Case studies of Cogen projects

Case 1

This is a project already done in Ghaziabad, Uttar Pradesh.

Project Description (brief): This project activity involves the installation of a 22 MW backpressure type turbo generator along with high pressure (87 kg/cm2) 110 TPH capacity boiler commissioned in 29/11/2007 (date of synchronization of the turbine with the UP State grid) and a high pressure boiler of 125 TPH (115 kg/cm2 pressure) along with a 28 MW condensing extraction and bleed-type steam turbine-driven generator set that was commissioned in 13/02/2016.

The 22MW backpressure turbine is used for captive power consumption and power from this turbine is also exported to the grid. The 28 MW turbine is housed in a substation that continuously exports renewable power to the grid.

The high-pressure boilers are fired by bagasse, a byproduct from the sugar manufacturing process to generate steam, which in turn powers the steam turbine to generate power.

Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
Emission Reductions (tCO2)	9974	125290	63575	146007	169497	146886	91919	93239	75749	**9,22,136**

Case 2

This is a project already done in Khatauli, Uttar Pradesh.

Project Description (brief): This UCR project activity involves the installation of two 23 MW turbo generators along with two high pressure (86 kg/cm2) 120 TPH capacity boilers commissioned in 19/10/2005 and 17/12/2006. The total installed capacity is hence 46 MW.

The power generated from the turbines is utilised for captive consumption and the surplus power is exported to the grid. Power is generated both in the sugar season and off-season at 11 kV and steppedup on-site to 132 kV before being transmitted to the nearby UPPCL sub-station located at Khatauli.

Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
Emission Reductions (tCO2)	82304	73040	74815	75570	85619	96894	91779	88700	97139	96341	**8,62,201**

Case 3

This is a project already done in Punjab.

Project Description (brief): This project activity is to install one 27 TPH husk fired boiler with a 2.5 MW back pressure turbine to cater the electricity and steam demand of distillery. The installed 27 TPH (biomass) husk fired boiler generates steam and power to meet the demand of recipient plant and displaces the use of fossil fuel-based boilers. The project activity thus reduces Greenhouse gas (GHG) emissions associated with the combustion of coal in baseline boilers. The project activity claims emission reductions for the thermal/power energy production by renewable energy technologies (biomass boilers) that displace the use of fossil fuel-based boilers. This is in line with the applied methodology AMS I.C.

Year	2014	2015	2016	2017	2018	2019	2020	2021	Total
Emission Reductions (tCO2)	10423	72532	80946	86650	71785	76962	90918	94337	**5,84,553**

Case 4

This is a project already done in Bahraich, Uttar Pradesh.

Project Description (brief): This project activity currently involves two biomass boilers of 80 TPH each (one dumping grate and one retrofitted with a traveling grate), a bleed and back-pressure turbine with rated capacity of 20 MW, a condensing extraction and bleed-type steam turbine-driven generator set with a rated capacity of 18 MW and an old 12MW turbine that operated till June 2013 within the project boundary.

The total installed capacity during the first monitoring period (this report) is 50MW for the period 2013-2021. The start date of the project activity is the date of commercial power supply to the state grid on 01/02/2008

Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
Emission Reductions (tCO2)	4150	55302	49283	41372	19702	58515	47592	26306	16917	**3,19,139**

Case 5

This is a project already done in Harinbhatta, Chhattisgarh.

Project Description (brief): This project activity involves the installation of a high pressure 38 tonnes per hour (TPH), Pressure: 66 kilograms / cm2, Temperature 505oC Cethar Vessels AFBC Boiler and an 8 MW condensing Triveni turbine generator and provides 7.5 MW of electrical power to the Chhattisgarh State Electricity Board at 33 KV through the local substation. Other on-site generation units consist of a 320 KVA Jackson India Diesel generation set. This unit is used for backup power in emergencies and for maintenance work when the power plant is not operating, and the grid is down. It does not supply electricity to the grid and is therefore outside the project boundary.

Year	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**Total**
Emission Reductions (tCO2)	28931	27885	29146	31467	30746	22144	25103	30444	**2,25,866**