

Clean Development Mechanism

Sustainable Development co-Benefits Description Report¹

CDM project activity or programme of activities (PoA) information	
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Host Party	Uganda

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Overview of sustainable development co-Benefits

A. The extent of environmental co-Benefits:

		N/A	No	Slightly	Partly	Highly
Air	Reducing Sox					•
	Reducing Nox					•
	Reducing Fly ash					•
	Reducing suspended particulate matter (SPM)					•
	Reducing Non Methane Volatile Organic Compounds (NMVOCs)		•			
	Reducing Noise Pollution	•				
	Reducing Odors					•
	Reducing Dust	•				
	Other air quality improvements					•
	Land	Preventing end of life products/ equipment (solid waste)				
Producing/using compost		•				
Producing/using manure, mineral fertilizer or other soil nutrients		•				
Irrigation		•				
Preventing soil erosion						•
Minimum tillage		•				
Other means to improve land quality						•
Water	Improving management/control of wastewater		•			
	Saving/conserving of water					•
	Improving reliability/accessibility of water supply	•				
	Purification/cleaner water supply					•
	Improving ecological state of water bodies					•
	Other means to improve water		•			
Natural Resources	Protecting mineral resources	•				
	Protecting/enhancing plant life					•
	Protecting/enhancing species diversity					•
	Protecting/enhancing forests					•
	Protecting/enhancing other depletable natural resources					•

B. The extent of social co-Benefits:

		N/A	No	Slightly	Partly	Highly
Jobs	New long-term jobs					•
	New short-term jobs				•	
	New sources of income generation					•
	Other employment opportunities					•
Health & Safety	Disease prevention					•
	Reducing accidents					•
	Reducing crime					•
	Preserving food	•				

	Reducing health damaging indoor air pollution					•
	Enhancing health services	•				
	Improving sanitation and waste management	•				
	Other health and safety improvement					•
Education	Job-related training					•
	Enhanced educational services					•
	Project-related knowledge dissemination					•
	Other educational benefits		•			
Welfare	Improving working conditions					•
	Community or rural advancement	•				
	Poverty alleviation (more people above poverty level)					•
	Improving wealth distribution/ generation of income and assets					•
	Increased municipal revenues	•				
	Optimized women's empowerment					•
	Reduced traffic congestion	•				
	Other welfare benefits		•			

C. The extent of economic co-Benefits:

		N/A	No	Slightly	Partly	Highly
Growth	New investments				•	
	New industrial/commercial activities				•	
	New infrastructure					•
	Enhancement of productivity					•
	Reduction of production costs (services)					•
	New business opportunities					•
Energy	Other economic benefits		•			
	Improvement in supply of energy					•
	Access to energy					•
	Affordability and/or reliability of energy					•
	Other energy improvements					•
Technology	Introducing/developing/diffusing imported technology				•	
	Introducing/developing/diffusing local technology					•
	Adaptation of new technologies to local circumstances					•
	Know-how activities for a technology					•
	Other technological benefits		•			
Balance of payments	Reduction of foreign dependency					•
	Other macro-economic benefits		•			

D. Further information:

Information required

	Yes	No	N/A
	•		

Detailed description

A. Environmental co-Benefits

	Indicator	Specification	Extent
Air	The CDM improves air quality by reducing air pollutants as follows:		
	SOx	<i>The use of an institutional improved cook stove (IICS) results in better combustion efficiency and lower levels of emissions of health-damaging pollutants including sulfur dioxide (SO2), and a variety of organic air pollutant.</i>	Highly
	NOx	<i>The use of an IICS results in better combustion efficiency and lower levels of emissions of health-damaging pollutants including nitrus oxides (NO2).</i>	Highly
	Fly ash emissions	<i>At least 50% of the ash produced and its associated emissions into the atmosphere - is reduced as a result of the energy efficiency of the institutional improved cook stoves (IICS). The IICS rocket design with an enclosed firebox chamber also contributes to the contention of ash, preventing it to escape and suspend in the air.</i>	Highly
	SPM	<i>The cleaner and more efficient combustion of IICS and the reduction of at least 50% in fuel consumption are directly related to indoor air pollution from other harmful emissions such as CO and Respirable Suspended Particulate Matter (RSPM), helping achieve a reduction in respiratory diseases and child mortality. Amount of CO and RPM emission reductions achieved, indirectly measured through perception of improvement of air quality. Research indicates reduced CO and RPM as follows: A quantitative estimation for the reduction of CO, RPM etc. arising from the emission reductions of the programme due to the reduced consumption of firewood or charcoal. It can be derived as follows (Reference: Modelling indoor air pollution from cookstove emissions in developing countries using a Monte Carlo single-box model, Johnson et.al); Wood-fuel stoves reduce CO emissions by three-fourths and PM emissions by nearly half. More precisely for the model compared in the study (table 2, page 4) it indicates a mean reduction of PM in the range of 35% and 83% (1975 µg per cubic metre to 1266 measured in the field and 328 measured in the lab respectively). Similarly, the measured CO emissions are reduced by 50% or more (25, compared to 12 or 7 mg per cubic metre respectively).</i>	Highly
	NMVOCs		No
	Noise		N/A
	Odors	<i>As firewood consumption is reduced at least by half, so it the reduction of smoke. Simoshi systematically conducts the “Kitchen Information Update” survey during the school visits. Every three months, kitchen staff are interviewed and asked how the air quality is perceived in the kitchen – with options to choose between worse, same or better, while asked to further</i>	Highly

		<i>expand if discomfort was felt as a result of smoke from firewood burning (such as coughing, eye infections, respiratory illnesses, etc). Simoshi also reinforces the training of the "Firewood best Practice Manual" that teaches staff how to best keep firewood dry to minimise the smoke produced from burning firewood inside the kitchen.</i>	
	Dust		N/A
	Other air quality improvements	<i>Prior the time of the IICS installation, Simoshi conducts a kitchen infrastructure assessment to ensure that between many of the parameter assessed, the kitchen building has good ventilation and the IICS chimneys can be appropriately installed to ensure residual smoke can be conducted outside the building. Furthermore, IICS are installed with a chimney that facilitates the residual smoke conduction outside the kitchen building.</i>	Highly
Land	The CDM improves the soil quality and/or avoid soil pollution, waste disposal as follows:		
	Pollution prevention	<i>The use of metal sheets for the IICS fabrication could become a hazard if the IICS were disposed. Nevertheless Simoshi repairs/maintains for free all IICS for a 5-year period to all schools participating under the project activity. This not only ensures the energy efficiency is maintained, but also extends the lifetime of the IICS while minimising the pollution from the metal disposal.</i>	Highly
	Compost		N/A
	Manure, mineral fertilizer or other soil nutrients?		N/A
	Irrigation		N/A
	Soil erosion	<i>Erosion levels to improve, as deforestation is reduced by the lower consumption of firewood, with roots binding the soil and preventing the soil from washing away.</i>	Highly
	Tillage		N/A
	Other means to improve land quality	<i>Clay extracted to produce the IICS might affect local soil. Simoshi ensures that all suppliers of IICS comply with the national regulations on environment and have clearance from the relevant environment agencies.</i>	Highly
Water	The CDM improves the quality of water and access to water as follows:		
	Waste water		No
	Conservation of water	<i>Deforestation can reduce communities' access to clean water. The use of an IICS reduces the clearing of forests and the subsequent surges of water runoff and water yields.</i>	Highly
	Distribution		N/A
	Purification or a cleaner supply	<i>With less money spent of firewood, schools can more comfortably use their IICS to boil water for its consumption.</i>	Highly
	Water bodies	<i>Slowing down on deforestation implies a better conservation of water bodies and the quality of water flowing through a watershed.</i>	Highly
	Other means		No
Natural Resources	The CDM protects or enhance depletable natural resources as follows:		
	Mineral resources		N/A

Plant life	<i>The project activity supports the conservation of plant life as it reduces the pressure of cutting down of trees and shrubs for firewood use as cooking fuel.</i>	Highly
Species diversity	<i>Although biodiversity cannot be reasonably measured, the number of affected and/or threatened plants & fauna due to deforestation decreases as a result of the IICS energy efficiency.</i>	Highly
Forests	<i>Commercialisation of firewood as cooking fuel is unregulated in Uganda, putting enormous pressure in native forests and protected areas. The reduction of firewood consumption supports maintaining forested areas for the benefit and sustainability of future Ugandan generations.</i>	Highly
Other depletable natural resources	<i>In 2011 the Ministry of Energy and Mineral Development declared that 95% of schools in Uganda cooked with traditional cook stoves and open fires, with less than 2.000 improved cook stoves being disseminated in the past 6 years. Since 1990, forests in Uganda decreased from 4.751 million hectares 2.988 million hectares, with 97 % of the population using solid fuels for cooking. The human-driven and natural loss of trees is already affecting the Ugandan natural ecosystem, wildlife and extreme weather patterns, with recent rains and floods increasing soil erosion.</i>	Highly

B. Social co-Benefits

	Indicator	Specification	Extent
Jobs	The CDM creates new job opportunities including income generation as follows:		
	New long term jobs	<i>The project activity directly affects the number of job opportunities for IICS manufacturers and sales officers responsible for promoting and selling the technology within schools. Better quality skills are also required as mass production is required to meet the demand.</i> New long-term jobs > 1 year - 15	Highly
	New short term jobs	<i>The project activity provides free IICS annual maintenance to all schools. IICS are repaired during school holidays, therefore generating short-term jobs for technicians responsible for conducting repairs mainly during the months of December and January when schools are closed for the longest period.</i> New short-term jobs < 1 year - 6	Partly
	Income generation	<i>Simoshi outsources the purchase of the IICS. The project activity creates new jobs for both IICS manufacturers and Simoshi as the IICS demand increases, with more schools added and more project officers needed to continuously train the kitchen staff, repair the IICS, monitor the use of the IICS and collect indicators.</i>	Highly
	Other employment opportunities	<i>The collection of firewood imposes a serious time burden on women and children and alleviating this drudgery contributes to promoting gender equality and empowering women. The time saved because less firewood is needed for cooking activities means people will have more time to pursue different activities.</i>	Highly

Health & safety	The CDM results in health and safety improvements as follows:		
	Reduction of diseases, disease prevention	<i>The project activity addresses the health consequences of traditional cooking practices as air pollution has become a major public health issue, with 13,000 annual premature deaths caused by the inhalation of CO and particulate matter. Exposure to smoke contributes to a range of chronic illnesses and acute health impacts. The use of IICS provides cleaner air and a healthier environment for kitchen staff and children.</i>	Highly
	Reduction of accidents	<i>Traditional open fires are replaced by IICS which are safe to use because the fire is shielded. The kitchen staff and children are therefore protected from fires and burns.</i>	Highly
	Reduction of crime	<i>In cases where firewood is freely collected from the surrounding areas, with the use of an IICS quantities required are reduced, therefore having a direct impact for those exposed to dangerous situations when collecting firewood.</i>	Highly
	Preservation of food		N/A
	Reducing health damaging indoor air pollution	<i>Burning solid fuels in traditional open fires or inefficient cook stoves releases toxic pollutants into the air, leading to outdoors and indoor air pollution that exceed the World Health Organisation's health based guidelines. As most of the disease burden due to indoor air pollution falls on children under five years of age, the project activity helps achieve a significant reduction in child mortality as outdoor and indoor air pollution is reduced at least by half with the use of an IICS.</i>	Highly
	Enhancement of health services		N/A
	Improved sanitation and waste management		N/A
Education	Other health and safety improvements	<i>The use of an IICS translates into reductions of injuries occurring in unsafe kitchen environments such as burns from contact with a traditional stove's hot surfaces, scalds from moving pots from a traditional stove that has raised obstructions along its edges, or cuts through contact with sharp edges</i>	Highly
	The CDM facilitates education, dissemination of information, research or increases awareness as follows:		
	Job related training	<i>The project activity works with school staff hand in hand to ensure a successful behavioral change is achieved in all kitchen environment. On-going training and free IICS annual maintenance are the added on values necessary for the behavioural transition to happen. The project activity empowers the kitchen staff (usually neglected by school managers, badly remunerated and working in unhealthy and poor environments) through the continuous face to face training and monitoring model, following the "Kitchen Management Techniques" and "Firewood Best Practice Manual", and the "Kitchen Training Assessment" to improve the overall conditions and safety of the kitchen environment.</i>	Highly
Enhanced educational services	<i>The project activity has set educational processes and monitoring practices to overcome resistance to change, and these joint efforts have seen a deep cooperation to achieve the different benefits directly affecting the diverse audience involved. Cooks are usually women who play an instrumental role in raising awareness</i>	Highly	

		<i>between their peers and community members about the dangers of utilizing traditional cooking methods.</i>	
	Project related knowledge dissemination	<i>The project activity actively engages in daily visits to new schools to raise awareness on the benefits accrued from the use of an energy efficient cook stove, and the consequences traditional cooking has on climate change.</i>	Highly
	Other educational benefits		No
Welfare	The CDM improves local living and working conditions as follows:		
	Improvement of working conditions	<i>The inclusion and empowerment of kitchen staff (usually neglected by school managers, badly remunerated and working in unhealthy and poor environments) in the continuous training and monitoring model of the project activity, gives them not only a decent working environment but also a voice in future decisions to be made as the model continuously adapts to changes and innovates to improve.</i>	Highly
	Community or rural upliftment		N/A
	Poverty alleviation	<i>The project is designed to provide IICS to poor schools/institutions. IICS are made affordable to low-income schools/institutions by using carbon finance. IICS replace inefficient stoves therefore having a direct impact in the schools finances as an average schools in Uganda can save USD 800 per year from firewood not purchased as a result of the IICS firewood savings. Schools/institutions income increases due to IICS fuel savings, providing users with more disposable income.</i>	Highly
	Changes in distribution and/or generation of income and assets	<i>The project activity not only generates better employment conditions within its own employees, but indirectly has a positive impact in the quality of employment of those involved in the school kitchen. Simoshi's service-oriented approach provides better perceptions and outcomes from users, promoting a positive behavioural change in the long term.</i>	Highly
	Increased municipal revenues		N/A
	Empowerment of women	<i>Addressing gender issues in clean energy recognizes that women are key players in health, environmental, economic and climate change issues. Clean cooking results in tangible impacts for women and girls. They play a crucial leadership role in the adoption and use of clean cooking solutions. With improved health and less time spent collecting fuel, they can pursue income-generating or educational opportunities, contributing to poverty alleviation. The example given in schools as the kitchens prepare their daily meals from energy efficient cook stoves provides with a valuable opportunity to educate the school children about the benefits accrued from the use of an IICS</i>	Highly
	Reduced traffic congestion		N/A
	Other welfare benefits		No

C. Economic co-Benefits

	Indicator	Specification	Extent
Growth	The CDM supports economic development and/or stability as follows:		

	New investments	<i>The project activity will increase economic public and private investment for commercial activities as the technology becomes more popular and demand increases.</i>	Partly
	New industrial/comercial activities	<i>The project activity will increase economic private investment from potential IICS manufacturers as school demand increases from within Uganda and neighboring countries.</i>	Partly
	New infrastructure	<i>The project activity educates all schools about the importance of improving the existing kitchen infrastructure as the cost of replacing all traditional stoves with IICS (betwwen 3 to 4 IICS) costs an average of USD 1,200, A bad kitchen building will damage and reduce the IICS lifespan. Therefore Simoshi ensures the school invests some of the money not used from firewood purchases to improved kitchen conditions where applicable. Typical interventions include changing roof metal sheets, providing locks to doors to secure against theft, and cementing the floor to provide a clean environment.</i>	Highly
	Enhancement of productivity	<i>The project activity ensures that IICS models from the selected IICS manufacturers are of similar design, following Simoshi's Quality Assurance and Quality Control Manual (which includes consistency in manufacturing practices and materials used) and Simoshi's Maintenance Manual that demonstrates comparable maintenance and repair practices on all IICS included under the project activity to ensure the maximum firewood savings are achieved.</i>	Highly
	Reduction of production costs (services)	<i>The project activity provides free annual IICS maintenance to all participating schools for a 5-year period. As a result, the free service is an added on value to schools, while also minimising the costs associated with product guarantees and after service incurred costs.</i>	Highly
	New business opportunities	<i>The money saved from the firewood not purchased translates into new business opportunities for schools and institutions, as they can used an average USD 800 per year in other activities to support the school finances.</i>	Highly
	Other economic benefits		No
Energy	The CDM supports economic development and/or stability as follows:		
	Supply of energy	<i>The currently disseminated Ugastove portable firewood IICS have shown to use significantly less firewood to cook the same amount of food in comparison to traditional stoves, hence schools reporting to having reduced their firewood expenditures by at least 50% per school term.</i>	Highly
	Access to energy	<i>Through the daily visits to new schools and institutions, the project activity makes the energy efficient technology widely available to users who were either not aware of the technology, or could not afford the purchase through the existing traditional sales channels.</i>	Highly
	Affordability and/or reliability of energy	<i>The project activity provides financing to all schools when purchasing the IICS. A 15-month period is provided so schools can use the money saved from firewood not purchased to pay back for the cost of the IICS. Moreover, the project activity provides free IICS maintenance for 5-years, ensuring all IICS are as efficient as when they were first installed.</i>	Highly

	Other improvements to energy	<i>The project activity closely monitors the materials used by the IICS manufacturer to ensure the maximum standards and efficiency are achieved. These include laboratory tests from the Uganda Industrial research Institute on the clay and mica used for the insulation of fire chamber of all IICS (at least 10% alumina content in clay and at least 20% alumina content in mica) and thickness/gauge of the metal sheets of 1,5mm. used for the body of all IICS.</i>	Highly
Technology transfer	The CDM results in a change in technology as follows:		
	New imported technology	<i>Past efforts to popularise de use of an IICS, especially by NGOs and donor organisations, have resulted in the creation of several stove manufacturing companies and groups in Uganda. Knowledge about improved cook stove technology from other countries was accessed, and was adapted for local conditions by a small number of local manufacturers producing IICS on a modest scale. The project activity further supports the existing past efforts to make the IICS technology more popular and accessible.</i>	Partly
	New local technology	<i>The project activity supports the local IICS manufacturer Ugastove right along the supply chain to a more efficient level of mass production and distribution than the present existing artisanal manufacture of traditional stoves. This has substantially lowered manufacturing costs, and has facilitated IICS production to a modular design, allowing for simple annual maintenance events. This transformation of the manufacturing and delivery stimulates a more widespread adoption of efficient distribution and manufacturing techniques that will boost rural economic development.</i>	Highly
	Adaptation of new viable technologies	<i>The specific design of an IICS plays a major role in its acceptance by end-users. The IICS's ease of use by women is a key concern of Simoshi. If IICS are not carefully designed for local users' preferences they will either not be sold or will fall out of use after a short period of time, and thus will not qualify for carbon credits. The project activity will promote competition between suppliers to meet consumers' requirements for well-designed and affordable IICS, which can be maintained to ensure their long-term use.</i>	Highly
	Know-how activities for a technology	<i>The project activity conduct regular training sessions at both the manufacturer level and at the end user level. Training in a crucial activity that supports the success of the project. The IICS manufacturer is trained following the Quality Assurance and Quality Control, while school kitchen staff are monthly trained following the Kitchen Management Techniques to ensure the most efficient use of the IICS while a positive overall transformation in the kitchen environment is achieved.</i>	Highly
	Other technological benefits		No
Balance of payments	The CDM results in improving the country's balance of payments as follows:		
	Reduction of the dependency on foreign sources of energy	<i>A fair-trade share of the carbon credit income is a particular feature of Simoshi's project activity. IICS are sold through payment schemes that include three to four equal installments, at no interest rate, allowing schools and institutions to comfortably pay back their debt throughout the year. Schools and institutions do not need to search for money outside their budget or secure</i>	Highly

		<i>financial loans, as they use the money saved from firewood not consumed to pay back to Simoshi.</i>	
	Other macroeconomic benefits		No

D. Further information

	Specification	Extent
	<p><i>The Uganda National Alliance for Clean Cooking (UNACC) estimated in 2012, that only 7% of the population were using clean and efficient cook stoves . Similarly, the institutions in Uganda such as schools, health centres, prisons, commercial buildings and restaurants, primarily rely on traditional cooking technologies such as three stone stoves, open fires etc . (Government of Uganda, 2001). As per the Uganda Bureau of Statistics (UBOS) 2012 survey , 14.88% of the population have access to power grid services (54.8% in urban, and 7% in rural areas). If solar home systems and diesel generators, used mainly by rural households, are included, the national electrification access rate represents 26.1%. The most prevalent form of cooking fuel in the schools of Uganda is wood with 96% of the schools using it as their main cooking fuel, followed by charcoal with 4% of the schools (Ministry of Education and Sports, 2013). Simoshi's energy efficient stand-alone project activity registered with the Clean Development Mechanism (CDM) and the Gold Standard (GS) is capable of bringing a cleaner, healthier and environmentally friendly technology to low-income individuals, especially women and children, by changing the traditional cooking practices used in schools in Uganda. Simoshi outsources institutional improved cook stoves (IICS) from the local manufacturer Ugastove and promotes and sells/ distributes them to schools and institutions. The behavioral transformation Simoshi brings to schools through an effective management of change and subsequent support to the continuous use of the IICS enables both the participating schools and Simoshi to recycle a percentage of the stream of carbon credit returns, to introduce new investments in those same schools within the education of climate change, hygiene and kitchen infrastructure. Simoshi outsources institutional improved cook stoves (IICS) from the local manufacturer Ugastove and promotes and sells them to schools and institutions. The behavioural transformation Simoshi brings to schools through an effective management of change and subsequent support to the continuous use of the IICS enables both the participating schools and Simoshi to recycle a percentage of the stream of carbon credit returns, to further expand the number of schools that move up in the energy ladder. Through its intervention, this project has also been verified by the Gold Standard and achieves nine United Nations Sustainable Development Goals (SDG): SDG 1- No poverty, SDG 3 - Good health and well-being, SDG 4 - Quality education, SDG 5 - Gender equality, SDG 7 - Affordable Clean Energy, SDG 8 - Decent Work and economic growth, SDG 13 - Climate action, SDG 15 - Life on land, SDG 17 - Partnerships for the goals.</i></p>	