Funding Proposal

FP103: Promotion of Climate-Friendly Cooking: Kenya and Senegal

Kenya, Senegal | Deutsche Gesellschaft fuer Internationale Zusammenarbeit GmbH (GIZ) | Decision B.22/07

28 February 2019

GREEN CLIMATE FUND

Funding Proposal

Version 1.1

The Green Climate Fund (GCF) is seeking high-quality funding proposals.

Accredited entities are expected to develop their funding proposals, in close consultation with the relevant national designated authority, with due consideration of the GCF's Investment Framework and Results Management Framework. The funding proposals should demonstrate how the proposed projects or programmes will perform against the investment criteria and achieve part or all of the strategic impact results.

V10 Project/Programme Title:	Promotion of Climate-Friendly Cooking: Kenya and Senegal
Country/Region:	Global: Kenya and Senegal
Accredited Entity:	GIZ
Date of Submission:	28 January 2019

Contents

Note to accredited entities on the use of the funding proposal template
• Sections **A, B, D, E** and **H** of the funding proposal require detailed inputs from the accredited entity. For all other sections, including the Appraisal Summary in section F, accredited entities have discretion in how they wish to present the information. Accredited entities can either directly incorporate information into this proposal, or provide summary information in the proposal with cross-reference to other project documents such as project appraisal document. • The total number of pages for the funding proposal (excluding annexes) is expected not to exceed 50.

Please submit the completed form to:

fundingproposal@gcfund.org

Please use the following name convention for the file name:
"[FP]-[Agency Short Name]-[Date]-[Serial Number]"

A.1. Brief Project / Programme Information			
A.1.1. Project / programme title		Promotion of Climate-Friendly Cooking: Kenya and Senegal	
A.1.2. Project or programme		Project	
A.1.3. Country (ies) / region		Kenya and Senegal	
A.1.4. National designated authority (ies)		Kenya: National Treasury Senegal: Ministry of Environment and Sustainable Development	
A.1.5. Accredited entity		GIZ	
A.1.5.a. Access modality		☐ Direct ☒ International	
A.1.6. Executing entity / beneficiary		Executing Entities: Kenya: Ministry of Energy, SNV, GIZ Senegal: ENDA ENERGIE, ENDA ECOPOP, CONCEPT, GIZ Beneficiaries: 11.23 mln people, including 5.52 mln female Kenya: 7.98 mln people, including 3.91 mln female Senegal: 3.25 mln people, including 1.61 mln female	
A.1.7. Project size category (Total investment, million USD)		☐ Micro (≤10) X Medium (50<x≤250)	☐ Small (10<x≤50) ☐ Large (>250)
A.1.8. Mitigation / adaptation focus		☒ Mitigation ☐ Adaptation ☐ Cross-cutting	
A.1.9. Date of submission		28 January 2019	
A.1.10. Project contact details	Contact person, position		
	Organisation		
	Email address		
	Telephone number		
	Mailing address		

A.1.11. Results areas *(mark all that apply)*

Reduced emissions from:

- ☐ Energy access and power generation
  (E.g. on-grid, micro-grid or off-grid solar, wind, geothermal, etc.)
- ☐ Low emission transport
  (E.g. high-speed rail, rapid bus system, etc.)
- ☒ Buildings, cities and industries and appliances
  (E.g. new and retrofitted energy-efficient buildings, energy-efficient equipment for companies and supply chain management, etc.)
- ☐ Forestry and land use
  (E.g. forest conservation and management, agroforestry, agricultural irrigation, water treatment and management, etc.)

Increased resilience of:

- ☐ Most vulnerable people and communities
  (E.g. mitigation of operational risk associated with climate change – diversification of supply sources and supply chain management, relocation of manufacturing facilities and warehouses, etc.)
- ☐ Health and well-being, and food and water security
  (E.g. climate-resilient crops, efficient irrigation systems, etc.)

☐	Infrastructure and built environment (E.g. sea walls, resilient road networks, etc.)
☐	Ecosystem and ecosystem services (E.g. ecosystem conservation and management, ecotourism, etc.)

A.2. Project / Programme Executive Summary (max 300 words)

Nearly 3 bln people worldwide use solid fuels, such as firewood and charcoal, as the primary source of cooking. Burning solid fuels releases emissions of carbon dioxide, methane, black carbon – some of the most important contributors to global climate change. The global potential for greenhouse gas (GHG) emission reductions from the transition to **improved cookstoves (ICS)** is estimated at 0.6 - 2.4 Gt CO_2eq/year. There is evidence that ICS in Kenya and Senegal (a) reduce the specific GHG emissions significantly, (b) can be sold at large scale and (c) will be used over years at large extend once they are bought by households.

The proposed global project is aimed at demonstrating an innovative ICS market transformation strategy, starting in two countries, Kenya and Senegal, and by doing so improving global knowledge about ICS sector contribution to Nationally Determined Contributions (NDCs). It will significantly increase the number of ICS users amongst rural and most vulnerable populations in both countries, directly benefitting **11.23 mln people** and **1.91 mln mainly rural households, including 0.61 mln women-headed households and 5.57 mln children.**

The project will significantly limit consumption of non-renewable biomass in the cooking sector compared to the baseline situation leading to GHG emission reductions of **6.47 Mt CO_2eq** during the project period and an additional **24.77 Mt CO_2eq** until 2030. It will enable Senegal and Kenya to reach their stated NDC targets for GHG emissions in energy cooking sectors.

The project **paradigm shift objective** is to **accelerate** the growth of the ICS sector, in particular in more remote and rural locations **with an irreversible market transformation**. To do so, it will transform the sector from the one which is dominated by a number of small, artisanal, under-capitalised, and informal ICS producers into a much stronger economic sector with sufficient a technological basis and business management capacities, access to commercial capital and ability to deliver better quality products to a bigger number of consumers, in particular in remote rural areas. The intended outcome of the project is to triple annual ICS production and sales volume by the project end (after 5 years) and achieve a 6-fold increase by 2030; the scale required for both countries to substantially reach their ICS-related NDC targets **and to achieve ODA-independent growth.** To reach this paradigm shift objective the projects works on the ICS market development by a) professionalising the ICS production, expanding the distribution and retail chains and facilitating access to market-based finance (supply side activities) and b) by raising consumer awareness and creating an enabling market environment (demand side activities).

A.3. Project/Programme Milestone

Expected approval from accredited entity's Board (if applicable)	24/09/2018
Expected financial close (if applicable)	N/a
Estimated implementation start and end date	Start: 01/01/2020 End: 31/12/2024
Project/programme lifespan	5 years

B.1. Description of Financial Elements of the Project / Programme

1. GCF contribution in the form of grant is being requested to address barriers preventing ICS market growth at the rate required to meet energy cooking sector GHG emission reduction targets in NDC. A grant is the most appropriate financial instrument to address barriers to growth in these sectors due to the current status of both the ICS and the financial markets in both Kenya and Senegal: the ICS sector is not mature enough to access non-grant finance on the terms and conditions that the Kenyan and Senegalese financial institutions can offer (please refer to Section C.5 for detailed description of the ICS sector and financial markets in both countries).

2. The project will deploy GCF grant resources in the form of technical assistance (TA) and in-kind investment support to strengthen the ICS supply chain in terms of improved productivity and product quality, increased production volumes, and geographic coverage. It will also provide TA to bolster consumers' awareness and support a market environment that enables sustainable ICS market growth over the long-term.

3. The project will address prevailing financial barriers to access non-grant finance with targeted technical support and coaching to selected producers that are near bankability, as well as active dialogue with financial institutions to stimulate the ICS sector's gradual transition to market-based financing.

4. Starting late in the GCF project, this performance-based, intensive financial coaching, will be offered to ICS producers that are on the cusp of being bankable and have expanded to a level of at least 1,000 ICS per month. This element, along with coaching for and dialogue with possible financiers is designed to engage the ICS sector with finance providers and to defray the lending costs and risk associated with further investments needed for producers to further expand production without ODA, ensuring the exit of GCF financing, the hand-off to alternative financiers, and the long-term sustainability of the ICS sector in the two countries.

5. The project consists of 2 national-level outputs and 1 global output (excluding Project Management):
   - **Output 1:** Accelerated market development for climate-friendly cookstoves in Kenya (GCF finance: EUR 19.91 mln; co-financing: EUR 9.76 mln)
   - **Output 2:** Accelerated market development for climate-friendly cookstoves in Senegal (GCF finance: EUR 17.50 mln; co-financing: EUR 7.45 mln)
   - **Output 3:** Sharing and replication of knowledge on climate-friendly cooking solutions and their contribution to NDC among relevant countries (GCF finance: EUR 0.95 mln; co-financing: EUR 1.61 mln)

6. A detailed description of the project design is provided in Section C.3.

7. The total project costs are estimated at **EUR 57.17 mln, including EUR 38.36 mln GCF grant and EUR 18.81 in confirmed co-financing: EUR 12.78 mln from BMZ and EUR 6.03 mln from a range of project partners**. The latter includes contribution from the national governments (Kenya: Ministry of Energy– EUR 2.4 mln and Ministry of Health – EUR 0.5 mln; Senegal: Ministère du Pétrole et des Énergies – EUR 0.19 mln and Ministère de l'Environnement et du Développement Durable – EUR 0.43 mln), as well as from project executing entities (EEs) and other partners. The total ratio of confirmed co-financing to GCF funds is 0.5.

8. The GCF funds will be applied alongside other parallel sources of financing (Table 1). The project will leverage a considerable contribution – **EUR 1.51 mln** – from the ICS sector. Further, the technical assistance in the form of materials and equipment to the ICS sector stakeholders under Sub-components 1.1 and 2.1 will be allocated only after the required share of co-financing (20%) is provided in cash by the beneficiaries, thus minimising the risks for GCF that expected leverage did not materialise. Similarly, support, e.g. training and coaching, under Sub-components 1.3 and 2.3 will lead to additional leveraging from the financial sector in the form of loans to the ICS sector amounting to **EUR 0.78 mln** in loan funding. The project total co-financing ratio (co-financing to GCF including parallel sources of finance and confirmed co-financing) is 0.55[1].

[1] 1 EUR from GCF mobilizes another 0.55 EUR in co-financing and parallel financing, not including the amount of leveraging from the ICS consumers.

9. Finally, the project will leverage significant revenue for the ICS manufacturer from sales to households/ consumers. Until 2030, 13.95 mln additional ICS will be cumulatively sold (average price among all stove types in both countries: 9.72 EUR). This is equivalent to **EUR 136.62 mln** in revenue from sales of ICS until 2030. Please note that these resources are not counted as co-financing for the project, but stated as a matter of sustainable business operations and leveraged finance.

10. The project's total co-/parallel/leveraged financing is **EUR 157.72 mln** (Table 1) leads to a cumulative leveraging ratio of 4.1 for GCF funds, i.e. for each EUR of GCF support 4.1 additional EUR will be leveraged for ICS market development.

Table 1 Project financing structure, mln EUR

Source	***Amount, mln EUR***
GCF (grant)	**38.36**
Co-financing:	
BMZ	12.78
Other partners (confirmed)	6.03
Total co-financing:	*18.81*
Parallel financing[2]:	
ICS producers	1.51
Banks and Financing Partners	0.78
Total Co-financing (incl. Parallel Financing):	*21.12*
Leveraged financing[3]:	
Revenue from sales to ICS consumers	136.62
Total parallel and leveraged	*138.91*
TOTAL co-/parallel/leveraged financing	**157.72**

11. The project budget breakdown on sub-component level is displayed in table 2 and the GCF contribution per sub-component in table 3.

Table 2 Overall budget breakdown per sub-component and contributors

		GCF Proposal					Parallel Financing		Leveraged finance
		Amount entire project (mln EUR)	GCF funding (mln EUR)	BMZ (mln EUR)	Other partners -Confirmed (mln EUR)	Total (mln EUR)	ICS producers (mln EUR)	Banks (mln EUR)	ICS consumers (mln EUR)
Component 1: Kenya	Total Amount Implementation Sub-Component 1.1	14.700	11.886	0.829	1.985	1.060	0.612	0.448	
	Total Amount Implementation Sub-Component 1.2	10.061	4.379	4.322	1.359	92.085			92.085
	Total Amount Implementation Sub-Component 1.3	3.375	2.729	0.190	0.456	0.000			
	Total Project Management Costs Component 1	1.531	0.916	0.615		0.000			
Component 2: Senegal	Total Amount Implementation Sub-Component 2.1	15.705	11.953	2.227	1.524	1.229	0.893	0.336	
	Total Amount Implementation Sub-Component 2.2	2.938	1.085	1.568	0.285	44.534			44.534
	Total Amount Implementation Sub-Component 2.3	4.349	3.310	0.617	0.422	0.000			
	Total Project Management Costs Component 2	1.955	1.151	0.803		0.000			
Component 3: Global	Total Amount Implementation Sub-Component 3.1	1.039	0.289	0.749		0.000			
	Total Amount Implementation Sub-Component 3.2	0.842	0.235	0.608		0.000			
	Total Project Management Costs Component 3	0.681	0.426	0.255		0.000			
TOTAL		**57.174**	**38.360**	**12.783**	**6.031**	**138.908**	**1.505**	**0.784**	**136.619**

[2] Estimates based on equity investments for companies supported with professionalization kits and those business class producers to qualify for loans, modelled in the integrated bottom-up financial model as presented in Annex 6
[3] Estimated based on ICS market development model presented in the Impact Model (Annex 2)

12. The requested amount of GCF grant for sub-components 1.1 and 1.2 'Strengthening the ICS Supply and Delivery Chain' to provide targeted TA and limited (up to 5% of the budget) financial support packages to 100 ICS sector stakeholders has been estimated based on a detailed bottom-up financial and economic analysis of investment required to accelerate growth rates of ICS production and sales, in particular in new un-served rural and remote areas, for the different categories of ICS supply chain stakeholders (artisanal, professional and business-level ICS producers, distributors and last-mile entrepreneurs) and different level of TA support. It is the minimum amount of grant funding which is needed to address barriers and leverage additional investment at scale in order to support them to achieve their NDC targets for GHG emission reductions within the energy-cooking sector in Kenya and Senegal (See E.2 Paradigm Shift Potential).

Table 3: Project budget and GCF contribution by sub-components

Component	Sub-component (if applicable)	Amount (for entire project) (EUR in mln)	Currency	Amount (for entire project)	Local currency	GCF funding amount (EUR in mln)	Currency of disbursement to recipient
Component 1: Kenya	Sub-component 1.1	14.700	mln EUR	1,725.663	mln KES[4]	11.886	mln EUR
	Sub-component 1.2	10.061	mln EUR	1,181.004	mln KES	4.379	mln EUR
	Sub-component 1.3	3.375	mln EUR	396.157	mln KES	2.729	mln EUR
	PMC	1.531	mln EUR	184.638	mln KES	0.916	mln EUR
	Total	29.666	mln EUR	3,487.462	mln KES	19.910	mln EUR
Component 2: Senegal	Sub-component 2.1	15.705	mln EUR	10,301.616	mln XOF[5]	11.953	mln EUR
	Sub-component 2.2	2.938	mln EUR	1,927.423	mln XOF	1.085	mln EUR
	Sub-component 2.3	4.349	mln EUR	2,852.609	mln XOF	3.310	mln EUR
	PMC	1.955	mln EUR	1,271.469	mln XOF	1.151	mln EUR
	Total	24.946	mln EUR	16,353.116	mln XOF	17.500	mln EUR
Component 3: Global	Sub-component 3.1	1.039	mln EUR	1.039	mln EUR	0.289	mln EUR
	Sub-component 3.2	0.842	mln EUR	0.842	mln EUR	0.235	mln EUR
	PMC	0.681	mln EUR	0.681	mln EUR	0.426	mln EUR
	Total	2.562	mln EUR	2.562	mln EUR	0.950	mln EUR
Total project financing		57.174	mln EUR			38.360	mln EUR

[4] Exchange rate KES = 117.39
[5] Exchange rate CFA Franc = 655.96

B.2. Project Financing Information

	Financial Instrument	Amount	Currency	Tenor	Pricing
(a) Total project financing	**(a) = (b) + (c)**	57.174	million euro (€)		
(b) GCF financing to recipient	(i) Senior Loans	.....	Options	( ) years	( ) %
	(ii) Subordinated Loans	.....	Options	( ) years	( ) %
	(iii) Equity	.....	Options		( ) % IRR
	(iv) Guarantees	.....	Options		
	(v) Reimbursable grants *		Options		
	(vi) Grants *	38.360	Options		
	** Please provide economic and financial justification in section F.1 for the concessionality that GCF is expected to provide, particularly in the case of grants. Please specify difference in tenor and price between GCF financing and that of accredited entities. Please note that the level of concessionality should correspond to the level of the project/programme's expected performance against the investment criteria indicated in section E.*				
	Total requested (i+ii+iii+iv+v+vi)	38.360	million euro (€)		

	Financial Instrument	Amount	Currency	Name of Institution	Tenor	Pricing	Seniority
(c) Co-financing to recipient	Grant	12.783	million euro (€)	1. BMZ	( ) years ( ) years	( ) % ( ) % ( ) % IRR	Options Options Options Options
		2.400		2. Kenyan Ministry of Energy			
		0.513		3. Kenyan Ministry of Health			
		0.060		4. SNV Kenya			
		0.851		5. Kenyan Implementing Partners			
		0.191		6. Senegal: Ministère du Pétrole et des Énergies			
		0.427		7. Senegal: Ministère de l'Environnement et du Développement Durable			
		0.687		8. Senegalese Regional Cluster Management Units (3)			
		0.999		9. Senegal: Chambres des Métiers (12)			

	Lead financing institution: BMZ
	** Please provide a confirmation letter or a letter of commitment in section I issued by the co-financing institution.*

B.3. Financial Markets Overview (if applicable) – N/a

C.1. Strategic Context

GHG emissions from energy cooking sector and its relevance for climate change mitigation

13. Traditional biomass represents approximately 15% of total global energy use and 80% of current biomass use and helps meeting the cooking needs of ~2.5 bln people[6]. Burning solid fuels for cooking in open fires and traditional stoves releases emissions of carbon dioxide and short-lived climate forcers (SLCFs) like black and organic carbon (BC and OC) aerosols and methane (CH4) estimated at 1.0–1.2 Gt CO_2eq yr^{-1} or 1.9–2.3% of global GHG emissions[7]. The Intergovernmental Panel on Climate Change (IPCC)[8] estimated that replacing traditional open fires with more energy efficient improved cookstoves (ICS) has a **global mitigation potential between 0.6 and 2.4 Gt CO_2eq/yr**, while at the same time delivering a wide range of sustainable development benefits, such as reducing the pressure on forests and biodiversity, reducing exposure to smoke-related health hazards, reducing the burden on women and children for collecting wood for fuel, and saving money for the poor (when the fuel needs to be purchased). Global patterns in population growth, urbanisation, and historical fuel use suggest that the number of people relying on solid fuels for cooking and heating will persist at a level of about 3 bln, primarily due to growing firewood consumption and rising charcoal use in Sub-Saharan Africa (SSA), which will counterbalance the declines in solid fuel use in Asia and Latin America. For this reason, two SSA countries, Kenya and Senegal, have been selected as the targeted countries for this GCF Funding Proposal.

14. In **Senegal**, the use of wood-based fuels (firewood and charcoal) is the largest single contributor to the energy sector GHG emission (66%). This is the result of continued population growth and the overwhelming reliance on wood fuel for domestic needs (over 86% of the rural population). The wood fuel supply is constantly decreasing, while the population is growing by 2.7% annually and cooking fuel consumption is increasing at a similar rate (3.1% per year)[9]. As a result, every year, about 40,000 ha of forest are being lost because of the overexploitation of forest resources. UNFCCC estimates the fraction of non-renewable biomass in total biomass consumption in Senegal at 85%[10], meaning that 85% of wood fuel is being used unsustainably and leading to net GHG emissions.

Improved Cookstoves are a proven solution to mitigate GHG emissions in Kenya and Senegal

15. There is evidence that the stove models sold as **"ICS" in Kenya and Senegal are reducing the specific fuel consumption** and likewise **reducing the specific GHG emissions**. In line with the approach used by the Energising Development (EnDev) programme (See C.4 for an explanation of the programme), an improved cooking stove (ICS) is defined[11] in this proposal as a stove with fuel savings of at least 40%[12] and above, compared to the fuel consumption of the baseline stove it is replacing (e.g. three-stone fire for firewood stoves and Kenya Ceramic Jiko (KCJ) for charcoal stoves), based on a Controlled Cooking Test (CCT)[13]. In case other significant improvements (e.g. on safety) can be proven, a reduction of 30% of the specific fuel use is also accepted (for more details on the selected stoves see Section F.2). This definition is consistent with the one adopted by the World Bank (WB).

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[6] IEA Energy Access Outlook 2017, Paris, France, p 58 ff.
[7] Bailis, B., R. Drigo, A. Ghilardi and O. Masera (2015). The carbon footprint of traditional woodfuels. Nature Climate Change 5, 266–272.
[8] Smith P., M. Bustamante, H. Ahammad, H. Clark, H. Dong, E.A. Elsiddig, H. Haberl, R. Harper, J. House, M. Jafari, O. Masera, C. Mbow, N.H. Ravindranath, C.W. Rice, C. Robledo Abad, A. Romanovskaya, F. Sperling, and F. Tubiello, 2014: Agriculture, Forestry and Other Land Use (AFOLU). In: *Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC)*. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
[9] FAO (2015): Evaluation des ressources Forestières mondiales 2015, Rapport National Sénégal, page 14; http://www.fao.org/3/a-az329f.pdf
[10] https://cdm.unfccc.int/DNA/fNRB/index.html. Updated data to be applied during the project as it becomes available.
[11] This definition is consistent with the one adopted by the World Bank for 'cleaner and more efficient stoves' as a stove with thermal efficiency of at least 25% (firewood stoves) and 30% (charcoal stoves) and lower emissions based on the standard Water Boiling Test (WBT) or a stove with fuel savings of at least 40% over and above the fuel consumption of a traditional stove (i.e. three-stone fire and traditional metallic charcoal stoves) based on a Controlled Cooking Test (CCT)
[12] To ensure that calculation of GHG emission reductions are conservative, EnDev assumes the fuel savings in real use are lower (on average 30% savings), since for example, the CCT is based on fuel efficiency when preparing a typical full meal, yet if the users prepare smaller meals or drinks, the overall efficiency of fuel use will be lower.
[13] Latest version of the CCT protocol: http://cleancookstoves.org/binary-data/DOCUMENT/file/000/000/80-1.pdf

The ICS disseminated by the project are domestically produced, low-cost efficient biomass stoves, that are well-adapted to local cooking habits and pots; and which are thus appropriate and affordable for the large majority of households in the targeted countries. Knowledge of the habits and cooking needs of the population has been accumulated for over 12 years in the baseline project.

16. There is market evidence that the traditional biomass cooking sectors in the targeted countries are ready for transformation: the demand for more efficient solutions is on the rise driven by constantly increasing scarcity (in rural areas) and price of wood fuel supply (urban areas). Project data from EnDev as well as independent studies also show that the **ICS supported by the project are in high demand once they have been introduced**. In particular, an independent study by RWI showed in a randomized control trial in rural villages far from the current EnDev ICS activities, that after 1 year, 95% of households who had received an intervention stove (EnDev ICS) still used the stove daily, and that 85% were using the ICS as their main cookstove. Two years after the trial began, 90% still used their ICS. Three and a half years after the trail, only 49% of the households could still use their ICS, but only because many ICS were broken or deteriorated (as expected – each stove is expected to last at least 2 years in Senegal in EnDev monitoring) and households did not have access to a replacement stove. Similarly, in Kenya, a 2013 evaluation of the baseline project showed that 84% of the promoted ICS were in daily use, while the rest were used less frequently and only 6 percent were not in use. **The high usage rate from these studies, as well as the increasing sales volumes in the areas where EnDev producers now are supported show that the technologies are appreciated and demanded by consumers**.

17. Based on the evidence on functionality, market potential and high sustainability of use in households, the Governments of Kenya and Senegal included targets on ICS in their NDC and other development planning (see below). In its **Nationally Determined Contribution (NDC)**, the Government of Senegal defined significant emission reduction targets for the energy sector. Because of the large share of emissions stemming from the use of wood fuel for cooking, the NDC in Senegal defines explicit targets, i.e. 8.4 mln improved cookstoves (ICS) sold cumulatively between 2010 and 2030, and interventions for reducing the use of non-renewable wood as fuel for domestic cooking, such as (1) Dissemination of improved stoves for firewood and charcoal, (2) Increased efficiency in charcoal production, (3) Increased sustainable wood fuel production and (4) Diversification of household fuels.

18. Further, promotion of climate-friendly cooking solutions has been identified among the key development priorities of the government, confirmed through country's commitment to the **SE4ALL goals** and enshrined in the 'Plan Sénégal Emergent' (PSE) (2015 -2035), the key strategic document for national development, which emphasises that universal access to sustainable energy is one of the priority areas for reducing inequalities between the rural and urban areas in the country.

19. **Kenya**: Over 80% of Kenyans rely on the traditional use of biomass as the primary source of energy for cooking and heating with firewood contributing 68.7% and charcoal 13.3%[14], while only a smaller proportion relies on LPG (12%), kerosene (11%) and electricity (0.4%)[15]. The use of biomass is predominant in rural areas with about 95% of the households relying on it. Consequently, wood fuel consumption remains one of the major factors for degradation of Kenya's forest resources[16]: according to UNFCCC, 92% of biomass consumption in the country is categorized as non-renewable[17].

20. In its **NDC**, the Government of Kenya has committed to the mitigation contribution of 30% reduction (42.9 Mt CO_2eq) of GHG emission by 2030 relative to the BAU scenario of 143 Mt CO_2eq. The Kenyan NDC has identified ICS as a priority area for contributing to the emission reduction targets under the category of energy demand sector. The specific NDC target for cooking energy is an annual abatement of 2.8 Mt CO_2eq in 2030 (see Section C.2 for more details).

[14] Sustainable Energy for All (SE4All) Kenya Action Agenda, January 2016
[15] Kenya Health Demographic Survey 2014
[16] The demand for wood in Kenya is estimated to be about 1 cubic metre per capita per year, the majority of which (i.e. 84%) is used for wood fuel (i.e. firewood and charcoal).
[17] UNFCCC default value of fraction of non-renewable biomass in Kenya. https://cdm.unfccc.int/DNA/fNRB/index.html. To be updated during the project when new data is available.

Improved cookstoves (ICS) value chain[18]

21. The **ICS value chain** typically consists of suppliers of raw materials, producers, and various forms of retailers in the supply chain (see Figure 1) as well as the public sector and civil society partners that fulfil important supporting roles in generating demand, including:

Actors in ICS *production*

- individuals artisans producing only ceramic liners (potters)
- individual artisans producing final ICS (smiths and/or potters)
- cooperative-like groups (mostly of women) producing only liners, but sometimes (in Kenya) sub-contracting the metalwork, thereby becoming end producers of ICS
- larger 'workshops' producing both final ICS, who may produce ceramic liners and/or buy them from other producers, depending on demand
- industrial manufacturers (only in Kenya)
- Suppliers of inputs materials (clay, sand, cement, metal sheets, paint etc.)

Actors in ICS *distribution*

- importers of industrially produced ICS (only Kenya)
- Wholesalers at regional capitals, that can manage larger stocks of ICS for redistribution to local dealers and limited direct sales (currently only relevant for the few business class producers existing)
- Small NGO projects on food security, forest management etc. who work as a demand aggregator for their target communities and process bulk ICS orders from producers or wholesaler
- Local traders at weekly markets (usually selling ICS next to the vendors of charcoal or firewood)
- Last-Mile Entrepreneurs (LMEs[19]), who retail and/or install ICS in their neighbourhood/village in rural areas
- Women's groups, who commonly use their own 'consumer financing' instrument (Senegal: tontine) to facilitate investments of their members by lowering the investment barriers. Sometimes they even market ICS beyond their own group
- Community Based Organisations (CBOs) involved in awareness raising and marketing on the village level.

The public sector or non-profit organisations support this sector in other value-chain functions which individual producers are not able to fulfil, i.e. testing, innovation (R&D), quality control and awareness raising that generate demand. These include:

- National, regional and local government authorities, which are responsible for necessary policy frameworks and standards and investment in public health, safety and environment campaigns
- NGOs that invest in public-good informational campaigns
- Universities or institutes that can work on testing ,innovation, and quality-control

22. All categories of producers may employ workers part-time or full-time, on a casual basis or more permanently. The workers are skilled labourers, although in the current situation, ICS production and employment mainly takes place in the informal sector. (The producers of baseline stoves work in similar structures and conditions, and many ICS producers formerly produced baseline stoves.)

18 Please also refer to the annexed "WB and GIZ Joint Strategy Paper for GCF Investment –Investing to create markets for low-carbon cooking"

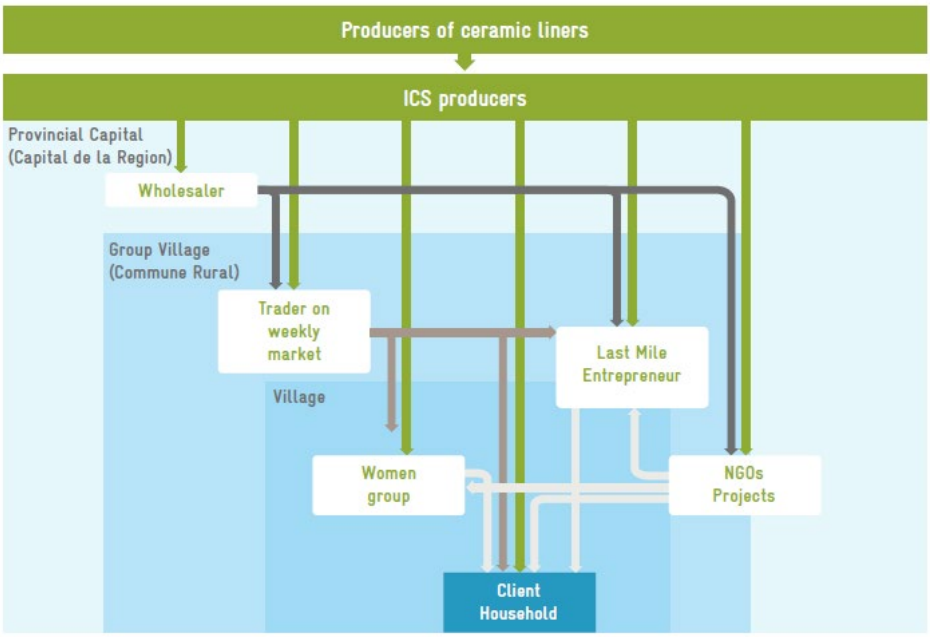
19 Last-Mile-Entrepreneurs are local entrepreneurs who buy and sell or install ICS part of full-time and may also sell other goods, for example also EnDev supported solar lanterns or pico-PV in their community/village. The term LME covers (i) localised resellers of stoves, and/or (ii) installers of in-built stoves such as inbuilt Jiko Kisasa, Rocket stoves in Kenya, or Foyers Banco in Senegal.

23. For the purpose of this proposal, the following **categorisation of ICS producers** has been adopted for both countries depending on the size of the enterprise and its production level. These categories are further used in structuring the project assistance to these producer groups (see Section C.3):
    - **Artisanal** (small) level production (family or 1-3 workers) of up to <100 stoves per month
    - **Professional** (medium) level production (3–7 workers) of 100 to <1,000 stoves per month; and
    - **Business class** (large) producers (> 7 workers) of 1,000 stoves or more per month

    This last category is currently rare in both markets.

24. The sales are either directly to the end client, or to a range of intermediaries such as wholesalers, traders on the weekly markets, LMEs, projects or NGOs or CBOs, or women's groups in villages. Some of the intermediaries may also sell to other intermediaries and not only to the end client. In most cases the LMEs, traders, NGOs or CBOs as well as private individuals purchase the stoves or the liners at the production centre and transport them to the place of storage and sales or usage. Stoves are sold in various ways, at local markets, during exhibitions and roadshows, in small shops, by door-to-door sales, as well as upon request as household-installation.

Figure 1 ICS Supply Chain



25. **Kenya baseline ICS market**: Up-to-date sector-wide statistics on the levels of stove production and adoption in Kenya are currently not available. Two sector studies that should address these information deficits are underway and should be published in early 2019.[20] The baseline description of the stove sector in this Proposal is based on currently available national statistics and EnDev knowledge of the sector. EnDev has been active in the ICS sector in Kenya since 2005, and has supported mainly locally produced wood-burning ICS as described in the Technical Evaluation, mainly in rural areas in higher populated counties. Besides EnDev only a few development organisations support locally produced wood-burning ICS companies and some artisanal producers previously supported by EnDev may still produce, but sell stoves independently without reporting to EnDev.

[20] The first study, initiated by the ESMAP programme of the World Bank in collaboration with SEforAll, is a household survey on a nation-wide level to monitor and evaluate energy access, including modern cooking energy services. This will contribute to monitoring of the progress towards SDG #7.
The second important study in the pipeline is the sector study on clean cooking in Kenya, supported by the members of the Clean Cooking Association of Kenya CCAK. This study will provide details on the supply and distribution of different cookstove technologies and fuels as well as the penetration, use and adoption of the different technologies.
These two studies will allow a more precise evaluation of baseline situation in regards to the current number of households using local or manufactured ICS, and or the different categories of baseline stoves. (Please see discussion of the NDC targets in C2.)

26. For charcoal stoves in Kenya, most production is of the Kenyan Ceramic Jiko (KCJ). This is now counted as a baseline stove, but it has very good efficiency compared to other traditional charcoal stoves used across Africa. It is the product of the first-generation donor-supported ICS, which has become ODA independent and is the standard charcoal stove in urban areas of Kenya. Many small producers produce it in similar conditions as the other local stoves. The project does not have statistics on how many producers are involved in KCJ production. The GCF project proposes to support producers to disseminate a new charcoal stove in Kenya that is currently being tested, that should be affordable and robust, and meet the Kenyan national cookstove standard.

27. The market for industrially manufactured stoves is mainly limited to Nairobi and other urban centres. There is a variety of stove companies on the market[21], but there is no sector side statistics on how many of these industrial stoves are sold. In 2014 the RBF Facility programme, managed by SNV for Energising Development, was introduced in Kenya to pilot RBF-mechanisms for promoting industrially produced ICS on the Kenyan market that are relatively expensive but also offer higher safety and efficiency standards ("Higher Tier"). The stoves in the facility use a variety of fuels, including LPG, ethanol and pellets. The facility incentivises sales above a baseline using ex-post incentives per stoves sold, with the intention of accelerating the market for the higher tier cookstoves. Currently, the facility has reached annual sales of about 25,000 for the higher-tier stoves from 7 companies, all of which are industrially produced. The market penetration is estimated at no more than 5% in 2018. The sales of the RBF facility seem to be indicative of the industrial ICS stove sector in Kenya – sales are growing but they have a very limited market penetration, are not as well adapted to local cooking practices, and are mainly relevant for urban consumers that can afford these more expensive stoves.

28. The "classic" EnDev ICS intervention in Kenya has reached a market volume of about 240-300 thousand ICS sold annually. These sales generate from approximately 130 producers and 4,000 last-mile entrepreneurs (LMEs) supported by the baseline project. The project estimates that these sales satisfy nearly all of the demand of the estimated 37% of Kenyan households currently using ICS. Local small stove artisan and small enterprises mainly dominate the ICS market for domestically produced stoves: over 80% of the market share for ICS comes from artisanal stove producers and there are only two business class producers manufacturing monthly over 1,000 stoves.

29. **Senegal baseline ICS market**: The ICS market in Senegal is relatively closed. On the one hand, there are hardly any ICS imported for distribution in Senegal. On the other hand, exports of ICS produced in Senegal to neighbouring countries are negligible. There are slightly more than 250 ICS producers, who currently supply this market with about 200,000 ICS/year. Like in Kenya, the market is currently dominated by artisans; nearly 90% of the ICS producers (=229) come from small-scale stove artisans with an output of less than 100 stoves per month. A group of 25 producers have invested in mechanical machines and employ additional staff. These 'professional producers' reach monthly stove sales between 100 and 1,000 stoves. Recently, with EnDev support, one producer emerged capable of demonstrating the full potential of this sector. He sells more than 3,000 ICS every month. Two others have reached nearly 1,000 ICS per month and will soon join the new 'business class' of ICS producers (See Table 4).

[21] Industrial stove companies that have had their stoves tested for the Kenya market are: Burn (charcoal & firewood stoves), Ecozoom (charcoal & firewood stoves), Envirofit (charcoal & firewood stoves), Ramtons (firewood stoves),Scode (firewood stoves), Wisdom (pellet stoves) , Mimomoto (pellet stoves), Africa Clean Energy (ACE) (Pellet stoves), EzyStove (charcoal & firewood stoves). Descriptions are available on http://catalog.cleancookstoves.org/stoves

Table 4 Categories of ICS producers in Kenya and Senegal supported by EnDev

	Name of level	Monthly stove production	Number of enterprises (2017) Kenya	Number of enterprises (2017) Senegal
Artisanal	Occasional or individual	Less than 10	56	77
Artisanal		10 to < 30		69
Artisanal	Family or group	30 to < 100	46	82
Professional	Small	100 to < 300	23	23
Professional	Large	300 to < 1000	3	4
Business class	1	1000 to < 1500	1	0
Business class	2	1500 to < 3000	1	
Business class	3	3000 and more	0	1
		TOTAL	130	256

30. The ICS market in these countries is developing and growing thanks largely to donor and governmental support, albeit very slowly due to several challenges associated with its nascent stage. However, this growth is based on ODA investments as ICS producers do not have neither the capital, nor the access to finance, for investing substantially into the growth of their business. **Over 80% of the ICS small/family-scale entrepreneurs, largely informal artisanal producers with a limited asset base and limited production and growth capacities, dominate the sector**. This GCF project therefore puts a focus on transforming artisanal and professional producers to reach a higher level of production. The ultimate goal of this project is the creation of a group of business class producers with bankable business plans that will be implemented based on private sector financing.

ICS market demand potential

31. The size of the global cooking fuel markets suggests that the potential demand for clean and improved cooking solutions is large. In 2010 alone, consumers in the developing world spent USD 100 bln on all cooking fuels, with charcoal, coal, and wood, accounting for approximately one-third of this total. This figure dwarfs annual developing world consumer spending on cooking appliances across all clean or improved technologies, which is estimated **at less than USD 8 bln**. A preliminary assessment shows that globally more than 85% of the population could purchase at least a basic improved cookstove at price of around USD 5. Although most donors (and partially the consumers as well) would like to switch away from biomass cooking to LPG, biogas, bioethanol or electricity, these "higher-tier" solutions are not feasible for the large majority of consumers in developing countries due constraints of cost, (reliability of) supply and infrastructure constraints. In fact, global statistics show that even with rising incomes, biomass cooking does not disappear.

32. Kenya: It is estimated that about 37%[22], which is about 3.7 mln households in Kenya use ICS based on 2016 data. These include improved charcoal stoves, mainly used in urban areas, where wood is scarce and storage space is rare as well as firewood stoves, mainly used in rural areas, where fuelwood is still available, and purchasing power is low, so that firewood is mainly collected. Besides the small share of ~ 10% of households using non-solid fuels, a significant proportion of the households (over 50% i.e. approx. 5.3 mln households) still use traditional biomass cookstoves, including open fires[23]. With current demographic trends (2.7% annual increase), by 2030 Kenya's population will reach 66.96 mln people or 14.88 mln households[24]. Assuming ICS sector baseline annual growth rate of 5%, only about 50% of the potential consumers will be reached by 2030 leaving around 7 mln households still relying on the use of traditional inefficient stoves.

33. In Kenya, wood and charcoal fuel will remain predominant well into the future, and is without alternative for most households, because there is neither sufficient supply of electricity or LPG nor the available infrastructure to work towards a market transformation that would include rural areas. According to UNDP/WHO 2009[25], nationwide, wood is used by 68.7% of the national population and charcoal by 13.3%. Together this makes 82% of the population using biomass for cooking. In urban areas, charcoal has a share of 30.2% (wood of 10.3%) of the cooking fuels; in rural areas, wood has a share of even 88.2%. Even the main urban areas would have major difficulties providing enough resources to eliminate wood and charcoal for cooking in cities, although the Government of Kenya has begun subsidizing LPG to increase its use for cooking. A recent report[26] estimates that in urban areas in Kenya, approximately one quarter of all households do their "primary" cooking with charcoal, LPG and kerosene stoves. (Yet, due to fuel stacking the portion of total cooking done with charcoal and kerosene is higher.) In Nairobi, the situation is different to the rest of the country, with 44% and 47% of the population reporting that they cook primarily with LPG or kerosene. LPG availability is however constrained to the outside of Nairobi and it is more expensive than charcoal and kerosene even with subsidisation.

34. Senegal's ICS sector is now at the stage that allows 13% of the households to have access to two ICS (most households are using two stoves in parallel during meal preparation: one for the rice, one for the other dishes). This means that at least 87% of the market is still served by traditional cookstoves. The total market potential is at the level of **3.2 mln ICS (1.6 mln households[27] with 16 mln persons), with currently 1.4 mln households unserved**. This is going to increase in view of positive demographic dynamics up to nearly 22 mln persons in 2050, which will require about additional one mln ICS to meet their cooking needs. Six remote regions (in the east and the south of Senegal) as well as the rural areas in all provinces are not well served in terms of both stove supply and marketing interventions. These markets are also more difficult to reach, as population density and purchasing power of clients are lower than in the current sub-markets. In Senegal, there were efforts backed by a WB program to effect a switch to LPG for cooking at the beginning of this century. Still to date around 50% of the households have LPG equipment at their homes. However, the moment the ODA support for LPG subsidies were removed, the consumption dropped to a very low level. LPG is now a "breakfast fuel"[28] in Senegal, and there is no way to change this unless a donor is prepared to pay for subsidies for the next few decades. As for electricity, there are currently very critical access gaps for all other uses of electricity and the prospects for expanding the production base are currently limited.

35. Yet, even in areas where the demand for ICS is already established, the producers are **not able to respond to the increased demand without assistance due to financial and entrepreneurial barriers**. In Senegal, EnDev started to work with existing producers of ICS stemming from previous stove projects. Annual sales were at 40,000 ICS mainly in Dakar and Kaolack. Based on investments of EnDev, additional producers were trained and supported in eight regions of the country. Most enterprises were just producing for their direct neighbourhood based on direct sales at the producers' workshop. With the success of EnDev awareness raising, demand started to exceed supply. However, producers failed to respond to market demands. While investments would allow higher volumes of sale, producers did not have enough capital on their own to invest into the expansion of their businesses. With informal nature of their business, and the low turnover of artisanal production (< EUR 1,000 per month), they could not access formal sector financing. EnDev Senegal started to support investments into larger production units to overcome this investment barrier and scale production. The average growth rate of the annual sales 2006-17 reached 16%.

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[22] Sustainable Energy for All (SE4All) Kenya Action Agenda, January 2016, p.18. These are the most current statistics. However updated statistics will be available by project begin. Currently a study, initiated by the ESMAP programme of the World Bank in collaboration with SEforAll, has carried out household surveys on a nation-wide level to monitor and evaluate energy access, including clean cooking services. This will contribute to monitoring of the progress towards SDG #7. The publication is expected in early 2019.

[23] A traditional biomass stove is characterised by lower thermal efficiency (less than 10% for firewood stove and less than 20% for charcoal stoves) and high emissions, according to the Kenyan national definition of KEBS.

[24] Source: https://esa.un.org/unpd/wpp/Download/Standard/Population/

[25] http://www.undp.org/content/dam/undp/library/Environment%20and%20Energy/Sustainable%20Energy/energy-access-situation-in-developing-countries.pdf

[26] Dalberg: https://www.dalberg.com/our-ideas/cleaning-cooking-urban-kenya-lpg-and-bio-ethanol

[27] Senegal's population is currently estimated to be about 16 mln. The last available UN statistic from 2016 was 15.4 mln. (UNDESA- http://www.un.org/esa/population/publications/worldageing19502050/pdf/178seneg.pdf)With current population growth rates, there will be nearly 22 mln persons in 2030. The additional households will require about one mln more ICS.

[28] Households use LPG mainly for cooking a quick breakfasts according to household surveys

A group of 25 professional producers emerged with average monthly sales of approximately 150. However, even with their monthly turnover of EUR 1,500-2,500 they are not interesting as clients for the financing sector.

36. **High and rising fuel prices is a major demand driver for ICS**. According to the World Bank[29], between 2000 and 2010, LPG prices have risen 8% annually in nominal terms for key Africa LPG markets; kerosene prices have grown 9% annually; and the price of ethanol, a potential alternative cooking fuel, has remained above that of kerosene. Because of increasing demand and growing biomass scarcity, charcoal prices have grown even faster – more than tripling in a decade (>11% annual growth). Coupled with growing incomes, it is estimated that those consumers regularly paying for cooking fuels can afford the upfront cost of a basic ICS.

37. Existing studies and consultations held during proposal development show that most consumers are able to pay for the initial investment in an ICS. Based on the findings of the EnDev's consumer survey in a number of Sub-Saharan African countries, **ability to pay is not a major issue for basic ICS supported by the project**, except for the very poor. The vast majority of consumers (70–90%), including many of those who fall below of poverty (BoP) income level of less than USD 1.25 per day, are able to afford paying USD 3–7 for basic ICS, once they have access to improved stoves and are convinced of the quality and utility of the product[30]. In Senegal, for example, these conclusions imply an existence of a potential market demand for ICS from around 50% of all households[31], most of which remains unmet. However, it is important to note that consumers who have not already been sensitized to the benefits of the ICS and are not familiar with the technology will not be willing to an investment until they have been convinced that the additional costs are worth it: both in terms of potential cost benefits and suitability of the products, as well as other additional transaction costs.

38. One aspect, which may negatively affect consumers' ability to pay, is their **liquidity constraints**. Yet, evidence in the literature on both ICS and analogous energy saving devices[32], such as solar lanterns, suggests that a target of a two-month or shorter payback period is a strong rule of thumb for minimising liquidity constraints for the most poor, though the range of acceptable payback for most consumers would likely be between one and six months. Experience from the baseline projects, as mentioned above, support this conclusion.

39. Financial analysis of the fuel-saving costs for a range of targeted ICS products in both Kenya and Senegal clearly indicates that **simple pay-back** for consumers for such investments is within **acceptable range of 2 to 3 months** even for the most expensive categories of the products i.e. priced at EUR 9-10 (Table 5). For example, a rural Senegalese household spends on average EUR 8 per month on fuel[33]. A typical stove for this category of consumers is the Jambar Jaboot firewood stove that costs between EUR 6.50 – 10. In a Controlled Cooking Test (CCT), it was proven that the Jambar Jaboot firewood reduces the specific fuel consumption by 40%. For an average household, every month of using an ICS reducing fuel consumption by 40% would save EUR 3.25, and investment would be fully recovered within 3 months. A frequent solution to the liquidity constraint is for women to organise group borrowing in the form of 'tontines' (in Senegal) or 'merry-go-rounds' (in Kenya). The population, which cannot be reached by lower cost commercial cooking solutions, is small. Complementary approaches are implemented by NGOs or other projects, which may reach the customers with no ability to pay.

Table 5 Simple pay-back from investment in ICS by consumers, EUR

	Senegal		Kenya	
	Firewood	Charcoal	Firewood	Charcoal
ICS Cost	9	9	10	10
Monthly saving	3	4	7	5
Pay-back (months)	**3**	**3**	**2**	**2**

[29] http://documents.worldbank.org/curated/en/164241468178757464/Clean-and-improved-cooking-in-Sub-Saharan-Africa-a-landscape-report
[30] Surveys conducted by GIZ and EnDev ICS promotion programs in Ethiopia, Ghana, Malawi, Tanzania, and Uganda suggest a village-level penetration of 70–90% for USD 4–10 ICS products. In the urban setting, Kenya surveys show a >80% penetration of Kenya Ceramic Jiko (USD 4–8) stoves in such cities as Nairobi. (GIZ/MeGen Power 2011).
[31] In Senegal, 67% of firewood using households purchase their wood fuel
[32] http://documents.worldbank.org/curated/en/164241468178757464/Clean-and-improved-cooking-in-Sub-Saharan-Africa-a-landscape-report
[33] Enquête nationale sur la consommation et les pratiques des ménages en Combustibles Domestiques

40. Overall, the continuation of current trends over the next decades promises to offer many opportunities for transformative advances in the adoption of ICS. On the demand side, key factors include escalating prices for cooking fuel and steady growing household incomes. A large share of consumers already pay for their cooking fuels and can benefit tangibly from adopting even basic energy-saving cookstove alternatives. There is also growing evidence of consumer ability to pay for basic ICS in both Kenya and Senegal.

41. **Potential Market Demand Summary:** in Kenya, there are 5.3 mln unserved households and for Senegal the number stands at 1.4 mln households, i.e. 6.7 mln households cumulatively. Of these, about 70-90% or 4.7 mln – 6 mln households are unserved households that would be able to pay for an ICS. This represents a latent demand potential because most of these customers must first be made aware of the technology and its benefits before they will invest. The numbers of potential "customers" will increase in view of generally positive population dynamics. However, major obstacles remain on the path to maximising the reach of improved cooking solutions: consumers' limited awareness about benefits of ICS and low willingness to pay higher prices for new products is one of the greatest long-term obstacles to market growth on the demand side (please refer to Section C.2 for a detailed discussion about barriers to ICS market growth).

C.2. Project / Programme Objective against Baseline

42. The baseline scenario for ICS sector development in both Kenya and Senegal would leave a significant portion of Kenya's and Senegal's population without access to even minimally improved cooking solutions and would still represent a much lower level of ICS adoption than is needed to reach the national defined NDC targets. There will be no irreversible shift in the market to ODA-independent growth leading to the majority of cooking being done on ICS by 2030. GHG emissions from household cooking will continue to grow significantly, due to rising population and insufficient incomes and infrastructure to access cleaner cooking solutions for the vast majority of consumers in these countries.

43. Without GCF support, the EnDev programme will continue to support ICS market development albeit **on a much more limited scale leading to modest ICS market growth rates of estimated 1.5% in Senegal and 5% in Kenya**[34] (not sufficient to reach NDC target). EnDev will invest in kits from non-GCF sources to bring a smaller number of artisanal producers to the professional level and few professional producers to the business class level.

Kenya

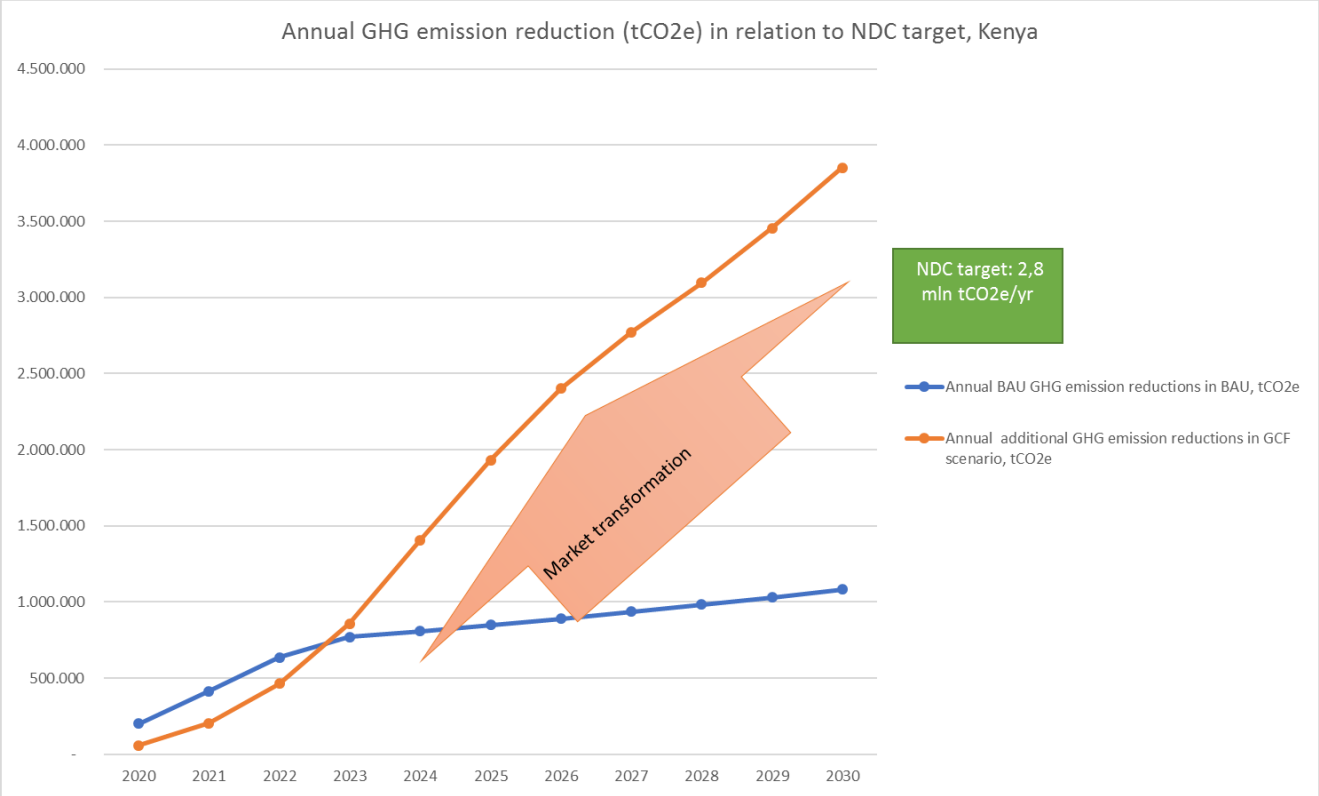
44. Kenya's total GHG emissions in 2010 were 69.5 Mt CO_2eq according to the latest official national data from the GHG inventory[35]. The forestry and energy sectors are the largest contributors to national GHG emissions. In the energy demand sector, wood fuel accounts for the largest share of consumption, i.e. almost 70% of primary, non-electricity, non-transport energy demand. According to the 2nd National Communication (NC) to UNFCCC, GHG emissions from energy demand will grow in the baseline scenario from 7 Mt CO_2eq in 2015 up to 10 Mt CO_2eq in 2030.

45. Kenya's NDC established an ambitious target for energy demand sector, i.e. 6.09 mln t CO_2eq in GHG emission reductions by 2030 or 60% reduction compared to estimated baseline. This target corresponds to 50% of the estimated technical potential for GHG emission reduction in the energy demand sector. Among the eight low-carbon options in the energy demand sector analysed in the 2nd NC, use of ICS shows the largest potential for reductions, i.e. 5.6 Mt CO_2eq a year in 2030. In line with the adopted approach to establishing the NDC target, at least 50% of that potential or 2.8 Mt CO_2eq in GHG emission reduction a year should be realised in the cooking sector to enable Kenya to meet its NDC targets.

46. In the baseline scenario, which assumes historic ICS market growth rate of 5%, annual GHG emission reductions will amount to 1.08 mln tCO2e in 2030 or 39% of the target. Whereas, the GCF market growth scenario aims at reaching annual GHG emission reduction of 3.85 MtCO2eq by 2030 (See Figure 2). Proposed target for GHG emission reduction from ICS adoption is higher than NDC target for the sector (of 2,8 mln tCO2e/yr) because the GHG emission reduction from increased ICS adoption can be counterbalanced by GHG emissions from increase in traditional stove use (in absolute terms) due to continued and high population growth rate in Kenya.

[34] This growth assumption for the baseline is used in the impact model. However, the actual baseline growth for most local ICS companies is more likely to be 0-1% unless they are still supported by EnDev under the smaller baseline project or other actors.
[35] 2nd National Communication to UNFCCC submitted in 2015. Available on-line at https://unfccc.int/sites/default/files/resource/Kenya%20SNC_Executive%20Summary.pdf

Figure 2 Annual GHG emission reduction, compared to NDC target Kenya

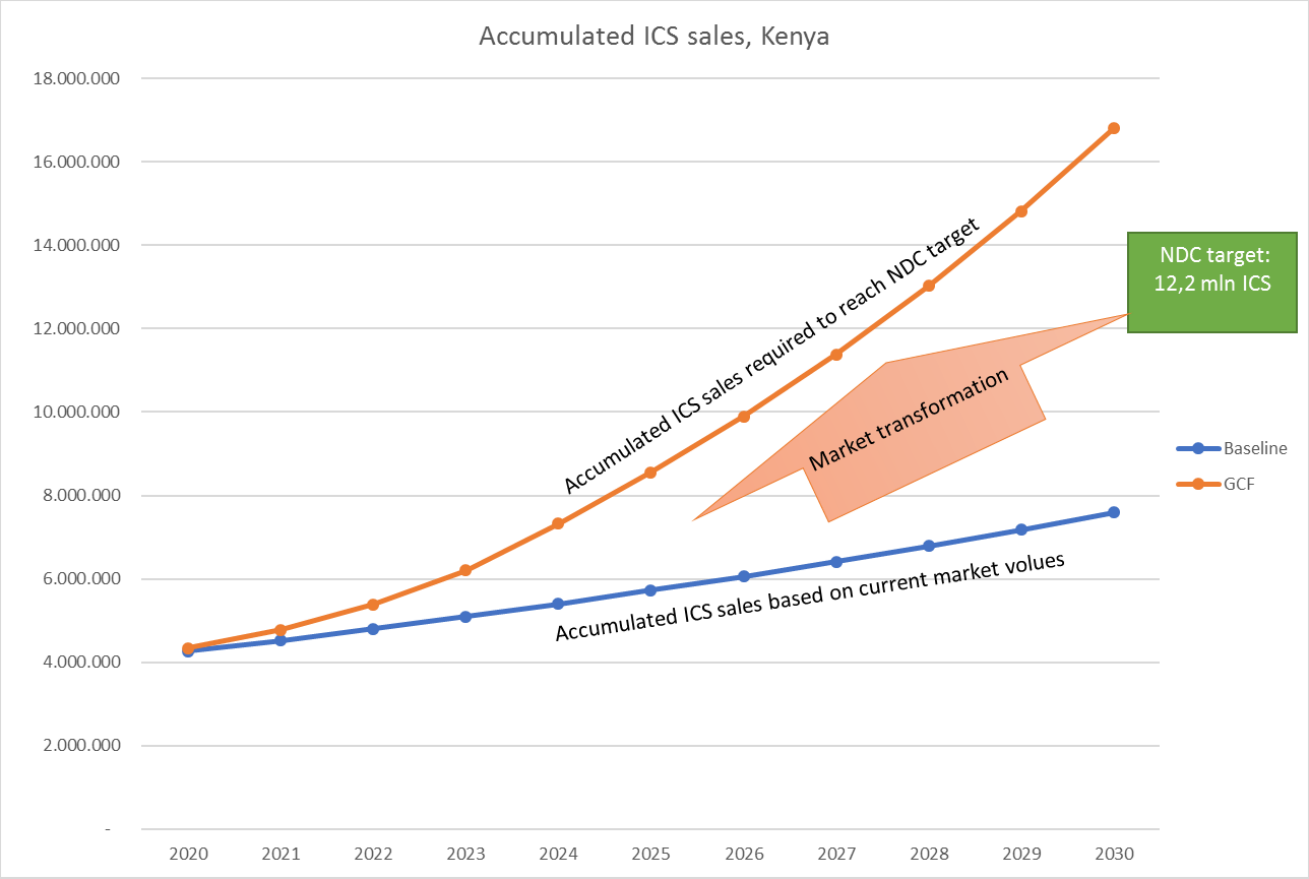


47. This would require that **additional 4.8 mln ICS are used by Kenyan households in 2030** compared to baseline, or **cumulatively 12.22 mln ICS** should be in use by 2030 to ensure also regular replacement of the stoves (estimated by GIZ in line with GHG emission calculation methodology used in this proposal described in Section E.1 and assuming 80-20 split between wood fuel and charcoal stoves).

48. Current adoption of ICS is at 37% (3.7 mln households, 2016 estimate), while the annual level of ICS sales is at 240,000–300,000 stoves, comprised of stoves for new consumers, but also stove replacements and stoves stacking. It is assumed that some households use more than 1 stove and therefore a factor of 1.1 stoves per household is used to calculate **4.07 mln ICS currently in use**. The business as usual 5% market growth scenario of ICS sales would bring **additional 1.35 mln ICS in use** in 2030 (Figure 3): this is not sufficient to ensure even timely replacement of ICS currently in use.

49. The project aims at making a substantial contribution to the achievement of NDC target of Kenya. By accelerating climate friendly ICS market growth (during the project period by 36% and after the project until 2030 by 10%), it will lead to **additional annual sales of 1.57 mln ICS** by the project end and to the cumulative sales **of 12.79 mln ICS by 2030** as result of the GCF project. Adding the GCF sales to the baseline of 4.07 mln ICS, the number of stoves needed to be in use in the sector does exceed the required 12.22 mln ICS to achieve the NDC target.

Figure 3 Accumulated ICS sales until 2030 in Kenya compared to NDC ICS target



Senegal

50. In Senegal, GHG emissions from the energy sector amounted to 11 Mt CO_2eq in 2005[36] or about 40% of the national GHG emissions. Wood-based fuels (firewood and charcoal, including charcoal production) are the largest single contributor to the GHG emission in the energy sector, accounting for 66% of sectoral emission or 7 Mt CO_2eq. Of these, residential biomass energy use is responsible for 4.6 Mt CO_2eq or 66%. These figures suggest that the sub-sector of domestic cooking has been emitting almost one-fifth (17%) of all annual GHG emissions of the country. Furthermore, according to the 3rd National Communication, GHG emissions from biomass energy use have been steadily growing since 1994 by about 11% per year and are projected to increase further up to 20 Mt CO_2eq in 2030 largely as a result of anticipated population growth and continued reliance on wood fuel (Table 6).

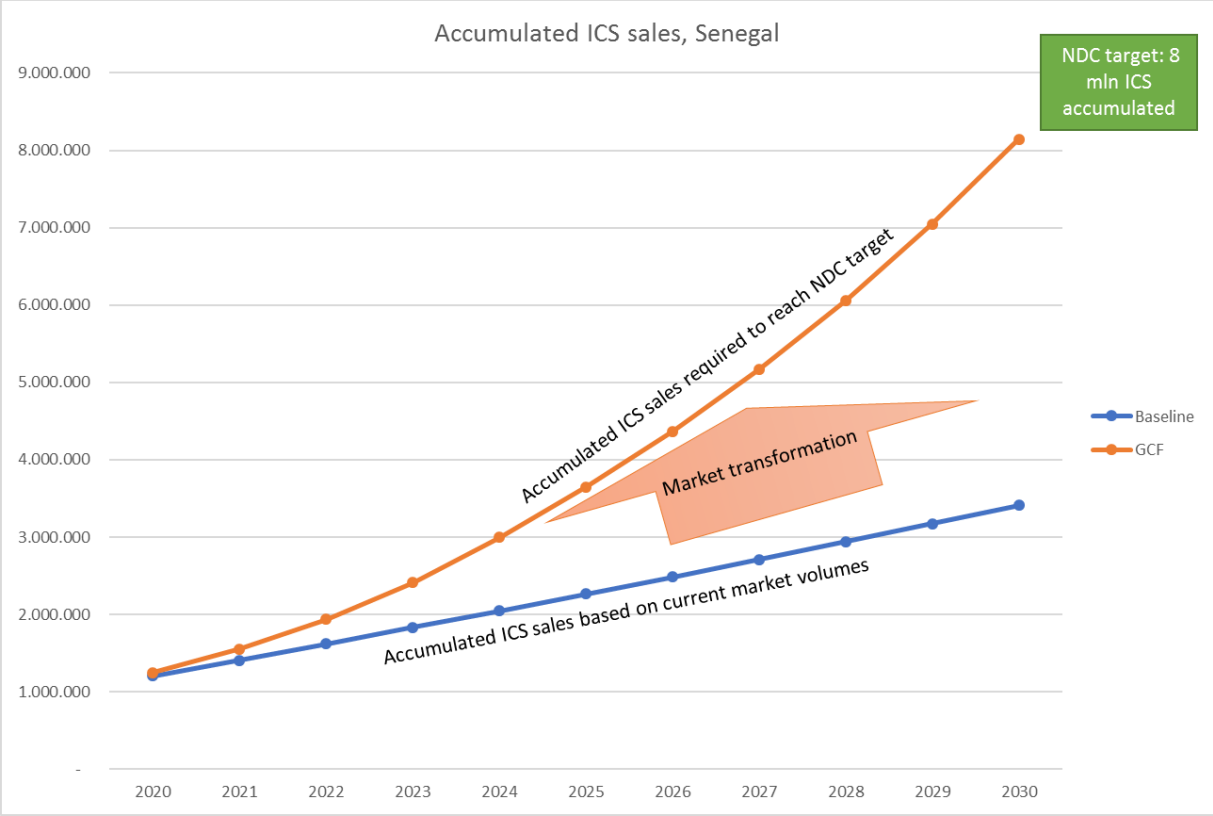
[36] The latest official data on national GHG emissions in Senegal according to the 3rd National Communication to UNFCCC dated 2015 (submitted to UNFCCC in 2016, available at https://unfccc.int/documents/89618)

Table 6 GHG emissions forecast for Senegal, 2005–2030

Year	2005	2010	2015	2020	2025	2030
Emissions from fossil fuels (Gg CO_2)	4,537	5,142	5,990	6,977	8,126	9,465
Emissions from Biomass (Gg CO_2)	7,855	9,963	11,956	14,349	17,221	20,667
Total Emissions (Gg CO_2)	12,392	15,105	17,946	21,326	25,347	30,133

51. The project aims to contribute to the national NDC mitigation objective of reducing the BAU emissions by 5% until the year 2030, inter alia, via production and sales of **7.2 mln ICS** in the country[37]. In 2010, ICS producers sold annually below 40,000 ICS. Based on the intensive investments of several stakeholders, including EnDev, the actual development of the market volume has increased to around 200,000 ICS in 2017. Despite such substantial market growth, the accumulative total so far is only at 10.6% of the NDC's 8.4 mln ICS cookstove target. The baseline projections based on historic market growth rates (1,5% year) would yield **only 2.4 mln ICS** by 2030. The project will improve the baseline scenario by **accelerating the growth rate** in annual ICS sales **from 1.5% to 24%** during project life-time and **11% after the project** end in order to ensure that stated NDC target can be met in full (Figure 4).

Figure 4 Accumulated ICS sales projected in Senegal 2020-2030 compared to NDC ICS target for 2030



[37] http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Senegal/1/CPDN%20-%20Sénégal.pdf

52. However, numerous sector barriers need to be addressed for ICS markets to realise their potential both on the supply and demand side. Although obstacles hindering market development and sector transformation are country-specific, key sector barriers can be summarised as follows.

Supply-side barriers

53. Each of the identified category of ICS producers (artisanal, professional business) faces its own set of challenges, but there are also common themes. These include a weak technological basis, knowledge, and capacities to improve production process and product design, the difficulty, cost and risks of distributing stoves to the last mile, and a lack of access to capital markets to finance large investment needs.

54. **Barrier 1.1: Weak technological basis and capacities to improve production processes and product design to suit consumer needs.** There is huge potential to achieve efficiency gains and improve productivity in existing ICS manufacturing processes, but the companies lack basic assets, technological knowledge and access to knowledge to do so. For example, the design of the most popular ICS in Senegal is already 30 years old. The stove is very well adapted to the cooking needs and household size of the clients in Senegal. However, the designer at the time focussed on a solution that suits low-tech, hand-made production[38]. Today, the design is limiting the application of efficient production concepts. Artisanal and professional players, in particular, contend with low margins, rising costs of materials (particularly for metal components), and low managerial and business planning capacity. There are also quality control issues, which include the high cost and logistical challenges of accessing stove-testing services, and the limited technical ability of producers to ensure the quality of their products.

55. Importing industrially manufactured stoves is also not an adequate answer to this barrier. International companies developed stove designs with industrial production concepts and products that promise better performance based on lab-test results. Some of these products have been tried in Kenya and Senegal, but without any significant market penetration. **National ICS markets are challenging**, as customer needs differ a lot from common other markets. For example, households in Senegal demand very powerful stoves as families are big (average of 10 people) and cooking pots tend to be over-dimensioned. International producers, on the other hand, optimize 'Off the shelf'-stoves for lower power outputs as they are evaluated in a 5l Water Boiling Test equalling a family size of five. For Senegal, the most effective way to achieve a fast uptake of ICS use countrywide is the scaling of the existing, well-known and good performing ICS by improving the efficiency of the production technology and practices. A limited re-design on tooling and parts of the stove may leverage additional efficiency gains. The alternative – the introduction of completely new ('higher tier') stove designs would be rather challenging: (a) it would require a lengthy pilot phase to find a product that shows an improved field test performance compared to the current ICS, (b) to find such product with a competitive price point (current ICS are at a range of EUR 10-15) and (c) to convince a population that is fond of the Jambar stoves since 30 years or more to buy a different product. This transformation would not be feasible within the 5 years of the GCF project and the climate effect would be much lower than the proposed approach even if savings per stove might be gradually higher.

56. **Barrier 1.2: Under-developed ICS supply chain**. Even when consumers are aware of an appropriate cooking solution, it is often unavailable or difficult to access due to an under-developed ICS supply chain. Although access to basic ICS is typically not a challenge in most urban environments, even basic ICS solutions do not reach remote rural areas. In Senegal, more than 90% of the ICS sold countrywide in 2016 were charcoal stoves that mainly serve urban households whereas rural consumers do not have access to charcoal and need wood burning ICS. The distribution chains often stop at the traders of weekly markets that do not actively reach out to clients in villages. There is, therefore, an urgent need to address the missing link between the ICS market and potential clients in villages.

57. The large majority of ICS production in both countries (see also C.1) comes from small-scale, often family-based and not formally registered artisanal enterprises. The typical case is 'a tin-smith banging on a sheet metal under a tree'. These 'companies' lack basic business experience in terms of marketing or business planning, let alone experience with developing the supply chain. Their level of sales and revenues are just sufficient to cover basic running costs, but clearly not sufficient to accumulate sufficient working capital for stronger supply chain development and delivery of ICS to end users. Most of these small producers sell their ICS only at their workshop or have a very limited distribution outreach (handcart distance).

[38] This design issue will be addressed in the project if possible without changing the branding or appearance of the stove. The fuel efficiency of this stove is still quite good, as are the other features that make it an attractive stove for SN households.

Expanding ICS markets to new areas, which are not currently being served by existing ICS manufacturers, is costly and carries additional risks. It requires high additional and upfront resources to cover the costs associated with geographical expansion into unserved areas, such as the need to build delivery and distribution networks in remote areas, support marketing and awareness raising among consumers, and ensure post-sale service. Private investment in marketing ICS in new areas carries a higher risk proposition for an investor as the benefits of improved awareness will be spread across the sector and may not be reaped by an individual ICS producer/distributor. Without such investment, however, ICS markets lack scalability and growth.

58. **Barrier 1.3: Limited access to finance (informality, high interest rates, collateral requirements, etc.).** In terms of access to finance, most ICS producers cannot access finance through the traditional commercial banking sector, nor micro-finance institutions (MFIs). This is not due to a lack of potential financing options, but rather the current available options in both Senegal and Kenya are not adapted to the needs of informal, artisanal-level enterprises, such as those of the ICS sector.

- **Senegal**: Senegal's finance sector is segmented into a range of different institutions that are not yet fully integrated. Access to finance remains difficult for most private enterprises and is cited as the principle limitation for the development of the private sector[39]. The informal character of a significant part of the economy and the absence of an independent legal system has contributed to caution on the part of commercial banks to lend to private enterprises. The Senegal market has a range of financing options for different sized business clients. Traditional commercial banks work with registered companies and established entities and offer average loans priced at 12.5% APR for tenors from 5 to 8 years with sufficient equity participation. Collateral conditions are strict (100% of loan amount). Commercial banks tend not to service the informal sectors of the economy. One exception is the Bank of Africa, which offers a special programme oriented towards artisans that is underwritten by the national FONGIP programme. In terms of micro-finance, Senegal has a dynamic micro-finance sector. The larger MFIs are solid (Microcred, Pamecas, etc.) and profitable, although the smaller MFIs are fragile. Despite the dynamism of the sector, MFIs turn down approximately 80% of loan applications from small and medium enterprises (SMEs). Collateral conditions are not as strict as for commercial banks, although the annual interest rates range from approximately 20 to 22%.

- **Kenya**: Kenya's financial sector is the most developed in East Africa. The banking sector[40] is diverse, with 28 domestic and 14 foreign commercial banks, including 11 microfinance institutions and over 200 savings and credit cooperative associations. In practice, the commercial banking sector is concentrated and dominated by four main domestic banks. Although Kenya has a mature and developed financial market compared to other sub-Saharan countries, recent interest rate controls introduced by the Central Bank in 2016 to cap lending rates have slowed credit growth. The controls were intended to reign in commercial interest rates reaching 18% per annum and to provide increased access to credit, but the effect has been for commercial banks to freeze or sharply reduce new lending, shorten loan tenors and lay off staff. The Market Perceptions Study in July 2018[41] conducted by the Central Bank of Kenya notes that respondents from medium and small firms find it difficult or very difficult to obtain bank loans, especially after the introduction of interest rate caps. This is due to stricter bank regulations which limit new loans and even encourage the premature shortening of existing loan repayment periods. Overall, the effect is to limit credit growth in the private sector, particularly to SMEs and individuals. Following a recent IMF mission, the GoK has agreed to review the interest controls[42.] Access to finance for the commercial banking is currently tightly regulated. Both interest rates caps and stringent collateral conditions restrict commercial lending. For the non-regulated sectors (mirco-finance and SACCOs), collateral conditions may be less stringent but interest rates remain over 20%.

59. All in all, the fundamental reasons preventing ICS sector to access market-based finance are the following:
    - **Informal business nature.** The majority of ICS producers are unregistered and do not possess the necessary documentation or registered collateral required by commercial banks.
    - **Lacking risk guarantee and own finance or property.** Local micro enterprises in the stove sector have neither (sufficient) equity for lending nor guarantees for risk management in order to become eligible for public

[39] https://www.mfw4a.org/senegal/financial-sector-profile.html
[40] https://www.export.gov/article?id=Kenya-banking-systems
[41] https://www.centralbank.go.ke/uploads/market_perception_surveys/888863399_MPC%20MARKET%20PERCEPTIONS%20SURVEY%20-%20July%202018.pdf
[42] https://www.the-star.co.ke/news/2018/03/09/kenya-agrees-to-review-interest-rate-cap-at-imf-request_c1726931

or private lending. The type and value of assets, which artisanal and even professional ICS manufacturers own, would not be sufficient, let alone qualify as a collateral for a bank.

- **Initial Capital Investments yield low returns.** Research conducted by EnDev with the ICS sector in Senegal and Kenya indicates that the estimated financial returns associated with necessary average capital investment to increase production yield returns between -12% and 11% IRR (Table compared to financial market rates that range from 13% or higher. Therefore, from a financial perspective, these investments cannot generate sufficient cash flow to service the debt typically available in the respective markets.
- **High interest rates.** ICS producers that have approached the micro-finance institutions indicate the even higher interest rates (20%) as a main deterrent.
- **Unfamiliarity with Loan Applications/Business Plans.** Small and informal ICS producers tend to produce directly with available means. Formal medium or long-term business planning is not common.

60. Overall, the prevailing modality for ICS producers to finance their business development is either through self-financing or, for larger orders, based on up-front down payments from the clients, with the balance received upon delivery[43]. Commercial banks and micro-finance institutions tend to overlook the ICS sector for the reasons cited above (informality, perceived risk, etc.). See Section D.1 for further details about financial markets and institutions in both countries.

Demand-side barriers

61. On the demand side, the main barrier to the expansion of the ICS market has traditionally been the **low willingness of the consumers to adopt a new stove,** stemming from a number of factors, such as the appropriateness of stove design, consumer awareness of the new solution and its benefits, consumer trust in the vendor and confidence in the advertised benefits of the technology, as well consumer ability to access the stove. In the baseline projects, the consumers who have been reached so far by the product, and/or have been introduced to the well-adapted and affordable ICS promoted by the project through word of mouth or targeted marketing do show a high adoption rate. Yet, **when reaching out to an expanded geographic region, consumers have to be convinced anew** of the benefits of an ICS before they will invest.

62. **Barrier 2.1: Lack of confidence in new products/vendors**. On the market demand side, even though consumers are increasingly aware of the numerous benefits of ICS, the level of such awareness and **trust in new products** varies significantly across both countries, in particular in rural areas, where consumers have less access to national marketing and awareness raising campaigns. In these areas, the project needs local partners and local marketing campaigns to win trust and generate demand for the better cooking services the ICS provide. More important than general awareness of clean cooking solutions, there is much evidence to show that ICS are a quintessential 'experience good'. Consumer exposure is thus critical to building confidence in new cooking technologies and trust in stoves and vendors. Poor consumers are by nature risk-averse when it comes to the adoption of new consumer durable technologies. This risk aversion expresses itself in scepticism about the stated benefits of stove adoption (e.g., stove seller promises of quick break-even periods due to fuel savings), and in a lack of confidence about stove durability and after-sales support. Given the quality issues affecting general consumer durables in many African markets, consumers' low-risk appetite is not entirely unwarranted.

63. **Barrier 2.2: Low awareness of the risks associated with traditional cooking practices and the multiple benefits of ICS, as well as their importance for family expenses, health and the environment.** The lack of awareness and ignorance about ICS is particularly pronounced in the rural areas, where education levels and access to market information tends to be lower, while established traditional practices play a more dominant role in guiding families' behaviour and ultimately decision-making. For example, in Senegal, the population in the urban centres of eight (of the 14) regions is well aware of the ICS on the markets due to radio, TV and public events. In contrast, the population in the south and the east of the country have not yet heard much about these products. The situation of people living in rural areas in all provinces is even worse.

[43] At the funding proposal development stage, several ICS producers in Kenya and Senegal have been interviewed to obtain real-life perspective on the barriers to growth they faced, including access to finance. For example, one representative ICS producer interviewed would ideally like a month's stock of production available (approximately 150–200 stoves) which would require working capital of approximately EUR 600 (EUR 3 of materials x 200).

The most important reasons for poor consumers to invest in ICS are often not the obvious reasons that concern fuel and therefore cost-saving, but reasons of convenience, safety, time saving, as well as reduced smoke exposure. Consumers must be introduced to all the stove benefits before they will invest in the first ICS and reinvest in a replacement ICS.

64. **Barrier 2.3: Non-favourable market environments.** Apart from demand-side barriers, there are several policy, institutional and co-ordinational challenges that need to be addressed to create a favourable market environment for ICS sector growth. Clean cooking issues are often not integrated into the wider sector planning as focus is rather on electrification and not on providing sustainable energy access to modern cooking. For the creation of a conducive market environment, it is important to establish a new spirit of transformation amongst the existing and new stakeholders of the sector and increase the enabling conditions for growth, which are for example increased support for testing and labelling, local government involvement in awareness campaigns, and public- policies supportive of small businesses. Strengthened capacities in the public sector to revise relevant policies promoting ICS use and to monitor sector development are also necessary.

C.3. Project / Programme Description

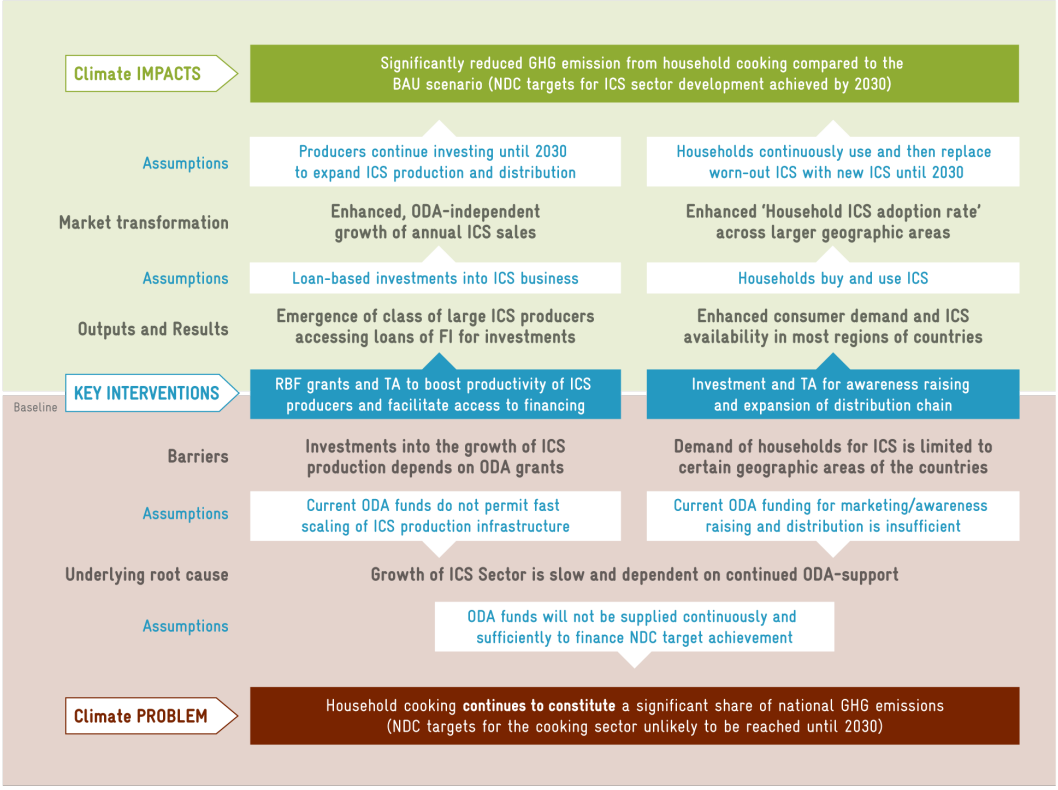
65. The project is designed to tackle GHG emissions from the unsustainable consumption of wood-based fuels in the household cooking sector, which is the largest single contributor to the GHG emissions in the energy sector in both Kenya and Senegal (70% and 66% respectively). To do so the project will address the underlying root cause of the problem, i.e. slow and largely ODA-dependent growth of improved cookstove (ICS) sector. In the baseline, modest growth of ICS sales would be insufficient to meet increasing household demand and transform the sector to a low-emission development trajectory leading to continued reliance of the majority of households on inefficient cooking appliances and excessive use of scarce fuelwood and associated GHG emissions. The currently limited level of ODA-funding will not be sufficient to enable the long-term growth rates required to meet the NDC targets in the cooking energy sector.

66. Therefore, the project's **paradigm shift objective is to accelerate the growth of the ICS sector with an irreversible market transformation** that will significantly increase the level of ICS production and sales, in particular to more remote and rural locations, thereby enabling the two project countries, Kenya and Senegal, to significantly advance the achievement of their stated NDC goals.

67. To enable such paradigm shift, two main barriers will have to be addressed. On the supply side, the ICS sector is not capable of securing the investment required to scale up ICS sales, whereas the demand for ICS remains concentrated in a limited geographic location and among more affluent[44] and better-informed consumer groups. As illustrated in the **Theory of Change (TOC)** diagram (Figure 5), the project will adopt a **two-pronged approach**.

[44] The domestically produced ICS promoted by EnDev and to be scaled-up are affordable to all but the very poor, however at least in Kenya; there is also a small market for the imported, industrially produced ICS that are currently only affordable for a smaller, urban population.

Figure 5 Theory of Change Diagram



68. First, on ICS **supply side**, it will support a **transformation of the ICS sector** from the one which is characterized by ODA-dependent artisanal, under-capitalised and informal SMEs into a much stronger formal economic sector with a sufficient technological basis, business management capacities, access to financial markets and ability to secure investment needed to accelerate growth in and sustain high level of ICS sales. As a result, the transformed ICS sectors will have the ability to deliver better quality products to a wider range of consumers, in particular in remote (rural) areas and provide services to vulnerable population groups. Second, on **market demand side**, the project will create awareness and **readiness for ICS adoption** among hundreds thousands of new customers, in particular in rural locations not yet reached by the project. (Please see the discussion of latent-demand and ability to pay in C.1 –ICS Market Demand Potential)

69. Over the last decade in both Kenya and Senegal GIZ supported the ICS sector to move from Pre-Commercial towards Pioneering stage by providing technical assistance (training and advisory services) to the small group of domestic ICS producers that exist in both countries and are described in the 2017 baseline situation. Most producers are at the artisanal level and only a few have begun to professionalize with support from GIZ. The Sector has now reached the stage when it is ready to grow, albeit at very low rate. For example, GIZ's prior activities in Kenya enabled establishment of 130 producers and 4,000 last-mile entrepreneurs, which cumulatively ensure 240,000 – 300,000 ICS sales/year. GIZ has successfully tested some of proposed new approaches, e.g. the use of professionalization kits, and also laid the groundwork for scaling-up, e.g. established a pool of credible ICS producers with good performance track record.

70. The project will enable current artisanal stove producers to reach the professional level of operations and professional stove producers to attain a business class status in terms of both production scale and effectiveness. When the majority of companies in the ICS sector moves from artisanal to professional and business category and reach the level of sales, which they can sustain on their own, it means that the market enters into the 'expansion' stage.

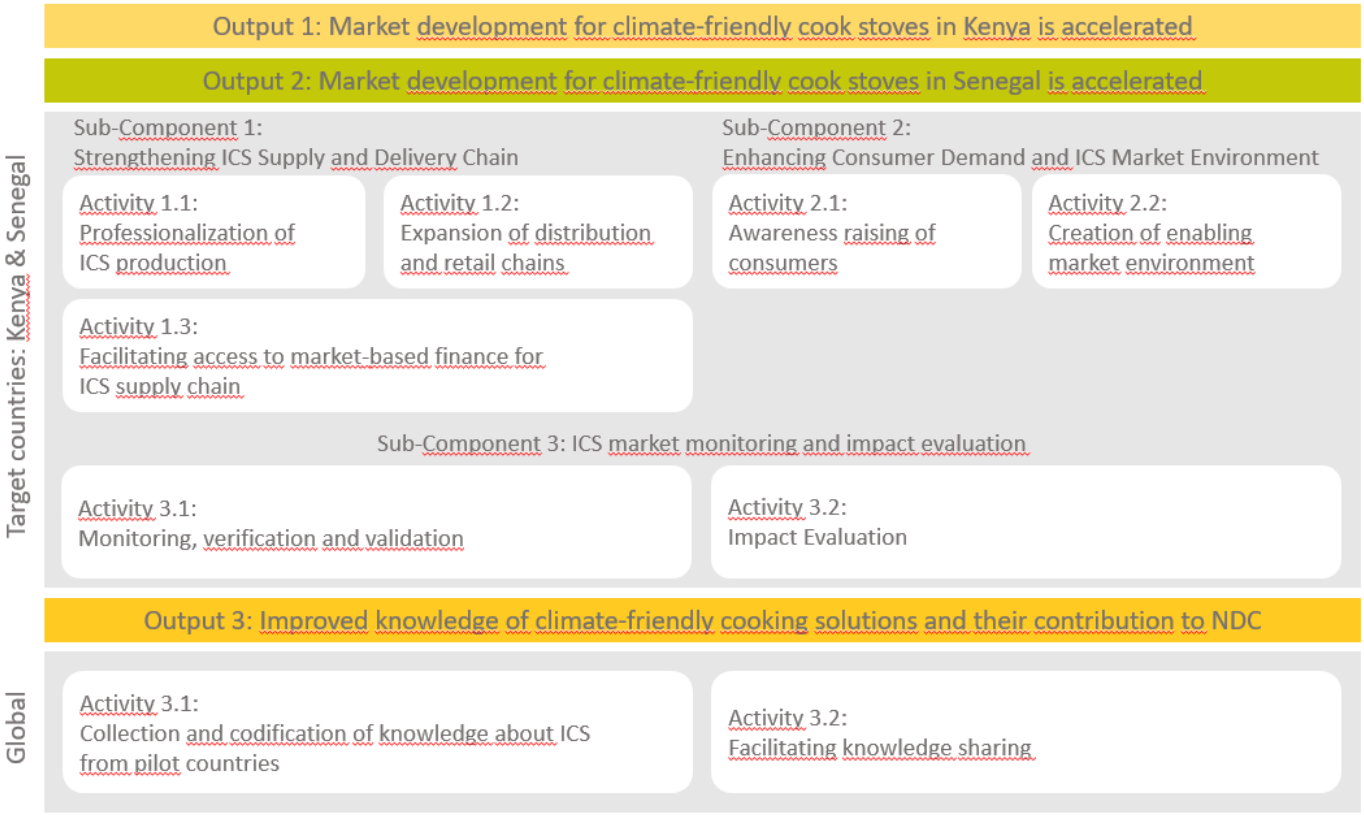
According to EnDev's **Market Development Scorecard** (Figure 6) for modern energy products and services, it is only at this stage of development that participants start generating revenues on the level that is sufficient for them to raise capital and sustain the high production volumes and growth trajectory without the need to rely on grant-based support. During its 5-year life-time, the GCF project will support the transition of ICS markets in Senegal and Kenya **from pioneering through expansion phases so that both reach their maturity phase by the GCF project end**; this would enable markets to continue grow and expand on a self-sustaining basis to reach ICS-related NDC goals by 2030.

Figure 6 ICS Market Development Phases

Description of the market phase	Pre-Commercial Phase 0	Pioneering Phase I	Expansion Phase II	Maturity Phase III	Saturation Phase IV	Degeneration Phase V
	In the context of developing countries, the time when a certain (existing) product/service has not yet reached a certain market or only a few units of this product are traded within the country on demand.	The new product is introduced into the market it is relatively unknown and has not yet earned the trust of consumers. As only small amounts of the product are bought by "early adopters", the focus lies on awareness raising and consumer gaining activities (high marketing costs, usually no-or low profits).	As the product gains popularity, new participants (competitors) enter the market. Turnover increases at a very high rate and the product starts generating high profits.	This is usually the longest and the most profitable phase. Demand is not growing at such a high rate anymore, and product prices drop. Due to the increasing competition for market share, profits decrease at the end of this phase. The number of suppliers decrease and the remaining ones increase their market shares.	The competition for market shares becomes even harder.	Turnover and profits decrease drastically; the product/ service is replaced by a new product.

71. The proposed two-pronged market transformation strategy (Figure 7) will be delivered via **two country components** each leading to the country-specific outputs of 'Accelerated growth of the ICS sector' in Kenya and Senegal for achieving the project specific mitigation targets. Both outputs follow a generic strategy based on the global EnDev experience, adapted to the local market context in both countries. In addition, the **third global component** supports the output of 'Improved knowledge about application of low-carbon cooking solution for the achievement of NDCs' on a global scale. It aims at improving the understanding of ICS sector transformation strategies and the contribution such strategies can make to NDCs, based on the experiences from Outputs 1 and 2.

Figure 7 Project structure and logical framework



Generic strategy for both Country Outputs 1 and 2:

72. Each of the two country outputs will follow a similar strategy to achieve market transformation of the cooking sector, with individual activities being tailored to specific situation and needs of ICS sector in Kenya and Senegal respectively. The strategy focusses on **three core elements** in order to address the identified barriers to market transformation on the supply and demand side (see Section C.2 for barrier analysis):
    - The first core element (Sub-component 1) is to **strengthen the ICS supply and delivery chain** to accelerate growth in ICS sales and operate on a larger and more productive, professional and commercial (ODA-free) basis. The project will do so by providing tailored TA and in-kind investment support to improve professionalization of ICS production, distribution and retail chains, as well as their expansion to unserved areas.
    - The second core element (Sub-component 2) will provide TA to **strengthen demand and enable market conditions** for ICS sector by supporting large-scale consumer marketing and awareness raising campaigns. It will also **finalise and streamline the institutional and policy frameworks** governing clean cooking sector, improve sector coordination and develop roadmaps and monitoring systems for sectoral mitigation targets. In addition, the project will assist countries to **develop and strengthen quality assurance frameworks**, including capacities for cookstove/fuel testing, which will provide transparent data on cookstove/fuel performance in local conditions.
    - The third core element (Sub-component 3) will undertake **regular ICS market monitoring and project impact** evaluation in order to validate and adjust, as necessary, the market transformation strategy and the scope and modality of GCF support.

Sub-component 1: Strengthening ICS supply and delivery chain

73. This sub-component will address the key barriers to ICS sector professionalization and commercialization (i.e. Barriers 1.1 to 1.3, see Section C.2). To do so, the project will provide a technical assistance and investment support to qualified ICS supply chain stakeholders to a) improve their professionalisation level; b) expand ICS distribution and retail chains; and c) facilitate access to market-based finance and other forms of capital for business class producers.

Improvement of the professionalization level of stove producers

74. The project will implement a **performance-based support scheme** to enable artisanal and professional producers to significantly increase their production and sales levels and move one class up, i.e. to professional or business class level respectively. The scheme will entail provision of **tailored 'professionalisation kits'**. These have been designed by EnDev based on needs and development stage of different categories of ICS producers (e.g. artisanal, professional,). The production processes will be mechanised (i.e. with relevant machines, tools and equipment) to reduce the production throughput time, improve workmanship and maintain consistent level of production quality. Other elements of the kits are items for better workshop organisation and work safety.

75. **The scope of assistance to be provided will include either standardised (artisanal) or tailored-made (professional) 'kits'**:
    - **Artisanal professionalization kits** will comprise a set of hand tools (e.g. pliers, hammer), manual machines (e.g. roller, jenny, cutting machine), electric machines (e.g. welding machine, compressor for spray painting), safety gears, workshop furniture, container (for storage) with hangar (for shade), transportation (e.g. tricycle/motorbike transporter), etc. This standardized kit is designed to enable the growth of an artisanal ICS producer from an average sale volume at 25 ICS/month up to more than 100 ICS/month.
    - Support **kits for professional ICS producers that should grow to the business class level** will be tailored to the specific needs and individual development plan of each producer and may include different items, such as – amongst others - hand tools, manual machines, electric machines (e.g. drilling machines, electric jenny), safety equipment, workshop furniture, container for storage, transportation (e.g. tricycle) etc. The "kit" is designed to enable the growth of a professional ICS producer to a business level from an average sale volume at 100 ICS/month up to more than 1,000 ICS/month. A business development consultant will support each producer with preparation of a business plan for the expansion. Tailor-made "kits" will be based on the details of the business plan.

76. The kits will be provided in tranches in-line with agreed-upon business plan and result-based criteria and milestones:
    - Eligibility of ICS producers to enter the scheme will be established based on **past performance, i.e.** minimum ICS sales records during the last two consecutive years: at least 25 ICS/month for artisanal producers and at least 100 ICS/month for professional producers (See Figures 10 and 11 under the Description of each Component by country below for more details;
    - Provision of tranches will be linked and based on actual achieved sales volumes, and, in the case of business-class producers, linked to business plans (See Figures 10 and 11 for more details)
    - For the promotion of artisanal producers to the professional level, the values of the kits ranges from EUR 12,500 to 16,000 (based on the country). The kits will be provided in tranches.
    - For lifting professional producers to business class level, the GCF project will in Kenya offer a kit with 3 tranches and a total value of around EUR 23,000. In Senegal, tailor-made kit (also offered in tranches) will range between around EUR 17,000 (small version) and 21,000 (larger version). However, the exact configuration of the kits will be elaborated by the business consultants during the project implementation. The producers will pay up to 20% own contribution cash up-front. This ensures that only producers with serious business development motivation can benefit from the scheme. The exact criteria for the determination of the share of own contribution will be elaborated in an operational manual (see §75 below). The ICS producers confirm with their signature in a handover-document that until 12/2024 they can/will not sell the assets of the kit without prior consent of the GCF project (or the Chamber of Crafts).

*Example 1: Provision of performance-based incentives to producers in **Senegal***

A Short Summary Explanation - Performance-based incentives, taking Senegal as an example

Artisanal (family business) producers in Senegal all start from a similar baseline of assets. They have one or two set(s) of hand tools and no mechanical or electric machines for production. They operate at their homes outside their houses, on communal land (roadside) or under a shelter on a market place. They only produce on demand (and payment in advance) and sell at their product only to the end client at their workshop.

The investments needs to lift them to professional level are rather uniform (e.g. a workshop structure, better hand tools, (mechanical) machines, workshop furniture, safety gear, transportation and communication equipment.) A "professionalization kit" has been designed based on the experiences of EnDev Senegal since 2012. This kit will be availed as the first step.

Once the professionalization kit has resulted in the expected increase of the average monthly sales from 25 (baseline) to 150 ICS per month in the first project year, the entrepreneurs can present an investment proposal for material investment needed for producing up to 250 ICS per month, with a maximum of EUR 6,000.

The current 25 professional producers, on the other hand, have more diverse baseline assets. Some of them use more machines than others. Some of them have workshop structures while others still work open air. Providing a standard "professionalization kit" would lead to inefficiencies. Hence, the producers will be assisted by a business consultant to develop a reliable investment plan suited for their individual situation. In a simulation, the kits are ranging between EUR 17,000 and EUR 21,000 depending on the kind and number of manual and electric machines.

77. **An Operational Manual** will be developed for each country at project commencement to guide the implementation of performance-based support scheme. It will cover in detail the following aspects of the scheme:
    - Eligibility criteria
    - Key performance indicators for each category of ICS producers, i.e. a minimum percent increase in sales volumes and/or minimum level of ICS sales (in absolute numbers)
    - Implementation arrangements, flow of funds and contractual/legal arrangements between beneficiaries and responsible parties
    - Financial management: disbursement and payments
    - Criteria for the definition of the share of own contribution of the ICS producers
    - Step-by-step approach and process flow-diagram explaining the key steps in the process: a) application of ICS producers for support; b) capacity needs assessment; c) definition of professionalization kits and milestones; d) estimation of the GCF-covered costs of the kit; e) signing legal compact with beneficiary; f) provision of professionalization kits; g) regular monitoring and verification of sales volume; h) final evaluation (impact).
    - ESMP guidance and requirements for supported producers

78. The professionalization kits will be complemented with the provision of **specific trainings** carried out with national partners, covering such topics, as:
    - Correct use of new equipment
    - Workshop safety
    - Improved workshop organisation
    - Social standards of work and environmental management
    - Business and legal advisory services to professionalise and potentially formalise the businesses.

    These trainings are important to ensure that the producers use the assets of the kit are to their full potential.

79. Financial institutions prefer business partners with a proper business address and with facilities that can act as a collateral for a loan. However, most professional producers still work on rented land in provisional facilities like shelters. For the overall vision of an ODA-independent growth path, it is highly important to facilitate the improvements required for increasing the acceptability of the producers as loan-clients of the finance sector. ICS producers will procure land that will be used to develop the workshop building.

The project – through its BMZ co-funding – will contribute up to 90% of these investment costs in durable assets (which may include a workshop building on a plot, and a vehicle for ICS transportation) if producers have reached benchmarks of production levels. The details of this **investment package** will also be elaborated in the operational manual (see § 75 above).

Expansion of the ICS distribution and retail chain

80. To address the **ICS supply chain barrier**, the approach **supports the expansion and professionalisation of distribution and retail chains.** As the project expands into new markets/regions, it will undertake various activities to either establish or upgrade the existing avenues for sale of ICS, which may be via direct sales from producers, or through wholesalers, market traders, last mile entrepreneurs (LMEs), women groups, community-based-organisations (CBOs) or NGOs. The improved retail chain is a crucial for ensuring ICS can reach the households demanding the product once the awareness of the advantages has been established. The support is provided through a) support to LMEs in form of distribution equipment and assets or mini-incentives for sales, and b) through trainings to the various new and existing actors in the distribution and retail chain. The capacity of the various LMEs/women's groups etc. shall be enhanced by
    - Procurement of distribution equipment and assets for producers, who sell directly to increase their flexibility, outreach and sales.
    - Provision of starter kits (including flyers, advertisement materials, shelf, large umbrella, mobile pavilion) for LMEs to increase their outreach and advertisement.
    - Provision of entrepreneurship trainings for new and existing LMEs
    - Institutionalisation of trainings at formal training institutions (youth polytechnics and Vocational Training Centres (VTC)

*Example 2: Expanding the Market for ICS in **Senegal***

Example Senegal: Expanding the Market-for ICS – An integrated approach that works

In Senegal, the supply of ICS to urban markets in eight regions is well established. During the GCF project, the urban markets in six new regions and the rural markets in all fourteen regions will need to be expanded, and or newly established.

The urban markets in the six new regions will be integrated into the distribution network of the ICS producers based on the current approach. The producer identify business partners who can act as wholesalers for the region. They are provided with an inventory stock of ICS based either on sales or on commission. Retailing in urban areas is mainly done through market traders. Some first trials on roadside and door-to-door retailers have been observed. The main role of the project funding in the expansion of urban markets is to support first the distribution infrastructure (particularly transportation) and secondly, awareness interventions like cooking demonstrations and theatre performances on markets to attract the attention of the potential clients**. Radio and TV spots** are aired to support customer awareness of a new product and its advantages (and reach clients across each region beyond the urban areas).

The **market expansion to rural population is significantly more difficult** to achieve. Research from RWI (see above) has proven that stove – once they have reached rural clients – will be used on a daily base by almost all ICS owners (though not exclusively). However, it is the challenge to bridge the gap between the depots in the capitals of the fourteen regions of Senegal and the 50% of the population that is living in the 15,000 villages of Senegal. The following supply-sub-chains are envisaged and supported by the GCF project:

- **NGOs** organise the demand in "their villages" and facilitate the purchase at the depot or the directly at the producers workshop. The GCF project will use some of these NGOs for awareness raising on ICS;
- **Traders on the weekly markets** in rural areas will sell ICS to villagers who are visiting the market in their area. These traders are supplied with stoves on commission by the wholesaler of directly by the producer. The GCF project will support the sales on the weekly markets with animation events, cooking demonstration and other awareness activities.
- **Local retailers**: In each of the regions of Senegal (outside Dakar), the GCF project will identify at least 50 persons in villages who are capable and willing to retail ICS in their community and neighbouring villages **(LMEs**). They must have transport means to collect ICS from the trader on the next weekly market. The GCF project supports these LMEs through an initial kit of stoves and marketing materials and trainings. Their efforts will be supported by awareness visits of project partners in 8,000 villages (=53%). Village leaders and community groups will be sensitised on the benefits of using ICS.
- **Women's groups:** The most important intervention in the **rural areas is the mobilisation of women's groups** in the 8,000 villages. Traditionally these groups run a 'tontine', a kind of consumer financing concept based on frequent small contributions of all members. EnDev has started to integrate ICS sales successfully into these tontines and some have started to sell ICS beyond the members of their group. If all 8,000 women groups at the end of the programme would only sell 2 ICS per month (=24 ICS per year) this would cumulate to 192,000 ICS per year which is roughly the 50%-share of the rural areas from the total sales at the end of the GCF project. The GCF project is supporting this development by a sequence of meetings, demonstrations of ICS, provision of demonstration stoves etc.

Facilitation of access to market-based finance and other forms of capital for business class producers:

81. To address the **access to finance barriers**, the approach is not to first change the conditions offered by commercial banks to reach the ICS productive sector, but rather to change the nature of the ICS sector through its progressive formalisation and professionalisation so that it can ultimately successfully approach the financial sector (or other finance providers) at the end of the GCF project. This is an integral part of the sector transformation objective of continuous and sustainable sector growth beyond ODA-support. The access to finance support is predominantly directed towards the participating business class producers and will be provided in the form of **capacity building** for the ICS business class producers to engage proactively with the financial sector (or financial providers) to **obtain financing for a second, independent round of capital investments** to sustain the steep growth path after the end of GCF project. Dialogue, capacity building for and with relevant financial providers on the potential of the ICS market and the producers will also be offered as explained in below.

82. **Capacity building** activities will address the following barriers:
    - Informal business nature: The business class producers will receive particular support to enhance their ability to secure financing from financial institutions conditional upon their formal registration and their undertaking of business activities in line with established business norms and regulations. This includes training and coaching by business consultant (business skills, monitoring of stocks and finances, marketing of products etc.) and IRR calculations for each individual producer.
    - Lacking risk guarantee and own finance or property: Participation in the professionalisation programme will enable ICS producers to obtain the minimum level of capitalisation and assets value to meet minimum collateral requirements through the technology provision in the professionalization kits ("push" grant mechanism at project start). In parallel**, the project will work with financial sector in both countries** to educate financiers about ICS sector specifics, including the nature, type and value of production assets, and will support the design of new financial products, which had better suit the ICS sector.
    - Unfamiliarity with Loan Applications/Business Plans: Through TA support, this process will create potential banking clients that will be able to independently approach commercial banks, micro-finance institutions and other entities with more viable and financeable projects. Such assistance will be in the form of capacity building by developing business case documents for loan applications and trainings on requirements of the finance sector (quality and completeness of documents, finance language etc.)

83. It is envisaged that around 20 companies in Kenya and 25[45] companies in Senegal will "graduate" with business status after receiving professionalization kits and will be ready to access market finance by the project end. The project will work with these "business graduates" to understand their credit profile, assess investment needs and business plans and specific barriers faced to access non-grant financing. Technical assistance will then be designed in partnership with local financial institutions to help address the prevailing barriers and make such projects bankable.

84. As illustrated generically in the Table 7 below, a relatively small GCF financial contribution can have a high leveraging impact by enabling additional debt finance of at least EUR 0.784 mln along with additional equity investment from the producers of approximately EUR 0.336 mln. (A detailed Operational Manual to govern implementation of the grant scheme will be developed by the project in close collaboration with financial sector partners and business-class ICS producers in both countries.)

Table 7 Illustrative explanation of leveraging for business class producers[46]

	2024						
Country	**Capital Investments €**			**Financing Source €**			
	Companies	**Avg. Inv.**	**Total Inv.**	**Equity**	**Debt**	**TA**	**Total**
Kenya	8	80,000	640,000	192,000	448,000	78,400	718,400
Senegal	6	80,000	480,000	144,000	336,000	58,800	538,800
Total			1,120,000	336,000	784,000	137,200	**1,257,200**

[45] At least 16 producers will reach business class at the end of the 5 year reporting period, but another 9 supported professional level producers are expected to reach business level shortly after project end to bring the total to 25.

[46] The table "*Illustrative explanation of leveraging with the financial incentive scheme for business class producers"* does not accurately depict the amount of investment per producer on average, nor the amount of debt per producer to be mobilized, nor the amount of companies supported! The actual average capital investment per producer will be calculated during implementation, but will be lower in Kenya than in Senegal. The average debt per producer will depend on the business plans and the receptiveness of the (M)FIs.

Generic approach in Sub-component 2: Enhancing consumer demand and ICS market environment

85. Under the second sub-component in both countries, demand-side interventions will address consumer demand barriers (i.e. Barriers 2.1 to 2.3, see Section C.2) and market environment barriers (i.e. Barrier 2.4). Awareness is key for behavioural change in this very traditional sector. Demand for ICS is likely to be influenced by better understanding of the risks of traditional ways of cooking, like respiratory health, safety, unsustainable consumption of biomass, convenience etc. The biggest challenge in this section of the value chain has been the lack of investment in large-scale consumer marketing/awareness creation. This largely results from the fact that the returns from any such investment are largely public and not private. In this case, any company that invests in raising consumer awareness about the benefits of improved stoves may increase the demand for these products, but cannot be assured that consumers will buy from them rather than from a competitor. Furthermore, the marketing approach for rural areas must be different from urban areas, as customers in rural areas still are able to gather their wood fuel 'for free' with family labour, and often do not realise the other benefits a modern ICS brings, such as improved health, better safety for children, less soot, and more convenience. Technical assistance will support **awareness raising and PR for the entire market**. Awareness campaigns with nation-wide outreach as well as local and regional events shall sensitise and bring behavioural change messages across. Different partners and networks are involved in order to mainstream and increase efficiency and outreach. Following a customer segmentation approach, interventions will be designed according to locally relevant drivers and barriers. This includes gender-sensitive consumer awareness/behaviour change campaigns, as well as tailored marketing of cleaner and efficient stoves for specific target groups in un-served areas[47].

86. This sub-component will also help **finalise and streamline the institutional and policy frameworks** governing clean cooking sector, improve sector coordination and develop roadmaps and monitoring systems for sectoral mitigation targets. In addition, it will assist countries to **develop and strengthen quality assurance frameworks**, including capacities for cookstove/fuel testing, which will provide transparent data on cookstove/fuel performance in local conditions and will drive the demand towards cleaner and more efficient solutions. These framework conditions include national standards, testing capacity, long term training capacity, a functioning sector association, sector data and sector support at county level, to provide an enabling environment for the stove businesses. Various institutions are involved in building this enabling environment from the national down to the county level.

Generic approach in Sub-component 3: ICS market monitoring and impact evaluation

87. The project will undertake **regular ICS market monitoring** during and after the completion of the GCF project to collect evidence and record the progress in market transformation. For this, it has designed and successfully applied through previous EnDev work a thorough monitoring, reporting and verification (MRV) system in its ICS component. The MRV system is designed to provide **reliable sales data** and track progress on project level, including via regularly meeting and consultation with producers, LMEs and users. The MRV system does compare ICS production with sales, which show that consumers are taking up the product. Retailers will provide data about sold or installed stoves and also basic customer data (where feasible[48]). All data will be gathered and the producers will be visited on a regular (monthly) basis. Data will be managed in a central management unit that will perform random spot checks along the supply chain. So far, this reporting system has delivered reliable data about additional sales and will be applied for the purpose of monitoring and reporting on the impact of GCF project (See Section H.2 for a detailed description of the proposed monitoring and evaluation arrangements for the project). The project will also use the **EnDev Market Development Scorecard** to systematically collect, analyse, and compare ICS market evolution in the targeted countries. By doing so, it will make it possible to understand the exact stage of ICS market development and the progress towards its inflection point, i.e. when the market has reached the end of expansion phase and external support is no longer needed to sustain growth (Figure 6). This point is an irreversible shift in the market that implies that it will develop further without ODA.

[47] In Kenya specifically, the project will coordinate with the WB, the Ministry of Energy, and relevant public and private stakeholders to design marketing and awareness materials nationally that can be modified for different target groups in the counties served by the GIZ and by the WB project

[48] In case the producers sell in lots to distributors, the system may record only the bulk sale.

Output 1: Accelerated market development for climate-friendly cookstoves in Kenya

Sub-component 1: Strengthening ICS supply and delivery chain

88. In Kenya, the project will strengthen supply chains for improved biomass cookstoves aiming at **upgrading 52 local cookstove entrepreneurs from the artisanal level to the professional level and 18 from the professional level to the business class level** and by training 20 new producers (Figure 8). At the end of the project, 20 'business class' ICS producers will form the backbone of the sector, and account for about half of the annual market sales of about one mln ICS. The approximately 60 professional producers and improved pool of artisanal producers will contribute the rest of the market volume. Twenty new production centres in new areas for artisanal and professional class producers will support the rapid expansion of the market in new intervention areas. It is also expected that a number of approx. 20 currently supported very small artisanal producers will drop out due to limitation in growth potential. Distribution will be enhanced by training an additional 2,000 distributers (stove installers, marketers and venders, who are based in the localities and therefore reaching the last mile, i.e. LMEs). By strengthening larger ICS producers to become nationwide suppliers on one side, and by investing in expanding the outreach and production capacities in existing and new regions on the other side, the GCF-supported ICS market segment will continuously grow, by an estimated 36% during the project period and continue by about 10% per year after the end of the GCF support until 2030. In line with overall project approach under Sub-component 1, such assistance will be provided based on performance-based principle and in packages covering improvements in mechanisation and production technology, production processes, quality assurance, innovation and expansion of last-mile distribution channels as well as facilitation of access to market-based finance.

Figure 8: Kenya: ICS Market Transformation Approach

Activity 1.1.1 Professionalisation of ICS production

89. The activity improves the production processes, quantity and quality of ICS and of the ceramic liners. Producers in the artisanal and professional producer category will be supported to facilitate their business expansion and thus transition to the professional and business class respectively. This activity will increases the number of professional and business class producers, and leads to accelerated production of quality stoves, As illustrated in Figure 8, the project in Kenya will upgrade 52 local cookstove entrepreneurs from the artisanal level to the professional level; and will support the transition of 18 entrepreneurs from the professional level to the business class level.

To do so, the project provides "professionalization kits" (investment support for tools, equipment, machines, storage, safety equipment and distribution assets) via a performance-based grant mechanism to producers and facilitates stove quality assurance by stove testing, national standards and branding. The **'professionalisation kits'** (See Figure 8) will be provided along the eligibility principles – basically production capacity, sales figures and willingness to provide an own contributio as described in the generic sub-component description.

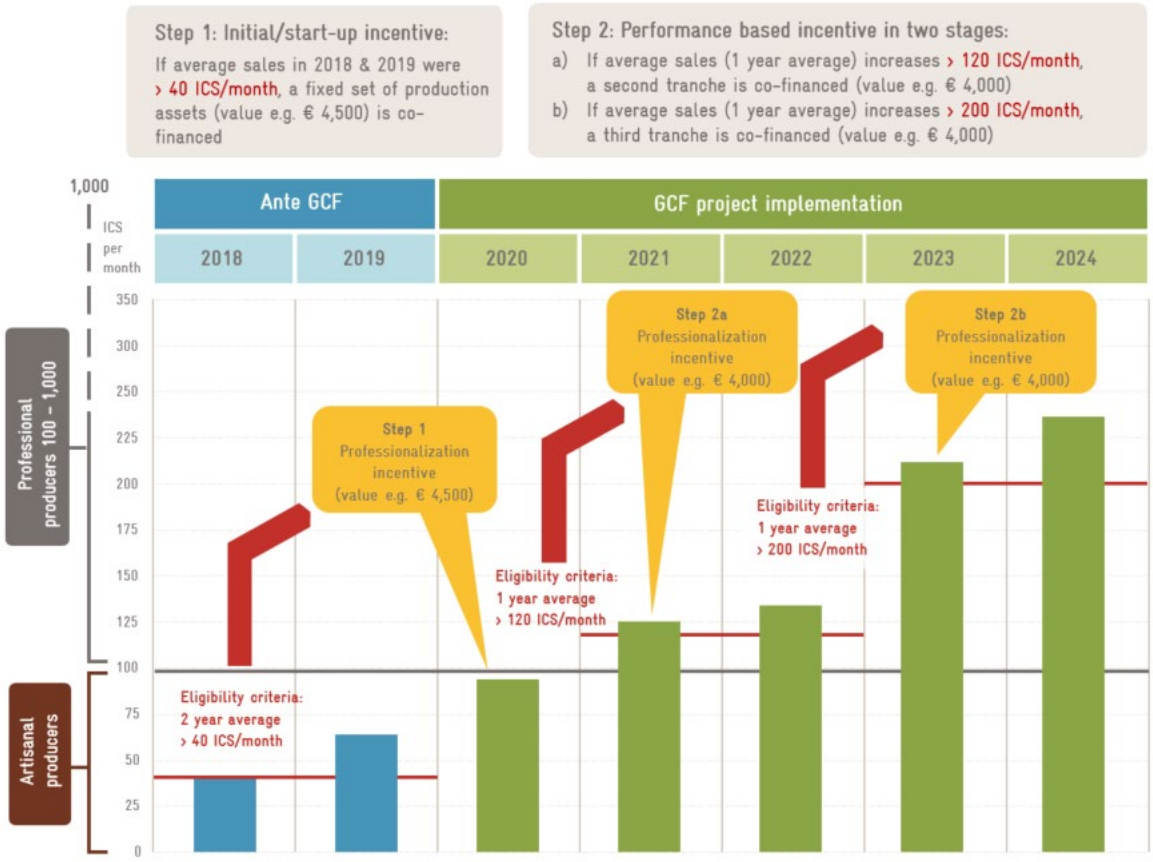
90. Professionalisation kits for ICS producers will includes means for mechanisation, equipment and workshop expansion, for which the producers receive different production equipment, tools and technical trainings. The professionalization kit consists of **two components**: a) the **initial/ start up investment** consisting of professionalization assets, e.g. machines, tools and equipment, training for machine operation, and materials for expansion of production centres; and then, the b) **follow up performance based investment measures** consisting of e.g. marketing, business development services and transport means.

Table 8: Details of professionalization kits in Kenya

		Artisanal to professional level				Professional to business class level			
		eligibility total	> 40/month tranche 1	>120/month tranche 2	>200/month tranche 3	eligibility total	> 150/month tranche 1	>300/month tranche 2	>600/month tranche 3
Overall cost in EUR		12.500	4.500	4.000	4.000	23.100	12.500	10.000	600
ITEM-TYPE	Explanation								
tools and machines	handtools, manual and electrical machines	5.400	2.600	2.800	-	12.600	7.600	5.000	-
workshop infrastructure	storage, workware, safety equipment, furniture	4.200	1.000	1.200	2.000	6.000	2.650	2.750	600
distribution assets	tricycle, smartphone	2.900	900	-	2.000	4.500	2.250	2.250	-

91. **Artisanal producers** who showed good performance during 2018 and 2019 (more than on average 40 stoves per month) would qualify for a package that helps them to reach professional production level (100 to < 1,000 ICS per month). This package will benefit approx. up to 50 artisanal producers (based on current performance data). As illustrated in Figure 8, the "Start-up" incentive will be provided to artisans who have sold more than 40 ICS/month over the last two years (where it is expected that most incentives to artisans will be paid at the beginning of year 1). The second component is provided in two stages. If average sales over 1 year increase above 100 ICS/month, the first half of the second inventive package will be provided; and if the producers then increase sales to above 200 ICS/month, the second half of the second incentive package (the third total tranche for artisan transition to the professional class) will follow. The actual composition of the standard kit will be further refined at the beginning of the GCF project through consultations with relevant artisans.
    - The GCF project procures the assets for the professionalization kits in bulk. The value of the first tranche of the kit is expected to be around EUR 4,500. Eligible artisanal producers are offered the professionalization kit, but are obliged to provide their own contribution (up to 20% of the value of the tranche 1 of the kit). **This kit is step one in the professionalization approach**.
    - During the GCF project, the monthly production and sales of the producers is closely monitored. Once the monthly sales of the recipients of the professionalization kit is above 100 ICS (6 month average), they **qualify for step two of the professionalsation kit**. And respectively with 200 stoves old per month over the past six months, the producers **qualify for step 3 of the kit**, which is EUR 4,000. Producers have to be prepared to provide up to 20% own contribution. The exact mechanism will be further elaborated in the operational manual at the start of the project including criteria for eligible types of investments (e.g. production machines, containers…).

Figure 9: Performance based incentives for professionalization of artisanal producers in Kenya

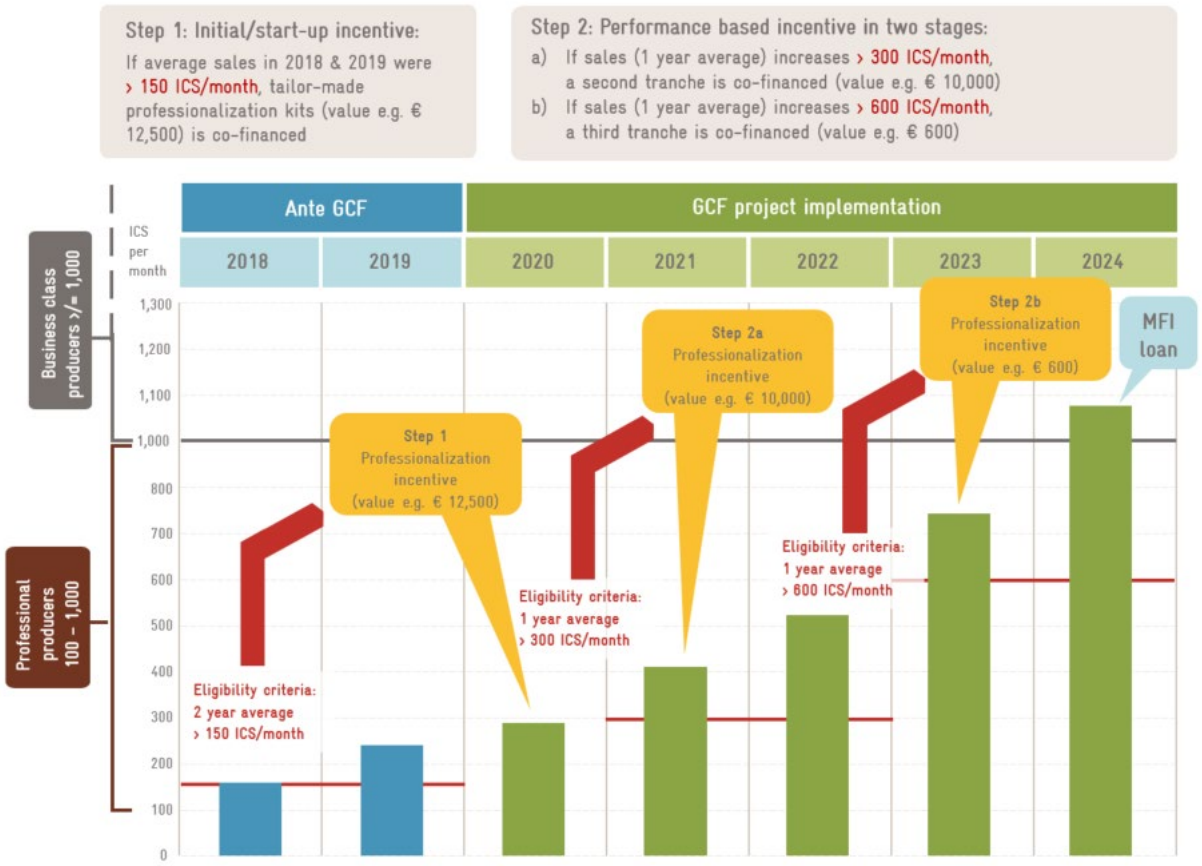


92. **Professional producers** who produced in average more than 150 stoves per month in 2018 and 2019 qualify for a professionalization incentive that helps them to reach business class production level (> 1,000 ICS per month). It is estimated that in 2020 there will be **up to 20 professional producers eligible for the professionalization support**. The production systems of these producers are divers: Some have workshop buildings, some use already electric machines, some have already an own vehicle etc. It would be inefficient to define a fixed set of inputs as a standard kit for this group, as it is either defined too narrow (and is therefore incomplete for some of the producers) or it is too comprehensive as some producers already possess some of the assets (leading to inefficient resource allocation). Instead, business consultants will assist each of the producers to come up with an individual investment plan and budget for each of the estimated 20 eligible producers. This tailor-made support ensures effective allocation of resources. The value of this professionalization kit is expected to be EUR 23,100 and will be provided in three tranches as well. Producers will contribute up to 20% of the value of the kit as own contribution in cash. Details of the procedures will be further developed at project commencement (operational manual), including the criteria for the definition of the share of own contribution.

93. Some of the 20 **professional producers** needs or want to expand their workshop building in order to accommodate the increased production. Others want to increase their outreach and want to invest in sales outlets as well as vehicles for transportation. Eligible professional producers are offered an **investment package** under which they are assisted to build workshop or sales buildings or to invest in a vehicle for the distribution of ICS. The project – through the BMZ co-funding – will support these investments with up to 90% of the total value of the investment, which shall not exceed EUR 13,400 per producer. The exact criteria for eligibility and conditions will be further elaborated in the operational manual.

94. The recipients of all professionalization kits (artisanal and professional level) will receive very intensive technical and business training.

Figure 10: Performance based incentives for professionalization to business class in Kenya



95. **Technical assistance will be provided to all supported entrepreneurs:** In order to run their businesses successfully and responsibly as outlined in the ESMP and GAP, all producers supported will receive capacity building and training on good business, environmental and social management practices, but in different depth and intensity appropriate to their business level. Topics to be covered include: a) production process (to improve technology, materials, workplace health & safety, work flow, quality control, Environmental and Social Management, and b) entrepreneurship and business management (under consideration of specific training needs for women).

96. Other elements that will be offered additionally to the performance based-kits will be: a) analysis to improve workflow processes during production, building on the experiences and best practices of other small-scale businesses or semi-industrial enterprises with similar processes; b) support to achieve Kenya Bureau of Standards (KEBS) quality standards (stamp/sticker mark of quality and QR code for verification), and to develop brands (name/logo, etc. on basis of KEBS mark) to communicate the quality of their products to consumers.

97. In addition to the provision of the 'professionalisation kits', the project will **support ICS design innovation**, focussing on **improving technical performance and/or stove production processes**. Several interested universities will be engaged and cooperate with the stove producers to improve technical performance of the ICS (e.g. on thermal efficiency, combustion efficiency, durability, quality of materials and aesthetic design among others). The innovation process will also involve designing and constructing machines and/or tools for stove production processes, which cannot use conventional machines/tools in order to enhance stove production capacity and quality.

98. In view of the project's focus on new markets/counties, where there are currently no existing production centres, and because the costs of transporting the ceramic liners/inserts for the stoves are prohibitively high, the project will **support the establishment of new production centres (up to 20) in new counties**.

This will ensure a local ICS supply for the local markets in new intervention areas. Selection criteria for new production centres will depend on geographic and technical criteria: i.e. areas with suitable raw materials (mainly clay and pottery sand) and suitable entrepreneurs, which will be selected with a competitive process. The project will also explore building the capacity of existing small-scale businesses with similar processes to integrate stove production as a business line. In those counties, where establishment of production is not feasible, the focus will be on building capacities of local retailers and distributors (see next activity).

Activity 1.1.2 Expansion of distribution and retail chains

99. Last mile distribution channels are key in ensuring access of ICS by end consumers. The project **will establish new networks and strengthen the capacity of the existing network of LMEs** (approx. 2,000 new and 4,000 existing LMEs). The additional LMEs will be trained in distribution and retail chain, while the existing LMEs will be trained particularly on entrepreneurship and expansion of sales. Marketing of their products is an important training element for both LME categories, particularly in new areas, where they do not have presence and where the market is under-developed. Further, the LMEs will receive distribution kit investments, including distribution, marketing and transportation assets and materials (e.g. flyers, advertisement materials, shelf, large umbrella, mobile pavilion) on performance basis.

100. The project will deepen the activities within the current *focal areas* (22 counties[49]) of EnDev Kenya, but also venture into seven *growth counties*, where initial outreach took place, and eight so-called *underserved counties*[50] in the Rift Valley, Central region, Coastal region and Northern Kenya (See Annex for map of project locations in Kenya):
    - Current EnDev focal areas with different levels of activities and adoption but a need for deepening (22 counties): *Kakamega, Bungoma, Busia, Vihiga, Nandi, Uasin Gishu, Homabay, Kisumu, Migori, Bomet, Kericho, Siaya, Kisii, Nyamira, Kirinyaga, Meru, Tharaka Nithi, Kiambu, Muranga, Embu, Makueni, Machakos*
    - New focal areas (new markets): *Trans Nzoia, Elgeyo Marakwet, Baringo, Taita Taveta, Laikipia, Nyeri, Isiolo, Marsabit, Kilifi, Kwale, Nakuru, Kitui, Narok, Nyandarua, Kajiado*
    - New focal areas but implementation subject to security situation in the region: *Samburu, West Pokot, Lamu, Wajir, Mandera, Turkana, Tana River, Garissa*

101. The project will establish a network of trainers, especially in collaboration with formal training institutions (youth polytechnics and vocational training centres (VTC)) to establish a pool of technical trainers for local stove supply. They will provide **introduction and technical training to distributers on the key aspects of ICS distribution**, as well as after sale services, with special attention to women's groups. Distribution is closely related to marketing and as many of the local entrepreneurs have difficulties investing in marketing, the project provides supporting marketing initiatives (marketing materials, market activation, branding and promotional events) for producers and distributers as results based upfront support.

Activity 1.1.3 Facilitating access to market-based finance for business class producers

102. In line with the generic approach for Sub-component 3, the project will **facilitate access to market-based finance and other sources of capital** including: a) Capacity building for business class stove producers to enhance their ability to secure financing from financial institutions; b) sensitisation of financial intermediaries (FIs, MFIs, SACCOs, Government Enterprise Funds) on business and investment opportunities in the ICS sector; c) stimulation and development of alternative financing and credit models for business class producers and distributers for investment capital and working capital, including establishment of SACCOs[51], promotion of alternative credit facilities, integration of ICS finance into existing government funding platforms, and d) linking of (M)FI and business class ICS producers, including support in development of business and financial plans.

[49] Current EnDev focal areas: Kakamega, Bungoma, Busia, Vihiga, Nandi, Uasin Gishu, Homabay, Kisumu, Migori, Bomet, Kericho, Siaya, Kisii, Nyamira, Kirinyaga, Meru, Tharaka Nithi, Kiambu, Muranga, Embu, Makueni, Machakos

[50] Growth counties are: Trans Nzoia, Elgeyo Marakwet, Nakuru, Nyandarua, Kajiado Laikipia, Nyeri, ,
New (underserved) counties are: Marsabit, Kilifi, Kwale, Baringo, Taita Taveta, Isiolo , Kitui, Narok,

[51] Savings and Credit Cooperatives (SACCOs) are community based financial institutions. A Sacco is owned, managed and run by its members who have a common bond. Membership is open to all community members regardless of race, tribe, gender, political affiliation, religion, or job status. A member of the SACCO is a person admitted to membership after registration in accordance with the Sacco's by-laws.

Sub-component 2: Enhancing consumer demand and ICS market environment

Activity 1.2.1 Awareness raising of consumers

103. In Kenya one of the **key hurdles to adoption of ICS is social and cultural behavioural norms**. Ordinary marketing and awareness activities, focussing only on the features of the cooking technologies/fuels, are not adequate to convince the consumers to switch to ICS. The awareness creation strategy and messaging will therefore **focus on elements of behavioural change** to cater for the underlying cultural and social behaviours. The project will – in close collaboration with the **Clean Cooking Association of Kenya (CCAK**), the **World Bank KOSAP programme** and the REDD+ programme– support the government agencies, particularly the **Ministry of Energy, Ministry of Health and Ministry of Environment and Forestry** both at national and county level on developing and **implement the behavioural change campaigns**, which will focus on **health and climate impacts related to forest degradation or deforestation from unsustainable cooking fuel supply chains**. Joint awareness creation packages will be developed and applied in all counties by the GIZ/EnDev and WB KOSAP projects. The existing networks of **Community Health Volunteers (CHVs), Community Forest Associations (CFAs), agricultural extension officers and Water Users Associations (WUAs) and women's groups** among others will be the main channels for delivering 'below the line' campaigns, which will be more targeted and closer to the people. 'Above the line' campaigns will involve the use the media (radio and TV), mobile communication channels (broadcast SMSs) as well as social media channels.

Activity 1.2.2 Creation of enabling market environment

104. The GCF project implementers will work with the Ministry of Energy to **improve the policy and regulatory framework for improved cookstoves** The Ministry of Environment and Forestry (MoE&F), which hosts the Climate Change Directorate, will be supported in strengthening **the monitoring of NDC targets** for the climate friendly cooking sector, which is one of the priority areas for emission reduction. The project will also support the Ministry of Health (MoH) on domesticating the **indoor air quality guidelines** with specific input from a clean cooking perspective. Indoor air pollution is treated as a health risk factor within the Kenyan Health Sector Strategic and Investment Plan IV of 2018 - 2022. Since 2016 MoH is implementing the "Domestication of the WHO Household Air Pollution guidelines and road map for an enhanced global response to the adverse health effects of air pollution" project, which is planned until 2022. MoH established and institutionalized a coordination mechanism to address household energy and air pollution and climate change issues within the cross-sectoral Technical Working Group (TWG).[52]

105. The project will support the existing efforts of jointly supporting the cooking sector in collaboration with government, private sector and other development partners. In particular, the project will **support and strengthen Clean Cookstove Association of Kenya (CCAK)** to actively foster collaboration and coordination among sector players including hosting regular stakeholder forums including women organisations. CCAK will also play an instrumental role for **sector planning, lobbying and advocacy**. CCAK will be supported by establishing and maintaining a **knowledge management system for sector data** and information including providing regular updates and market intelligence and analysis for the sector.

106. The project will **finalise and facilitate enforcement of cooking sector regulations and standards** by working closely with the Energy Regulatory Commission (ERC) and Kenya Bureau of Standards (KEBS), including the development of a **national ICS quality label** based on KEBS standards for technical requirements to cookstoves[53]. Technical assistance will be provided **to strengthen stove testing capacities** in line with established standards in existing stove testing centres, including upgrading of the Kenya Industrial Research Institute (KIRDI) stove testing centre to a reference centre and laboratory in Kenya and the region. In addition, the project will support

[52] Indoor air pollution is associated with diseases of lower and upper respiratory tract and the most vulnerable groups include women and children who spend most of their time in the kitchen. MoH Kenya implements its disease preventive interventions across the country in all the 47 counties. MoH is present in all the counties, sub counties and divisional level with app. 8840 preventive and promotive public health staff in all 6,612 sub-locations. These public health staff as well as the TWG will be instrumental in order to reach out to implement the community level awareness and consumer education campaigns on ICS.

[53] Both WB KOSAP and GIZ/EnDev projects will support and closely coordinate their work on the strengthening of enabling environments for ICS market growth, including the development of relevant standards and other regulatory provisions.

establishment of new stove testing centres preferably in academic and research institutions to complement KIRDI.

107. At the same time, county governments provide a good platform for promoting clean cooking at the grass roots level. The project will closely **collaborate with the county governments** on awareness creation at the grass roots level. This will also include providing technical support for the county governments to plan and include clean cooking interventions and related implementation strategies in their development and financial plans. Curricula for cooking energy capacitation at youth polytechnics and at vocational training centres will be developed jointly and implemented in training courses, to support the long terms capacity development.

Sub-component 3: ICS market monitoring and impact evaluation

108. The project will conduct regular monitoring of ICS market development and evaluation of project impacts as further detailed in Section H.2

109. The MRV system is designed to deliver reliable results. On a monthly basis the producers will be visited and the production and sales will be assessed and compared with the sales of the distributers. Additional sales with increased quality and quantity are generated due to and as consequence of the GCF project's investment in professionalization kits, investment packages and TA for accelerated production and sales. These are attributable to the modernised and standardised production processes and can be counted as additional to the baseline or business as usual scenario.

110. A joint monitoring and reporting platform as well as the verification approach will be developed and applied building on existing EnDev monitoring system and experience. The platform, in collaboration with MoEF (especially the **Climate Change Directorate CCD**, for reporting on NDC achievement) and MoE (for reporting on **SE4All action agenda target achievements**) will include all Executing Entities and Implementing Partners who are responsible for result areas of this project. The MRV system will be gender-sensitive monitoring as defined in the Gender Action Plan and include E&S monitoring as defined in the ESMP).

111. The project design in Kenya is based on a number of assumptions regarding potential impacts for the climate, but also on health, gender and other co-benefits. The GCF project will implement studies to verify some of these assumptions, complementarily to external evaluation studies.

<u>Output 2: Accelerated market development for climate-friendly cookstoves in Senegal</u>

Sub-component 1: Strengthening ICS supply and delivery chain

112. In line with the over-all strategy to accelerate ICS market growth in Senegal, the project will **increase the professionalisation of the ICS sector and transition of ICS producers to higher production levels** as illustrated in Figure 11). At the end of the project, 25[54] large-scale ICS producers will **sell together countrywide about half or more of the projected annual volume of 586,000 ICS annually**. This 'business class' of ICS producers will form the backbone of the sector, while artisanal and professional ICS producers will continue to make a significant contribution to the sector (for more details and definition of producer categories – please refer to Section C.2). The commercial ICS producers and distributers ensure a minimum annual market volume of 10,000 ICS in each of the 14 regions. 650 retailers ('last-mile entrepreneurs'), distributed across 13 regions of Senegal, will improve the access of rural households to ICS. By strengthening larger ICS producers to become nationwide suppliers on one side, and by investing in expanding the outreach in new regions and the rural areas on the other side, the ICS market will continuously grow by about 11% per year after the end of the GCF support until 2030. By setting the ICS sector on a much steeper growth path, the project will ensure that Senegal can substantially reach its unconditional objective of the NDC on ICS sales in 2030.

[54] In Senegal, at least 16 large-scale producers are expected at the end of the 5-year reporting period, but another nine (9) producers are expected to reach business class sales volumes shortly after the project exit, to bring the total on the market to 25 business class producers.

Figure 11 Senegal: ICS Market transformation approach

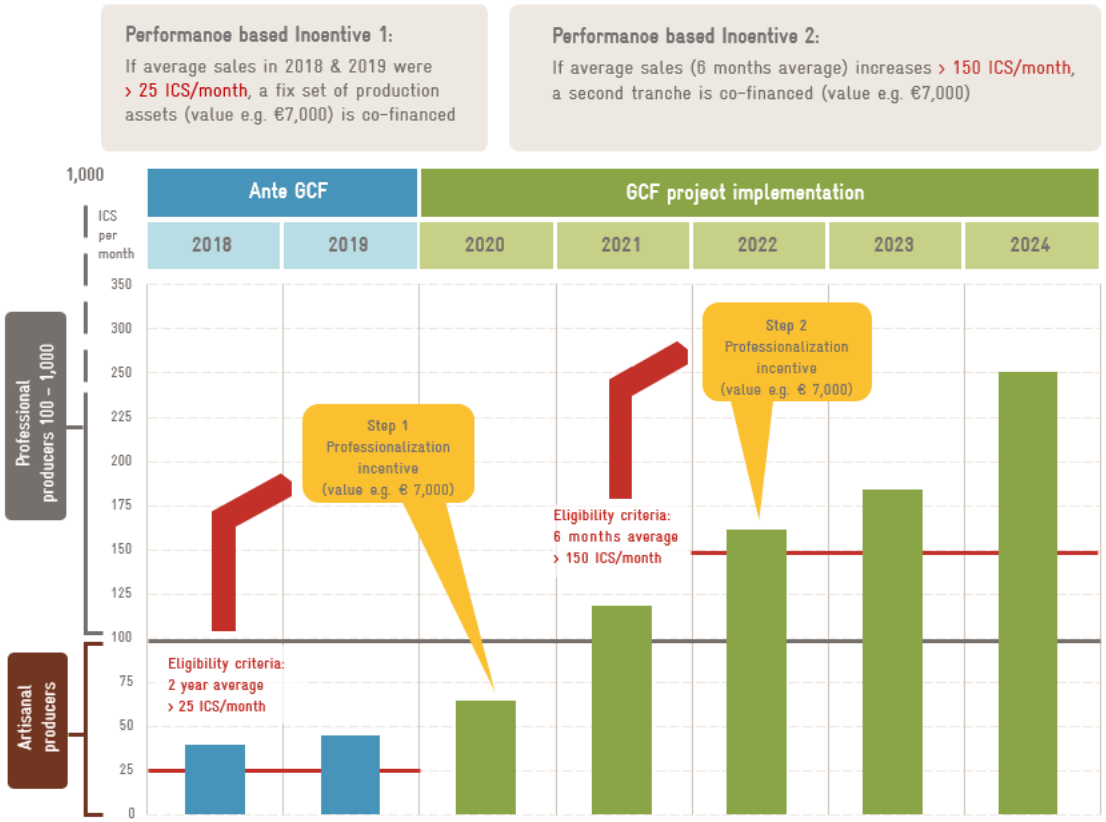
Activity 2.1.1 Professionalisation of ICS production

113. In line with the over-all proposed approach to strengthen ICS supply chain, the project will provide tailored performance-based technical assistance and technology development packages, **'professionalisation kits',** to two categories of ICS producers, artisanal and professional. For Professional producers, three scenarios (small to large) have been developed.

Table 9: Details of professionalization kits in Senegal

		Kit for artisanal producers			Kit for professional producers											
					small scenario				medium scenario				large scenario			
		eligibility total	25 or more/month tranche 1	>150/month tranche 2	eligibility total	> 100/month tranche 1	>300/month tranche 2	>500/month tranche 3	eligibility total	> 200/month tranche 1	>400/month tranche 2	>600/month tranche 3	eligibility total	> 300/month tranche 1	>500/month tranche 2	>800/month tranche 3
Overall cost in EUR		14.140	7.160	6.980	16.890	8.450	4.940	3.500	18.090	8.850	8.640	600	20.840	9.950	9.390	1.500
ITEM-TYPE	Explanation															
machines and tools	handtools, manual and electrical machines	3.900	1.950	1.950	4.450	2.500	1.350	600	5.650	2.900	2.250	500	8.100	4.000	3.000	1.100
workshop infrastructure	container with hangar, safety equipment, furnitures, workware	7.040	3.510	3.530	9.240	4.250	2.090	2.900	9.240	4.250	4.890	100	9.540	4.250	4.890	400
distribution assets	tricycle, smartphone	3.200	1.700	1.500	3.200	1.700	1.500	-	3.200	1.700	1.500	-	3.200	1.700	1.500	-

Figure 12: Performance based incentives to artisanal producers in Senegal



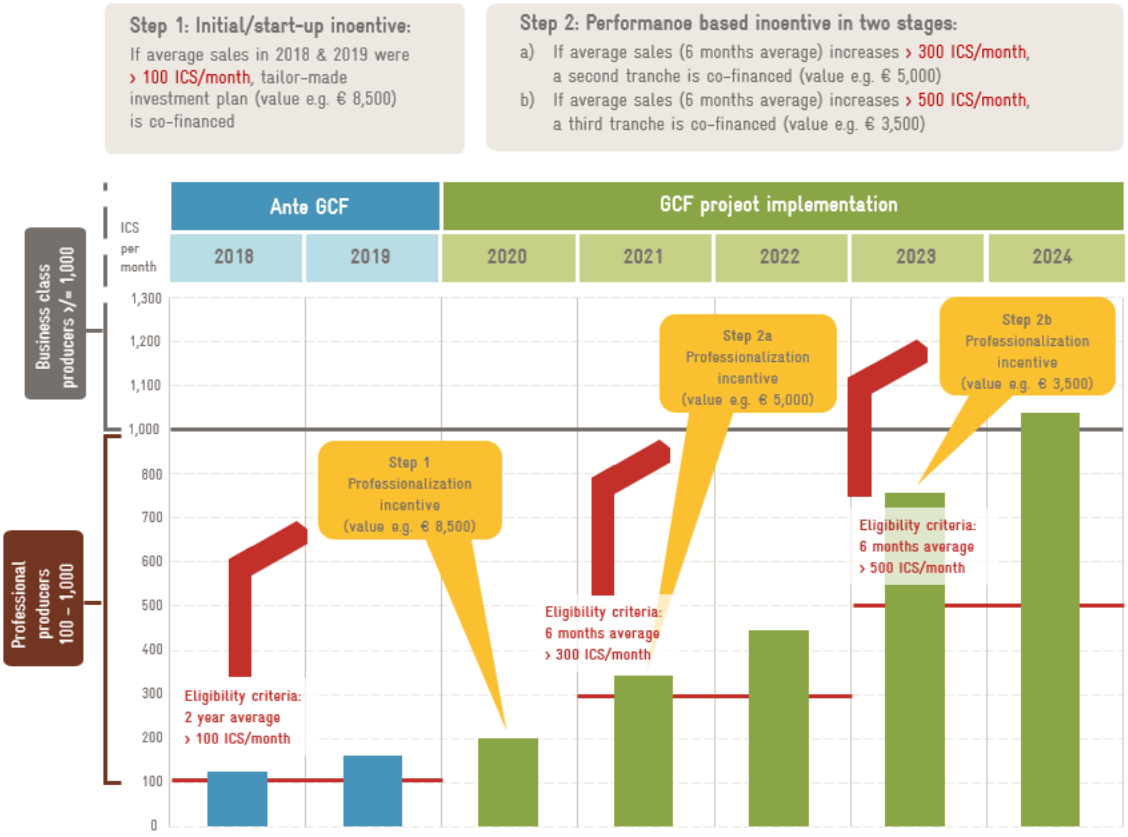
114. **Artisanal producers** who showed good performance during 2018 and 2019 (more than on average 25 stoves per month) qualify for a package that helps them to reach professional production level (100 to < 1,000 ICS per month). This package will **benefit approx. up to 57 artisanal producers** (based on current performance data) and it will be a standardised one (same level of support for all producers). The production system of artisanal producers is rather uniform: 1-3 staff, no workshop building, hand tools only, no division of labour, no means of transportation etc. EnDev piloted the use of these **professionalization kits** to increase artisanal production in the baseline project. Based on these experiences, there is a good understanding about a minimum set of assets required to reach professional production levels (100-<1,000 ICS per month): hand tools for 4-7 staff, manual machines (roller, jenny, cutting machine), electric machines (welding machine, compressor for spray painting), workshop furniture, safety gears, a Container for storage of assets and inventory, a tricycle for transportation of smaller deliveries etc. The actual composition of the standard kit will be further refined at the beginning of the GCF project through consultations with relevant artisans.

- The GCF project procures the assets for the professionalization kits in bulk. The value of the first tranche of the kit is expected to be around EUR 7,000. Eligible artisanal producers are offered the professionalization kit, but are obliged to provide their own contribution (up to 20% of the value of the tranche 1 of the kit). This contribution is paid into the account of the producer association to which the producer is affiliated, which is part of the regional “Chamber of Crafts” (Chambre des Métiers). The Chambers of Crafts are signatory to the account of the association and will ensure that payments have been done according to agreements. They also ensure that the funds collected from the artisanal producers as their own-commitment are used to further develop the ICS sector of the region (e.g. by awareness campaigns, trade fares). Once the producer has made his required payments, the Chamber of Crafts informs the GCF project to hand over the

assets. This handover is done from the project to the Chamber of Crafts as the political partner, who in turn will hand the kit over to the producer. **This kit is step one in the professionalization approach**.

- During the GCF project, the monthly production of the producers is closely monitored. Once the monthly sales of the recipients of the professionalization kit is above 150 ICS (6 month average), they **qualify for step two of the professionalsation approach**. Producers can apply for a co-financing for additional assets for production or distribution according to their requirements. However, they still have to provide up to 20% own contribution and the total value shall not exceed EUR 7,000. The exact mechanism will be further elaborated in the operational manual at the start of the project including criteria for eligible types of investments (e.g. production machines, containers…).

Figure 13: Performance based incentives to professional producers in Senegal (small scenario)



115. **Professional producers** who produced in average more than 100 stoves per month in 2019 qualify for a professionalization incentive that helps them to reach business class production level (> 1,000 ICS per month). It is estimated that in 2020 there will be **up to 22 professional producers eligible for the professionalization support**. The production systems of these producers are divers: Some have workshop buildings, some use already electric machines, some have already an own vehicle etc. It would be inefficient to define a fixed set of inputs as a standard kit for this group, as it is either defined too narrow (and is therefore incomplete for some of the producers) or it is too comprehensive as some producers already possess some of the assets (leading to inefficient resource allocation). Instead, business consultants will assist each of the producers to come up with an individual investment plan and budget for each of the estimated 22 eligible producers. This tailor-made support ensures effective allocation of resources.. The value of the professionalization support is expected to vary between EUR 17,000 (small scenario) and EUR 21,000 (large scenario).. Producers will contribute up to 20% of the value of the kit as own contribution in cash. Details of the procedures will be further developed in the operational manual, including the criteria for the definition of the share of own contribution.

116. Many of the 22 professional producers are still working under rather informal conditions (at the roadside or on a market place with no address and no fixed building. Eligible professional producers will also be offered an investment package under which they are assisted to obtain a workshop building on a plot they provide (as their property) and the investment of a vehicle for the distribution of ICS.
The project – through the BMZ co-funding – will support these investments with up to 90% of the total value of the investment, which shall not exceed EUR 35,000 per producer. The exact criteria for eligibility and conditions will be further elaborated in the operational manual.

117. The recipients of all professionalization kits (artisanal and professional level) will receive very intensive technical and business training.

118. In addition, under Activity 2.1.1, the project will **support innovation and upgrade of ICS products**, including revision of existing ICS design for faster production, developing and testing technical solutions to reduce exposure risks in commonly found cooking systems of Senegal, as well as conducting lab- and field-testing of new national and international stove designs and materials.

Activity 2.1.2 Expansion of distribution and retail chains

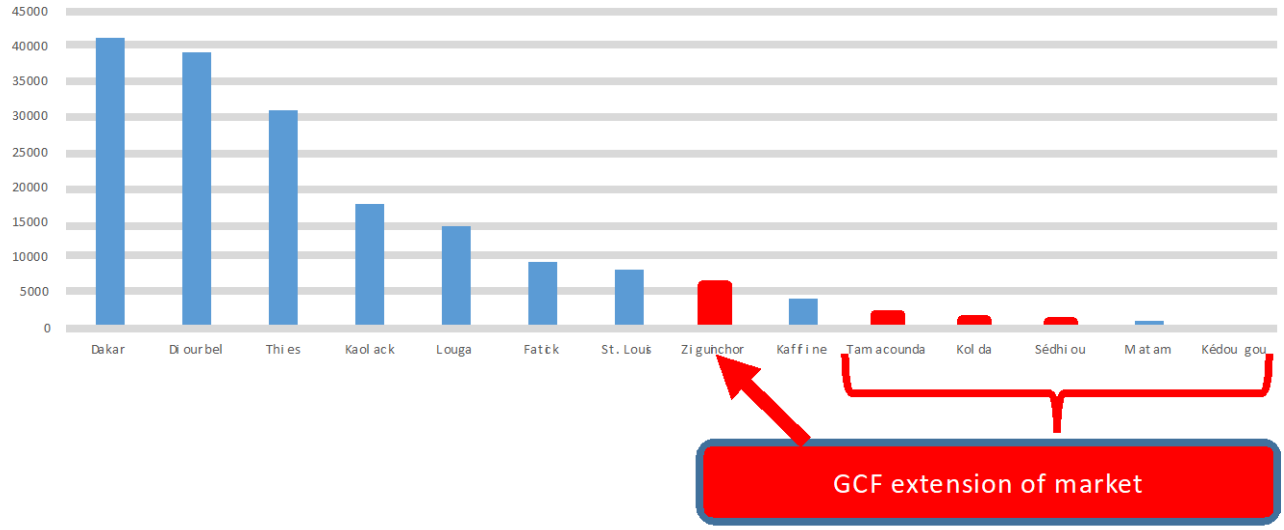
119. The Senegalese ICS market is unevenly developed. Under this activity, the project will **address deficiencies in distribution and retail networks** with a particular focus on six under-served regions with lowest sales level (Figure 14). The project will promote collaboration with the existing distribution infrastructure of other sectors and facilitate linkages between potential retailers in the regions and the producers and distributers of ICS. Various distribution models including direct sales, third party dealer-distributor networks, micro-franchisees, social sector partners, and institutional sales will be supported. The project will select young people in rural settlements to start retailing ICS in their communities as LMEs. They will receive training, marketing materials and to start their business. The up-take of stove sales will be encouraged with batches of bonus-ICS granted for achieving specific milestones. The exact mechanism will still be defined, but similar to the following example:

Table 10: Financial Incentives for first LME sales

Milestone achieved by LME	Batch of bonus-ICS provided
First 10 ICS are sold	5
First 25 ICS are sold	10
First 50 ICS are sold	15
First 100 ICS are sold	20

These LMEs are bridging the gap between the existing suppliers of ICS in the weekly markets and the rural communities that surround these markets. The most important vehicle to connect rural households with ICS markets will be the women groups. They are found in almost every village and many of them have traditional ‘tontine’ savings system that allows women (including female heads of households) to overcome investment barriers through the solidarity of the group. The project will reach out to at least half of all villages (8,000 villages) through the village leadership to sensitise and convince women groups becoming retailers of ICS both for their own members as well as to the outside of their group. The project will also intensify the collaboration with women’s associations to reach poorer populations in villages better. In parallel, an output-based performance incentive will be implemented for participating distributors if they achieve defined performance benchmarks.

Figure 14 Current Regional ICS market in Senegal, projected annual sales



Activity 2.1.3 Facilitating access to market-based finance for business class producers

120. EnDev will work with the business class producers to overcome 'access to finance' barriers through individualised training and coaching of the producers. Main activities are:

- Development of business case description for ICS sector overall (sector-level)
- Training of business class producers on basic knowledge and the language of the finance sector, the requirement for loan application, etc.
- Development of finance-ready business plans (including IRR calculation) for producers that have reached 'business class' category and can qualify for a loan

121. Micro-Finance Institutes and banks will also be familiarised with the business and investment potential of the ICS sector based on documents, meetings with ICS producers as well as site visits to business class producers.

122. In terms of potential partners, EnDev has met with several commercial banks and micro-finance institutions to discuss interest in the sector. One avenue of cooperation for the ICS sector could be via the Bank of Africa's FONGIP programme that is intended to support the informal and artisan sectors via a securitisation of loans. The exact terms and conditions with this partner, as well as others, will be determined further during the implementation phase. Discussions will also follow with FIs supported through a planned scheme from the German Development Bank (KfW) to support renewable energy access providers.

Sub-component 2: Enhancing consumer demand and ICS market environment

Activity 2.2.1 Awareness raising of consumers

123. In Senegal, the project will focus on **expanding the market of informed consumers into the remaining 6 regions** in the south and east of the country. The project will address particularly the rural areas countrywide, as so far the population living in villages has not yet been reached sufficiently. The project will develop and implement a specific concept for raising awareness for the population living in rural areas. A particular focus in this concept will be on demonstrations and theatre performances in the context of caravan events and weekly markets. In parallel, the project will intensify the use of public and private national and local media for awareness raising. It will establish partnerships for this purpose with existing services and projects working on the ground. These partners will also

come from outside the energy sector, such as in the sector of health or food and nutrition security. The project will also intensify the collaboration with women's associations, mainly tontines, as previously mentioned.

124. In Senegal, about two thirds of the annual stove production is sold in urban areas. The rural areas are not yet well aware of the ICS products. More than 50% of the population is living in these rural areas in around 15,000 villages. Reaching out to the 8 mln rural people requires a substantial investment. EnDev experiences have shown that these predominantly farming communities are best convinced through direct interaction. A set of activities are designed for that:

- In the context of mobilising women groups as retailers for ICS (see above on activity 2.1.2), the project will sensitise the village leadership and government extension workers in 8,000 villages
- Sensitise women groups for ICS including a cooking demonstration and provision of ICS for testing (in 8,000 village women groups)
- Animation events on weekly markets in rural areas (1,500 rural markets)

125. In the six new regions, the population in peri-urban areas will be mobilised. 500 caravan events with theatre performances (on ICS benefits), music and ICS presentations shall be performed in densely populated areas. The direct interventions are complemented with spots in local and national radio stations as well as on national TV.

126. Messages of the awareness campaigns will focus on economic, health, safety and environmental/climate benefits of ICS, including forestry issues, and will be developed in consultation with the responsible Ministries as well as the World Bank PRODEGE project.

Activity 2.2.2 Creation of enabling market environment

127. The project will work closely with relevant national authorities to **ensure regular exchange of information about ICS market development** and will support the development and application of a joint monitoring system for the sector, as well as its linkage with national MRV for NDC. It will also provide assistance to the government in development of an investment plan for the domestic energy sector, including estimation of the investment requirements and potential sources to finance it, including liaison with the donor community and other financing sources to secure their interest and commitments.

128. Annual stove camps for innovation sharing and joint learning for all stakeholders of the sector in Senegal will be organised by the project, inter alia, to promote sharing of knowledge on gender mainstreaming experience with relevant national and local institutions.

Sub-component 3: ICS market monitoring and impact evaluation

129. The project will conduct regular monitoring of ICS market development and evaluation of project impacts as further detailed in Section H.2.

Output 3: Improved knowledge on climate-friendly cooking solutions and their contribution to NDCs

130. The global output 3 'Improved knowledge on climate-friendly cooking solutions and their contribution to NDCs' will use the results, knowledge and experience generated through the Outputs 1 and 2, as well as the Executing Entities' global networks of partners, to **improve the understanding of ICS sector transformation strategies and the contribution such strategies can make to NDCs achievement**.

Activity 3.1 Collection and codification of knowledge on ICS market development from Kenya and Senegal

131. This activity includes the compilation of data generated at national level as results of Outputs 1 and 2, including project results and impacts, with particular attention to gathering knowledge and evidence of the climate change benefits and impacts of the ICS sector in the form of GHG emission reductions and adaptation to climate change impacts. The project will **conduct regular ICS market studies, surveys and other analyses to assess the effectiveness of the project ICS market transformation strategy** and identify lessons learnt and best practices including gender aspects.

132. The project has high potential to generate globally applicable knowledge related to the design and implementation approach of market transformation strategies and programs for climate-friendly cooking sectors and their contribution to climate change mitigation. This knowledge will be captured, assessed with possible focus on the following knowledge products:

- ICS market monitoring tools
- Approaches to and lessons learnt from ICS sector professionalization: design and implementation of professionalization kits for ICS producers
- Facilitating access to market-based finance to enable ICS sector professionalization and growth
- Evaluating access quality, sustainable development, gender and climate co-benefits of ICS

133. Jointly with the World Bank, Clean Cooking Alliance (CCA) and other relevant partners, the project will review and assess implementation approaches and compare their effectiveness, opportunities for complementarity and synergies; it will also seek to **identify lessons learnt and best practice** for most cost-effective approaches in delivering climate benefits. A standardised guidance on their replication (e.g. How-to Guide or similar guidance document) will be developed.

Activity 3.2 Facilitating knowledge sharing

134. Under this activity, the project will **facilitate knowledge sharing among existing global and national ICS sector stakeholders,** as well as support identification of new partnerships with national and international partners, who are able to scale up experiences and approaches of the project activities in the targeted countries and other countries with similar market conditions. In doing so, the project will build on and utilise its partnerships with major international initiatives, among them the Clean Cooking Alliance (CCA), Sustainable Energy for All (SE4All), the World Bank/ESMAP programme and the Africa-EU Energy Partnership (AEEP). The project will conduct consultations and identify optimal knowledge sharing modalities/platforms; it will develop and implement a knowledge sharing strategy and action plan jointly with relevant partners.

135. Where national governments or international strategic partners request knowledge products, the project will provide advisory on respective knowledge products and their application in other developing countries (beyond Kenya and Senegal), and upon request also contribute to design of comprehensive ICS sector development programmes based on evidence, experience and lessons learnt generated through the project's Outputs 1 and 2.

C.4. Background Information on Project / Programme Sponsor (Executing Entity)

136. The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) is the Accredited Entity (AE) for the project. In all three components, GIZ acts additionally as an executing entity (EE) (see section C.7 for distinction between AE and EE functions). The project will work with two additional Executing Entities (EE) in Kenya and three additional Executing Entities (EE) in Senegal. The activities to be carried out for the implementation of the specific components and/or sub-components, and the executing entities responsible for such activities, are shown in the following table:

Table 11: Overview of activities and respective executing entities

(Sub)Components	Activities	Executing Entity(ies) in Charge
Component 1 (Kenya)		
Sub Component 1 in Kenya	Activity 1.1Professionalization of ICS production	GIZ
	Activity 1.2: Expansion of distribution and retail chains	GIZ, SNV, Ministry of Energy
	Activity 1.3: Facilitation access to market-based finance for business class producers	GIZ, SNV, Ministry of Energy
Sub Component 2 in	Activity 2.1: Awareness raising of consumers	GIZ, SNV, Ministry of Energy

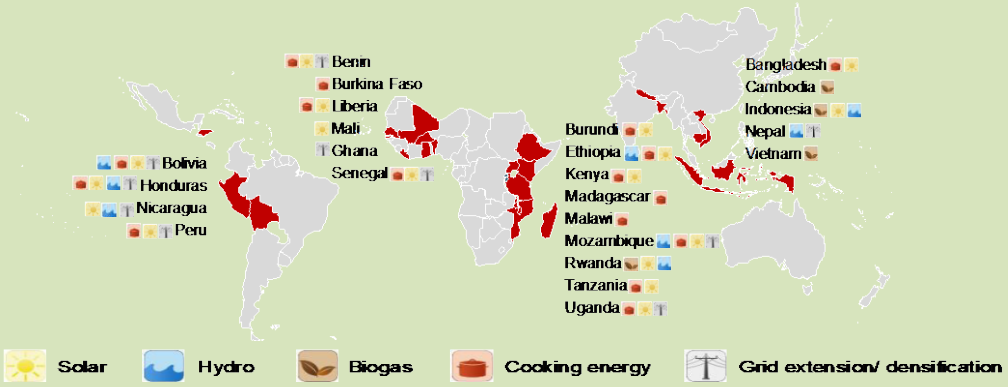
Kenya	Activity 2.2.: Creation of enabling market environment	GIZ, SNV, Ministry of Energy
Sub Component 3 in Kenya	Activity 3.1: MRV	GIZ, SNV, Ministry of Energy
	Activity 3.2: Impact evaluation	GIZ
Component 2 (Senegal)		
Sub Component 1 in Senegal	Activity 1.1Professionalization of ICS production	GIZ
	Activity 1.2: Expansion of distribution and retail chains	GIZ, ENDA ENERGIE, ENDA ECOPOP, CONCEPT (each NGO serves a cluster of regions)
	Activity 1.3: Facilitation access to market-based finance for business class producers	GIZ
Sub Component 2 in Senegal	Activity 2.1: Awareness raising of consumers	GIZ, ENDA ENERGIE, ENDA ECOPOP, CONCEPT (each NGO serves a cluster of regions)
	Activity 2.2.: Creation of enabling market environment for ICS	GIZ
Sub Component 3 in Senegal	Activity 3.1: MRV	GIZ
	Activity 3.2: Impact evaluation	GIZ
Global Component (Component 3)	Activity 3.1: Collection and codification of knowledge on ICS market development from Kenya and Senegal	GIZ
	Activity 3.2. Facilitating knowledge sharing	GIZ

137. The following section provides justification for the involvement of each of the EE; their profile and their specific roles in the project (please refer to Section C.7 for further details on implementation structure and to Section E.5.2 for EEs' background and relevant expertise).

Energising Development (Endev)

The baseline project activities in Kenya and Senegal are implemented by **GIZ Kenya** and **GIZ Senegal** as part of the global **Energising Development (EnDev)** energy access partnership. EnDev is currently financed by six donor countries: the Netherlands, Germany, Norway, the United Kingdom, Switzerland and Sweden. EnDev promotes sustainable access to modern energy services that meet the needs of the poor – long lasting, affordable, and appreciated by users. EnDev works in 25 countries in Africa, Asia and Latin America. The partnership is implemented by the GIZ in close cooperation with the Netherlands Enterprise Agency (RVO). The programme currently operates in 25 partner countries in Africa, Latin America and Asia, including 19 countries with active ICS support projects (Figure 18). EnDev is a professionally and effectively managed and implemented global programme which over-achieved its original main goal to facilitate access to modern energy to 15 mln people by 3.22 mln (total of 18.22 mln) at the end of 2017. Through its performance-based approach and a unique monitoring system (See Section H.2), the programme is steered towards high efficiency, thus setting a good example also for other international organisations and initiatives. A mixture of project interventions, complementarity of cost coverage, cooperation with local implementation partners, flexible fund allocation and lean management contribute to the efficiency of EnDev.

Figure 18: Map of EnDev Programme



The assessment of the **governance and management of EnDev** (See Annex 14 'Evaluation Report of Baseline Project') showed that the programme has a lean and appropriate management setup. With the recent changes in the set-up, the management has been well adapted to the changed organisational requirements. EnDev management in Europe operated at slightly below 7% of the total programme expenditures. Members of the Governing Board (meetings twice a year) bring in their points of view subject to their country's policy lines. A workspace, the so-called 'EnDev Wiki' is made available by Energypedia for all EnDev staff. Currently, about 380 EnDev staff members are on the Wiki and thus have access to the knowledge platform Energypedia.

Component 1: Kenya

138. The project works with **one government EE and two international EEs in Kenya**, which complement each other. It forms the most efficient and effective executing entity structure for the envisaged activities. Following GIZ standards, all activities will be implemented transparently and the project will be open to expand partnerships and collaboration with other national and international entities. The overall responsibility lies with GIZ, as GIZ has a long history and respective experiences in the sector globally and in Kenya and brings in transformative innovative approaches. The capacities and competences of Kenyan partners shall be expanded and increased by this project.

139. **GIZ:** GIZ Kenya is implementing the Kenyan cookstove project since 2005 under the global energy access partnership EnDev. The activities are implemented in three major clusters of Kenya: Lake Victoria, Western cluster and Central cluster, addressing ICS demand in 22 focal counties and starting to expand to seven growth counties. The project is implemented in those counties, where about 80% of the Kenyan population is living and therefore the demand for ICS is still significant. GIZ Kenya is contributing to scaling up the cookstove market in Kenya, combining strengthening the ICS production and distribution, enhancing demand for ICS among the population and supporting an enabling environment. The key assets of GIZ are the long-lasting working relationship of trust with different partners in the sector in Kenya, starting with different ministries (MoE, MoA, MoH etc.), different county governments, national institutions for standards and testing, research institutions, national and international NGOs, and others.

140. GIZ Kenya has the **following tasks** in the implementation of all activities that are at overall sector level:

Sector coordination:

- Coordination of the Project Coordination Committee on regular basis
- Consultation of the Project Advisory Board on regular basis
- Coordination with policy advice, development of policy documents
- Contribution to the implementation of the stove regulation and the national stove standards
- Coordination of the implementation of the national awareness campaign
- Institutionalisation of stove training and awareness creation

Professionalisation of ICS producers:

- (Co-)Investment into production assets
- (Co-)Investment into distribution assets
- Linkage and capacity development to enable access to finance
- Technical training on stove production and business development
- Advise on work norms (social, environmental and health standards)
- Coordinating Quality assurance, quality control, testing and branding
- Extensive business training and coaching

141. **Ministry of Energy (MoE):** The MoE hosts the State Department of Renewable Energy, which is responsible for policy, regulation and implementation of renewable energy projects in collaboration with relevant partners. The Ministry has various ongoing activities on clean cooking, including promotion of improved cookstoves, biogas development, ethanol for clean cooking and development of standards and regulations for improved cookstoves. Besides the head office, the Ministry has 16 energy centres throughout the country with 160 staff members. Since 2009, MoE has been the lead political partner of EnDev and is chairing the EnDev Project Steering Committee (PSC).

142. MoE has the following experience in the ICS sector:

- Provision of training of local artisans via the 16 energy centres
- Development of the Kenyan ICS standard, coordinated by the Kenyan Bureau of Standards
- Development of Regulations for improved cookstoves
- MoE is the chair of the Interministerial Committee on clean cookstoves

143. The Ministry of Energy contribution to the project will total EUR 2.4 mln.

144. The MoE has the **following task**s in project implementation:

- Chairing the Project Advisory Board of the project
- Finalisation and implementation of policy and regulation via the 47 county governments
- Development (jointly with EnDev, SNV, Ministry of Health) of awareness and behaviour change messages and strategy and coordination of the implementation via the counties governments and via the local associations
- Implementation of awareness creation measures and stove demonstration/exhibition through their 16 energy centres
- Contribution to training and capacity development of stove producers and distributers
- Provision of the platform for coordination, collaboration and knowledge sharing between the two GCF projects of GIZ and WB.

145. **SNV Development Organisation (the Netherlands):** SNV Development Organisation, the Netherlands, is a non-for-profit international development organisation, founded in 1965, with the legal status of a foundation. In 2016, SNV implemented more than 300 projects in more than 30 countries across Africa, Asia and Latin America. SNV employs more than 1000 staff members worldwide - of which 74% local staff - and mobilised revenues of EUR 110.5 Mln in 2016. SNVs governance structure consist of a managing board of 5 board members, managing the operations of SNV under the supervision of an independent supervisory board. The SB consists of a chair, a vice-chair and four regular members. By providing advisory services and sharing specialist expertise in agriculture, energy and water sanitation and hygiene, SNV works with local partners to equip communities, businesses and organisations with tools and knowledge they need to increase their incomes and gain access to basic services. SNV has been working with GIZ EnDev programme in Kenya since 2012, implementing projects and components of the EnDev portfolio in Kenya and has proven experience in the cookstove sector and with this target group. SNV is implementing the Sector Support project, aimed at coordinating the cooking sector of Kenya and strengthening the Clean Cooking Alliance of Kenya (CCAK) in the interest of its members. Further SNV implements the Results Based Financing (RBF) Facility project on scaling up the cookstove market. In this project, SNV has established collaboration with banks, MFIs and other financial institutions for access to finance. SNV will provide in-kind contribution to the project estimated at EUR 60,000. SNV will be responsible for the implementation of the **following tasks**:

- Capacity building and performance-based incentives, access to finance
- Support awareness creation and marketing to enhance demand in cooperation with other actors being specified in the implementation details.
- Capacity development and technical as well as business trainings along the supply chain for the distributors of improved cookstoves

Component 2: Senegal

146. On the one hand, the project in Senegal is operating at a national level with sector-wide interventions. This entails all activities concerning the professionalisation of the ICS production and large-scale distribution as well as the measures to improve the coordination of the sector. All these interventions **will be implemented by GIZ Senegal as the leading EE of the project** that has the most comprehensive sector experience due to its long-lasting work experience in the ICS sector in the country. No other organisation in Senegal has comparative experience in the ICS sector at this time as the GIZ project under the global EnDev partnership, and is thus positioned to carry out the professionalisation support and coordinate the necessary activities to transform the market. The GCF project includes capacity building of the chosen NGOs to continue ICS professionalisation support after the project end. The Implementing Partners (IPs) and members of the Project Advisory Board (PAB) will also expand their knowledge of the needed support for sector transformation after project end (see section C.7 for IPs and PAB).

147. On the other hand, the project will be reaching out to most of the 15,000 villages in the 14 regions of Senegal for awareness raising and last-mile marketing support. This requires a) intensive supervision of implementing partners (see Section C.7), b) combination of existing outreach structures of competent NGOs in different geographic regions and c) combination of talents of various organisations. For this purpose, regions have been grouped into five clusters of 2–4 regions. The project activities in these clusters **will be implemented and supervised by three larger NGOs with EE functions (Cluster Management Unit, CMU),** who are already working in these areas and their network of smaller NGOs (see map in the Annex 15b). The involvement of these NGOs ensures reaching partially remote and rural households by their already existing networks, which is crucial to target the new geographic regions. These EE have been selected together with the Ministry of Petroleum and Energy via a competitive Expression of Interest process, which included the assessment of technical capacities and a thorough due diligence process of management and administrative capacities.

148. **GIZ Senegal** profile and roles: GIZ Senegal has been working since 2006 to develop the ICS sector in the country. Starting with a focus on local artisanal production for local markets, GIZ developed a professionalisation strategy over time to transform the ICS sector. GIZ has been working since the beginning with all ICS producers closely and is supporting their development to higher levels of organisation and efficiency. This new strategy is showing first results in an increase of annual stove sales, which will continue much faster under the GCF project. GIZ is in close contact with the Ministry of Petroleum and Energy, and has supported the Ministry in the development of the sector through studies, coordination meetings, etc.

149. GIZ/EnDev Senegal is taking the lead in the management of the GCF component in Senegal and has the **following tasks** (amongst others) in the implementation of all activities that are at overall sector level:

Sector coordination:

- Information of concerned ministries (including field visits)
- Meetings of stakeholders of the ICS sector (including annual 'stove camp')
- Policy advice, development of policy documents and relevant studies
- Development and application of monitoring system for the ICS sector and its contribution to the NDC targets
- National Media campaigns (TV, radio)

Professionalisation of ICS producers:

- (Co-)Investment into production and distribution assets
- Technical training on stove production, workshop organisation
- Improvements of stove design and production processes, materials and tooling
- Advise on work norms (social, environmental and health standards)
- Extensive business training and coaching
- Linkage to finance sector (improve access to credit)

150. **Three Cluster Management Units profiles and roles):**

- **ENDA ENERGIE** has existed for about 30 years in Senegal. Their work focusses on access to energy, climate change, desertification, and 'gender in energy'.
- **ENDA ECOPOP** has 25 years of experience in good governance in rural areas of Senegal. They work intensively with local authorities to improve the quality of their services to the communities.
- **CONCEPT** has been working in Senegal for more than 20 years. They are active in 6 regions for the development of grassroots initiatives, the strengthening of expertise, and the recognition and participation of stakeholders in the choice of development policies and projects.

151. The three regional management units will implement, procure and supervise services for the **following tasks**:

- Awareness campaigns (cooking demonstrations, theatre play, local authorities, etc.)
- Local distribution (Last mile entrepreneur, weekly markets, women's group)

GIZ Senegal will provide capacity building to the regional cluster management units according to the capacity needs identified in the due diligence processes to enable the unlocking of their full potential and to equip them for long-term involvement in the sector after the project end.

C.5. Market Overview : N/a

C.6. Regulation, Taxation and Insurance (if applicable) – N/a

152. Additional costs may occur in case of currency fluctuations or if no privileges and immunities according to international law will be granted by Kenya and/or Senegal. In this case the following additional costs need to be borne by GCF:

- taxes on goods, services and salaries
- customs (on imported goods and services)
- costs for registration (for establishing a local branch) and respective tax declaration,
- other costs which occur to secure a legal capacity of GIZ in Kenyia and Senegal

Therefore, respective costs have been budgeted in the budget line "contingency" (see Annex 10a and 17).

C.7. Institutional / Implementation Arrangements

153. During the project implementation, GIZ will act in the double function as Accredited Entity (AE) and as Executing Entity (for details on EE function see Section C.4). GIZ will ensure a clear and strict separation between the two different roles. The AE and the EE roles of GIZ will be assumed by different units within GIZ´s organizational structure. While quality assurance and oversight functions pertaining to GIZ's AE role are assumed by GIZ´s headquarter corporate structure the EE role will be assumed by GIZ´s operation EE structure in Kenya and Senegal. Both structures are strictly separated and are accountable to different management structures within GIZ.

154. As Accredited Entity (AE) **GIZ will take oversight responsibility for the overall project** as defined in the Accredited Master Agreement between GCF and GIZ. As AE, GIZ will administer the funds on behalf of GCF and will provide oversight guidance and quality assurance through its relevant head quarter units for the Executing Entities. The Head Office based AE team will be responsible for

- overall responsibility and oversight for the project, including project preparation and implementation
- continuous communication with the GCF
- receiving the GCF proceeds as well as disbursing, administering and processing the funds (financial management)
- ensuring the proper use of the GCF proceeds
- supervising each project activity
- assessing the integrity and capacity of the EEs
- setting up a subsidiary agreement with the EEs
- monitoring the subsidiary agreements and the performance of EEs
- securing EE's procurement according to AE's rules and policies
- keeping adequate documentation and reporting towards the GCF
- establishing internal control routines
- ensuring a continuous project risk assessment
- providing financial reports to the GCF
- evaluating the project

155. Oversight and quality assurance is guaranteed in cooperation with the specific departments in GIZ's Head Office:

- Finance department – responsible for strategic and operational financial control of the company; maintaining standards of financial management, financial control, accounting, elaboration of annual statements of accounts, etc.
- Procurement department – responsible for procurement, contracting, setting up the financing agreements with the executing entities; the execution and monitoring of tender processes through the procurement plan, etc.
- Compliance and Integrity
- Legal Affairs and Insurance
- Auditing
- Evaluation
- Risk Management Unit
- Compliance with GIZ Safeguards and Gender Management System

Overview of flow of funds and contractual arrangements

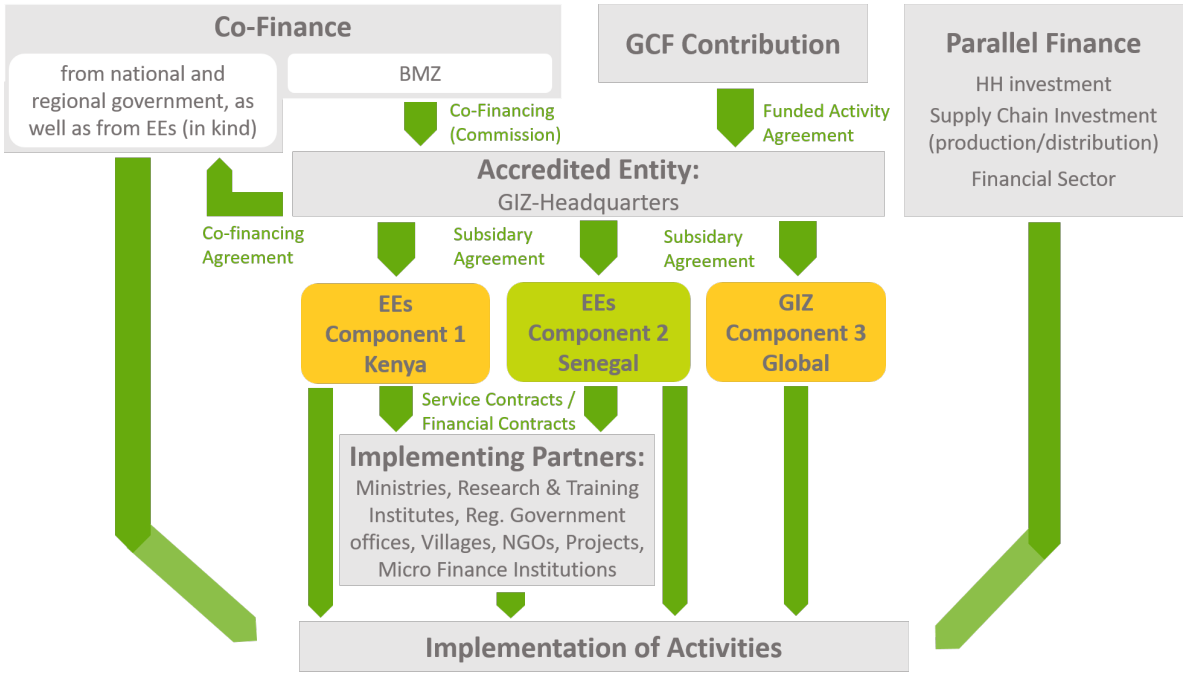
156. For the financing of the Project, GCF will enter into a **Funded Activity Agreement** with GIZ as AE, which will administer the relevant GCF Proceeds to be used for the financing of the project and channel such GCF Proceeds to the Executing Entities in accordance with the AMA and the FAA. The FAA will include a provision to the effect that the GIZ has been commissioned by the Germany's Federal Ministry for Economic Development and cooperation (BMZ) with the project and GCF has approved a financial contribution to such project.

157. GIZ will enter into a **co-financing arrangement (commission)** with Germany's Federal Ministry for Economic Cooperation and Development (BMZ), and in-kind co-financing arrangements with the Governments of Kenya and Senegal, represented by the respective Ministries of Energy in both countries as well as the Ministry of the Environment and Sustainable Development in Senegal.

158. GIZ will also enter into **Subsidiary Agreements** with the Executing Entities in respect of the elements of the project to be implemented by such entities. The Subsidiary Agreements will be legally binding and outline the detailed financial, procurement and implementation plan of the relevant elements of the project, as well as contain the relevant provisions for the compliance by the relevant Executing Entity with the requirements from the AMA and FAA.

159. If required, EEs will issue **service contracts or financial contracts** to sub-contractors (implementing partners). More details on implementing partners are provided in the following paragraphs. A flow of funds including the contractual arrangements is provided in figure 15:

Figure 15 Flow of funds and contractual arrangements



Implementation and governance structure for the project

160. Figure 16 depicts the **governance and implementation structure** of the entire project:

Figure 16 Governance and implementation structure of the project

161. **Project Governing Board:** The project uses the already existing EnDev governing board structure for the overall governance of all activities. Members of the board are representatives of the Directorate-General for International Cooperation of the Dutch Ministry of Foreign Affairs (MFA NL), the German Federal Ministry for Economic Cooperation and Development (BMZ), the Norwegian Agency for Development Cooperation (NORAD), the UK Department for International Development (DFID), the Swiss Agency for Development and Cooperation (SDC), and the Swedish International Development Cooperation Agency (SIDA). Meetings take place twice a year. The AE is invited to these meetings for regular reporting on project impacts, outcomes, outputs, and implementation progress.

Implementation and governance arrangements in Component 1 and 2:

162. The project uses the existing EnDev **Project Advisory Board (PAB)** in Kenya for overall guidance and advice on project implementation in the country. In Senegal, this committee will be newly formed for the GCF project, though the baseline project already coordinates with these same entities in its work. Members of the committees in both countries are representatives of the following institutions:

Kenya	Senegal
• Ministry of Energy • Ministry of Environment and Forestry • Ministry of Agriculture • Ministry of Health • Climate Change Directorate (CCD) • Council of Governors (representing the counties, in which the project is active) • SNV • GIZ	• Ministry of Petroleum and Energy • Ministry of Environment and Sustainable Development • Ministry of Finance • National Designated Authority • GIZ country director

163. The PABs **meet twice a year** and have the following mandate/tasks:

- Provide overall guidance for the project, in particular regarding aspects of targeting the most vulnerable, gender balance, and sustainability
- Provide review and feedback of/on annual work plans, annual reports, and audits
- Ensure project synergy and coherence with the evolution of the international and national context, including overall national adaptation planning
- Be informed of project adherence with E&S safeguards and Gender Action Plan objectives
- Support the coordination of project activities across different line ministries and between private sector, public sector, and civil society

164. The Lead Executing Entity (GIZ Kenya/Senegal) provides the respective reporting and input to these meetings.

165. On an operational level, the establishment of new **Project Coordination Committees (PCCs)** ensures structured implementation of project activities and across the project components. Members of the PCCs [55]are representatives of the respective EEs in both countries:

Kenya	Senegal
• GIZ/EnDev (Lead Executing Entity with coordination and decision making mandate) • SNV • Ministry of Energy • World Bank (WB representative to ensure coordination with the partnering WB GCF project)	• GIZ/EnDev (Lead Executing Entity with coordination and decision making mandate) • EE: (Cluster Management Unit North) • EE: (Cluster Management Unit West) • EE: (Cluster Management Unit Central) • EE: (Cluster Management Unit South) • EE: (Cluster Management Unit South-East)

166. The PCCs meet monthly with the **following tasks**:

- Enhance common understanding amongst EE of the theory of change and how the ICS sector in both countries shall be transformed
- Discuss, monitor, and promote best possible synchronisation of implementation between the EEs (to ensure that supply and demand for ICS grow simultaneously)
- Define, monitor, and coordinate work plans
- Ensure that budgets and work plans are on track and monitor project progress
- Identify and resolve bottlenecks and implementation challenges relevant on project level
- Monitor adherence to environmental, social and fiduciary safeguards; monitor implementation of the Project Environmental and Social Management Plan (ESMP, provided in annex) and Gender Action Plan (GAP, provided as a separate document), and steer review of these plans if needed
- Identify issues required to be brought to the attention of the PCC and/or political decision makers
- Provide for information exchange and synergies between project sub-components
- Agree on terms of reference, recruitment of experts
- Discuss outcome and impact monitoring processes and results
- Discuss reporting to the PAC and the overall project management

[55] In Senegal, the Department of Forests and Water of the Ministry of the Environment and Sustainable Development may also take part in the PCCs, as they have expressed interest in taking a leading role in coordinating and or implementing gender activities. The Ministry of Petroleum and Energy may also take part in the PCC due to their role in coordinating and supporting the enabling environment.

167. In both countries, additional **implementation partners involved in the value chain** were / or are to be identified to implement specific activities under service or financial contracts, in case the EEs do not implement these activities themselves. These implementation partners are responsible for the following activities:

Implementation partners	
Research	Quality assurance, testing of innovations, national stove camp events…
Training Institutes	Stove production methods, business training and coaching, social and health standards, distribution and marketing approaches, environmental management, social management, and gender mainstreaming
(micro-)Finance Institutes	Access to credit, training on application
Suppliers of tools and machines	Local production of tools and machines for ICS production, supply structure,…
NGOs	Use of existing extension structure for food security, environment, energy, forest etc. to reach out to households. EnDev has already identified NGOs in both countries, which are willing to add ICS promotion through cooking demonstrations etc. on their normal work portfolio and use their social capital to create demand for ICS. • Women groups will be motivated to promote ICS within their group and beyond. • Producers and local retailers will be linked to the identified demand (e.g. women groups). • Last mile entrepreneurs will be identified, trained, equipped and supported in reaching villages. • Additional tasks will be identified in the course of project implementation
Chamber of Crafts	Supervision of ICS producers and producer associations; Organisation of local awareness events etc.

Implementation arrangements in Component 3

168. Component 3 implements activities for knowledge exchange on a global level. The responsibility for implementation is with GIZ in Eschborn, Germany. Due to the nature of the component, no governance structure is foreseen. The results and activity reporting will be part of the regular Project Governance Board meetings.

C.8. Timetable of Project/Programme Implementation

Project implementation timetable is presented in the Section I (Annex 16).

D.1. Value Added for GCF Involvement

169. The GCF contribution in the form of a grant is critical to comprehensively address a complex set of barriers jeopardising ICS market growth and investment in the sector. The GCF grant will help remove these barriers on the demand and supply side of the market by strengthening the ICS supply chain in terms of product quality, production volumes and geographic coverage, creating consumers' awareness and putting in place an enabling policy and regulatory framework for sustainable ICS market growth in the long-term. In view of prevailing financial market conditions in the targeted countries, the **ICS sector has no opportunities to access other forms of finance rather than grants and technical assistance** (See Section C, §§ 42–44).

170. Without the GCF intervention, it is **unlikely that either the ICS sector in Senegal or Kenya would substantially improve independently** to ensure the level of ICS production and sales compatible with NDC targets and to reach the expansion stage. The sector will continue to be dependent on ODA-support for its growth for the near future. Although the Energising Development Partnership has been working in the ICS sector in both countries for more than 10 years, the scope of the intervention possible under the "classical" or baseline approach of the EnDev partnership will not be sufficient to catalyze the needed market transformation to reach the NDC targets by 2030. The baseline projects, subject to funding availability will probably be able to continue support and, using the lessons learned in the last years, will successfully support a gradual market expansion at about 1.5 % or 5 % growth in the current intervention areas in Senegal and in Kenya, but will fall short of the scope and ambition of the proposed GCF project to transform the market and reach an ODA-independent growth trajectory that will lead to the achievement of the NDC targets by 2030.

171. The informal nature of the ICS sector precludes engagement with the traditional banking sector (in both countries, the financial returns from initial capital investments are insufficient to contract market-based finance, and, importantly, the professional techniques and technologies are not widely known or available to ICS producers). The professionalisation of the ICS sector with combined investment support and technical assistance ensures not only improved output, but the shift of the sector away from current practices to a sector that produces more efficient stoves and that has reached a level of professionalisation and output that allows it to engage successfully with the financial sector (or finance providers) in each country, thus providing it with long-term sustainability.

172. High collateral requirements and high interest rates are the obvious barriers. However, even existing concessional credit lines and state-funded guarantee programmes targeting SMEs do not work for the ICS sector as it currently stands. This is because approximately 90% of ICS production comes from micro-scale, individual, part-time and/or family-based, not formally registered artisans or artisanal enterprises. Absence of legal and tax registrations, balance sheets, credit history, documented sales records, and formal corporate structure makes such artisans 'non-bankable' and prohibit their access to any formal sources of finance. Under such circumstances, ICS producers have to rely on either self-financing or on informal sources (e.g. family and friends). GCF grant support is essential to help overcome this barrier to help prepare and implement business plans, marketing strategies, product improvements, identify and set-up appropriate distribution channels, etc. and bring artisanal and professional producers to the business class category so that by project end, they will be able to access soft or commercial loans.

173. To this end, starting late in the GCF project, a targeted additional **performance-based technical support and training package will be offered to ICS producers** of the business class that meet certain performance criteria and objectives, and are nearing bankability and thus ODA independence. This training support is designed to engage the ICS sector with finance providers and to defray the lending costs and risk for the FIs in these countries that are risk adverse and have not yet engaged with any domestic ICS producers. This targeted additional support should ensure that ICS producers are able to develop business plans and autonomously obtain financing, thus ensuring the exit of GCF financing, the **hand-off to alternative financiers, and the long-term sustainability of the ICS sector in the two countries.**

174. This project offers **a high value-added proposition** for the GCF due to its well-designed approach to **significantly lower domestic GHG emissions** in these countries permanently with an **irreversible market transformation.**

The project will result in a functioning, **ODA-independent** value chain and market for climate friendly cookstoves that will increase steadily after project end until market saturation to allow **the majority of households nationwide** in both countries to use an affordable ICS that not only reduces GHG emissions, but also better **meets their cooking needs and improves their health.** Furthermore, the lessons-learned from this approach will be **introduced and could be duplicated in** many other countries, once the mechanisms have been proven and will be **applicable to the nearly 3 bln persons worldwide** cooking primarily with wood and charcoal (solid fuels). The global collaboration with the World Bank and important international forums such as the Clean Cooking Alliance ensures that institutional knowledge gained from the project will be shared with other development and climate finance actors.

D.2. Exit Strategy

175. The main objective of the project is to **achieve an irreversible shift in the market for ICS within 5 years**, so that the markets in both countries revert from ODA-driven to ODA independent growth, and thus continue to grow to reach the NDC targets for the sector in 2030. Thus, there are a number of elements in the project design which are meant **to ensure sustainability of its results** and impacts in the long-term, specifically:

- The project will **focus on the private sector** as the driver and enabler of large-scale cooking sector transformation using a performance-based incentive approach that fosters ownership and sustainability of the businesses. It will facilitate the creation of a new segment of 'investment' ready ICS producers, companies with sufficient technological base, managerial capacity and working capital/access to sustain ICS market growth beyond the GCF project. As explained earlier and illustrated in Figures 6 and 9: when a critical mass of ICS producers moves from artisanal to professional and business categories, with sales rising commensurately, the market is in the expansion stage. This is when the sector will start generating sufficient returns to ensure high production volume and a sustainable growth trajectory without the need to rely on additional external support.

- The project will **strengthen all elements of the ICS supply chain**, production, distribution and after-sales services. The latter is essential for the project's sustainability as it will a) ensure customers' easy access to required maintenance services and b) provide additional revenue stream for ICS suppliers to cover the costs of operations in new service areas. Furthermore, the project will strengthen partners needed to continue the development of the value chain: government and research entities, larger NGOS and community based organisations as well as local government – who must continue work on further design improvement, testing, labelling and awareness raising of the health and economic benefits of using ICS for households.

- ICS will be sold on **full market price** since the project does not involve direct subsidies to consumers. Therefore, as a minimum, ICS sales will not decline at the end of the project (unless the economic situation deteriorates significantly) as it was often the case in the end of the publicly sponsored ICS distribution programmes in the past.

- The project will promote **localised, affordable technological solutions**, which have been identified, and field-tested through EnDev's earlier work in the countries, and/or which will be further developed during the project. These stoves are tailored to the specific customers' needs and preferences, thus eliminating the risk at this stage that is inherent when piloting consumer acceptance of new stoves. Also all ICS will be produced and assembled locally using local work force and materials throughout the entire supply chain, which is an important factor for long-term sustainability.

- **Performance-based access to finance technical support package will be** specifically designed to encourage professionalised ICS producers to actively engage with the financial sector during the project. In

parallel, technical assistance activities are designed not only to support ICS producers in the development of persuasive business plans and financial proposals, but also to introduce selected financial institutions to the ICS sector itself, including the development of alternative financing and credit models for business class producers and distributers for investment capital and working capital, such as the establishment of SACCOs[56], promotion of alternative credit facilities, integration of ICS finance into existing government funding platforms, and linking of (M)FI and business class ICS producers. Therefore, there is a definite exit strategy for GCF support at the end of the project period (2024) and a take-over by local financial institutions to support the sustainable development of the sector.

176. In summary, the approach will lead to the **commercialization of the sector**. The provided support is designed to encourage professionalised ICS producers first to ramp-up production and their sales avenues in the distribution network to a commercial scale, and secondly for the producers to actively engage with the financial sector during the project., Technical assistance will be provided to the ICS producers for the development of persuasive business plans and financial proposals. Equally important is that the project will engage the financial sector stakeholders to help develop appropriate products and explore opportunities to bring-in non-grant instruments to finance investment in ICS sector growth (micro-credit, credit coops, local development and commercial banks).

177. The project strategy rests on the assumption that with over 1,000 ICS sales/month, the business class ICS producers will be creditworthy. Therefore, its exit strategy is to a) maximize number of producers at business class status by project end; b) incentivize/reduce the risks of their first borrowing; c) actively engage with financial sector stakeholders to develop and market dedicated business loans to ICS producers; and at the same time d) mobilize latent demand potential in the new geographic areas through outreach and build sufficient distribution and retail structure to enable the sales in the expanded market regions.

[56] Savings and Credit Cooperatives (SACCOs) are community based financial institutions. A Sacco is owned, managed and run by its members who have a common bond. Membership is open to all community members regardless of race, tribe, gender, political affiliation, religion, or job status. A member of the SACCO is a person admitted to membership after registration in accordance with the Sacco's by-laws.

E.1. Impact Potential

Potential of the project/programme to contribute to the achievement of the Fund's objectives and result areas

E.1.1. Mitigation / adaptation impact potential

Mitigation impact potential

178. The proposed project is aimed at creating a self-sustainable market for the improved cookstoves (ICS), leading to substantial climate change mitigation impacts, i.e. direct project lifetime GHG emission reductions of **6.47 mln tons** of carbon dioxide equivalent (Mt CO_2eq) during project period and additional 24.77 (Mt CO_2eq) in the project influence period until 2030 or cumulatively during project's lifespan – 31.24 Mt CO_2eq. It will also directly benefit **11.23 mln people** or **1.91 mln vulnerable households, including 0.61 mln women-headed households and 5.57 mln children** (Table 12).

Table 12 GCF Climate Change Mitigation Impacts

	Senegal	KENYA	Total
Direct GHG Emission reductions, tCO2	**1,083,396**	**5,385,254**	**6,468,650**
Indirect GHG emission reductions, tCO2	4,318,887	20,453,486	24,772,373
Total GHG emission reductions, tCO2	5,402,282	25,838,740	31,241,023
GCF Euro/tCO2e - direct	**17**	**4**	**6**
GCF Euro/tCO2e - total	3	1	1
Direct: project life-time:			
Total # households	315,719	1,595,607	**1,911,327**
Total # beneficiaries	3,251,907	7,978,037	**11,229,944**
Total # female beneficiaries	1,609,282	3,911,351	**5,520,633**
Share of beneficiaries in total population, %	21%	16%	
Total # women-headed households	94,716	510,594	**605,310**
Total # children	1,420,736	4,148,579	**5,569,315**
Indirect: post project to 2030			
Total # households	808,482	4,366,744	**5,175,226**
Total # beneficiaries	8,327,368	21,833,718	**30,161,086**
Total # female beneficiaries	4,120,993	10,704,303	**14,825,296**
Share of beneficiaries in total population, %	54%	45%	
Total # women-headed households	242,545	1,397,358	**1,639,903**
Total # children	3,638,170	11,353,533	**14,991,704**

179. **Cumulative GHG emission reduction impact:** The project will result in large and highly cost-effective direct GHG emission reductions because of the accelerated adoption of efficient ICS already during project lifetime. It is projected that because of GCF-support interventions, annual ICS sales growth rates will increase from 1,5% to 24% in Senegal and from 5% to 36% in Kenya resulting in additional sales of 2.87 mln ICS during 5 years of the project duration and corresponding to 6.47 mln t CO_2e in GHG emission reduction (see Table 13).

Table 13 Direct GHG emission reductions

SENEGAL	GCF Project Period					Total Direct
	2020	2021	2022	2023	2024	
Annual additional ICS sales	45,000	101,475	172,189	260,570	370,868	950,102
Annual additional fuelwood ICS	24,750	55,811	94,704	143,314	203,978	522,556
Annual additional charcoal ICS	20,250	45,664	77,485	117,257	166,891	427,546
GHG emissions - fuelwood ICS (lifetime), tCO2e	28,222	63,641	107,990	163,420	232,594	595,868
GHG emissions - charcoal ICS (lifetime), tCO2e	23,091	52,070	88,356	133,707	190,304	487,528
Total GHG emission reductions (lifetime), tCO2e	51,313	115,711	196,346	297,126	422,899	1,083,396
KENYA	GCF Project Period					**Total Direct**
	2020	2021	2022	2023	2024	
Annual additional ICS sales	74,400	179,304	325,879	529,323	810,313	1,919,220
Annual additional fuelwood ICS	59,520	143,443	260,704	423,459	648,251	1,535,376
Annual additional charcoal ICS	14,880	35,861	65,176	105,865	162,063	383,844
GHG emissions - fuelwood ICS (lifetime), tCO2e	167,011	402,496	731,524	1,188,208	1,818,965	4,308,203
GHG emissions - charcoal ICS (lifetime), tCO2e	41,753	100,624	182,881	297,052	454,741	1,077,051
Total GHG emission reductions (lifetime), tCO2e	208,763	503,120	914,405	1,485,260	2,273,707	5,385,254

180. In addition, due to the market-based approach, the ICS sector will continue to grow beyond the implementation period (albeit at slower growth rate but higher than in the baseline scenario) **leading to estimated additional sales of 11.08 mln ICS and indirect GHG emission reductions of 24.77 mln t CO_2 eq until 2030**.

Adaptation impact potential

181. The project will also result in additional **climate change adaptation benefits**, as follows:

- Reductions in fuel use are directly contributing to the **saving of resources** (money or labour) required by the households to acquire the fuel. These avoided expenditures can allow households to allocate the resources into investments for adaptation measures.
- Climate change in Senegal and Kenya is increasing desertification and reducing the availability of biomass fuel. Reductions in specific fuel use allows households to **adapt to shortages in the supply of biomass fuel**.
- **Improved health outcomes** for families adopting the ICS technology, which will lead to an improved level of resources for adaptation.

182. **The project will also benefit vulnerable groups**. The project has been designed to maximize and ensure long-term sustainability of its climate impacts (in the form of GHG emission reduction) by a national market transformation. Yet at the same time, this transformation will ensure **substantial adaptation co-benefits for the most vulnerable groups of consumers**. For example, as noted in the review, the regions in Senegal that are currently underserved and will be targeted by the project have also been identified as among the most vulnerable to climate impacts in view of their climate risk profile and dependence of the local population on depleting forest resources (Section 3.5.2 climate risk maps). Therefore, the large amount of GCF grant will be programmed in those regions to ensure long-term changes in consumers' behavior that will lead to use of ICS and the adaptation benefits listed above, while also improving climate resilience in view of climate change impacts on forests.

183. Further measures to improve **the supply of biomass fuel and improve forestry management** outside of the proposed project in both countries are also necessary to adequately address the problems resulting from the growing demand for biomass fuel. However, these aspects are being addressed by other stakeholders and partners within the countries, outside of the proposed GCF project. The project will encourage further action for an improved supply chain where feasible, through other actors, as it will not be feasible to make a meaningful and efficient contribution to this "other side" of the root problem in the same GCF project.

- **In Kenya** the issues of reducing emissions deforestation and forest degradation, under which the improvement of the supply chain for biomass falls, is being addressed at the systemic level under the country's REDD+ programme. Kenya is currently implementing the readiness phase of the REDD+ programme through support from the Forest Carbon Partnership Facility of the World Bank. The support is being channeled through the UNDP under the UNREDD program. The implementation is being spearheaded by a multi-stakeholder team steered by the Kenyan Ministry of Environment and Forestry and the UNDP, and will close in December 2020. It will be followed by the implementation of the national strategies and results-based demonstration activities and then results-based actions. Other projects implemented by the GIZ in Kenya, with funding from the BMZ and BMU, also address land-use changes related to forest degradation. The GCF project will dialog with the main actors in this sector in opportunities to interlink fuel demand activities with the REDD+ or other forestry and land-use initiatives coordinated by the Ministry of Environment and Forestry. As the MoEF is member of the GCF Project Advisory Board, it will be in a good position to coordinate the fuel supply related activities with the stove marketing activities of this GCF project. Possible measures could cover consumer awareness on forest conservation as well as enabling environment.
- **In Senegal,** EnDev has discussions with the World Bank, and has been made aware the third phase of their PROGEDE project will now focus on sustainable forest management (countrywide). The proposed GCF project will be able to collaborate and share knowledge on forestry issues through the Ministry of Environment and Sustainable Development in the Project Advisory Board. Furthermore, the EnDev project will provide limited funds outside of the GCF proposal in cooperation with the Forest and Water Department and the implementing NGOS on some pilot initiatives on forest management and on use of pigeon peas as an alternative fuel.

184. Efficiency gains on fuel use of cookstoves are accompanied by **reduced exposure of the cook and often children or elderly who are also in the cooking area to harmful emissions** such as particulate matter (PM) and carbon monoxide (CO). These emissions are known as Household Air Pollution (HAP). This can **contribute to reducing the health risks of diseases** among the most vulnerable populations in both Senegal and Kenya.

185. For example, an independent scientific study of a random sample of households in Senegal[57] showed that there is a **significant reduction in eye infections and respiratory illness** among those who cook with an ICS of the type promoted by EnDev. Some of this benefit resulted from the reduction of smoke from the stove. Other factors that led to reduced exposure to smoke in the study were the quicker cooking time, the good-shielding of the stoves, which makes it possible to cook outside even when it is windy, and the fact that the stove needs less intense monitoring and allows the cook to work on other tasks away from the stove during the cooking period.

186. Health benefits are a major impact area or co-benefit of ICS use, and Energising Development is engaged globally in international discussions about how to best measure and support health benefits. The project will apply the **Cooking Energy System (CES**), currently being developed by Energising Development, in both countries to monitor use of ICS and behavioural changes that lead to reduced health impacts from cooking, such as using improved ventilation, cooking more out-doors, and regularly using the ICS, which reduces smoke exposure compared to the baseline stoves in and of itself. The project will also continue to collaborate with universities and other partners involved in the Clean Cooking Alliance that conduct further independent studies on the health impacts of ICS use. One example of this collaboration with universities on health impacts is a current collaboration with RWI–Leibnitz-Institut für Wirtschaftsforschung in a health impact study on cookstoves including ICS promoted by EnDev, which will be published during the project lifetime.

[57] Bensch and Peters, 2014, p. 20-22

187. The **CES system**, which will be used, addresses best practices for reducing HAP (Household Air Pollution), is an evaluation approach for ICS interventions developed by EnDev that analyzes the quality of cooking energy services based on three criteria – Access, Health and Convenience. Under Health, a holistic assessment of fuel quality, stove design, kitchen design, user behavior, safety of use and many more factors are evaluated in order to determine the health effects of cooking based on proxy indicators.

188. The health benefits from ICS-interventions can be described along the following impact chain: **Reduced Emissions –> reduced HAP –> reduced exposure to HAP**. Emissions from the stove are reduced by designs elements, which improve the combustion in the stove resulting in less smoke and a hotter fire that cooks faster. However, the level of HAP depends further on the cooking location (indoor, outdoor) and the design of cooking location (kitchen with/without window, hangar, low walls/ high walls…). The remaining emissions kept in a room and/or can circulate and dilute with the air; depending on peoples movement during the cooking process (and on the prevalence of other sources of smoke), thus the exposure in one room can be lower or higher than the average HAP, depending on behavior and location of each person.

189. EnDev will **apply the CES approach in the GCF project** and assess empirically the effect of the ICS at household level. Based on the assessment, recommendations for (a) technology development and (b) user behavior will be developed and integrated into large-scale awareness campaigns conducted with partners. A preliminary CES was conducted in Senegal in 2016/17 that helped inform the project design, and the revised CES methodology will be applied again in both countries during the project period.

In applying the CES, the project measure the following with field surveys and then address them in awareness campaigns:

- How to minimize HAP when using the ICS
- Treatment of fuel (e.g. drying)
- Treatment of stove, cleaning, maintenance, repair
- Ventilation and kitchen design

190. The proposed GCF project will not devote project funds to monitoring air pollution by gas and PM, as health benefits are not the focus of the project. In particular, the project will not attempt to measure reduction of **black carbon**, as this is not an established practice, but rather a scientifically difficult, costly and time-consuming endeavor. As this GCF project is focusing on climate effects, it is sufficient to focus on CO2 emission reductions, for which we have evidence. This project does also not promote the replacement of **kerosene lamps** in kitchens, as this is addressed outside of the GCF project by Energising Development's interventions for improved energy access with solar lamps.

E.1.2. Key impact potential indicator

GCF core indicators	*Expected tonnes of carbon dioxide equivalent (t CO_2 eq) to be reduced or avoided (mitigation only)*	*Annual*	1.29 mln t CO_2 eq (average for 5 year project duration)
		Lifetime	6.47 mln t CO_2 eq (over 5 year of project lifetime)

	• *Expected total number of direct and indirect beneficiaries, disaggregated by gender (reduced vulnerability or increased resilience);* • *Number of beneficiaries relative to total population, disaggregated by gender (adaptation only)*	*Total*	11.23 mln people (direct), or 5.52 mln women (direct)
		Percentage (%)	21% - Senegal 16% - Kenya
Other relevant indicators	• *Increase in the number of households with access to low GHG emission energy: 1.91 mln households with access to ICS (1.60 mln households in Kenya and 0.32 mln households in Senegal)* • *Expected increase in the number of small, medium, and large low-emission power suppliers (compared to baseline): 174 ICS producers with improved production capacity, including 72 existing, 20 new in Kenya, and 82 existing in Senegal*		

Expected tonnes of carbon dioxide equivalent (t CO_2 eq) to be reduced:

191. The estimated potential for GHG emission reduction from adoption of one ICS is **0.57 t CO_2eq/stove/year** for in Senegal and **0.8 t CO_2eq/stove/year** in Kenya. These estimates were derived from CDM baseline data on household fuel consumption in the countries, as well as UNFCCC default values in line with applicable guidance provided by the UNFCCC methodology AMS-II.G.: Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass (version 10)[58]. The **formula to estimate annual GHG emission reductions** is provided in Figure 17 (see GHG impact model in Annex 2 for input values).

Default values of the fraction and calorific values of non-renewable biomass for both Kenya and Senegal has been used in line with AMS-II.G, version 10 (see GHG impact model).

Default values for baseline woody biomass consumption for households in Senegal and Kenya have been applied as approved by CDM board**,** as follows**:**

- AMS0035 Standardized baselines: Baseline woody biomass consumption for household cookstoves in Kenya (valid until February 2020), p. 5: 0.76 tonnes/persons/year (https://cdm.unfccc.int/methodologies/standard_base/2015/sb103.html)
- AMS0025 Standardized baseline: Cookstoves in Senegal (valid until August 2019), p.4: 4.68 tonnes/household/year (https://cdm.unfccc.int/methodologies/standard_base/2015/sb90.html)

[58] https://cdm.unfccc.int/methodologies/DB/HLXIKEIBAXBE4EHO24H5IAB824MBD8

Further, in line with AMS-II.G, version 10, an adjustment factor to account for any continued use of pre-project devices have been applied to account for households continuing to use a baseline stove in parallel to the ICS.

To estimate life-time emission reduction, annual GHG emission reductions have been multiplied by **ICS life-time (i.e. 2 years in Senegal and 3.5 years for Kenya)** and by the total number of ICS to be deployed annually in line with the assumed annual growth rate in the baseline and project scenarios for the total duration of the project, as well as for the post-project market development until 2030.

192. To monitor the progress under the climate change mitigation impact indicator, the project will follow the monitoring recommendations provided in the AMS-II.G methodology. The total number of ICS deployed will be monitored annually based on the EnDev production and distribution monitoring system and database, as described in Section H.2 of this document.

Figure 17 Calculation of GHG emission reduction

$$ER_y = B_{y,savings} \square f_{NRB,y} \cdot NCV_{biomass} \square EF_{projected\_fossilfuel}$$

Where:

ER_y	Emission reductions during the year y in tCO_2e
$B_{y,savings}$	Quantity of woody biomass that is saved in tonnes
$f_{NRB,y}$	Fraction of woody biomass saved by the project activity in year y that can be established as non-renewable biomass
$NCV_{biomass}$	Net calorific value of the non-renewable woody biomass that is substituted (IPCC default for wood fuel, 0.015 TJ/tonne)

Expected total number of direct and indirect beneficiaries*:*

193. Only the **number of direct beneficiaries** disaggregated by gender and other vulnerable groups have been estimated to stay on the conservative side, as follows:

- Number of beneficiaries: the number of ICS in use determines the number of people benefitting from the ICS use (# of ICS * average household size). However, in Senegal, households always use 2 stoves at the same time when preparing a meal, hence the effect of a single ICS is only applicable for half of the household size. In Kenya, field observation shows that some households use two stoves in parallel, but this pattern is far from being an established practice. To be on the conservative side, a factor of 1.1 (i.e. every 9th household is assumed to be using two stoves) has been adopted to estimate number of beneficiary households in Kenya
- Number of women beneficiaries – based on national statistical data (share of women in total population)
- Number of women-headed households – based on national statistical data (share of women-headed households in total number of households)
- Number of children – based on national statistical data (share of children per household)

194. Cost-effectiveness of the resulting GHG emission reductions stands at **EUR 6/t CO_2eq on average (EUR 4/t CO_2eq for Kenya and EUR17/t CO_2eq for Senegal).** This is comparable[59] with, for example, findings of the analysis of cookstove projects implemented under the CDM mechanism, which demonstrated that the minimum price per t CO_2 required to make an ICS project financially viable (back in 2007–2010) had been within the range of EUR 2.3-9.0/t CO_2eq[60].

195. **IPCC special report 'Global Warming of 1.5°C'**[61] provides the latest international benchmarks of the mitigation costs (price of carbon), i.e. costs of mitigating one extra unit of GHG emissions depending on the stringency of mitigation requirements. The price of carbon varies substantially across models and scenarios and it increases with the scale of mitigation efforts: the higher the targets, the higher the costs. For example, estimates of mitigation costs under a -2℃ pathway range from 10 – 200 USD t CO_2eq in 2030, while for more stringent Below-1.5℃ pathway carbon price is in the range from 135 – 5,500 USD t CO_2eq in 2030. **Against these benchmarks, mitigation cost of the proposed GCF project, i.e. EUR 6/t CO_2 compares very favourably.** These estimates signal the high cost-effectiveness of the proposed mitigation measures compared to the costs that will have to be incurred to reach -2℃, let alone -1.5℃ climate stabilization target, and therefore justify GCF investment in the project.

196. Under the EnDev global partnership, the **global benchmark for providing improved energy access targets less than EUR 20 per person** on average across all programmes. The ICS projects are normally among the most cost-effective interventions for improving energy access. Globally, all 19 ICS projects in the EnDev portfolio have an average cost-efficiency of EUR 7.33 per beneficiary, according to 2018 project data. The current EnDev baseline project in Kenya has an average cost of EUR 3.90 per beneficiary, compared to EUR 3.41 in Senegal, reflecting efficiencies gained after several years of implementation in the current project areas. The **proposed GCF project has a cost efficiency per beneficiary in GCF funds of EUR 6 during the project lifetime and EUR 1 until 2030**, which provides a high value for money and performs well against the EnDev benchmark, although the approach involves expansion to new regions and introduction of new stove models (refer to the lessons learned).

197. The **average cost of each tonne of CO_2eq avoided in EnDev ICS projects globally is currently EUR 12.29**. In the baseline, EnDev projects in Kenya and Senegal, each tonne of CO_2eq avoided has a current cost-efficiency of EUR 4.14 and EUR 11.33 respectively. Compared to the **average cost-efficiency of the proposed project during the project lifetime, the proposed activities show good efficiency for mitigation**.

E.2. Paradigm Shift Potential

Degree to which the proposed activity can catalyse impact beyond a one-off project/programme investment

E.2.1. Potential for scaling up and replication (Provide a numerical multiple and supporting rationale)

198. Paradigm shift to be enabled by the project will enable a substantial contribution to the national climate goals of GHG emission reduction from the energy-cooking sector because of **ICS adoption by an additional 50% of Senegalese households and 36% of Kenyan households by 2030**. It will be achieved as a result of the market transformation of the ICS sector in terms of:

- **Establishment of a new class of ODA-independent investment-ready ICS producers** with sufficient technological base, managerial capacity, working capital and access to finance to sustain high ICS market growth and expansion beyond GCF project timeframe.

[59] Assuming annual inflation and change in EURO real value in 2018 compared to 2007
[60] Müller, N., Spalding-Fecher, R., Bryan, S., Battye, W., Kollmuss, A., et al. (2011). *Piloting Greater Use of Standardised Approaches in the Clean Development Mechanism – Phase I: Identification of Countries and Project Types Amenable to Standardised Approaches*. Commissioned by the UK Department for International Development. Zurich.
[61] Global Warming of 1.5°C, an IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty. Chapter 2. Pages: 79-82. Available on-line: http://www.ipcc.ch/report/sr15/

- **Accelerating the ICS market growth rates to reach national climate targets in 2030**: the project will result in 5-fold increase in annual sales of ICS (across all countries) compared to annual sales at project start in 2020 and by doing so will effectively enabling the countries to achieve their stated NDC targets.

Key indicators which illustrate intended paradigm shift can be summarised as follows:

- **Kenya:** Increase in the number of producers in professional category from 26 up to 60 and in business category from 2 to 20, leading to an increase in the annual ICS sales from projected 252,000 ICS at the beginning of 2020 up to 1,116,621 ICS by the project end and up to 1,978,162 ICS by 2030.
- **Senegal:** Increase in the number of producers in professional category from 25 up to 60 and in business category from 3 to 25, leading to an increase in the annual ICS sales from projected 203,000 ICS at the beginning of 2020 up to 586,325 ICS by the project end and up to 1,096,671 ICS by 2030.

199. **The replication potential of the project within the targeted countries is significant**: The unserved market for ICS is now over 6 mln households (**Kenya > 5 mln and Senegal – 1.4 mln).** While the proposed project aims at significantly tapping this potential (ICS sales will grow during project lifetime by 24% and 36% per year in Senegal and Kenya respectively), it will also create conditions for sustained ICS sector growth beyond its timeframe thus ensuring continued replication impact of the GCF investment.

200. **The replication potential in other counties is also significant. Globally there are over 3 bln people still relying on inefficient biomass use** for cooking and the number is steadily growing due to population growth. Knowledge about climate benefits of ICS remain limited, thus the importance of this sector in achieving global and national climate goals. Through the global component, the project will ensure knowledge transfer and south-south learning between countries, but also globally in exchanges with other developing countries and strategic partners in the clean cooking sector, such as the World Bank and the Clean Cooking Alliance. This contributes to lead to achieving a paradigm shifts in the ICS sector. Sharing the knowledge products globally, with strategic partners and other national governments aims at expanding this project approach to additional countries based on the experience gathered in implementation.

E.2.2. Potential for knowledge and learning

201. **The creation of knowledge** among the many ICS sector stakeholders, producers, distributors, individual consumers, and community organisations, as well as public authorities **is a key element of the ICS market transformation strategy** adopted by the project. Learning objectives and activities therefore have been integrated in the scope of all project components and sub-components as follows:

202. At the national level, under Sub-component 1 ‘Strengthening ICS value chain’ in both Kenya and Senegal, the project will provide **extensive training and tailored mentorship to some 100 ICS producers** to help improve their knowledge about international best practices regarding ICS manufacturing and product design, including working conditions, health, safety, and environment. It will also support ICS producers in learning about business and financial planning, as well as understanding market-based finance and how to access it. In addition, the project will provide **training to 2,000 additional LMEs on effective marketing and sales approaches for ICS**. Finally, it will invest in strengthening knowledge of the financial institutions, local banks, and MFIs, about ICS sector and its specifics, risks, and investment potential.

203. Further, under Sub-component 2 ‘Enhancing Consumer Demand and ICS Market Environment’ the project will **raise awareness and knowledge about ICS and their benefits (economic, health, and environmental)among millions of potential customers in rural Kenya and Senegal** via PR, advocacy, and education campaigns, as well as local authorities and community organisations, including women’s groups. In Kenya, the project will support the development of training content (curricula) on modern cooking energy applications at youth polytechnics as well as at vocational training centres.

204. The project will implement a **Gender Action Plan (GAP)** with project partners, monitor the results, and share the results with national and regional institutions, as well as NGOs that will be capacitated to continue gender-sensitive support to the ICS value chain.

The GAP puts a strong emphasis on **dedicated training for women**, including gender-specific business and entrepreneurship training, as well as other training (including literacy, if needed) on demand. Although women already play an important role in the ICS value chain, particularly in the production of clay inserts, and in distribution and marketing structures on the village levels, there are insufficient female led ICS production companies. Female entrepreneurs in particular feel hampered by a lack of business skills, which can be addressed by training.

205. The project will support **collaboration with universities and public offices** involved in testing and labelling ICS, will support national and local government in allocating resources for necessary public sector support measures for testing, labelling and communication of benefits, and will work with national and local stakeholders on designing effective promotion campaigns for ICS. In Kenya, the project collaborates for example with testing centres and major universities on design, labelling and testing of ICS, and with a wide-range of stakeholders on marketing of the ICS. In Senegal, the project will collaborate closely with the involved ministries, and provide a professional communication expert to support the Ministry of Petroleum and Energy in designing clean household energy promotional material and also with CERER, a national institute for the study and research of renewable energy on field testing, and the design of cold-ceramic as well as other design elements. Local government and civil society, including NGOs and women's groups will be involved in the design and implementation of marketing activities on county and village level.

206. Sub-component 3 in Kenya and Senegal, regular ICS market monitoring activities will directly contribute to the **knowledge about the state of ICS sector development** in each country (level of production and sales, consumer awareness, preferences, etc.). Impact evaluation studies will assess co-benefits of ICS (health, adaptation, energy poverty, etc.). To contribute to the global body of knowledge and create a stronger case for continued political support to the sector among public authorities and international organisations.

207. Lastly, Component 3 of the project has been designed to improve **knowledge on climate-friendly cooking solutions and their potential contribution to NDC among relevant countries globally**. Experiences made and lessons learnt in the project are documented. These are made available as knowledge products for other parties, like national governments, development organisations etc., and applied in interventions as well as replicated in future project proposals.

E.2.3. Contribution to the creation of an enabling environment

208. The project is aimed at **creating an enabling environment for accelerated ICS market growth** in Kenya and Senegal. The core elements of such an enabling environment are:

- A **strong ICS production sector** capable of delivering sufficient quantity and quality of ICS products to the market at the scale required to reach NDC targets. The project via Activities 1.1.1 and 2.1.1 'Professionalisation of ICS production' will ensure that in both Kenya and Senegal such a sector exists and is capable of sustaining growth beyond the project.
- An **effective network of distributors and retailers** reaching out to even the most remote parts of the countries, thus ensuring access to ICS to all potential customers. Activities 1.1.2 and 2.1.2 'Expansion of distribution and retail chains' will support this measure.
- A **group of experienced local NGOs that is well trained, experienced, and motivated in the support of the ICS sector.** By collaborating with larger NGOs as EEs and service providers in the implementation of the GCF project, create and strengthen these capacities in the sector and links them with the relevant ministries.
- **Strong national alliances**, which coordinate and support interests of the sector players, like the Clean Cooking Association in Kenya (CCAK). The project support CCAK in the implementation of its core functions.
- **Interministerial cooperation**, including the ministries responsible for health, environment, energy etc., in a platform for coordinated a clean cooking awareness creation campaign preparation. The project supports such cooperation in various forms in both countries, in particular through the PAB and PCC.
- A **group of MFIs and banks capable and willing to provide financial services** in support of investments in production and distribution infrastructure of larger ICS producers. See Activities 1.1.3 and 2.1.3.
- A **broad awareness on the benefits and viability of ICS usage** amongst all relevant population groups in the two countries (see Activities 1.2.1 and 2.2.1).
- **Effective support from public and civil society stakeholders** at the national and local level. (See Activities under 1.2 and 2.2)

E.2.4. Contribution to regulatory framework and policies

209. In Kenya, the project will support the Energy Regulatory Commission (ERC) and Kenya Bureau of Standards (KEBS) in finalisation, adoption, and enforcement of ICS regulations and standards, as well as national ICS quality labels.

210. In Senegal, the project will support the development of an investment plan for the domestic energy strategy, including estimation of the investment needs and potential public, private, and international sources to finance its implementation. It will work closely with relevant national authorities to ensure regular exchange of information about ICS market development and support the development and application of a joint monitoring system for the sector, as well as its linkage with national MRV for NDC. The close work with national ministries and relevant departments will ensure that sufficient knowledge and capacity for further support to climate-friendly cooking solutions through market-based approaches is available for further necessary support after project end.

E.3. Sustainable Development Potential

Wider benefits and priorities

E.3.1. Environmental, social and economic co-benefits, including gender-sensitive development impact

211. The project will **deliver numerous sustainable development benefits** and will make a tangible contribution to a number of Sustainable Development Goals (SDGs) via reduction of energy poverty (SDG 1), lessening exposure to health risks (SDG 3), reducing drudgery for women in collecting wood fuel (SDG 5), improving access to modern energy (SDG 7), reducing GHG emissions and strengthening communities' resilience to climate change (SDG 13), and diminishing pressure on forest resources (SDG 15) for 11.23 mln

people directly during project lifetime and over 30.16 mln people indirectly until 2030 (see Table 14 for a summary of the project's SD impacts).

Table 14 GCF Project Beneficiaries in Senegal, Kenya and Total

Direct: project life-time:			
Total # households	315.719	1.595.607	**1.911.327**
Total # beneficiaries	3.251.907	7.978.037	**11.229.944**
Total # female beneficiaries	1.609.282	3.911.351	**5.520.633**
Share of beneficiaries in total population, %	21%	16%	
Total # women-headed households	94.716	510.594	**605.310**
Total # children	1.420.736	4.148.579	**5.569.315**
Indirect: post project to 2030			
Total # households	808.482	4.366.744	**5.175.226**
Total # beneficiaries	8.327.368	21.833.718	**30.161.086**
Total # female beneficiaries	4.120.993	10.704.303	**14.825.296**
Share of beneficiaries in total population, %	54%	45%	
Total # women-headed households	242.545	1.397.358	**1.639.903**
Total # children	3.638.170	11.353.533	**14.991.704**

212. The IPCC clearly recognises the high potential of ICS to deliver multiple sustainable development benefits, which go beyond climate change mitigation. First, the use of inefficient cooking devices leads to indoor pollution, resulting in nearly 4 mln premature deaths every year, and a range of chronic illnesses and other health problems. The use of the improved cooking systems promoted by this project w**ill contribute to the reduction of the health risk caused by smoke and soot** because of decreased indoor air pollution in the households, which purchased an ICS. Please see the discussion of adaptation benefits in E.1 for more details on the health benefits and what will be measured during the project by the GIZ versus through cooperation with independent research projects.

213. Scaling-up ICS adoption also **reduces the pressure on forests and biodiversity**[62], reduces drudgery for women in collecting wood fuel, and saves money if fuel needs to be purchased. Benefits from wide-scale adoption of improved cookstoves outweigh their costs by seven-fold if and when their health, social, and environmental benefits are accounted for. Furthermore, the IPCC 5th Assessment Report clearly identifies energy-efficient wood fuel cooking devices as a climate change adaptation measure, which reduces pressure on forests, thus increasing resilience of the forest ecosystem to climate change[63]. The project will limit its interventions to actions that lower pressure on forests due to the drastically increased use of ICS. Other public and donor programmes in both countries are preparing effective programs to improve forestry. Please also see the discussion of adaptation benefits in E.1.

214. Other sustainable development benefits of the project include **reduction of energy poverty, creation of new long-term jobs, additional opportunities for education and income-generating activities**, in particular for women engaged in ICS value chain.

[62] Please also see the discussion on co-benefits to the project in C.3. This project will not address the value chains for the supply of biomass, as these can be effectively addressed in other projects focused on the forestry sector.

[63] Smith P., M. Bustamante, H. Ahammad, H. Clark, H. Dong, E.A. Elsiddig, H. Haberl, R. Harper, J. House, M. Jafari, O. Masera, C. Mbow, N.H. Ravindranath, C.W. Rice, C. Robledo Abad, A. Romanovskaya, F. Sperling, and F. Tubiello, 2014: Agriculture, Forestry and Other Land Use (AFOLU). In: *Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC)*. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. Chapter 11, p. 846

215. In terms of gender impacts, as women (and children) are almost unanimously the main users of cookstoves and responsible for the fuel collection or purchase, they are the ones benefiting most from reduced fuel usage and local emissions. The project further **increases gender equality** by reducing household work for women and making them participate in the cookstove value chains. This impact is further enhanced by ensuring women's participation in decision-making in the project activities, and providing specific trainings in, among others, entrepreneurship for women.

216. The project is expected to **create an estimated 2,745 work opportunities** by the project end, including about 705 jobs in the ICS production sector alone and the rest along the ICS distribution/sales chain.

217. In Kenya, the number of jobs in the supported production sector is expected to increase by 360 by the end of the project. Besides, 2,000 additional installers and retailers (LMEs) will be trained and it is conservatively assumed that at least 60% of them will be involved in ICS sales/distribution (1,620). Therefore, the project is expected to **create about 1,980 work opportunities in total in Kenya**.

218. In Senegal, the number of jobs in the supported production sector is expected to increase by 345 at the end of the project. Besides, 650 installers and retailers (LMEs) will be trained and it is conservatively assumed that at least 60% of them will be involved in ICS sales/distribution (420). Additionally, women's groups will be supported for selling ICS. Therefore, the project is expected to **create about 765 work opportunities in the country**.

219. The project further generates temporary employment (during 5 years) for trainers and local employees of the partner NGOs, and provides activity in Kenya for highly skilled technicians in institutions which will be involved in stove testing and technology development. It can be expected that many of these jobs, particularly those in the value chain needed to ensure further sector growth, will continue after project end, due to the close coordination on project implementation with local and national stakeholders.

E.4. Needs of the Recipient

Vulnerability and financing needs of the beneficiary country and population

E.4.1. Vulnerability of country and beneficiary groups (Adaptation only)

n/a

E.4.2. Financial, economic, social and institutional needs

220. Participating countries are low income to lower middle-income countries, which have demonstrated commitments to promoting ICS, including via their NDCs, but lack sufficient implementation and financial capacities to carry out comprehensive market transformation programmes without additional international support. This project specifically targets the poor, vulnerable and marginalised populations, which lack access to the ICS market.

221. **Kenya**: Kenya's population is estimated at 48 mln (about 9.6 mln households, 2016) and is growing at an annual average of 2.7%. 78% of the population are in the rural regions and 22% in the urban area. 33% of urban dwellers and 51% in the rural areas (45% of the population) live under the poverty line on less than USD 2 a day. Poverty is higher in the Northern and Coastal regions of the country. Kenya is characterised by a labour market that includes household-based enterprises, subsistence agriculture and a small wage sector. A majority of the country's population is engaged in agriculture (32%) on family owned land while 7.7% percent have no work. Most people in rural areas (44%) work on family agricultural holdings with low or no pay. This has a bearing on the affordability of the cooking technologies available in the market.

222. The project will deepen the activities within the current focal areas (22 counties) of the EnDev project in Kenya but also venture into at least 15 additional new counties in parts of Rift Valley, Central region, Coastal region and Northern Kenya where the market for ICS is still underdeveloped.

223. Kenya has been one of the fastest growing economies in sub-Saharan Africa for the past five years ranging from 5–6% annual GDP growth per year. The country has strong international trade and transport links, a growing middle class, increased public infrastructure investments and established tourism, financial services, and agricultural sectors. Nevertheless, the **country is resource poor and is vulnerable to external and economic shocks** from rising oil costs, security concerns and climatic conditions. The World Bank forecasts medium term growth in the same range (5.8% for 2018, 6.1% for 2019) and adds the impact from slow credit growth since 2016[64].

224. The GoK is committed to reducing its fiscal deficit to less than 6% of GDP from over 8% currently through a combination of cost cutting and revenue enhancing measures. These policy measures are in accord with the IMF to maintain access to the precautionary Stand-By Agreement of USD 1.5 bln to withstand monetary shocks.

225. Both the IMF and the Department of Treasury have recently warned about the level of Kenya's public debt. Official data shows total public debt stood at KSh 4.57 trillion (approximately EUR 37 bln) at the end of December 2017 as the build-up of massive borrowing that began five years ago continued unabated (including, among other infrastructure projects, the Mumbai-Nairobi Madaraka Express train line). The mountain of debt is comprised of 51.9% of foreign loans and 48.1% of domestic loans. The overall increase is attributed to increased external debt mainly arising from exchange rate fluctuations and disbursements from external loans debt during the period,' according to the Treasury. Concern over Kenya's debt load is mainly related to the fact that its rate of increase is way ahead of revenue growth, indicating the widening gap and mounting pressure on the government's capacity to repay loans.[65]

226. **Senegal** is one of the world's least developed countries; it is **ranked 162 out of 188 in the human development index**[66]. The country relies significantly on external payments. According to the World Bank, '*…on the external front, debt was estimated at 62% of GDP in 2017 and the current account deficit worsened from 5.4 to 7.9 percent in 2017 due to rises in imports of oil and capital goods, and exports expanded less rapidly*.'

227. The economy relies heavily on cash crops and fishing, both of which are vulnerable to climate change. Those living in urban areas have far better access to resources than those in rural areas; according to WFP[67], a quarter of people living in the capital, Dakar, are poor, compared with two-thirds of those living in the countryside. Senegal suffers from **persistently high poverty rates, currently at 46.7%.** Overall, 17% of people are food-insecure, and in some – mostly rural – parts of the country, the prevalence of global acute malnutrition is critical. Rapid population growth (2.9% a year) will further exacerbate completion for and pressure on natural resources, as well as vulnerability to climate change.

228. Almost all of the 1.6 mln households of Senegal use one, and for the most part, two stoves for firewood or charcoal to prepare their daily food. EnDev estimates that about **87% of households still rely on inefficient cookstoves**. In particular, all rural areas and the provinces in the south and east of Senegal are still un(der)-served, as far as access to ICS is concerned. According to the National Agency for Civil Aviation and Meteorology of Senegal (ANACIM), these areas are particularly poor and food insecure. The GCF project will focus on both the centre of the country and the south to increase the ICS market, to increase the affordability of cooking energy and to reduce the health burden of people cooking with these fuels. It will help the population to manage their individual adaptation to a changing climate environment.

[64] https://www.worldbank.org/en/country/kenya/overview
[65] https://www.nation.co.ke/business/Kenya-s-public-debt-crosses-Sh4-5trn-mark/996-4320928-bit76az/
[66] http://banquemondiale.org/fr/country/senegal/overview
[67] www1.wfp.org/countries/senegal

229. **Borrowing capacity:** Between 2006 and 2016, **Senegal's public debt has increased 4-fold** and now accounts for over 60% of GDP or USD 579 per capita[68]. Although the level of debt is within the guidelines established by the UEMOA (70% of GDP), Senegal is not in a bullish position to take on significant debt obligations and run the risk of exceeding UEMOA guidelines.

E.5. Country Ownership

Beneficiary country (ies) ownership of, and capacity to implement, a funded project or programme

E.5.1. Existence of a national climate strategy and coherence with existing plans and policies, including NAMAs, NAPAs and NAPs

230. The project has been designed in **close alignment with national climate and development priorities** of the targeted countries, as presented in the following key national policy and strategy documents:

231. **Kenya**: Kenya's **INDC** has also identified clean energy technologies (including ICS) as **a high potential intervention area** for achieving the country's mitigation and adaptation objectives. The NDC further resulted in a number of specific plans and policies. Kenya has developed a National Climate Change Response Strategy (NCCRS 2010), National Climate Change Action Plan (NCCAP 2013), and a National Adaptation Plan (NAP 2016), which provide the vision for low carbon and climate resilient development, and the National Climate Change Framework Policy and legislation. The climate change actions are addressing different areas such as afforestation and reforestation, geothermal and other clean energy development, energy efficiency, climate smart agriculture, and drought management. Specifically, **the draft NCCAP for 2018–2022**, which is still under revision, emphasises, *inter alia*, the **strategic importance of the following measures aimed at expedited ICS market development** in Kenya:

- Promotion of local manufacture, development, and enforcement of quality standards and servicing of clean cookstoves, e.g., tax-relief incentives for manufacturers, training (both management and technical), loans and other required support for local service providers
- Supporting local businesses to stock improved cookstoves, with an emphasis on women-led businesses
- Establishment of timber plantations for sustainable biomass supply through various programmes such as agroforestry[69]

232. **Senegal**: Because of the large share of CO_2 emissions stemming from the use of firewood and charcoal for cooking, there are explicit interventions for reducing the use of non-renewable wood as fuel for domestic consumption defined in the NDC. Ambitious targets for interventions addressing the emissions from domestic cooking with wood fuels have been **defined in the mitigation objectives in the NDC, including specifically the diffusion of 8.4 mln ICS for firewood and charcoal**. As far as Senegal's key development priorities are concerned, the project will directly contribute to the two strategic priorities of the government, as formulated in the *Plan Sénégal Emergent* (PSE) – to foster economic growth and reduce poverty. To do so, the IMF notes in its recent Fifth Review under the Policy Support Instrument (PSI)[70] (December 2017) that '*further progress is needed on implementing measures to facilitate SME access to capital and, more broadly, the transition of the informal sector to the formal sector*'. By focussing on profesionalisation and commercialisation of the largely informal ICS sector in the country, the project will make a direct contribution to this national policy priority.

[68] https://countryeconomy.com/national-debt/senegal
[69] http://www.kcckp.go.ke/download/Mitigation-Technical-Analysis-Report-2018-2022.pdf, page 40.
[70] The PSI is an instrument of the IMF designed for countries that may not need, or want, IMF financial assistance, but still seek IMF advice, monitoring and endorsement of their policies.

E.5.2. Capacity of accredited entities and executing entities to deliver

233. GIZ is one of the largest international providers of capacity development and technical assistance on climate change worldwide. More than 20.4 mln people around the world have gained access to sustainable and climate-friendly energy services through the Energising Development Programme initiated by Germany and the Netherlands and implemented by GIZ.

234. The **multi-donor Energising Development Programme (EnDev)** is an energy partnership programme funded mainly by 6 donor countries and co-managed by RVO and GIZ. It promotes sustainable access to modern energy products and services that are affordable, meet the needs of the poor, and create positive economic, social and/or environmental impacts. Target groups of EnDev are poor households, social institutions and SMEs. EnDev promotes access to modern energy through grid connection, mini-grids and off-grid technologies and products, including improved cookstoves and solar lanterns. By mid-2017, EnDev was comprised of 31 projects in 25 countries and of side activities in 5 additional countries. 21 of these 31 projects concern the support to improved cooking systems. Further details on EnDev experience and results in Kenya and Senegal have been provided earlier in Section C.4.

235. There is a good **gender** balance in staffing within the GIZ project teams and several staff members are trained in gender mainstreaming. The project teams have a very good track record of engaging with both genders at grassroots level. Awareness on gender mainstreaming throughout GIZ is good, and there is qualified staff available for support at the headquarter level. The National Gender and Equality Commission (NEGC) of Kenya has recommended that project staff be also trained on gender-sensitive budgeting, and these recommendations have been included in the proposal.

236. Several of the project partners (EES and implementing partners) have significant capacity in implementing gender projects at grassroots level. These can complement GIZ by bringing in significant experience in geographic areas not covered up to now by the programmes.

237. **E&S management capacity:** The E&S management capacity of the EnDev project teams is good. The teams are not yet trained for E&S management, but have been shown to adequately follow up on environmental and social issues. Specific 'focal points' will be designated or appointed for E&S management, and additional training on E&S will be provided during the project. Project partners are subject to due diligence, which includes an assessment of their E&S management capacity.

E.5.3. Engagement with NDAs, civil society organisations and other relevant stakeholders

238. The **GCF project will be embedded into on-going GIZ programmes** in Kenya and Senegal where the core project implementation structure is already in place. The programme has a very good track record of stakeholder engagement. They regularly consult with project partners, institutions and NGOs. Project teams also exert a very close monitoring of beneficiaries and of supported ICS producers, usually in cooperation with grassroot level organisations, such as the Agricultural Services in Kenya who meet every 2 months with LMEs to monitor their sales. This practice of regular stakeholder engagement has been used during preparation of the GCF proposal.

239. **Senegal:** The NDA of Senegal has been closely involved in the discussion and preparation and provide strategic guidance on the scope and direction of the project, in particular its primary focus on ICS sector development. Throughout project development process a number of meetings have been held with the NDA and other directorates in the Ministry of Environment and Sustainable Development, which is strongly supporting the project with human resources. Feedback from the NDA and other departments was incorporated in the final version of the funding proposal. NDA issued a letter of no objection to the project on 12 October 2018. The Ministry of Petroleum and Energy has been the closest implementing partner for EnDev since 2006 and is allocating significant human resources to support the implementation of the GCF project A series of stakeholder consultations was held during the project design phase, as listed in the Table 15 below, and consultation with local and national stakeholders will remain a key element of the activities on awareness raising and the enabling environment.

240. **Kenya:** The National Treasury as the NDA has prioritised four key areas for the current 3-year national proposal pipeline for GCF. One of the key areas is clean energy and any proposal on clean cooking is considered as part of clean energy. GIZ has presented the project idea to the NDA and the NDA confirmed that the project fits into the key areas. Several rounds of stakeholder consultations have been conveyed under NDA guidance, as summarised in Table 16 below. The first level of consultation involved the Ministry of Energy (MoE), the Ministry of Health (MoH) and the Kenya Forest Service (KFS). The second level of consultation involved the cooking sector players under the auspices of CCAK. A stakeholder workshop was convened under CCAK in July 2017 and later on in September 2018 with participants representing private sector, government, research institutions, and NGOs. The funding proposal has been extensively discussed and stakeholder feedback has been incorporated. NDA issued a letter of no objection to the project on 12 October 2018.

241. This proposal has been designed and informed by a **series of stakeholder consultations** in Kenya and Senegal, as well as EnDev global partners, as summarised in Table 15 and 16 below.

Table 15 Summary of stakeholder consultation: Senegal

Stakeholder	Meeting dates	Summary of consultations
Ministry of Petroleum and Energy	June 2017, June – July 2018	Meeting with Director of Hydrocarbons, who is responsible for the households fuels: • Presentation of concept of the GCF project • Discussion of the political endorsement of the GCF project • Attention to the support of the DH and the need for stronger coordination between the actors in the sector. However, the limited resources of the DH do not permit a much stronger engagement. The DH appreciated the ideas outlined in the project concept to strengthen the coordination within the ICS sector and to support the improvement of the environment in which the GCF project will transform the ICS sector. Discussion with the Director of the Cabinet: • Presentation of concept of the GCF project • Discussion on the Ministry's own contribution to the GCF Project Meeting with the General Secretary: • Presentation of concept of the GCF project • Discussion on the Ministry's own contribution to the GCF Project Meeting with Director of Hydrocarbons, who is responsible for the households fuels: • Report on Progress with the GCF proposal • Organisational structure of the GCF project • Presentation on the process and progress of the selection of the 5 EE; • Discussion on the Ministry's own contribution to the GCF Project
Ministry of Petroleum and Energy, gender focal person	Dakar, 3 July 2018	Meeting with the gender focal point in the ministry Consultation on GCF project and proposed gender action plan
Stakeholders in the cookstove sector in Kaffrine, including women's groups	Koungheul (Kaffrine), 18 July 2018	Consultation on GCF project and proposed gender action plan with representatives of: • 26 women stove producers groups of Kaffrine region • a women's group working in agricultural production (GIE Xaritu Xaleyi) • the regional Women's Commitee of Kaffrine • the municipal Women's Commitees of Lour Escale and Ida Mouride • Kaffrine's local artisan committee (ARFPFA) • Kaffrine Crédit Mutuel du Sénégal bank • the press
Chambers of Crafts and the ARFPFA	23–25 August 2017 (Kaolack, Fatick, Diourbel and Kaffrine) 18–21 September 2017 (Thiès, Louga and Saint Louis)	• Explaining the strategy of professionalisation of the ICS sector under the GCF project and its components/elements • The Role of the regional Chambers of Craft (follow-up activities and ICS producers, registration of ICS producers, improvement of organisational management of ICS producers) • A variety of stakeholders of the ICS supply and retailing structures were present, such as regional associations of ICS producers, women's groups, local environmental projects, a local radio station, different actors of the chamber of crafts and even a technician of the chamber of commerce.

		• Participants identified their different roles in the implementation of the GCF project. They emphasised the need of women entrepreneurs to introduce efficient devices for their fish smoking businesses. • Recommendation to searching for partnerships with new stakeholders for reaching the population of villages.
Women's Groups	April and July 2018	Presentation and exchange on the strategy for the dissemination of ICS for households under the GCF project • Introducing EnDev FASEN, the range of ICS, the intervention strategy of EnDev Senegal. • Introducing the approaches under which EnDev FASEN is currently promoting ICS and the success of this strategy in other regions so far. • Outlook on the way forward of this project under the GCF project, then in all 14 regions of Senegal. • The central role of women's groups in the strengthening of the distribution of ICS in rural areas. • The role of gender in the development and transformation in the ICS market
Research Centre for Renewable Energy (CERER)	September 2017, July 2018	Presentation of concept of the GCF project. Identification of the collaboration areas : • Verification of innovative stove products • Tests on performance (fuel use, emissions, safety) in the lab, on acceptability and performance (fuel use), and in the field Hosting Annual Stove camp on their premises
Workshop with representatives of potential Executing Entities (EE)	August 2018	• Exchange about the GCF Concept Note (CN) and next planning steps, Roles and requirements for potential EEs

Table 16 Summary of stakeholder consultation: Kenya

Stakeholder	Meeting dates	Summary of consultations
Stakeholders Consultation Workshop of the clean cooking sector convened by the CCAK	28 July 2017; Nairobi	Presentation of the initial concepts The objectives of the workshop were to: • Obtain initial feedback on the concept • Synthesise priorities for the sector • Develop a list of recommendations for potential inclusion in proposals
Consultation of the EnDev Project Steering Committee (PSC)	5 April 2018, Nairobi	• Consultation of PSC on the GCF Concept Note (CN) and next planning steps • Request the EnDev PSC for their willingness to serve as GCF Project Advisory Board • Follow up on commitment letters and support.
Consultation of the Kenya Treasury (NDA)	5 April 2018, Nairobi	• Feedback on the EnDev Concept Note • Recommendations for the GCF funding proposal, stakeholder engagement and implementing partners
Workshop with representatives of potential Executing Entities (EE) and Implementing Partners (IP)	6 April 2018, Nairobi	• Exchange about the GCF Concept Note (CN) and next planning steps • Roles and requirements for potential EEs and IP
Gender focus group consultations	EnDev offices in Kisumu, 18 July 2018	• Group of 15 women, trainers and builders of rocket stoves
Gender focus group consultations	Kisumu county, 18 July 2018	• Group of 6 fish restaurant owners, 5 women and 1 man • Keyo women pottery enterprises, 11 women • Group of stove users (about 20 women and 2 men), Ulalo and Niahera villages • Group of women stove users including 2 widows, Ladygay
JOYWO	Karen, Nairobi, 19 July 2018	• Gender aspects of table top financing

CCAK	Nairobi, 19 July 2018	• Recommendations for gender action plan
National Gender and Equality Commission	20–23 July 2018	• E-mail exchanges on gender action plan

Stakeholder engagement plan

242. The regular stakeholder engagement and consultation practice of the 'baseline' projects will also be set forth during project operation. The Project Advisory Board (PAB), which meets twice a year, guarantees the engagement of the national institutional stakeholders. The Project Coordination Committees (PCCs), which meet monthly, ensures engagement of representatives of the respective EEs in both countries. Activities for knowledge exchange on a global level, which are the focus of Component 3, will allow for engagement with international stakeholders. Stakeholder engagement with ICS users, with producers and with LME's, is embedded into the project activities in the form of regular consultations and reporting.

243. Formal **gender-sensitive consultations** will be held to ensure that gender needs are featured in all the project components, including awareness raising, marketing, product design, and production methods.

244. The project includes a double **grievance mechanism**:
- a project-scale grievance mechanism whereby possible complaints are regularly collected by the EEs during their consultations of beneficiaries[71];
- an environmental and social grievance mechanism for supported business scale producers (see ESMP).

E.6. Efficiency and Effectiveness

Economic and, if appropriate, financial soundness of the project/programme

E.6.1. Cost-effectiveness and efficiency

245. The proposed GCF project has been designed to **ensure minimum concessionality of GCF funding** such that GCF grant funding is deployed only to support viable climate initiatives that cannot currently be financed by the non-grant instruments.

Macro-economic

246. **Overall level of indebtedness**. On a macro-economic scale, Senegal is a least developed country (LDC) and Kenya a low middle-income country. Both countries have reached or surpassed the level of external indebtedness considered prudent for developing countries (see Section E.4.2). In line with IMF directives and public finance guidance, all proposed public external lending programmes must be approved by the respective Finance Ministries and figure as part of the annual public budget. With some exceptions, most programmes premised on external public debt are therefore not considered.

247. **Private Equity**. Private equity and investment are currently popular in some Sub-Saharan countries, particularly in Kenya. Socially responsible investment funds have also targeted activities in Sub-Saharan Africa.

[71] In light of the large scale of the project and the fact that it directly targets customers, the project grievance mechanism has not been designed as a general public complaint mechanism (such as a general phone number), for fear that stove customers could use it as an after-sales service.

However, given the total scale of the required investments[72] in both countries (on average, less than EUR 3 mln per country) and the small, informal nature of most ICS producers, the ICS sector is unlikely to garner the attention of these entities at least until they have reached the professional stage at the end of GCF project.

248. **Grant funding**. Grant funding is required to finance both the capital investments and technical assistance required to affect the paradigm shift in the ICS sector. ICS producers currently do not have the means or training to produce the more efficient stoves independently and on a significant scale. Grant financing is therefore necessary for the described financial mechanism (up-front capital investments and interest rate subsidies as well as the LME distributor incentive). Specific arguments below describe how these grant-financed mechanisms address the current financial gap.

Sub-component 1

249. The current financing gap in the ICS sector in Senegal and Kenya is described below:

250. **Modest Financial Returns at Project Level.** GIZ has conducted extensive studies in the ICS sector in both Senegal and Kenya. During project development, financial analyses were conducted with different classes of ICS producers based on required capital investments. The average IRR indicators for 4 different producer categories ranged from -12% to 11% (Table 17). This level of financial return is not sufficient to finance debt or other market instruments because IRR is inferior to the prevailing market rates.

Table 17 FIRR: Investment in ICS sector growth

country	**Kenya**		**Senegal**	
category	**Professional**	**Artisan**	**Professional**	**Artisan**
Baseline				
FIRR	5%	2%	-12%	11%

251. **Debt market conditions in target countries**. The regulated (commercial) banking sector currently does not engage the ICS sector for a variety of reasons, including the informal nature of the sector, collateral requirements, and perceived risk. Even if the ICS producers possessed the required documentation and registered assets, the debt market for similar sized capital investments starts at least at 13% (Kenya) and 12.5% (Senegal). Micro-finance institutions in both countries require fewer formalities but practice higher interest rates of up to 22% depending on risk (see Section C.2. for detailed overview of financial markets in both countries and prevailing conditions).

252. Increase (via up-front subsidy) the cash flow of the proposed capital investment projects such that the IRR either equals or surpasses the rate of the debt market. **This approach works to increase the attractiveness of the projects to the bankers.** Since there are other factors affecting the banking sector's view of the ICS sector, this is unlikely to generate much interest.

253. The strategy to be pursued is one of minimum concessionality and market competition to **minimally distort the market, for the shortest time possible** to get to inflection point, i.e. to achieve the level of ICS sales and market growth, which can sustain itself and in the medium-term ensure NDC targets for ICS are

[72] This refers to the total estimated capex required to be invested in the supported enterprises by external sources to reach the production goals of the project. The conclusion is echoed in, for example, the 2018 report by Accumen "ACCELERATING ENERGY ACCESS: THE ROLE OF PATIENT CAPITAL", p. 17… which says:" In the clean cooking sector, we find the bleakest prospects for companies trying to raise capital: less than USD 2 mln in total equity was invested in clean cookstoves companies in 2017." (https://acumen.org/wp-content/uploads/Accelerating-Access-Role-of-Patient-Capital-Report.pdf)

met. The amount of GCF-funded investment has been estimated to make such investment viable and generate sufficient income to re-invest and sustain the required growth and market expansion rates.

254. At the end of the GCF project, it is expected that a subset of the ICS producers that have professionalised will successfully access the finance sector independently of donor support. This addresses the fundamental financial gap between profitable project initiatives and the existing debt (or similar instrument) markets in Senegal and Kenya. This transformation of the ICS sector is essential for the autonomous growth rate required for achieving the NDC targets until 2030.

Sub-component 2

255. TA sub-component 2 has also been designed to maximize efficiency of GCF grant for awareness raising and education purpose. It is important to emphasize the differences in the nature of costs associated with creating market for small and micro-scale low-carbon technologies, as opposed to large-scale low-carbon technologies.

256. Whilst for large-scale technologies the largest category of costs is the capital investment, for the small and especially micro-scale technologies such as ICS, the largest category of costs "arise from the information processes necessary to acquire, assess and use information about the product" (See analysis by the Lund University, Sweden, on transaction costs of low-carbon technologies in developed countries[73]). For example, the efforts taken to decide whether or not to adopt efficient technologies was a significant source of costs (up to 30%) for Swedish families seeking to improve the energy efficiency of their heating systems back in early 1990's. Same lessons have been learnt by other developed countries while promoting markets for small-scale EE and RE solutions.

257. Kenyan and Senegalese consumers face similarly higher cost of obtaining information about an ICS and therefore the project puts a strong focus on soft activities on the demand side. Our estimates of the amount of resource required to cover these costs are based on thorough ICS sector understanding in both countries (high number of intermediaries in ICS value chain) which have to be involved and reached out, as well as the targeted number of households, 1.91 mln households, under the project. The GCF funding request for activities 1.2.1 and 2.2.1 under sub-components 2 stands at EUR 7.39 mln, which translates into EUR 3.86 per household for sensitising. This is well within the range of global estimates[74] of undertaking an ICS promotional campaign (USD 1-9 per household) and therefore is cost-efficient.

258. Please see discussion of cost-efficiency and effectiveness regarding GHG emission reduction outcomes in Section E.1.2 above.

E.6.2. Co-financing, leveraging and mobilized long-term investments (mitigation only)

259. The total project costs are estimated at **EUR 57.17 mln, including EUR 38.36 mln GCF grant and EUR 18.81 in confirmed co-financing: EUR 12.78 mln from BMZ and EUR 6.03 mln from a range of project partners**. The latter includes contribution from the national governments (Kenya: Ministry of Energy– EUR 2.4 mln and Ministry of Health – EUR 0.5 mln; Senegal: Ministère du Pétrole et des Énergies – EUR 0.19 mln and Ministère de l'Environnement et du Développement Durable – EUR 0.43 mln), as well as from project executing entities (EEs) and other partners. The total ratio of confirmed co-financing to GCF funds is 0.5.

260. The GCF funds will be applied alongside other parallel sources of financing (Table 1). The project will leverage a considerable contribution – **EUR 1.51 mln** – from the ICS sector. Further, the technical assistance in the form of materials and equipment to the ICS sector stakeholders under Sub-components 1.1 and 2.1

[73] http://portal.research.lu.se/ws/files/2530445/4452169.pdf
[74] https://cleancookstoves.org/binary-data/RESOURCE/file/000/000/459-1.pdf, page 18

will be allocated only after the required share of co-financing (20%) is provided in cash by the beneficiaries, thus minimising the risks for GCF that expected leverage did not materialise. Similarly, support, e.g. training and coaching, under Sub-components 1.3 and 2.3 will lead to additional leveraging from the financial sector in the form of loans to the ICS sector. An estimated EUR 0.24 mln in GCF grant financing will leverage **EUR 0.78 mln** in loan funding, i.e. the ration of 1:5.4. The project total co-financing ratio (co-financing to GCF including parallel sources of finance and confirmed co-financing) is 0.55.

261. Finally, the project will leverage significant revenue for the ICS manufacturer from sales to households/ consumers. Until 2030, 13.95 mln additional ICS will be cumulatively sold (average price among all stove types in both countries: 9.72 EUR). This is equivalent to **EUR 136.62 mln** in revenue from sales of ICS until 2030. Please note that these resources are not counted as co-financing for the project, but stated as a matter of sustainable business operations and leveraged finance.

262. The project's total co-/parallel/leveraged financing is **EUR 157.72 mln** (Table 1) leads to a cumulative leveraging ratio of 4.1 for GCF funds, i.e. for each EUR of GCF support 4.1 additional EUR will be leveraged for ICS market development.

E.6.3. Financial viability

263. The GCF support to selected ICS producers in Senegal and Kenya will **yield positive economic and financial rates of return** based on the average capital investments identified during the preparatory phase. Table 18 indicates the initial results.

Table 18 Economic and Financial IRR

country	**Kenya**		**Senegal**	
category	**Professional**	**Artisan**	**Professional**	**Artisan**
Without GCF Support				
EIRR	82%	71%	24%	53%
FIRR	5%	2%	-12%	11%
With GCF Support				
EIRR	159%	105%	62%	76%
FIRR	19%	16%	8%	19%

264. **Without GCF Support:** The financial viability of the four ICS producer classes in the absence of GCF support is poor. The cash-based, informal activity leads to underinvestment in equipment. What support the producers do receive tends to be directed towards increasing marketing and distribution actions as opposed to production. It does not allow for hiring additional staff, creating sufficient stock, or increasing productivity. It is essentially a stagnant situation, with an increase of sales of 5% per year (Kenya) and 1.5% per year (Senegal) and limited capital investment.

265. For **Kenya**, the **average FIRR is between 5 and 2%,** which indicates very modest returns. In **Senegal**, capital investment in the artisan category is positive in the BAU case. For the professional class, there is a destruction of value since the BAU anticipates general under-investment and postponing of significant marketing and distribution activities. Only necessary investments in electric and manual machines are continued (at lower amounts). Investments in safety equipment, work wear and tools are either completely eliminated or curtailed significantly. With sales increased by only 1.5% per year over the baseline, the BAU

scenario for this category is -12%. Outside support for investment is clearly needed in order to reach the next business category.

266. **With GCF Support:** The financial viability of the four ICS producer classes improves with the introduction of GCF financing. The results range from 9% to 19% FIR. The designated capital expenditures are implemented, additional staff hired, production increases as does the extent of the marketing and distribution network. It is important to note that, though these FIRR results are positive, they are modest and do not allow the ICS producers sufficient returns to access the respective traditional corporate banking markets from a purely financial point of view. This sets the stage for the technical assistance and professionalisation activities that will improve the ICS producers, increase productivity, and lead to a subset of producers that are able to formulate business plans and successfully conclude financing agreements with financing entities in the respective markets.

267. **Sensitivity analysis:** A sensitivity analysis on the 'with GCF support' scenario was conducted on the key investment parameters at the ICS producer level in Kenya and Senegal. The main risks concern the rollout of the up-front investments on the national scale in each country. The proposed capital investments will vary from producer to producer as will the implementation timing and costs. In addition, distribution activities will vary based on individual ICS producers' arrangements and geographic coverage. Sensitivity tests were therefore conducted on capital expenses and incremental sales for the three categories to determine the impact of these variations. In addition, the impact of cost of production and cost of sales variations were also assessed.

Table 19 Sensitivity analysis

Scenario: With GCF Support	FIRR	Variation	EIRR	Variation
I. Kenya Artisan				
Original Estimate	**16%**	**0**	**105%**	**0%**
Capex increase 10%	13%	-16%	94%	-10%
Sales Decrease 10%	-5%	-129%	92%	-12%
Capex increase 10% and Sales decrease 10%	-7%	-142%	87%	-17%
Capex Decrease 10% and Sales increase 10%	34%	113%	117%	12%
Cost of Production Increase 10%	5%	-68%	95%	-9%
Cost of Sales Increase 10%	13%	-20%	98%	-6%
II. Kenya Professional				
Original Estimate	**19%**	**0**	**159%**	**0%**
Capex increase 10%	17%	-10%	143%	-10%
Sales Decrease 10%	-14%	-174%	130%	-18%
Capex increase 10% and Sales decrease 10%	-15%	-181%	124%	-22%
Capex Decrease 10% and Sales increase 10%	47%	151%	188%	18%
Cost of Production Increase 10%	6%	-71%	138%	-13%
Cost of Sales Increase 10%	8%	-58%	141%	-11%
III. Senegal Artisan				
Original Estimate	**19%**	**0**	**76%**	**0**
Capex increase 10%	17%	-14%	81%	6%
Sales Decrease 10%	6%	-68%	79%	4%
Capex increase 10% and Sales decrease 10%	4%	-81%	74%	-3%
Capex Decrease 10% and Sales increase 10%	34%	74%	102%	33%
Cost of Production Increase 10%	11%	-44%	81%	6%
Cost of Sales Increase 10%	19%	-4%	86%	13%
IV. Senegal Professional				
Original Estimate	**8%**	**0**	**62%**	**0**
Capex increase 10%	5%	-36%	68%	9%
Sales Decrease 10%	-6%	-178%	69%	10%
Capex increase 10% and Sales decrease 10%	-10%	-215%	63%	1%
Capex Decrease 10% and Sales increase 10%	23%	176%	87%	39%
Cost of Production Increase 10%	0%	-95%	71%	14%
Cost of Sales Increase 10%	7%	-16%	73%	17%

268. The following **observations** can be made concerning the sensitivity analysis:

- Generally speaking, the FIRR estimates are more volatile to changes in different inputs. This is because there are fewer variables driving these calculations. The FIRR calculation relies on four inputs (Capex, sales revenue, cost of production, and cost of sales) while taxes are minor and derived from these inputs.
- **FIRR calculations** are most sensitive to changes in sales and costs of production. Variations in capital expenditures do not have such a strong impact on the FIRR calculation. The most significant sensitivity impact is the combination of a decrease in sales and increase in capital expenditures (negative outlook).
- **EIRR estimates** are not as volatile to changes in different inputs. Partly this is due to more factors (the addition of economic value of GHG emissions reduction) to the four inputs used in the FIRR calculations. In fact, additional economic benefits of GHG emission reductions are very large and either equal or outweigh most of the other factors in value.

E.6.4. Application of best practices

269. Project design has been informed by EnDev's prior experience with promoting markets for ICS globally including in the two targeted countries. The following lessons have been taken into account and incorporated in the design.

270. **Lesson learnt 1: Emphasis on private sector and commercial market development as opposed to subsidising the provision of ICS to consumers**. Working towards commercial markets is a constitutional part of EnDev's approach in the ICS sector. It does so through (i) interventions to strengthen the ICS products and supply chain actors, (ii) awareness raising campaigns, and (iii) sector development for quality assurance, standards, etc. Consumer subsidies for ICS have proven to be less effective in growing ICS markets than supply chain support because free or subsidised ICS distribution spoils the prospects of a self-sustaining market in the future. In addition, the financial burden of running a large-scale subsidy programme is substantial, and it has proven nearly impossible to withdraw the subsidies without damaging the market. Supporting ICS supply chains along with awareness raising and quality assurance for the sector has proved to be cheaper, more sustainable and more effective. For example, EnDev started to promote ICS in Benin in 2006 with a small intervention focussing on a rural target group. Soon it became clear that this approach was too limited in scope and results. Hence, in 2010, a reorientation towards a new, market-based approach was initiated with the intention of transforming the cooking sector by introducing new products to the market, by increasing the market volume, by extending the geographical outreach and by enhancing public awareness. After a process of concentration, consolidation and professionalisation, the sector is run – though not exclusively serviced – by a number of large-scale cookstove manufacturers (or producer groups) selling certified ICS, each of whom is selling more than a thousand stoves per month, generating sufficient revenue to sustain the achieved level of production and continue growth. In recent years, manufacturing has become sufficiently profitable, which again allows new investments that go beyond production, such as marketing and public awareness. Quality control is addressed using production tools (e.g. moulds/dices) which reduce the risk of design drift. The main market players operate in the formal private sector and are serviced by commercial banks. These are the key characteristics of a self-sustainable market, which the proposed project aims at achieving on a larger scale in the targeted countries.

271. **Lesson learnt 2: Substantial technical assistance is required to jump start ICS market and accelerate its growth**. Due to the nascent stage of the ICS supply chain, producers and other agents involved in product delivery need comprehensive technical and business tutoring which touches upon various business development aspects starting from basic planning and financial advice to technical support with design and marketing of an appropriate ICS product and its adaptation to local consumers' needs and preferences. This also requires market intelligence and understanding of consumers' preferences and needs. For example, in Malawi GIZ supported ICS market development starting from a concept for supply-demand systems based on 'local production with local materials for local markets' and initial annual production of less than 2,000 ICS, up to the current nation-wide approach with large scale production, warehousing, professional marketing, formal sector retailing and specific pro-poor approaches and annual sales of 85,000. The total cost of the programme amounted to EUR 9.35 mln, including revenues from the sales of the Emission Reduction Units under the UNFCCC's CDM mechanism. This translates into EUR 16 per stove for the 5-years cumulative market volume. However, this example also demonstrates how the need for TA decrease as the market grows and becomes more professional and capitalised: initial market development phase in Malawi required EUR 6.2 mln to reach the annual production volume of 13,000 ICS, while the second stage with a budget of only EUR 3.5 mln resulted in 7-fold increase in ICS production – up to 85,000 ICS.

272. **Lessons learnt 3: Supply-chain targeted grants using result-based approaches are proving to be an effective instrument to leverage private sector investments, laying the foundation for graduation to full-cost financing, and reducing barriers and risks for those enterprises on the cusp of investing in their link of the value chain.** Providing incentives based on performance to wholesalers or retailers can be an effective way to grow the various stages of the market-supply chain for ICS.

Experience with result-based approaches shows it has been effective as an incentive for suppliers to increase their inventory, to incorporate more ambition in their marketing outreach, to invest in new distribution infrastructure, and to reach out to new geographic regions or target groups. The advantages of this approach are that it lets the private sector rather than the donor makes investment decisions and that result-based support package can be designed to specifically target certain 'under-performing' market segments (e.g. remote areas that the companies would not move into on their own or more efficient products). For example, in Tanzania, a result-based scheme was implemented to address bottlenecks at the end of the rural distribution chains for household solar systems. Short-term incentives offered by the project aimed to strengthen distribution from the suppliers to the end retailers in the comparatively underserved rural areas of the Lake Zone. Due to geographic signalling built into the programme, distribution networks with end-customer supply services were established within one year with 15 companies and 23 sales-hub and engaged over 600 retailers in the targeted area. EnDev's average leveraging ratio across its portfolio is in the range of 1:3.6, while in certain circumstances it can go higher up to 1:6[75].

273. **A transparent system of auditing and verification is an essential element of supply-chain interventions**. EnDev has developed a robust MRV system for the ICS market (see Section H.2), as has been explicitly acknowledged in the EnDev external evaluation[76] *'EnDev is at the vanguard of self-obliged monitoring and impact evaluation ambitions. Their outcome monitoring system is very elaborate and enables the programme to substantiate achieved goals. EnDev is very transparent by disaggregating in detail beneficiaries for each country and technology and it is thereby able to calculate cost per beneficiary for each EnDev sub-intervention*'.

[75] Result-based Financing for Energy Access. How to design and implement projects: Lessons from the field. EnDev: 2018
[76] External Evaluation EnDev Partnership Programme. 2014

<table>
<tr><td colspan="3">E.6.5. Key efficiency and effectiveness indicators</td></tr>
<tr><td rowspan="3">GCF core indicators</td><td colspan="2">Estimated cost per t CO_2 eq, defined as total investment cost / expected lifetime emission reductions (mitigation only)</td></tr>
<tr><td colspan="2">
<table>
<tr><td>(a) Total project financing</td><td>EUR 57.174 mln</td></tr>
<tr><td>(b) Requested GCF amount</td><td>EUR 38.360 mln</td></tr>
<tr><td>(c) Expected lifetime emission reductions overtime</td><td>6.47 mln t CO_2eq</td></tr>
<tr><td>(d) Estimated cost per t CO_2eq (d = a / c)</td><td>EUR 8.86 / t CO_2eq</td></tr>
<tr><td>(e) Estimated GCF cost per t CO_2eq removed (e = b / c)</td><td>EUR 6.27 / t CO_2eq</td></tr>
</table>
Describe the detailed methodology used for calculating the indicators (d) and (e) above.
See Section E.1.2 for detailed methodology to estimate lifetime emission reductions.

Please describe how the indicator values compare to the appropriate benchmarks established in a comparable context.
Provided in Section E.1.2</td></tr>
<tr><td colspan="2">Expected volume of finance to be leveraged by the proposed project/programme and as a result of the Fund’s financing, disaggregated by public and private sources (mitigation only)</td></tr>
<tr><td colspan="2">274. Section B.1 and Table 1 above provides information on volume of finance to be leveraged by the project, disaggregated by public and private sources</td></tr>
<tr><td colspan="2">Other relevant indicators (e.g. estimated cost per co-benefit generated as a result of the project/programme)</td><td>n/a</td></tr>
</table>

F.1. Economic and Financial Analysis

275. The detailed economic and financial model is based upon GIZ pilot work with the ICS producers in Senegal and Kenya. An extensive study of the ICS market and the different business classes within the markets was conducted. The model can be found in the Annex.

Description of Financial Model: General Structure

276. The Financial Model developed to demonstrate the impact of GCF funding in the ICS market in Senegal and Kenya is based on proposed investment in distinct producer classes under sub-component 1. It is a '**bottom-up' approach** in that the proposed investments at the individual producer level are evaluated in each country and scaled by the number of producers in the GCF project to yield the total financial and economic impacts from GCF support under sub-component 1.

277. **Two different producer classes (artisan level and professional level)** are assessed with differing types of investment and forecasted sales of more efficient firewood and charcoal stoves. To evaluate the impact of GCF funding, a Business as Usual case (BAU) is first developed for each producer class for a total of four base case scenarios. In addition, a proposed 'with GCF funding' case is developed for each producer class to demonstrate the impact of additional resources and training to professionalise the sector and bring the producer to the next class of production and achieve the paradigm shift. Therefore, in total, there are eight separate cases presented in the Financial Model:

Senegal

1. Artisan level (Business as Usual)
2. Artisan level (with GCF support)
3. Professional level (Business as Usual)
4. Professional level (with GCF support)

Kenya

1. Artisan level (Business as Usual)
2. Artisan level (with GCF support)
3. Professional level (Business as Usual)
4. Professional level (with GCF support)

Specific Structure

278. The Financial Model follows a standard input/output structure, however, given the number of scenarios, the inputs per producer class are not presented on one single page, but rather, a single page is dedicated to each producer class (Senegal, Artisan, Business as Usual case, for example). In this way, the individual investments, sales and FIRR and EIRR calculations are performed for each producer class. The output page consolidates data from each of individual producer classes and presents it according to key categories, for example, FIRR and EIRR estimates, sensitivity analyses, project financing, investment calculations, etc. The intent is to demonstrate the links between the individual investments at the producer level and full impact at the macro or national level for each country based on GCF funding support.

279. Importantly, the **Financial Model concentrates primarily on physical or capital investments** undertaken with GCF support at the producer level. It is assumed that substantial technical assistance will also occur during the GCF project including training to producers to use the equipment and to prepare bankable business plans. The project will also provide performance-based incentives to existing business level producers (which will be the first to reach "bankability" and distributors, in particular LMEs, which is outside the financial model's scope. In parallel, training will also be provided to financing partners to understand the needs and dynamics of the ICS markets in each country. The value of these investments is not modelled.

280. Finally, each sheet is clearly divided into FIRR calculations for the individual producers and EIRR calculations, which affect the wider population. For the moment, the main differences between the two calculations are:

- Taxes are included in the FIRR calculation but not the EIRR since these are public transfers of resources;
- GHG emission reductions. The reduction in GHG emissions using more efficient stoves (and less fuel) is calculated and introduced in the EIRR estimate. A nominal value of EUR 5 is used to indicate a monetary value for these emissions (actual amounts may differ in practice)

281. Finally, other economic calculations are not currently included in the model, including the value of health benefits, increased productivity (from less searching for fuel), etc. but may be included during project implementation.

Scenarios

1) Without GCF Support

282. The largely informal ICS sector functions on a cash basis and most small producers self-finance most investments (either capital expenditures or working capital). Therefore, barring any external support, the 'business as usual' scenario consists principally of under investment and limited growth of sales of existing models. Given the precarious and informal nature of the sector, it could even contract without support.

Average Capital Investment: Approximately 10-25% of needed investments
Growth of Sales: 1.5 - 5% per annum

2) With GCF Support

283. With GCF support, substantial up-front subsidies are used to partially finance the capital investments suggested by EnDev. The investments take place over 10 years period between 2020 and 2030, including with GCF support between 2020 and 2024. These capital investments (and the associated technical assistance) lead to significant increases in sales of ICS stoves. However, earlier financial analyses indicate that these initial investments (without GCF support) will yield only between -12% and 11% FIRR over 10 years. Importantly, the capital investments (and associated technical assistance) in this scenario initiate the paradigm shift in which a subset of ICS producers jumps to the next level of production, increase productivity, and are able to address the financial sector independently.

Average Capital Investment (10 yrs): EUR 15,000 – 85,000 depending on category
Growth of Sales: Significant increase

F.2. Technical Evaluation

282. Brief information about ICS to be promoted by the project in both countries, including key technical and economic characteristics is provided in the tables below. More information and technical details can be found in the annexed Feasibility Study.

Kenya

283. The heavy reliance on solid biomass in Kenya implies that most of the cooking technologies in use are biomass stoves. These include traditional biomass cookstoves (i.e. three-stone fire and traditional metallic charcoal stoves) and improved biomass cookstoves (different varieties for both charcoal and fuel).
In the Kenyan market, there are **already various types of climate friendly cookstoves**, which range from artisanal and semi-industrial to industrial and imported products and include charcoal stoves as well as firewood stoves. Their thermal efficiency ranges from 20 to 45% and their prices range from EUR 5 to 60.[77]

[77] Please also see the description of the baseline and current ICS producer situation in section C under the description of the value chain and barriers to expansion.

284. In the past EnDev has focussed on rural areas, which show a high modern energy access deficit. Therefore, EnDev supported the value chain of **firewood ICS**, like the Jiko Kisasa and the Rocket Stove. These stoves have a thermal efficiency of 20 to 25% and save 35 to 55% of firewood compared to the baseline stoves (mainly three-stone fire or simple mud ring stoves), which they replace. These stoves are produced locally in artisanal or semi-industrial manner and therefore have an affordable price ranging from EUR 5 to 30. These models have proven to be appropriate for the user needs and cooking practices and therefore have a high acceptance and adoption rate.

285. The project intends to continue working with these stove models. However, as there **is increasing demand for charcoal stoves** and currently **no affordable charcoal ICS** on the market, the project will also support locally designed and produced improved charcoal stoves. The Kenyan Ceramic Jiko (KCJ) is the established model, a locally designed and produced ICS for charcoal, at an affordable price of EUR 5 to 10. Other products like the industrially produced BURN and Envirofit charcoal stoves are more expensive at around EUR 30 to 60. The project will promote an improved charcoal stove, which fills the gap between KCJ and the industrial products, with an affordable improved charcoal stove. Different improved charcoal stoves models are currently undergoing testing at universities and official testing centres and thereafter will be made available to the market. The range of ICS to be promoted along with their key performance and design characteristics is summarized in the Table 20 below.

Table 20 Characteristics of ICS to be promoted in Kenya

Name of ICS	Jiko Kisasa portable	Jiko Kisasa inbuilt/fixed	Rocket stove with insert	Rocket stove with brick and cement	Metal charcoal stove	Ceramic charcoal stove
Photo						
Fuel	Firewood	Firewood	Firewood	Firewood	Charcoal	Charcoal
Description	The Jiko Kisasa portable consists of a ceramic liner for increased insulation and a metal cladding for increased robustness and portability. It has high potential for nomad households and for areas where outdoor cooking is preferred. This version is produced in production centres.	The inbuilt or fixed Jiko Kisasa consists mostly of two prefabricated liners, which are constructed into a double-pot stove. This Jiko further requires mud, clay, sand, etc. for the construction around the liner. This version is constructed by craftsmen (LMEs).	The Rocket Stove is constructed by craftsmen who also provide the insert. The insert allows for improved combustion performance and higher quality control. It is mass-produced in production centres and is installed into a mud structure by an LME. The household provides the building material.	This Rocket Stove version is built where quality clay soil is not available. It is built with bricks and cement and shows a good robustness. It is also constructed by a craftsman (LME). The construction material is either provided by the household or sold by the LME.	This charcoal metal stove prototype has a small combustion chamber, good insulation and secondary air inlets for improved combustion. Built from locally available material, this stove can be sold at an affordable price. .	This charcoal ceramic stove prototype has a small combustion chamber, which is made of ceramic, which provides good insulation. Built from locally available material, this stove can be sold at an affordable price.
Av. reduction of specific	35 – 40%	35 – 45%	45 – 50%	45 – 55%	Tbd, due to ongoing	Tbd, due to ongoing

fuel consumption against most common baseline stove (CCT)					testing by universities and official testing centre	testing by universities and official testing centre
Average price	EUR 8–15	EUR 10–20	EUR 10–20	EUR 20–25	Tbd, due to ongoing testing by universities and official testing centre	Tbd, due to ongoing testing by universities and official testing centre
Lifespan (in years)	3	3	5	5	3	3

Senegal

286. In Senegal, the project will promote a range of ICS as described in Table 21 below. All listed ICS types are well adjusted to the cooking practices in local households. In 2006, EnDev launched the promotion and distribution of the improved cookstoves Jambar and Sakkanal in two regions: Dakar (capital) and Kaolack (a crossroads region in central Senegal). Faced with high demand, EnDev has expanded its intervention areas in another six regions. Currently EnDev is promoting Jambar, Sakkanal, Taaru, Banco and institutional cookstoves for large cooking pots (see table 22 below). These cookstoves have all been tested by the CERER (Centre for Research on Renewable Energies) and have a thermal efficiency of 30 to 45% for domestic cookstoves and 45 to 60% for institutional cookstoves compared to the traditional stoves (three-stone fires and traditional metal stoves). They are produced locally in a traditional or semi-industrial way. The project will continue to promote the models that adapt well to household cooking practices.

Table 21 Characteristics of ICS to be promoted in Senegal

Name of ICS	Jambar charcoal stove	Jambar firewood stove	Taaru	Sakkanal Multi-Pot	Sakkanal Mono-Pot	Banco Household and institutional
Photo						
Fuel	Charcoal	Firewood	Charcoal	Charcoal and Firewood	Charcoal and Firewood	Firewood
Descriptions	The Jamber charcoal stove consists of two parts, a metal part and a ceramic part for improved isolation. It is portable and can be used in households with changing cooking sites.	The Jambar firewood stove consists of two parts, a metal part and a ceramic part for improved use. It is portable and can be used in households with changing cooking sites.	Taaru is a metal charcoal stove with a moveable combustion chamber that can be changed at any time. The skirt of the stove consists of two cones that improve air circulation	Sakkanal Multi is a metal mix cookstove (charcoal and firewood) with a moveable grid. It is well adapted to rural regions. It can be used for different types of cooking pots.	Sakkanal Mono is a metal mix cookstove (charcoal and firewood) with a moveable grid. It is well adapted to rural regions. It is used with quadratic cooking pots.	Banco is a fixed cookstove. It is built of clay, cow dung, straw and water.

			for better combustion.			
Av. Reduction of specific fuel consumption against most common baseline stove (CCT)	30 – 35%	40 – 45%	45 – 50%	40 – 45%	40 – 45%	50 – 60%
Weight	4 to 10 kg	4 to 10 kg	4 to 7 kg	4 to 7 kg	4 to 7 kg	7kg/15kg/30kg
Average price	EUR 7 – 13	EUR 10 – 13	EUR 9 – 13	EUR 8	EUR 8	EUR 3 – 5
Lifespan (in years)	2	2	2	2	2	1

Table 22 Characteristics of ICS to be promoted in Senegal (institutional)

Name of ICS	Rocket Institutional	Jojo Institutional
Photo		
Fuel	Firewood	Firewood
Descriptions	Rocket is an institutional firewood stove with a metal and a ceramic part. It is adapted to be used for large events, in school cantines and processing plants.	Jojo is an institutional firewood stove that consists only of metal. It is adapted to be used for large events, in school cantines and processing plants.
Av. Reduction of specific fuel consumption against most common baseline stove (CCT)	45 – 50%	45 – 50%
Weight	15kg/30kg	15kg/30kg
Average price	EUR 92	EUR 77
Lifespan (in years)	4	4

F.3. Environmental, Social Assessment, including Gender Considerations

287. In conformity with GCF's environmental and social policy dated March 2018, an environmental and social assessment has been conducted for the project. Project activities have been assessed against GCF's interim environmental and social safeguards (ESS1 to ESS8)[78] and, additionally, on GIZ's safeguards for (i) human rights, (ii) context and conflicts sensitivity and (iii) gender impacts and mainstreaming. The Environmental and Social Assessment is included in Annex 11 and the Gender Assessment in Annex 12.

Assessment and management of potential unintended negative E&S[79] impacts and risks

288. The ESS1 standard on 'Assessment and Management of Environmental and Social Risks and Impacts' requires (i) identifying the environmental and social impacts, risks, and opportunities of projects; (ii) ensuring effective stakeholder engagement; and (iii) managing environmental and social performance throughout the life of the project.

[78] GCF uses the 2012 IFC Performance Standards (PS) as interim ESS. These standards are available in English and French on IFC's website.
[79] E&S=Environmental and Social

289. The project has major positive environmental and social impacts, as described in the relevant sections of the proposal. This section addresses **potential unintended negative impacts** of the project, as well as opportunities for impact enhancement not yet identified in other sections of the proposal (i.e. 'additional'). Potential unintended negative impacts are limited to minor impacts from larger-scale stove production workshops. The project further offers significant opportunities to positively affect labour and working conditions, as well as health and safety, in stove production.

290. The **E&S management capacity of the local EnDev teams is good**. The teams are not yet trained for E&S management, but have been shown to adequately follow up on environmental and social issues. Project partners are subject to a due diligence, which includes an assessment of their E&S management capacity. The project teams also have a very good track record of ongoing stakeholder engagement in the 'baseline projects'. The GCF project design builds on extended consultation with stakeholders and provides for participation of all groups (see Section E.5.2).

291. Residual unintended negative risks and impacts, as well as opportunities, will be managed through an **Environmental and Social Management Plan (ESMP)** for the project, presented in the annex. The following sections provide the rationale for the definition of measures included in the ESMP.

Environmental impacts and nuisances from stove production

292. The only sector where potential unintended negative environmental impacts and risks have to be managed is the production of ICS, and only when this production reaches a certain scale. Individual producers have no E&S impacts; small and medium-size unmechanised workshops have minor environmental impacts only, and mechanised workshops/factories (of which only two currently exist) may cause limited nuisances and pollution due to the use of mechanical equipment.

293. Improved cookstoves hardly generate any waste, since the ceramic liners are made only of clay and sand and can either be disposed without harm, or recycled into new liner production. Metal waste in production is minimal and is recycled; metal from discarded stoves is also recycled. Paint is expensive and is currently always used to the last drop. Potential sources of waste when upscaling production would be limited to waste oil from generators and mechanical equipment, as well as paint residue or cleaning solvents from the use of paint sprayers. To mitigate potential pollution impacts, the project promotes implementation of basic E&S guidelines for supported business-scale producers, among others to correctly handle hazardous products.

294. Quantities of primary materials such as clay and sand used for stove production are negligible compared to any other construction activities, but extraction of these materials may have limited impact locally on riverbeds. The project will promote the use of materials from legally approved sources, and in case of local sourcing (in Kenya only), may support the rehabilitation of riverbeds.

Labour and working conditions, including occupational health and safety

295. For workers directly engaged by the project partners, GIZ and SNV are fully compliant with the GCF's standard ESS2 on Labour and Working Conditions, and the assessment has not identified potential non-compliances requiring mitigation, expect potential security issues in Kenya (see below).

296. The supported private ICS production centres will employ a limited number of employees. Full compliance with paragraph 24 of ESS2 is not possible in the informal economic sectors in Kenya and Senegal, which still concerns the majority of workers in these countries. However, in the baseline projects, the constant monitoring of producers eliminates the main risks of poor working conditions (such as child labour and forced labour), and working conditions are better than in sectors not supported by the project. The GCF project will set forward this practice and reinforce it by training of producers and of project staff on best practices in labour management and health and safety. The project includes measures to guarantee compliance with the other paragraphs of ESS2: health and safety, compulsory adherence of workers to a social security scheme, monitoring procedure, and a grievance mechanism.

297. Thereby the project will create significant opportunities for enhancing labour conditions and occupational health and safety in the informal economic sectors in Kenya and Senegal, and will contribute to shift larger producers towards formalisation and professionalisation.

Potential land requirements

298. Any land acquisition required for the expansion of production sites, or the creation of new production sites for supported producers, even if the land acquisition is financed by the producers themselves, will have to be managed in compliance with ESS5 on land acquisition and resettlement. GIZ/EnDev staff will be trained on identifying potential risks and supporting producers in managing them.

Indigenous people

299. Indigenous peoples are present both in Kenya and in Senegal. The project is expected to have an overall positive impact on these communities, since it will contribute to the preservation of natural resources, which are often vital to indigenous people, and reduce conflict potentials over these resources. Marketing and sales activities are not expected to target indigenous people, but individuals among them may freely decide to become ICS users or producers. This is not expected to affect indigenous people negatively, or affect their culture, knowledge, or practices. Some indigenous people may not be recognised as such by the governments of Kenya or Senegal, but due to the nature of project interventions, this is not considered as a significant source of risk. However, to manage any residual risks, the ESMP includes a mechanism to ensure that culturally appropriate approaches, as well as gender-sensitive approaches, are adopted at all times by project partners, including government institutions, when working with communities and households.

Financial intermediation

300. The GCF requires financial intermediaries to be screened in conformity with their E&S policy. Potential financial intermediaries who will be involved in the project are small-scale institutions who would be categorised under the lowest level of risk, I3: '*when an intermediary's existing or proposed portfolio includes financial exposure to activities that predominantly have minimal or negligible adverse and social impacts*', and would therefore require screening only for E&S management capacity (standard ESS1) and labour conditions (standard ESS2). A mechanism is included in the project to screen all FIs who may get involved at later stage, and review their E&S management capacity every year.

GIZ Human Rights safeguard

301. The project was screened concerning GIZ's human rights safeguards. The screening was based on the same information collected for the assessment of the project concerning ESS2 (labour), ESS5 (involuntary resettlement), ESS7 (indigenous peoples) and prevention of discrimination and right to participation (both included under ESS1). This information sufficiently covered GIZ's safeguard for the considered project activities.

GIZ Conflict and Context Sensitivity safeguard

302. GIZ's safeguard system requires an analysis of conflict potential and context sensitivity for Kenya. Kenya is a fragile state with serious risks of conflicts and violence. Although the country has relative economic stability and has been building up a solid legal framework since 2010, risks are fuelled by unequal access to resources, impunity within the political class, extrajudicial responses by the police, corruption, electoral violence whereby ethnic affiliation is used for political purposes, abuse of political finance, land conflicts, non-recognition of indigenous land rights and internal displacements of peoples, border disputes, conflicts in neighbouring countries, youth unemployment, radicalisation and (transnational) extremist groups, proliferation of weapons, presence of armed militia in the extractive industry, in politics and in public transport, and a traditional custom of cattle raiding which is gaining in violence due to exacerbation of the pressure on pastures and availability of weapons.

303. In this context, GIZ will manage employee security through their corporate system and require partner organisations to do the same for areas/periods in Kenya, which are particularly at risk. The project will use experience of local EEs in risk-prone areas.

304. Since violent attacks have occurred in the sand extraction sector, producers in Kenya will be required to shift as much as possible to using sand from legal sources. In Kenya, the project will further avoid cases where it could

be suspected of providing financial support to campaigning politicians; to this end, the project will make use of GIZ's integrity management system, and will further rely on the project grievance mechanism for potential cases to be reported.

Project risk categorisation

305. The screening did not identify other potential negative impacts for the project. In GIZ's Safeguards and Gender management system, the project is automatically categorised as B under the 'Conflict and Context Sensitivity Safeguard' for Kenya. From an environmental and social point of view and according to the GCF's categorisation, the project could in principle be categorised as C[80]. However, the large geographical extent of the project, which covers two entire countries, the human rights context of the countries, as well as the number of partners involved, makes a full prior complete identification of risks relatively difficult, and the project is therefore categorized B as a precaution, with implementation of a full E&S management plan.

Environmental and social management plan (ESMP)

306. The mitigation, risk management, and impact enhancement measures defined above are included in the Environmental and Social Management Plan (ESMP) for the project. The ESMP has been budgeted in the overall project costs, and is presented in the annex.

307. Assessment of the baseline projects has shown that the project teams currently exert a very close monitoring of beneficiaries and of supported ICS producers, and more generally of project E&S impacts. Up to now, this practice has successfully allowed management of arising E&S issues. For instance, a case whereby residents have complained about noise from a producer has been solved when the producer adapted working hours after consultation with local stakeholders, and another case of localised pollution by used oil firing in a kiln has been solved by technical adaptation of the kiln. The project teams also have a good track record of managing land acquisition issues by engaging with the relevant stakeholders.

308. The ESMP for the project builds forward upon this successful practice of close monitoring and consultation, by further formalising it and by training project staff on E&S management.

309. Project potential unintended negative risks and impacts will be managed among others by:

- appointing and training dedicated national and regional E&S staff for the project coordinating E&S management among project partners
- regularly monitoring E&S aspects;
- regularly engaging with beneficiaries and producers
- implementing a project grievance redress mechanism for affected people and for workers
- training producers on E&S management and providing them with safety equipment
- having all supported producers adhere to environmental and social management guidelines
- requiring all supported business-scale producers to develop and implement a producer ESMP.

Gender impacts and gender mainstreaming

310. The gender assessment carried out for the project shows that the project has major positive impacts on gender equality, by reducing household work for women and providing opportunities for women to engage in paid work. The project has no potential negative gender impacts.

311. Surveys of gender impacts of the baseline projects were available for each country and extensive consultations have been held with women organisations in both countries to assess gender aspects of the programme. The most

[80] The environmental and social risk categories as defined in the ESS of the GCF apply to activities financed by the GCF as follows (GCF, 2016)

- Category A. Activities with potential significant adverse environmental and social risks and impacts that, individually or cumulatively, are diverse, irreversible, or unprecedented;
- Category B. Activities with potential mild adverse environmental and social risks and impacts that, individually or cumulatively, are few, generally site-specific, largely reversible and readily addressed through mitigation measures; and
- Category C. Activities with minimal or no adverse environmental and social risks and/or impacts.

significant outcomes of these consultations are that women still feel less confident than men to engage in entrepreneurship and to address administrations or other formal organisations, and less capable of writing and keeping records. This lack of skills and confidence hampers their access to finance, to available assistance programmes, and to procurement opportunities.

312. A Gender Action Plan has been developed for the project, where specific training of women is an important component. Gender-sensitive monitoring is included in the project and should verify that women benefit from equal work opportunities, and equal incomes for equal work.

313. The gender mainstreaming capacity of the proposed project organisation is good, with several implementing partners having significant experience in working with gender issues at the grassroots level and in all regions of Senegal and counties of Kenya. A GIZ gender focal point will be established for each country and each region/country of intervention to coordinate implementation of the Gender Action Plan. The project will further contribute to improving the institutional framework for gender mainstreaming in Kenya and Senegal by disseminating knowledge on gender-related project experience.

314. Regarding other special interest groups, the project generates significant employment opportunities for youth. The ease of use offered by ICS is particularly important for persons with disabilities or with HIV. The GAP will also favour employment of people with disabilities.

315. Domestic violence is a significant issue in both Senegal and Kenya. The baseline projects have shown that the project has rather a peace-building effect in the households. Organisations such as JOYWO and SNV have significant experience in working at the grassroots level around the issue of domestic conflicts and their experience will be essential for project implementation. It is also advised to investigate the conflict potential at the household level for new project regions if needed, as some stakeholders have mentioned that care has to be taken to make sure that approaches to changing cooking methods in the household are always culturally appropriate, to prevent possible household conflicts These activities are included in the Gender Action Plan, which is presented as a separate document.

Table 23 Summary of the Gender Action Plan

Gender objectives	Activities
General project impact statement: the project increases gender equality by reducing household work for women and making them participate in the cookstove value chains **As women are almost unanimously the main users of cookstoves and responsible for the fuel collection or purchase, they are the ones benefiting most from reduced fuel usage and local emissions.**	
1.Potential unintended negative gender-related project impacts are prevented	Enhance knowledge of gender issues in households to ensure culturally appropriate approaches in all communities
2.Women and men benefit equally from the project	Ensure project co-benefits of employment and income generation accrue to women equally, by overcoming barriers to economic participation
3.Differentiated needs of men and women are taken in into account in project activities	Differentiated consultation of men and women, equal participation of men and women in decision-making in project activities, and gender-differentiated approaches to awareness raising, design and production
4.Specific roles of men and women are harnessed as agents of change	Work with women's groups in awareness-raising, design and production
5.Gender mainstreaming capacity in the project teams is increased	Strengthen capacity of project team to carry out gender mainstreaming activities, among others by sharing existing experience of project partners
6.Institutional frameworks for gender mainstreaming is strengthened	Knowledge sharing between the project and national institutions, including regional administrations, ministries and NGOs

F.4. Financial Management and Procurement

316. Procurement and financial management will be implemented as follows (in line with the general arrangements as described in Section C.7 and Annex 18):

- The Executing Entities – Ministry of Energy and SNV NL, as well as the five regional NGOs in Senegal - will sign subsidiary agreements with GIZ, based on GIZ standard operating procedures for contracts for financing.
- Contracts for financing establish the legal basis on which GIZ makes funding available to the Executing Entities for specific purposes to help them carry out certain measures.
- The Executing Entities are responsible for implementing and administering the measures in accordance with GIZ standard operating procedures.

Procurement

317. In case of procurement by GIZ, GIZ will follow its own procurement guidelines. GIZ is required to comply with the relevant contracting rules as established in the German Act against Restraints of Competition (GWB), the German Regulation on the Award of Public Contracts (VgV) and, if applicable, the Contracting Rules for the Award of Public Service Contracts (VOB and VOL) when procuring services, construction work, and supplies. When awarding contracts for supplies and services (including consultancy services) to be financed in full or in part from the contract for financing, the external Executing Entities will observe the national legal standards for procurement and will in any case comply with the GIZ minimum standards. An overview of these minimum standards is available at https://www.giz.de/de/downloads/giz2017-en-Annex_4a-Award-Procedure.pdf GIZ assesses adherence of submitted procurement documents to GIZ procurement regulations at defined stages in the process.

Financial Management

318. The financial management of the project will follow GIZ's internal rules and regulations. GIZ has bank accounts with Deutsche Bundesbank and Commerzbank. GIZ will not open a specific bank account for GCF proceeds and other GCF funds but will ensure that all funds provided are clearly identifiable from GIZ's other funds by setting up separate cost units exclusively for the funds disbursed by the GCF for each funded activity (ledger accounts). Funds received and expenditures incurred will be booked to the respective cost unit according to generally accepted accounting principles and procedures accepted by the German government. As a general principle, GIZ disburses funds to the recipients in accordance with the progress of the project. The Executing Entities have to prove the proper use of funds and the defined progress as a prerequisite for any further disbursement.

319. Independent external auditors will perform annual financial audits of the project in line with International Auditing Standards.

G.1. Risk Assessment Summary

320. Informed by EnDev previous work on ICS market promotion in targeted countries and worldwide, the project design has identified several categories of **risks, which may negatively impact the achievement of project objective.** Key market and financial risks are related to the likelihood of securing cash co-financing from ICS producers in full and on time, as well as the inertia of the rural ICS market. Both risks, if they materialise, would have a high impact on the project prospects to accelerate ICS market growth in the countries. The co-financing risk will be mitigated via appropriate contractual and payment arrangements with ICS producers whereby assistance to ICS would be delivered in stages subject to ICS meeting certain obligations, including co-financing. At the same time, a co-financing payment schedule will be developed bearing in mind ICS's cash flow projections in order not to jeopardise their financial ability and ensure sufficient working capital for the companies to grow.

321. The other category of **risks is related to project implementation**: first, potential delays at the start-up phase and second, the need to ensure coordination, as well as timely and effective delivery of inputs by project's many implementing partners/executing entities.

322. Based on conducted E&S assessment, **only minor environmental and social risks have been identified**. However, due to the large geographical scale of the project and the conflict sensitivity context in Kenya, the project has been categorised as 'B' and an E&S management plan has been developed to mitigate the risk, as summarised in the Section F.3 of the proposal.

323. Lastly, there is a potential risk of market distortion by consumer subsidy programmes or other unexpected changes in market situation, which will have to be monitored as 'emerging risks', as well as security situation.

G.2. Risk Factors and Mitigation Measures

Selected Risk Factor 1: Co-financing from ICS Producers

Description	Risk category	Level of impact	Probability of risk occurring
The project will require ICS producers to contribute to the costs of 'professionalisation kits' with at least 20% in cash co-financing. There is a risk that the enterprises are not able to pay their contributions in full up-front due to limitations in their cash flow.	Financial	High (>20% of project value)	Medium

Mitigation Measure(s)

The approach to risk mitigation in this case is two-fold. First, the project's assistance package, the professionalisation kits will be delivered in stages and linked to achievement of specific results by the recipient of support. Second, in order to consider the cash flow of the enterprises, the project may consider allowing entrepreneurs to pay their own-contribution in instalments. If payments are not done on time in line with agreed payment schedule, the project will freeze the access of the supported enterprise to support until payments are made. This way, the project will lower the probability of risk occurring, i.e. that project would provide support and co-financing will not materialise.

Selected Risk Factor 2: Inertia of new rural and more remote ICS markets

Description	Risk category	Level of impact	Probability of risk occurring
The project is planning to focus on new and more remote rural markets for ICS in both countries, and in Kenya, the project may venture more into urban markets with the new charcoal stove. So far, EnDev Senegal has not supported rural markets beyond the pioneering stage. EnDev Kenya will be drastically expanding the geographic scope although they already work with rural markets.	Other	High (>20% of project value)	Medium

There is the risk that even with new approaches, the ICS market for rural households will not pick up at scale and the rate expected.			
Mitigation Measure(s)			
The project will scale up its distribution concept in Senegal, which will involve young people and women from rural villages in the commercial distribution of the ICS. This activity will close the gap between the clients and the ICS-traders at the weekly markets. EnDev Kenya has already developed and piloted this approach with good results. Under Component 2, the project will also sensitise the population on a broad scale to the importance of ICS, using new methods and more partners. This will create a much stronger demand for ICS. However, it is crucial to constantly monitor and review if the new approaches are really helping to influence the rural population. An international research consortium of three universities from Germany, the USA and Senegal is currently analysing this problem and will provide their recommendations on how to bridge the gap between rural market traders and households in the villages. Their research results will inform the programme on how to improve and maximise the impact of the project on the rural ICS market development.			
Selected Risk Factor 3: Slow start-up			
Description	Risk category	Level of impact	Probability of risk occurring
Experience has shown that new projects take significant time during the start-up phase because of lengthy preparation exercise. This has the impact of delaying the project, which could hamper delivery of results within the specified period.	Technical and operational	Medium (5.1-20% of project value)	LowLow
Mitigation Measure(s)			
The GCF project is embedded into on-going EnDev programmes in Kenya and Senegal where the core project implementation structure is already in place, including the selection and assessment of executing entities, extensive stakeholder consultation and sensitisation of key project partners. Therefore, the preparation and inception process is expected to be minimal and the project will become operational much sooner than if a completely new structure would need to be set up.			
Selected Risk Factor 4: Executing Entities (EE) risks			
Description	Risk category	Level of impact	Probability of risk occurring
The project has a complex implementation structure. To ensure intended impact on the ground, partnerships with local organisations are essential. The project will work via a number pre-selected Executing Entities (EEs) in both Kenya and Senegal with varying implementation, financial, institutional, and administrative capacity. Working through new implementation partners creates dependency of the project success on their performance. If one or even several of them do not deliver the expected results (in the planned timeframe), the project results will be affected.	Technical and operational	High (>20% of project value)	Medium
Mitigation Measure(s)			
The selection of the EE has been based on a competitive call for Expression of Interest. A range of categories has evaluated applying NGOs, including their historic track record, their physical presence in the country, their network of collaboration partners, their experiences with energy and related topics. Many of the selected applicants have already collaborated with EnDev or are known from their work in the country. For early detection of mal-			

performance, EnDev as lead EE in Kenya and Senegal is dedicating liaison-officers for support and supervision of each of the selected EEs. Capacity building needs identified during the due diligence will be addressed with targeted support through the liaison-officers, further training etc.

The EEs will submit and implement annual gender action plans and E&S management plans, consistent with the project Gender Action Plan and ESMP. The E&S and gender focal points for each country and region (or cluster in Kenya) will oversee the implementation of these plans and monitor capacity of the EEs to deliver.

Selected Risk Factor 5: Environmental & Social Risks

Description	Risk category	Level of impact	Probability of risk occurring
Potential minor unintended negative environmental and social risks of the project exist only in larger-scale ICS production centres an could include labour and working conditions, occupational health and safety, environmental and social impacts of clay and sand extraction, nuisances and pollution due to the use of mechanical equipment.	Social and environmental	Low (<5% of project value)	Medium

Mitigation Measure(s)

The minor risks will be managed through the project ESMP by regularly monitoring E&S aspects, training producers, and implementing basic environmental and social management guidelines for producers receiving financial support. By implementing this E&S management plan, the project will create significant opportunities for enhancing labour conditions and occupational health and safety in the informal sector, and to support larger producers in becoming entirely compliant with national regulations. See Section F.3 for detailed description of E&S risks identified and proposed mitigation measures

Other Potential Risks in the Horizon

As part of the project, the producers of ICS will be selling their products at full market price to their clients. No direct end-customer price subsidy is provided in this set-up. This approach would be undermined significantly in case a large-scale programme would distribute ICS at a highly-subsidised level. This currently seems unlikely either in Kenya and Senegal, but the risk may arise, especially in view of different political factors (e.g. election campaigns). In both Kenya and Senegal as well as through its global component, the project will support sector coordination efforts and aligning of approaches between various sector stakeholders, including donors and funding agencies. It will do so by strengthening the capacities of national agencies in charge of the ICS market to coordinate work of the various agencies, as well as by demonstrating the effectiveness of the ICS market transformation strategy, which can deliver high market growth rates without consumer subsidies and other market distortion mechanisms.

Another mitigation mechanism is the work through the EE and the partnering NGOs. By using a network of organisations on the ground in large parts of the country, the evolution of such a subsidised competition will potentially be detected at a very early stage, hence allowing for discussions and mitigation before larger damage has occurred.

H.1. Logic Framework.

H.1.1. Paradigm Shift Objectives and Impacts at the Fund level[81]						
Paradigm shift objectives						
Shift to low-emission sustainable development pathways	The project **paradigm shift objective** is to accelerate the growth of ICS market and significantly increase the level of ICS sales, in particular in remote rural locations, thereby enabling two targeted countries, Kenya and Senegal, to reach their stated NDC goals on ICS coverage and GHG emission reduction in the energy-cooking sector.					
Expected Result	**Indicator**	**Means of Verification (MoV)**	**Baseline**	**Target**		**Assumptions**
				Mid-term (after 2 years)	Final	
Fund-level impacts						
M3.0 Reduced emissions from buildings, cities, industries and appliances	M3.1 Tonnes of carbon dioxide equivalent (t CO_2eq) reduced as a result of the project	Monitoring Report of Executing Entities and EnDev & NDC Monitoring reports of GoK and GoS	0	0.88 mln (KE 0.71 mln, SE 0.17 mln)	6.47 mln (KE 5.39 mln, SE 1.08 mln)	Support to producers and other stakeholders results in projected sales and use of stoves as calculated in the impact model, and that each stove in use saves at least 30% of fuel.
Social, environmental, economic co-benefit index/indicator at impact level	Number of new jobs created in ICS sector	Monitoring Report of Executing Entities and EnDev	0	N/a[82]	2,745 jobs (KE 1,980; SE 765)	New jobs in ICS production and distribution (LMEs) rise with consumer demand and sales increase. At least 60% of trained LMEs will continue to be employed.

[81] Information on the Fund's expected results and indicators can be found in its Performance Measurement Frameworks available at the following link (Please note that some indicators are under refinement): http://www.greenclimate.fund/documents/20182/239759/5.3_-_Performance_Measurement_Frameworks__PMF_.pdf/60941cef-7c87-475f-809e-4ebf1acbb3f4

[82] Mid-term targets for this indicator are not feasible because jobs will only be created in the second half of the implementation period.

Expected Result	Indicator	Means of Verification (MoV)	Baseline	Target Mid-term (after 2 years)	Target Final	Assumptions
Project/programme outcomes	**Outcomes that contribute to Fund-level impacts**					
M 6.0 Increased number of small, medium and large low emission power suppliers	M 6.2 Number of households, and individuals (males and females) with improved access to low-emission energy sources	EnDev monitoring for number of households, energy access data from SEforAll for KE[83] and SE[84], GoK/GoS (Energy Ministry) data and reporting on Energy access[85].	Baseline TBD from 2019 statistical data	0.304 mln households additional to baseline KE: 0.23 mln households (1.152 mln individuals, of these 0.565 mln females) and SE: 0.073 mln households (0.754 mln individuals, of these 0.373 mln females)	1.911 mln households additional to the baseline. Of these: KE: 1.595 mln households (7.978 mln individuals, of these 3.911 mln females) SE: 0.315 mln households (3.251 mln individuals, of these 1.609 mln females)	Baseline data for 2019 can only be reliably assessed at project begin. Additional access for households will be determined based on EnDev monitoring data, considering stove stacking, meaning 2 ICS needed per household in Senegal and 1.1 ICS to satisfy daily cooking needs in Kenya. The monitoring data is verified by the NDA and government monitoring reports. These results will be compared to SEforALL reports as they become available. Number of individuals estimated by average household size. Gender disaggregation based on national statistical information

[83] https://www.se4all-africa.org/seforall-in-africa/country-data/kenya/
[84] https://www.se4all-africa.org/seforall-in-africa/country-data/senegal/
[85] GOK reporting in Kenya will be based on the national monitoring of the achievement of the SEforAll Action Agenda coordinated by Ministry of Energy, GoS reporting is based on the Annual Reports of the Ministry of Energy and Petroleum

Project/programme outputs	Outputs that contribute to outcomes					
1. The market development for climate-friendly cookstoves in **Kenya** is accelerated	**I 1.1 Annual volume of ICS sales contributing to achievement of NDC targets**	EnDev monitoring system	250,000	443,904	1,116,000	The increase of annual ICS sales is the measure for market acceleration.
	I 1.2 Change in the level[86] of producer productivity	EnDev monitoring system	Level 1 = 102 producers Level 2 = 26 producer Level 3 = 2 producers	Level 1 = 68 producers Level 2 = 60 producer Level 3 = 2 producers	Level 1 = 40 producers Level 2 = 70 producer Level 3 = 20 producers	The change in level of production shows the increasing professionalization of the sector that will support ODA-independent growth
	I 1.3 Number of producers with access to finance[87]	EnDev monitoring	0	0	8	The combination of increased sales and improved financial knowledge of business class producers combined with increased knowledge of the ICS sector in financial institution allows the companies to develop bankable investment plans that will be accepted.
	I 1.4 Percent change in knowledge, awareness, and positive perception of ICS benefits	Random sample surveys[88] in regions with ICS market expansion	TBD[89]	>30%	>60%	If potential clients know the benefits of using an ICS, they are more inclined to buy an ICS. Both men and women are decision makers for buying stoves. Men are more often the ones who pay for the stoves. Having both genders aware of the benefits will increase the number of customers.

[86] Level 1 = Artisanal production <100 ICS/month; Level 2 = Professional production 100 to < 1,000 ICS/month; Level 3 = Business class production at least 1,000 ICS/month
[87] Where access to finance is reflected as number of business class producers with signed loan agreements with the banking sector to finance expansion of business activities
[88] Survey will measure the share of persons in regions of ICS market expansion who can mention at least one benefit of using an ICS. The results will be gender disaggregated.
[89] Baseline to be established in year 1 of project implementation

	I 1.5 Extent[90] of integration of ICS in policies, plans and implementation	National and county action plans and budgets	All counties = 0	8 counties = 1 2 counties = 2	10 counties = 2	GoK and the devolved county governments learn about ICS, integrate ICS into their plans and policies and allocate budget for it.
2. The market development for climate-friendly cookstoves in **Senegal** is accelerated	**I 2.1 Annual volume of the ICS sales (number of ICS) contributing to achievement of NDC target**	EnDev monitoring	200,000	307.520	586,000	The increase of annual ICS sales is the measure for market acceleration.
	I 2.2 Change in the level[91] of producer productivity	EnDev monitoring system	Level 1 = 228 producers Level 2 = 25 producer Level 3 = 3 producers	Level 1 = 181 producers Level 2 = 72 producer Level 3 = 3 producers	Level 1 = 171 producers Level 2 = 69 producer Level 3 = 16[92] producers	The change in level of production shows the increasing professionalization of the sector that will support ODA-independent growth
	I 2.3 Number of producers with access to finance[93]	EnDev monitoring	1	1	6	The combination of increased sales and improved financial knowledge of business class producers combined with increased knowledge of the ICS sector in financial institution allows the companies to develop bankable investment plans that will be accepted.
	I 2.4 Percent change in knowledge, awareness, and positive perception of ICS benefits	Random sample surveys[94] in regions with ICS market expansion	TBD	> 20%	> 50%	If potential clients know the benefits of using an ICS, they are more inclined to buy an ICS. Both men and women are decision makers for buying stoves. Men are more often the ones who pay for the stoves. Having both genders aware of the benefits will increase the number of customers.

[90] Extent of to be measured on a scale of 0-3; where 0 = public expenditures at County level do not reflect, enable or support expansion of ICS as part of County access to energy priorities; 1 = evidence on the benefits of ICS is available to decision-makers for policy, planning and budgeting at the County level; 2 = County level policy, plans have integrated ICS priorities and budgets

[91] Level 1 = Artisanal production <100 ICS/month; Level 2 = Professional production 100 to < 1,000 ICS/month; Level 3 = Business class production at least 1,000 ICS/month

[92] It is projected that another nine of the supported professional producers will reach business class sales level only shortly after the end of the GCF project (in 2025/26) to make it 25 business class producers and only 60 professional producers.

	I 2.5 Number of stakeholders working in the ICS sector in Senegal inside[95] and outside of GCF project	Stakeholder meetings, GoS reports on ICS sector	TBD in Yr 1	Inside: 8 Outside: 3	Inside: 20 Outside: 10	The more stakeholders are working in the ICS sector, the easier it is for clients and ICS producers to access information and to lobby for a better market environment.
3. Improved knowledge on climate-friendly cooking solutions and their contribution to NDCs	**3.2 Extent[96] of adaption and replication of project lessons learnt and knowledge products in other countries**	Countries requesting knowledge products, other climate project proposals submitted to donors	0	2 countries with score 1	5 countries with score 1, thereof 2 countries with score 2 and 1 country with score 3	Experiences made and lessons learnt in the project are documented. These are made available as knowledge products for other parties, like national governments, development organisations etc., and applied in interventions as well as replicated in future project proposals.

[93] Where access to finance is reflected as number of business class producers with signed loan agreements with the banking sector to finance expansion of business activities
[94] Survey will measure the share of persons in regions of ICS market expansion who can mention at least one benefit of using an ICS. The results will be gender disaggregated
[95] Inside = receiving GCF funds as EE or service provider, outside = not receiving GCF funds but still collaborating with GCF or working in parallel to GCF in the ICS sector
[96] Extent = Number of countries, reflected at individual level with a score where:
score 1 is awarded for request and awareness about knowledge products;
score 2 for application of knowledge products (tools, approaches and best practices (as defined in GCF project midterm evaluation)) based on Kenya/Senegal experiences and;
score 3 for replication of knowledge products (even if adapted) in project design and funding proposals (from all funding sources).

Activity	Description	Actions	Measurements/Deliverables	Evidence
Output 1: Accelerating Market Development for Climate-friendly Cookstoves in Kenya				
Sub-Component 1.1: Strengthening the ICS Supply and Delivery Chain				
1.1.1 Professionalization of ICS production	The activity improves the production processes and quality of ICS and ceramic liners. Producers in the artisanal and professional producer category to facilitate their business expansion and thus moving up into the professional and business class respectively. It also establishes 20 new production centres in new regions. This increases the number of artisanal, professional and business class producers and leads to additional production of quality stoves. To do so, the project provides "professionalization kits" (investment support for tools, equipment, machines and construction / capacity building) via a performance-based grant mechanism to producers and facilitates stove quality assurance by stove testing, national standards and branding.	• Needs assessment of all production centres • Procurement and provision of professionalization Kits and investment packages (e.g. mechanisation, equipping, and tooling) for expansion of production centres (= initial/ start up investments) • Provision of performance based incentives: professionalization kits and investment packages (e.g. marketing, business development and transport means) (= further follow up performance based investments) • Technical training on operation of machines accompanying mechanisation & equipping • Capacity building and training of stove production centres on production process (to improve technology, materials, production processes, health & safety at work space, work flow, quality control, and ESMP), including dedicated trainings for women • Provision of entrepreneurship/business management training (under consideration of specific training needs for women) • Regular stove testing to monitor performance at laboratory, production centres and households by DEKUT and SERC under supervision of KIRDI • Support producers via technical training, testing and quality control	Mid term (2 yr): • Initial/ start up investments provided to app. 100 stove producers • 20 new stove production centres at artisanal and professional level established Final: • Performance based investments provided to app. 80 producers • At least 90 producers participated in the entrepreneurship/business management training • 18 professional class producers moved to business class level (> 1,000 ICS/month) • 52 artisanal class producers moved to professional level (> 100 ICS/month) • 100% of the business class producers and 50% of the professional class producers meeting the KEBS stove quality standard.	• Grant mechanism monitoring system • Sales number reporting system

		to achieve Kenya Bureau of Standards (KEBS) quality standard (stamp/sticker mark of quality and QR code for verification) • Provision marketing training to producers to develop strong brands (name/logo, etc. on basis of KEBS mark)		
1.1.2 Expansion of distribution and retail chains	The activity expands (into new markets/regions) and improves the (existing) distribution and retail chains (via producers, wholesalers, market traders, last mile entrepreneurs (LMEs), women groups, NGOs). This ensures that produced stoves will actually be distributed and sold to new consumer groups / households to reach the envisaged annual sales figures at the end of the project. To do so, the project provides a) support LME by providing distribution equipment and assets and b) trainings to the various new and existing actors in the distribution and retail chain.	• Provision of distribution kit investments, including distribution, marketing and transportation assets and materials for LMEs (e.g. flyers, advertisement materials, shelf, large umbrella, mobile pavilion) on performance basis. • Provision of training of Trainers (for individual trainers and formal training institutions (youth polytechnics and Vocational Training Centres (VTC)) on ICS technologies • Recruitment, induction and technical training of distributers in new areas, with special attention to women's groups • Provision of entrepreneurship trainings for new and existing LMEs (specific entrepreneurship/business training for women) • Support of marketing initiatives (market activation, branding and promotional events) for producers and distributers (upfront support), marketing and promotional activities	Mid term (2 yr) • Distribution kit investments provided to at least 2000 existing LMEs and women groups Final • App. 2,000 additional LMEs trained in distribution and retail chain • Distribution kit investments provided to at least 2000 additional LMEs and women groups • App. 4,000 LMEs trained on entrepreneurship and marketing • 15 new counties covered with distribution and retail networks	• Grant mechanism monitoring system • Progress reports • Sales figures reporting
1.1.3 Facilitating access to market-based finance for business class producers	The activity facilitates the access to market-based finance for business class producers of ICS. This ensures that future growth of businesses (and therefore of the market) is sustained beyond ODA-support via commercial financing to market-conditions. To do	• Sensitisation of financial intermediaries (FIs, MFIs, SACCOs, Government Enterprise Funds, …) on business and investment opportunities in the ICS sector	Mid term (2 yr) n/a Final • Trainings on financial literacy and financial management for	• Consultant • Meeting facilities • Project staff and transport

	so, the project provides capacity development support to SACCOs, creates linkages between entrepreneurs and finance institutions.	• Support of establishment of Savings and Credit Cooperative Organisations (SACCOs) for ICS related businesses (or integration of ICS businesses in existing SACCOs) to facilitate access to financing • Promotion of development and access of alternative credit facilities for stove businesses (e.g. lease, hire purchase or rent-to-own models for equipment) • Facilitation of the integration of ICS financing into existing government funding platforms for business class entrepreneurs (e.g. Biashara Fund, Women Fund, Youth Enterprise Fund, Uwezo Fund, Kenya Industrial Estates, etc.) • Stimulation and development of alternative financing and credit models for business class producers and distributers for investment capital and working capital • Provision of financial literacy and financial management trainings in collaboration with financial institutions for business class enterprises as well as training on formal registration and ESMP implementation, under consideration of specific training needs of women • Training on requirements of the finance sector for investment application (quality and completeness of documents) • Advisory on development of a complete business and finance plan for third party investments in the expansion of business class producers (> 3,000 ICS per month)	app 20 business class producers • At least 10 FIs, MFIs, SACCOs or alternative investors etc. have shown interest in the ICS market and at least 5 of them have developed financing opportunities for ICS • At least 10 of business class producers with developed bankable investment application documents • 8 financing agreements signed by business class producers	

		• Linking (M)FI and business class ICS producers		
Sub-Component 1.2: Enhancing Consumer Demand and ICS Market Environment				
1.2.1 Awareness raising of consumers	Awareness is key for behavioural change in this very traditional sector. Demand for ICS is likely to be influenced by better understanding of the risks of traditional ways of cooking, like respiratory health, safety, convenience etc. Awareness campaigns with nation-wide outreach as well as local individual events shall sensitise and bring behavioural change messages across. Different partners and networks are involved in order to mainstream and increase efficiency and outreach.	• Development of behavioural change messages and awareness campaigns • Capacity building of existing awareness creation networks (Community Health Workers, Agricultural Field Extension Officers, Community Forest Associations, Water Resources Users Associations, Community Based Organisations, Women's groups and media, etc.) • Implementation of national level awareness campaigns on ICS (public and private media) • Implementation of community level awareness and consumer education campaigns on ICS (trigger behaviour change with role plays, street theatres, roadshows etc.) • Development and piloting of solutions for clean kitchens and awareness-raising on improved kitchen designs and clean cooking environments	Mid term (2 yr) • App. 200 small community level awareness events are implemented Final • At least 5 national level awareness campaigns are implemented • Menu of options for solutions for clean kitchens is developed and piloted	• project records about events • partner (networks, government, energy centres) records about events
1.2.2 Creation of enabling market environment (sector coordination, regulative framework, quality standards and stove testing)	A regulatory framework, including national standards, testing capacity, a functioning sector association, sector data and sector support at county level, provide an enabling environment for the stove businesses in Kenya. Various institutions are involved in building this enabling environment from the national down to the county level. In order to avail long-term cooking energy capacity building and training, curricula are developed. The activities aim for supporting the development as well as	• Advisory to Energy Regulatory Commission (ERC) for finalisation and implementation of ICS regulations, under consideration of project experiences with gender sensitive approaches. • Advisory to Kenya Bureau of Standards (KEBS) in finalisation and implementation of ICS Standards under consultation with women's groups and users • Development of a national quality label (generic), based on KEBS	Mid term (2 yr) • National quality label is available • At least 3 stove testing centres have capacity and equipment for stove testing • CCAK action agenda is developed • ICS regulation is published and implemented • Kenya ICS standard is published and implemented	• Energy Regulatory Commission • Kenya Bureau of Standards • DEKUT, SERC and KIRDI testing reports • Data collection and monitoring system for the sector • county plans and budgets

	the implementation of this enabling environment.	standard for technical requirements combined with awareness creation • Enhancement of stove testing capacity in existing testing centres (KIRDI) and establishment of new stove testing centres (e.g. at SERC and DEKUT) • Strengthening of Clean Cookstove Association of Kenya (CCAK) and its associates by sector coordination, business planning, lobbying and advocacy • Support of sector data collection and knowledge management • Capacity development for county governments to include clean cooking measures into their county plans and budgets, including sharing of project gender experience • Institutionalisation of stove training and awareness creation by development of training content (curricula) for cooking energy capacitation at youth polytechnics as well as at vocational training centres, targeting female and male students equally.	Final • Data collection and knowledge management system for the sector is established and managed by CCAK or MoE • At least 10 county governments have included clean cooking measures into their county plans and budgets • training content (curricula) for cooking energy capacitation at youth polytechnics as well as at vocational training centres developed	• business plan of CCAK and lobbying events by CCAK • youth polytechnics as well as vocational training centres
Sub-Component 1.3: ICS Market Monitoring and Impact Evaluation				
1.3.1 Monitoring, verification, and validation	MRV is delivering reliable results for GCF. The monitoring and reporting platform as well as the verification approach build on existing	• Development of a common monitoring and reporting platform together with MoE and MoEF for all Executing Entities and Implementing Partners (including system maintenance over project period) (including gender-sensitive monitoring as defined in the Gender Action Plan and E&S monitoring as defined in the ESMP) • Verification of results and reporting	Mid term (2 yr) • One common monitoring and reporting platform was developed and is used by all Executing Entities (EE) and Implementing Partners Final • Verification of results and validation of procedures has been implemented according to schedule (5 annual reports by each EE)	• MoE and MoEF • monitoring and reporting platform • verification reports

1.3.2 Impact Evaluation	The GCF support to the ICS sector in Kenya is based on a number of assumptions regarding potential impacts for the climate, but also on health, gender and other co-benefits. The GCF project will implement studies to verify some of these assumptions complementary to the external evaluation studies.	• Implementation of periodic studies on impacts and co-benefits:
		  ○ Assessment of the adaptation impacts of the GCF project based on a proxy-indicator methodology of EnDev
		  ○ Assessment of actual reductions of wood-fuel-use through the adoption of ICS in households
		  ○ Assessment of the quality of the cooking energy systems in all regions of Kenya (CES methodology of EnDev)
		  ○ Contribution to the verification of CES proxy indicators
		  ○ Assessment of ICS market development based on EnDev scorecard methodology
		• Implementation of external evaluations (mid-term and final), including gender surveys
			Mid term (2 yr)
			• Baseline assessments on ICS markets, CES and impacts are completed
			
			Final
			• At least 5 reports on studies of co-benefits and impacts are available.
			• At least 2 external evaluation reports are available.
				• Consultant
				• Project

Output 2: Accelerating Market Development for Climate-friendly Cookstoves in Senegal				
Sub-component 2.1 Strengthening ICS supply and delivery chain				
2.1.1 Professionalization of ICS production	Artisanal and professional ICS producers currently cannot invest into increasing their production because of 'lack of access to financing'. The GCF project is solving this problem by providing a performance based grant support to eligible ICS producers. In the framework of a co-financing arrangement, up to 67 ICS producers at artisanal level and up to 25 ICS producers at professional level will be supported to progress to the next higher production level. Eligible artisanal producers receive a fixed set of production assets. Professional producers develop with support of a business consultant an investment plan to reach business class production level. 'Professionalization of ICS production' requires also extensive capacity building on production processes, workshop organisation, safety, social standards, environmental management etc. The design of current ICS and production tools have been developed in the 1980s for manual production. A review of production processes will release productivity gains. Complementary, there will be opportunities to reduce the exposure risks of domestic cooking with ICS.	• Procurement and provision of equipment to artisanal and professional producers (professionalization kits) • Co-financing via investment packages to workshop building and vehicles. • Technical training for producers of ICS and ceramic inserts on use of new equipment, on work safety etc. • Development of new hand tools for efficient ICS production • Improve workshop organisation for producers of ICS and ceramic inserts • Revision of existing ICS design for faster production • Facilitate basic E&S management of business class producers • EEs monitor E&S issues • Training and coaching for business class producers on economic aspects of their profession • Testing (lab- and field) of new national and international stove designs • Develop and introduce cold ceramics for insert production • Develop, test and promote technical solutions to reduce exposure risks in Senegalese cooking systems	Mid term (2 yr) • Up to 67 artisanal producers received tranche 1 of the professionalization kit and the investment package • Up to 25 professional producer received tranche 1 of the professionalization kit and investment support Final • Up to[97] 67 artisanal producers receive tranche 2 of the professionalization kit and investment packages; • Up to 25 professional producers receive tranche 2 and 3 of the professionalization support and investment packages; • Up to 92 up-graded ICS producers receive training on various topics • Test report on prototypes of better tools for ICS production • Test report and samples of prototype(s) on simplified ICS design (for mass production • Test reports and samples of ICS liners from cold ceramics • Test report and samples of solutions for 'exposure reduced kitchens'	• Report of Chambers of Crafts; • GCF project activity monitoring system • Training reports of service providers • Report of service provider and feedback report from ICS producers • Test reports from CERER and the service provider.
2.1.2 Expansion of distribution and retail chains	The increase of monthly ICS production (see 2.1.1) does not suffice to increase stove use in villages. First of all the ICS producers have to be supported to expand their distribution network to the remote regions of Senegal.	• Procurement and provision of distribution equipment to artisanal producers (together with 2.1.1) • Investment support to professional producers for distribution assets (together with 2.1.1)	Mid term (2 yr) • 650 LMEs receive starter kits • Up to[98] 67 artisanal ICS producers receive distribution kit (see 2.1.1); • Up to 25 professional ICS producers receive	• Report of Chambers of Crafts; • GCF project activity monitoring system

	The greatest challenge is to ensure that the ICS are reaching the households in the villages. The GCF project is pursuing two main approaches to strengthen the link of the villages with the ICS distribution chain. Young people will be supported to become "Last Mile Entrepreneur". This concept is working well in Kenya and shall now be introduced to Senegal. More importantly, women groups in 8,000 villages will be mobilised to integrate ICS in their 'tontine' group-financing system. They will start buying stoves for themselves before they continue to sell ICS even outside of their group.	• Linking ICS producers with distributers of other commercial goods • Facilitate linkage between potential retailers and ICS suppliers • Identification and training of 650 retailers (last-mile entrepreneurs) • Provide LMEs with starting kit, marketing materials and performance based bonus ICS (if applicable) • Establish linkages of LME with ICS suppliers (e.g. market traders) • Provide women-specific training on entrepreneurship/business • Sensitisation of local leadership and government extension workers on ICS (as preparation for next step below) • Sensitisation of women's groups including cooking demonstrations (as preparation of next step below) • Mobilise women groups in 8,000 villages for the promotion of ICS • Facilitating linkage of interested women groups with ICS suppliers;	professionalization support for distribution (see 2.1.1) • Up to 92 producers receive training on marketing; Final • 500 LMEs are selling ICS in 2024 districts • Leadership and extension workers of 8,000 villages sensitised on ICS (as preparation of next step below) • 8,000 women groups sensitised on ICS including cooking demonstration (as preparation of next step below) • 6,000 women groups engage in promoting ICS in 2024 districts	• Training reports of service providers

[97] The figure reflects the projected number of eligible enterprises. However, not all eligible companies may decide to invest, as they have to co-finance the investment. Hence, the actual number of enterprises participating might be smaller. This applies to all figures in this box of the table.

[98] The figure reflects the projected number of eligible enterprises. However, not all eligible companies may decide to invest, as they have to co-finance the investment. Hence, the actual number of enterprises participating might be smaller. This applies to all "up to"-figures in this box of the table.

2.1.3 Facilitating access to market-based finance for business class producers	The access to market-based finance for business class producers of ICS ensures that future growth of businesses (and therefore of the market) is sustained beyond ODA-support via commercial financing at market-conditions.	Preparation of finance sector for support of ICS producers: • Prepare generic IRR calculation on expansion investment for large business class level (> 3,000 ICS per month) • Prepare individual business case description of business class producer • Sensitisation of (M)FIs on business and investment opportunities in the ICS sector Preparation of business class producers for support of finance sector • Training on requirements of the finance sector for loan application • Training on the 'language' of the finance sector • Development of a finance-ready business plan for expansion to the 'large business class' (> 3,000 ICS per month) Linking (M)FI and business class ICS producers • Facilitate meeting between business class ICS producers and (M)FIs • Facilitate field visits for (M)FI staff to business class producer workshops and ICS distributers Provision of RBF incentive for investment credits for business class producers (2023-24) • Develop and implement the financial support mechanism	Mid term (2 yr) n/a Final • Generic IRR document for the transition to large business class • Up to[99] 25 business case descriptions • Report on (m)FI sensitisation on ICS business opportunities • Up to 25 business class producers trained on finance issues • Up to 25 business class producers possess bankable loan application documents • Handbook for performance based mechanism for incentive	• Report of service provider • Reports of GCF project field staff

[99] It is a service offered to the business class producers. The figure is the projected total number of eligible producers, but some may not invest to become business class producers. This applies to all "up to" figures in this box of the table.

Sub-Component 2.2: Enhancing Consumer Demand and ICS Market Environment				
2.2.1 Awareness-raising of consumers	Boosting of ICS production and distribution alone does not increase ICS use in households. The GCF project has to ensure that households buy ICS and integrate them into their cooking energy system. In eight regions, EnDev has done this successfully for the urban areas. Under GCF, the population in the six regions in the South and East as well as the rural areas throughout Senegal have to be mobilised. Massive awareness campaigns have to be prepared and implemented at grass root level as EnDev-experiences in Senegal have shown that behavioural change of rural population is best achieved through direct face to face interaction. Complementary, mass media such as local and national radio and national TV will be used as well.	<u>Preparation of campaigns</u>: • Mainstreaming of awareness-raising concept into implementation partners • Inclusion of exposure messages into the awareness campaigns of the EE • Consultation with different target groups (women, men, servants, etc.) on inclusion of gender needs in campaigns and messages • Assess Baseline socio-economic and gender situation in new regions (based on existing or new survey data) <u>Implementation of grass root awareness activities</u> • *Sensitisation of local leadership and government extension workers on ICS* (see under 2.1.2) • *Sensitisation of women's groups including cooking demonstrations* (see under 2.1.2) • Caravan events with music and theatre performances in (peri-urban) areas • Animation event on weekly markets of rural areas <u>Implementation of national and regional media campaigns</u> • Advertising of ICS in national media (TV, radio) • Advertising of ICS in regional and local media (radio)	Mid term (2 yr) • Report on gender included in the campaigns and messages (field research) • Baseline surveys on gender and socio-economic situation of new intervention zones; • Leadership and extension workers of 8,000 villages sensitised on ICS (see under 2.1.2) • 8,000 women groups sensitised on ICS including cooking demonstration (see under 2.1.2) Final • 450 caravan events with theatre performances • 1,300 animation events on rural markets • 1,000 spot-emission-months in local radios • 72 spot-emission-months in national radio • 6 spot-emission-months in national TV	• Reports of service providers • Reports of EE field staff • Contracts with radios and TV stations
2.2.2 Creation of enabling market environment for ICS	Very few actors are currently active in the ICS sector of Senegal. This applies both for the national level as well as for the regions of Senegal. The coordination is mainly required for the compilation of the annual progress	• Inform ministries about all interventions, regularly and on demand • Implement meetings of stakeholders in the sector including forest management	Mid term • Relevant Ministry staff (energy; environment) are well informed about GCF project. Final	• Reports of meetings and field visits • Minutes of GCF Project Advisory Board meetings

	report for the national ICS sector at ministry level. Achieving the NDC targets requires a stronger support and coordination of a much larger group of stakeholders. Within the GCF project, organisations at local (e.g. NGOs) and national level (e.g. INGOs, projects, research) will be actively integrated and motivated to engage in the ICS sector. Some of them will be contracted as service providers, but others engage because of synergies or interest. Important implementation knowledge will be shared to build capacities in the country (mainly through an annual stove camp). Ministries will be supported to follow field implementation (site visits) and to build capacities (training of staff).	• Implement study on the fuel consumption in the 'household cooking sector' of Senegal • Develop investment plan for the domestic energy strategy • Facilitate the better placement of the investment plan for the Household Energy Strategy in the donor community of Senegal • Field visits and trainings of ministry staff for the management of the sector • Implement annual stove camp for all stakeholders of the sector in Senegal • Sharing knowledge on project gender mainstreaming experience with national and regional level institutions • Strengthening the monitoring of NDC targets for the cooking sector. • Identification and integration of new partners and service providers to the GCF project • Regular meetings of all GCF project implementation partners and service providers	• National ICS stakeholder outside the GCF implementation partners are informed about GCF project; • National ICS stakeholders have well adopted the 'Annual Stovecamp' as an event for national exchange on innovation in the ICS sector	• Reports of stakeholder meetings • Feedback survey on GCF project with ministries and national stakeholders • Reports of coordination meetings • EnDev project report • Reports of 'Annual Stovecamp'
Sub-Component 2.3: ICS Market Monitoring and Impact Evaluation				
2.3.1 Monitoring, verification, and validation	In the GCF project, a number of EEs will work together who most of them have no experience in monitoring stove production, distribution and sales. A joint monitoring and reporting platform has to be developed implemented. Furthermore, the proper application of the monitoring system and the correctness of the monitoring reports has to be validated and reported results have to be verified in the field to ensure reliable data reporting to the NDA (NDC monitoring) and GCF.	• Develop a monitoring and reporting platform for all Executing Entities and Implementing Partners • Verification of results and reporting • Validation of proper application of monitoring procedures	Mid term (2 yr) • Monitoring system for GCF project is established and utilised according to regulation; Final • Verification of results and validation of procedures has been implemented according to schedule (5 annual reports)	• Monitoring reports • Verification and validation reports

2.3.2 Impact Evaluation	The GCF support to the ICS sector in Senegal is based on a number of assumption regarding potential impacts for the climate, but also on health, gender and other co-benefits. The GCF project will implement studies to verify some of these assumptions complementary to the external evaluation studies.	• Assessment of the adaptation impacts of the GCF (EnDev Methodology) • Assessment of 'total wood-fuel use reductions' in ICS user households • Quality-assessment of the cooking energy systems in all regions of Senegal (CES methodology of EnDev) • Verification of CES proxy indicators • Assessment of ICS market development (EnDev methodology) • External evaluation (mid-term and final) including gender surveys	Mid term (2 yr) • Baseline assessments on ICS markets, CES and impacts are completed Final • 5 reports of impact studies are available • 2 external evaluation reports are available	Reports of service providers
Output 3: Improved knowledge on climate-friendly cooking solutions and their contribution to NDCs				
3.1 Collection and codification of knowledge on ICS market development from Kenya and Senegal	The project has high potential to generate globally applicable knowledge related to the design and implementation approach of market transformation strategies and programs for climate-friendly cooking sectors and their contribution to climate change mitigation. This knowledge, which will be captured and evaluated, shall be compiled in knowledge products. These knowledge products and their replication will be developed in exchange with strategic partners of the project.	• Compilation of data from Kenya and Senegal ICS market studies, surveys and other analyses to assess the effectiveness of the project strategy • Analysis of data in order to identify lessons learnt and best practices, including gender aspects; • Joint assessment of lessons learnt and best practice with strategic partners like the World Bank or Clean Cooking Alliance (CCA) • Development of knowledge products on the basis of best practice in delivering climate benefits • Preparation of a standardised guidance on their replication (e.g. How-to Guide).	Mid term (2 yr) n/a Final • Lessons learnt and best practice report • At least 3 knowledge products developed Guide for replication	• Project • Strategic partners •
3.2 Facilitating knowledge sharing	The objective of this component is to adapt, replicate and apply generated knowledge products in other developing countries. To do so, the project facilitates knowledge sharing among existing global and national ICS sector stakeholders, as well as new national	• Identification of relevant international and national ICS sector partners and stakeholders • Conduction of consultations on ideal knowledge sharing modalities/platforms • Development and implementation of knowledge sharing strategy and	Mid term (2 yr) • ICS sector partners and stakeholder mapping Final • Reports on consultations on knowledge sharing modalities/platforms	• Strategic partners • Web platform Agenda and documentation of regional and international events

	and international partners. These shall be enabled to scale up experiences and approaches of the project activities in the targeted countries and other countries with similar market conditions.	action plan jointly with strategic partners • Share knowledge on gender mainstreaming • Presentation and discussion of knowledge products and platforms at relevant regional or international events on related topics (climate, energy, health) • Promotion and advisory on knowledge products and their application in other developing countries	• Knowledge sharing strategy and action plan • Knowledge products and platforms presented at least 3 regional and international events • At least 5 countries request knowledge products	

H.2. Arrangements for Monitoring, Reporting and Evaluation

324. The **EnDev programme has a 12-year track record in monitoring of energy access interventions**, including impacts (such as CO_2, gender, employment). EnDev's monitoring system provides donors and partners with realistic and reliable data on sales of energy access technologies as well as adoption and numbers of beneficiaries (households and household members). It is the foundation for adaptive programme and project management. EnDev's 'high end' monitoring system is focussed on results at outcome level and merges the results achieved in a variety of projects into a few meaningful figures to show its relevance with regard to the SDGs, in particular SDG 7. The monitoring is rather conservative in its assumptions and counting methods to ensure credibility vis-à-vis the public and its donors. The latter appreciate reliability and transparency of the system and a good bi-annual reporting, quick and to the point financial monitoring, and prompt reporting on special requests.

325. At the country level, the country project manager will be responsible for ensuring that monitoring is **aligned with the GCF logical framework** and is conducted in an objective and timely manner. Transparent and replicable methods will be used and data will be stored in a secure and retrievable way. The basic building blocks of EnDev's monitoring system are (a) quality-controlled tools to collect, process and analyse data (b) processes to structure monitoring cycles in every semester (c) roles and responsibilities describing who does what (d) knowledge management, for example, description of minimum data requirements, FAQs, etc.

326. Under this proposal, EnDev will **monitor stove sales along the distribution chain on a monthly/quarterly basis**. Sales will be registered on a sales sheet or using digital tools, and stove vendors will be trained in their use. Minimum data requirements are location of sale and type of stove sold. It is often not possible to record names and addresses of each individual customer (it is time-consuming and inconvenient for the customer). EnDev will be able to provide information about the regional distribution of sales (assuming that this is a good proxy indicator for the regional distribution of stove owners). Stove usage will be assessed through impact studies in selected samples and in discussions with collaborating women's groups (which are also retailers of ICS). In these discussions, women using stoves can express their observations and wishes towards stove performance and features. From EnDev experience, this information is especially important in after-sales services and in turning one-time customers into repeat customers. Other instruments like set-up of a database driven by mobile-phone based customer self-registration will be tested to further advance knowledge about the customer base.

327. **Monthly sales sheets** will then be communicated to EnDev regional offices. Monitoring officers will revise the sales information and will verify and cross-check information, using plausibility checks and random spot checks. After accepting the data, they will be compiled and transmitted to the EnDev country office, which performs another set of verification and crosschecks. The data then become part of EnDev's six-monthly progress reports. These reports inform EnDev's multi-donor governing board meetings about the current status of target achievement and about areas that need attention.

328. The MRV system is designed to deliver results of additional sales above the baseline. On a monthly basis the producers will be visited and the production and sales will be assessed and compared with the sales of the past. The additional sales with increased quality and quantity are generated due to and as consequence of the GCF project's investment in professionalization kits, investment packages and TA for accelerated production and sales. These are attributable to the modernised and standardised production processes and can be counted as additional to the baseline or business as usual scenario.

329. The **number of ICS in use determines the number of people benefitting from the ICS use** (# of ICS * average household size). However, in Senegal, large households (10 persons on average) are always using 2 stoves in parallel when preparing a meal, hence the effect of a single ICS is only applicable for half of the household size. The ICS promoted by EnDev have a limited life span[100].

[100] EnDev Monitoring system makes a conservative lifetime estimate of 2 and 3.5 years for these models for Senegal and Kenya respectively.

Only stoves, which are still within their useful live years, will render services to the households and affect the climate. Hence the 'number of ICS' to be considered is only referring to ICS which are still within their life span. For example, in Senegal only the stove sold in the last 2 years will be counted for the calculation of the outcome. Using these and other adjustment figures allows EnDev to prevent over-reporting.

Impact assessment

330. The project will assess **the quality of the access provided applying the EnDev Cooking Energy System (CES) methodology**. The CES methodology is EnDev's proxy-indicator approach for assessing the quality of access to modern cooking services[101]. The CES – similarly to the Multi-Tier Framework (MTF) developed by ESMAP[102] – takes into account the transitional character as well as the complexity of improving access to cooking energy services. Improving the cooking situation in the sense of CES means: considering fuel quality or even switching fuel, improving cooking devices and cooking equipment, adjusting user behaviour and cooking practices as well as increasing ventilation and modifying the kitchen. While some internationally discussed measurement approaches are mainly based on stoves and laboratory test results, the CES evaluate quality and effects of access to cooking energy based on field-based approximations and household surveys.

331. Further impact studies will be conducted to assess ICS adoption and daily usage, and the subsequent **actual reductions of wood-fuel-use**. This will be measured by applying the **Kitchen Performance Test (KPT)**[103], which is a field test used to evaluate ICS performance in real-world settings. It is designed to assess actual impacts on household fuel consumption. KPTs are typically conducted in the course of an actual dissemination effort with real populations cooking normally, and give the best indication of real world performance. Based on the KPT-based fuel saving results, the real resulting GHG emission reduction can be calculated with the methodology applied in the GCF Impact Model[104].

332. The **EnDev Market Development Scorecard** will be used to establish the stage of ICS market development as has been presented in

333. Figure . Further **socio-economic co-benefits** (including gender, income, job creation, or health aspects), as well as potential adaptation impacts will be assessed by household surveys.

Independent evaluation

334. **An interim evaluation/mid-term review**: an independent mid-term review will be conducted in year three of the implementation. It will focus on an overall review of EnDev's programmatic approach, of project progress, performance and impact (environmental, social, gender), and of finances. The review will also focus on the institutional, administrative and organisational set-up of the project. The mid-term review will be based on desk reviews and interviews with key staff and partners of all projects, and on field visits to two projects.

335. The mid-term review will include recommendations for (1) any corrective actions if necessary (2) updates to the project design and (3) changes to the project monitoring approach. There will be individual per-project recommendations and recommendations for the EnDev GCF project as a whole. The recommendations will be addressed in the second part half of the intended project duration. The results of the mid-term review will be presented to the stakeholders of the sector in each of the two countries.

336. **Final evaluation**: An independent final evaluation will be conducted within six months of the end of the project. It will focus on overall performance vs. indicators, impacts and finances, and on implementation and effects of the recommendations given by the mid-term review. The results of the final evaluation will be presented to the stakeholders of the sector in each of the two countries.

[101] Further details about the CES provided under section E 1.1.
[102] More information about the MTF: https://www.esmap.org/node/55526
[103] The KPT protocol to be found here: http://cleancookstoves.org/binary-data/DOCUMENT/file/000/000/604-1.pdf
[104] See Annex 2 of this proposal.

I. Supporting Documents for Funding Proposal

☒ NDA No-objection Letter

☒ Feasibility Study

☒ Integrated Financial Model that provides sensitivity analysis of critical elements (xls format, if applicable)

☒ Confirmation letter or letter of commitment for co-financing commitment (If applicable)

☒ Project/Programme Confirmation/Term Sheet (including cost/budget breakdown, disbursement schedule, etc.) – *see the Accreditation Master Agreement, Annex I*

☒ Environmental and Social Impact Assessment (ESIA) or Environmental and Social Management Plan (If applicable)

☒ Appraisal Report or Due Diligence Report with recommendations (If applicable)

☒ Evaluation Report of the baseline project (If applicable) and two key baseline evaluations of the projects in Senegal and Kenya

☒ Map indicating the location of the project/programme

☒ Timetable of project/programme implementation

** Please note that a funding proposal will be considered complete only upon receipt of all the applicable supporting documents.*