

Brief

Name of Project: “DGKCC Waste Heat Recovery and Utilization for 10.4 MW Power Generation at Dera Ghazi Khan Plant.”
Version 01.

Objectives:

The main objective of the project activity is installation of waste heat recovery plant (Heat Recovery Steam Generators (HRSGs) & steam turbo-generator). All the waste heat recovered from the clinker production process would be utilized for power generation and the hot exhaust from HRSGs would be used to preheat the raw material. Two HRSGs will be installed on each kiln, one at pre-heater and one on cooler. The generated electricity will fully displace the HFO based electricity generation and partially displace the grid electricity imports and contributes towards sustainable development.

- To help in achieving the objectives of combating climate change under UNFCCC by reducing significant amount of greenhouse gas (carbon dioxide) emissions and contributes to the regional and national sustainable development.

Date of Submission: March, 28th 2009

Submitted by: Carbon Services (Pvt) Limited.

Project Sponsors: D.G Khan Cement Company Limited.

Project Development Consultants: First Climate (Switzerland) AG

Detail of Total Project Cost:

S.R	Description	Amount (PKR)
1.	Main Equipments (HRSGs & Steam Turbine)	1,007,370,000
2.	Other Allied Equipments/Accessories, technical advisory, freight and other charges	186,736,800
3.	Civil Works	305,000,000
4.	Miscellaneous Expenses	73,569,340
	Total (PKR)	1,572,676,140
	Amount in (US\$) Million	1.97

Estimated Emission Reduction:

<u>Source</u>	<u>Tons of CO₂eq/ yr</u>
D.G Khan Cement Company Limited.	40,332
Total annual reduction:	40,332

Operational Lifetime: 25 years.

Starting/Commissioning Date: 01/09/2009

Crediting/Validity Period:

- Kyoto first commitment period: 2008-12
- Estimated validity period (Including Post Kyoto period): 2008-33

Economic Viability of the Project:

Internal Rate of Return (IRR):

Without CDM benefits: 12.40%

With CDM benefits: 13.63%

Benefits from the Project:

Activity	Revenue (US\$) million/annum
Sale of Carbon Credits (@ US\$ 14/tonnes of CO _{2eq}):	0.56
Total estimated annual revenue:	0.56

Other Qualitative Benefits:

- The project is a role model of for other cement factories. Generation of electricity by recovered waste heat will build up a skill set for such kind of operation.
- The project will generate jobs during its construction/operation phase.
- Less degradation of roads because HFO is transported to the cement factory in heavy oil tankers causing a lot of damage to local roads. The project activity will completely avoid HFO based generation hence resulting less degradation by oil tankers.
- The project activity reduces the local air pollutants (such as nitrogen, sulphur oxides and volatile organic compounds). Reduction in local air pollutants benefits the local community due to reduced costs for health care and climate change adaptation.
- The project activity builds and improves the skill set of the local workers and engineers; the skilled workers can transfer their newly acquired skills to other sectors of industry thus resulting in considerable fiscal savings as far as hiring foreign skilled workers and consultants to install or troubleshoot a similar technology in Pakistan is concerned.
- Stimulates economic activity and investment in the project area.