



The Gold Standard

Premium quality carbon credits

“This project is an exceptional example of how carbon finance can contribute to reducing emissions as well as benefiting the local community.”

Elizabeth Harris, ClimateCare

A Case Study: Zengamina Mini Hydro in Mwinilunga District, Zambia

The Zengamina Mini Hydro Scheme is located in Mwinilunga district – Kalene Mission, North Western Province, Zambia. This is a remote area of Zambia, situated 1’000 km from the capital city Lusaka.

Historically, Zambia has focused on large hydroelectricity developments dominated by the government. Prior to 2001 the law did not permit private companies to participate in the industry and access to electricity remains a major challenge. The main source of electricity has been diesel generators, which are expensive, create pollution and are difficult to transport, leading to problems within the local community.

Kalene Mission Hospital in North West Zambia has been providing health care to the local population for 100 years. In this area there is no energy grid supply – the grid ends 380 km away. The hospital and other users, such as the Sakeji School and Hillwood farm, consequently rely on diesel generators, bottled gas or other fuel, which is highly unreliable and costly as it has to be transported long distances. The absence of reliable energy supply has also inhibited economic development – the area is excellent for growing pineapples, but the existent canning factory was highly economically inefficient.

Sustainable and Measurable Results:

- Created approximately 450 jobs at the peak, a large proportion of which are women. For many, this job represented their first cash income.
- Reduced emissions by up to 3’000 tonnes CO₂e per year
- Contributed 1’532’000 Zambia Kwacha into the local economy.
- Improved local respiratory health.
- Provides access to affordable electricity for local residents.



Photo Dan Rea

Hydro Construction.

To meet some of these challenges, Zengamina Power Ltd, in association with North West Zambia Development Trust, constructed a 700 KW mini hydro scheme in this remote part of Zambia in the North Western Province. Climate Care has been able to provide carbon financing to this important project, which has been designed as a Gold Standard VER project aimed at replacing diesel generators. The success of the project and The Gold Standard guidelines is evidenced by the improvements to the local community and the lives of its residents.



Quick facts

- Project Stream: Gold Standard VERs
- Project type: Renewable Energy, Mini Hydro
- Methodology: AMS.I.D
- Date of registration: 2008
- Expected First Vintage: 2009
- Estimated average annual volume:
Up to 3,000 VERs



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The Project

The type of technology being implemented in this hydro scheme is new in Zambia and hence requires significant technology and skills transfer. The technology transfer, generators and turbines from Germany and the UK, and the carbon finance were critical for this projects viability and conception. The project is expected to generate 500 tonnes CO₂e reductions per annum rising to over 3'000 tonnes per annum as the scheme is connected to a wider range of local users.

The scheme is a run of a 'river' concept and as such, will not store water upstream of the weir. The purpose of the civil infrastructure was to deliver water from the Zambezi River upstream of the rapids via a canal to a large diameter penstock conduit. An Environmental Impact Assessment has been carried out to ensure there will be no negative impact on the surrounding area.

"Before, we did not look to the future. Now, I hope the life of the people will change."
Denson Kajinga, resident of Sahandu village

Results

The mini hydro project was designed to meet The Gold Standard's rigorous criteria. By doing so, it does not just provide clean energy and an alternative to fossil fuels; it also impacts the local community in sustainable, positive ways.



Photos: Gareth Bentley

Students attending Sakeji School



Kalene Hospital

Photo: Gareth Bentley



Turbine Hall

"Gold Standard's unique emphasis on projects that promote sustainable development and poverty reduction is helping to address the gulf between rich and poor that is central to the climate debate."

Erik Wurster, Carbon Finance Officer, E+.Co.

One of the most visible impacts the project has had on the area can be seen at Kalene Hospital.

This hospital, built in 1906, serves a very large area. The energy source for the hospital was switched to hydro from diesel and that change "revolutionised what we do here" says Richard, the Manager at Kalene. They can now reliably utilize anesthetic equipment, lighting, suction machines, monitors and other equipment.

The project will hopefully act as a catalyst for further investment. Denson Kajinga, a Sahandu Village resident, expects a great deal to change in the area. He believes that the "power will attract investors to set up industries." At the moment much of the local pineapple crop goes to waste as it cannot be transported to market – they desperately need a canning factory to make the most of their crops.

Although Ezron Muke of Nkemba Village, has similar hopes that the hydro electricity will attract industries such as welding shops and a cannery, he is excited to see the impact the project has had on the local school. As accounts clerk at Kalene High School he not only sees students able to study in the evening, but have access to laboratories and even computer classes.

The mini-hydro project provides electricity in the local schools, giving children access to computers, in the local hospital where operations can now be undertaken at all times and in homes where people will have access to electric light on demand for the first time in this remote part of Zambia.



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This project not only delivers emission reductions but also tangible contributions to sustainable development. Although relatively small in size, the project supports the local economy by creating 500 fulltime jobs ... We will sell these CERs for a premium price to interested buyers that are looking for the best available quality.”

Dr. Christoph Sutter, Managing Director of South Pole Ltd.

A Case Study: Malavalli Power Plant, Mysore, India

Plant Pvt Ltd., a leader in distributed power generation, and South Pole Ltd., a carbon asset management company, worked in cooperation with the Swiss-based MyClimate Foundation to develop and execute the Malavalli Power Plant Project in Mysore, India. These companies combined their expertise to build a project that contributes to sustainable development in India, lowers carbon emissions and promotes economic and social well-being.

The Malavalli power plant was developed to maximize benefits for a wide range of stakeholders, and is an outstanding example of how environmental integrity and economic growth can be combined to benefit a developing community.



Malavalli Power Plant

Sustainable Results:

- Promotes organic farming practices
- Created 650 local jobs
- Reduces emissions by 21'000 tonnes CO₂e per year
- Contributed Rs. 45 Million to the local economy
- Introduced healthier disposal practices for biomass
- Provides reliable energy for 18 hours per day and with improved voltage
- Increased availability of electricity promotes new industry, such as a saw mill

Control Room



The Project

The Malavalli Power Plant consists of a 4.5 MW (gross) capacity grid connected biomass based power plant with high-pressure steam turbine configuration. Over a 7-year period the plant generates about 193 GWh by using low-density crop residues (70%) and other biomass fuels found in the local area. Agricultural residues used include sugar cane trash, coconut fronds, corn cobs, and toppings of plantation wood. The power generated in the plant is exported to the state grid, substituting electricity generated by conventional fossil fuels that, in the Indian context, typically include high (35-45%) ash content coal or high (4-5%) sulphur content fuel oil.

The plant uses a steam turbo generator with a boiler capable of firing multiple fuels, which raises the combustion efficiency in comparison with the Fluidized Bed Combustion (FBC) previously in place.



Community managed energy plantation.



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A Case Study: Malavalli Power Plant,
Mysore, India

Quick facts

- Project Stream: Gold Standard CERs
- Project type: Renewable Energy, Biomass Power
- Methodology: AMS.I.D
- Date of registration: 2006?
- First Vintage: 2004?
- Estimated average annual volume: 20'000 CERs



“For any purpose it (biomass) was not used. Now it is very useful for us, we are getting money and we are getting power, quality power.”
N. Nann Jeyegowda

Results

The combustion of the CO₂-neutral biomass at Malavalli Power Plant reduces emissions by about 21'000 tonnes of CO₂/year. The generation of eco-friendly power helps to meet the ever-increasing demand for electricity in a sustainable manner and contributes to the development of the local economy in Mysore.

The project has introduced a practical use for natural by-product resources by creating an economic value for agricultural waste (that was previously burnt through uncontrolled combustion). Using this waste for power not only creates a new source of income but also avoids the particulate emission, ground water contamination and methane emissions that resulted from combustion.

Rural entrepreneurial development has flourished since the inception of the project. About 450 new jobs have been created in the crop residues supply chain and about 200 jobs at the Biomass Power Plant and Organic Fertilizer O&M have been created for local residents. The project's contributes approximately Rs. 45 million to the rural economy through the biomass supply chain.

To help support residents, project promoters have supported the establishment of a platform called Grameena Udyog Samithi for local farmers and the creation of an NGO that manages power distribution, billing and collection of revenues from the project.

Additional sustainability benefits include the implementation of a 100% ash utilization scheme. This scheme involves the production of organic fertilizer that is subsequently redistributed to local farmers, thereby promoting organic farming.



Farmer collecting biomass materials.



Community Managed energy plantation.





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“We do not develop these projects just to make a profit.

We’re genuinely committed to finding sustainable solutions that local communities will profit from for years to come.”

Jan-Willem Bode, CEO of OneCarbon

Case Study: Anemon Wind Farm and Mare Wind Farm, Turkey

OneCarbon registered two Gold Standard Voluntary Emission Reduction (VER) projects: the 30 MW Anemon wind farm and the 40 MW Mare wind farm, located in the Turkish provinces of Çanakkale and Izmir.

Before the construction of the wind farms, all energy in Çanakkale and Izmir Provinces was supplied by the national grid. Not only was this costly, it was also a significant source of pollution. As the region develops, demand for energy in any form continues to grow, creating even greater dependence on fossil fuel-based emissions.

During each phase of the projects, developers considered the social and environmental impact of the farms. The project sites were strategically placed; both farms have been built in wastelands with no agricultural capabilities or livestock, so the local agriculture was not a factor. The project was then built with local labor and local machinery when possible.



Mare Wind Farm

The clean, renewable energy, provided by these projects improve the Turkish energy mix, which has been largely based on fossil fuels. The two wind farms together cut Turkey’s emissions by 164’000 tonnes CO₂e per year and each have contributed to sustainable economic development in the local regions.

Sustainable Contributions:

- Expected to reduce Turkey’s emissions by 163’000 tonnes CO₂e per year in average
- Infrastructural improvements including a health clinic, new roads, new schools and school computers
- Created local jobs

Mare Quick Facts

- Project Stream: Gold Standard VERs
- Project type: Renewable Energy, On-shore wind farm
- Methodology: ACM0002
- Date of registration: 2007
- First Vintage: 2007
- Estimated average annual volume: 94’000 VERs

Anenom Intipe Quick Facts

- Project Stream: Gold Standard VERs
- Project type: Renewable Energy, On-shore wind farm
- Methodology: ACM0002
- Date of registration: 2007
- First Vintage: 2007
- Estimated average annual volume: 79’000 VERs



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Case Study: Anemon Wind Farm and Mare Wind Farm, Turkey

“The Gold Standard is THE standard that consumers should look for when offsetting, safe in the knowledge that it guarantees environmental and local community benefits.”

*Georgina Stevens,
Business Sustainability Manager,
Virgin Atlantic*



The Mare wind farm in Izmir

Development on Mare, an onshore wind farm in Izmir, started in June 2007 and was registered as a Gold Standard project in November 2007.

Mare wind farm has an installed capacity of 40 MW. It consists of 49 Enercon wind turbine units of the types E44 and E48. It generates 129 GWh per year, which will be supplied directly to the grid.



The Anemon/Intipe wind energy project in Cannakkale

Intipe, an onshore wind farm in Turkey, became operational and registered as a Gold Standard VER project in November 2007.

The wind farm consists of 38 Enercon wind turbines with a total installed capacity of 30.4 MW. The E48 type turbines each have a capacity of 800 kW and it is expected that 108 GWh will be generated each year. This will be supplied directly to the grid.

Results

The Mare and Anemon projects diversify electricity generation in Turkey contribute to sustainable economic development and enhance the lives of local residents. Turkish demand for energy is increasing by 8% per year but, thanks to the wind farms, emissions are not increasing at the same pace. The expected Gold Standard VER production

for Intipe is 74'000 tonnes CO₂e per year. Expected Gold Standard VER production from the Mare project is 90'000 tonnes CO₂e per year, as of June 2007.

The lives of the local community have been greatly enriched: there are now new roads, new jobs and, in the spirit of local development, even the equipment for Mare was purchased exclusively in Turkey.

One of the most immediate impacts of the project felt by the villagers was economic. Before the construction of the wind farms, many of the residents of the nearby villages were not able to find steady work due to a limited economy and poor educational preparation. The staff for the project was recruited locally where employees can benefit from immediate work and ongoing technical training programs for the future.

Other members of the community benefit from targeted infrastructural improvements such as roads and schools.



The opening of the new local kindergarten near Germiyan village.



New kindergarten building near Germiyan village