United Nations Framework Convention on Climate Change

CDM PROJECT CO-BENEFITS IN CAPE TOWN, SOUTH AFRICA

Enhancing living conditions through energy upgrades to low-cost housing

Project description	**The Kuyasa CDM pilot project involves retrofitting over 2,300 low-cost homes in the district of Khayelitsha, Cape Town, South Africa, with solar water heaters, ceiling insulation, and energy efficiency lighting.** The government of South Africa has ambitious plans for the construction of low-cost housing to help alleviate the country's acute housing shortage. Around 2.4 million units have been built in the previous 15 years, with a further 3 million planned over the next 15 years. This project shows how low-cost housing can be implemented in a more sustainable way.
Co-benefits	**The project illustrates how the CDM can help to improve health and quality of life for people in low-income urban communities by:** • Reducing the cost of providing heat, light and hot water, thereby lowering household expenses and increasing access to basic energy services • Increasing health and welfare by enabling warmer homes in winter • Creating jobs for, and improving the skills of, local residents • Empowering communities to take part in decision-making and learn about climate change

"The project brought skills and jobs for young men, they don't hang around street corners anymore, it has brought dignity to the community … Our children are much safer now, no more hanging wires…We are warm. We are saving. We don't get flu as often. Life is much easier." (Quotes from a survey of residents, Kuyasa Project implementation team, 2010)

KEY PROJECT BENEFIT

Reducing costs, improving living conditions and generating jobs and skills

The project has led to the creation of 85 full-time jobs, with related training and skill transfer

One of a number of Kuyasa residents who were selected, trained and employed as solar hot water installers
(Courtesy of Nic Bothma)

CDM PROJECT CO-BENEFITS IN CAPE TOWN, SOUTH AFRICA

Enhancing living conditions through energy upgrades to low-cost housing

CO-BENEFITS IN DETAIL

Economic	• Increases the value of residents' homes through infrastructure improvements • Results in a 56 % decrease in households spending more than R100/month (USD 14) on electricity, equal to savings of around R50/month (USD 7) • Creates jobs for 85 people, mainly young people (50), women (28) and people with disabilities (3). • Reduces peak electricity demand, helping offset the need for load-shedding or new power generation capacity for the city of Cape Town
Social	• Enhances living conditions by providing significantly improved hot water, space heating and lighting services, thereby improving the welfare of residents • Increases access to energy services due to reduced costs • Improves human health, with household surveys reporting a 76 % reduction in the incidence of respiratory illness as a result of warmer homes in winter
Empowerment	• Increases skills and knowledge of Kuyasa residents through more than 3,000 accredited training days and nearly 2,000 non-accredited training days, empowering people to further transform their own and other communities • Allows local community-based participation and decision-making, with the opportunity to learn about climate change and sustainable energy

PROJECT FACTS

Project title & number	Kuyasa Low Cost Urban Housing Energy Upgrade – 79 Gold Standard – 337
Project type & methodology	Energy efficiency in households – lighting, insulation and solar AMS-I.C. – Thermal energy for the user and AMS-II.C.- Demand-side energy efficiency programmes for specific technologies and AMS-II.E. – Energy efficiency and fuel switching measures for buildings
Location	Khayelitsha, Cape Town, South Africa Lat: 34° 2' 25" S Long: 18° 40' 27" E
History & CERs	Registered: 27 August 2005 Project operational life: 21 years Expected CERs: 6,580 (tCO_2 eq/year) Expected total CERs: 138,180 (tCO_2 eq) CERs issued to date: Request yet to be submitted
Project link	<http://cdm.unfccc.int/Projects/DB/DNV-CUK1121165382.34/view>
Facts as at	November 2010

Solar hot water installation
(courtesy of Nic Bothma)

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United Nations Framework Convention on Climate Change

CDM PROJECT CO-BENEFITS IN NEPAL

Accelerating deployment of clean energy in rural households

Project description	**Two CDM projects are helping to deploy an additional 20,000 biogas digesters in households across Nepal. This is accelerating the implementation of the Biogas Support Programme of the Nepalese Government, which otherwise uses a mix of national finance and donor aid.** The digesters are sold at a subsidised rate to low-income rural households to enhance access to basic services such as heating, cooking and hot water production. The digesters utilise the dung from farmers' livestock and domestic latrines to produce methane gas as the organic waste breaks down. The methane is then used as cooking fuel in biogas stoves built directly in the dwellings. This replaces more traditional cooking fuels such as firewood, agricultural residues, animal manure and kerosene.
Co-benefits	**The project illustrates how the CDM can deliver a range of benefits for low income households in rural communities, by:** • Scaling-up and accelerating deployment of a clean energy programme by enhancing the funding opportunities available to it • Providing micro-financial support for low-income households to allow them to transition to lower-cost, cleaner forms of energy production and use • Reducing the time spent by women collecting firewood or travelling to purchase fuel • Improving indoor air quality in homes as the smoke-free combustion of biogas displaces the use of traditional fuels, generating health benefits for the community, especially for women who do most of the cooking • Creating jobs and building capacity to support the widespread replication of the technology

"Our family decided to install a biogas plant because firewood was not available easily, and it was also more convenient. The main benefit is that there is no smoke in the kitchen now, and it is much healthier for us. It also takes less time to cook and clean utensils. We still collect firewood but earlier we needed 30 kgs/day but now we need only 5 kgs/day." (Owner of a biogas digester in Gorkha)

KEY PROJECT BENEFIT

Accelerating the improvement of health and welfare, creating employment and enhancing incomes in rural communities

The project is supporting nearly 20,000 additional households in Nepal to obtain biogas systems

Women with biogas stove (Courtesy of the World Bank)

CDM PROJECT CO-BENEFITS IN NEPAL

Accelerating deployment of clean energy in rural households

CO-BENEFITS IN DETAIL

Economic	• Supporting the upfront investment. With system costs ranging from USD 251 to USD 393 per household, which is significantly higher than that of conventional kerosene stoves (USD 6 – 8 per unit), the CDM project allows the units to be sold to households for the price of USD 148 – USD 309 (a 20 – 40 % cost reduction) • Saving of around USD 240 per household on annual fuel expenditure • Reducing annual kerosene imports which costs to Nepal of around USD 2 million (the entire Biogas Support Programme) • Creation of job in digester construction and maintenance is estimated to be in the order of 15,000 people years (the entire Biogas Support Programme)
Social	• Improving health by reducing exposure to smoke in properties. In a survey, 89.4 % of sampled households reported a reduction of kitchen smoke with the use of biogas. This has led to health improvements, especially for women • Improving manure management and other sanitation aspects. Biogas digesters are installed in conjunction with domestic latrines
Empowerment	• Freeing-up on average 3 hours of time per day, which can be used by women in other ways such as the education of children, tending crops, undertaking social activities, or allowing poorer households to generate better incomes • Building capacity in the region for replication of the project by training biogas installers and enhancing digester maintenance services

PROJECT FACTS

Project title & number	Biogas Support Programme, Nepal (Activity 1 and 2) – 136 and 139
Project type & methodology	Methane avoidance – domestic manure AMS-I.C. – Thermal energy for the user with or without electricity
Location	55 (activity 1) and 57 (activity 2) out of 75 districts in Nepal
History & CERs	Registered: 27 December 2005 Project operational life: 21 years Expected CERs: 46,990 + 46,893 (tCO_2 eq/year) Expected total CERs: 1,971,543 (tCO_2 eq) CERs issued to date: Awaiting issuance request
Project link	<http://cdm.unfccc.int/Projects/DB/DNV-CUK1132666829.52/view> < http://cdm.unfccc.int/Projects/DB/DNV-CUK1132671435.09/view>
Facts as at	November 2010

Women with biogas stove
(Courtesy of the World Bank)

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CDM PROJECT CO-BENEFITS IN HUBEI PROVINCE, CHINA

Biogas digesters enhance the welfare of low-income rural communities

Project description	**The region of Hubei is a rural, mountainous district in China where the main economic activity is agriculture. Households in the region are being given the opportunity to install biogas digesters that use animal waste to generate gas for use in domestic heating, lighting and cooking.** Over 33,000 households – or around 165,000 people – are benefitting from the installation of domestic digesters, displacing more carbon-intensive traditional domestic fuels such as firewood, coal, coke and crop residues.
Co-benefits	**The project illustrates how the CDM can enhance people's health and quality of life, by:** • Reducing the time spent by women collecting firewood or travelling to purchase fuel • Significantly reducing the amount of household income spent on fuel • Building capacity in biogas systems, allowing for more widespread replication • Improving indoor air quality in homes due to smoke-free combustion of biogas compared to traditional fuels, generating health benefits for the community, especially for women who do most of the cooking • Enhancing sanitation services by improving swine manure handling techniques, as well as providing a connected latrine for households

"One interviewee reported that her asthma had disappeared since switching to biogas. Another said that the extra time she had now was spent on more productive things such as pig rearing, allowing the household to generate more income."
(World Bank Community Benefits Plan supervision team field visit, April 2009)

KEY PROJECT BENEFIT

Improving health and welfare, creating employment and enhancing incomes in rural communities

The elimination of fuel collection chores means that a woman has on average 3 additional hours a day

A biogas fed kitchen in the Hubei region (Courtesy of the World Bank)

CDM PROJECT CO-BENEFITS IN HUBEI PROVINCE, CHINA

Biogas digesters enhance the welfare of low-income rural communities

CO-BENEFITS IN DETAIL

Economic	• Saving around RMB3000 per household on annual fuel expenditure (for the lowest income households, fuel costs can be up to 75 % of annual expenditure) • Building capacity in the region for replication of the project, by training biogas installers and enhancing digester maintenance services
Social	• Improving health by reducing exposure to smoke in properties, delivering reported reductions in asthma, eye infections and other respiratory problems, particularly among women • Improving manure management and other sanitation aspects, in that the biogas digester is installed along with a domestic latrine
Empowerment	• Empowering women who now have on average 3 hours per day more to spend on more economically productive activities, social activities, and other matters (e.g. child-rearing, education) • Allowing low-income homes to further their children's education

PROJECT FACTS

Project title & number	Hubei Eco-Farming Biogas Project – 2221
Project type & methodology	Methane avoidance – domestic manure AMS-III.R. – Methane recovery in agricultural activities at household/small farm level and AMS-I.C. – Thermal energy for the user with or without electricity
Location	Hubei Province, China Lat: 30° 16' 13" N Long: 109° 28' 30" E
History & CERs	Registered: 19 February 2009 Project operational life: 10 years Expected CERs: 58,444 (tCO_2 eq/year) Expected total CERs: 584,440 (tCO_2 eq) CERs issued to date: Request yet to be submitted
Project link	<http://cdm.unfccc.int/Projects/DB/TUEV-SUED1218669721.67/view>
Facts as at	November 2010

Fitting a biogas cooker
(Courtesy of the World Bank)

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CDM PROJECT CO-BENEFITS IN BALI, INDONESIA

Community-led approaches to waste management

Project description	**The Gianyar Waste Recovery Project involves the expansion of an existing organic waste separation and composting pilot facility in Gianyar, Bali, Indonesia.** Presently, around 85 % of waste entering landfill in Bali is organic, which could be composted instead of being left to decay in landfills and resulting in methane emissions. Furthermore, compost could be used as an organic fertiliser, reducing the burden of chemical fertilisers used in Bali.
Co-benefits	**The project illustrates how the CDM enables local community action to manage environmental issues, by:** • Empowering communities to decide on the most appropriate approach to managing waste in their neighbourhood • Being community driven, in this case being scaled-up from a pilot project supported by Rotary Club Bali Ubud to a full-scale facility to replace a landfill • Creating employment, especially for women, in enhanced waste management services, with up to 125 jobs which can be directly linked to this project • Providing training and education opportunities for local communities through the construction of an environmental education centre on a restored landfill site

"The Gianyar project has been held up as an example of good practice for waste management in Indonesia, having won an award from UNEP in the Asia Region, and serving as a benchmark for the Japanese Government for waste management in the region."
(statements made by project participants)

KEY PROJECT BENEFIT

Empowering communities to take action on waste management

The project has involved the construction of an education centre and led to the creation of up to 125 full-time jobs for the community

Landfill site before and after restoration. The lower photograph shows the new education facility constructed to cater for visitors wishing to learn about environmental issues.
(courtesy of David Küper, Rotary Club Ubud)

CDM PROJECT CO-BENEFITS IN BALI, INDONESIA

Community-led approaches to waste management

CO-BENEFITS IN DETAIL

Economic	• Providing between 85 and 125 jobs for local people, in particular for women • Reducing the economic burden and dependency on imported chemical fertilisers through their substitution with locally produced organic fertilisers • Providing examples of low-cost good practice waste management options for Bali and other parts of southeast Asia, providing alternatives to non-local and costly sources of soil fertilisation • Generating extra income for the community from reusable material in waste, which is sold to recyclers
Social	• Delivering enhanced a waste management practice that reduces nuisance posed by the old landfill such as odour, dust, noise, pests, toxic emissions and water pollution problems • Providing training and education for local communities in an environmental education centre on a restored landfill site, with visits by school children and government officials taking place on a regular basis, giving them the opportunity to learn about a broad range of environmental issues
Empowerment	• Promoting responsible local community-based participation during project design and decision-making, with over 46 project-related meetings being held between the developer and the local community over a 3-year period (2004 to 2007) resulting in a high level of acceptance and support from the community • Giving opportunities for children and others to learn about climate change and sustainable energy

PROJECT FACTS

Project title & number	Gianyar Waste Recovery Project – 1885
Project type & methodology	Methane avoidance – composting AMS-III.F. – Avoidance of methane production from decay of biomass through composting Treatment
Location	Gianyar, Bali, Indonesia Lat: 8º 33' 58" S Long: E 115º 20' 59" E
History & CERs	Registered: 4 November 2008 Project operational life: 10 years Expected CERs: 7,671 (tCO_2 eq/year) Expected total CERs: 76,710 (tCO_2 eq) CERs issued to date: Request yet to be submitted
Project link	<http://cdm.unfccc.int/Projects/DB/SGS-UKL121447297.27/view>
Facts as at	November 2010

Compost aeration system
(courtesy of David Küper, Rotary Club Ubud)

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United Nations Framework Convention on Climate Change

CDM PROJECT CO-BENEFITS IN ANDHRA PRADESH, INDIA

Energy efficient lighting for low-income households

Project description

The Visakhapatnam OSRAM CFL project involves the distribution of approximately 700,000 long-life compact fluorescent lamps (CFL) to households in the district of Visakhapatnam, Andhra Pradesh, India.

In the district of Visakhapatnam CFLs are being distributed at low or no cost to grid-connected customers of the Eastern Power Distribution Company of Andhra Pradesh Ltd. Approximately 670,000 households in the area are now benefitting from this project. Each customer may exchange one incandescent bulb (either 60 W or 100 W) for one CFL (15 W or 20 W respectively) placing it where it will be most used in their household, potentially reducing electricity demand for lighting by up to 80 %.

Co-benefits

This project illustrates how the CDM can provide energy efficiency lighting for low-income households and deliver benefits to the community by:

- Delivering cheaper to run domestic lighting for low-income households, allowing residents to light up their homes for longer
- Involving the community in the implementation of the project, in particular the empowerment of women self-help groups
- Increasing energy services in a country which faces considerable power outages
- Providing for employment in the local factory manufacturing the CFLs and a variety of other jobs associated with project implementation

KEY PROJECT BENEFIT

Reduction of poverty, access to energy efficient lighting and empowerment of the community

Over 3,000 women have been engaged through self-help groups to provide energy efficient lighting to low-income households

Women self help groups replacing GLS (incandescent) bulbs (Courtesy of Boris Bronger, OSRAM)

CDM PROJECT CO-BENEFITS IN ANDHRA PRADESH, INDIA

Energy efficient lighting for low-income households

CO-BENEFITS IN DETAIL

Economic	• Contributing to poverty alleviation by reducing household expenditure on electricity bills (200 rupees per year saving for the average low income household) • Promoting local employment opportunities at the local OSRAM factory and related service providers, such as lamp recycling, data entry, monitoring and meter installation. A total of 10 full-time and 50 part-time jobs were created with durations from 4 to 12 months • Improving energy services by reducing peak demand for electricity, improving grid reliability and reducing the risk of black-outs and rolling brown-outs that persist in this area • Increasing access to affordable and longer lasting household lighting appliances
Social	• Enabling longer evening hours in households allowing for increased social, domestic and educational activities • Improving the living environment of all, especially of women and children
Empowerment	• Engaging women self-help groups to support project implementation, with over 3,000 women engaged through self-help groups to distribute CFLs and collect old bulbs • Utilization of full community-based participatory approaches • Providing the opportunity to learn about climate change and to contribute to decisions made at the community level

PROJECT FACTS

Project title & number	Visakhapatnam OSRAM CFL Distribution Project – 1754
Project type & methodology	Energy efficiency in households – Lighting AMS-II.C – Demand side energy-efficient equipment/appliance at households/community level
Location	Visakhapatnam, Andhra Pradesh, India Lat: 17° 40' 31" N Long: 83° 13' 57" E
History & CERs	Registered: 12 February 2009 Project operational life: 10 years Expected CERs: 27,427 (tCO_2 eq/year) Expected total CERs: 274,270 (tCO_2 eq) CERs issued to date: Request yet to be submitted
Project link	<http://cdm.unfccc.int/Projects/DB/TUEV-SUED1206629154.85/view >
Facts as at	November 2010

(Courtesy of Boris Bronger, OSRAM)

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CDM PROJECT CO-BENEFITS IN BOGOTÁ, COLOMBIA

Rapid and reliable bus transport for urban communities

Project description	**The TransMilenio Bus Rapid Transit (BRT) project (Phase II to IV) involves the design of a comprehensive and sustainable mass urban transport system in the city of Bogotá, Colombia** The project has overhauled the disaggregated city bus system of Bogotá, replacing over 9,000 old inefficient buses with over 1,200 large capacity centrally fleet managed modern buses. A range of upgrades were incorporated including new infrastructure of over 130 km of dedicated bus lanes, a range of feeder networks integrating into the main system, and a new integrated fare card system to allow free transfers. Implementation problems have led to slower than expected uptake, however, passenger journey numbers increased from 94 million per year in 2006 to 134 million in 2009, with the new extensions to the system currently under development being expected to increase total passenger journeys to more than 400 million per year after 2012. Despite the increases in passengers, the project will reduce emissions by almost 250,000 tonnes per year.
Co-benefits	**The project illustrates how the CDM can help improve the quality of life for urban dwellers, by:** • Increasing access to affordable, reliable and timely public transport, with shorter wait times and station attendants who provide assistance to passengers • Enhancing the quality of transport services with improvements in cleanliness, safety, travelling time and efficiency • Improving health and welfare of the urban population. The TransMilenio system has significantly reduced overall traffic congestion and accidents in the city

"The TransMilenio project is widely regarded as a global example of how to introduce sustainable mass rapid transit systems in a rapid and relatively low cost way, delivering welfare benefits for large urban communities." (statement by project participant)

KEY PROJECT BENEFIT

Improving the quality of life for urban communities

Over 460 million comfortable and secure passenger journeys have been made on the new BRT system since its start in 2006, reducing traffic congestion and improving cycle routes for other commuters

Bus Rapid Transit station in Bogotá during rush hour
(Courtesy of GTZ)

CDM PROJECT CO-BENEFITS IN BOGOTÁ, COLOMBIA

Rapid and reliable bus transport for urban communities

CO-BENEFITS IN DETAIL

Economic	• The old, inefficient and poorly organised bus system placed a significant cost burden on public funds and resulted in high ticket prices for commuters. The BRT system has significantly rationalised the cost of bus service provision in the city • Congestion on major routes in the city has been significantly reduced with less traffic and costs to other commuters • Average speed prior to implementation was less than 10 km/hour, and average travel time to work was 1 hour 10 minutes. The BRT system has reduced journey times by on average 32%, and future journey speeds are forecast to reach 25 km/hr • Encouragement of entrepreneurial activities such as sub-contractors to TransMilenio and, by extension, creation of additional employment opportunities for transit workers
Social	• Of the 460 million passenger journeys made since 2006, 37 million would have used cars or taxis, 12.5 million would have been made by foot; 410 million would have used the old buses; the balance would not have travelled at all on account of access barriers under the old transport system • Bus stations have elevated platforms, allowing level access for people with disabilities Buses include blue seats dedicated to the elderly, women with children and the disabled • Accident rates have dropped by up to 90 % in the TransMilenio bus corridors • Integrated bicycle routes have been designed alongside the bus corridors, and stations include large bicycle parking facilities • Air quality improvements through a reduction in pollution caused by congestion and old inefficient buses
Empowerment	• Empowering people to make more informed choices about sustainable transport • Enabling access to community services (social activities, schooling etc.) formerly not possible due to poor public transport

PROJECT FACTS

Project title & number	BRT Bogotá, Colombia: TransMilenio Phase II to IV – 672
Project type & methodology	Transport AM0031 – Methodology for Bus Rapid Transit Projects 
Location	Bogotá, Colombia Lat: 4° 35' 53" S Long: 74° 4' 33" W
History & CERs	Registered: 7 December 2006 Project operational life: 21 years Expected CERs: 246,563 (tCO_2 eq/year) Expected total CERs: 5,177,823 (tCO_2 eq) CERs issued to date: 197,718
Project link	<http://cdm.unfccc.int/Projects/DB/DNV-CUK1159192623.07/view>
Facts as at	November 2010

The maintenance and control depot (Courtesy of Deysi Rodríguez)

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United Nations Framework Convention on Climate Change

CDM PROJECT CO-BENEFITS IN THE CHENDEBJI, BHUTAN

Micro hydro power contributing to sustainable rural electrification

Project description	**The e7 Bhutan Micro Hydro Power Project supplies electricity to the village of Chendebji, previously without reliable electricity, from a dedicated 70 kW run-of-river micro hydro turbine on the edge of the village.** Electrification of villages in this region from the Bhutan grid has proven extremely challenging due to the local geography, resulting in many communities suffering a lack of reliable electricity. Electricity from the turbine is now used in domestic and commercial properties, and replaces a range of fuels including wood (cooking, heating, hot water), kerosene (lighting) and diesel (electricity generation).
Co-benefits	**The project illustrates how the CDM can deliver a range of benefits for small isolated mountain communities by:** • Providing access to low-cost electricity and free hot water for the first time to many domestic and commercial customers – to date, 50 households, 5 municipal buildings (including a dispensary) and a temple are connected • Reducing the time and effort involved with collecting firewood and cooking, enabling more productive activities such as weaving and tending livestock • Improving indoor air quality by providing electric rice and curry cookers in place of traditional indoor wood-fired stoves • Enhancing educational opportunities by allowing longer study times at home and providing access to electronic learning devices

"School going children used to study for just 30 minutes since lighting with kerosene for prolonged periods of time used to cost a lot. The free hot water service is appreciated especially during cold winter months." (comments from project participants)

KEY PROJECT BENEFIT

Providing electricity to, and improving the livelihoods of, isolated mountain communities

A wide range of benefits, including improved sanitation services, domestic cooking, heating, and lighting

The turbine house, transmission lines, turbine and generator at Chendebji (courtesy of Choten Duba)

CDM PROJECT CO-BENEFITS IN THE CHENDEBJI, BHUTAN

Micro hydro power contributing to sustainable rural electrification

CO-BENEFITS IN DETAIL

Economic	• Provides low-cost, low-emissions electricity to households for the first time, constituting only 2 % of the average annual income (Nu. 1,92/year ≈ 0.040 USD/year) • Frees up time spent collecting firewood and cooking using slower methods, with all households now having an electric rice cooker and curry cooker, and with the time saved now being used for more productive activities, including social, domestic and educational activities, as well as traditional weaving which generates additional income • Facilitates commercial developments, including a new restaurant, guesthouse and a village store
Social	• Generates approximately 30 kW of power for hot water at the turbine house for use in a free-of-charge communal bathing and washing facility, with over 20 households regularly using this service, particularly in colder months • Replaces wood-fired heating, cooking and hot water generation, with villagers previously needing to collect two bundles (equivalent to two head loads) per household every day in the winter • Enables the use of electric cooking appliances, improving indoor air quality and eliminating smoke inhalation during cooking, with attendant health benefits • Enables the use of vaccine refrigerators, tele-medicine capabilities, and other electric medical devices at the village dispensary • Introduces new electricity-powered learning tools (such as television and computers) and lighting, enabling further education activities during the evening hours
Empowerment	• Increases time available for educational activities by enabling the use of electric rather than high-cost kerosene lamps, increasing time for homework from 30 minutes to 1.5 hours • Involves the community in project planning and implementation

PROJECT FACTS

Project title & number	e7 Bhutan Micro Hydro Power CDM Project – 62
Project type & methodology	Hydro – Run of river AMS-I.A – Electricity generation by the user
Location	Chendebji, Trongsa District, Bhutan Lat: 27° 27' 12" N Long: 90° 19' 30" E
History & CERs	Registered: 23 May 2005 Project operational life: 21 years Expected CERs: 524 (tCO_2 eq/year) Expected total CERs: 11,004 (tCO_2 eq) CERs issued to date: 474
Project link	<http://cdm.unfccc.int/Projects/DB/JACO1113389887.76/view>
Facts as at	November 2010

Chendebji Turbine House and overflow channel (courtesy of Choten Duba)

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CDM PROJECT CO-BENEFITS IN GUINEA SAVANNAH REGION, NIGERIA

Efficient use of firewood in rural communities

Project description	**The Efficient Fuel Wood Stoves for Nigeria Project involves the distribution of around 12,500 efficient wood-burning stoves ('SAVE80') and heat-retaining polypropylene boxes to replace inefficient traditional fireplaces in the Guinea Savannah Zone, Nigeria.** The SAVE80 wood stove system is up to 80 % more efficient in its use of wood compared to traditional fireplaces, leading to a reduction in greenhouse gas emissions and levels of deforestation associated with wood collection. It is being provided to households in partnership with a local organisation for a subsidised price including on a credit basis.
Co-benefits	**The project illustrates how the CDM can enhance people's health and quality of life, by:** • Reducing the time spent collecting firewood, a task usually carried out by women and children collection, thereby freeing up their time for social, domestic and educational activities • Promoting inter-community and inter-faith harmony, both by reducing conflict for valuable forest resources and also by featuring technology demonstrations for mixed religious groups in both Christian and Muslim religious facilities • Contributing to poverty alleviation by significantly reducing household expenditure on wood purchases • Delivering cheaper to run domestic cooking for low-income households • Creating local employment opportunities in stove assembly and distribution

"A remarkable aspect of this project has been its capacity to bring together different communities by holding joint presentations on stove operation for all faiths in both churches and Muslim religious halls."

(Yahaya Ahmed, chairman of DARE, British Council Forum on InterFaith and Climate Change)

KEY PROJECT BENEFIT

Providing access to energy efficient cooking while easing resource conflict

Households are saving on average 22 % of their annual income through reduced firewood costs

Children with the SAVE80 household stove
(Courtesy of Florian Zerzawy, Atmosfair)

CDM PROJECT CO-BENEFITS IN GUINEA SAVANNAH REGION, NIGERIA

Efficient use of firewood in rural communities

CO-BENEFITS IN DETAIL

Economic	• Providing average savings per household of 150 per year in wood purchase costs, equal to around 22 % of average per capita income in the region (dependent on how firewood is acquired) • Contributing to local employment opportunities in stove assembly and in distribution by employing 14 full time employees, and 52 mostly young people who have been trained in stove assembly
Social	• Improving livelihoods and health, by freeing up significant amounts of time otherwise spent acquiring firewood, especially for women and children who are then able to undertake other more productive activities • Improving indoor air quality from reduced smoke production from the cooking stoves, leading to health benefits especially for women and children who spend most of the time in their homes
Empowerment	• Facilitating skills transfer and engagement of young adults to assist in stove assembly and project implementation • Using inter-faith participatory approaches and easing inter-community tensions, especially over scarce wood resources • Provding the opportunity to learn about climate change and to contribute to decision-making at the community level

PROJECT FACTS

Project title & number	Efficient Fuel Wood stoves for Nigeria – 2711 Gold Standard – 411
Project type & methodology	Energy Efficiency in households – Stoves AMS-II.G – Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass
Location	Guinea Savannah Zone, Nigeria Lat: 10° 28' 37" N Long: 7° 25' 10" E
History & CERs	Registered: 12 October 2009 Project operational life: 10 years Expected CERs: 31,309 (tCO_2 eq/year) Expected total CERs: 313,090 (tCO_2 eq) CERs issued to date: Request yet to be submitted
URL	<http://cdm.unfccc.int/Projects/DB/RWTUV1245685309.5/view >
Facts as at	November 2010

DARE stove distribution centre
(Courtesy of Florian Zerzawy, Atmosfair)

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United Nations Framework Convention on Climate Change

CDM PROJECT CO-BENEFITS IN KOLAR DISTRICT, INDIA

Providing rural households with low-cost energy services

Project description

The Bagepalli CDM Biogas Project involves the construction of approximately 5,500 two-cubic-metre capacity biogas digesters in households in the area ("Taluk") of Bagepalli and other nearby Taluks in the Kolar District, Karnataka, India.

The digesters, which utilise the dung of household cows, produce methane gas from the anaerobic breakdown of organic waste. The resulting methane is used as a cooking fuel in biogas stoves built in the dwellings. This replaces inefficient wood-burning mud stoves that were traditionally used for cooking and to produce hot water. It is a particularly critical technology for the area because of widespread deforestation due to firewood collection, and increasing shortages of wood for fuel in the area. An average dwelling has five occupants, meaning that nearly 30,000 people will benefit from the scheme.

Co-benefits

The project illustrates how the CDM can deliver a range of benefits for low income households in rural communities, by:

- Providing micro-finance support through exclusively CER forward funding for low-income households to allow them to transition to lower-cost, cleaner forms of energy production and use
- Reducing the time spent by women collecting firewood or travelling to purchase fuel
- Empowering women in households by passing further CDM revenues directly to them in the second and third crediting periods, following recovery of the project costs
- Improving indoor air quality in homes as the smoke-free combustion of biogas displaces the use of traditional fuels, generating health benefits for the community, especially for women who do most of the cooking
- Creating jobs and building capacity to support widespread replication of the technology

"The most critical factor for us was being able to afford the medicine to treat the most common problems such as burning eyes, breathing problems etc. Now we can afford a doctor because we save more and earn more, we don't need him because there are no major health issues anymore." (Parvathi Amma, biogas user)

KEY PROJECT BENEFIT

Free clean energy for rural communities, and empowering women in families

Once the investment costs have been paid back, remaining CDM revenues will be given directly to participating women

Coolie Sangha family: clean indoors with time to spend with the family (Courtesy of Sudha Padmanabha, Fair Climate Network)

CDM PROJECT CO-BENEFITS IN KOLAR DISTRICT, INDIA

Providing rural households with low-cost energy services

CO-BENEFITS IN DETAIL

Economic	• Upfront support for investment, allowing free installation for households. The pre-selling of CERs raised EUR 1.1 million, which has allowed the construction of 5,485 domestic biogas digesters for 339 villages in the Chickballapur Taluk • Once the initial installation costs are paid back, which is anticipated in the first 7 years, all further CDM revenues will be directed to the women using the biogas digesters over the entire period of the project • Freeing-up women's time for more productive activities. Presently household members – usually women and children – in Bagepalli have to walk 3 – 5 km to find wood, if it is available at all. Cooking time is also reduced using the biogas system. This time is now available for more productive uses • Creating jobs and capacity-building through the training of 128 local masons in biogas digester design and construction, allowing for replication of the project in the region. The project has generated approximately 16,500 – 22,000 person-days of masonry work and 44,000 person-days of daily wage labour to excavate the pits and assist the masons
Social	• Improving health, especially for women and children, by reducing exposure to smoke and soot in properties. Prior to implementation, many suffered eyes, nasal and throat irritation and lung problems due to smoke from cooking with firewood • Improving manure management and other sanitation aspects.
Empowerment	• Empowering women who now have more time to spend on economically productive activities, social activities, and domestic matters (e.g. child rearing and educational activities) • Creating direct incomes for women users of the biogas digesters, empowering them to have more involvement in household financial matters • Promoting social activities because of the speed of preparing drinks and snacks, enhancing the dignity of women and their position in the household.

PROJECT FACTS

Project title & number	Bagepalli CDM Biogas Progamme – 121 Gold Standard – 410
Project type & methodology	Methane avoidance – domestic manure AMS-I.C. – Thermal energy for the user with or without electricity
Location	Bagepalli, Kolar District, Karnataka, India Lat: 13° 45' 56" N Long: 77° 47' 30" E
History & CERs	Registered: 10 December 2005 Project operational life: 21 years Expected CERs: 19,553 (tCO_2 eq/year) Expected total CERs: 41,0613 (tCO_2 eq) CERs issued to date: 11,761
Project link	<http://cdm.unfccc.int/Projects/DB/DNV-CUK1131002343.1/view>
Facts as at	November 2010

Construction of Deenabhandu (2 m³) biogas unit
(Courtesy of Sudha Padmanabha, Fair Climate Network)

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United Nations Framework Convention on Climate Change

CDM PROJECT CO-BENEFITS IN THE SAYAN DISTRICT, LIMA, PERU

Micro hydro power delivering community infrastructure and services

Project description	**The Santa Rosa Project is a bundled small run-of-river hydroelectric power scheme comprising 4.1 MW of installed capacity at three separate units (1.1 MW, 1.5 MW, 1.5 MW) located in the Sayan District, Lima, Peru.** The turbines are placed in slipstreams at three locations on the existing channel feeding water from the Huara River to the Santa Rosa irrigation zone. Electricity is supplied to the local electricity grid, helping to improve the quality of electricity services in the region.
Co-benefits	**The project illustrates how the CDM can deliver a range of benefits for small rural communities, by:** • Creating a fund from CDM revenues which is dedicated to investments in local infrastructure and services, including the construction of a computer laboratory to grant access to computers for the first time for many local families • Improving computer literacy for students, as well as adults through evening and weekend classes • Providing free electricity to a local orphanage for around 50 orphans • In future phases, constructing two new classrooms, a community centre and a local park, and reforesting the main street in the town of La Merced

"The project proponents established a community benefits plan requiring a portion of CDM revenues to be set aside for investment into local community-based projects." (Statement by the project participant)

KEY PROJECT BENEFIT

Investing CDM revenues back into local community projects

Local infrastructure improvements include a computer laboratory at a local school, plus computer literacy training for children and adults

Students in their computer laboratory at the local school, La Merced (Courtesy of the World Bank)

CDM PROJECT CO-BENEFITS IN THE SAYAN DISTRICT, LIMA, PERU

Micro hydro power delivering community infrastructure and services

CO-BENEFITS IN DETAIL

Economic	• Invests around US$ 35,000 of CDM revenues into local community projects and social services, which has been used to construct a computer laboratory with 14 computers at the school in the town of La Merced • Provides electricity to a local orphanage (Association Achalay) of around 100,000 kWh per year at no cost • Enables planned construction of a community centre and two new classrooms for the school in La Merced
Social	• Improves environment and recreational facilities in the local town, including a new park and reforestation of the main street • Grants computer access to people of La Merced, including training during evenings and weekends • Buys Christmas presents for local schoolchildren • Supports an orphanage which accommodates around 50 disadvantaged youth from the city of Lima
Empowerment	• Enables exposure and access to computing, a first for the area • Enhances educational and vocational training opportunities for La Merced • Empowers adults with new skills in the labour market • Gives opportunity to learn about climate change and to contribute to decisions made at the community level

PROJECT FACTS

Project title & number	Santa Rosa Micro Hydro Project – 88
Project type & methodology	Hydro – Run of river AMS-I.D - Grid Connected Renwable Energy Generation
Location	Sayan District, Lima, Peru Lat: 11° 3' 43" S Long: 75° 20' 6" W
History & CERs	Registered: 23 October 2003 Project operational life: 21 years Expected CERs: 13,845 (tCO_2 eq/year) Expected total CERs: 290,745 (tCO_2 eq) CERs issued to date: 22,801
Project link	<http://cdm.unfccc.int/Projects/DB/SGS-UKL1125047848.33/view>
Facts as at	November 2010

The micro hydro system the Sayan District (courtesy of the World Bank)

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