

CARBON OFFSET PROFILE

India: Hanuman Biomass Renewable Energy Project



Chhattisgarh state is situated in central eastern India. In comparison, the rural state has a below-average population density. 80 percent of the state's population depend on agriculture. Despite strong growth in the last decade it lags behind many federal states with regards to economic development. The backbone of its industry are raw material producers mainly of steel, cement and mineral products. Given an ever increasing industry output innovation is needed.

Today, mineral extraction is one of the main drivers for deforestation and environmental pollution in Chhattisgarh. The state's economy has not been able to profit from the expansion of the manufacturing sector to the same extent as the rest of India over the last two decades. In many rural areas the energy infrastructure is insufficient to meet even the existing demand.

Unleashing Endogenous Potentials

Chhattisgarh is often described as the rice bowl of India. Bearing a positive connotation this is also a sign of dependency. Many small hold farmers suffer from the comparatively low productivity of rice cultivation. Some have to fight for mere existence, others get into debt while attempting to boost productivity with fertilizer, machinery and high-yielding crops. This project opens the possibility of additional income for these farmers.

The paper and pulp plant of Hanuman Agro Industries used to fire coal to meet the on-site steam demand. Electricity had to be imported from the grid. In addition to the direct emissions this electricity import from the regional grid - also dependent on coal - led to an overall high greenhouse gas emission level. Supported by carbon offset revenues the plant owners decided to replace these installations with a 2.5 megawatt co-generation unit. The new equipment is fired with biomass and supplies all electricity and steam required for the plant's production processes. The demand for biomass –especially rice husk – gives a value to a residue that so far had been left to decay in the fields. Thus, the whole region profits from using a local, self-dependent and environmentally friendly fuel source.



Key Facts:

Project type:
Renewable Energy: Biomass

Project standard:
VCS

Total emission reductions:
32,500t CO₂e p.a.

Project start date:
February 2005

Project partner:
Hanuman Agro Industries Limited

Validator:
SGS (DOE)

Verifier:
SGS (DOE)

Header photo by: Utpal Deka - Guwahati, assam, India.





Technology brief – how biomass fuel works

Biomass refers to organic matter such as rice husks, wood, organic waste, or alcohol fuels. While biomass may be grown for the specific purpose of generating electricity or heat, in the case of this project it comes from an existing by-product of the agricultural production in the region. During combustion, biomass releases carbon equivalent to the amount that had been sequestered during its lifespan as a plant. As long as the extraction of biomass is less than the annual growth of the plant it derives from, biomass can be considered to be a carbon neutral fuel. The use of agricultural residues is particularly sensible since there is no conflicting use for the biomass.



Rice husk is an excellent fuel but requires significant changes in firing technology and fuel logistics. One main challenge is the wide dispersion of suppliers combined with the low energy density of rice husk. Since coal is abundantly available in the region the use of coal is the most likely scenario without the incentives of carbon offset revenues.



Sustainability benefits

In addition to reducing greenhouse gas emissions, this project supports sustainable development in the region by:

- ✓ Creating jobs in the construction, maintenance, and operation of the plant as well as in the rice husk logistics
- ✓ Creating additional income for farmers from agricultural waste
- ✓ Alleviating the load on the regional electricity grid
- ✓ Reducing emissions of air pollutants from fossil fuel burning like SO₂, soot and particulate matter
- ✓ Demonstrating and spreading renewable energy technology
- ✓ Creating a role model for regional empowerment through environmental friendly technology

