**	• Design incentives that support multiple Tier 3+ technologies: ICS, LPG, biogas, electric, ethanol. • Let local context determine technology fit. • Promote innovation competitions and result-based pilots.	Ensures solutions are context-appropriate and cost-effective.
9. Establish Robust	**Peru**	• Set up national MEL platform tracking technology use,	Builds accountability,

Monitoring, Evaluation, and Learning (MEL) Systems		health/environment impact, and gender outcomes.- Require results data as condition for disbursement under Clean Cooking Fund.	improves efficiency, and attracts performance-based finance.

Lesson from Ethiopia's Efficient Lighting Program: A Model for Scaling High-Tier Clean Cooking Technologies : In the mid-2000s, Ethiopia's electric power utility, then known as EEPCo (now Ethiopian Electric Utility and Ethiopian Electric Power), launched a successful nationwide energy efficiency intervention by distributing over 4 million compact fluorescent lamps (CFLs) to households, aiming to reduce electricity demand and alleviate power shortages. Backed by government policy, donor support, and strong public communication, this program significantly reduced peak load, delayed costly infrastructure expansion, and shifted public behavior toward energy-efficient products[18,19]. This experience offers valuable lessons for scaling high-tier clean cooking technologies: success can be achieved through a coordinated approach that includes public-private partnerships, targeted subsidies or free distribution for initial market entry, strong government leadership, and public awareness campaigns that build trust and demand. Just as efficient bulbs became widely accepted and normalized, high-tier clean cookstoves can gain traction through similar demand-side management, policy support, and smart market incentives.

Lessons from Ethiopia Government Lead Cookstove Programs (1984- Present): Financing, Market Approaches, and Impact : Based on historical data from the Ministry of Water and Energy, Ethiopia's clean cookstove initiatives have evolved over four decades, transitioning from donor-driven pilots to large-scale, market-based programs. These efforts have aimed to address household energy needs, reduce deforestation, and promote sustainable, locally-adapted technologies. The following summary highlights key lessons drawn from major projects and interventions since the 1980s.

1984–1987: CEPPE Project (Cooking Efficiency Program Planning in Ethiopia): The CEPPE project marked the beginning of improved cookstove initiatives in Ethiopia, focusing on household energy surveys, stove development, and pilot sales in Addis Ababa. This early stage established the foundation for later market and technology interventions.

1990–1992: CEINFMP Project (Cooking Efficiency Improvement and New Fuels Marketing Project) : Building on CEPPE, CEINFMP expanded to include charcoal, kerosene, and electric stoves, emphasizing private sector dissemination and the introduction of more efficient cooking practices. The project set efficiency benchmarks (at least 20% more efficient than traditional stoves) and promoted unsubsidized sales.

2004–2011: RHEEIP (Rural Household Energy End-Use Efficiency Improvement Project) : RHEEIP, funded by the World Bank and the Ethiopian government, scaled up efforts to rural and peri-urban areas, introducing a variety of stove models (Mirt, Gonzie, Opesi, Tikikil, and closed stoves). The project supported over 2.6 million stoves, trained nearly 30,000 producers (many women), and implemented revolving funds, business coaching, and technical support to foster local enterprise and market sustainability.

2004 - 2011: Energy Access Household Energy Efficiency Improvement Project : Early Implementation and Capacity Building : The Energy Access Household Energy Efficiency Improvement project, initiated in 2004, was a pioneering effort to enhance energy access and efficiency in rural Ethiopia. Funded by the World Bank accompaneid with machin fund fro the government, the project targeted six regions (Oromia, Amhara, Tigray, SNNPR, Benishangul-Gumuz, and Gambella). It focused on distributing clean cookstoves, building institutional capacity,

[18] World Bank. (2010). Ethiopia: Energy Efficiency Program. World Bank Project Documents.

[19] MoWIE (Ministry of Water, Irrigation and Electricity, Ethiopia). (2013). Energy Efficiency and Conservation Program: Progress Report. Government of Ethiopia.

and stimulating local economies through technical support and equipment purchasing. This early phase laid the groundwork for future initiatives by establishing production centers for improved cookstoves (ICS) and fostering local enterprise development.

2013–2020: The National Improved Cookstove Program (NICP) : Emergence of Private Suppliers and Commercial Finance : By 2013, the National Improved Cookstove Program (NICP) marked a significant shift toward private sector involvement and commercial finance mechanisms. Two domestic private supplier companies were active, with a third joining in 2014. The program, funded by multilateral donors including the BARR Foundation, UNDP, and the Norwegian Embassy, received a total grant of USD 5.5 million. This funding supported institutional capacity building, entrepreneurship development, and carbon finance initiatives. Market-based approaches such as innovation funds and business development support began to emerge, complementing traditional grant-based models.

2009 - 2020: National Biogas Program (NBP) : Scaling Up with Multilateral Support : Launched in 2009, the National Biogas Program (NBP) represented a comprehensive effort to promote biogas systems across Ethiopia. Initially implemented under the Africa Biogas Partnership Program (ABPP), Phase I and II received funding from DGIS (Netherlands Directorate-General for International Cooperation) totaling USD 16.8 million. In 2014, Phase III was introduced, with additional funding from the European Union and the Government of Ethiopia, bringing the total budget to USD 23 million. The program emphasized biogas installation, capacity building, marketing, bio-slurry utilization, financial support, and policy integration. By 2023, the NBP had benefited over 46,000 households. This period saw increased private sector engagement, with SNV and Hivos playing key roles in fund management and technical support.

Key Lessons Across the Years:

- **Early Projects Built Foundations** : Initial efforts in the 1980s–90s (CEPPE, CEINFMP) established technical standards and market insights, showing that cookstoves must be efficient, locally relevant, and commercially viable.
- **Local Capacity Drives Scalability** : Training and financing for local entrepreneurs—especially women through projects like RHEEIP, helped build resilient, inclusive markets.Diversified Finance Ensures Sustainability : Transitioning from donor grants to blended finance models—including private investment and carbon credits—strengthened financial independence and market growth.
- **Strong Institutions Enable Scale** : Coordination between MoWE, regional bureaus, and partners ensured policy alignment and effective scaling of lessons learned.
- **Integrated Approaches Multiply Impact**: Programs like the National Biogas Program showed that linking clean cooking with agriculture, health, and sanitation boosts adoption and stakeholder engagement.
- **MEL Systems Improve Outcomes**: Embedding Monitoring, Evaluation, and Learning early as in NICP supports adaptive management and attracts long-term investment.

Chapter 5: Investment Projection and Strategies

Ethiopia's Clean Cooking Subsector Investment Plan aims to expand clean cooking access from below 10% in 2025 to 75.87% by 2035. This ambitious target requires a total investment of $3.38 billion. Based on historical funding patterns (2004–2024) and emerging opportunities in climate finance, a diversified financing strategy is proposed for 2025–2035.

Value Proposition: Economic and Energy Savings Analysis Through Induction Technology Amid Rising Electricity Tariffs (2025-2028) : Replacing open resistor cookstoves with induction technology across Addis Ababa households presents a compelling economic and environmental opportunity. Based on the population of 5.2 million with an average household size of 4.6 persons, approximately **1.13 million households** currently use open resistor stoves consuming **912 kWh annually per household (from 2 hours daily cooking and weekly injera baking)**. Induction stoves, which are 40-50% more energy efficient, would reduce this consumption to 456-547 kWh per household annually. This efficiency translates to substantial citywide energy savings of **413-516 GWh** annually, as the total consumption would decrease from 1,030.4 GWh with resistor stoves to 515-619 GWh with induction technology. The financial implications are equally significant, with progressive electricity tariff increases magnifying the benefits over time annual savings grow from **235-293 million ETB in 2025** to **381-477 million ETB by 2028**, resulting in cumulative savings of **1.15-1.52 billion ETB** over the four-year period.

The transition to induction cooking technology represents a timely opportunity to mitigate the impact of rising electricity tariffs while advancing energy efficiency objectives in Ethiopia. While implementation will require initial investments in compatible cookware, public awareness campaigns, possible government subsidies, and electrical infrastructure assessment, the economic rationale is undeniable. The cumulative energy savings of **704-826 GWh by 2028** would substantially reduce household energy expenditure while supporting national energy efficiency goals. As electricity tariffs are projected to increase by **15% in 2026, 20% in 2027, and 25% in 2028**, the financial benefits become increasingly pronounced over time, making this transition a strategic priority for energy planners and policymakers. The analysis demonstrates that investing in this technology shift now will yield significant returns for both individual households and the broader energy ecosystem of Addis Ababa. This case showcases how inefficiency will cost us a lot, and shifting to high-efficiency stoves not only

for Addis but also for other cities is a very important issue to be considered nationally.

Adopting induction stoves attracts investors through several key advantages: they enable IoT-based technologies for collecting valuable usage data; they contribute to measurable CO_2 reduction which supports carbon credit markets; and they facilitate easy data collection for comprehensive monitoring. This digital integration creates opportunities for smart grid applications, predictive maintenance services, and consumption analytics that provide valuable intelligence for utilities and energy companies. The technology transition also supports Ethiopia's climate commitments while providing investors with transparent performance metrics that can be monitored remotely, reducing verification costs and increasing accountability in development projects.

The proposed financing mix for the period 2025 - 2035 is designed to ensure a balanced approach, combining public sector support, private sector investment, and carbon finance to drive sustainability and long-term success as shown in Figure 12. This approach reflects a strategic reduction in reliance on unpredictable grants due to global shifts in climate finance and political instability, while leveraging Ethiopia's growing experience and opportunities in the carbon market supported by emerging national frameworks and international mechanisms under the Paris Agreement. Concurrently, it promotes increased private sector engagement through blended finance models and regulatory incentives to complement declining grant levels, and strengthens government commitment to catalyze market growth, improve public health, and ensure energy equity, all of which are critical for scalable and sustainable development in the clean cooking sector.

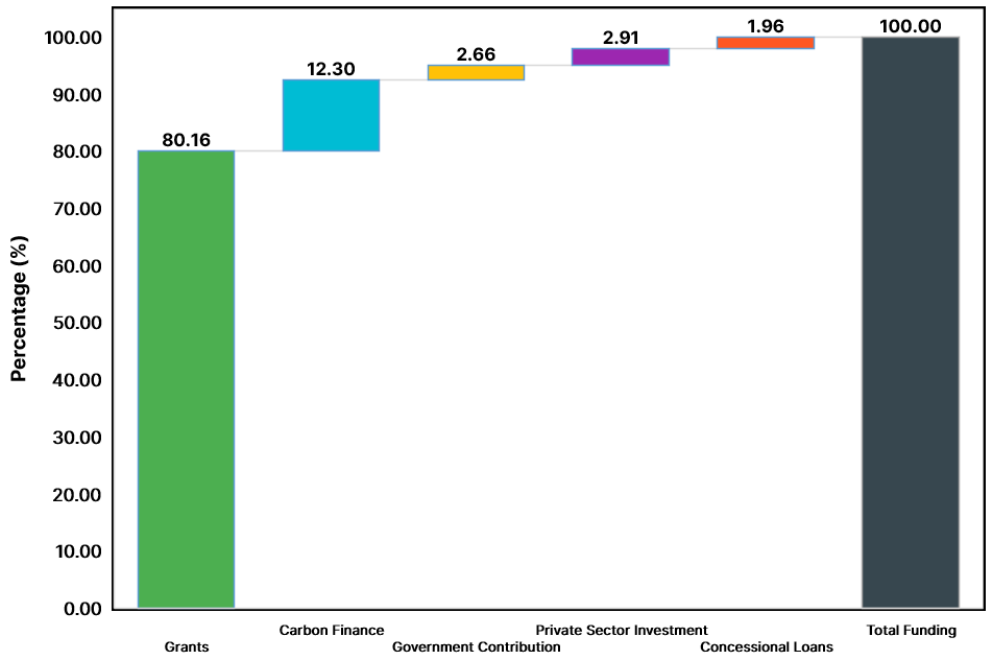

Figure 12 : Historical Allocation of Cookstove Finance by Source (2004–2024)

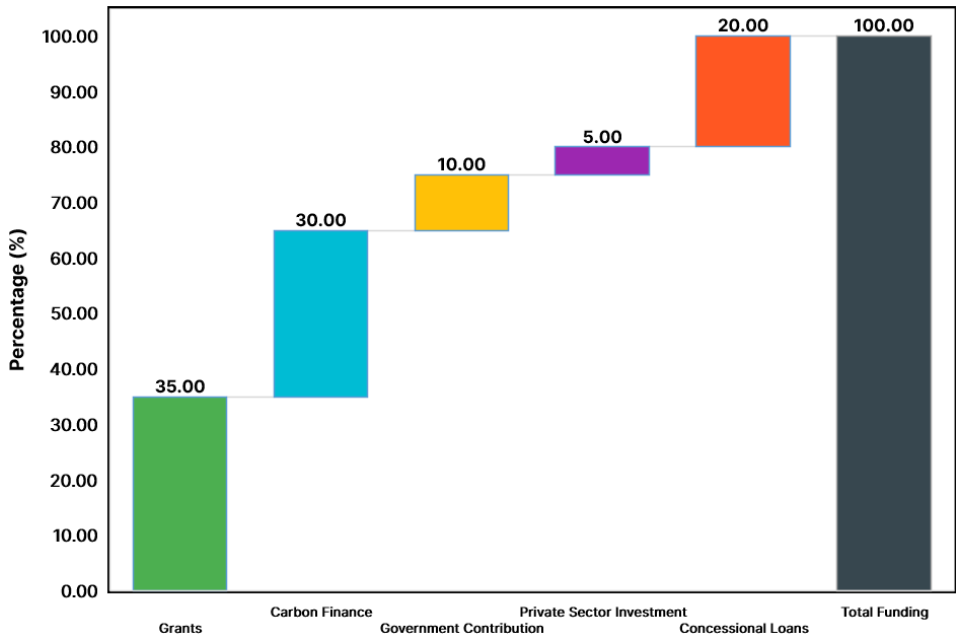

Figure 13 : Proposed Allocation of Clean Cookstove Finance by Source (2025 - 2035)

5.1. Justification for the Target Financial Mix (2025 - 2035)

The proposed target financial mix for Ethiopia's clean cooking sector (2025-2035) represents a strategic pivot from historical grant dependency towards a sustainable, diversified funding ecosystem essential for scalable impact. This involves significantly reducing the share of grants to mitigate overreliance and unpredictability, while aggressively mobilizing market-aligned resources by substantially increasing contributions from the maturing carbon market, leveraging concessional loans from global climate finance and DFIs, and catalyzing greater private sector investment crucial for innovation and long-term development. Concurrently, boosting government contribution demonstrates critical political commitment and strengthens the enabling environment, collectively creating a robust financial foundation that de-risks the sector and aligns various stakeholders towards achieving national clean cooking goals effectively and sustainably.

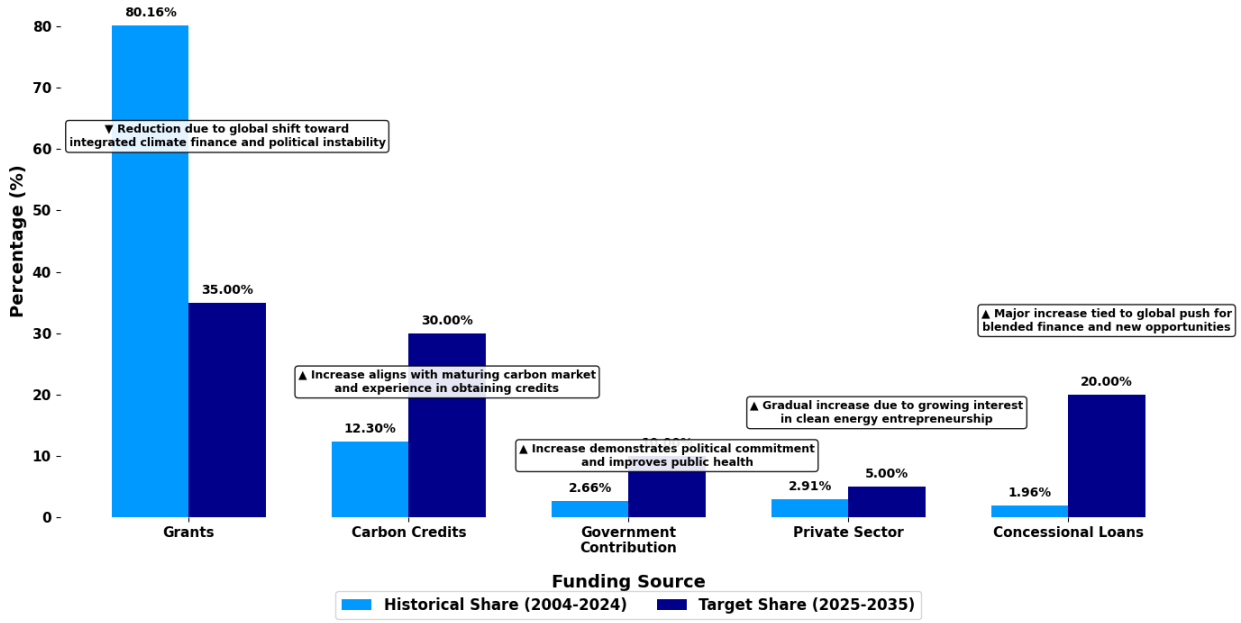

Figure 14 : Historical Cookstove Project Funding Share (2004-2024) and Proposed Clean Cooking Project Funding Share (2025-2035)

Historically (2004 – 2025), the sector relied heavily on grants, which accounted for over 80% of funding. However, this share is proposed to be reduced sharply to 35% in the target period, reflecting a global shift toward integrated climate finance and the impact of political instability on donor funding. In contrast, the share of carbon credits is proposed to more than double, rising from 12.3% to 30%, as Ethiopia leverages its growing experience in carbon markets and benefits from new frameworks and international mechanisms. Government contributions are also expected to increase substantially, from 2.7% to 10%, demonstrating stronger political commitment and a focus on public health and sustainability. The private sector's role, though still modest, is projected to grow from 2.9% to 5%, driven by increased interest in clean energy entrepreneurship and the adoption of blended finance models. Most notably, concessional loans are proposed to increase tenfold, from just 2% to 20% of the funding mix, reflecting the global push for blended finance and new opportunities from development finance institutions. Overall, this strategic rebalancing is intended to diversify funding sources, reduce reliance on unpredictable grants, and ensure the long-term sustainability and scalability of clean cooking solutions in Ethiopia.

Table 5 : Justification for the Target Financial Mix (2025 - 2035)

Funding Source	Historical Share (2004 - 2025)	Target Share (2025 - 2035)	Rationale and Justification
Grants	80.16%	35%	• ▼ Significant reduction due to global shift toward integrated climate finance and and international political instability, leading to money being shifted to secure peace. • Overreliance on grants poses risks for long-term sustainability. • Ethiopia must diversify funding sources. • Grants better suited for foundational work (awareness, piloting).

			• Reduced donor predictability necessitates alternative streams.
Carbon Credits	12.3%	30%	• ▲ Substantial increase aligns with maturing carbon market in Ethiopia. • Gained experience in obtaining carbon credits linked to cookstoves, as we generated over 16 Million dollars through several carbon projects. • The carbon credit framework of the country is being developed by the minister for planning and development in Ethiopia, and it greatly helps the carbon market. Once it is finished, it will help the sector as well. • Experiecne MRV systems support credit generation and verification. • Paris Agreement Article 6 enables direct trading. • Neighboring countries best practices provide a roadmap for Ethiopia • Attractive to both public and private investors under climate finance.
Private Sector	2.91%	5%	• ▲ Gradual increase due to growing interest in clean energy entrepreneurship. • Need for private capital to complement declining grant levels. • International success shows local production cuts costs and boosts access. • Blended finance models reduce risk and attract investment. • Requires regulatory and fiscal incentives to grow. • Critical for long-term scalability and innovation.
Government Contribution	2.66%	10%	• ▼ Government contribution must increase because: • It demonstrates political commitment. • It improves public health. • It promotes environmental sustainability. • It ensures energy equity. • It drives local economic development. • It strengthens policy implementation and coordination. • It de-risks private sector engagement and catalyzes market growth.
Concession Loans	1.96%	20%	• ▲ Major increase tied to global push for blended finance. • Many opportunities are becoming available from the World Bank and the Africa Development Bank for the clean cooking sector. The Development Bank of Ethiopia (DBE) is providing loans for

			large-scale manufacturers, and thus clean cooking manufacturing will be a part of this effort/development. • Ethiopia eligible for DFIs, climate funds (AfDB, WB,etc).

5.2. Funding Allocation and Phased Investment Strategy for Clean Cooking in Ethiopia (2025 - 2035)

5.2.1. Grant Financing Projections

Grants (35% | $1.18 billion): Catalyzing Early Deployment and Equity-Based Interventions : The proposed allocation of 40% of the financing mix to grants will be strategically utilized to catalyze foundational and high-impact activities essential for Ethiopia's clean cooking roadmap. A significant portion of these grants will fund capacity building and training programs for local manufacturers, distributors, technicians, and community health workers, ensuring the development of critical skills needed to produce, maintain, and promote clean cooking technologies. Grants will also support extensive awareness-raising campaigns and community engagement initiatives to increase adoption rates by educating households on the health, environmental, and economic benefits of clean cooking solutions. Additionally, grants will provide the necessary risk capital to pilot innovative technologies and business models, enabling evidence generation and refinement before scaling.

Furthermore, grant funding will be directed towards strengthening market development by addressing supply chain bottlenecks and establishing business incubators that nurture local clean cooking enterprises, especially in underserved rural areas. Grants will also support government agencies in developing enabling policies, standards, and institutional frameworks to facilitate roadmap implementation. Targeted subsidies or vouchers funded by grants will ensure equitable access for vulnerable households, accelerating market penetration. Finally, grants will finance robust monitoring, evaluation, and learning systems to track progress, measure impact, and inform continuous improvement. By focusing on these critical areas, the 40% grant allocation will effectively de-risk the sector, attract private investment, and lay the groundwork for sustainable, scalable clean cooking solutions across Ethiopia.

5.2.2. Carbon Finance & Pre-Financed Carbon-Linked Loans

Carbon Finance & Pre-Financed Carbon-Linked Loans (30% | $1.014 Billion): Monetizing Emission Reductions: The proposed allocation of 30% of the financing mix equivalent to $1.014 billion to Carbon Finance and Pre-Financed Carbon-Linked Loans will be pivotal in monetizing emission reductions and unlocking global climate finance for Ethiopia's clean cooking transition. Through the widespread adoption of clean cooking technologies, the program will generate carbon credits, enabling the country to tap into international carbon markets and reinvest the proceeds to further expand clean cooking access. Pre-financed carbon-linked loans will provide the upfront capital needed to accelerate deployment, especially in the program's later phases, by structuring loans that are secured against future carbon credit revenues. This approach ensures that immediate investments can be made, even before carbon credits are realized, thus overcoming initial financing barriers.

Active engagement with carbon market mechanisms and collaboration with institutions such as the World Bank's Clean Cooking Fund and the Green Climate Fund will grant Ethiopia access to critical climate finance streams. At the same time, targeted capacity building will strengthen Measurement, Reporting, and Verification (MRV) systems, ensuring accurate tracking and certification of emission reductions. As these systems mature and clean cooking technologies reach scale, the consistent

generation of carbon credits will not only finance further expansion but also establish robust, performance-based financing models. This will attract additional private sector and international investment, creating a virtuous cycle that accelerates the clean cooking transition and supports Ethiopia's climate and development objectives.

The existing experience in securing carbon credits for cookstove projects in Ethiopia is a valuable asset for scaling up efforts by involving experts who have already successfully obtained carbon credits linked to cookstove initiatives in the country. These experts are familiar with every detailed step required to secure carbon credits. Additionally, the carbon credit framework currently being developed by the Ministry of Planning and Development of Ethiopia is a significant contribution to upcoming clean cooking projects. Therefore, establishing dedicated carbon and climate finance teams within the Ministry of Planning and Development as well as the Ministry of Water and Energy should be given high priority.

5.2.3. Government Contribution

Government Contribution (10% | $380 million): Institutionalizing Commitment and National Ownership : The government's proposed contribution of 10%, amounting to $380 million, is essential for institutionalizing commitment and fostering national ownership of Ethiopia's clean cooking program. Based on international best practices, this funding will be strategically used to develop robust policies, regulatory frameworks, and capacity-building initiatives that embed clean cooking within Ethiopia's national development and climate action strategies. By creating an enabling environment and embedding clean cooking within national priorities, government funding will attract both domestic and international investments, securing the program's long-term sustainability and relevance.

Moreover, government leadership will play a pivotal role in strengthening institutional capacity and enhancing coordination among local governments, private sector actors, and other stakeholders responsible for implementing the clean cooking program. The funds will also address market barriers through demand-side interventions such as subsidies and results-based financing schemes that improve consumer affordability and stimulate uptake. Investments will be made to strengthen supply chains and support small and medium enterprises (SMEs) through business development services, enabling local production and distribution networks to scale effectively. Additionally, public funding will help de-risk private sector investments by providing early-stage capital, facilitating blended finance models, and establishing coordination platforms that enhance transparency and collaboration. By increasing the proposed government investment, Ethiopia will reduce its dependence on external funding, ensuring the program's continued effectiveness, scalability, and lasting impact on underserved populations.

5.2.4. Private Sector Investment

Private Sector Investment (5% | $169 million): Scaling Up Market Viability and Responsiveness : Private sector investment, proposed at 5% or $169 million, is vital for scaling clean cooking solutions and enhancing market responsiveness and achieving the roadmap targets by driving innovation, expanding market reach, and improving service delivery. Private companies shall invest in manufacturing, distribution, and after-sales services, which enhances the availability and quality of clean cooking technologies, especially in rural and underserved areas. By developing robust supply chains and retail networks, the private sector ensures that clean cooking solutions are accessible and affordable to consumers, helping to overcome key market barriers. Private sector engagement also fosters entrepreneurship, creates jobs, and attracts additional finance through blended finance and public-private partnerships. These combined efforts accelerate adoption rates

and contribute significantly to meeting Ethiopia's clean cooking goals, including improved health, environmental sustainability, and economic development.

5.2.5. Concessional Loans

Concessional Loans (20% | $338 million): Financing Infrastructure and Scale-Up : The proposed concessional loans, amounting to 20% or $338 million, are essential for financing the large-scale infrastructure required to scale Ethiopia's clean cooking program. These loans, provided by development institutions such as the World Bank, African Development Bank, and the European Development Bank, offer long-term, low-interest financing that supports the achievement of roadmap objectives by enabling the widespread scale-up of clean cooking solutions across the country. These loans shall be requested by fulfilling the requirements set forth by the respective development institutions. The favorable terms reduce the financial burden on the program, allowing for sustainable expansion during later phases when large-scale deployment is necessary.

Moreover, concessional loans often come with sovereign guarantees or other risk mitigation mechanisms that lower perceived investment risks, facilitating capital mobilization for critical infrastructure projects. By supporting improved logistics, supply chains, and financing channels, these loans enable the large-scale distribution and servicing of clean cooking technologies. This approach ensures that clean cooking solutions become widely accessible and sustainable, accelerating progress toward Ethiopia's clean cooking targets while leveraging proven international financing models.

Table 6 : Funding Allocation and Strategy for Ethiopia's Target Clean Cooking Investment (2025-2035)

Funding Source	Amount (USD)	Justification	Support Measures	Expected Outcomes
Grants (35%)	$1.18 billion	• Essential for de-risking early market entry and addressing foundational barriers. • Catalyzes high-impact activities like capacity building and awareness campaigns. • Ensures equitable access for vulnerable populations through targeted subsidies.	• Fund capacity building for manufacturers, distributors, technicians, and community health workers. • Support awareness campaigns . • Provide risk capital for piloting innovative technologies and business models. • Finance monitoring, evaluation, and learning systems.	• De-risked sector attracting private investment. • Increased adoption through awareness and subsidies. • Strengthened local supply chains and enterprises. • Robust policy frameworks and institutional capacity. • Scalable, sustainable clean cooking solutions.
Carbon Finance & Pre-Financed Carbon-Linked Loans (30%)	$1.014 billion	• Leverages carbon markets to monetize emission reductions. • Provides performance-based financing for medium- and long-term scale-up. • Overcomes initial financing barriers through pre-financed loans.	• Engage with World Bank's Clean Cooking Fund, Green Climate Fund, and carbon credit platforms. • Develop pre-financed carbon-linked loans secured by future carbon credit revenues. • Strengthen MRV systems for accurate emission tracking and certification. • Leverage expertise from existing cookstove carbon credit projects.	• Access to global climate finance for program expansion. • Increased carbon credit generation for reinvestment. • Robust performance-based financing models. • Attraction of private and international investment.
Government	$380	• Institutionalizes	• Develop policies, regulatory	• Enhanced policy

Contribution (10%)	**million**	national ownership and program sustainability. • Embeds clean cooking in national development and climate strategies. • Addresses market barriers through subsidies and demand-side interventions.	frameworks, and institutional capacity. • Fund subsidies and results-based financing to improve affordability. • Support SMEs through business development services. • Provide early-stage capital to de-risk private investments.	integration and institutional coordination. • Increased affordability and uptake through subsidies. • Strengthened local production and distribution networks. • Reduced reliance on external funding for long-term sustainability.
Private Sector Investment (5%)	**$169 million**	• Drives innovation, market responsiveness, and scalability. • Enhances availability and affordability through robust supply chains. • Fosters entrepreneurship and job creation.	• Invest in manufacturing, distribution, and after-sales services.	• Expanded market reach, especially in rural areas. • Increased availability and quality of clean cooking technologies. • Job creation and economic development. • Accelerated adoption through innovative business models.
Concessional Loans (20%)	**$338 million**	• Finances large-scale infrastructure for program scale-up. • Provides long-term, low-interest financing to reduce financial burden. • Mitigates investment risks through sovereign guarantees.	• Secure loans from development banks and financial institutes • Finance infrastructure like storage depots, service centers, and grid improvements. • Leverage favorable loan terms for sustainable expansion. • Support logistics and financing channels for widespread deployment.	• Scalable infrastructure for clean cooking distribution. • Increased accessibility of clean cooking technologies. • Reduced financial barriers for large-scale projects. • Sustainable expansion in later program phases.

5.3. Strategy for Mobilizing Funding Sources

This actionable financing strategy provides Ethiopia with a practical roadmap to mobilize clean cooking investments over the next decade. By starting with grants and policy incentives, enhancing credibility through carbon markets, and progressively increasing engagement with loans and the private sector, this approach ensures scale, inclusivity, and long-term sustainability. The Government of Ethiopia through the Ministry of Water and Energy should lead coordination, supported by a multi-stakeholder platform to track financing flows, outcomes, and pipeline development.

5.3.1. Mobilizing Government Contributions

Government contribution is central to building an enabling policy environment, attracting donor co-financing, and sustaining national ownership of clean cooking goals. With a proposed allocation of 10%, government funding should support subsidies for vulnerable households, consumer awareness campaigns, standards development, and operational support to the Clean Cooking Implementation Unit. This funding can be sourced through sectoral budgets in Ministries of Water and Energy,

Minister of Finance, Ministry of Women and Social Affairs, Minister of Planning and Development, Ethiopian Environmental protection Authority, Minster of Health, Minister of Agriculture. Clean cooking should be fully integrated into Ethiopia's climate and development strategies, including the Nationally Determined Contributions (NDCs), National Sustainable Energy Development Strategy (N-SEDS), Ethiopia's long-term low emissions and climate resilient development strategy (2020-2050), and Health Sector Transformation Plan and others. Concrete actions include establishing clean cooking budget lines, fiscal incentives (VAT/tariff exemptions, Note: VAT exemptions for manufacturers of clean cooking technologies should be prioritized, as they are likely to provide more direct benefits than tariff exemptions) and national programs co-financed by donors. The presence of a clear government commitment de-risks investment and strengthens donor confidence[20].

5.3.2. Mobilizing International Donor Grants

Grants play a foundational role by de-risking early-stage innovation, building markets, enabling last-mile delivery, and making technologies affordable for the poorest households. Ethiopia should target international grant providers including the Global Clean Cooking Alliance (CCA), Green Climate Fund (GCF), Sustainable Energy for All (SEforALL), GIZ - EnDev, and bilateral donors like SNV, USAID, NORAD, FCDO, and JICA[21]. Philanthropic foundations such as IKEA Foundation, Shell Foundation, and Rockefeller Foundation also provide catalytic grant capital. Ethiopia can unlock these opportunities by aligning bankable proposals with SDGs 7, 13, and 5, with NDCs Goals presenting co-benefits such as women's empowerment, respiratory health improvement, and forest preservation. Using Results-Based Financing (RBF) mechanisms within grant programs ensures accountability and outcome delivery. Bundling grants with technical assistance, policy reform, and capacity building increases donor appeal. A donor coordination platform within the Ministry of Water and Energy (MoWE) can further improve alignment and transparency.

5.3.3. Mobilizing Carbon Finance

Carbon finance offers Ethiopia a sustainable and scalable source of revenue by monetizing the emission reductions generated from clean cooking technologies. By participating in voluntary carbon markets (VCMs) and registering with credible certification bodies such as Gold Standard, Verra, or Plan Vivo, Ethiopia can generate carbon revenues to subsidize consumer prices, support operational costs, and attract private investment. To maximize these benefits, Ethiopia should develop a national Program of Activities (PoA), implement digital Monitoring, Reporting, and Verification (MRV) systems, and partner with experienced aggregators and carbon market organizations. Key partners could include World Vision, Vita Impact, the Horn of Africa Regional Environment Centre & Network (HoA-REC&N), Mekane Yesus cookstove projects, World Food Program cookstove projects, and the national biogas program, which has already secured carbon finance for cookstove initiatives. Leveraging the experience and existing success of these partners is essential for scaling up large-scale carbon projects linked to clean cooking[22].

Potential buyers of Ethiopia's carbon credits include multinational corporations such as Microsoft, IKEA, and Shell, all seeking high-integrity credits aligned with the UN Sustainable Development Goals. Ethiopia can also explore opportunities under Article 6 of the Paris Agreement to participate in international carbon trading. To ensure broad participation, especially among smaller enterprises,

[20] World Bank (2020), Funding Clean Cooking: Results-Based Financing Approaches.
[21] SEforALL (2021), Energizing Finance: Understanding the Landscape.
[22] Clean Cooking Alliance (2022), Carbon Finance for Clean Cooking.

technical assistance and pre-financing mechanisms are crucial. The carbon framework currently being developed by the Ministry of Planning and Development will play a vital role in strengthening the sector and enabling Ethiopia to fully capitalize on carbon finance opportunities.

5.3.4. Mobilizing Concessional Loans

Concessional loans are a critical mechanism for scaling up proven clean cooking business models, manufacturing, and consumer financing. These loans typically come from development finance institutions (DFIs) such as the World Bank, African Development Bank (AfDB), European Investment Bank, International Finance Corporation (IFC), and regional banks. For example, Siinqee Bank and other regional banks are launching new initiatives to provide tailored loan services for end-users and enterprises adopting clean cookstoves and solar technologies, demonstrating a strong commitment to sustainable development, strengthening local supply chains, and positioning themselves as strategic partners for scaling clean cooking initiatives. The terms of concessional loans generally include low interest rates, long repayment periods, and grace periods.

Ethiopia can access these funds for downstream infrastructure such as establishing large-scale stove manufacturing facilities, distribution networks, and improving value chain networks—as well as for upstream manufacturing and credit lines for SACCOs and microfinance institutions to on-lend to households. Blended finance, which combines loans with grants, can further reduce capital costs and improve financial sustainability. To access concessional loans, strong project preparation, feasibility studies, and creditworthiness assessments are required. Incentives like interest rate buy-downs tied to gender or social impact metrics can further enhance the viability of these investments.[23].

5.3.5. Attracting Private Sector Investment

Private investment in clean cooking remains limited but holds long-term potential. Early-stage enterprises face high capital costs, long payback periods, and market uncertainties. To attract private capital including from impact investors, venture capital, commercial banks, and corporations Ethiopia should use blended finance instruments that de-risk private involvement. These include guarantees, co-investment facilities, challenge funds, and results-based payments. Private capital is most likely to flow into scalable business models. Supporting entrepreneurs through incubation hubs, improving financial skill training, and streamlining customs and tax policies are essential. Public-private dialogue platforms and incentive programs (tax holidays, performance-based grants, Result-Based Financing) can also help private sector investment[24].

5.3.6. Leveraging Community-Based Finance Mechanisms

Community-based financing through cooperatives, ROSCAs, and MFIs can directly address affordability constraints among low-income households. Ethiopia has a strong culture of savings groups and village financial institutions, which can be used to finance clean cooking devices and fuels through group loans, lease-to-own schemes, or installment plans. Clean cooking can be embedded into existing rural savings platforms, with support from NGOs, development partners and technical assistance providers. Government or donor-backed guarantees can protect lenders from default risk, and local facilitators can help with outreach and training. Examples like the EneRSU project in Oromia show that village-level finance can successfully enable energy access. Community

[23] IRENA (2024), Renewables-Based Clean Cooking: Enabling Finance for Impact
[24] Acumen & Dalberg (2018), Accelerating Clean Cooking Solutions: The Role of the Private Sector.

finance should be integrated into national plans and linked to clean cooking enterprises to strengthen delivery models[25].

Table 7: Clean Cooking Financial Sources, Justification, and Action Plan

Funding Source	Justification	Key Actions Required
Government Contribution	Builds policy credibility, co-finances enabling infrastructure (e.g., standards, awareness), and signals national ownership for donor leverage	Integrate clean cooking into NDCs and national energy/climate strategies; allocate dedicated budget lines; implement fiscal incentives (tax exemptions, subsidies); co-finance Tier 3+ stoves
Grants	Critical for de-risking early-stage projects, funding innovation, supporting affordability, and enabling last-mile delivery in rural areas	Engage multilateral and bilateral donors (GCF, SEforALL, USAID, GIZ-EnDev, SNV,FCDO, Vita,World Vision, Irish Aid, NCA,DCA etc.); develop bankable proposals proposals aligned with SDGs , gender, health, forest reduction goals; bundle grants with capacity building, Establish experience grant writing team at every level.
Carbon Finance	Offers performance-based revenue, attracts corporate carbon credit buyers, and sustains clean cooking markets via verified climate co-benefits	Register Carbon projects; Write Bankable Carbon linked Cookstove projects, aggregate through Program of Activities (PoAs); invest in digital MRV tools; educate buyers on co-benefits; pre-finance SMEs for crediting
Concessional Loans	Scales commercially viable models with affordable capital; supports manufacturing, consumer finance, and infrastructure expansion	Prepare bankable proposals; partner with DFIs (World Bank, AfDB, IFC, DBE); blend with grants and guarantees; establish stove credit lines via MFIs/SACCOs; use green bonds or result-based loans
Private Sector	Catalyzes innovation, drives long-term market sustainability, and bridges financing gaps with scalable business models	Launch public-private investment challenge funds; provide first-loss guarantees or portfolio risk-sharing; support PAYGO, lease-to-own, and impact investor engagement
Community Finance	Increases grassroots affordability and adoption; builds local ownership through community savings and credit mechanisms	Train ROSCAs and SACCOs on stove lending; partner with MFIs for microcredit; provide product literacy and technical training; support women's groups and cooperatives

5.4. A Framework for Financial Mix Strategy in Investment Planning Integrating Requirements and Securing Strategies

The Framework for Financial Mix Strategy in Investment Planning, Integrating Requirements and Securing Strategies, as shown in Table 7, provides a comprehensive guide to navigating diverse funding avenues for Ethiopian development projects. Grants require strong alignment with funder and national priorities, demonstrable development impact, robust project design, organizational credibility, and sustainability, achieved through thorough funder intelligence, tailored proposals emphasizing local context and impact, and strong partnerships. Concessional loans depend on economic viability, solid financial projections, and creditworthiness, necessitating fundable business plans and preparation for rigorous due diligence. Carbon and climate finance demand alignment with climate policies like NDCs, verifiable greenhouse gas emission reductions, and community engagement, addressed by quantifying

[25] Power Africa (2020), Innovative Financing for Off-Grid Energy Access in Africa.

emissions, proving additionality, and developing sustainable, scalable models. **Securing government contributions** relies on aligning with national priorities, demonstrating clear socio-economic benefits, and gaining policy support through advocacy and showcasing local impact. Blended finance aims to catalyze private investment by mitigating risks with concessional funds, requiring clear financial structuring and measurable dual returns. Finally, **attracting private sector investment** hinges on a compelling business case demonstrating economic viability, market potential, a strong management team, and clear revenue models, supported by robust financial projections and investor readiness. This framework ultimately equips users to strategically approach various funders by understanding and addressing their specific requirements.

Table 8 : A Framework for Financial Mix Strategy in Investment Planning Integrating Requirements and Securing Strategies

Financial Instrument	Main Requirements for Grant	Crucial Strategies for Securing It
Grants	• Strong Alignment with Funder's Mandate & Priorities • Alignment with National/Regional Strategies • Clear, Measurable, and Significant Development Impact • Robust Project Design & Methodology • Evidence-Based Approach / Research Component • Organizational Capacity & Credibility • Strategic Partnerships & Collaboration • Sustainability & Scalability • Detailed and Justified Budget • Focus on Enabling Environment / Policy Work (if applicable) • Market Development Components (if applicable) • Capacity Building for Local Actors (if applicable) • Technology Deployment, Demonstration & Adoption Focus (if applicable) • Inclusivity and Gender Equality	• Funder Intelligence & Tailored Proposal Design • Highlight Ethiopian Context & Needs, Policy Integration • Develop a Compelling Proposal with Measurable Impact • Robust Methodology with Strategic Partnerships • Evidence-Based Approach with Research Integration • Showcase Organizational Credibility & Track Record • Showcase Strong Local Partnerships & Collaboration • Emphasize Sustainability & Scalability • Transparent Budgeting with Value-for-Money Narrative • Policy Engagement & Advocacy Planning • Market Systems Strengthening & Private Sector Linkages • Local Empowerment Focus with Training & Mentorship Programs • Tech Innovation with Demonstration Sites • Inclusive Programming with Gender Mainstreaming
Concessional Loans	• Economic Viability • Financial Projections • Collateral/Guarantees • Strong Business Plan • Due Diligence Readiness	• Demonstrate Long-Term Economic Viability • Present Clear, Data-Backed Financial Projections • Strengthen Security Offering Through

	• Creditworthiness	Collateral/Guarantees • Develop a Comprehensive and Fundable Business Plan • Ensure Due Diligence Readiness with Complete Documentation • Build and Showcase Strong Creditworthiness
Carbon and Climate Finance	• Alignment with National Climate Policies & NDCs • Measurable GHG Emission Reductions • Additionality Demonstration • Community Engagement & Beneficiary Involvement • Sustainable Technology & Scalable Model • Robust Monitoring, Reporting & Verification (MRV) System • Gender & Social Inclusion Focus • Financial Viability & Revenue Model • Legal & Institutional Capacity • Access to Carbon Market Mechanisms	• Align with Ethiopia's NDCs, or Climate Plans • Quantify Emission Reductions Using Recognized Standards • Demonstrate Additionality Through Baseline Studies and Funding Gap Analysis • Engage Communities in Planning and Implementation via Participatory Approaches • Deploy Durable, Locally Adapted Clean Cooking Technologies with Scale-Up Potential • Implement Digital Tools or Surveys for Usage Tracking and Transparent Reporting • Design Gender-Inclusive Activities That Reduce Women's Burden and Improve Health • Build a Sustainable Business Model • Ensure Organizational Compliance, Governance, and Legal Registration Readiness • Partner with Carbon Certification Bodies or Aggregators for Market Access
Government Contribution	• National Priority Alignment • Policy Support • Fiscal Space & Budget Allocation • Economic/Social Benefits • Public Acceptance & Buy-in • Institutional Capacity • Stakeholder Coordination • Long-Term Sustainability Planning	• Align with Relevant Development Plans • Advocate for Enabling Policies (Tax Exemptions, Subsidies, Standards) • Demonstrate Fiscal Responsibility and Integration into Annual Budget Cycles • Quantify Job Creation, Health Improvements, and Fuel Cost Savings • Engage Communities and Local Leaders in Awareness and Adoption Campaigns • Build Government Capacity for Implementation, Monitoring, and Reporting

		• Establish Multi-Agency Task Force or Steering Committee for Coordination • Develop Exit and Transition Plans for Sustained Post-Funding Operations
Blended Finance	• Catalytic Impact • Additionality • Clear Financial Structure • Risk Mitigation • Investor Readiness • Measurable Development & Financial Returns • Strong Governance	• Unlock Private Sector Investment • Justify Need for Non-Market Financing • Define Capital Stack Roles • Use Concessional Funds to Absorb Risks • Meet Due Diligence and Return Expectations • Track Dual-Impact Metrics • Ensure Transparent Oversight & Reporting
Private Sector Investment	• Economic Viability • Financial Projections • Collateral/Guarantees • Strong Business Plan • Due Diligence Readiness • Creditworthiness • Market Potential & Scalability • Clear Revenue Model • Management Team Strength & Experience • Risk Mitigation Strategy • Alignment with Investor's Impact Thesis • Measurable Social/Environmental Impact	• Build a Sustainable Business Model • Present Clear Financial Projections • Offer Collateral or Guarantees • Develop a Strong, Fundable Business Plan • Prepare for Due Diligence • Demonstrate Creditworthiness • Use Scalable Tech & Engage Private Sector • Include a Solid Revenue Model • Showcase Team Expertise & Track Record • Manage Risks with Concessional Support • Align with Funder/Investor Priorities • Measure Climate & Social Impact

5.5. Investment plan Implementation Roadmap

5.5.1. Phase-Based Financing Approach (2025-2035)

The implementation of Ethiopia's clean cooking investment plan will be carried out in three strategic phases from 2025 to 2035. **Phase 1 (2025–2027)** will focus on foundation building, including the finalization of national clean cooking policies, alignment of donor priorities with government objectives, and the launch of pilot programs to test business models and technologies across different regions. This phase will also prioritize the development of institutional frameworks, data systems, and capacity building. **Phase 2 (2028 - 2030)** will emphasize scale-up, marked by the deployment of capital across a diverse mix of technologies and geographies. This period will support regional expansion into underserved areas and promote greater private sector engagement through risk-sharing instruments and enabling policies. **Phase 3 (2031–2035)** will concentrate on consolidation, accelerating universal access to clean cooking solutions by deepening market penetration, scaling results-based financing mechanisms, and enhancing measurement, reporting, and verification (MRV) systems to improve transparency and attract long-term investment.

5.5.2. Key Performance Indicators

To effectively track progress and ensure accountability throughout the implementation of the clean cooking investment plan (2025 - 2035), a set of robust key performance indicators (KPIs) will be used to guide decision-making and evaluate impact. One of the primary indicators will be the **percentage of households using Tier 3 and above cooking solutions**, reflecting improvements in health, efficiency, and environmental sustainability. Equally important is the **amount of capital mobilized by source**, which will assess the success of strategies aimed at attracting grant funding, concessional debt, carbon finance, and private investment. The plan will also monitor **greenhouse gas (GHG) emissions reductions, measured in tons of CO_2 equivalent (tCO_2e)**, to quantify the climate benefits of the transition to clean cooking. Additional KPIs will include the **number of private sector actors supported**, indicating the level of market development and innovation, as well as **regional equity in access**, measured by the percentage of rural households gaining access to clean cooking solutions. Lastly, **gender parity in the clean cooking workforce and entrepreneurship** will be tracked to ensure that the transition is inclusive and contributes to broader social equity objectives.

To implement the Clean Cooking Subsector Investment Plan effectively, key actions include mobilizing diverse financing sources such as the **Clean Cooking Fund, donor contributions, carbon and climate finance, international grants, revolving funds, public-private investments, crowdfunding, and bank loans**. These financial streams should be coordinated through dedicated institutional units such as Technology Development, Marketing and Communication, Planning and Evaluation, R&D Coordination, Carbon and Climate Finance, Public-Private Partnerships, and Finance Generation. Simultaneously, a multi-stakeholder Steering Committee with expertise in carbon and climate finance should be established or strengthened to guide strategy, align efforts, and provide oversight. Together, these measures will enable systematic resource mobilization, technology adoption, private sector engagement, and performance monitoring, laying the foundation for scaling clean cooking access across Ethiopia.

Key Actions to Strengthen Implementation of the Clean Cooking Investment Plan

- **Establish a National Clean Cooking Data and Monitoring Unit**: Develop a nationwide data management and monitoring system to track clean cooking access, number of beneficiaries, stove dissemination, and CO_2 reduction. Reliable data is essential to attract investors, claim carbon finance, and guide strategic decisions. No project should be funded or implemented without a baseline data system in place.
- **Ensure Data-Driven Decision-Making**: Use real-time data to measure every performance metric in the sector, support carbon credit claims, present bankable proposals to investors, and evaluate impact effectively.
- **Promote Multi-Sectoral Collaboration**: Since the clean cooking sector intersects multiple sectors, all relevant stakeholders must be engaged and aligned from energy and health to environment, finance, and education to ensure an integrated approach.
- **Address Financing Across the Value Chain**: Financing must support not just producers and suppliers but also end-users. Tailored financial mechanisms should be developed to ensure affordability and access at all levels.
- **Create an Enabling Business Environment**:Simplify procedures, reduce bureaucratic bottlenecks, and promote ease of doing business to attract investment in the sector. This includes incentives for manufacturers, distributors, and service providers.
- **Design Government Incentives and Tax Exemptions**:The government should introduce tax exemptions and investment incentives to de-risk the sector, encourage private sector participation, and make clean cooking technologies more affordable.
- **Enhance Public Awareness and Demand Creation**: Reach the last mile with sustained awareness

campaigns. Educated and informed communities are more likely to adopt clean cooking technologies, especially when paired with flexible financial options.

- **Develop Business and Technical Skills Across the Ecosystem**: Invest in business development services and technical training to build the capacity of producers and innovators, enabling them to scale effectively and sustainably.
- **Simplify Carbon Finance Processes for Clean Cooking Projects**:Streamline carbon credit certification and reporting processes to attract more investment. Learning from neighboring countries and implementing best practices is essential to make Ethiopia a competitive player in the carbon finance market.
- **Ensure Strong Government Leadership and Investment**:Government intervention is crucial in the transition phase. This includes allocating public funding, enforcing policies that require high-standard clean cooking products, and supporting private actors with clear regulations and incentives.

Chapter 6: Clean Cooking Program Financial Allocation Strategy based on Activities

A comprehensive $3.38 billion investment, comprising $2.6 billion for cookstove acquisition and distribution costs and $780 million for program implementation costs, should drive equitable access to clean cookstoves across underserved communities, significantly reduce greenhouse gas emissions, and substantially improve health outcomes through a sustainable, scalable, and innovative funding model. This strategy is carefully aligned with the national phased targets of achieving 18% clean cooking access by 2027, 57.74% by 2030, and 75.87% by 2035.

This strategically developed funding allocation dedicates $2.6 billion to deliver affordable cookstoves through various financial mechanisms including **microfinance solutions, carbon finance opportunities, targeted subsidies, and private-sector innovation initiatives**. The complementary **$780 million program cost** allocation is designed to ensure operational excellence and long-term sustainability by prioritizing the establishment of a National Clean Cooking Unit. This unit will be supported by a robust Fund Management Unit, comprehensive activity costs spanning multiple domains, and critical enabling functions such as policy development, research advancement, and infrastructure enhancement. The allocated activity costs strategically supports all specialized sub-units of the Clean Cooking Unit at both national and regional levels, ensuring cohesive and effective program execution across all implementation dimensions. Furthermore, by leveraging carbon finance mechanisms and establishing self-sustaining revolving funds, the program secures long-term financial viability while aligning with national and international climate action goals. This approach creates a virtuous cycle, where initial investments generate ongoing returns that can be reinvested to expand the program.

The key strategic recommendations emphasize prioritizing microfinance solutions and carbon finance mechanisms to significantly reduce end-user costs while scaling distribution networks across diverse geographic regions. It is essential to strategically fund operational activities across all specialized sub-units to drive widespread adoption, measure meaningful impact, and ensure program sustainability in varied socioeconomic contexts. Furthermore, uniting all stakeholders is critical for building resilient last-mile delivery networks and fostering continuous innovation in clean cooking technologies. To effectively coordinate these collaborative efforts, particular emphasis should be placed on establishing the Clean Cooking Coordination Unit during the Short-Term phase.

This unit will serve as a central hub to streamline communication, play a critical role in preparing bankable proposals, manage funds, support regional energy offices in aligning objectives, and accelerate the implementation of clean cooking solutions across diverse regions.

6.1. Cookstove Cost Allocation ($2.6 billion)

The $2.6 billion cookstove cost allocation is strategically distributed across several key activities to maximize impact and ensure program sustainability. The largest share, approximately 40%, is dedicated to microfinance and payment plans, making cookstoves more affordable and accessible for end-users. Prefinance for carbon projects accounts for 25% of the total allocation, leveraging carbon finance to further incentivize clean cooking adoption. Subsidies represent 15%, directly reducing upfront costs for households. A revolving fund comprises 10% of the budget, maintaining ongoing financial support and future program expansion. Additionally, 5% is allocated to manufacturing and supply chain support, strengthening local production and distribution capacity, while another 5% is set aside for a private sector innovation fund to stimulate new business models and technological advancements. Collectively, these targeted investments address both demand- and supply-side challenges, paving the way for widespread adoption and long-term success of clean cookstove initiatives.

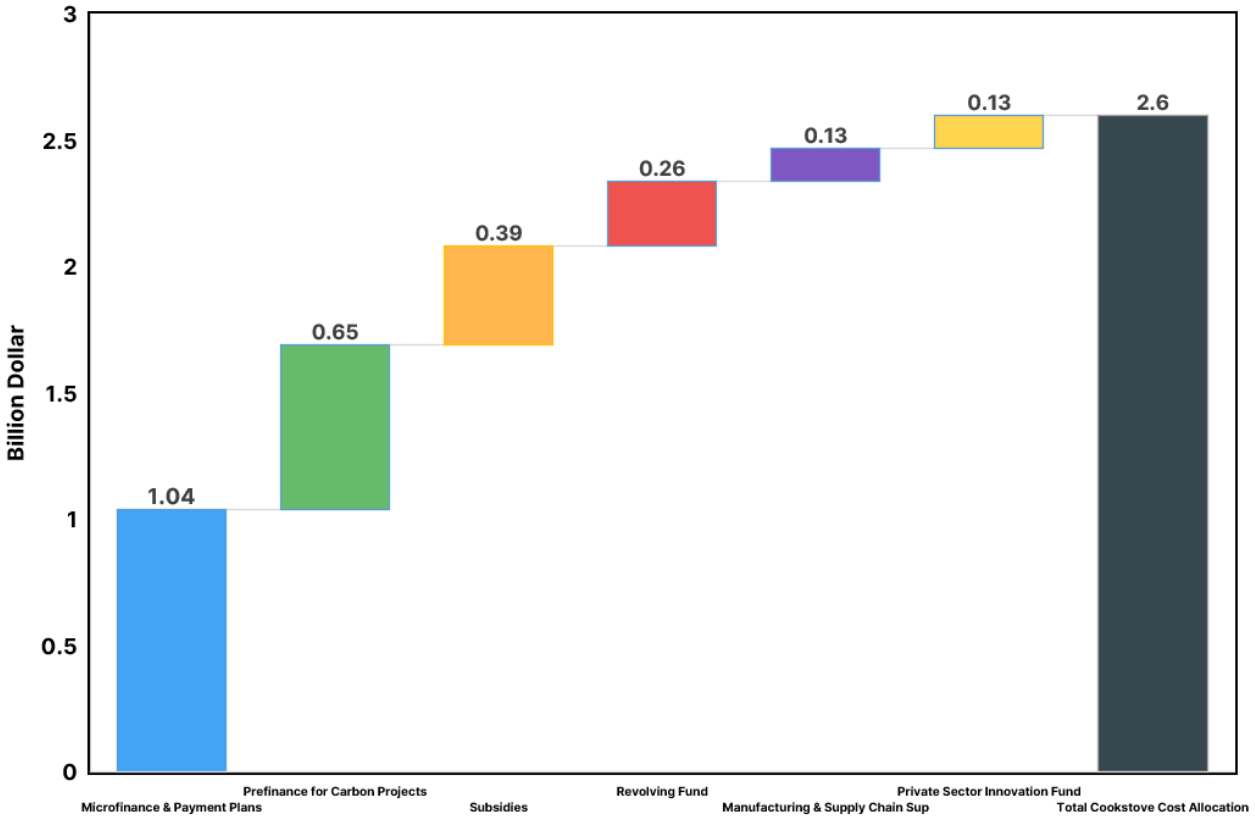

Figure 15 : Cookstove Cost Allocation

6.1.1. Microfinance and Payment Plans (~$1.04 billion, 40%)

Accessible and affordable financing solutions are essential to ensure that low-income and financially vulnerable households can adopt clean cookstoves without facing prohibitive upfront cost barriers an issue that has historically limited adoption rates across target regions. To address this, a total of

$1.04 billion (40% of the total allocation) is proposed for comprehensive microfinance programs offering low-interest loans with flexible, long-term repayment terms. Developing strategic partnerships with established microfinance institutions, community savings groups, and mobile payment platform providers will be crucial for deploying innovative financial systems, which can be directly linked to usage metrics or quantified fuel savings. These partnerships are particularly important for reaching the most financially vulnerable populations, who are often excluded from formal banking systems.

Implementation will follow a phased approach aligned with national targets, beginning with system establishment and followed by scaled expansion. This strategy will dramatically increase accessibility for millions of households from diverse economic backgrounds, with strategic loan guarantees and targeted interest subsidies covered through program funding. Flexible payment mechanisms will ensure affordability even for households with irregular income patterns, such as seasonal agricultural workers.

It is also vital to establish formal partnerships with regional and local financial institutions and digital payment platforms, launching pilot programs in at least three high-priority regions to validate the approach before full-scale rollout.

6.1.2. Advance Payment for Cookstove Distribution with Carbon Finance (~$650 million, 25%)

Prefinancing for cookstove distribution under carbon credit projects is essential, as carbon credit revenues are typically realized only after project verification and implementation. Therefore, allocating approximately $650 million (25% of the total budget) as advance payments is critical to enable immediate large-scale production and distribution of high-quality cookstoves. These funds will be directed to qualified manufacturers and distribution partners, accelerating capacity development and expanding distribution networks, which in turn reduces per-unit costs through economies of scale and makes clean cookstoves more affordable for end-users. The specialized Carbon and Climate Finance Coordination Unit will be responsible for developing and validating rigorous certification protocols and methodologies, ensuring that each cookstove deployment generates verifiable carbon credits. Systems will be established to begin recovering the initial investment after about two years of operation, once carbon revenues start to flow. This approach creates a sustainable funding cycle, enabling the program to expand beyond initial target areas without the need for ongoing external funding. In the short term, a critical step will be to finalize the national carbon credit framework and establish robust monitoring, reporting, and verification systems to guarantee credibility and maximize value in carbon markets.

6.1.3. Subsidies (~$390 million, 15%)

To make clean cookstoves affordable for the most vulnerable households especially those unable to access even flexible financing approximately **$390 million (15% of the cookstove allocation cost)** is allocated for targeted subsidies from 2025 to 2035. These subsidies will focus on rural communities, urban informal settlements, and the lowest income quintiles, using tiered structures based on verified household income and vulnerability assessments. Eligibility will be determined through partnerships with relevant government agencies and organizations, ensuring resources reach those most in need. Pilot programs in high-need areas will help refine targeting and verification systems before a broader rollout, maximizing equity and program impact across diverse regions.

6.1.4. Revolving Fund (~$260 million, 10%)

A well-designed self-sustaining revolving fund of **$260 million (2025 -2035)**, managed transparently by the Finance Generation Coordination Unit within Ethiopia's Ministry of Water and Energy, ensures continuous and expanding financing for cookstove purchases long after initial program investments. Supported by a multi-stakeholder steering committee from diverse clean cooking sectors, the fund will be replenished through affordable end-user loan repayments. Digital tracking systems and performance metrics will ensure efficient capital utilization, creating a revolving cycle of expanding impact that can operate indefinitely beyond formal program timeframes.

The fund should be launched with comprehensive digital repayment tracking systems and transparent governance structures from program inception, featuring clearly defined performance metrics and public reporting mechanisms for accountability. This sustainable financing ecosystem is designed to be scalable and transparent, continuously extending reach beyond initial program targets while ensuring maximum impact per dollar invested. The revolving structure transforms the initial investment into a permanent financing solution that continues generating impact for many years, creating an ever-expanding cycle of clean cookstove adoption throughout Ethiopia.

6.1.5. Manufacturing and Supply Chain Support (~$130 million, 5%)

Significant strategic investments in local production capabilities and efficient distribution networks must be prioritized to reduce per-unit costs while improving access to clean cookstoves in hard-to-reach Ethiopian communities. The program should allocate $130 million toward developing comprehensive local manufacturing infrastructure, including production facilities, workforce training programs, and quality control systems, alongside optimized and resilient last-mile delivery networks. This approach should reduce reliance on imported products while building valuable local manufacturing expertise and creating sustainable employment opportunities directly within target communities.

Thus, a total of approximately **$130 million (2025 -2035)** should be allocated for infrastructure investments should systematically lower production costs through economies of scale and localization benefits, while simultaneously creating meaningful employment opportunities in manufacturing and distribution sectors throughout Ethiopia. The program should ensure reliable supply chain performance even in challenging contexts through redundant distribution channels and local capacity development. Additionally, the focus on local production should reduce the environmental footprint associated with long-distance transport of finished products, further enhancing the program's sustainability credentials.

The implementation team should identify and formalize partnerships with promising local manufacturers to establish or expand production facilities, with capacity development programs launched simultaneously to ensure workforce readiness and product quality standards. These partnerships should include knowledge transfer mechanisms and technical assistance to build long-term manufacturing capabilities within Ethiopia. The program should also develop specialized distribution strategies for different regional contexts, recognizing that urban, peri-urban, and rural areas require tailored approaches to maximize efficiency and reach.

6.1.6. Private Sector Support as Innovation Fund (~$130 million, 5%)

The allocation of approximately $130 million (5% of the total $2.6 billion cookstove program budget) as a Private Sector Innovation Fund is intended to drive ongoing improvements in the affordability, durability, and user experience of clean cookstoves. This fund will provide competitive grants and low-interest loans to private companies, encouraging the development of more cost-

effective, efficient, and user-friendly cookstove designs. Oversight by a specialized Technology Development Unit within the Ministry of Water and Energy will ensure technical guidance, support for innovation pilots, and rigorous impact evaluation, so that investments yield measurable advances in stove performance, cookstove design based on cultural food preferences, and adoption. By engaging private sector expertise and fostering market-driven innovation, the program aims to accelerate technological progress and expand clean cooking solutions beyond what traditional development approaches typically achieve.

6.2. Program Cost Allocation ($780 million)

The strategically designed $780 million program cost allocation ensures operational excellence and long-term sustainability by prioritizing professional fund management, comprehensive activity costs across multiple domains, and critical enabling functions such as policy development, research advancement, and infrastructure enhancement.

6.2.1. Establishment of Clean Cooking Program Unit and Regional Coordination Structures (~$234 million, 30%)

To ensure effective implementation of Ethiopia's clean cooking transition, approximately $234 million representing 30% of the total investment will be allocated to establish a dedicated Clean Cooking Program Unit (CCPU) at the national level and regional coordination teams across all regions. This structure will serve as the central engine for strategy execution, stakeholder coordination, policy alignment, and performance monitoring.

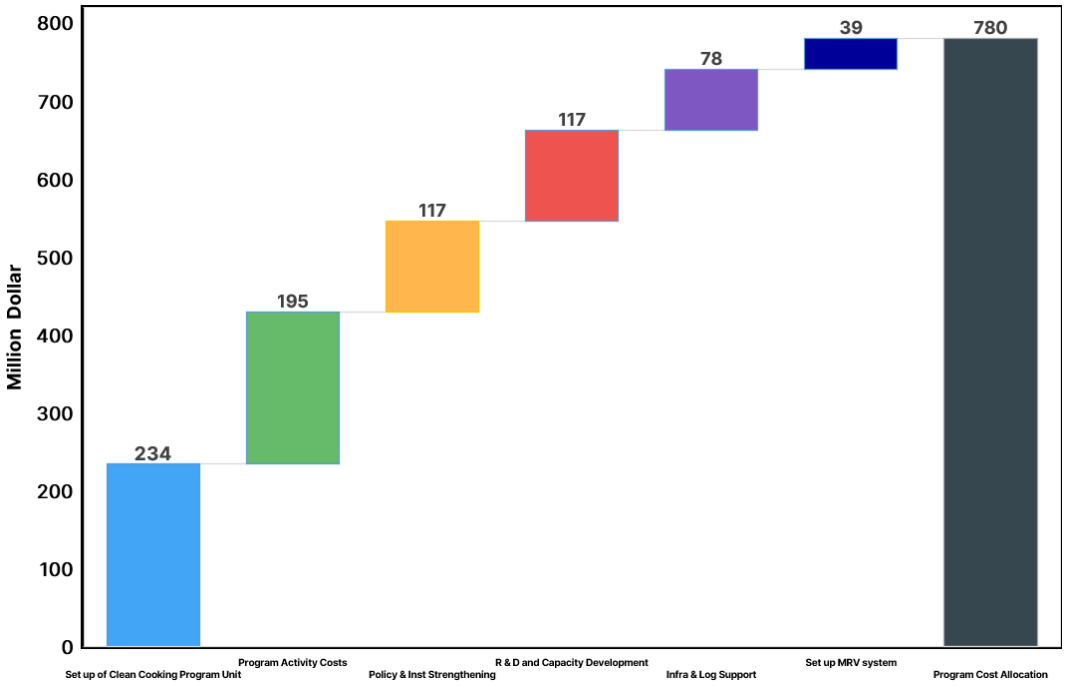

Figure 16 : Program Cost Allocation

The CCPU will be staffed with technical, operational, and policy experts and equipped with the institutional authority to coordinate across sectors and regions. A substantial share of the allocation will go toward staffing costs covering salaries, benefits, and capacity development for national and regional personnel ensuring sustained, high-quality implementation support. This investment also

covers the setup of regional implementation support units, enabling national objectives to be effectively translated into locally tailored interventions, supported by strong coordination and learning mechanisms. A significant portion of this allocation will support the development of robust fund management systems and institutional governance mechanisms to oversee the overall investment transparently and efficiently. This includes specialized staffing for financial oversight, procurement, compliance, environmental and social safeguards, and reporting functions. Staffing costs in this area encompass finance professionals, internal auditors, procurement officers, and fund administrators, all of whom are essential for upholding financial integrity and ensuring accountability. In addition, the funding will cover the procurement and deployment of advanced digital platforms for real-time program and fund tracking, financial audits, and results-based reporting. By resourcing both national and regional fund coordination capacities, this investment ensures strong controls, timely disbursements, and clear accountability across all program components. Key leadership, systems, and governance structures must be fully established before the disbursement of major funds.

6.2.2. Activity Costs (~$195 million, 25%)

The $195 million Activity Costs allocation strategically supports the diverse operational activities of all Clean Cooking Unit's specialized sub-units, driving widespread adoption, rigorous impact measurement, and long-term program sustainability across all implementation regions. The allocation is strategically distributed across specialized sub-units as follows, aligning with the framework.

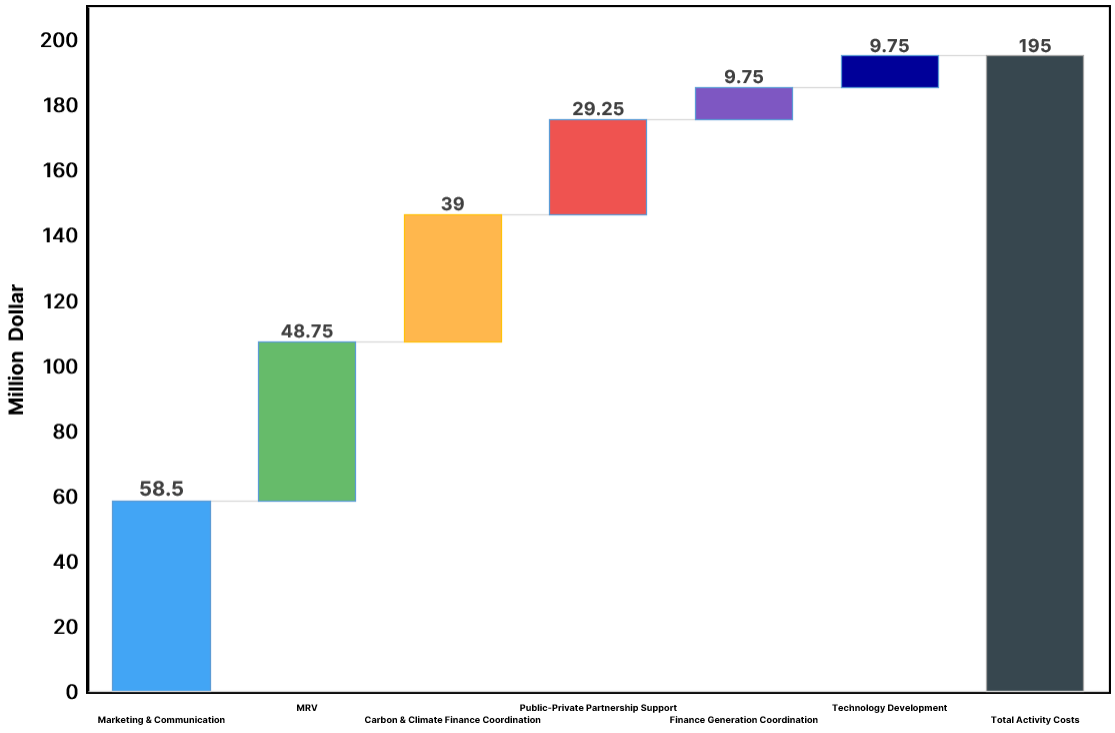

Figure 17 : Activity Costs

6.2.2.1. Marketing and Communication (~$58.5 million, 30% of Activity Costs)

An estimated $58.5 million should be invested in nationwide marketing and communication to drive clean cooking adoption across all phases. These efforts are critical to overcome cultural, behavioral, and informational barriers that hinder uptake particularly in rural, low-income, and underserved urban communities. Strategic, locally adapted campaigns will begin with intensive awareness-raising during the Short-Term (2025–2027), followed by adoption-focused messaging in the Medium-Term, and promotion of higher-tier solutions in the Long-Term. Activities will include radio and social media outreach, community workshops, cooking demonstrations, and training for local champions, with messages tailored to gender, cultural norms, and regional needs. This investment ensures clean cooking is not only understood but embraced as a national development priority.

6.2.2.2. Planning, Monitoring, and Evaluation (~$48.75 million, 25% of Activity Costs)

A dedicated investment of **$48.75 million** will support the development of a strong planning, monitoring, and evaluation (PME) system that underpins the clean cooking program's effectiveness and accountability. This system is essential for tracking real-time progress, measuring key outcomes such as emissions reductions, improved health, and household time savings, and ensuring that program implementation stays aligned with national targets. It also enables transparent reporting to funders and stakeholders while identifying areas that need corrective action or additional support.

The PME approach will leverage digital tools to monitor cookstove distribution, user adoption, usage patterns, and carbon credit generation. It will include training for field staff, deployment of mobile-based data collection systems, and independent third-party verification to ensure accuracy and credibility. Baseline data will be established early in the program, with regular impact reporting and performance reviews conducted throughout implementation. This structured, data-driven approach will help optimize delivery, maximize impact, and build trust in the results achieved.

6.2.2.3. Carbon and Climate Finance Coordination (~$39 million, 20% of Activity Costs)

An estimated $48.75 million will be allocated to planning, monitoring, and evaluation activities to ensure the clean cooking program remains accountable, data-driven, and results-oriented throughout all implementation phases. This investment will support the design and deployment of digital tracking systems, development of data collection tools, training of field personnel, and engagement of independent third-party verifiers. By systematically measuring key indicators such as adoption rates, emissions reductions, health impacts, and household time savings the program will generate reliable evidence to guide decision-making, optimize performance, and strengthen stakeholder confidence. Mobile-enabled technologies will be integrated to improve data quality while reducing collection costs. Establishing a robust monitoring and evaluation framework from the outset will ensure that progress is accurately tracked and that the program remains responsive and adaptable to emerging needs across its full lifecycle.

6.2.2.4. Public-Private Partnership Support (~$29.25 million, 15% of Activity Costs)

With a budget of approximately $29.25 million, this activity aims to strengthen the clean cooking ecosystem through strategic public-private partnerships. By engaging small and medium-sized enterprises (SMEs), private sector actors, and civil society organizations, the program supports long-term sustainability beyond the initial investment period. The funding will enable structured stakeholder engagement, tailored SME capacity-building initiatives, and focused market development efforts. Support will be directed toward private distributors and local entrepreneurs to help them extend their services into underserved areas, using business development services, technical assistance, and market facilitation tools. These efforts will reinforce market-based

distribution channels and develop local implementation capacity that endures beyond the program's duration. Strengthening the local business environment will help establish a resilient foundation for ongoing clean cooking access. The immediate priority is to launch partnership-building workshops and initiate SME engagement across priority regions, supported by comprehensive capacity-building programs.

6.2.2.5. Finance Generation Coordination (~$9.75 million, 5% of Activity Costs)

With a dedicated budget of approximately **$9.75 million**, this activity focuses on ensuring the financial efficiency and sustainability of critical financing mechanisms such as revolving funds and microfinance partnerships. Professional operational support is essential to manage complex loan repayment systems and maintain productive relationships with various financial institutions across the regions of implementation. This funding will also enable the development and operation of transparent digital platforms for real-time tracking of fund usage, performance monitoring, and impact reporting, thereby ensuring accountability and transparency. The investment is designed to enhance the efficiency of revolving funds, reduce administrative overheads, and enable the scalability of financial mechanisms that support the adoption of clean cookstoves in diverse environments. To ensure continued success, the next step will be to establish robust digital systems for repayment tracking and management by the first quarter of 2026, with accessible performance metrics and reporting dashboards for key stakeholders.

6.2.2.6. Technology Development (~$9.75 million, 5% of Activity Costs)

Systematic piloting of innovative technologies, funded with approximately $9.75 million (representing 5% of Activity Costs), significantly improves stove adoption rates and performance metrics by ensuring solutions meet specific user needs across diverse Ethiopian contexts. The program should fund strategically designed small-scale pilot programs for testing promising technologies with rigorous user feedback studies to inform design refinements. Developing productive partnerships with innovative private companies and research institutions should accelerate technology development and adaptation to local conditions, creating a collaborative ecosystem that leverages both international expertise and local knowledge. This approach continuously enhances stove designs to better meet specific user needs and preferences, systematically boosting adoption rates and long-term usage patterns across diverse communities throughout Ethiopia. By ensuring technologies truly meet user needs before wider deployment, the program maximizes both impact and sustainability of the clean cooking initiative.

6.2.3. Policy and Institutional Strengthening (~$117 million, 15%)

Allocating $117 million (approximately 15% of the program cost) to Policy and Institutional Strengthening is critical for creating the enabling environment necessary for the long-term success of clean cooking initiatives. This investment will support the development of robust policy frameworks, enhance institutional capacity at all government levels, and foster effective public-private collaboration. Key activities should include establishing clear national standards and certification systems for clean cookstoves, integrating clean cooking targets into national development plans, strengthening monitoring and evaluation systems, and providing ongoing training for government and local officials. Additional efforts should focus on building multi-stakeholder platforms for dialogue and coordination, supporting evidence-based policymaking through research and data collection, and facilitating cross-sector partnerships to ensure sustained momentum. These actions will embed clean cooking within national strategies, ensure program sustainability beyond initial funding, and accelerate progress toward universal access to modern cooking solutions.

6.2.4. Research, Knowledge, and Capacity Development (~$117 million, 15%)

Allocating $117 million for Research, Knowledge, and Capacity Development drives continuous innovation and develops essential local expertise required for program sustainability. The program should establish productive partnerships with academic and research institutions for advanced technology research, deliver comprehensive training programs for technicians and community leaders, and systematically disseminate best practices and lessons learned. These activities should be managed by the Academic Research and Technology Transfer Coordination Unit, building critical local technical capacity, generating valuable insights for program improvements, and creating knowledge resources that benefit the global clean cooking sector. The implementation team should establish formal academic and research partnerships early in the program, with initial research agenda and capacity building curriculum developed collaboratively with key stakeholders to ensure knowledge creation and transfer become embedded aspects of the initiative.

6.2.5. Infrastructure and Logistics Support (~$78 million, 10%)

An allocation of approximately $78 million will be directed toward strengthening infrastructure and logistics systems essential for reliable last-mile delivery of clean cookstoves. Efficient infrastructure is critical to overcoming geographic and logistical barriers that have historically limited access to clean cooking technologies, especially in remote or underserved areas. This investment will support the establishment of strategic storage hubs, the optimization of transportation routes, and the development of resilient distribution systems. These efforts will be professionally managed through coordinated public-private partnerships, working closely with local logistics providers to ensure cost-effective and context-appropriate solutions. Strengthening these operational foundations will dramatically improve the reliability and geographic reach of supply chains, enabling equitable access to clean cooking technologies regardless of location. As a next step, a comprehensive mapping of the logistics network and a detailed needs assessment will be conducted, forming the basis for infrastructure development plans in the most critical regions.

6.2.6. Data Management and Carbon Credit Facilitation (~$39M, 5%)

To enhance financial sustainability and ensure transparency, the Clean Cooking Program proposes a $39 million investment representing 5% of the total program budget in data management and carbon credit facilitation. This activity focuses on developing a robust digital infrastructure that enables accurate tracking of clean cooking technology adoption, verifies usage, and supports the generation of carbon credits in line with international MRV (Monitoring, Reporting, and Verification) standards. The goal is to unlock revenues from carbon markets while enabling standardized, data-driven reporting across all regions.

The initiative will deploy GPS-based stove tracking systems and mobile-enabled data collection tools to monitor stove distribution and usage in urban, rural, and underserved communities. It will also implement emissions calculation software aligned with recognized standards to quantify carbon reductions effectively. To ensure reliability and credibility, the program will train field staff and implementation partners in MRV protocols and engage third-party verifiers for carbon credit certification. Additionally, all digital systems will be integrated with fund management platforms to allow transparent, real-time reporting of impacts and financial flows. This investment is expected to significantly contribute to the program's financial sustainability through carbon revenue while strengthening accountability and decision-making via timely, verified data. The Clean Cooking Program Unit will lead implementation, with technical support from different organizations.

6.3. Concluding Remarks on Cost Allocation

The $3.38 billion Clean Cooking Program Financial Allocation Strategy represents a transformative approach to achieving equitable access to clean cookstoves, reducing greenhouse gas emissions, and improving health outcomes across underserved communities. By allocating $2.6 billion to cookstove acquisition and distribution and $780 million to program implementation, the strategy ensures a sustainable, scalable, and innovative framework aligned with the roadmap target of achieving 75.87 % access to clean cooking by 2035.

The cookstove cost allocation leverages microfinance, carbon finance, subsidies, revolving funds, local manufacturing, and private-sector innovation to make clean cookstoves affordable and accessible while fostering economic and environmental sustainability. Simultaneously, the program cost allocation establishes robust management structures, supports operational excellence, and strengthens enabling functions such as policy development, research, and infrastructure. This dual approach ensures effective execution across the Short-Term (2025-2027), Medium-Term (2028-2030), and Long-Term (2031-2035) phases, creating a self-sustaining ecosystem through revolving funds and carbon finance mechanisms.

By prioritizing partnerships with NGOs, Development partners, CSOs, government entities, and private-sector stakeholders, academic units, the program builds resilient last-mile delivery networks and drives continuous innovation in clean cooking technologies. This strategy not only addresses immediate access barriers but also embeds clean cooking within national development frameworks, ensuring long-term viability and alignment with global climate goals. Through strategic investments, transparent governance, and data-driven monitoring, the program sets a global benchmark for scalable, equitable, and sustainable clean cooking initiatives, delivering lasting impact for millions of households.

Chapter 7: Risk Analysis and Mitigation Framework

7.1. Financial & Funding Risks

Top Recommendation: Secure diversified, climate-aligned financing while building local financial capacity and minimizing dependency on volatile revenue streams such as carbon credits.

Financial and funding risks represent the most significant obstacles to Ethiopia's clean cooking transition. The sector faces challenges from potential shortfalls in expected financing proportions, which could severely impact implementation timelines and overall program success. High inflation rates and local currency depreciation further compound these difficulties by increasing capital expenditure requirements for stoves, fuel, and infrastructure development.

Beyond these primary concerns, the sector must also contend with potential delays in public budget contributions, which could impede the development of results-based financing mechanisms and enabling infrastructure. Loan conditionality from development finance institutions may further restrict Ethiopia's borrowing capacity, while private sector hesitancy stems from perceived high risk and limited return potential. Local financial institutions currently lack the technical capacity to properly evaluate and finance clean cooking ventures, creating a significant bottleneck for both enterprises and end-users seeking loans. The dependency on external carbon credit verification

expertise adds substantial transaction costs and operational delays, while domestic private sector entities face critical financial skill gaps that limit their ability to develop bankable projects.

Table 9 : Financial & Funding Risks

Risk	Priority	Impact	Mitigation Strategy
Shortfall in expected financing proportions (Gov't, donors, private, carbon, loans)	High	Sector targets may be missed or slowed	Diversify funding sources (climate finance, carbon), phased approach
Inflation or local currency depreciation increases costs	High	Higher capex for stoves, fuel, infrastructure	Encourage local production, forex hedging mechanisms
Carbon credit revenues underperform	High	Failure causes gaps	Conservative estimates, bundle projects, early buyer agreements
Delay or reduction in public budget contributions	Medium	Delays in RBFs, infrastructure, enabling environment	Earmark budget lines, leverage donor co-finance
Loan conditionality or fiscal limits from DFIs/IMF	Medium	May limit Ethiopia's borrowing or delay funds	Emphasize concessional finance, blended funding
Private sector perceives sector as risky	Medium	Low investment in stoves/fuels businesses	Risk guarantees, VGF, impact investor roadshows
Local banks lack capacity to lend to sector	Medium	Enterprises and users face loan constraints	Credit guarantee schemes, bank training
Carbon credit verification expertise is external and costly	High	Local dependency on international verifiers raises transaction costs and delays	Build local capacity via international partnerships; streamline verifier access to Ethiopian markets
Private sector financial skill gap	High	Limited ability of local SMEs to develop bankable projects or attract finance	Targeted financial literacy, business development services, TA for business planning

Way Forward: Scale up blended finance instruments, implement bank readiness training programs, and foster carbon finance partnerships to unlock climate-linked investments sustainably.

Risk Assessment due to Financing Shortfalls in Ethiopia's Clean Cooking Investment Plan (2025–2035) by considering four scenarios (25%, 50%, 75%, and 100% funding scenarios) and their impact on clean cooking access rate : Ethiopia's clean cooking initiative faces a significant risk of shortfall in expected financing proportions from government, donors, private sector, carbon markets, and users. This financing gap directly threatens the program's target of providing 75.87% of the population with clean cooking access by 2035. The scenario analysis examining outcomes at 25%, 50%, 75%, and 100% of the required $3.38 billion investment quantifies the relationship between funding levels and achievable access rates. This critical information helps stakeholders prioritize funding sources, develop contingency plans, and make a compelling case to potential financial partners.

25% Funding Scenario (~$845 million) : This minimal funding would limit clean cooking access to approximately 20-25% of the population by 2035. Implementation would concentrate on urban areas with existing grid infrastructure for electric stoves. Rural communities would see minimal

coverage, creating significant access disparities. The program would require higher consumer contributions and private sector investment to partially offset the funding gap, while still falling far short of national clean cooking ambitions.

50% Funding Scenario (~$1.69 billion) : With half the required funding, Ethiopia could achieve approximately 40-45% clean cooking access. This allows for comprehensive urban coverage with gradual expansion into peri-urban areas, though deep rural penetration would remain limited. The strategy would emphasize electric stoves in grid-connected areas with some advanced biomass solutions in accessible rural communities. While representing progress, this scenario still leaves more than half the target population without clean cooking solutions.

75% Funding Scenario (~$2.54 billion) : This funding level would enable approximately 60-65% clean cooking access, supporting comprehensive urban and peri-urban coverage with meaningful rural penetration. The program could maintain technological diversity while making modest compromises on total deployment numbers. This scenario would position Ethiopia as a regional clean cooking leader, though the 10-15% gap would likely affect the most remote and vulnerable communities.

100% Funding Scenario (~$3.38 billion) : Full funding would achieve the 75.87% access target, supporting deployment of all planned technology types across their designated areas. This comprehensive approach would generate substantial co-benefits in public health, environmental protection, gender equality, and economic productivity while ensuring the clean cooking transition benefits all segments of Ethiopian society equitably.

Concluding Remarks : The risk of not securing adequate funding for Ethiopia's clean cooking initiative cannot be overstated. Failure to mobilize the necessary $3.38 billion would profoundly impact public health outcomes, environmental sustainability, gender equality, and economic development across the nation. Each 25% reduction in funding translates to approximately 15 - 20% of households to rely on traditional cooking methods with their associated health hazards, environmental degradation, and time poverty, particularly affecting women and children.

Extraordinary efforts must be directed toward securing the full funding envelope through coordinated engagement with multilateral development banks, climate finance mechanisms, bilateral donors, private sector partnerships, and innovative financing instruments. The economic, social, and environmental returns on this investment far outweigh the costs, making this not merely a funding challenge but a critical development imperative that requires unwavering commitment and creative resource mobilization strategies from all stakeholders involved in Ethiopia's sustainable development pathway.

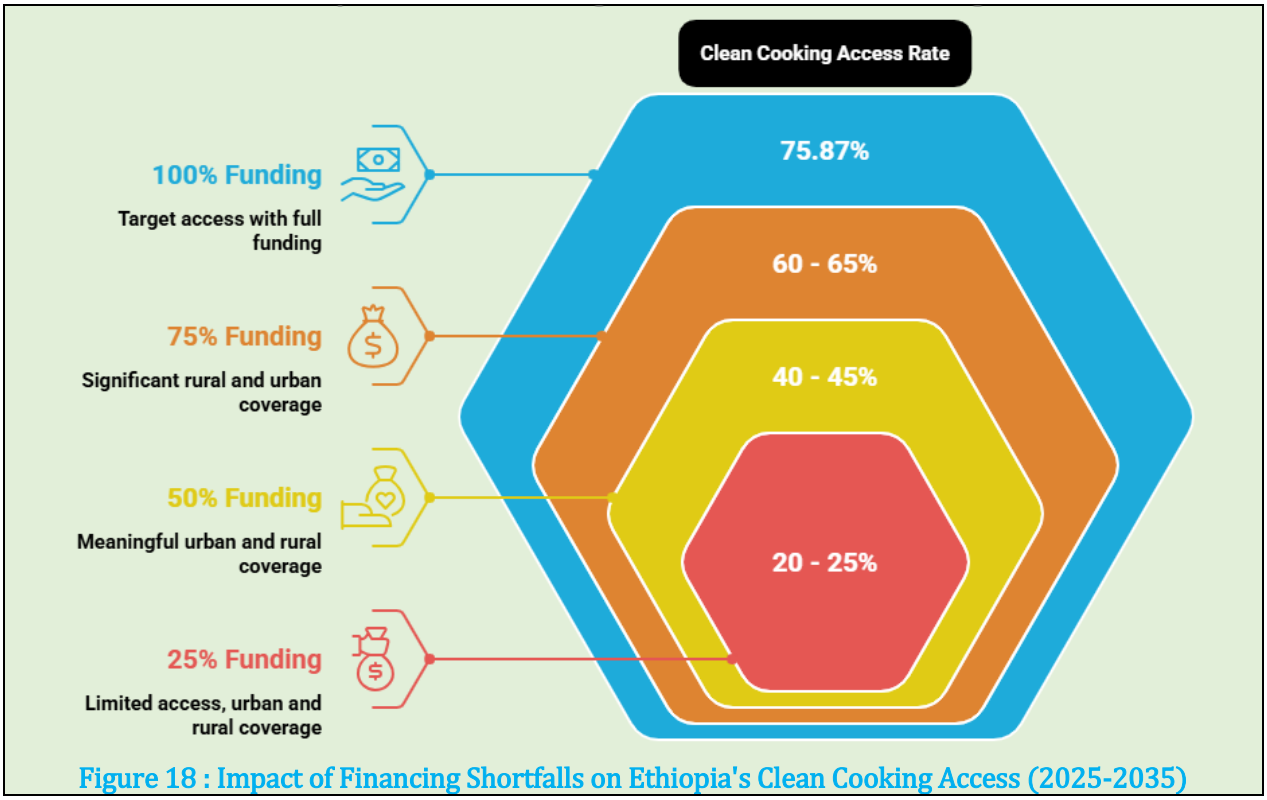

Figure 18 : Impact of Financing Shortfalls on Ethiopia's Clean Cooking Access (2025-2035)

7.2. Institutional Risks

Top Recommendation: Establish a centralized Clean Cooking Program Secretariat to ensure coordination, transparency, and efficiency across institutions.

Institutional challenges present significant barriers to effective implementation of clean cooking initiatives in Ethiopia. The most critical issue is the fragmented institutional landscape, where responsibilities are dispersed across multiple ministries and agencies without clear coordination mechanisms. This fragmentation leads to inefficiencies in fund allocation, duplicated efforts, and gaps in program coverage, ultimately undermining the sector's development. Governance weaknesses create additional concerns about potential mismanagement of resources, which can deter donor investment and delay program results, reducing the overall impact of interventions.

Monitoring and evaluation frameworks are currently insufficient to provide the robust impact verification necessary for carbon markets and results-based financing mechanisms. This deficiency is particularly problematic given Ethiopia's reliance on carbon financing for program sustainability. The limited technical capacity to design bankable clean cooking projects further blocks access to large-scale financing, as many potential initiatives fail to meet investor requirements for financial viability and risk management. Perhaps most critically, ease of doing business challenges including bureaucratic delays in business registration, customs clearance, and tax filing create significant hurdles for private sector investment, slowing market development and limiting the potential for scale.

Table 10 : Institutional Risks

Risk	Priority	Ethiopian Context	Mitigation Strategy
Fragmented institutional mandates/responsibility	High	Inefficiency in fund allocation, coordination	Establish Clean Cooking Program Unit/Secretariat
Weak governance, potential for mismanagement	Medium	May deter donors, delay results	Use RBFs, audits, independent verifiers
Weak M&E and impact verification	Medium	Affects carbon markets, RBFs	Develop digital tracking tools, stove registries
Low capacity to design bankable projects	Medium	Blocks access to large-scale finance	Project prep facility, TA to implementers
Ease of doing business challenges	High	Bureaucratic delays in registration, customs, tax filing hinder private investment	Establish dedicated facilitation unit, streamline licensing for clean cooking enterprises

Way Forward: Drive institutional reform through a cross-ministerial platform with clear mandates, and integrate results-based monitoring and project preparation support into program governance.

7.3. External & Policy Risks

Top Recommendation: De-risk policy and regulatory uncertainty by institutionalizing stable, long-term policy frameworks aligned with Ethiopia's climate and energy ambitions.

External and policy risks represent a fundamental barrier to clean cooking sector development in Ethiopia. The primary concern is the unpredictable nature of policy shifts and regulatory delays that create significant investor uncertainty. Frequent changes in taxation policies, import duties, and licensing requirements have historically undermined market confidence, deterring potential market entrants and complicating business planning for existing operators. This policy volatility is particularly problematic for the clean cooking sector, which requires long-term stable frameworks to attract the substantial investment needed for infrastructure development and market scaling.

The impact of these policy inconsistencies extends beyond immediate market disruption they fundamentally undermine Ethiopia's ability to meet its ambitious climate and energy transition goals. Clean cooking interventions represent a critical pathway for reducing emissions, improving public health, and enhancing energy access, but these benefits cannot be realized without a predictable regulatory environment that enables business growth and investment recovery. The lack of coordination between environmental, energy, and economic development policies further complicates implementation, creating conflicting requirements and inefficient allocation of resources across different government agencies.

Table 11 : External & Policy Risks

Risk	Priority	Ethiopian Context	Mitigation Strategy
Unpredictable policy shifts and regulatory delays	High	Frequent policy changes (e.g., VAT, import duties, licensing) create investor uncertainty and delay market entry	Establish Clean Cooking Policy Council; 5-year regulatory roadmap aligned to energy/climate plans

Way Forward: Prioritize long-term clean cooking regulation through public-private dialogue,

ensure consistency in tax and licensing frameworks, and formalize a predictable enabling environment for investments.

7.4. Concluding remark on Risk Analysis and Mitigation Framework

The success of Ethiopia's clean cooking transition ultimately depends on the effective implementation of the mitigation strategies outlined here, particularly the establishment of a centralized coordination mechanism, diversification of funding sources, and institutionalization of stable regulatory frameworks. These interventions must be undertaken through collaborative partnerships between government, private sector, development partners, and civil society to ensure alignment with national development priorities and international climate commitments. Moving forward, regular reassessment of the risk landscape will be essential as market conditions evolve and new challenges emerge. By maintaining an adaptive, forward-looking approach to risk management, Ethiopia can overcome current barriers and accelerate its journey toward universal access to clean cooking solutions, generating substantial benefits for public health, environmental sustainability, and economic development.

Chapter 8: Detailed Action Plan for Implementation, Enabling Investment Environment, and Leveraging Financial Resources

This section outlines a comprehensive action plan for the implementation of Ethiopia's Clean Cooking Subsector Investment Plan, strategies for creating an enabling investment environment, and mechanisms for securing and leveraging the necessary financial resources. The success of this plan depends on a well-organized implementation, a supportive environment that brings in and keeps investment, and creative financial solutions to access different funding sources. The financial mix, comprising grants (35%), government contributions (20%), private sector investment (10%), loans (10%), and carbon finance (25%), is designed to ensure sustainability and broad-based participation.

8.1. Detailed Action Plan for Implementation

8.1.1. Establish a National Clean Cooking Implementation Taskforce

The cornerstone of successful implementation is the establishment of a high-level National Clean Cooking Implementation Taskforce (NCCIT) under the intended Clean Cooking Coordination Unit within the Ministry of Water and Energy of Ethiopia. This multi-stakeholder body will be responsible for overseeing the strategic direction, coordination, and monitoring of the entire Clean Cooking Subsector Investment Plan. The NCCIT should be chaired by a high-ranking government official to ensure strong political will and effective inter-ministerial collaboration. Key members should include representatives from the Ministry of Water and Energy, Petroleum and Energy Authority, Ethiopian Forestry Development (EFD), Ministry of Agriculture, Ministry of Industry, Ministry of Finance, Ministry of Planning and Development, Ministry of Women and Social Affairs, microfinance institutions, Development Bank of Ethiopia, Ethiopian Environment Protection Agency, regional energy bureaus, Horn of Africa Regional Environment Centre and Network (HoA-REC&N) of Addis Ababa University, as well as development partners such as UNDP, GIZ, and NGOs including Irish Aid, Norwegian Church Aid, SNV, Vita, World Vision, research institutes, civil society organizations, Ethiopian Clean Cooking Alliance, and Ethiopia Women in Energy.

The NCCIT's mandate will encompass:

- **Resource Mobilization**: Championing resource mobilization efforts from domestic and international sources.
- **Strategic Guidance**: Providing overall strategic direction and ensuring alignment with national development goals.
- **Coordination**: Facilitating effective coordination among all stakeholders, resolving bottlenecks, and promoting synergies.
- **Policy Advocacy**: Advocating for supportive policies, regulations, and standards for clean cooking technologies.
- **Monitoring and Evaluation**: Overseeing the M&E framework, reviewing progress reports, and recommending corrective actions.
- **Public Awareness**: Leading national campaigns to promote the benefits of clean cooking and drive behavioral change.
- **Capacity Building**: Providing training and support to government, private sector, and communities to improve clean cooking deployment.
- **Innovation and Market Development**: Encouraging innovation, pilot projects, and private sector involvement to grow sustainable clean cooking markets.

Lesson from Kenya National Clean Cooking Implementation Taskforce : Kenya has established a National Clean Cooking Implementation Taskforce under the Prime Minister's Office to accelerate the transition to clean cooking solutions as part of the Kenya National Cooking Transition Strategy (KNCTS), aiming for universal access by 2028. Coordinated by the Ministry of Energy and Petroleum, the taskforce brings together multiple ministries to provide strong political oversight and support. Its role includes strengthening policies, mobilizing resources, engaging devolved governments, and fostering public-private partnerships to scale up clean cooking technologies such as LPG, bioethanol, and electric cooking. The taskforce also facilitates innovation hubs and knowledge platforms to promote clean cooking adoption. This initiative seeks to reduce dependence on polluting biomass fuels, improve health and environmental outcomes, and ensure accountability through monitoring and evaluation. Kenya's coordinated approach highlights its commitment to sustainable energy access and development.

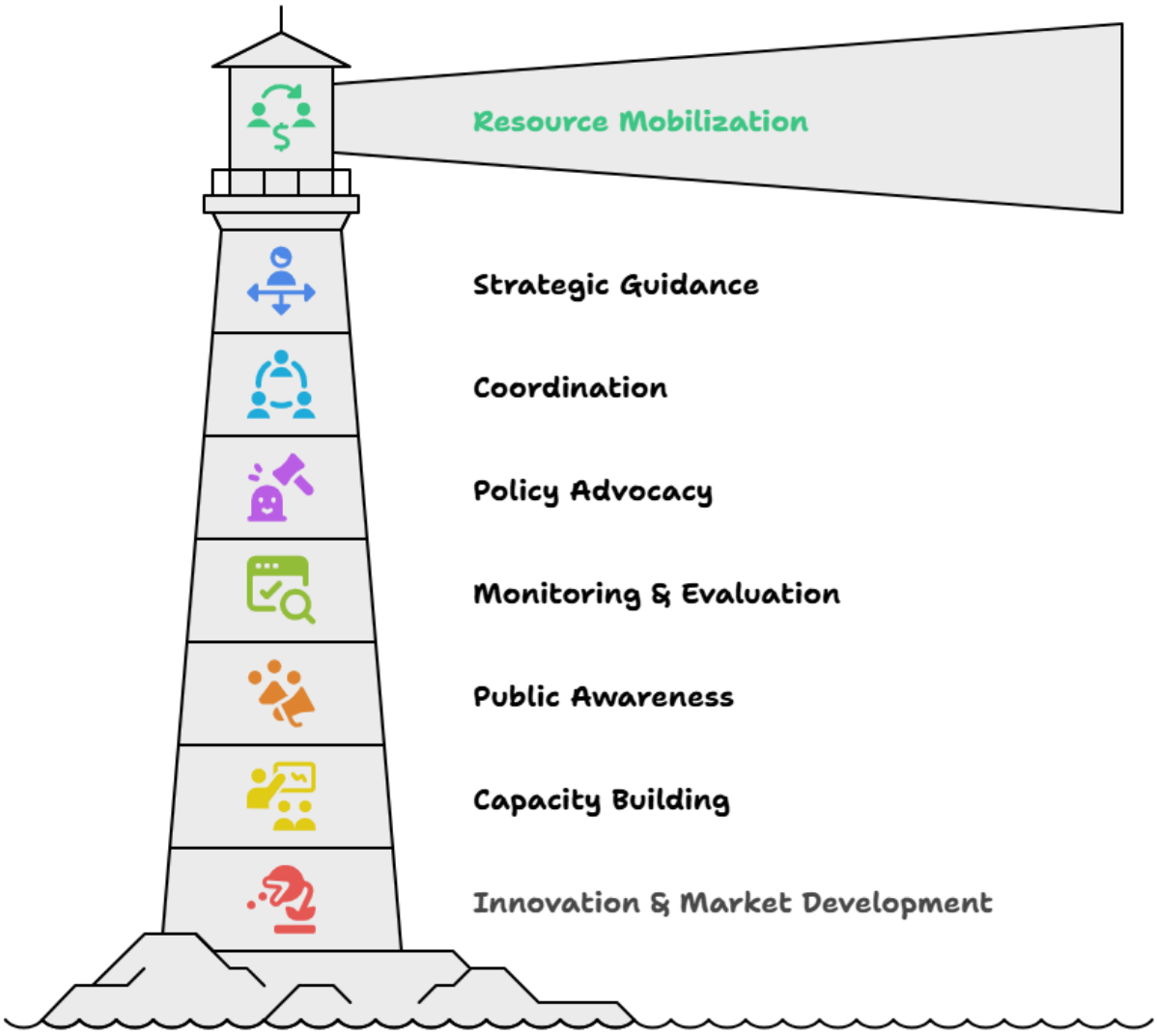

Figure 19 : National Clean Cooking Implementation Taskforce Mandates

8.1.2. Mobilize Early-Stage Funding and Technical Assistance

Securing adequate early-stage funding and technical assistance is essential for achieving clean cooking access targets. This initial capital supports foundational activities such as market assessments, capacity building, pilot projects, and the operationalization of the National Clean Cooking Program. Ethiopia should actively engage bilateral and multilateral development partners, philanthropic organizations, and climate funds with proven commitment to clean energy and sustainable development.

Key actions include:

Developing Compelling Bankable Proposals: To attract investment, clearly articulate the socio-economic and environmental benefits of the clean cooking and define measurable outcomes. Proposals should include a clear problem statement, project description, market analysis, financial plan, risk mitigation strategies, sustainability and scalability considerations, and a robust monitoring and evaluation framework. Leveraging international best practices, these proposals must demonstrate financial viability and developmental impact to appeal to diverse funders such as the

World Bank, African Development Bank, European Investment Bank, UN agencies, Development partners, NGOs, Green Climate Fund, and country-specific development agencies etc.
Targeted Donor Engagement: Identify and approach funders aligned with the program's objectives.
Request Technical Assistance: Seek expert support for standards development, M&E system design, carbon finance project preparation, and capacity building for local enterprises.
Establish a Dedicated Fund Management Mechanism: Create a transparent multi-donor trust fund or similar vehicle to pool and manage early-stage grants and concessional financing efficiently.
Continuous Grant Search and Application:

- Regularly monitor funding opportunities from multilateral development banks, UN agencies, climate funds, Multilateral and bilateral donors, and innovation challenge funds.
- Prepare and submit high-quality applications that fully comply with eligibility criteria and guidelines, using credible data and clearly articulating the project's benefits.
- Engage in multi-stage application processes including concept notes, full proposals, due diligence, and assessments.
- Leverage technical assistance to strengthen proposals, ensure standards compliance, and integrate carbon finance mechanisms.
- Build and maintain strong relationships with funders to receive feedback, clarify requirements, and explore co-financing or blended finance options.
- Track and report progress diligently on approved grants to build credibility and enhance future funding prospects.

8.1.3. Integrate Clean Cooking into Government Plans

Mainstreaming clean cooking into national and sectoral development plans is essential for long-term sustainability and government ownership. This ensures that clean cooking is not viewed as a standalone initiative but as an integral part of Ethiopia's broader development agenda, including poverty reduction, health improvement, environmental protection, and climate action.
Key actions include:

- **Budgetary Allocations**: Advocate for the inclusion of clean cooking initiatives in national and regional government budgets. This demonstrates government commitment and can leverage additional funding from development partners.
- **Policy Coherence**: Ensure that the Clean Cooking Investment Plan is fully aligned with and integrated into key national strategies. This alignment enhances coordination, resource mobilization, and the overall effectiveness of clean cooking initiatives. It also enables synergies across sectors such as energy, environment, forestry, gender, and climate change, supporting goals like reducing indoor air pollution, deforestation, and promoting gender empowerment. Without such coherence, efforts risk fragmentation, inefficiency, and limited impact.
- **Cross-Sectoral Collaboration**: Foster collaboration between the Ministry of Water and Energy and other line ministries (Health, Environment, Finance, Education, Gender) to integrate clean cooking objectives into their respective programs and activities. For example, promoting clean cooking in schools and health facilities.
- **Regional and Local Planning**: Support regional and local governments in incorporating clean cooking targets and actions into their development plans and budgets.

8.1.4. Operationalize a Clean Cooking Data and M&E System

A robust Monitoring and Evaluation (M&E) system is crucial for tracking progress, measuring impact, ensuring accountability, and facilitating adaptive management. This system should capture

data on key performance indicators (KPIs) related to technology dissemination, adoption rates, market development, socio-economic impacts, health benefits, and environmental outcomes.

Key actions include:

- Develop a Comprehensive M&E Framework: Define clear KPIs, baselines, targets, data collection methodologies, and reporting protocols. The framework should align with international best practices and be tailored to the Ethiopian context.
- Establish a Centralized Data Management Platform: Create a digital platform for collecting, storing, analyzing, and disseminating clean cooking data. This platform should be accessible to relevant stakeholders and provide real-time or near real-time information.
- Capacity Building for M&E: Train personnel at national, regional, and local levels on data collection, analysis, and reporting. This includes empowering local communities to participate in monitoring efforts.
- Regular Reporting and Review: Institute a system of regular progress reporting to the NCCIT and other stakeholders. Conduct periodic reviews and evaluations to assess performance, identify challenges, and make necessary adjustments to the implementation strategy.
- Impact Evaluation: Plan for rigorous impact evaluations at key milestones to assess the long-term effects of the clean cooking program on livelihoods, health, and the environment.

8.1.5. Forge Strategic Partnerships

Achieving the ambitious goals of the Clean Cooking Investment Plan requires a collaborative effort involving a wide range of stakeholders. Forging strategic partnerships will be essential for leveraging expertise, resources, and networks.
Key partnership areas include:

- Private Sector Engagement: Actively engage with local and international private sector actors, including stove manufacturers, distributors, retailers, and financial service providers. Create platforms for dialogue and collaboration to foster a vibrant clean cooking market.
- Civil Society Organizations (CSOs): Partner with NGOs, CBOs, and women's groups that have strong community linkages and experience in promoting household energy solutions, health, and gender equality. CSOs can play a vital role in awareness creation, social mobilization, and last-mile distribution.
- Academic and Research Institutions: Collaborate with universities and research institutions on technology R&D, market studies, impact assessments, and capacity building. Foster innovation in clean cooking technologies and business models tailored to local needs.
- Development Finance Institutions (DFIs) and International Organizations: Maintain strong partnerships with DFIs, multilateral agencies, and bilateral donors for financial and technical support. Align efforts with their strategic priorities and reporting requirements.
- Development Partners and NGOs: Engage a broad range of development partners and NGOs who bring critical support in advocacy, capacity building, market development, and implementation.

In summary, achieving the goals of Ethiopia's Clean Cooking Investment Plan will require strong leadership, robust coordination, and inclusive partnerships across government, private sector, civil society, and development partners. By mobilizing early-stage funding, developing bankable proposals, integrating clean cooking into national policies, establishing effective monitoring systems, and forging strategic partnerships, Ethiopia can accelerate access to clean cooking solutions. Sustained commitment to these actions will ensure measurable health, environmental, and economic benefits for all Ethiopians.

8.2. Creating an Enabling Environment for Investment

An enabling environment is paramount to attract and sustain the private sector investment required to meet the ambitious clean cooking targets. This involves establishing supportive policies, robust regulatory frameworks, and financial mechanisms that reduce risks and enhance the attractiveness of the clean cooking market in Ethiopia.

8.2.1. Policy and Regulatory Reforms

Clear, consistent, and supportive policies and regulations are the bedrock of a thriving clean cooking sector. Ethiopia needs to review and, where necessary, reform its existing legal and regulatory landscape to remove barriers and incentivize investment in clean cooking technologies.

Key actions include:

- **Developing a National Clean Cooking Policy**: Formulate a dedicated national policy that explicitly recognizes clean cooking as a national priority, sets clear targets, and outlines the roles and responsibilities of various government agencies. This policy should be aligned with energy, health, environment, and gender policies.
- **Streamlining Importation and Customs Procedures:** Simplify and expedite customs clearance processes for clean cooking technologies and related raw materials. Consider duty exemptions or reduced tariffs for certified clean cooking products to make them more affordable.
- **Establishing and Enforcing Quality Standards**: Adopt and enforce internationally recognized or context-appropriate quality standards for clean cookstoves and fuels. This will protect consumers, build trust, and ensure the long-term performance and safety of products. A robust testing and certification mechanism is essential.
- **Integrating Clean Cooking into Building Codes**: Mandate or incentivize the inclusion of clean cooking solutions in new housing developments and public buildings as a pilot project before large scale Interventions.

8.2.2. Investment Incentives and Fiscal Measures

Targeted investment incentives and fiscal measures can significantly de-risk investments and stimulate private sector participation in the clean cooking market. These measures should be carefully designed to be effective, transparent, and fiscally sustainable.

Key actions include:

- **Tax Incentives**: Offer tax holidays, reduced corporate income tax rates, or value-added tax (VAT) exemptions for businesses involved in the manufacturing, assembly, distribution, and retail of certified clean cooking technologies.
- **Access to Affordable Finance**: Facilitate access to credit for clean cooking enterprises through government-backed loan guarantee schemes, dedicated credit lines in commercial banks, or support to microfinance institutions (MFIs) that lend to clean cooking businesses.
- **Results-Based Financing (RBF) and Subsidies**: Implement well-targeted RBF schemes or smart subsidies to support both suppliers (to scale up operations) and end-users (to improve affordability), particularly for low-income households. Subsidies should be designed to be

phased out as the market matures. The programmatic and enabling activities budget includes provisions for such consumer incentives.

- Investment Promotion and Facilitation: Establish a one-stop shop or dedicated investment promotion unit within the National Clean Cooking Coordination Unit to assist potential investors with information, registration, and navigating regulatory processes.

8.2.3. Strengthening Microfinance and Consumer Credit Systems

Affordability is a major barrier to clean cooking adoption for many Ethiopian households. Strengthening microfinance and consumer credit systems is crucial to enable households to purchase higher-cost, but more efficient and beneficial, clean cooking technologies.

Key actions include:

- Capacity Building for MFIs: Provide training and technical assistance to MFIs to develop and offer tailored loan products for clean cooking technologies. This includes risk assessment, loan portfolio management, and marketing of clean energy loans.
- Partnerships with Clean Cooking Enterprises: Facilitate partnerships between MFIs and clean cooking suppliers to offer bundled financing options at the point of sale (e.g., Pay-As-You-Go models).
- Consumer Awareness on Financing Options: Educate consumers about the availability of credit for clean cooking and the long-term cost savings associated with these technologies.
- Risk Mitigation for MFIs: Explore mechanisms like loan guarantee funds or first-loss provisions to encourage MFIs to lend to the clean cooking sector, which may be perceived as higher risk.

8.2.4. De-risking Measures for Private Sector Engagement

Private sector investment is a critical component of the financial mix. To attract this investment, specific measures are needed to mitigate perceived and actual risks associated with the nascent clean cooking market.

Key actions include:

- Political and Regulatory Risk Mitigation: Ensure policy stability, transparent regulatory processes, and protection of investor rights. Long-term government commitment is essential.
- Market Development Support: Provide market intelligence, support for business development services, and facilitate linkages between local and international companies.
- Currency Risk Hedging Mechanisms: Where feasible, explore options to mitigate currency exchange rate risks for international investors or for businesses importing components.
- Public-Private Partnerships (PPPs) :Develop PPP frameworks for larger-scale clean cooking infrastructure projects

8.2.5. Capacity Building and Institutional Coordination

Strong institutional capacity and effective coordination among all stakeholders are vital for creating and maintaining an enabling environment. This involves strengthening the capabilities of government agencies, private sector actors, and civil society organizations.

Key actions include:

- **Training and Skill Development**: Implement comprehensive training programs for policymakers, regulators, entrepreneurs, technicians, and extension agents on various aspects of clean cooking (technology, business models, policy, M&E).
- **Strengthening Industry Associations**: Support the development and strengthening of industry associations for clean cooking businesses to promote self-regulation, advocacy, and knowledge sharing.
- **Enhancing Inter-Agency Coordination**: Ensure effective coordination mechanisms are in place, particularly through the National Clean Cooking Coordination Unit, to avoid duplication of effort and ensure a harmonized approach across government.
- **Knowledge Management and Sharing**: Establish platforms for sharing best practices, lessons learned, and market information among all stakeholders.

8.2.6. Monitoring, Learning, and Adaptive Implementation

Creating an enabling environment is an iterative process. Continuous monitoring, learning, and adaptive implementation are necessary to respond to changing market dynamics and emerging challenges.
Key actions include:

- **Regular Stakeholder Consultations**: Conduct regular consultations with private sector actors, CSOs, and consumers to gather feedback on the effectiveness of policies and incentives.
- **Periodic Review of the Enabling Environment**: Periodically assess the policy, legal, and regulatory framework to identify areas for improvement or adjustment.
- **Flexible Program Design**: Incorporate flexibility into program design to allow for adjustments based on M&E findings and stakeholder feedback.

In conclusion, creating an enabling environment for investment in Ethiopia's clean cooking sector requires clear policies, streamlined regulations, and targeted financial incentives that reduce risk and attract private sector participation. By developing a dedicated national clean cooking policy, simplifying customs procedures, enforcing quality standards, and offering tax breaks and affordable finance, Ethiopia can make the clean cooking market more attractive. Strengthening microfinance, supporting public-private partnerships, building institutional capacity, and maintaining adaptive, well-coordinated implementation will further ensure a vibrant, sustainable market that delivers health, economic, and environmental benefits.

8.3. Securing and Leveraging Financial Resources

Securing and effectively leveraging financial resources are critical for the successful implementation of Ethiopia's Clean Cooking Investment Plan. This section outlines strategies to mobilize funding from these diverse sources and ensure its efficient use.

8.3.1. Access to Grants and Blended Finance

Grants, constituting 35% of the financial plan, are crucial for de-risking investments, funding capacity building, supporting initial market development, and reaching the most vulnerable populations. Blended finance mechanisms, which combine concessional public funds with commercial capital, will be instrumental in attracting private sector participation.

Key actions include:

- **Developing a Comprehensive Grant Mobilization Strategy**: Identify and prioritize potential grant providers, including bilateral and multilateral development partners (e.g., World Bank, African Development Bank, UN agencies), climate funds (e.g., Green Climate Fund, Clean

Technology Fund), and philanthropic organizations. Develop tailored Bankable proposals highlighting the socio-economic, health, and environmental benefits of the plan.

- **Establishing a Multi-Donor Trust Fund (MDTF)**: Consider setting up an MDTF, potentially managed by a reputable international institution, to pool grant contributions, streamline fund management, and ensure transparent allocation and reporting. This can enhance donor coordination and reduce transaction costs.
- **Designing and Implementing Blended Finance** Facilities: Create specific blended finance instruments, such as first-loss guarantees, risk-sharing facilities, or impact bonds, to mitigate investment risks and improve the financial viability of clean cooking projects for private investors.

8.3.2. Leveraging Carbon and Climate Finance

Carbon finance, projected to contribute 25% of the total funding, represents a significant opportunity. The shift to cleaner cooking technologies reduces greenhouse gas emissions, generating carbon credits that can be monetized.

Key actions include:

- **Developing a Program of Activities (PoA) for Carbon Credits**: Establish a PoA under a recognized carbon standard (e.g., Gold Standard, Verra) to aggregate multiple clean cooking projects and streamline the process of carbon credit generation and verification. This reduces costs and complexity for individual project developers.
- **Building National Capacity for Carbon Finance**: Invest in training and technical assistance to build local expertise in carbon project development, monitoring, reporting, and verification (MRV), and navigating international carbon markets.
- **Engaging with International Carbon Markets and Buyers**: Proactively market Ethiopian clean cooking carbon credits to international buyers, including compliance markets (where applicable) and voluntary carbon markets. Explore long-term off-take agreements to secure predictable revenue streams.
- **Accessing Climate Adaptation and Mitigation Funds**: Beyond carbon markets, tap into broader climate finance mechanisms that support projects with strong mitigation and adaptation co-benefits, such as those enhancing resilience to climate change through sustainable resource management.

8.3.3. Government Contributions and Budget Allocations

The Government of Ethiopia's commitment, representing 20% of the financial plan, is vital for demonstrating national ownership and leveraging other sources of finance. This includes direct budgetary allocations and creating supportive fiscal policies.

Key actions include:

- **Mainstreaming Clean Cooking in National Budgets**: Ensure that clean cooking initiatives are consistently included in national and regional government budget allocations. This requires strong advocacy and clear demonstration of the plan's contribution to national development priorities.
- **Earmarking Specific Revenue Streams**: Explore options for earmarking a portion of revenues from energy or environmental levies to support clean cooking initiatives. This can provide a sustainable and predictable source of domestic funding.

- In-kind Contributions: Recognize and value in-kind contributions from government agencies, such as staff time, use of facilities, and integration of clean cooking promotion into existing government programs (e.g., health extension workers program).

8.3.4. Collaboration with Development Finance Institutions (DFIs)

DFIs can play a crucial role in providing both financial and technical support, including the 10% loan component of the financial plan. Ethiopia should actively engage with DFIs to:

- Secure Concessional Loans and Guarantees: Access long-term, low-interest loans for larger-scale clean cooking infrastructure projects or for on-lending to local financial institutions. Guarantees from DFIs can also help mobilize local commercial lending.
- Leverage Technical Expertise and Best Practices: Benefit from the knowledge and experience of DFIs in designing and implementing effective clean cooking programs, developing financial instruments, and establishing robust M&E systems.
- Co-financing and Risk Sharing: Partner with DFIs in co-financing arrangements for significant projects and utilize their risk mitigation instruments to attract other investors.

8.3.5. Results-Based Financing (RBF) for Scaling Clean Cooking Solutions

RBF approaches, where payments are made upon achievement of pre-agreed results, can be a powerful tool to incentivize performance and drive market development. RBF can be funded through various sources, including grants and government contributions.
Key actions include:

- Designing and Implementing RBF Schemes: Develop RBF programs targeting specific outcomes, such as the number of clean cookstoves disseminated and actively used, the establishment of sustainable supply chains, or the achievement of specific emission reduction targets.
- Targeting Both Supply and Demand Sides: Utilize RBF to support both suppliers (e.g., manufacturers, distributors) to scale up their operations and reduce costs, and end-users (e.g., through vouchers or rebates) to improve affordability.
- Ensuring Robust Verification of Results: Establish a credible and independent verification system to ensure that payments are made only when results are genuinely achieved. This is critical for the integrity and effectiveness of RBF programs.

As a final remark, mobilizing a diverse mix of funding sources is essential for the success of the Clean Cooking Investment Plan. This approach involves attracting grants for early-stage activities and vulnerable groups, blending concessional and commercial capital to stimulate private sector involvement, and utilizing carbon markets for additional revenue streams. Government budget allocations and earmarked resources signal strong national ownership, while collaboration with development finance institutions unlocks affordable loans, technical expertise, and risk-sharing mechanisms. Results-based financing further enhances performance and accountability. Collectively, these strategies establish a resilient financial foundation to scale up clean cooking solutions across Ethiopia.

Chapter 9: Identifying Bankable Clean Cooking Projects for Mobilizing Investment

Identifying bankable clean cooking projects is essential for mobilizing the investment required to sustainably scale clean cooking access. Bankable projects are financially viable, replicable, and aligned with development goals, making them attractive to investors such as private sector players, development finance institutions, and climate funds. Successfully mobilizing investment depends on developing clear, bankable proposals that combine innovative technologies with robust business models and enabling policies. Proven strategies to attract financial resources include aggregating demand to achieve economies of scale, integrating carbon finance mechanisms to unlock additional revenue streams, and leveraging public funds to crowd in private sector investment. Furthermore, adopting blended and results-based financing, fostering multi-stakeholder collaboration, and ensuring gender-responsive and inclusive project designs can further enhance the bankability and impact of clean cooking initiatives. By prioritizing these approaches, Ethiopia can accelerate progress toward its target of 75.87% clean cooking access by 2035, while building a resilient and sustainable clean cooking sector.

Figure 20 : Bankable Project Design Framework and key Selection Criteria

9.1. Strategic Framing

To accelerate Ethiopia's transition to universal clean cooking access and unlock substantial climate and development finance, the plan recommends a strategic portfolio of high-impact, bankable projects built on multi-stakeholder collaboration. These projects are purposefully aligned with Ethiopia's development and climate policy frameworks including the Nationally Determined Contributions (NDCs), Long-Term Low Emission Development Strategy (LT-LEDS), National Sustainable Energy Development Strategy (N-SEDS), and the national Energy Transition Roadmap while also supporting Sustainable Development Goals (SDGs : 5,6 and 13). Designed to be investment-ready, each project includes a robust business case, a focus on social equity, and well-defined roles for public, private, and civil society actors. By embedding gender-responsive approaches and community-level engagement, the projects address both climate and development objectives. The strategic framing ensures that the proposed interventions are scalable, inclusive, and positioned to attract blended and results-based financing from domestic and international sources.

9.2. Possible Bankable Projects

Ethiopia's approach to expanding clean cooking access between 2025 and 2035 centers on developing possible bankable clean cooking projects that transform national targets into concrete, scalable interventions. The strategic framework is closely aligned with the country's NDCs, long-term low-emission strategies, the Ethiopia Clean Cooking Roadmap, and the Sustainable Development Goals. Key pillars of this strategy include investment-ready business cases, multi-stakeholder collaboration, blended and results-based financing, gender-responsive approaches, and scalable, inclusive design.

To achieve these ambitions, four core technology pathways are prioritized. Advanced biomass stoves will be promoted through regional manufacturing and distribution hubs, results-based financing for stove deployment, and conservation-focused, sustainable fuel supply chains. Electric cooking initiatives will focus on local e-stove manufacturing, grid integration, appliance standards and labeling, and strengthening supply chains alongside technician capacity building. Biogas cooking systems will target household biogas deployment in livestock-rich areas, foster technology innovation, strengthen value chains, and integrate with agricultural productivity. Solar-powered cooking will be advanced through off-grid access programs, solar cooker innovation and manufacturing, and integrated solutions for both cooking and productive uses.

Cross-cutting enablers play a vital role in this strategy. Women-led clean energy microenterprises are supported, and a strong national policy and institutional framework is emphasized to ensure sustainability and inclusivity. Ethiopia's clean cooking future relies on scalable, coordinated action, smart financing, and teamwork, with a target of achieving 75.87% clean cooking access by 2035 and an estimated investment requirement of $3.38 billion over the decade.

Possible Bankable Clean Cooking Energy Projects in Ethiopia (2025-2035)

9.2.1. Advanced Biomass Stove Bankable Project Ideas

1. Regional Manufacturing, Distribution, and Fuel Preprocessing Hubs for Tier 3+ Biomass Stoves

This project envisions the creation of regionally distributed hubs that integrate the manufacturing, assembly, distribution, and fuel preprocessing of advanced biomass cookstoves. These hubs would serve as vital infrastructure to support the clean cooking value chain in Ethiopia, especially in rural and underserved areas where access to both clean stoves and appropriate fuel remains limited. Each hub would host local production facilities for Tier 3 or higher cookstoves, ensuring that the technologies are adapted to regional cooking preferences and produced at a lower cost through localized supply chains. These facilities would also support local entrepreneurship, vocational training, and job creation, with particular emphasis on empowering women and youth through technical roles and business opportunities. In addition to stove manufacturing and distribution, the hubs would include fuel-preprocessing units to produce standardized, efficient biomass fuel compatible with clean stoves. These facilities would process agricultural residues, sawdust, or sustainably harvested wood into briquettes or pellets that are clean-burning, energy-dense, and safe to transport. The integration of fuel processing ensures that households receive a complete clean cooking solution both the device and the fuel helping to improve adoption and sustained use. It also reduces indoor air pollution and minimizes emissions, reinforcing Ethiopia's commitments under the NDC and Green Legacy Initiative.

By establishing these comprehensive hubs, the project strengthens the entire clean cooking ecosystem, from production to consumption. The hubs would collaborate closely with local governments, technical institutes, development partners, and financial institutions to ensure alignment with national policies and to access blended finance. Ultimately, this project supports Ethiopia's transition toward universal clean cooking access by making high-quality stoves and sustainable fuels more affordable, accessible, and appropriate for local contexts while simultaneously contributing to climate mitigation, job creation, and public health improvement.

2. Results-Based Financing for Advanced Biomass Stove Deployment

This project is focused on designing and operationalizing a national results-based financing (RBF) facility to drive the large-scale deployment of clean biomass stoves. Through this approach, stove producers, distributors, and social enterprises would receive financial incentives based on the achievement of measurable results, such as verified stove installations and sustained use by households. The RBF model shifts the focus from inputs to outcomes, ensuring that resources are only disbursed when impact is proven. It supports private sector engagement by reducing investment risk and enhancing market confidence, while also encouraging innovation in outreach and customer service. This financing model would be linked to independent monitoring systems and may incorporate digital tracking tools to verify usage. Special attention would be given to reaching vulnerable groups, particularly in remote and economically disadvantaged areas. By aligning with global carbon finance mechanisms and donor-funded energy access programs, the project unlocks new sources of capital and enhances accountability. It directly supports Ethiopia's clean cooking scale-up efforts by incentivizing widespread adoption while ensuring quality and user engagement.

3. Integrated Conservation and Sustainable Biomass Fuel Supply

This project addresses the critical need for sustainable biomass fuel by promoting conservation, forest management, and alternative fuel production. As the demand for clean biomass stoves increases, so too does the need for sustainably sourced fuel to avoid unintended environmental consequences. The project promotes community-led afforestation, agroforestry, and the establishment of dedicated woodlots for cooking fuel supply. It also supports the development of cleaner fuel alternatives, such as briquettes made from agricultural waste and sustainably produced charcoal. These interventions would be managed through community cooperatives, ensuring that local people benefit directly from conservation efforts. The project contributes to forest preservation, improves soil and watershed health, and enhances rural incomes through sustainable natural resource use. It also complements Ethiopia's broader environmental strategies and climate-resilient green economy goals. By securing a long-term, renewable supply of biomass, this project ensures that the benefits of advanced cookstove adoption are sustained over time without increasing deforestation or environmental degradation. In summary, bankable clean cooking projects should be designed with financing potential, policy alignment, scalability, stakeholder collaboration, and gender equity in mind. These criteria ensure that projects are financially sustainable, aligned with national and global goals, scalable for greater impact, inclusive of women and vulnerable groups, and supported by strong partnerships across sectors.

9.2.2. Electric Stove Adoption and Integration Bankable Project Idea

1. **Electric Stove Manufacturing and Grid Integration :** To catalyze widespread adoption of electric cooking, this project proposes the establishment of **local manufacturing and assembly lines for electric stoves**, integrated with **targeted upgrades to grid infrastructure** in high-potential urban

and peri-urban areas. The initiative aims to drive down the cost of electric stoves by localizing production while enhancing Ethiopia's electricity grid capacity to handle increased cooking loads. This dual approach directly supports SDG 7, the NDC, and the LT-LEDS by enabling a shift to low-emission cooking solutions powered by Ethiopia's renewable energy mix. The manufacturing facilities would engage local SMEs and generate skilled jobs, with a focus on youth and women-led enterprises. In parallel, the project includes electrification enhancements such as load forecasting, transformer upgrades, and appliance-ready metering in target areas. This coordinated supply and demand-side intervention ensures system reliability, encourages consumer confidence, and supports the grid's readiness for widespread e-cooking adoption. The initiative will work in partnership with the Ethiopian Electric Utility (EEU), local stove producers, and financing institutions to deliver commercially viable and climate-aligned outcomes.

2. **Appliance Standards and Labeling for Electric Cooking :** This project establishes a **National Electric Appliance Standards and Labeling Program** tailored to cooking technologies to ensure the energy efficiency, safety, and quality of electric stoves entering the Ethiopian market. By setting clear performance standards and launching a recognizable energy labeling scheme, the program will drive consumer awareness and market differentiation, allowing households to make informed choices and rewarding manufacturers that meet higher standards. The project also supports policy alignment with regional and international best practices, reinforcing Ethiopia's NDCs and N-SEDS. By reducing inefficiencies and unsafe devices, the initiative contributes to load management on the national grid and reduces electricity waste. Through collaboration with the Ministry of Trade and Regional Integration, Ministry of Water and Energy, and customs authorities, the program will establish enforcement mechanisms and technical testing capacity within domestic institutions. Ultimately, this standards-driven approach will enhance investor confidence, reduce market fragmentation, and build a foundation for sustainable growth in the electric cooking sector.
3. **Electric Stove Supply Chain and Technician Capacity Initiative:** To ensure the reliability, adoption, and sustained use of electric cooking solutions, this project proposes the creation of a **national capacity-building and supply chain development program** for electric stoves. The initiative aims to strengthen local distribution networks, establish after-sales service systems, and train technicians and micro-entrepreneurs in stove installation, repair, and customer education. It specifically targets the development of last-mile delivery capabilities and local entrepreneurship, with a priority focus on **women and youth**. By building up a skilled workforce and ensuring service continuity, the project supports long-term consumer trust and usage, which is critical for behavioral transition to electric cooking. This effort complements stove manufacturing and grid integration activities and addresses one of the major non-technical barriers to electric cooking adoption. The project will partner with TVETs, local cooperatives, appliance retailers, and financial institutions to deliver hands-on training and enterprise support across regions, aligned with the goals of the Energy Transition Roadmap and national electrification strategy.

In Conclusion, the Electric Stove Adoption and Integration Bankable Project aims to accelerate the widespread use of electric cooking in Ethiopia by establishing local manufacturing and assembly lines for electric stoves, coupled with targeted upgrades to the electricity grid in high-potential areas. This integrated approach will reduce stove costs, create skilled jobs especially for youth and women and ensure the grid can reliably support increased cooking loads, directly advancing SDGs and Ethiopia's climate commitments. The project also introduces a National Appliance Standards and Labeling Program to guarantee the efficiency, safety, and quality of electric stoves, fostering consumer confidence and market growth. Additionally, a national capacity-building initiative will

strengthen supply chains, provide after-sales services, and train technicians and entrepreneurs, with a focus on last-mile delivery and empowering women and youth. Through collaboration with key government agencies, local producers, and financial institutions, this bankable project addresses both supply and demand barriers, laying the foundation for a sustainable and scalable transition to electric cooking in Ethiopia.

9.2.3. Biogas Systems for Household Cooking Bankable Project Ideas

1. **Household Biogas Access Program in Livestock-Rich Areas :** This project establishes a targeted biogas deployment program in Ethiopia's livestock-rich regions, converting animal waste into cooking fuel and organic fertilizer. By implementing standardized 4-10m^3 digesters with a hub-and-spoke construction model, the initiative creates sustainable cooking solutions for rural households. The program integrates carbon financing, agricultural incentives, and pay-as-you-save models to overcome investment barriers. Through partnerships with the Ministry of Agriculture and rural financing institutions, the project establishes quality standards and maintenance systems, transforming agricultural waste into valuable energy assets while reducing deforestation and improving soil fertility.
2. **Biogas Technology Innovation and Value Chain Strengthening :** This project creates a Biogas Technology Innovation Hub focused on enhancing performance, affordability, and user experience of biogas systems in Ethiopia. The initiative strengthens the entire value chain through technical improvements in digester design, gas storage, and cooking appliances while establishing quality standards and certification systems. By supporting local manufacturing capacity for critical components, the program reduces costs and improves reliability. Collaboration with technical universities and private fabricators creates a sustainable innovation ecosystem that enhances market confidence and establishes the specialized business environment necessary for sector growth.
3. **Integrated Biogas and Agricultural Productivity Enhancement :** This project maximizes biogas benefits by creating closed-loop agricultural systems that optimize bio-slurry as organic fertilizer alongside cooking fuel production. Through comprehensive training on bio-slurry application techniques and market linkages for premium products, the initiative transforms the economics of biogas adoption. The program should establish demonstration sites, certification standards, and producer cooperatives that showcase integrated farming approaches. By showing how Biogas digestate can be used as a natural fertilizer while providing clean cooking energy, the project positions biogas technology as an investment in agricultural productivity rather than merely an energy solution, thereby dramatically improving financial returns.

9.2.4. Solar Cooking System Bankable Project Ideas

1. **Off-Grid Solar Cooking Access Program :** This project establishes a national program leveraging Ethiopia's abundant solar resources for cooking in high-insolation regions with limited fuel alternatives. The initiative deploys a portfolio of technologies including direct solar cookers, battery-storage systems, and thermal storage solutions to enable consistent cooking capability regardless of time of day. Using a market-based approach with targeted subsidies for vulnerable households, the program integrates community solar cooking centers alongside household solutions. Through partnerships with the Ministry of Water and Energy and community organizations, the initiative establishes sustainable distribution channels that position solar cooking as a practical, affordable solution within Ethiopia's clean cooking mix.
2. **Solar Cooker Innovation and Manufacturing Hub :** This project creates a dedicated hub for localizing production and adapting solar cooking technologies to Ethiopian practices. The initiative supports R&D in thermal storage, optical designs & hybrid systems while implementing a phased manufacturing approach from assembly to full production. By establishing standards,

testing protocols & certification systems, the program ensures market quality while creating skilled employment opportunities. Through collaborations with universities, manufacturers & international partners, the project transforms solar cooking from an imported technology to a locally-owned industrial sector with regional export potential.

3. **Integrated Solar Energy for Cooking and Productive Use :** This project combines solar cooking with productive applications to maximize economic value and utilization rates of solar investments. By developing integrated packages for cooking alongside income-generating activities like food processing and refrigeration, the initiative transforms the business case for solar energy systems. The program provides comprehensive entrepreneurship support, financing mechanisms, and market linkages that position clean cooking within broader economic development. Through this integrated approach, solar cooking transitions from pure consumption expenditure to a productive asset with income-generating potential.

9.2.5. Cross-cutting Enabler Bankable Project Ideas

1. **Women-Led Clean Energy Microenterprise Program:** This project positions women entrepreneurs as central actors in Ethiopia's clean cooking value chains through tailored business development services, technical training, and specialized financing. The initiative implements a tiered support system from micro-retail to manufacturing roles across all clean cooking technologies. By integrating policy advocacy for gender-sensitive energy planning and institutional capacity building, the program ensures solutions address women's specific needs as primary users. Through collaboration with women's affairs ministries and business associations, the project enhances intervention effectiveness while advancing women's economic empowerment in growing energy markets.
2. **National Clean Cooking Policy and Institutional Framework Support :** This project strengthens governance systems essential for coordinated clean cooking sector development through policy harmonization, standards development, and cross-sectoral coordination mechanisms. The initiative builds capacity in key government institutions while establishing monitoring frameworks and enforcement mechanisms for quality assurance. By improving regulatory clarity, reducing institutional fragmentation, and enhancing implementation capacity, the program creates the stable environment necessary for long-term investment. Through partnerships with energy authorities and sub-national entities, the project establishes clear institutional mandates that improve resource allocation and create foundations for transformative sector growth.

Table 12 : A National Framework of Scalable, Inclusive, and Climate-Aligned Bankable Projects

Project Type	Project Title	Objective	Expected Outcome	Key Stakeholders
Advanced Biomass Stove Bankable Project Ideas	Regional Manufacturing and Distribution Hubs	Scale local production and distribution of Tier 3+ biomass stoves	Millions of stoves deployed, local jobs created	MoWE, MoI, SMEs, energy bureaus, donors,NGOs, development partners (DPs)
	Results-Based Financing for Biomass Stove Deployment	Incentivize private sector for clean stove adoption	Verified adoption, climate finance leveraged	MoWE, private distributors, carbon verifiers, End users, DPs. NGOs
	Conservation and Biomass Fuel Supply	Link clean stoves to sustainable fuel systems	Improved biomass sustainability, forest protection	MoWE, MoE, NGOs, pellet firms, communities, EFD
Electric Stove Adoption and Integration Bankable	Electric Stove Manufacturing and Grid Integration	Enhance grid-linked cooking solutions	Reduced urban biomass use, stable grid load	EEU, EEP,appliance firms, MoWE, municipalities
	National Appliance Standards and	Improve energy efficiency and consumer	Lower electricity bills, reduced peak	ESA, MoWE,local manufacturers and

Project Idea	Labeling Program	trust	loads	Importers, ECCA
	Supply Chain and Technician Capacity Initiative	Train and equip local technicians and repair networks	Increased stove durability and uptake	TVETs, MoI, MoWE, cooperatives, NGOs, DPs
Biogas Systems for Household Cooking Bankable Project Ideas	Household Biogas Program	Deploy digesters for rural households	Biogas access for 100,000+ homes, improved health	MoA,MoWE, rural energy bureaus, biogas installer
	Biogas Technology & Value Chain Strengthening	Localize R&D and strengthen component markets	Product innovation and improved system reliability	Universities, labs, private tech developers, MoWE
	Biogas and Agricultural Productivity Integration	Promote use of bio-slurry as fertilizer	Dual energy and agri-benefits	Cooperatives, MoA, agro-input firms, Health Extension Office
Solar Cooking System Bankable Project Ideas	Off-Grid Solar Cooking Program	Expand solar cooker access in remote areas	Reduced fuelwood use, women's time saved	MoWE, NGOs, solar firms, ESEDA, CSOs
	Solar Cooker Innovation & Manufacturing Hub	Advance R&D and localized manufacturing	Affordable, culturally appropriate cookers	R&D centers, solar SMEs, incubators
	Integrated Solar for Cooking & Productive Use	Link solar cooking to rural enterprises	Increased livelihoods, clean energy nexus	Cooperatives, rural entrepreneurs
Cross-cutting Enabler Bankable Project Ideas	Women-Led Clean Energy Microenterprise Program	Empower women-led clean energy businesses	Economic empowerment, increased tech uptake	Women's associations, MFIs, NGOs, DPs, CSOs
	National Policy & Institutional Framework Support	Strengthen governance and coordination mechanisms	Policy coherence, tracking platform, investor confidence	MoWE, MoF, development partners, NGOs, DPs, CSOs

9.3. Concluding Remark on Bankable Projects

The development and implementation of bankable clean cooking projects are fundamental to mobilizing the scale of investment required for Ethiopia's ambitious clean cooking access targets. By focusing on financial viability, replicability, and alignment with national development and climate goals, these projects attract a diverse range of investors including private sector actors, development finance institutions, and climate funds. Key strategies such as integrating carbon finance, leveraging blended and results-based financing, and aggregating demand to achieve economies of scale make these initiatives more attractive and sustainable. Additionally, embedding gender-responsive, inclusive designs and fostering strong multi-stakeholder collaboration further enhances their impact and bankability.

Looking ahead, Ethiopia's portfolio of bankable projects including advanced biomass stoves, electric cooking, biogas systems, and solar-powered solutions demonstrates a strategic, investment-ready approach that is closely aligned with the country's policy frameworks and Sustainable Development Goals. By prioritizing scalable, high-impact interventions and supporting them with robust business models, quality standards, and strong institutional partnerships, Ethiopia is well-positioned to accelerate progress toward its target of 75.87% clean cooking access by 2035. These efforts will not only improve public health and environmental sustainability but also drive economic growth, empower women and youth, and build a resilient, inclusive clean cooking sector for the future.

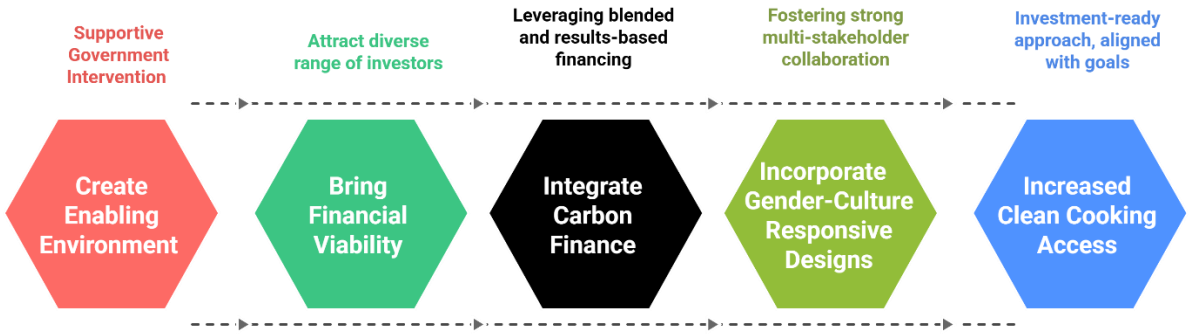

Figure 21 : Mobilizing Investment for Clean Cooking Access

Chapter 10: Conclusion and Recommendations

10.1. Conclusion

Ethiopia faces a severe energy crisis, with less than 10% of its population having access to clean cooking solutions as of 2024. The overwhelming reliance on traditional biomass fuels has resulted in significant health challenges from indoor air pollution, accelerated deforestation, and substantial time burdens especially for women and children. Recognizing these urgent issues, Ethiopia has developed a comprehensive National Clean Cooking Roadmap, aiming to increase clean cooking access to 75.87% by 2035. This ambitious target will benefit over 90 million people, reduce emissions by 75 $MtCO_2eq$, save 105.3 million tons of wood annually, create more than 335,700 jobs, and economically empower 2 million women.

To achieve these outcomes, the Clean Cooking Energy Subsector Investment Plan (2025–2035) proposes mobilizing $3.38 billion, with $2.6 billion allocated for Clean Cooking Technology Solutions (including microfinance, carbon project prefinancing, subsidies, and supply chain support) and $780 million for Enabling Components (such as program units, infrastructure, R&D, policy, and monitoring). The plan is grounded in a robust analysis of historical funding, which totaled $131.9 million between 2004 and 2024 predominantly from grants and carbon finance, but representing only 2.31% of the investment in electricity infrastructure.

The proposed financial mix 35% grants, 30% carbon finance, 10% government contribution, 5% private sector investment, and 20% concessional loans offers a possible path to sustainable growth for Ethiopia's clean cooking sector. This approach moves away from heavy reliance on grants, which made up over 80% of past funding but are now less predictable. By increasing carbon finance and concessional loans, Ethiopia can tap into new climate funds and global finance opportunities. Raising government and private sector shares shows strong national commitment and attracts more partners. This balanced mix spreads risk, brings in more money from different sources, and helps ensure long-term success for clean cooking in Ethiopia.

The Investment plan also acknowledges financial, institutional, and policy risks, and incorporates mitigation strategies such as diversified financing, phased implementation, capacity building, and the establishment of a central Clean Cooking Coordination Unit. The identification of bankable

projects across advanced biomass, electric, biogas, and solar cooking technologies further strengthens the pathway to achieving these goals.

Ultimately, success depends on a collaborative, multi-stakeholder approach, involving strong government leadership, private sector participation, community engagement, and ongoing learning and adaptation. This investment plan provides a clear framework for achieving a healthier, more sustainable, and economically empowered future for Ethiopia through widespread adoption of clean cooking solutions.

10.2. Key Strategic Recommendations

To realize the Clean Cooking Energy Subsector Investment Plan (2025–2035), the following strategic recommendations and implementation strategies with actionable plans are crucial.

- **Prioritize Clean Cooking as a National Development Imperative**: Elevate clean cooking to a top national priority, recognizing its transformative impact on health, forest conservation, job creation, gender empowerment, pollution reduction, and climate change mitigation. Integrating clean cooking into national development agendas will unlock cross-sectoral benefits and drive coordinated action.
- **Establish a Dedicated Clean Cooking Coordination Unit**: Create a specialized Clean Cooking Coordination Unit within the Ministry of Water and Energy, structured into focused divisions for grants, carbon finance, and financial innovation. This unit will provide strategic oversight, mobilize diverse funding streams, and build robust, sustainable financial models for the sector.
- **Develop Carbon and Climate Finance Expertise**: Form a Carbon and Climate Finance Team under ministerial guidance to lead the design and implementation of carbon initiatives. This team should develop national Programs of Activities (PoA), deploy digital Monitoring, Reporting, and Verification (MRV) tools, and connect with global carbon markets to maximize returns from emissions reductions.
- **Adopt a Diversified and Innovative Financing Strategy**: Mobilize funding through a blended approach that combines grants (to de-risk early-stage projects), carbon finance (to monetize emissions reductions), concessional loans (to support manufacturers and distributors), government contributions (to create enabling environments), and private sector investment (to drive sustainability and technological advancement). Align all financing mechanisms with global best practices and targeted implementation strategies.
- **Develop and Submit Bankable Proposals Aligned with Funder Priorities**: Prepare comprehensive, market-based proposals that emphasize technology innovation, commercialization, gender inclusion, climate finance, results-based financing, health impact, policy advocacy, and supply chain development. Ensure alignment with Sustainable Development Goals (SDGs), Nationally Determined Contributions (NDCs), and national energy strategies, while meeting funder requirements for co-financing, verified results, technical assistance, and local stakeholder engagement.
- **Integrate Results-Based Financing (RBF) Mechanisms:** Incorporate RBF models into funding proposals and program implementation, as many international funders are shifting toward performance-based disbursement. This approach will enhance accountability, attract additional funding, and ensure measurable impact.

- Track and Report on Key Performance Metrics: Establish a robust monitoring and evaluation framework to track health improvements, emission reductions, household adoption rates, gender impacts, and market development. Regularly report on progress to align with funder expectations and inform adaptive management.
- Leverage Major International Funding Opportunities: Actively engage with global and regional funders many of whom have specific commitments to Africa and Ethiopia to secure financial and technical support for clean cooking initiatives.
- Highlight Cross-Sectoral and Multi-Benefit Impacts: Clearly communicate the broad benefits of clean cooking across health, gender equality, climate change mitigation, and forest conservation to attract diverse funding sources and stakeholder buy-in.
- Establish a Unified Digital Platform for Monitoring and Transparency: Develop a centralized digital system to track clean cooking adoption, funding flows, supply chain logistics, user feedback, and carbon data. This platform will enhance transparency, enable rapid decision-making, verify carbon credits, and reduce certification costs.
- Invest in Local and Regional Manufacturing Capacity: Support the development of local and regional manufacturing centers through financial incentives, technical assistance, and improved access to affordable finance. This will reduce import dependency, lower costs, create jobs, and improve technology suitability for local contexts.
- Empower Women through Targeted Entrepreneurship Programs: Launch women-focused entrepreneurship initiatives offering tailored credit, matching grants, business coaching, and skills training to increase women's participation and leadership across the clean cooking value chain.
- Implement Fiscal Incentives and Market Support Measures: Provide tax exemption and duty-free imports for clean cooking manufacturer with greater monitoring system, and direct subsidies for clean fuels and clean cooking technologies to stimulate market growth and accelerate adoption.
- Set and Enforce Quality Standards and Certification: Establish clear quality standards and certification processes for stoves and fuels, ensuring alignment with international best practices while adapting to local needs. Regularly update standards as technologies evolve.
- Integrate Electric Cooking with Grid and Mini-Grid Expansion: Align electric cooking programs with national grid and mini-grid expansion plans. Incentivize utilities and suppliers to promote high-efficiency electric stoves and develop targeted financing solutions for end users.