

## Project Brief

**Name of Project: “Waste heat recovery and utilization for power generation at Lucky Cement Factory Limited, Karachi Plant (*Version 01*)”.**

### **Objectives:**

- The main objective of the project activity is installation of waste heat recovery plant (Heat Recovery Steam Generators (HRSGs) & steam turbine). 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 fossil fuel 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, 26<sup>th</sup> 2009

**Submitted by:** Carbon Services (Pvt) Limited.

**Project Sponsors:** Lucky Cement Company Limited.

**Project Development Consultants:** First Climate (Switzerland) AG

### **Detail of Total Project Cost:**

<b>Cost of Equipment/Service</b>	<b>Price</b>
Cost of Power Plant (Million US \$)	18.0
Transportation from China (Million US \$)	0.6
Transportation from Karachi Port to Nooriabad (Million US \$)	0.12
Duties and Taxes (Million US \$)	0.54
Civil Works (Million US \$)	1.2
Local Fabrication (Million US \$)	1.0
<b>Total Project Investment (Million US \$)</b>	<b>21.46</b>
<b>Total Project Investment (Million PKR)</b>	<b>1,301.77</b>

### **Estimated Emission Reduction:**

<u>Source</u>	<u>Tons of CO<sub>2</sub>eq/ yr</u>
Lucky Cement Company Limited.	505, 48

**Total annual reduction: 505, 48**

**Operational Lifetime:** 20 years.

**Starting/Commissioning Date:** 01/09/2009

**Crediting/Validity Period:**

- Kyoto first commitment period: 2008-12
- Estimated validity period (Including Post Kyoto period): 2008-28

**Economic Viability of the Project:**

Internal Rate of Return (IRR):

Without CDM benefits: 7.39%

With CDM benefits: 11.82%

**Benefits from the Project:**

<b>Activity</b>	<b>Revenue (US\$) million/annum</b>
Sale of Carbon Credits (@ 14.16 Euro/tones of CO <sub>2eq</sub> ):	.715
<b>Total estimated annual revenue:</b>	<b>.715</b>

**Other Qualitative Benefits:**

- The project will result in significant reduction in the emission of green house gases.
- Local environment will be improved by reduction in temperature of the vented hot air.
- The project will generate jobs during its construction/operation phase.
- Local fossil fuel resources will be conserved by avoiding fossil fuel based electricity from the existing captive power plant.
- The project activity will result in alleviation of poverty by providing labour employment opportunities to the local community during construction phase.
- There will be less health impact for the population through less emission of greenhouse gases and particles due to the project activity.
- The project is a cost effective way of generating electricity since no additional fuel is used.
- The project will introduce modern technology in the country.

- The project activity will improve technical knowledge of local population through technology transfer of the system by the supplier
- The project activity will set up an example of sustainable development to be followed by other cement factories.