



# Policy Brief

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Redesigning the Rwanda Clean Cooking Results-Based Financing Scheme for Biodiversity and Equity

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# Executive Summary

Rwanda's Clean Cooking Results-Based Financing (CC-RBF) scheme represents a significant policy initiative aimed at transitioning households from traditional biomass fuels to cleaner cooking technologies. This shift is not only essential for reducing greenhouse gas emissions but also has important implications for biodiversity conservation and social equity. As the CC-RBF aims to enhance the adoption of clean cooking solutions, it is crucial to examine its impact on both environmental sustainability and social inclusivity.

This policy brief proposes a redesign of the CC-RBF's subsidy framework to accelerate its positive ecological impacts while ensuring that the process embodies principles of social justice: procedural, distributive, and restorative. By accelerating uptake of clean cookstoves and enabling switching to sustainable alternative fuels - through scaling up coverage and target hotspot areas - the amended CC-RBF can support Rwanda's energy objectives while preserving its rich biodiversity and promoting social equity.

The CC-RBF is one of two instruments selected for redesign through the application of a rigorous analytical prioritisation and consultative process.<sup>1</sup> The CC-RBF, alongside the Crop Intensification Programme (CIP) and the Tax Incentive for Tourism Sector Investments, was found to be among the most important subsidy instruments to review in terms of Rwanda's biodiversity value to the economy and society. The instruments - which are interrelated - and their proposed biodiversity and social equity-oriented reforms, align with relevant Rwandan sector policy, and particularly with Rwanda's Vision 2050.

**Vision 2050** aims to achieve a nation that has a clean and healthy environment that is resilient to climate variability and change, and that supports a high quality of life for its society. Vision 2050 presents a sustainable growth and development pathway, centred on economic diversification, in terms of the use and management of natural resources, while building resilience to cope with the impacts of climate change. This pathway links the high quality of life desired for Rwandan people, with the quality of the natural and the built environment.

## Introduction

Rwanda is at a pivotal point in promoting sustainable cooking solutions through the CC-RBF scheme, which stands to bring about substantial benefits for biodiversity, social equity and human well-being. Accelerating the rollout of this important instrument and reviewing the ambition of its targets is critical for enhanced energy access, improved human health, and increased agricultural productivity. This brief outlines the background, subsidy mechanism, results, and biodiversity implications of the CC-RBF, providing a framework for potential policy redesign to enhance its benefits.

## Background

**Household reliance on firewood:** A significant portion of Rwandan households - approximately 76.1% - relies on firewood as their primary cooking fuel, equating to about 2.5 million households.<sup>2</sup> This reliance is notably higher in rural areas (94%) than in urban centres (32%).<sup>3</sup> Although firewood dependence has been decreasing over recent years - from 83.3% in 2014 to 76.1% in 2022 - there remains substantial pressure on forest resources, predominantly from unsustainable biomass harvesting.<sup>4</sup>

**Deforestation and biodiversity impacts:** Forestry statistics show that Rwanda has lost around 46,200 hectares of tree cover between 2001 to 2023, primarily due to expanding agricultural land and unsustainable wood fuel harvesting.<sup>5</sup> This practice leads to biodiversity decline, disrupting ecosystems and threatening species diversity. Species loss, habitat destruction, and soil erosion are direct consequences of this over-reliance on wood fuels. Increased adoption of clean cooking technologies is crucial to reducing habitat loss and restoring ecological balance. Rwanda's Nationally Determined Contributions (NDCs) align with the objective of mitigating deforestation by advocating for cleaner cooking alternatives - given that the cooking sector contributes significantly to national greenhouse gas emissions - approximately 14% from cooking fuels - it is vital to integrate fuel efficiency and pollution reduction into national strategies.<sup>6</sup>

## Overview of the Clean Cooking Subsidy Instrument (CC-RBF)

The CC-RBF operates as a results-based financing instrument designed to support private clean cooking companies – based on rigorous eligibility criteria - in promoting the sale and sustained use of clean cooking technologies. Using verified sales and performance indicators, the CC-RBF disburses financial incentives to participating companies. The programme includes multiple stakeholders, necessitating a collaborative approach:

- **Ministry of Infrastructure (MININFRA):** Oversees the clean cooking agenda.
- **Rwanda Energy Group (REG):** Manages implementation and monitoring.
- **Development Bank of Rwanda (BRD):** Administers financing in conjunction with other entities.
- **Independent Verification Agent (IVA):** Ensures compliance for subsidisation.

CC-RBF is designed to support low-income households in Rwanda, particularly those in Ubudehe categories 1, 2, and 3. These households – permitted to receive the subsidy only once to enable broad coverage – are prioritised to ensure that the most vulnerable populations benefit from affordable, energy-efficient cooking solutions.

Subsidies are disbursed in stages based on performance. For PAYGO or credit sales, companies receive 50% upon sales verification, 40% after three months, and 10% after one year. For cash sales, 80% is given after verification, with the remaining 20% disbursed a year later based on continued use validation.<sup>7</sup> Households contribute to the cost based on financial capabilities, promoting equitable access while maintaining market integrity.

The structure promotes market competitiveness while encouraging households to contribute to costs, thereby fostering ownership and engagement with the clean cooking solutions. Importantly, the presence of independent verification agents ensures transparency and efficacy in the subsidy disbursement process.

The switch to clean cooking options presents direct economic as well as health advantages. Rwandan households using traditional methods face high costs and time burdens associated with fuel collection - annual estimated losses amount to approximately USD 510 in unpaid labour.<sup>9</sup> In addition, traditional fuel use and cooking methods are the primary driver of indoor air pollution, a major cause of respiratory disease particularly harmful for children.<sup>9</sup> Clean cooking solutions mitigate these issues, providing economic relief, enabling improved human health, and supporting energy transition aims.

## Biodiversity Implications of Accelerating the CC-RBF

Transitioning to clean cooking technologies has profound positive implications for Rwanda's biodiversity. Key benefits include:

- **Reduced deforestation:** By decreasing reliance on firewood, CC-RBF can considerably lessen the pressure on forest resources, facilitating natural regeneration and reducing habitat loss.
- **Habitat preservation:** Lowering charcoal production and wood harvesting decreases the degradation of ecosystems and protects wildlife habitats.
- **Restoration efforts:** Encouraging sustainable cooking practices facilitates reforestation initiatives and enhances biomass conservation, crucial for biodiversity.
- **Reducing methane and CO<sub>2</sub> emissions:** Significantly reduced reliance on inefficient biomass burning diminishes methane and, will contribute to Rwanda's climate change mitigation efforts, which is vital for sustaining Rwanda's habitats and ecosystems. With this, the CC-RBF directly contributes to Rwanda's NDCs under the Paris Agreement.

- **Promoting environmental awareness:** The successful implementation of CC-RBF will promote increased awareness and appreciation for biodiversity conservation among communities. Educational initiatives coupled with subsidised clean cooking solutions will empower households to understand the ecological benefits of preserving natural resources, fostering a culture of environmental stewardship.

## Social Equity Outcomes of Accelerating the CC-RBF

**Improving access to clean cooking:** The CC-RBF is designed with equity in mind, catering especially to low-income households who traditionally rely on cooking practices that degrade natural resources. By providing subsidies targeted at varying income levels through the Ubudehe classification system, the programme enhances access to clean cooking technologies among marginalised communities.

**Economic empowerment:** Switching to cleaner cooking solutions not only reduces financial burdens associated with traditional fuel collection but also frees up time for women and girls who are disproportionately responsible for fuel gathering (up to 7 hours per day according to World Bank data). The average time saved can be redirected towards income-generating activities and education, thus promoting gender equity and overall family well-being.

**Health benefits:** By reducing indoor air pollution from traditional cooking methods, the CC-RBF contributes to enhanced health outcomes for families, and particularly for vulnerable groups, including children and women. This shift reduces the incidence of respiratory illnesses – particularly harmful for Rwanda’s children - and promotes healthier living environments.

Three distinct pathways have been identified for the CC-RBF’s future, each varying in ambition and potential impact on clean cooking adoption and forest conservation. *Currently, significant data gaps limit the quantification of the CC-RBF’s impact on deforestation and stove distributions, hindering effective scenario modelling and decision-making.*

Under a **Business-as-Usual scenario** (no redesign) the CC-RBF continues its current operations without major redesign or expansion until 2026 and beyond. Key characteristics include:

- *Status-quo operations:* Subsidies for clean cooking technologies remain available, but there is no prioritisation of areas facing critical deforestation or heavy biomass reliance, with consequences for erosion and landslides, and agricultural productivity.
- *Limited impact:* Deforestation persists, particularly in rural and peri-urban regions, leading to stagnated emissions reductions and biodiversity benefits.
- *Underachievement of targets:* The original target of reaching 500,000 households by 2026 is missed, resulting in a two-year extension. By the end of 2028, the target is eventually achieved, but the CC-RBF faces ongoing challenges in meeting biomass reduction and clean cooking adoption goals. With this, environmental degradation increases, and agricultural productivity is compromised. Household members, particularly children, continue to face compromised health outcomes.

Under a pathway of **Scaling Up and Targeting Hotspot Areas**, the CC-RBF takes a proactive step to expand its reach and focus on areas critically affected by deforestation and biodiversity loss. Included in the criteria is the selection of areas where biodiversity loss interfaces with agricultural dependence. Key characteristics of this scenario include:

- *Focused engagement:* The programme prioritises communities near biodiversity hotspots and regions with high deforestation rates.

- *Significant reach:* By 2030, the CC-RBF has successfully reached 1,000,000 households, resulting in a marked reduction of pressure on forest resources.
- *Improved efficiency:* The promotion of more efficient clean cooking stoves leads to lower biomass consumption, enabling a slowdown in deforestation and a decrease in greenhouse gas emissions, thus contributing to the country's NDCs.
- *Ongoing challenges:* Despite progress in hotspot regions, reliance on biomass fuels continues, hindering complete forest regeneration and longer-term emission reductions.

Under the third scenario – **Scaling Up, Targeting Hotspot Areas, and Integrating Sustainable Fuel Alternatives** – an ambitious pathway integrates a comprehensive approach that encompasses stove distribution and promotes sustainable fuel alternatives, with key characteristics:

- *Holistic strategy:* The CC-RBF integrates fuel transition incentives alongside clean stove distribution, encouraging the use of liquefied petroleum gas (LPG), biomass briquettes, and other clean energy sources.
- *Substantial impact by 2030:* Over 1,000,000 households adopt clean cooking technologies, with 500,000 households ceasing the use of fuelwood entirely, resulting in an annual conservation of approximately 900,000 tonnes of firewood.
- *Biodiversity and health benefits:* Deforestation rates decline significantly, preserving thousands of hectares of forest annually. Impacts on public health improve, as indoor air pollution and emissions from biomass burning decrease substantially, aiding Rwanda in fulfilling its climate commitments.
- *Market viability:* The programme creates market incentives that stimulate private-sector investment in alternative fuels, fostering a sustainable clean cooking ecosystem that extends beyond reliance on subsidies.

The future redesign of the CC-RBF offers critical pathways for enhancing both environmental sustainability and public health in Rwanda. While the Business-as-Usual scenario risks stagnation in deforestation and clean cooking adoption, targeted scaling and the integration of sustainable fuel alternatives provide promising opportunities for significant improvements. By strategically addressing the pressing challenges of deforestation and drawing on market dynamics, Rwanda can maximise the impact of the CC-RBF in promoting a healthier and more sustainable future. Enhanced data collection and continuous monitoring are essential to inform decision-making and ensure the effectiveness of whichever pathway is pursued.

## Recommendations for Policy Redesign

The CC-RBF has made commendable strides toward enhancing Rwanda's clean cooking landscape, with notable implications for biodiversity preservation. To further enhance these benefits, the following recommendations are proposed:

- **Strengthening Monitoring and Evaluation:** Implement more robust tracking of environmental and biodiversity outcomes linked to clean cooking adoption – including through implementation and integration of citizen science – ensuring long-term sustainability.
- **Public Awareness Campaigns:** Enhance community engagement and education on the ecological benefits of clean cooking solutions, fostering greater acceptance and utilisation.
- **Incentivising Local Solutions:** Encourage local innovations and adaptations in clean cooking technologies to better fit community needs while promoting biodiversity conservation.
- **Integrated Policy Frameworks:** Align clean cooking initiatives with broader environmental and health policies to create synergy in achieving sustainable development goals.

By focusing on the strategic redesign of the CC-RBF with a strong emphasis on biodiversity, Rwanda can further strengthen its efforts in combating climate change, enhancing public health, and ensuring sustainable development for future generations. The interplay between energy access and ecological preservation is critical in fostering a resilient environment where both communities and biodiversity can thrive together.

## Pathways for Implementation

The proposed action plan – outlined in the box that follows - aims to enable the REMA to advocate for the redesign of the CC-RBF to enhance its effectiveness in reducing deforestation and promoting the adoption of clean cooking technologies. The plan focuses on three key strategies: scaling up stove subsidies, refining implementation to prioritise hotspot areas, and integrating sustainable fuel alternatives.

There are important socioeconomic considerations that must be addressed. The potential impacts on charcoal producers and informal firewood collectors should be addressed through compensation measures, including training and support for alternative livelihoods. In addition, assistance should be available to local stove manufacturers transitioning to higher-efficiency models to maintain market access while improving environmental performance.

## Conclusion

Redesigning the CC-RBF positions Rwanda to make significant strides in clean cooking adoption, reduce deforestation, and improve public health outcomes. Through stakeholder engagement, targeted implementation, and rigorous monitoring and evaluation, REMA can effectively advocate for necessary reforms that align with Rwanda's sustainable development goals. Ensuring socioeconomic equity in this transition will also contribute to the long-term resilience of affected communities and the overall ecological health of the country.

# Action Plan for Subsidy Redesign and Implementation

## 1. Ensure stakeholder engagement and institutional coordination

- Engage MININFRA, REG, EDCL, BRD, World Bank, and RSB on redesign
- Establish technical working group (REG, RSB, RICA, RDB, LODA, BRD, REMA) and a steering committee (MININFRA, EPD, MINALOC, MoE, MINICOM)
- Engage private clean cooking companies, local government, NGOs, and CBOs on capacity to scale distribution

## 2. Conduct data collection and baseline assessment

- Map current CC-RBF beneficiaries by location and stove type
- Develop monitoring framework on deforestation and biomass consumption (using satellite data, forest inventories, household surveys)
- Establish biodiversity baselines in hotspot areas
- Identify data gaps in stove and fuel usage
- Update CC-RBF verification system

## 3. Undertake policy and financial adjustments

- Propose policy changes to extend CC-RBF subsidies to alternative fuels
- Review financial structure with BRD and World Bank
- Assess feasibility of co-financing options for incentivising both stove and fuel providers

## 4. Scale up stove distribution and refine subsidy structure

- Expand CC-RBF subsidy pool
- Implement tiered incentives based on stove efficiency and household location
- Engage independent verification agents for periodic usage checks (surveys, sensors, random inspections)

## 5. Target hotspot areas for focused implementation

- Use GIS to identify and prioritise areas with high deforestation or proximity to protected forests
- Establish local distribution hubs
- Partner with CBOs for behavioural support
- Launch outreach to wood-dependent communities (home visits, training, incentives)

## 6. Integrate sustainable fuel alternatives into programme

- Design fuel vouchers linked to stove purchases
- Provide technical grants for briquette, pellet, LPG investors
- Pilot supply chain interventions to improve rural/urban availability

## 7. Launch progressive fuel-switching subsidy system

- Develop KPIs: (1) Firewood/charcoal use per household, (2) Deforestation rates, (3) Air quality improvements, (4) Alternative fuel adoption, (5) Biodiversity changes
- Conduct monitoring using sensors, surveys, remote sensing; Publish periodic reports

## 8. Adjust CC-RBF and integrate into long-term national strategies

- Use evaluation findings to refine CC-RBF structure and improve efficiency
- Propose integration of CC-RBF into Rwanda's long-term energy and climate strategies to ensure continuity and funding

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