south pole
Carbon Asset Management Ltd.

Sustainable small and micro hydropower stations, rural South West China

Small run off river hydropower stations generate electricity without the need of a retaining dam, avoiding harm to people and environment. This grouped hydro bundle gives an example of sustainable power generation in rural areas.

Locations

Covering an area of 1.14 million m^2 (12 million ft^2), the south-western provinces Sichuan, Chongqing, Yunnan, and Guizhou span through a variety of landscapes from the subtropical South over severe karst hills up to the Tibetan plateau.
Several important rivers flow through the region such as the Yangtze, the Pearl River, the Mekong, the Salween, and the Red River.
With its destinct history, Sichuan and Chongqing are famous for their rich culture, especially their cuisine.

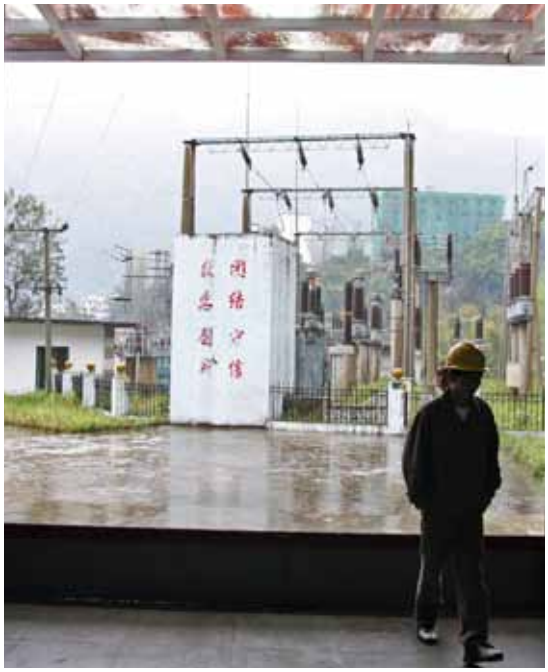
Projects

The Sustainable Small Hydropower Project is a bundle of small hydro power plants; the project activity generates electricity from run-off-river hydro power. Greenhouse gas emission reductions are thus achieved by the project activity through replacing electricity from fossil fuel based power plants with renewable electricity.

GHG emission reductions are achieved by replacing fossil fuels with sustainable energy, thereby avoiding the release of CO_2 into the atmosphere.

Individual projects spread widely across the less developed rural area of southwestern China, consisting of four provinces Yunnan, Sichuan, Chongqing, and Guizhou.

The entire bundle project complies with the Verified Carbon Standard. Besides bringing emission reduction the project is well developed and operated and brings significant and multiple benefits.



View from the turbine hall to the substation of Lishadi plant.

Projects mentioned hereafter are deliberately chosen to best represent the overall feature of the grouped project. These projects are located within the Wulong region of Chongqing and Nu river region of Yunnan province where the majority of the projects are coming from.

Forebay of one of the projects

Wulong county and Wanzhou county are two poverty-stricken counties as defined by the central government. In order to explore one of the many important aspects of sustainability, alleviation of inequality, it is reasonable to observe the changes the projects bring to these two poor regions. For this, the projects have also been validated against the Social Carbon Standard (seem ore under Benefits).

Social Benefits

The project leads to investments and development in the region, which would not happen in the project's absence. The construction of the power plant and associated infrastructure provide considerable economic benefit through employment of local people. Moreover operation and maintenance of the power station generate employment opportunities on a regular and permanent basis. As a result of on-job-training received when participating civil works, local peasants increase their labour skills and working experience.

Through the reliable, affordable power brought to remote communities the villagers now have access to more electrical appliances, which both improves their understanding of the 'outside' world and eases the daily domestic burden. As a part of the construction, the project developers upgraded access roads and community infrastructures.

Outside view of Lishadi hydro plant

In Yunnan, sustainable hydropower stations improve the livelihoods of ethnic minority communities. Yunnan has an abundance of water resource and diverse ethnic minority groups, which live with traditions born from their long history; they are partially self-sufficient and partially supported by the local government. Because of the difficult-to-access mountain regions, many of them are isolated from the outside world, so the introduction of small hydro stations gives them achance to get to know the modern world, and more importantly encourages cultural integration. The project builds bridges between the predominant Han nationality and minority groups by creating chances of working jointly and exchanging ideas.

Socio-Economic Benefits

The bundled hydro project was the first ever to issue Social Carbon Standard validated credits outside Brazil (where the standard was developed). This means that the social co-benefits are now being validated by a third party on an annual basis. In cooperation with a local NGO, a stakeholder consultation was held to define topics to be tackled with the help of carbon revenues: consequentially, in spring 2011, an agricultural education program for planting fruit trees will start in Lishadi region. Other topics for future implementation are composting toilets to enhance hygienic standards, children's educational programs, and a disaster relief fund to mitigate the effects of natural disasters linked to climate change such as landslides. The development program under the Social Carbon is a long-term engagement fully financed by carbon revenues from the specific project.

Electricity replaced the burning of fuel and wood in rural households

Apart from the Social Carbon pledge, the projects bring a source of local income and the development of skills. Among others, income opportunities are being created, local people are able to upgrade their houses, send children to school, etc.

In recent years, China has witnessed a huge increase in power consumption. The hydropower project is contributing in a sustainable manner to bridging the gap between supply and demand of power on a regional and national level. The project activity also leads to diversification of the national energy supply, which is still dominated by fossil fuel (mainly coal). The generated electricity is supplied to the regional grid, thereby improving the grid stability and availability of electricity to local consumers, allowing them to switch from burning wood or fuel. This can lead to reduced erosion since fewer firewood is needed.

The projects support technological and know-how transfer from other regions, and villagers have been taught how to handle electricity safely.

Most of the hydro power stations hire local people and provide employment and additional income for less developed rural regions. Since income tax benefits apply to small scale stations, thus revenues from electricity sales are transferred more directly to the local community.

The Dou family in front of their newly built house containing a convenience store

Environmental Benefits

This canal is used to divert run-off water for the irrigation of agriculture terraces

In China, the lion share of total electricity production is still derived from coal based power plants. With China being so heavily dependent on coal for its energy requirements, small hydro plants increase the share of renewable energy generation and lead by example. In addition, sustainable energy brings environmental benefits for the country's air, soil and water resources.

The pollution created by hydroelectric energy generation is cltose to zero. As compared to fossil fuel power plants, the project reduces CO_2, SO_X, NO_X and other emissions significantly, thus mitigating air polution and its direct and indirect impacts on human health.

Details

South Pole Project No. 300 494
DOE: TÜV Rheinland
Standard: VCS 2007
Average emission reductions per year: 500' 000 t CO_2e

For further details please contact:
South Pole Carbon Asset Management
Sales Department
sales@southpolecarbon.com
+41 43 501 35 52
www.southpolecarbon.com